Preface

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

Guide Revision History

The Guide Revision History records technical changes to this guide. The table shows the software release number and guide revision number for the change, the date of the change, and a brief summary of the change.

Cisco IOS Release.	Part Number	Publication Date	Change Summary
Cisco IOS XE Release 3.11S	OL-19820-15	November, 2013	The following features were added: • Blended Transcoding
Cisco IOS XE Release 3.8S	OL-19820-14	November, 2012	The following features were added: • AMR-WB
Cisco IOS XE Release 3.7S	OL-19820-13	July, 2012	The following features were added: • H.248 Border Access Controller Support • IMS Rf Billing Interfaces
Cisco IOS XE Release 3.6S	OL-19820-12	March 29, 2012	The following features were added: • Common IP Address Media Bypass • Via Header Passthrough

Text Part Number:

Cisco IOS XE Release 3.5S	OL-19820-11	November 28, 2011	The following features were added: • Alarm-Related Enhancements • CAC-Related Enhancements • Call Log Correlation • Flexible Media Routing
Cisco IOS XE Release 3.4S	OL-19820-10	July 25, 2011	The following features were added: • Limiting Resource Usage • QoS Demarcation Enhancements • SDP Editing Using Script-Based Editors • SRTP Support for RTCP Multiplexed with RTP and for SSRC-Based Multiplexing
Cisco IOS XE Release 3.3S	OL-19820-09	March 18, 2011	The following features were added: • SIP Header Manipulation Enhancements • Support for H.239 • Voice Transcoding Per Adjacency Statistics • Message, Policy, and Subscriber Statistics Enhancements • SPA DSP: Call Recovery • Flow Statistics QoS Enhancements • Selective Radius Billing • Alternative Contact Rewriting • BFCP Support • Limited H.323 ID Routing and Passthrough Support • Support to the Cisco ASR 1006 Series Router and Cisco ASR 1013 Series Router • Interchassis-Intrachassis Conversion

Cisco IOS XE Release 3.2S	OL-19820-08	November 24, 2010	The following features were added: • SPA DSP Services • Emergency and Security Enhancements – SIP trust model includes H.323 Interface – Emergency Call statistics • SBC Calls Support using IPSec Tunnels • ASR1001 Support • XML based billing • SIP Interworking Enhancements – Event Header in Publish Method – Source Number Editing during Number analysis – Privacy Service – Option Ping Enhancements – Multiple SBC media bypass – Add Expires Header to Register Message – Absence of Username Support in Request URI • Analysis, Routing, and Policy Enhancements – Copy and Swap Procedure – Multiple CAC Averaging Periods – Administrative Domains – Blacklist Alerts • Media Interworking Enhancements – MGX Assisted DTMF Interworking – Codec Preference and Re-Ordering – Per-Adjacency Codec String Interworking – Media Address Pool Support • PKI High Availability Support

Cisco IOS XE Release 3.1S	OL-19820-07	July 30, 2010	The following features were added: • IMS Rx and Diameter • ENUM Client feature • Customized System Error Messages • SRTP to RTP Interworking and SRTP Passthrough • Media Bandwidth Policy • SDP on 200 Invite • Memory Alerting • SIP Destination ID and SIP Source ID • Support for Asymmetric Payload Types • IP IPv6/VRF Feature • DTMF Method Interworking and ACCEPT Header Handling • CALEA IRI Interface Support feature • Redundant Peer Addresses • Per Subscriber Delete
Cisco IOS XE Release 2.6.2	OL-19820-06	July 08,2010	Endpoint information in PacketCable billing records was added.
Cisco IOS XE Release 2.6.1	OL-19820-05	April, 2010	Adjacency information in PacketCable Billing Records was added.
Cisco IOS XE Release 2.6	OL-19820-04	February 26, 2010	IPv6 support including IPv4 to IPv6 and IPv6 to IPv6 Interworking, Dynamic Codec Configuration, multiple audio and video codec support, H.323 support for Clear Channel calls, SIP-I Support and SIP Non-SDP Body Filtering, Unsignaled (granular-level) Secure Media, Configurable Mutual TLS Authentication per Interface, TLS Transport Parameter in Record-Router Header, Source Number Analysis, and Interoperability for SIP Authentication features were added.
Cisco IOS XE Release 2.5.1	OL-19820-03	January 27, 2010	H.323 Extra TCS Codecs support was added.

Cisco IOS XE Release 2.5	OL-19820-02	November 25, 2009	H.323 support, H.323-SIP interworking features, H.323 call routing, Transcoding support, multiple SIP features, 100rel interworking, SIP IP-FQDN URI translation, Contact Username Passthrough, IP Realm support, customized offer for late-to-early media, regular expression based routing, support for external server, call duration monitoring, signaling congestion handling, support for P-visited-network-ID, and other features were added in this release. See the Feature History Table in each chapter for supported features.
Cisco IOS XE Release 2.4	OL-19820-01	June 26, 2009	This guide introduced the unified model and a new unified feature set on the Cisco Unified Border Element (SP Edition). See the Feature History Table in each chapter for supported features. The name Cisco Unified Border Element (SP Edition) replaced the Integrated Session Border Controller name.

Objectives

This guide describes the Integrated Session Border Controller functions, features, restrictions, and configuration tasks for the Cisco ASR 1000 Series Aggregation Services Routers. It is not intended as a comprehensive guide to all of the software features that can be run using the Cisco ASR 1000 Series Routers, but only the Integrated Session Border Controller software specific to these Routers.

For information on general Cisco IOS software features that are also available on the Cisco ASR 1000 Series Routers, see the feature module or the technology guide for that software feature.

Intended Audience

This guide is intended for the following people:

- Experienced service provider administrators
- Cisco telecommunications management engineers
- Customers who use and manage Cisco ASR 1000 Series Routers

Organization

This guide contains the following chapters and appendixes:

Section	Title	Description
Part 1	Basics	This part contains the following modules: • Using the Command-Line Interface in Cisco IOS XE Software • Cisco Unified Border Element (SP Edition) Overview • Configuring Cisco Unified Border Element (SP Edition) • Media Address Pools • Implementing Multi-VRF on Cisco Unified Border Element (SP Edition) • Implementing Adjacencies on Cisco Unified Border Element (SP Edition) • Implementing Cisco Unified Border Element (SP Edition) Policies • Call Duration Monitoring • IP Realm Support • Managing Emergency Calls
Part 2	Service	This part contains the following modules: • Unexpected Source Address Alerting • DoS Prevention and Dynamic Blacklisting
Part 3	Dual Tone Multifrequency (DTMF)	This part contains the following module: • Implementing Interworking DTMF
Part 4	Redundancy-High Availability	This part contains the following modules: • Cisco Unified Border Element (SP Edition) Redundancy—High Availability Support • Interchassis High Availability
Part 5	Media	This part contains the following modules: • Fax Support • Codec Handling, page 1 • SDP Bandwidth Field Features • SDP Handling • Flexible Media Routing

Section	Title	Description
Part 6	Session Initiation Protocol (SIP)	This part contains the following modules: • Inherit Profiles for Non-IMS Adjacencies • Cisco Unified Border Element (SP Edition) Registration Features • SIP Message Manipulation • Signaling Congestion Handling • SIP IP-FQDN URI Translation • SIP Tel URI Support • SIP Timer • SIP Configuration Flexibility • SIP Renegotiation • 100rel Interworking Support • Customized System Error Messages • BFCP Support
Part 7	H.323	This part contains the following modules: • H.323 Support • H.323 to SIP Interworking • Support for H.239
Part 8	Billing	This part contains the following modules: • Implementing Billing on Cisco Unified Border Element (SP Edition) • Billing Support
Part 9	Secure Real-Time Transport Protocol (SRTP)	This part contains the following module: • Secure Media and SRTP Passthrough
Part 10	Quality of Service (QoS)	This part contains the following module: • Implementing QoS (Marking)
Part 11	Transcoding	This part contains the following modules: • Implementing Transcoding • Cisco Unified Border Element (SP Edition)—SPA DSP Services
Part 12	Management and Operations	This part contains the following modules: • Tracking Policy Failure Statistics • Implementing SNMP • Logging Support

Section	Title	Description
Part 13	Service	This part contains the following modules: • SIP 3xx Redirect Responses • SIP Call Hold • SIP Call Transfer • SIP Authentication • Late-to-Early Media Interworking • Early Media • SIP Instant Messaging • Integration of Resource Management and SIP • ENUM Client
Part 14	IPv6	This part contains the following module: • IPv6 Support
Part 15	IP Multimedia Subsystem (IMS)	This part contains the following modules: • P-CSCF Support • IBCF Processing Support • IMS Rx, Diameter, and IMS Rf
Part 16	CALEA IRI Interface Support	This part contains the following module: • CALEA IRI Interface Support
Appendix	Appendix A	End-to-End Cisco Unified Border Element (SP Edition) Configuration Example
	Appendix B	SIP Compliance and Interoperability
	Appendix C	XML Billing Schema

Related Documentation

This section refers you to other documentation that might also be useful as you configure your Cisco ASR 1000 Series Routers. The documentation listed below is available on Cisco.com.

For information on Cisco Unified Border Element (SP Edition) commands, see the *Cisco Unified Border Element (SP Edition) Command Reference: Unified Model* at:
http://www.cisco.com/en/US/docs/ios/sbc/command/reference/sbcu_book.html

For information on the Cisco Unified Border Element (SP Edition) distributed model, see the:

- *Cisco Unified Border Element (SP Edition) Configuration Guide: Distributed Model* at:
http://www.cisco.com/en/US/docs/routers/asr1000/configuration/guide/sbc/2_xe/sbc_2_xe_book.html
- *Cisco Unified Border Element (SP Edition) Command Reference: Distributed Model* at:
http://www.cisco.com/en/US/docs/ios/sbc/command/reference/sbc_book.html

For information on the Cisco Unified Border Element (SP Edition) examples, see the *Cisco Unified Border Element (SP Edition) Configuration Profile Examples* at:

http://www.cisco.com/en/US/docs/routers/asr1000/profiles/SBC_Config_Examplebook.html

For other related command documentation, see the:

- Cisco IOS command reference books for the new Cisco ASR 1000 Series Router commands and commands in existing Cisco IOS features for this release at the following link:

  http://www.cisco.com/en/US/products/ps9587/prod_command_reference_list.html

- Command Lookup Tool for information about Cisco IOS commands in general or a Cisco IOS master commands list at the following link:

  http://tools.cisco.com/Support/CLILookup

For Quick Start guides and installation documentation for the Cisco ASR 1000 Series Router, see the hardware documentation that was provided as a part of this release at:

http://www.cisco.com/en/US/products/ps9343/prod_installation_guides_list.html

For information on new software features, see the:

- *Cisco ASR 1000 Series Aggregation Services Routers Software Configuration Guide*

  http://www.cisco.com/en/US/docs/routers/asr1000/configuration/guide/chassis/asrswcfg.html

- *Cisco IOS XE release notes*

  http://www.cisco.com/en/US/docs/ios/ios_xe/2/release/notes/rnasr21.html

For further information, see the *Cisco ASR 1000 Series Aggregation Services Routers Documentation Roadmap* at:

http://www.cisco.com/en/US/docs/routers/asr1000/roadmap/asr1000rm.html

Documentation for the Cisco IOS XE configuration guides and feature modules can be found at:

http://www.cisco.com/en/US/products/ps9587/tsd_products_support_configure.html

Conventions

This document uses the following conventions:

Convention	Indication
bold font	Commands and keywords and user-entered text appear in **bold** font.
italic font	Document titles, new or emphasized terms, and arguments for which you supply values are in *italic* font.
[ ]	Elements in square brackets are optional.
{x | y | z}	Required alternative 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.
`courier` font	Terminal sessions and information the system displays appear in `courier` font.
< >	Nonprinting characters such as passwords are in angle brackets.
[ ]	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 Means *reader take note*.

Tip Means *the following information will help you solve a problem.*

Caution Means *reader be careful*. In this situation, you might perform an action that could result in equipment damage or loss of data.

Timesaver Means *the described action saves time*. You can save time by performing the action described in the paragraph.

Warning **Means *reader be warned*. In this situation, you might perform an action that could result in bodily injury.**

Configuration Guides, Command References, and Supplementary Resources

Table 1 lists, in alphabetical order, Cisco IOS XE software configuration guides and command references, including brief descriptions of the contents of the documents. The command references contain commands for both Cisco IOS software and Cisco IOS XE software, for all releases. The command references support many different software releases and platforms. Your Cisco IOS XE software release or platform may not support all these technologies.

Table 2 lists documents and resources that supplement the Cisco IOS XE software configuration guides and command references. These supplementary resources include release notes and caveats; master command lists; new, modified, removed, and replaced command lists; system messages; and the debug command reference.

For additional information about configuring and operating specific networking devices, and to access Cisco IOS documentation, go to the Product/Technologies Support area of Cisco.com at the following location:

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

Table 1 Cisco IOS XE Configuration Guides and Command References

Configuration Guide and Command Reference Titles	Features/Protocols/Technologies
• *Cisco ASR 1000 Series Aggregation Services Routers SIP and SPA Software Configuration Guide*	Configuration and troubleshooting of SPA interface processors (SIPs) and shared port adapters (SPAs) that are supported on the Cisco ASR 1000 Series Router.
• *Cisco ASR 1000 Series Aggregation Services Routers Software Configuration Guide*	Overview of software functionality that is specific to the Cisco ASR 1000 Series Aggregation Services Routers.

Table 1 Cisco IOS XE Configuration Guides and Command References (continued)

Configuration Guide and Command Reference Titles	Features/Protocols/Technologies
• *Cisco IOS XE Access Node Control Protocol Configuration Guide* • *Cisco IOS Access Node Control Protocol Command Reference*	Communication protocol between digital subscriber line access multiplexers (DSLAMs) and a broadband remote access server (BRAS).
• *Cisco IOS XE Asynchronous Transfer Mode Configuration Guide* • *Cisco IOS Asynchronous Transfer Mode Command Reference*	LAN ATM, multiprotocol over ATM (MPoA), and WAN ATM.
• *Cisco IOS XE Broadband Access Aggregation and DSL Configuration Guide* • *Cisco IOS Broadband Access Aggregation and DSL Command Reference*	PPP over Ethernet (PPPoE).
• *Cisco IOS XE Carrier Ethernet Configuration Guide* • *Cisco IOS Carrier Ethernet Command Reference*	IEEE 802.3ad Link Bundling; Link Aggregation Control Protocol (LACP) support for Ethernet and Gigabit Ethernet links and EtherChannel bundles; LACP support for stateful switchover (SSO), in service software upgrade (ISSU), Cisco nonstop forwarding (NSF), and nonstop routing (NSR) on Gigabit EtherChannel bundles; and IEEE 802.3ad Link Aggregation MIB.
• *Cisco IOS XE Configuration Fundamentals Configuration Guide* • *Cisco IOS Configuration Fundamentals Command Reference*	Autoinstall, Setup, Cisco IOS command-line interface (CLI), Cisco IOS file system (IFS), Cisco IOS web browser user interface (UI), basic file transfer services, and file management.
• *Cisco IOS XE DECnet Configuration Guide* • *Cisco IOS DECnet Command Reference*	DECnet protocol.
• *Cisco IOS XE Dial Technologies Configuration Guide* • *Cisco IOS Dial Technologies Command Reference*	Asynchronous communications, dial backup, dialer technology, Multilink PPP (MLP), PPP, and virtual private dialup network (VPDN).
• *Easy Virtual Network Configuration Guide* • *Easy Virtual Network Command Reference*	Easy Virtual Network (EVN) is an IP-based virtualization technology that provides end-to-end virtualization of the network. With EVN, you can use a single IP infrastructure to provide separate virtual networks whose traffic paths remain isolated from each other.
• *Cisco IOS XE High Availability Configuration Guide* • *Cisco IOS High Availability Command Reference*	A variety of high availability (HA) features and technologies that are available for different network segments (from enterprise access to service provider core) to facilitate creation of end-to-end highly available networks. Cisco IOS HA features and technologies can be categorized in three key areas: system-level resiliency, network-level resiliency, and embedded management for resiliency.
• *Cisco IOS XE Intelligent Services Gateway Configuration Guide* • *Cisco IOS Intelligent Services Gateway Command Reference*	Subscriber identification, service and policy determination, session creation, session policy enforcement, session life-cycle management, accounting for access and service usage, and session state monitoring.

Table 1 Cisco IOS XE Configuration Guides and Command References (continued)

Configuration Guide and Command Reference Titles	Features/Protocols/Technologies
• *Cisco IOS XE Interface and Hardware Component Configuration Guide* • *Cisco IOS Interface and Hardware Component Command Reference*	LAN interfaces, logical interfaces, serial interfaces, virtual interfaces, and interface configuration.
• *Cisco IOS XE IP Addressing Services Configuration Guide* • *Cisco IOS IP Addressing Services Command Reference*	IP addressing, Address Resolution Protocol (ARP), Network Address Translation (NAT), Domain Name System (DNS), Dynamic Host Configuration Protocol (DHCP), and Next Hop Address Resolution Protocol (NHRP).
• *Cisco IOS XE IP Application Services Configuration Guide* • *Cisco IOS IP Application Services Command Reference*	Enhanced Object Tracking (EOT), Gateway Load Balancing Protocol (GLBP), Hot Standby Router Protocol (HSRP), IP Services, TCP, Web Cache Communication Protocol (WCCP), User Datagram Protocol (UDP), and Virtual Router Redundancy Protocol (VRRP).
• *Cisco IOS XE IP Multicast Configuration Guide* • *Cisco IOS IP Multicast Command Reference*	Protocol Independent Multicast (PIM) sparse mode (PIM-SM), bidirectional PIM (bidir-PIM), Source Specific Multicast (SSM), Multicast Source Discovery Protocol (MSDP), Internet Group Management Protocol (IGMP), and Multicast VPN (MVPN).
• *Cisco IOS XE IP Routing: BFD Configuration Guide*	Bidirectional forwarding detection (BFD).
• *Cisco IOS XE IP Routing: BGP Configuration Guide* • *Cisco IOS IP Routing: BGP Command Reference*	Border Gateway Protocol (BGP), multiprotocol BGP, multiprotocol BGP extensions for IP multicast.
• *Cisco IOS XE IP Routing: EIGRP Configuration Guide* • *Cisco IOS IP Routing: EIGRP Command Reference*	Enhanced Interior Gateway Routing Protocol (EIGRP).
• *Cisco IOS XE IP Routing: ISIS Configuration Guide* • *Cisco IOS IP Routing: ISIS Command Reference*	Intermediate System-to-Intermediate System (IS-IS).
• *Cisco IOS XE IP Routing: ODR Configuration Guide* • *Cisco IOS IP Routing: ODR Command Reference*	On-Demand Routing (ODR).
• *Cisco IOS XE IP Routing: OSPF Configuration Guide* • *Cisco IOS IP Routing: OSPF Command Reference*	Open Shortest Path First (OSPF).
• *Cisco IOS XE IP Routing: Protocol-Independent Configuration Guide* • *Cisco IOS IP Routing: Protocol-Independent Command Reference*	IP routing protocol-independent features and commands. Generic policy-based routing (PBR) features and commands are included.
• *Cisco IOS XE IP Routing: RIP Configuration Guide* • *Cisco IOS IP Routing: RIP Command Reference*	Routing Information Protocol (RIP).
• *Cisco IOS XE IP SLAs Configuration Guide* • *Cisco IOS IP SLAs Command Reference*	Cisco IOS IP Service Level Agreements (IP SLAs).
• *Cisco IOS XE IP Switching Configuration Guide* • *Cisco IOS IP Switching Command Reference*	Cisco Express Forwarding.

Table 1 Cisco IOS XE Configuration Guides and Command References (continued)

Configuration Guide and Command Reference Titles	Features/Protocols/Technologies
• *Cisco IOS XE IPv6 Configuration Guide* • *Cisco IOS IPv6 Command Reference*	For a list of IPv6 features, protocols, and technologies, go to the IPv6 "Start Here" document at the following URL: http://www.cisco.com/en/US/docs/ios/ios_xe/ipv6/configuration/guide/ip6-roadmap_xe.html
• *Cisco IOS XE ISO CLNS Configuration Guide* • *Cisco IOS ISO CLNS Command Reference*	ISO Connectionless Network Service (CLNS).
• *Cisco IOS XE LAN Switching Configuration Guide* • *Cisco IOS LAN Switching Command Reference*	VLANs and multilayer switching (MLS).
• *Cisco IOS XE Multiprotocol Label Switching Configuration Guide* • *Cisco IOS Multiprotocol Label Switching Command Reference*	MPLS Label Distribution Protocol (LDP), MPLS Layer 2 VPNs, MPLS Layer 3 VPNs, MPLS Traffic Engineering (TE), and MPLS Embedded Management (EM) and MIBs.
• *Cisco IOS XE NetFlow Configuration Guide* • *Cisco IOS NetFlow Command Reference*	Network traffic data analysis, aggregation caches, and export features.
• *Cisco IOS XE Network Management Configuration Guide* • *Cisco IOS Network Management Command Reference*	Basic system management, system monitoring and logging, Cisco IOS Scripting with Tool Control Language (Tcl), Cisco networking services (CNS), Embedded Event Manager (EEM), Embedded Syslog Manager (ESM), HTTP, Remote Monitoring (RMON), and SNMP.
• *Cisco IOS XE Novell IPX Configuration Guide* • *Cisco IOS Novell IPX Command Reference*	Novell Internetwork Packet Exchange (IPX) protocol.
• *Cisco IOS XE Optimized Edge Routing Configuration Guide* • *Cisco IOS Optimized Edge Routing Command Reference*	Optimized edge routing (OER) monitoring and automatic route optimization and load distribution for multiple connections between networks.
• *Cisco IOS XE Performance Routing Configuration Guide* • *Cisco IOS Performance Routing Command Reference*	Performance Routing (PfR) provides additional intelligence to classic routing technologies to track the performance of, or verify the quality of, a path between two devices over a WAN infrastructure in order to determine the best egress or ingress path for application traffic.
• *Cisco IOS XE Quality of Service Solutions Configuration Guide* • *Cisco IOS Quality of Service Solutions Command Reference*	Class-based weighted fair queueing (CBWFQ), low latency queueing (LLQ), Modular Quality of Service (QoS) Command-Line Interface (CLI) (MQC), Network-Based Application Recognition (NBAR), priority queueing, Multilink PPP (MLP) for QoS, header compression, Resource Reservation Protocol (RSVP), weighted fair queueing (WFQ), and weighted random early detection (WRED).
• *Cisco IOS Security Command Reference*	Access control lists (ACLs); authentication, authorization, and accounting (AAA); firewalls; IP security and encryption; neighbor router authentication; network access security; public key infrastructure (PKI); RADIUS; and TACACS+.

Table 1 Cisco IOS XE Configuration Guides and Command References (continued)

Configuration Guide and Command Reference Titles	Features/Protocols/Technologies
• *Cisco IOS XE Security Configuration Guide: Secure Connectivity*	Internet Key Exchange (IKE) for IPsec VPNs; security for VPNs with IPsec; VPN availability features (reverse route injection, IPsec preferred peer, and real-time resolution for the IPsec tunnel peer); IPsec data plane features; IPsec management plane features; Public Key Infrastructure (PKI); Dynamic Multipoint VPN (DMVPN); Easy VPN; and Cisco Group Encrypted Transport VPN (GET VPN).
• *Cisco IOS XE Security Configuration Guide: Securing the Control Plane*	Control Plane Policing, Neighborhood Router Authentication.
• *Cisco IOS XE Security Configuration Guide: Securing the Data Plane*	Access Control Lists (ACLs); Firewalls: Context-Based Access Control (CBAC) and Zone-Based Firewall; Cisco IOS Intrusion Prevention System (IPS); Flexible Packet Matching; Unicast Reverse Path Forwarding (uRPF); Threat Information Distribution Protocol (TIDP) and TMS.
• *Cisco IOS XE Security Configuration Guide: Securing User Services*	AAA (includes Network Admission Control [NAC]); Security Server Protocols (RADIUS and TACACS+); Secure Shell (SSH); Secure Access for Networking Devices (includes Autosecure and Role-Based CLI access); Lawful Intercept.
• *Cisco IOS XE Service Advertisement Framework Configuration Guide* • *Cisco IOS Service Advertisement Framework Command Reference*	Cisco Service Advertisement Framework.
• *Cisco IOS XE VPDN Configuration Guide* • *Cisco IOS VPDN Command Reference*	Multihop by Dialed Number Identification Service (DNIS), timer and retry enhancements for L2TP and Layer 2 Forwarding (L2F), RADIUS Attribute 82 (tunnel assignment ID), shell-based authentication of VPDN users, and tunnel authentication via RADIUS on tunnel terminator.
• *Cisco IOS XE Wide-Area Networking Configuration Guide* • *Cisco IOS Wide-Area Networking Command Reference*	Frame Relay; L2VPN Pseudowire Redundancy; and Media-Independent PPP and Multilink PPP.

Table 1 Cisco IOS XE Configuration Guides and Command References (continued)

Configuration Guide and Command Reference Titles	Features/Protocols/Technologies
• *Cisco Unified Border Element (Enterprise) Configuration Guide* • *Cisco IOS Voice Command Reference*	The Cisco Unified Border Element (Enterprise) on the Cisco ASR 1000 brings a scalable option for enterprise customers. Running as a process on the Cisco ASR 1000 and utilizing the high-speed RTP packet processing path, the Cisco Unified Border Element (Enterprise) is used as an IP-to-IP gateway by enterprises and commercial customers to interconnect SIP and H.323 voice and video networks. The Cisco UBE (Enterprise) provides a network-to-network demarcation interface for signaling interworking, media interworking, address and port translations, billing, security, quality of service (QoS), and bandwidth management.
• *Cisco Unified Border Element (SP Edition) Configuration Guide: Distributed Model* • *Cisco Unified Border Element (SP Edition) Command Reference: Distributed Model*	The Cisco Unified Border Element (SP Edition) is a session border controller (SBC) that is VoIP-enabled and deployed at the edge of networks. For Cisco IOS XE Release 2.3 and earlier releases, Cisco Unified Border Element (SP Edition) is supported only in the distributed mode. Operating in the distributed mode, the SBC is a toolkit of functions that can be used to deploy and manage VoIP services, such as signaling interworking, network hiding, security, and quality of service.
• *Cisco Unified Border Element (SP Edition) Configuration Guide: Unified Model* • *Cisco Unified Border Element (SP Edition) Command Reference: Unified Model*	The Cisco Unified Border Element (SP Edition) is a highly scalable, carrier-grade session border controller (SBC) that is designed for service providers and that is generally deployed at the border of the enterprise or SP networks to enable the easy deployment and management of VoIP services. Cisco Unified Border Element (SP Edition) is integrated into Cisco routing platforms and can use a large number of router functions to provide a very feature-rich and intelligent SBC application. Formerly known as Integrated Session Border Controller, Cisco Unified Border Element (SP Edition) provides a network-to-network demarcation interface for signaling interworking, media interworking, address and port translations, billing, security, quality of service, call admission control, and bandwidth management. For Cisco IOS XE Release 2.4 and later releases, Cisco Unified Border Element (SP Edition) can operate in two modes or deployment models: unified and distributed. The configuration guide documents the features in the unified mode.

Table 2 lists documents and resources that supplement the Cisco IOS XE software configuration guides and command references.

Table 2 Cisco IOS XE Software Supplementary Documents and Resources

Document Title or Resource	Description
Cisco IOS Master Command List, All Releases	Alphabetical list of all the commands documented in all Cisco IOS XE software releases.
Cisco IOS Debug Command Reference	Alphabetical list of **debug** commands including brief descriptions of use, command syntax, and usage guidelines.
Cisco IOS XE system messages	List of Cisco IOS XE system messages and descriptions. System messages may indicate problems with your system, may be informational only, or may help diagnose problems with communications lines, internal hardware, or the system software.
Release notes and caveats	Information about new and changed features, system requirements, and other useful information about specific software releases; information about defects in specific Cisco IOS XE software releases.
MIBs	Files used for network monitoring. To locate and download MIBs for selected platforms, Cisco IOS XE software releases, and feature sets, use Cisco MIB Locator at the following URL: http://www.cisco.com/go/mibs
RFCs	Standards documents maintained by the Internet Engineering Task Force (IETF) that Cisco IOS XE documentation references where applicable. The full text of referenced RFCs may be obtained at the following URL: http://www.rfc-editor.org/

Obtaining Documentation and Submitting a Service Request

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

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

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