Supported Platforms

Supported Platforms

Cisco Unified Border Element (CUBE) supports various platforms running on Cisco IOS XE Software Releases.

Note For information on migrating from existing Cisco IOS XE 3S releases to the Cisco IOS XE Denali 16.3 release, see Cisco IOS XE Denali 16.3 Migration Guide for Access and Edge Routers.

The following table provides information on Cisco router platform support for CUBE:

Table 1: Supported Platforms

Cisco Router Platforms	Cisco Router Models	Cisco IOS Software Releases
Cisco 4000 Series-Integrated Services Routers (ISR G3)	Cisco 4321 Integrated Services Routers Cisco 4331 Integrated Services Routers Cisco 4351 Integrated Services Routers Cisco 4431 Integrated Services Routers Cisco 4451 Integrated Services Routers	Cisco IOS XE Denali 16.3.1 onwards
	Cisco 4461 Integrated Services Routers	Cisco IOS XE Amsterdam 17.2.1r onwards
Cisco 1000 Series-Integrated Services Routers (ISR)	All Cisco 1100 Integrated Services Router series models.	Cisco IOS XE Gibraltar 16.12.1a onwards

Cisco Router Platforms	Cisco Router Models	Cisco IOS Software Releases
Cisco Aggregated Services Routers (ASR)	Cisco ASR1001-X Aggregated Services Routers Cisco ASR1002-X Aggregated Services Routers Cisco ASR1004 Aggregated Services Routers with RP2 Cisco ASR1006 Aggregated Services Routers with RP2 and ESP40	Cisco IOS XE Denali 16.3.1 onwards
	Cisco ASR1006-X Aggregated Services Routers with RP2 and ESP40	Cisco IOS XE Fuji 16.6.1 onwards
	Cisco ASR1006-X Aggregated Services Routers with RP3 and ESP40/ESP100	Cisco IOS XE Everest 16.6.1 onwards
Cisco Cloud Services Routers (CSR)	Cisco Cloud Services Router 1000V series	Cisco IOS XE Denali 16.3.1 onwards
Cisco Cloud Services Routers (CSR)	Cisco Catalyst 8000V Edge Software (Catalyst 8000V)	Cisco IOS XE Bengaluru 17.4.1a onwards
Cisco 8300 Catalyst Edge Series Platforms	C8300-1N1S-6T C8300-1N1S-4T2X C8300-2N2S-6T C8300-2N2S-4T2X	Cisco IOS XE Amsterdam 17.3.2
Cisco 8200 Catalyst Edge Series Platform	C8200-1N-4T	Cisco IOS XE Bengaluru 17.4.1a
Cisco C8200L Catalyst Edge Series Platform	C8200L-1N-4T	Cisco IOS XE Bengaluru 17.5.1a

Feature Comparison for Supported Platforms

The following table provides high level details of Cisco Unified Border Element (CUBE) features supported on different platforms.

Table 2: Feature Comparisons for Supported Platforms

Features	Cisco ASR 1000 Series Routers	Cisco ISR 4000 Series Routers	Cisco ISR 1000 Series Routers
High Availability Implementation	Redundancy Group Infrastructure	Redundancy Group Infrastructure	No
Media Forking	Yes (Cisco IOS XE Release 3.8S onwards)	Yes (Cisco IOS XE Release 3.10S onwards)	No
DSP Card Type	SPA-DSP	PVDM4 SM-X-PVDM	No
Transcoder registered to CUCM	No	Yes (Exists via SCCP - Cisco IOS XE Release 3.11S onwards)	No
Transcoder—LTI	Yes	Yes	No
Cisco UC Gateway Services API	Yes (Cisco IOS XE Release 3.8S onwards)	Yes	Yes
Noise Reduction and ASP	Yes	Yes	No
Call Progress Analysis	Yes (Cisco IOS XE Release 3.9S onwards ; Recommended - Cisco IOS XE Release 3.15S)	Yes Recommended - Cisco IOS XE Release 3.15S	No
SRTP-RTP Interworking	Yes - No DSP resources required (Cisco IOS XE Release 3.7S onwards)	Yes - No DSP resources required Cisco IOS XE Release 3.12S onwards	Yes - No DSP resources required
CUBE for SP Managed and Hosted Services	Yes	Yes	Yes
Unified SRST colocation with CUBE	Not supported	Yes (Cisco IOS XE Fuji 16.7.1 Release onwards)	Yes. From Cisco IOS XE Bengaluru 17.5.1a
IPv6	Yes	Yes	Yes

Table 3: Feature Comparisons for Supported Platforms (Contd...)

Features	Cisco CSR 1000V Series Routers	Cisco 8000V Catalyst Series Edge Platforms	Cisco 8300 Catalyst Edge Series Platforms	Cisco 8200 Catalyst Edge Series Platforms
HA Implementation	RG Infrastructure	RG Infrastructure	RG Infrastructure	RG Infrastructure

Features	Cisco CSR 1000V Series Routers	Cisco 8000V Catalyst Series Edge Platforms	Cisco 8300 Catalyst Edge Series Platforms	Cisco 8200 Catalyst Edge Series Platforms
Media Forking	Yes	Yes	Yes	Yes
DSP Card Type	No	No	NIM-PVDM SM-X-PVDM	NIM-PVDM
Transcoder registered to CUCM	No	No	Yes (via SCCP)	Yes (via SCCP)
Transcoder—LTI	No	No	Yes	Yes
Cisco UC Gateway Services API	Yes	Yes	Yes	Yes
Noise Reduction & ASP	No	No	Yes	Yes
Call Progress Analysis	No	No	Yes	Yes
SRTP-RTP Interworking	Yes - No DSP resources required	Yes - No DSP resources required	Yes - No DSP resources required	Yes - No DSP resources required
CUBE for SP Managed and Hosted Services	Yes	Yes	Yes	Yes
Unified SRST colocation with CUBE	Not supported	No	Yes	Yes
IPv6	Yes	Yes	Yes	Yes

Note For more information on Unified SRST and CUBE Co-location, see Unified SRST and Unified Border Element Co-location.

Co-location of CUBE - High Availability (HA) with Unified SRST is not supported.

Virtual Cube

Overview

Virtual CUBE (vCUBE) is virtual deployment of Cisco Unified Border Element (CUBE) feature set.

From Cisco IOS XE Bengaluru 17.4.1a, vCUBE is available for use with Cisco® Catalyst® 8000V Edge Software (Catalyst 8000V) series.

Note H.323 protocol is no longer supported from Cisco IOS XE Bengaluru 17.6.1a onwards. Consider using SIP for multimedia applications.

Feature Information

The following table provides release information about the feature or features described in this module. This table lists only the software release that introduced support for a given feature in a given software release train. Unless noted otherwise, subsequent releases of that software release train also support that feature.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to www.cisco.com/go/cfn. An account on Cisco.com is not required.

Table 4: Feature Information for vCUBE Support

Feature Name	Releases	Feature Information
vCUBE in Microsoft Azure	Cisco IOS XE Bengaluru 17.6.3a	vCUBE offer is introduced in Microsoft Azure for Cisco Catalyst 8000V Edge Software (Catalyst 8000V).
vCUBE Catalyst 8000V Edge Software (Catalyst 8000V)	Cisco IOS XE Bengaluru 17.4.1a	vCUBE introduced for Cisco Catalyst 8000V Edge Software (Catalyst 8000V) in VMware ESXi environments and AWS environment.
vCUBE in Amazon Web Services (AWS)	Cisco IOS XE Gibraltar 16.12.4a	vCUBE offer introduced in AWS for Cisco CSR 1000v Series Cloud Services Router

Prerequisites

Hardware

- The vCUBE feature set is part of the Cisco virtual router software and is deployed in VMware ESXi virtualized environments. For more information on how to deploy Cisco virtualized routers in VMware ESXi environments, see Install the Cisco CSR 1000V in VMware ESXi Environments and https://www.cisco.com/c/en/us/products/routers/catalyst-8000v-edge-software/index.html.
- For information on the best practices for setting ESXi host BIOS parameters for performance, see BIOS Settings.
- Virtual CUBE is supported on the CSR 1000V and C8000V platforms.
- vCUBE is supported in AWS. You must use the AWS Marketplace product listing for virtual CUBE.

  For more information about the Cisco CSR 1000V and C8000V in AWS, see Cisco CSR 1000V Series Cloud Services Router Deployment Guide for Amazon Web Services and Cisco C8000V Router Deployment Guide for Amazon Web Services.

- vCUBE is also supported in Microsoft Azure. You must use the Azure Marketplace product listing for virtual CUBE.

  For more information about C8000V in Microsoft Azure, see Deploying Cisco Catalyst 8000V Edge Software on Microsoft Azure.

Note

- The CSR1000V and Catalyst 8000V products may be used in several different public and private cloud environments. However, vCUBE is only supported when deployed on VMware ESXi, AWS, and Microsoft Azure platforms currently.
- When you use a consolidated (.bin) image to upgrade a CSR 1000V medium configuration (2 vCPU, 4 GB RAM) to Catalyst 8000V, you must change the virtual machine vRAM allocation to at least 5 GB to ensure advertised performance. When deploying in AWS environments, boot the router using individual packages rather than a consolidated image without the need for extra memory. Refer to Installing Subpackages from a Consolidated Package for details.

Software

- Obtain the relevant license for the router platform. See vCUBE Licensing Requirements , on page 7 for more information.
- In AWS platform, only Bring Your Own License (BYOL) is supported for vCUBE. Pay as You Go (Subscription) versions of the CSR 1000V and C8000V are not supported. Make sure you choose the vCUBE AWS Marketplace product listing. Refer to Cisco Virtual CUBE-BYOL for details.
- In Microsoft Azure platform, only Bring Your Own License (BYOL) is supported for vCUBE. Pay as You Go (Subscription) versions of the C8000V are not supported. Make sure you choose the vCUBE Azure Marketplace product listing. Refer to Cisco Virtual CUBE-BYOL for details.
- For more information about Cisco virtual routers, see CSR 1000V Data Sheet and Catalyst 8000V Data Sheet.

Features Supported

vCUBE supports most of the CUBE features available in IOS XE releases.

Note From Cisco IOS XE Cupertino 17.8.1a onwards, Catalyst 8000V supports software MTP for Cisco Unified Communications Manager.

vCUBE does not support the following:

- DSP-based features
  - Codec Transcoding, Transrating
  - Raw in-band to RTP-NTE DTMF Interworking
  - Call Progress Analysis (CPA)

- Noise Reduction (NR), Acoustic Shock Protection (ASP), and Audio Gain
- IOS-based Hardware MTP

Note CUBE high availability is not supported on vCUBE when deployed in AWS and Microsoft Azure platforms.

Virtual CUBE Support on Cisco CSR 1000V or C8000V Series Routers

vCUBE media performance depends on the underlying host platform consistently providing packet switching latency of less than 5 milliseconds. The recommended hardware and virtual machine configurations ensure this performance when followed closely. For more information on how to monitor media performance, see Voice Quality Monitoring.

vCUBE Licensing Requirements

vCUBE with CSR1000V

vCUBE is enabled for the CSR1000V with the APPX and AX platform licenses. vCUBE processes and CLI commands are enabled when either of these licenses are enabled. Secure call features require the AX license. In common with all CUBE instances, CUBE smart licenses are required for each active session.

The following table details the license requirements for vCUBE on the CSR1000V.

Virtual CUBE Session License	Platform License	Features	Throughput License
CUBE Smart Licenses	APPX	No TLS / SRTP support	Session count * (signaling + bidirectional media bandwidth)
	AX	All vCUBE features	

For detailed information about licensing, see Cisco CSR 1000V Series cloud services Router Configuration Guide and Smart Licensing.

vCUBE with C8000V

vCUBE is enabled for the C8000V with the DNA Network Essentials with an appropriate bandwidth tier license.

Note When upgrading to C8000V software from a CSR1000V release, an existing throughput configuration is reset to a maximum of 250 Mbps. Install an HSEC authorization code, which you can obtain from your Smart License account, before reconfiguring your required throughput level.

Virtual CUBE Session License	DNA Subscription	Features	Bandwidth Tier License
CUBE Smart Licenses	Essentials or above	All vCUBE features	Session count * (signaling + media bandwidth)

For detailed information on licensing, see Licensing.

Installation

You can install Virtual CUBE in two ways:

- Install using an OVA file
- Install using an ISO image

Install vCUBE on ESXi

Procedure

	Command or Action	Purpose
Step 1	Use the CSR1000V or the C8000V OVA application file (available from software.cisco.com) to deploy a new virtual instance directly in VMware ESXi.	**Note** Select the required instance size during the OVA deployment. For further details on how to perform the deployment, see Cisco CSR 1000V Series Cloud Services Router Software Configuration Guide or Cisco Catalyst 8000V Edge Software Installation And Configuration Guide.

Enable vCUBE

Procedure

	Command or Action	Purpose
Step 1	Power on the virtual machine.	
Step 2	Enable platform and throughput licenses and register to a Cisco licensing server.	
Step 3	Perform the steps Enable the CUBE Application on a Device to enable vCUBE.	

Troubleshoot vCUBE

To troubleshoot vCUBE, follow the same procedure as that of Cisco hardware routers. This includes crash file decoding, decoding traceback, and so on. For more details, see Troubleshoot Cisco ASR 1000 Series Aggregation Services Routers Crashes.

To troubleshoot Virtual Machine (VM) issues, see Cisco CSR 1000V Series Cloud Services Router Software Configuration Guide and Cisco Catalyst 8000V Edge Software Configuration Guide.