Introduction

This release notes contain information about downloading and installing Cisco IOS XE Release 16.5.1 and its maintenance releases. It also provides new and changed information, hardware support, limitations and restrictions, and caveats for Cisco IOS XE Release 16.5.1 and its maintenance releases.

We recommend that you view the field notices for this release to see if your software or hardware platforms are affected. If you have an account on Cisco.com, you can find field notices at http://www.cisco.com/en/US/customer/support/tsd_products_field_notice_summary.html .

If you do not have a Cisco.com login account, you can find field notices at http://www.cisco.com/en/US/support/tsd_products_field_notice_summary.html .

Note Cisco IOS XE Release 16.5.1 is generally available for field deployment. However, we recommend that you validate and qualify Cisco IOS XE Release 16.5.1 in a limited field trial with your specific network configuration requirements in order to ensure a smoother, faster, and successful field deployment.

This chapter includes the following sections:

System Requirements

These sections describe the system requirements for Cisco IOS XE Everest 16.6.x:

Memory Requirements

The following table displays the memory recommendations for the Cisco cBR Series Converged Broadband Routers with Cisco IOS XE Release 16.5.1 feature sets.

Table 1: Memory Recommendations for the Cisco cBR Series Converged Broadband Routers

Feature Set	Cisco cBR Route Processor	Software Image	RecommendedFlash Memory	RecommendedDRAM Memory	RunsFrom
CISCO IOS-XE universalk9	Cisco cBR8 (CBR) Processor	cbrsup-universalk9.03.15.00.S.155-2.S-std.SPA.bin	8G	48G	Bootflash:
CISCO IOS-XE CLC K9	Cisco cBR8 (CYLONS) Processor	cbrsup-universalk9.03.15.00.S.155-2.S-std.SPA.bin	8G	16G	Supervisor

Hardware Supported

For detailed information about the hardware supported in Cisco IOS XE Release 16.5.1 and its maintenance releases, see:

http://www.cisco.com/c/en/us/td/docs/cable/cbr/installation/guide/b_cbr_how_and_what_to_order.html.

Note The Cisco cBR chassis must house line cards with either Downstream DOCSIS 3.0 PHY modules or Downstream DOCSIS 3.1 PHY modules. Mixed configuration is not supported.

Determining the Software Version

To determine the version of the Cisco IOS XE software running on your Cisco cBR Series Converged Broadband Routers, log in to the router and enter the **show version** EXEC command:

```
Router# show version
Load for five secs: 3%/0%; one minute: 3%; five minutes: 0%
Time source is NTP, *16:28:17.679 PDT Thu Apr 6 2017
Cisco IOS XE Software, Version 16.05.01
Cisco IOS Software [Everest], cBR  Software (X86_64_LINUX_IOSD-UNIVERSALK9-M), Version
16.5.1, RELEASE SOFTWARE (fc3)
Technical Support: http://www.cisco.com/techsupport
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Compiled Sun 02-Apr-17 21:15 by mcpre


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licensed under the GNU General Public License ("GPL") Version 2.0.  The
software code licensed under GPL Version 2.0 is free software that comes
with ABSOLUTELY NO WARRANTY.  You can redistribute and/or modify such
GPL code under the terms of GPL Version 2.0.  For more details, see the
documentation or "License Notice" file accompanying the IOS-XE software,
or the applicable URL provided on the flyer accompanying the IOS-XE
software.


ROM: IOS-XE ROMMON
```

```
Router uptime is 2 minutes
Uptime for this control processor is 6 minutes
System returned to ROM by reload at 16:19:37 PDT Thu Apr 6 2017
System image file is "harddisk:cbrsup-universalk9.16.05.01.SPA.bin"
Last reload reason: Reload Command



This product contains cryptographic features and is subject to United
States and local country laws governing import, export, transfer and
use. Delivery of Cisco cryptographic products does not imply
third-party authority to import, export, distribute or use encryption.
Importers, exporters, distributors and users are responsible for
compliance with U.S. and local country laws. By using this product you
agree to comply with applicable laws and regulations. If you are unable
to comply with U.S. and local laws, return this product immediately.

A summary of U.S. laws governing Cisco cryptographic products may be found at:
http://www.cisco.com/wwl/export/crypto/tool/stqrg.html

If you require further assistance please contact us by sending email to
export@cisco.com.

Cisco cBR-8 (RP1) processor (revision RP1) with 7508482K/6147K bytes of memory.
Processor board ID FXS1921Q1XR
16 Gigabit Ethernet interfaces
32768K bytes of non-volatile configuration memory.
50331648K bytes of physical memory.
7743487K bytes of eUSB flash at bootflash:.
97620247K bytes of SATA hard disk at harddisk:.
30659088K bytes of USB flash at usb0:.

Configuration register is 0x0

Router#
```

Microcode Software

This section describes microcode software that is supported for the Cisco cBR Series Converged Broadband Routers.

For more information, see the Upgrading the Cisco cBR Series Converged Broadband Routers for Cisco IOS XE Everest 16.5.1 guide.

Feature Support

Cisco IOS XE software is packaged in feature sets that consist of software images that support specific platforms. The feature sets available for a specific platform depend on which Cisco IOS XE software images are included in a release. Each feature set contains a specific set of Cisco IOS XE features.

Caution Cisco IOS XE images with strong encryption (including, but not limited to 168-bit [3DES] data encryption feature sets) are subject to U.S. government export controls and have limited distribution. Strong encryption images to be installed outside the United States are likely to require an export license. Customer orders may be denied or subject to delay because of U.S. government regulations. When applicable, the purchaser or user must obtain local import and use authorizations for all encryption strengths. Please contact your sales representative or distributor for more information, or send an e-mail to export@cisco.com.

New and Changed Information

The following sections list the new hardware and software features supported on the Cisco cBR Series Converged Broadband Routers in this release:

New Hardware Features in Cisco IOS XE Everest 16.5.1

Cisco CCAP RF Line Card for Remote-PHY

The Cisco CCAP RF line card with no downstream and upstream PHY modules is connected with the Cisco 1.2GHz GS7000 SHO Node (Cisco GS7000 node). The PID of the line card is CBR-CCAP-LC-40G-R.

New Software Features in Cisco IOS XE Everest 16.5.1

MAC Filtering

This feature enables/disables MAC address filter on the backhaul interface. It supports 32 unicast filter entries per interface.

For more information, see the Cisco cBR Series Converged Broadband Routers Security and Cable Monitoring Configuration Guide.

DualCrypt Encryption Mode Support

This feature enables SRM to configure PowerKey and DVB CAS sessions on the same line card of the Cisco cBR-8 Converged Broadband Router.

For more information, see the Cisco cBR Converged Broadband Routers Video Features guide.

Fail-to-Clear

This feature enables the operator to control the configured DVB-encrypted sessions to function without encryption for a configured duration, when encryption for a session fails in Cisco cBR-8.

For more information, see the Cisco cBR Converged Broadband Routers Video Features guide.

OFDM Channel Power Profile

This feature helps in adjusting the power-level of 6 MHz bands in a DOCSIS 3.1 downstream OFDM channel.

For more information, see the Cisco cBR Converged Broadband Routers Layer 2 and DOCSIS 3.1 Configuration Guide.

Segment Routing

This feature allows you to enable segment routing mode on Cisco Converged Broadband Router, as an option for IPv6 address configurations under the sub mode.

For more information, see the Cisco cBR Series Converged Broadband Routers Layer 3 Configuration Guide for Cisco IOS XE Everest 16.5.1 guide.

Modified Software Features in Cisco IOS XE Everest 16.5.1

DOCSIS 3.1 OFDM Primary Channel

This feature allows the user to configure RF-channels 158 to 162 under the mac-domain as primary channel.

For more information, see the Cisco cBR Converged Broadband Routers Layer 2 and DOCSIS 3.1 Configuration Guide.

Integrated Software Features in Cisco IOS XE Everest 16.5.1

AES Encryption with EAE Support

This feature allows DOCSIS3.0 cable modem working on non-MTC mode to use AES-128 as BPI encryption Algorithms. It also allows DOCSIS3.0 cable modem to use AES-128 as encryption algorithms when EAE is enabled.

For more information, see the Cisco cBR Series Converged Broadband Routers Security and Cable Monitoring Configuration Guide.

MIBs

To locate and download MIBs for selected platforms, Cisco IOS XE releases, and feature sets, use Cisco MIB Locator found at the following URL:

https://mibs.cloudapps.cisco.com/ITDIT/MIBS/servlet/index

MIBs in Cisco IOS XE Everest 16.5.1

Following are the new MIBs in Cisco IOS XE Everest 16.5.1:

- docsRphyRpdDevInfoTable
- docsRphyRpdDevIdentificationTable
- docsRphyRpdDevCapabilitiesTable
- docsRphyCcapL2tpSessionInfoTable
- docsRphyRpdDevDsUsRfPortAllocTable

- docsRphyRpdIpAddressTable

Best Practice Manual of Procedure for Cisco IOS XE Everest 16.5.1 Upgrade

See the Upgrading the Cisco cBR Series Converged Broadband Routers for Cisco IOS XE Everest 16.5.1 guide.

Cisco cBR Series Converged Broadband Routers Documentation References

Go to the following link to access the technical documents:

http://www.cisco.com/c/en/us/support/video/cbr-series-converged-broadband-routers/tsd-products-support-series-home.html

Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, using the Cisco Bug Search Tool (BST), submitting a service request, and gathering additional information, see What's New in Cisco Product Documentation.

To receive new and revised Cisco technical content directly to your desktop, you can subscribe to the What's New in Cisco Product Documentation RSS feed. The RSS feeds are a free service.