What's New in Cisco IOS XE Gibraltar 16.12.x

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Cisco is continuously enhancing the product with every release and this section covers a brief description of key features and enhancements that were added. It also includes links to detailed documentation, where available.

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

New Software Features in Cisco IOS XE Gibraltar 16.12.1z2

There are no new software features in Cisco IOS XE Gibraltar 16.12.1z2.

New Software Features in Cisco IOS XE Gibraltar 16.12.1z1

SNMP Punt Rate Limit

Starting from Cisco IOS XE Gibraltar 16.12.1z1 release, SNMP packets destined to cBR-8 are identified and given a specific punt-cause. Thus, the cBR-8 router can use the existing punt-policer functionality to rate-limit these SNMP packets to avoid CPU congestion. The default rate is 512 packets/second.

New Software Features in Cisco IOS XE Gibraltar 16.12.z

Setting Device Alias when Provisioning RPD

Supports setting the device alias during RPD provisioning. In earlier releases, the MIB object `docsRphyCtrlRpdInitProvCtrlDeviceAlias` was used to set the device alias. The device alias of an RPD is the RPD name configured during the RPD provisioning.

Note   You can configure the device alias of an RPD via the `docsRphyCtrlRpdInitProvCtrlDeviceAlias` MIB. After an RPD reset, the device alias resets. The Cisco cBR sets the RPD name configured during the RPD provisioning as the device alias.

User-Configurable Dynamic SID Cluster Threshold

Starting from Cisco IOS XE Gibraltar 16.12.1z release, the operator may configure a maximum rate threshold for the service flow with SID cluster assignment. The original threshold is not optimal in certain cases. If the maximum rate of the service flow is greater than or equal to the configured threshold, two SIDs are allocated to the service flow instead of one SID.

Profile Management Application

The Cisco cBR router supports the configuration of external profile management so that an external Profile Management Application tool can automatically control the profile assignment of the modems.

OFDMA RxMER Partial

After you enable this feature, an OFDMA channel is set in partial mode for a modem if RxMER probe data is below the operator-specified threshold.

Support for OOB 55d1 Upstream Events

Cisco cBR router supports OOB US events which help in monitoring the cell quality of upstream return path of OOB 55-1. In this release, Cisco cBR supports three new events which are triggered when the packet count drops below the threshold during a 5 minute monitoring window.

The following 3 three types of OOB events are triggered when the packet count exceeds or drops below the threshold value:

- Excessive Corrected Cells

- Excessive Uncorrected Cells

- Excessive Total Cells

Process	Sub-Process	RPD Priority	Event Message	Message Notes and Detail	Error Code Set	Event ID
55-1 Upstream	Cell Quality	Notice	OOB 55-1 US excessive corrected cells ended; Port: <P1>; Ch Center Freq: <P2>; Cell Count: <P3>; <TAGS>;	P1 = RfPort P2 = Channel Center Frequency P3 = Current Cell Count	B706.06	66070606
55-1 Upstream	Cell Quality	Notice	OOB 55-1 US excessive uncorrectable cells ended; Port: <P1>; Ch Center Freq: <P2>; Cell Count: <P3>; <TAGS>;	P1 = RfPort P2 = Channel Center Frequency P3 = Current Cell Count	B706.07	66070607
55-1 Upstream	Cell Quality	Notice	OOB 55-1 US excessive total cells ended; Port: <P1>; Ch Center Freq: <P2>; Cell Count: <P3>; <TAGS>;	P1 = RfPort P2 = Channel Center Frequency P3 = Current Cell Count	B706.08	66070608

New Software Features in Cisco IOS XE Gibraltar 16.12.1y

New Events and Alarms for Video Encryption Debugging

The Cisco cBR router supports troubleshooting video encryption issues using the new events and alarms for video scrambling debugging logs. You can debug VOD failures by going through the logs.

Proactive Network Management Using RxMER MIB

Supports Proactive Network Management (PNM) OFDMA Receive Modulation Error Ratio (RxMER) MIB. This MIB enables collection and reporting of the OFDMA channel RxMER for every subcarrier.

DPIC PTP Primary

Provides support for Digital Physical Interface Card (DPIC) Precision Time Protocol (PTP) Primary. With the DPIC PTP Primary, the RPD synchronizes to the PTP primary with some switch between them.

> **Note** The DPIC PTP Primary feature is only supported on DPIC40, and not supported on DPIC100.

OFDMA Codeword Error Threshold

Allows you to configure a codeword error threshold above which the profile is downgraded to a partial mode.

New Software Features in Cisco IOS XE Gibraltar 16.12.1x

Hitless OFDM Profile Updates

Supports adding or removing OFDM profiles from an OFDM channel without shutting down or restarting (shut/noshut) of the channel. This feature is used by a Profile Management Application (PMA).

Ephemeral Profile to CM assignment

Provides a CLI to resolve an issue where a specific MAC address causes the CMTS to forward all the user data traffic to that cable modem (CM) on the new OFDM data profile. The CM does not reset when moving to the new profile. If the CMTS receives a CM-STATUS 16 for that profile, the CMTS downgrades the profile automatically. This feature is used by a Profile Management Application (PMA).

SNR Smoothing

Cisco cBR router supports improved rates of per CM and per US SNR. The following methods of easing the fluctuations in SNR are available for Cisco cBR routers:

- Cable modem-based SNR
- US channel-based SNR

Upstream Dynamic Modulation Profile for RPHY

Cisco cBR Series Converged Broadband Router supports Upstream Dynamic Modulation Profile.

OFDMA Codeword Error Profile Downgrade

From Cisco IOS XE Gibraltar 16.12.1x, Cisco cBR supports the codeword error threshold above which the modulation profile will be downgraded, where the modulation profile is switched to a lower order QAM.

Supports MDD with Pre-Registration DSID

Cisco cBR router supports pre-registration DSID (TLV 5.2) in the MAC Domain Descriptor (MDD) message when only IPv4 is configured and active, where the IP provisioning mode is IPv4.

New Software Features in Cisco IOS XE Gibraltar 16.12.1w

OFDMA—4 Override Zones per IUC

In Cisco cBR Series Converged Broadband Router 16.12.1w and later versions, the limitation of one IUC override per IUC configuration does not apply for Cisco cBR-8 on CBR-LC-8D31-16U31, CBR-CCAP-LC-40G-R, and CBR-CCAP-LC-G2-R. The OFDMA-4 override zones per IUC feature increases the number of overrides that can be defined to four per IUC.

Enhanced Upstream Sharing on CBR-CCAP-LC-G2-R

Cisco cBR routers support the following two modes of upstream sharing on the CBR-CCAP-LC-G2-R line card.

- 128 x 8—128 scqam channels and 1:8 sharing ratio per line card (Default)

- 256 x 4—256 scqam channels and 1:4 sharing ratio per line card

New Software Features in Cisco IOS XE Gibraltar 16.12.1

Cisco IOS XE Gibraltar 16.12.1 supports the following new features:

Telemetry

Model-driven telemetry allows cBR8 to continuously stream real time configuration and operating state information to collectors. cBR-8 supports both gRPC and NETCONF modes of telemetry.

For more information, see Model-Driven Telemetry.

IPDR connection initiated by CMTS

Starting from Cisco IOS XE 16.12.1, IPDR connections can be initiated by CMTS.

For more information, see IPDR connection initiated by CMTS.

IPDR – IPV6 address

Starting from Cisco IOS XE 16.12.1, IPDR collector can be configured with IPv6 address and work in IPv6 mode.

For more information, see IPDR - IPV6 address.

IPv6 Bulk Lease Query

cBR-8 supports DHCPv6 bulk lease query in accordance with RFC 5460. The DHCPv6 bulk lease query feature is used to recover the IPv6 bindings (GUA/PD/LLA) for CPE ONLY after a chassis reload. The feature is designed to start after a chassis reload, and is disabled by default.

For more information, see DHCPv6 Bulk Lease Query.

show cable modem select

The show cable modem select command is updated. Four new fields—sysdes, txpwr, cpev4, and cpev6 are added. For more information, see the Cisco CMTS Cable Command Reference Guide.

For more information, see the show cable modem select.

Sniff out boot file name from DHCP process per CM

Starting from Cisco IOS XE 16.12.1, the cBR-8 is able to sniff, parse and save the configuration file related information per CM.

For more information, see DHCP, ToD, and TFTP Services for CMTS Routers.

100G DPIC Support - 100G Interface Mode

Cisco cBR-8 Router provides support for 2x100G Digital Physical Interface Cards (DPIC). The 2x100G DPIC works only with the CBR-CCAP-LC-G2-R line card to transmit DEPI, UEPI, and GCP traffic from the router to the Remote PHY devices.

The product ID (PID) of 2x100G DPIC is CBR-DPIC-2X100G. For more information, see 100G DPIC Support - 100G Interface Mode and DPIC 100G configuration.

DSG OPS CLI

The DSG OPS (Operation Simplify) CLI feature simplifies the legacy DSG TG configuration under mac-domain. The feature uses the DSG OPS CLI under mac-domain-profile. It can automatically create DSG TG channels to the mac-domain when you apply mac-domain profile with DSG configuration.

For more information, see the Command Reference Guide.

Polaris 16.12.1 MIBs - 20181018 version alignment and RpdSwImageTable support

Modified Software Features in Cisco IOS XE Gibraltar 16.12.1z2

There are no modified software features in Cisco IOS XE Gibraltar 16.12.1z2.

Modified Software Features in Cisco IOS XE Gibraltar 16.12.1z1

There are no modified software features in Cisco IOS XE Gibraltar 16.12.1z1.

Modified Software Features in Cisco IOS XE Gibraltar 16.12.1z

There are no modified software features in Cisco IOS XE Gibraltar 16.12.1z.

Modified Software Features in Cisco IOS XE Gibraltar 16.12.1y

There are no modified software features in Cisco IOS XE Gibraltar 16.12.1y.

Modified Software Features in Cisco IOS XE Gibraltar 16.12.1x

There are no modified software features in Cisco IOS XE Gibraltar 16.12.1x.

Modified Software Features in Cisco IOS XE Gibraltar 16.12.1w

There are no modified software features in Cisco IOS XE Gibraltar 16.12.1w.

Modified Software Features in Cisco IOS XE Gibraltar 16.12.1

There are no modified software features in Cisco IOS XE Gibraltar 16.12.1.

New Hardware Features in Cisco IOS XE Gibraltar 16.12.1z2

There are no new hardware features in Cisco IOS XE Gibraltar 16.12.1z2.

New Hardware Features in Cisco IOS XE Gibraltar 16.12.1z1

New Revision of CBR-CCAP-LC-40G

In Cisco IOS XE Amsterdam 16.12.1z1 release, support is added for Version ID V09 of the cBR-8 line card CBR-CCAP-LC-40G. It is compatible with 16.12.1z1 and later 16.12.1 releases, 17.3.1w and later releases. For more information, see the Field Notice 70631.

New Hardware Features in Cisco IOS XE Gibraltar 16.12.1z

There are no new hardware features in the Cisco IOS XE Gibraltar 16.12.1z release.

New Hardware Features in Cisco IOS XE Gibraltar 16.12.1y

There are no new hardware features in the Cisco IOS XE Gibraltar 16.12.1y release.

New Hardware Features in Cisco IOS XE Gibraltar 16.12.1x

There are no new hardware features in the Cisco IOS XE Gibraltar 16.12.1x release.

New Hardware Features in Cisco IOS XE Gibraltar 16.12.1w

There are no new hardware features in the Cisco IOS XE Gibraltar 16.12.1w release.

New Hardware Features in Cisco IOS XE Gibraltar 16.12.1

Cisco IOS XE Gibraltar 16.12.1 supports the following new features:

- Optical module QSFP-100G-SM-SR is supported on SUP250 and DPIC 100G card. QSFP-4X10G-AOC5M is supported on DPIC 100G card.

  Note   If the QSFP-100G-SM-SR module is used in the DPIC 100G card, the cBR-8 router chassis ambient temperature must be limited to 50ºC at sea level.

  If the QSFP-100G-SM-SR module is used in the SUP 250 PIC card, the cBR-8 router chassis ambient temperature must be limited to 54ºC at sea level.

  Note   QSFP-4X10G-AOC meets Criteria B per ESD (15kV air/8kV contact) WW Compliance.

- For DPIC 100G card, it supports the following SFP+/QSFP in 16.12.1:

  - QSFP-100GE-LR

  - QSFP-100GE-SR

  - QSFP-100GE-SM-SR

  - QSFP-40G-LR (4x10G mode)

  - QSFP-40G-SR (4x10G mode)

  - QSFP-4X10G-AOCxM (4x10G mode)

For more information, see cBR Hardware Installation Guide.