Cisco Unified Border Element (Version 10.0)

Product Overview

The evolution of unified communications and collaboration services over the past few years has delivered dramatic improvements in employee productivity for enterprise and commercial businesses and will continue as voice, video, and mobile services continue to grow as pervasive elements of integrated collaboration solutions. However, these enhancements will be available only for organizations deploying end-to-end real-time IP communications for both inter- and intracompany voice and video services based on Session Initiation Protocol (SIP). As such, these companies will require a transition of their service provider network interconnect from time-division multiplexing (TDM) circuits to SIP trunking.

To accomplish this transition, the session border controller (SBC) has become a critical network component for scaling and securing unified communications networks. The SBC network component enables expansion of real-time voice and video services for end-to-end IP connectivity through service provider SIP trunk services, or through a secure SIP session over the Internet to support direct connectivity between two enterprise networks.

The Cisco SBC, Cisco Unified Border Element (CUBE), provides the SBC feature set to support the transition to SIP trunking by enabling Cisco or third-party call control to connect to and interoperate with service provider SIP trunk services. Cisco Unified Border Element terminates and re-originates both signaling (H.323 and SIP) and media streams (Real-Time Transport Protocol [RTP] and Real-Time Control Protocol [RTCP]) to provide secure border interconnection services between IP networks. Using CUBE, Cisco customers can save on their current network services, simplify their network architectures, and position their networks for ongoing enhancements in collaboration services.

As an integrated Cisco IOS® Software application, the Cisco Unified Border Element runs on a broad range of Cisco router platforms, including the Integrated Services Routers (ISRs) (Cisco 800, 2900, and 3900 Series as well as the Cisco 4451-X ISR) and the Cisco ASR 1000 Series Aggregation Services Routers. The breadth of Cisco router platforms that support the CUBE feature license means that CUBE provides unsurpassed price/performance scalability as compared to any other enterprise SBCs available. This scalability translates into network design flexibility for enterprise and commercial businesses, and operational efficiencies and breadth of serviceable market for service providers that include CUBE as part of their SIP trunk managed or hosted services.

Cisco Unified Border Element performs the following functions between the enterprise and service provider networks:

- **Session control:** The capability to offer flexible trunk routing, Call Admission Control (quality of service [QoS]), and resiliency and call accounting for the SIP sessions processed by the SBC
- **Interworking:** The capability to interconnect different signaling methods and media encoding variants for both voice and video sessions
- **Demarcation:** The capability to act as a distinct demarcation point between two networks for address and port translation and to facilitate troubleshooting
- **Security:** The capability to intelligently allow or disallow real-time traffic between networks, and to encrypt the real-time traffic as appropriate for the application

Cisco Unified Border Element Use Cases

Cisco Unified Border Element fulfills the role of a general-purpose SBC providing extensive features in the various categories defined previously. However, the ultimate objective of CUBE is to solve business problems. To that end, CUBE has been designed to participate as a critical element in a variety of network solutions, as follows:

- **Flexible SIP interconnect:** Because of the broad range of Cisco routers that can be used as the platform for CUBE, you have the greatest flexibility available in how you design your SIP trunk network based on centralized, distributed, or hybrid (combination of centralized and distributed) architectures. This flexibility will be invaluable as collaboration use cases, such as conferencing, video, and mobility, evolve to place increased demands on the enterprise network. Many service providers have recognized their customers' need to adapt their SIP trunk architecture as their collaboration services evolve and now offer multilocation SIP trunk pooling services. CUBE provides unsurpassed price/performance flexibility of an SBC available to take advantage of these service offerings.
- **Simplified TDM-SIP migrations:** For most enterprises, the transition from TDM trunk services to SIP trunk services requires careful planning, because this transition must be achieved while maintaining a functional voice network. This planning involves, among other things, addressing the service provider requirement for number portability and the IT requirement for dial-plan revisions. CUBE can simplify this transition, particularly for Cisco customers who already use the Cisco TDM Gateway on the Cisco Integrated Services Routers Generation 2 (Cisco ISR G2) routers. These same ISR G2 routers can be easily upgraded - without requiring any additional hardware - to support the CUBE feature license, and can concurrently support SIP trunking and TDM trunking. As a result, the enterprise can transition its voice network to SIP trunking while retaining the existing TDM gateway functions. As the enterprise develops familiarity and confidence in SIP trunking, the TDM Gateway function can be phased out, or retained as a high-availability redundant network strategy.
- **Remote gateway for hosted call-control services:** Many service providers offer hosted call-control services to their small and medium-sized business (SMB) customers based on cloud-based private-branch-exchange (PBX) software, such as Broadsoft. Using the NANOCUBE licensing (refer to the "CUBE Licensing Options" section later in this document), Cisco 800 Series ISRs can be included as part of these hosted call-control services to perform gateway functions at the customer premises, such as registration pass-through, voice-quality metrics, and 911 preemption.
- **Telepresence, voice, and video business-to-business interconnect:** Cisco Unified Border Element provides secure connectivity for Cisco TelePresence® deployments, either on a point-to-point basis over the Internet between two private enterprise networks or from a private enterprise network to a telepresence service provider.
- **Voice and video recording:** CUBE supports voice-recording solutions by providing various mechanisms to invoke media forking on a per-call basis. One method, which is SIP-based and is derived from the SIPREC standardization, sends a forked SIP invite to the target recording application server, which can either accept or reject the call. An alternative method is an HTTP-based application programming interface (API) that allows the recording server to instruct CUBE to perform the media forking, and can toggle the media forking through the duration of an active call.

- **Remote phone proxy registration:** Cisco Unified Border Element allows remote Cisco phones (including Cisco Unified IP Phone 7000, 8000, and 9000 Series models) to establish a secure application layer connection for both signaling (SIP-Transport Layer Security [TLS]) and media (Secure RTP [SRTP]) through the Internet, and then perform a proxy registration of these phones with Cisco Unified Communications Manager, Cisco Business Edition, or Cisco Hosted Collaboration Solution (Cisco HCS). A variant of these CUBE features allows a modification of this use case to allow the Cisco phones to register with a hosted cloud-based call-control service.
- **Call-center and interactive-voice-response (IVR) solutions:** Cisco Unified Border Element provides numerous features to enhance deployment as part of an enterprise call center environment. For example, it supports midcall codec renegotiation, with either internal transcoding or external endpoints. CUBE also supports SIP-based Call Progress Analysis for outbound call center solutions, and runs concurrently on the ISR G2 with the Cisco IOS Software-based VoiceXML client to support IVR integration.
- **Voice policy:** Cisco Unified Border Element, as part of its complete SBC security function, supports policy-led evaluation of phone calls. This capability is becoming increasingly critical as incidents of telephony denial of service (TDoS) become more and more prevalent, evidenced by the formal public warnings of such attacks being given by the U.S. Federal Bureau of Investigation (FBI) and Department of Homeland Security (DHS). CUBE enables highly flexible and granular voice-policy solutions to identify specific patterns of calling activity from either internal users (employees) or external callers and take appropriate action when those patterns occur, including call termination, call redirection, and call recording. This voice pattern recognition helps ensure the full capacity of the enterprise voice network is used to support the business as intended.

CUBE Licensing Options

CUBE can be licensed according to the following three different licensing options:

- **Standard CUBE Licensing:** Standard licensing is used for CUBE licensing with all modular Cisco ISR G2 (ISR 2900 and 3900 Series) and ASR 100X platforms to deliver the full range of CUBE functions, but without high availability. This license is per-session, and a session is defined as a two-way call through CUBE regardless of the number of media sessions involved in that call (that is, a video call with 4 media lines or sessions or an audio call with 2 media lines or sessions).
- **Redundant CUBE Licensing:** Redundant licensing is used for CUBE with all modular Cisco ISR G2 (ISR 2900 and ISR 3900 Series) and ASR 100X platforms to deliver the full range of CUBE functions, including high availability with call preservation between an active and standby CUBE. This licensing option also allows for license transfer between two geographically distributed CUBE platforms, as in the scenario of a dual data center deployment strategy, where CUBE service redundancy without call preservation is satisfactory.
- **NANOCUBE Licensing:** NANOCUBE licensing is only used for Cisco 800 Series ISR and Cisco Service Provider Integrated Access Device (SP-IAD) platforms, typically as part of a service provider hosted service with cloud-based call control. This licensing option also supports other CUBE features, except to the extent such features require additional hardware platform support, such as DSP's for transcoding.

More information about these licensing options can be obtained in the CUBE Ordering Guide available at: http://www.cisco.com/go/cube.

CUBE Feature Support

The Cisco Unified Border Element supports protocols such as H.323 and SIP for both voice and video. Table 1 lists the features supported for voice and video.

Table 1. Cisco Unified Border Element Features (CUBE versions include 9.5.1 or greater)

Feature	Support Details
Protocols	• H.323 and SIP
Protocol and signal interworking	• H.323 to H.323 (including Cisco Unified Communications Manager) • H.323 to SIP (including Cisco Unified Communications Manager) • SIP to SIP (including Cisco Unified Communications Manager) • SIP to SIP (including Cisco TelePresence® calls)
Media support	• RTP, RTCP, and Binary Floor Control Protocol (BFCP) • Sub-RTCP for media statistics
Media interworking	• SIP delayed-offer to SIP early-offer interworking for audio or video calls • H.323 Slow Start to H.323 Fast Start for audio calls
Media modes	• Media flow-through • Media flow-around
Signaling transport mode	• TCP • User Datagram Protocol (UDP) • TCP-to-UDP interworking
Fax support	• T.38 fax relay • Fax pass-through • Fax over G711
Modem support	• Modem pass-through • Modem over G711

Dual-tone multifrequency (DTMF)	• H.245 alphanumeric
	• H.245 signal
	• RFC 2833
	• SIP notify
	• Key Press Markup Language (KPML)
	• Interworking capabilities include;
	  ◦ H.323 to SIP
	  ◦ RFC 2833 to G.711 in-band DTMF*
	  ◦ Various SIP-to-H.323 DTMF interworking options
	  ◦ RFC 2833 to KPML

Supplementary services	• Call hold, call transfer, and call forwarding for H.323 networks using H.450 and transparent passing of Empty Capability Set (ECS) • SIP-to-SIP supplementary services (holds and transfers) support using REFER • SIP-to-SIP supplementary services (holds and transfers) support using REINVITE • H.323-to-SIP supplementary services for Cisco Unified Communications Manager with media termination point (MTP) on the H.323 trunk
Internetworking	• Configurable SIP profiles to manipulate SIP message content, including header fields and Secure Device Provisioning (SDP) attributes • P-Asserted-Identity (PAI), P-Preferred-Identity (PPI), and Remote-Part-ID (RPID) internetworking**** • Unsupported Multipurpose Internet Mail Extensions (MIME)-type attachment pass-through**** • Unsupported SIP header pass-through**** • Dial-peer bind (allows Cisco Unified Border Element to connect to multiple different service providers) • Incoming dial-peer match based on remote IP address • Assisted RTCP for Microsoft Lync Interoperability
Call Routing/Dialing Options	• E164 based dialing • URI based dialing • Routing based on non-sequential lists (either E164 or URI or both)

Feature	Support Details
Call Admission Control (CAC)	• Maximum number of calls per trunk (maximum number of calls) • CAC based on IP circuits • CAC based on total calls, CPU use, or memory use threshold • CAC based on bandwidth availability • Resource Reservation Protocol (RSVP)
OPTIONS SIP message support	• Support for response to OPTIONS-PING messages • Support for generation of in-dialog OPTIONS-PING messages • Support for generation of out-of-dialog OPTIONS-PING messages to control dial-peer status***
Media recording	• Media forking features for both voice and video to integrate with Cisco TelePresence Media Recording Servers • Active (SIP-based) and passive (API-based) mechanisms for invoking media forking
IP Routing feature	• Support for Cisco IOS Software-based routing features, including Border Gateway Protocol (BGP), Enhanced IGRP (EIGRP), and Multiprotocol Label Switching (MPLS) • Support for Cisco IOS Software-based policy routing features • Support for Cisco IOS Software-based access-control-list (ACL) features
Voice-quality statistics	• Packet loss, jitter, and round-trip time (RTT) • Per-call leg call-quality statistics • Flexible NetFlow call-quality statistics and information • Sub-RTCP statistics collection
QoS	• IP Precedence and differentiated-services-code-point (DSCP) marking • Per-call QoS packet marking
Network Address Translation (NAT) traversal	• NAT traversal support for SIP phones deployed behind non-Application Line Gateway (ALG) data routers • Stateful NAT traversal • IPv4-to-IPv6 translation
Network hiding	• IP network privacy and topology hiding • IP network security boundary • Intelligent IP address translation for call media and signaling • Back-to-back user agent, replacing all SIP-embedded IP addressing • History information-based topology hiding and call routing
Number translation	• Number translation rules for voice-over-IP (VoIP) numbers • Uniform Resource Identifier (URI)-based dialing translations
Codecs	• G.711 mu-law and a-law • G.722 and G.722.2 • G.723ar53, G.723ar63, G.723r53, and G.723r63 • G.726r16, G.726r24, and G.726r32 • G.728 • G.729, G.729A, G.729B, and G.729AB • Internet Low Bitrate Codec (iLBC) • Midcall codec renegotiation • AMR wideband • AAC-LD
Transcoding**	• Transcoding between any two different families of codecs from the following list: ◦ G.711 a-law and mu-law ◦ G.729, G.729A, G.729B, and G.729AB ◦ iLBC ◦ G.722 • Midcall transcoder insert and drop
Security	• Rogue SIP invite and rogue RTP packet detection • Alerts for rogue packet activity • IP Security (IPsec) • SRTP • TLS • SRTP-to-RTP interworking

Feature	Support Details
Authentication, authorization, and accounting (AAA)	• AAA with RADIUS
Voice media applications	• Tool Command Language (Tcl) scripts support for application customization • VoiceXML 2.0 script support for application customization • Web-based API to monitor and control signaling and media traffic
API	• WEB-based API compatible with Web Service Description Language (WSDL) development tools to support call monitoring and control, call-detail records (CDRs), and serviceability attribute interaction with external application; specifically designed for voice-policy applications
Billing	• Standard CDRs for accurate billing available through: ◦ AAA records ◦ Syslog ◦ Simple Network Management Protocol (SNMP)
Lawful intercept**	• Provision of replicated packets to third-party mediation device
Remote Phone Proxy Sessions	• Termination of SIP-TLS and SRTP with registration pass-through to allow SIP-based endpoints, including Cisco Unified IP Phone 7900, 8900, and 9900 models and Jabber® Voice Client, to connect from remote sites through the Internet without requiring IPsec VPN to Cisco Unified Communications Manager, Cisco Business Edition, or Cisco HCS. (Not included with NANOCUBE license).
Line-side Back to Back UA NANOCUBE Sessions	• Termination of Cisco Shared Port Adapter (SPA) and other third-party SIP endpoints with registration pass-through and survivability for use with 3rd party hosted call control SP services.
Inter-Cluster Lookup Service (ILS) routing	• Support for ILS routing to complement ILS dial-plan exchange between Cisco Unified Communications Manager clusters or to simplify call-routing complexity between multiple clusters
Video	
Protocols	• H.323 and SIP
Cisco endpoints supported	• Cisco Unified Video Advantage (UVA) and Cisco TelePresence endpoints
Rich media	• Simultaneous support for data, audio, and video
Signaling interworking	• SIP delayed-offer to SIP early-offer calls
Media	• Support for multiplex RTP calls (for Cisco TelePresence solution) • Simple Traversal of UDP through NAT (STUN)/Datagram TLS (DTLS) pass-through for telepresence
H.323-enhanced features	• H.235 pass-through for secure calls • H.239 pass-through for picture-in-picture feature
QoS	• DSCP markings to prioritize video streams as they traverse the network
Data support	• T.120 data collaboration flow-around only
Camera control	• Far-end camera control (FECC)
Video codecs	• H.261 • H.263 • H.264
Network Management	
Manageability and serviceability	• Resource usage monitoring over SIP trunk • SNMP per-call quality traps • SNMP and syslog SIP trunk status messages
High Availability	
High availability	• Inbox redundancy on Cisco ASR 1006 • Box-to-box redundancy on Cisco ASR 1000 • Box-to-box redundancy on Cisco ISR G2 routers and the Cisco 4451-X ([HSRP]-based) router **Note:** Media is preserved for active calls at time of failover in each redundancy configuration listed.

** Requires digital signal processors (DSPs) and is available only on the Cisco ISR 2900 series, Cisco ISR 3900, and 3900E Series, Cisco 4451-X, and ASR 100X series.

Router Platform Support

The Cisco Unified Border Element is developed as a component within Cisco IOS Software and runs on the following Cisco router platforms:

- Cisco 800 Series ISRs (Cisco 880 Series and Cisco 892F models)
- Cisco Service Provider Integrated Access Device (SP-IAD)
- Cisco 2900 Series ISRs (Cisco 2901, 2911, 2921, and 2951)
- Cisco 3900 Series ISRs (Cisco 3925 and 3945)
- Cisco 3900E Series ISRs (Cisco 3925E and 3945E)
- Cisco 2900 Series ISRs (Cisco 2901, 2911, 2921, and 2951)
- Cisco 4451-X ISR
- Cisco ASR 1000 Series Routers (Cisco ASR 1001, ASR 1002, ASR 1004, and ASR 1006)

A minimum of 64 MB of flash memory and 256 MB of DRAM is required, and a minimum of one Fast Ethernet port for an external interface is required.

The Cisco Unified Border Element may require additional hardware for connectivity to the public switched telephone network (PSTN) and WAN and for transcoding capabilities. If connected to the IP network through a WAN connection, the CUBE supports all the WAN connectivity methods and interface cards that the underlying router platform supports.

Note: For transcoding, additional DSPs are required.

More information about transcoding is available at: http://www.cisco.com/en/US/products/ps5854/products_qanda_item0900aecd8016c2c7.shtml.

Product Specifications and Session Capacities

Table 2 shows platform memory specifications to support Cisco Unified Border Element. In this table, the maximum capacities for each of the SIP session types are shown. CUBE supports three session types, as follow:

1. SIP Trunk Session - SIP trunk registration and connectivity to Service Provider
2. Phone Proxy Session - Secure remote phone registration to CUCM
3. NANOCUBE Session - Allows for SIP endpoint access to hosted 3rd party call control

Table 2. Platform Support, Product Specifications, and Session Capacity and Session Types

Router Platform with Latest CUBE Versions	Flash Memory	DRAM	Maximum SIP Trunk Sessions**	Maximum Phone Proxy Sessions**	Maximum NANOCUBE Sessions**
Cisco 881 ISR* Cisco 886V ISR* Cisco 887V ISR*	Fixed Configuration	Fixed Configuration	15	Not Supported	15
Cisco 888E ISR* Cisco 888 ISR*	Fixed configuration	Fixed configuration	25	Not Supported	25
Cisco 892F ISR*	Fixed configuration	Fixed configuration	50	Not Supported	50
SPIAD2901-8FXS/K9*	256 MB	512 MB	80	Not Supported	100
SPIAD2911-16FXS/K9* SPIAD2911-24FXS/K9*	256 MB	512 MB	100	Not Supported	125
Cisco 2901 ISR	256 MB	512 MB	100	50	-
Cisco 2911 ISR	256 MB	512 MB	200	100	-
Cisco 2921 ISR	256 MB	512 MB	400	250	-
Cisco 2951 ISR	256 MB	512 MB	600	400	-
Cisco 3925 ISR	256 MB	1 GB	800	500	-
Cisco 3945 ISR	256 MB	1 GB	950	500	-
Cisco 3925E ISR	256 MB	1 GB	2,100	1,400	-
Cisco 3945E ISR	256 MB	1 GB	2,500	1,500	-
Cisco 4451-X ISR	4 GB	1 GB	4,000	3,000	-
Cisco ASR 1001	Refer to data sheet	8 GB	10,000	3600	-
Cisco ASR 1002-X	Refer to data sheet	16 GB	10,000	3600	-
Cisco ASR 1004 and ASR 1006	Refer to data sheet	16 GB	16,000	6,000	-

* These Router platforms support NANOCUBE licensing (see Licensing Section).
** Maximum sessions assumes that only the specified session is configured.Simultaneous use of other CUBE session types will reduce session maximums one for one.

Ordering Information

This product is orderable through bundles, as shown in Table 3.

Table 3. Cisco Unified Border Element ISR G2 Bundles

Part Number (SKU)	Product Description	Technology Package	Additional HW	Flash/DRAM
C2901-VSEC-CUBE/K9	Cisco 2901 Voice Sec and CUBE Bundle, PVDM3-16, UC and SEC License P, FL-CUBEE-25	SL-29-UC-K9 and SL-29-SEC-K9	None	256MB 512MB
C2911-VSEC-CUBE/K9	Cisco 2911 Voice Sec and CUBE Bundle, PVDM3-16, UC and SEC License P, FL-CUBEE-25	SL-29-UC-K9 and SL-29-SEC-K9	None	256MB 512MB
C2921-VSEC-CUBE/K9	Cisco 2921 Voice Sec and CUBE Bundle, PVDM3-32, UC and SEC License P, FL-CUBEE-25	SL-29-UC-K9 and SL-29-SEC-K9	None	256MB 512MB
C2951-VSEC-CUBE/K9	Cisco 2951 Voice Sec and CUBE Bundle, PVDM3-32, UC and SEC License P, FL-CUBEE-25	SL-29-UC-K9 and SL-29-SEC-K9	None	256MB 512MB
C3925-VSEC-CUBE/K9	Cisco 3925 Voice Sec and CUBE Bundle, PVDM3-64, UC and SEC License P, FL-CUBEE-25	SL-39-UC-K9 and SL-39-SEC-K9	None	256MB 1GB
C3945-VSEC-CUBE/K9	Cisco 3945 Voice Sec and CUBE Bundle, PVDM3-64, UC and SEC License P, FL-CUBEE-25	SL-39-UC-K9 and SL-39-SEC-K9	None	256MB 1GB
C3925E-VSEC-CUBEK9	Cisco 3925E Voice Sec and CUBE Bundle, PVDM3-64, UC and SEC License P, FL-CUBEE-25	SL-39-UC-K9 and SL-39-SEC-K9	None	256MB 1GB
C3945E-VSEC-CUBEK9	Cisco 3945E Voice Sec and CUBE Bundle, PVDM3-64, UC and SEC License P, FL-CUBEE-25	SL-39-UC-K9 and SL-39-SEC-K9	None	256MB 1GB

This product is also orderable as an add-on or upgrade to Cisco routers by following three simple steps:

1. Select a Cisco router based on performance requirements (refer to Table 2).
2. Select a Cisco IOS Software image with Cisco Unified Border Element feature support (all IP Voice and later images support some components of the Cisco Unified Border Element). On the Cisco 2900, 3900, and 3900E Series platforms, which use a universal software image, select the Unified Communications package.
3. Select the appropriate Cisco IOS Software feature license.

To order software only, follow steps 2 and 3 and refer to Table 4 when selecting feature license part numbers.

Table 4. Ordering Information for Feature Licenses

Part Number (SKU)	Description
FL-CUBEE-5(=)	Feature license applicable to the Cisco 2900 and 3900 Series platforms for 5 simultaneous IP-to-IP Gateway sessions
FL-CUBEE-25(=)	Feature license applicable to the Cisco 2900 and 3900 Series platforms for 25 simultaneous IP-to-IP Gateway sessions
FL-CUBEE-100(=)	Feature license applicable to the Cisco 2900 and 3900 Series platforms for 100 simultaneous IP-to-IP Gateway sessions
FL-CUBEE-500(=)	Feature license applicable to the Cisco 2900 and 3900 Series platforms for 500 simultaneous IP-to-IP Gateway sessions
FL-CUBEE-1000(=)	Feature license applicable to the Cisco 3900 Series platforms for 1000 simultaneous IP-to-IP Gateway sessions
FL-CUBE-4(=)	Feature license applicable to the Cisco 2800 and 3800 Series platforms for 4 simultaneous IP-to-IP Gateway or Gatekeeper sessions
FL-CUBE-25(=)	Feature license applicable to the Cisco 2800 and 3800 Series platforms for 25 simultaneous IP-to-IP Gateway or Gatekeeper sessions
FL-CUBE-100(=)	Feature license applicable to the Cisco 2800 and 3800 Series platforms for 100 simultaneous IP-to-IP Gateway or Gatekeeper sessions
FLSASR1-CUE-100(=)	Unified Border Element-Ent Edition 100 Sessions for ASR1k
FLSASR1-CUE-500(=)	Cisco Unified Border Element 500 Sessions for ASR 1000 Series
FLSASR1-CUE-1K(=)	Cisco Unified Border Element-1000 Sessions for ASR 1000Series
FLSASR1-CUE-4K(=)	Cisco Unified Border Element 4000 Sessions for ASR 1000 Series
FLSASR1-CUE-16K(=)	Cisco Unified Border Element 16,000 Sessions for ASR 1000 Series
FL-NANOCUBE	NANOCUBE license available only for 800 Series ISR-G2 routers and SP-IAD 2900 routers

Downloading the Software

After ordering a feature license, visit the Cisco Software Center to download the Cisco IOS Software. Table 5 provides the software image name and software feature set available with each platform.

Table 5. Cisco Unified Border Element Software Feature Set and Software File

Platform	Software Image Name	Software Feature Set
Cisco 2901, 2911, and 2921 platforms	c2900-universalk9-mz	Universal Image
Cisco 2951 platform	c2951-universalk9-mz	Universal Image
Cisco 3925 and 3945 platforms	c3900-universalk9-mz	Universal Image
Cisco ISR 4451-X	isr4400-universalk	Universal Image
Cisco ASR 100X	SASR1R1-AESK9-21SR	Cisco ASR Advanced Enterprise Services

Note: Cisco ISR 28XX and 38XX can support CUBE with IOS release 15.1(4)M and earlier. EOL notice for these platforms can be found at the following link: http://www.cisco.com/en/US/prod/collateral/routers/ps5853/qa_c67-631674_ps5854_Products_End-of-Life_Notice.html.

Summary

Organizations, large and small, are realizing the value of SIP-based communication. Cisco's session border controller, CUBE, is helping these organizations take advantage of service providers' SIP services by providing voice and video connectivity for both trunk and line-side service offerings. As such, Cisco Unified Border Element is ideal for businesses of all sizes and cost-effectively supports a variety of SIP services, whether with premises-based call control or hosted call control, with the added benefit that CUBE uses the customer's existing investment in Cisco routers.

For More Information

For more information about the Cisco Unified Border Element, visit http://www.cisco.com/go/cube or contact your local Cisco account representative.

Americas Headquarters
Cisco Systems, Inc.
San Jose, CA

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
Singapore

Europe Headquarters
Cisco Systems International BV Amsterdam,
The Netherlands

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