

## Related Documentation

The following sections describe the documentation available for Cisco IOS Release 12.4. These documents consist of software installation guides, Cisco IOS configuration and command references, system error messages, feature modules, and other documents.

Use these release notes with the documents and tools described in the following sections:

- [Release-Specific Documents, page 1](#)
- [Feature Modules, page 2](#)
- [Cisco Feature Navigator, page 2](#)
- [Cisco IOS Software Documentation Set, page 2](#)
- [Obtaining Documentation and Submitting a Service Request, page 10](#)

## Release-Specific Documents

The following document is specific to Cisco IOS Release 12.4 and is located on Cisco.com:

*[Caveats for Cisco IOS Release 12.4](#)*

Refer to *[Caveats for Cisco IOS Release 12.4](#)* for caveats applicable to all platforms for all maintenance releases of Cisco IOS Release 12.4.

On [Cisco.com](#) at:

**Support > Select A Product > Select a category > Cisco IOS and NX-OS Software > Select a sub-category > Cisco IOS Software Release 12.4 Family > Select a product > Cisco IOS Software Releases 12.4 Mainline > General Information > Release Notes**



### 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 **Support > Select A Product > Select a category > Cisco IOS and NX-OS Software > Select a sub-category > Cisco IOS Software Release 12.4 Family > Select a product > Cisco IOS Software Releases 12.4 Mainline > Bug Toolkit**. Another option is to go to [http://www.cisco.com/cgi-bin/Support/Bugtool/launch\\_bugtool.pl](http://www.cisco.com/cgi-bin/Support/Bugtool/launch_bugtool.pl). (If the defect that you have requested cannot be displayed, this may be due to one or more of the following reasons: the defect number does not exist, the defect does not have a customer-visible description yet, or the defect has been marked Cisco Confidential.)

## Feature Modules

Feature modules describe new features that are supported in Cisco IOS Release 12.4 and are updates to the Cisco IOS documentation set. A feature module consists of a brief overview of the feature, benefits, configuration tasks, and a command reference. As updates, the feature modules are available online only. Feature module information is incorporated into the next printing of the Cisco IOS documentation set.

On [Cisco.com](http://www.cisco.com) at:

**Support > Support > Select A Product > Select a category > Cisco IOS and NX-OS Software > Select a sub-category > Cisco IOS Software Release 12.4 Family > Select a product > Cisco IOS Software Releases 12.4 Mainline > Configure > Feature Guides**

## 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 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.

Cisco Feature Navigator is available 24 hours a day, 7 days a week, and 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/cfn>

## Cisco IOS Software Documentation Set

The Cisco IOS Release 12.4 documentation set consists of the configuration guide and command reference pairs listed in [Table 1](#) and the supporting documents listed in [Table 2](#). The configuration guides and command references are organized by technology. For the configuration guides:

- Some technology documentation, such as that for DHCP, contains features introduced in Releases 12.2T and 12.3T and, in some cases, Release 12.2S. To assist you in finding a particular feature, a roadmap document is provided.
- Other technology documentation, such as that for OSPF, consists of a chapter and accompanying Release 12.2T and 12.3T feature documents.



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**Note**

In some cases, information contained in Release 12.2T and 12.3T feature documents augments or supersedes content in the accompanying documentation. Therefore it is important to review all feature documents for a particular technology.

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## Cisco IOS Release 12.4 Documentation Set

Table 1 lists the Cisco IOS Release 12.4 configuration guides and command references.

**Table 1** Cisco IOS Release 12.4 Configuration Guides and Command References

Configuration Guide and Command Reference Titles	Description
<b>IP</b>	
<a href="#">Cisco IOS IP Addressing Services Configuration Guide</a> , Release 12.4 <a href="#">Cisco IOS IP Addressing Services Command Reference</a> , Release 12.4	The configuration guide is a task-oriented guide to configuring IP addressing and services, including Network Address Translation (NAT), Domain Name System (DNS), and Dynamic Host Configuration Protocol (DHCP). The command reference provides detailed information about the commands used in the configuration guide.
<a href="#">Cisco IOS IP Application Services Configuration Guide</a> , Release 12.4 <a href="#">Cisco IOS Application Services Command Reference</a> , Release 12.4	The configuration guide is a task-oriented guide to configuring IP application services, including IP access lists, Web Cache Communication Protocol (WCCP), Gateway Load Balancing Protocol (GLBP), Server Load Balancing (SLB), Hot Standby Router Protocol (HSRP), and Virtual Router Redundancy Protocol (VRRP). The command reference provides detailed information about the commands used in the configuration guide.
<a href="#">Cisco IOS IP Mobility Configuration Guide</a> , Release 12.4 <a href="#">Cisco IOS IP Mobility Command Reference</a> , Release 12.4	The configuration guide is a task-oriented guide to configuring Mobile IP and Cisco Mobile Networks. The command reference provides detailed information about the commands used in the configuration guide.
<a href="#">Cisco IOS IP Multicast Configuration Guide</a> , Release 12.4 <a href="#">Cisco IOS IP Multicast Command Reference</a> , Release 12.4	The configuration guide is a task-oriented guide to configuring IP multicast, including Protocol Independent Multicast (PIM), Internet Group Management Protocol (IGMP), Distance Vector Multicast Routing Protocol (DVMRP), and Multicast Source Discovery Protocol (MSDP). The command reference provides detailed information about the commands used in the configuration guide.
<a href="#">Cisco IOS IP Routing Protocols Configuration Guide</a> , Release 12.4 <a href="#">Cisco IOS IP Routing Protocols Command Reference</a> , Release 12.4	The configuration guide is a task-oriented guide to configuring IP routing protocols, including Border Gateway Protocol (BGP), Intermediate System-to-Intermediate System (IS-IS), and Open Shortest Path First (OSPF). The command reference provides detailed information about the commands used in the configuration guide.
<a href="#">Cisco IOS IP Switching Configuration Guide</a> , Release 12.4 <a href="#">Cisco IOS IP Switching Command Reference</a> , Release 12.4	The configuration guide is a task-oriented guide to configuring IP switching features, including Cisco Express Forwarding (CEF), fast switching, and Multicast Distributed Switching (MDS). The command reference provides detailed information about the commands used in the configuration guide.
<a href="#">Cisco IOS IPv6 Configuration Guide</a> , Release 12.4 <a href="#">Cisco IOS IPv6 Command Reference</a> , Release 12.4	The configuration guide is a task-oriented guide to configuring IP version 6 (IPv6), including IPv6 broadband access, IPv6 data-link layer, IPv6 multicast routing, IPv6 quality of service (QoS), IPv6 routing, IPv6 services and management, and IPv6 tunnel services. The command reference provides detailed information about the commands used in the configuration guide.
<a href="#">Cisco IOS Optimized Edge Routing Configuration Guide</a> , Release 12.4 <a href="#">Cisco IOS Optimized Edge Routing Command Reference</a> , Release 12.4	The configuration guide is a task-oriented guide to configuring Optimized Edge Routing (OER) features, including OER prefix learning, OER prefix monitoring, OER operational modes, and OER policy configuration. The command reference provides detailed information about the commands used in the configuration guide.

**Table 1 Cisco IOS Release 12.4 Configuration Guides and Command References (continued)**

Configuration Guide and Command Reference Titles	Description
<b>Security and VPN</b>	
<p><i>Cisco IOS Security Configuration Guide</i>, Release 12.4</p> <p><i>Cisco IOS Security Command Reference</i>, Release 12.4</p>	<p>The configuration guide is a task-oriented guide to configuring various aspects of security, including terminal access security, network access security, accounting, traffic filters, router access, and network data encryption with router authentication. The command reference provides detailed information about the commands used in the configuration guide.</p>
<b>QoS</b>	
<p><i>Cisco IOS Quality of Service Solutions Configuration Guide</i>, Release 12.4</p> <p><i>Cisco IOS Quality of Service Solutions Command Reference</i>, Release 12.4</p>	<p>The configuration guide is a task-oriented guide to configuring quality of service (QoS) features, including traffic classification and marking, traffic policing and shaping, congestion management, congestion avoidance, and signaling. The command reference provides detailed information about the commands used in the configuration guide.</p>
<b>LAN Switching</b>	
<p><i>Cisco IOS LAN Switching Configuration Guide</i>, Release 12.4</p> <p><i>Cisco IOS LAN Switching Command Reference</i>, Release 12.4</p>	<p>The configuration guide is a task-oriented guide to local-area network (LAN) switching features, including configuring routing between virtual LANs (VLANs) using Inter-Switch Link (ISL) encapsulation, IEEE 802.10 encapsulation, and IEEE 802.1Q encapsulation. The command reference provides detailed information about the commands used in the configuration guide.</p>
<b>Multiprotocol Label Switching (MPLS)</b>	
<p><i>Cisco IOS Multiprotocol Label Switching Configuration Guide</i>, Release 12.4</p> <p><i>Cisco IOS Multiprotocol Label Switching Command Reference</i>, Release 12.4</p>	<p>The configuration guide is a task-oriented guide to configuring Multiprotocol Label Switching (MPLS), including MPLS Label Distribution Protocol, MPLS traffic engineering, and MPLS Virtual Private Networks (VPNs). The command reference provides detailed information about the commands used in the configuration guide.</p>
<b>Network Management</b>	
<p><i>Cisco IOS IP SLAs Monitoring Technology Configuration Guide</i>, Release 12.4</p> <p><i>Cisco IOS IP SLAs Monitoring Technology Command Reference</i>, Release 12.4</p>	<p>The configuration guide is a task-oriented guide to configuring the Cisco IOS IP Service Level Assurances (IP SLAs) feature. The command reference provides detailed information about the commands used in the configuration guide.</p>
<p><i>Cisco IOS NetFlow Configuration Guide</i>, Release 12.4</p> <p><i>Cisco IOS NetFlow Command Reference</i>, Release 12.4</p>	<p>The configuration guide is a task-oriented guide to NetFlow features, including configuring NetFlow to analyze network traffic data, configuring NetFlow aggregation caches and export features, and configuring Simple Network Management Protocol (SNMP) and NetFlow MIB features. The command reference provides detailed information about the commands used in the configuration guide.</p>

**Table 1 Cisco IOS Release 12.4 Configuration Guides and Command References (continued)**

Configuration Guide and Command Reference Titles	Description
<p><a href="#">Cisco IOS Network Management Configuration Guide</a>, Release 12.4</p> <p><a href="#">Cisco IOS Network Management Command Reference</a>, Release 12.4</p>	<p>The configuration guide is a task-oriented guide to network management features, including performing basic system management, performing troubleshooting and fault management, configuring Cisco Discovery Protocol (CDP), configuring Cisco Networking Services (CNS), configuring DistributedDirector, and configuring Simple Network Management Protocol (SNMP). The command reference provides detailed information about the commands used in the configuration guide.</p>
<b>Voice</b>	
<p><a href="#">Cisco IOS Voice Configuration Library</a></p> <p><a href="#">Cisco IOS Voice Command Reference</a></p>	<p>The configuration library is a task-oriented collection of configuration guides, application guides, a troubleshooting guide, feature documents, a library preface, a voice glossary, and more. It also covers Cisco IOS support for voice call control protocols, interoperability, physical and virtual interface management, and troubleshooting. In addition, the library includes documentation for IP telephony applications. The command reference provides detailed information about the commands used in the configuration library.</p>
<b>Wireless / Mobility</b>	
<p><a href="#">Cisco IOS Mobile Wireless Gateway GPRS Support Node Configuration Guide</a>, Release 12.4</p> <p><a href="#">Cisco IOS Mobile Wireless Gateway GPRS Support Node Command Reference</a>, Release 12.4</p>	<p>The configuration guide is a task-oriented guide to understanding and configuring a Cisco IOS Gateway GPRS Support Node (GGSN) in a 2.5G General Packet Radio Service (GPRS) and 3G Universal Mobile Telecommunication System (UMTS) network. The command reference provides detailed information about the commands used in the configuration guide.</p>
<p><a href="#">Cisco IOS Mobile Wireless Home Agent Configuration Guide</a>, Release 12.4</p> <p><a href="#">Cisco IOS Mobile Wireless Home Agent Command Reference</a>, Release 12.4</p>	<p>The configuration guide is a task-oriented guide to understanding and configuring the Cisco Mobile Wireless Home Agent, which is an anchor point for mobile terminals for which Mobile IP or Proxy Mobile IP services are provided. The command reference provides detailed information about the commands used in the configuration guide.</p>
<p><a href="#">Cisco IOS Mobile Wireless Packet Data Serving Node Configuration Guide</a>, Release 12.4</p> <p><a href="#">Cisco IOS Mobile Wireless Packet Data Serving Node Command Reference</a>, Release 12.4</p>	<p>The configuration guide is a task-oriented guide to understanding and configuring the Cisco Packet Data Serving Node (PDSN), a wireless gateway between the mobile infrastructure and standard IP networks that enables packet data services in a Code Division Multiple Access (CDMA) environment. The command reference provides detailed information about the commands used in the configuration guide.</p>
<p><a href="#">Cisco IOS Mobile Wireless Radio Access Networking Configuration Guide</a>, Release 12.4</p> <p><a href="#">Cisco IOS Mobile Wireless Radio Access Networking Command Reference</a>, Release 12.4</p>	<p>The configuration guide is a task-oriented guide to understanding and configuring Cisco IOS Radio Access Network products. The command reference provides detailed information about the commands used in the configuration guide.</p>

**Table 1 Cisco IOS Release 12.4 Configuration Guides and Command References (continued)**

Configuration Guide and Command Reference Titles	Description
<b>Long Reach Ethernet (LRE) and Digital Subscriber Line (xDSL)</b>	
<p><i>Cisco IOS Broadband Access Aggregation and DSL Configuration Guide</i>, Release 12.4</p> <p><i>Cisco IOS Broadband Access Aggregation and DSL Command Reference</i>, Release 12.4</p>	<p>The configuration guide is a task-oriented guide to configuring broadband access aggregation and digital subscriber line features. The command reference provides detailed information about the commands used in the configuration guide.</p>
<p><i>Cisco IOS Service Selection Gateway Configuration Guide</i>, Release 12.4</p> <p><i>Cisco IOS Service Selection Gateway Command Reference</i>, Release 12.4</p>	<p>The configuration guide is a task-oriented guide to configuring Service Selection Gateway (SSG) features, including subscriber authentication, service access, and accounting. The command reference provides detailed information about the commands used in the configuration guide.</p>
<b>Dial—Access</b>	
<p><i>Cisco IOS Dial Technologies Configuration Guide</i>, Release 12.4</p> <p><i>Cisco IOS Dial Technologies Command Reference</i>, Release 12.4</p>	<p>The configuration guide is a task-oriented guide to configuring lines, modems, and ISDN services. This guide also contains information about configuring dialup solutions, including solutions for remote sites dialing in to a central office, Internet service providers (ISPs), ISP customers at home offices, enterprise WAN system administrators implementing dial-on-demand routing, and other corporate environments. The command reference provides detailed information about the commands used in the configuration guide.</p>
<b>Asynchronous Transfer Mode (ATM)</b>	
<p><i>Cisco IOS Asynchronous Transfer Mode Configuration Guide</i>, Release 12.4</p> <p><i>Cisco IOS Asynchronous Transfer Mode Command Reference</i>, Release 12.4</p>	<p>The configuration guide is a task-oriented guide to configuring Asynchronous Transfer Mode (ATM), including WAN ATM, LAN ATM, and multiprotocol over ATM (MPOA). The command reference provides detailed information about the commands used in the configuration guide.</p>
<b>WAN</b>	
<p><i>Cisco IOS Wide-Area Networking Configuration Guide</i>, Release 12.4</p> <p><i>Cisco IOS Wide-Area Networking Command Reference</i>, Release 12.4</p>	<p>The configuration guide is a task-oriented guide to configuring wide-area network (WAN) features, including: Layer 2 Tunneling Protocol Version 3 (L2TPv3); Frame Relay; Link Access Procedure, Balanced (LAPB); and X.25. The command reference provides detailed information about the commands used in the configuration guide.</p>
<b>System Management</b>	
<p><i>Cisco IOS Configuration Fundamentals Configuration Guide</i>, Release 12.4</p> <p><i>Cisco IOS Configuration Fundamentals Command Reference</i>, Release 12.4</p>	<p>The configuration guide is a task-oriented guide to using Cisco IOS software to configure and maintain Cisco routers and access servers, including information about using the Cisco IOS command-line interface (CLI), loading and maintaining system images, using the Cisco IOS file system, using the Cisco IOS Web browser user interface (UI), and configuring basic file transfer services. The command reference provides detailed information about the commands used in the configuration guide.</p>

**Table 1 Cisco IOS Release 12.4 Configuration Guides and Command References (continued)**

Configuration Guide and Command Reference Titles	Description
<p><i>Cisco IOS Interface and Hardware Component Configuration Guide</i>, Release 12.4</p> <p><i>Cisco IOS Interface and Hardware Component Command Reference</i>, Release 12.4</p>	<p>The configuration guide is a task-oriented guide to configuring and managing interfaces and hardware components, including dial shelves, LAN interfaces, logical interfaces, serial interfaces, and virtual interfaces. The command reference provides detailed information about the commands used in the configuration guide.</p>
<b>IBM Technologies</b>	
<p><i>Cisco IOS Bridging and IBM Networking Configuration Guide</i>, Release 12.4</p> <p><i>Cisco IOS Bridging Command Reference</i>, Release 12.4</p> <p><i>Cisco IOS IBM Networking Command Reference</i>, Release 12.4</p>	<p>The configuration guide is a task-oriented guide to configuring:</p> <ul style="list-style-type: none"> <li>• Bridging features, including: transparent and source-route transparent (SRT) bridging, source-route bridging (SRB), Token Ring Inter-Switch Link (TRISL), and Token Ring Route Switch Module (TRRSM).</li> <li>• IBM network features, including: data-link switching plus (DLSw+), serial tunnel (STUN), and block serial tunnel (BSTUN); Logical Link Control, type 2 (LLC2), and Synchronous Data Link Control (SDLC); IBM Network Media Translation, including SDLC Logical Link Control (SDLLC) and Qualified Logical Link Control (QLLC); downstream physical unit (DSPU), Systems Network Architecture (SNA) service point, SNA Frame Relay Access, Advanced Peer-to-Peer Networking (APPN), native client interface architecture (NCIA) client/server topologies, and IBM Channel Attach.</li> </ul> <p>The two command references provide detailed information about the commands used in the configuration guide.</p>
<b>Additional and Legacy Protocols</b>	
<p><i>Cisco IOS AppleTalk Configuration Guide</i>, Release 12.4</p> <p><i>Cisco IOS AppleTalk Command Reference</i>, Release 12.4</p>	<p>The configuration guide is a task-oriented guide to configuring the AppleTalk protocol. The command reference provides detailed information about the commands used in the configuration guide.</p>
<p><i>Cisco IOS DECnet Configuration Guide</i>, Release 12.4</p> <p><i>Cisco IOS DECnet Command Reference</i>, Release 12.4</p>	<p>The configuration guide is a task-oriented guide to configuring the DECnet protocol. The command reference provides detailed information about the commands used in the configuration guide.</p>
<p><i>Cisco IOS ISO CLNS Configuration Guide</i>, Release 12.4</p> <p><i>Cisco IOS ISO CLNS Command Reference</i>, Release 12.4</p>	<p>The configuration guide is a task-oriented guide to configuring International Organization for Standardization (ISO) Connectionless Network Service (CLNS). The command reference provides detailed information about the commands used in the configuration guide.</p>
<p><i>Cisco IOS Novell IPX Configuration Guide</i>, Release 12.4</p> <p><i>Cisco IOS Novell IPX Command Reference</i>, Release 12.4</p>	<p>The configuration guide is a task-oriented guide to configuring the Novell Internetwork Packet Exchange (IPX) protocol. The command reference provides detailed information about the commands used in the configuration guide.</p>
<p><i>Cisco IOS Terminal Services Configuration Guide</i>, Release 12.4</p> <p><i>Cisco IOS Terminal Services Command Reference</i>, Release 12.4</p>	<p>The configuration guide is a task-oriented guide to configuring terminal services, including DEC, local-area transport (LAT), and X.25 packet assembler/disassembler (PAD). The command reference provides detailed information about the commands used in the configuration guide.</p>

Table 2 lists the documents and resources that support the Cisco IOS Release 12.4 software configuration guides and command references.

**Table 2 Cisco IOS Release 12.4 Supporting Documents and Resources**

Document Title	Description
<i>Cisco IOS Master Command List</i> , Release 12.4	An alphabetical listing of all the commands documented in the Cisco IOS Release 12.4 command references.
<i>Cisco IOS New, Modified, Replaced, and Removed Commands</i> , Release 12.4	A listing of all the new, modified, replaced and removed commands since Cisco IOS Release 12.3, grouped by Release 12.3T maintenance release and ordered alphabetically within each group.
<i>Cisco IOS New and Modified Commands</i> , Release 12.3	A listing of all the new, modified, and replaced commands since Cisco IOS Release 12.2, grouped by Release 12.2T maintenance release and ordered alphabetically within each group.
<i>Cisco IOS System Messages, Volume 1 of 2</i> <i>Cisco IOS System Messages, Volume 2 of 2</i>	These publications list and describe Cisco IOS system messages. Not all system messages indicate problems with your system. Some are purely informational, and others may help diagnose problems with communications lines, internal hardware, or the system software.
<i>Cisco IOS Debug Command Reference</i> , Release 12.4	This publication contains an alphabetical listing of the <b>debug</b> commands and their descriptions. Documentation for each command includes a brief description of its use, command syntax, and usage guidelines.
<i>Release Notes</i> , Release 12.4	These release notes (this document) describe general release information, including information about supported platforms, feature sets, platform-specific notes, and Cisco IOS software defects.
RFCs	RFCs are standards documents maintained by the Internet Engineering Task Force (IETF). Cisco IOS software documentation references supported RFCs when applicable. The full text of referenced RFCs may be obtained at the following URL: <a href="http://www.rfc-editor.org/">http://www.rfc-editor.org/</a>
MIBs	MIBs are used for network monitoring. To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at the following URL: <a href="http://www.cisco.com/go/mibs">http://www.cisco.com/go/mibs</a>

## Notices

The following notices pertain to this software license.

### OpenSSL/Open SSL Project

This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit (<http://www.openssl.org/>).

This product includes cryptographic software written by Eric Young (eay@cryptsoft.com).

This product includes software written by Tim Hudson (tjh@cryptsoft.com).

## License Issues

The OpenSSL toolkit stays under a dual license, i.e. both the conditions of the OpenSSL License and the original SSLeay license apply to the toolkit. See below for the actual license texts. Actually both licenses are BSD-style Open Source licenses. In case of any license issues related to OpenSSL please contact [openssl-core@openssl.org](mailto:openssl-core@openssl.org).

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This product includes cryptographic software written by Eric Young ([ey@cryptsoft.com](mailto:ey@cryptsoft.com)). This product includes software written by Tim Hudson ([tjh@cryptsoft.com](mailto:tjh@cryptsoft.com)).

### Original SSLeay License:

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This package is an SSL implementation written by Eric Young ([ey@cryptsoft.com](mailto:ey@cryptsoft.com)).

The implementation was written so as to conform with Netscapes SSL.

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“This product includes cryptographic software written by Eric Young (eay@cryptsoft.com)”.

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4. If you include any Windows specific code (or a derivative thereof) from the apps directory (application code) you must include an acknowledgement: “This product includes software written by Tim Hudson (tjh@cryptsoft.com)”.

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## Obtaining Documentation and Submitting a Service Request

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

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

Subscribe to the *What's New in Cisco Product Documentation* as a Really Simple Syndication (RSS) feed and set content to be delivered directly to your desktop using a reader application. The RSS feeds are a free service and Cisco currently supports RSS Version 2.0.

# This document is to be used in conjunction with the documents listed in the **“Related Documentation”** section on page 1.

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