Release Notes for Cisco NCS 4206 and Cisco NCS 4216 Series, Cisco IOS XE Dublin 17.11.x

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Introduction

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This document provides information about the IOS XE software release for the Cisco NCS 4206 and Cisco NCS 4216 beginning with Cisco IOS XE Release 3.18SP.

Overview of Cisco NCS 4206 and NCS 4216

Cisco NCS 4206

The Cisco NCS 4206 is a fully-featured aggregation platform designed for the cost-effective delivery of converged mobile and business services. With shallow depth, low power consumption, and an extended temperature range, this compact 3-rack-unit (RU) chassis provides high service scale, full redundancy, and flexible hardware configuration.

The Cisco NCS 4206 expands the Cisco service provider product portfolio by providing a rich and scalable feature set of Layer 2 VPN (L2VPN) and Layer 3 VPN (L3VPN) services in a compact package. It also supports a variety of software features, including Carrier Ethernet features, Timing over Packet, and pseudowire.

For more information on the Cisco NCS 4206 Chassis, see the Cisco NCS 4206 Hardware Installation Guide.

Cisco NCS 4216

The Cisco NCS 4216 is a seven-rack (7RU) unit chassis that belongs to the Cisco NCS 4200 family of chassis. This chassis complements Cisco's offerings for IP RAN solutions for the GSM, UMTS, LTE and CDMA. Given it's form-factor, interface types and Gigabit Ethernet density the Cisco NCS 4216 can also be positioned as a Carrier Ethernet aggregation platform.

The Cisco NCS 4216 is a cost optimized, fully redundant, centralized forwarding, extended temperature, and flexible pre-aggregation chassis.

For more information about the Cisco NCS 4216 Chassis, see the Cisco NCS 4216 Hardware Installation Guide.

NCS 4216 14RU

The Cisco NCS 4216 F2B is a 14-rack unit router that belongs to the Cisco NCS 4200 family of routers. This router complements Cisco's offerings for IP RAN solutions for the GSM, UMTS, LTE, and CDMA. Given its form-factor, interface types, and Gigabit Ethernet density the Cisco NCS 4216 14RU can also be positioned as a Carrier Ethernet aggregation platform.

The Cisco NCS 4216 14RU is a cost optimized, fully redundant, centralized forwarding, extended temperature, and flexible pre-aggregation router.

For more information about the Cisco NCS 4216 F2B Chassis, see the Cisco NCS 4216 F2B Hardware Installation Guide.

NCS 4216 14RU

The Cisco NCS 4216 14RU is a 14-rack unit router that belongs to the Cisco NCS 4200 family of routers. This router complements Cisco's offerings for IP RAN solutions for the GSM, UMTS, LTE, and CDMA. Given its form-factor, interface types and GigabitEthernet density the Cisco NCS 4216 14RU can also be positioned as a Carrier Ethernet aggregation platform.

The Cisco NCS 4216 14RU is a cost optimized, fully redundant, centralized forwarding, extended temperature, and flexible pre-aggregation router.

For more information about the Cisco NCS 4216 14RU chassis, see the Cisco NCS 4216 14RU Hardware Installation Guide.

Feature Navigator

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

Hardware Supported

The following sections list the hardware supported for Cisco NCS 4206 and Cisco NCS 4216 chassis.

Cisco NCS 4206 Supported Interface Modules

Supported Interface Modules

Note If the **license feature service-offload enable** command is configured, then the NCS4200-1T8LR-PS IM is not supported in the router for RSP3.

Note There are certain restrictions in using the interface modules on different slots in the chassis. Contact Cisco Sales/Support for the valid combinations.

Note FAN OIR is applicable every time the IM based fan speed profile is switched to NCS4200-1H-PK= and NCS4200-2Q-P interface modules. Even though the IMs remain in the Out-of-Service state, they are still considered as present in the chassis.

Table 1: NCS420X-RSP Supported Interface Modules and Part Numbers

RSP Module	Supported Interface Modules	Part Numbers	Slot
NCS420X-RSP	8-port 10 Gigabit Ethernet Interface Module (8X10GE)	NCS4200-8T-PS	All
	1-port 100 Gigabit Ethernet Interface Module (1X100GE)	NCS4200-1H-PK=	4 and 5
	2-port 40 Gigabit Ethernet QSFP Interface Module (2X40GE)	NCS4200-2Q-P	4 and 5
	8/16-port 1 Gigabit Ethernet (SFP/SFP) + 1-port 10 Gigabit Ethernet (SFP+) / 2-port 1 Gigabit Ethernet (CSFP) Interface Module	NCS4200-1T16G-PS	0,3,4, and 5
	1-port OC-192 Interface module or 8-port Low Rate Interface Module	NCS4200-1T8S-10CS	2,3,4, and 5
	NCS 4200 1-Port OC-192 or 8-Port Low Rate CEM 20G Bandwidth Interface Module	NCS4200-1T8S-20CS	2,3,4, and 5[1]
	48-port T1/E1 CEM Interface Module	NCS4200-48T1E1-CE	All
	48-port T3/E3 CEM Interface Module	NCS4200-48T3E3-CE	All
	2-port 100 Gigabit Ethernet (QSFP) Interface Module (2X100GE)[2]	NCS4200-2H-PQ	4,5
	1-port OC48[3]/ STM-16 or 4-port OC-12/OC-3 / STM-1/STM-4 + 12-port T1/E1 + 4-Port T3/E3 CEM Interface Module	NCS4200-3GMS	2,3,4, and 5

[1] These slots are supported on 10G or 20G mode.

[2] IM supports only one port of 100G with RSP3 as QSFP28 on Port 0 in both slots 4 and 5.

[3] If OC48 is enabled, then the remaining 3 ports are disabled.

Table 2: NCS420X-RSP-128 Supported Interface Modules and Part Numbers

RSP Module	Supported Interface Modules	Part Numbers	Slot
NCS420X-RSP	SFP Combo IM—8-port Gigabit Ethernet (8X1GE) + 1-port 10 Gigabit Ethernet Interface Module (1X10GE)	NCS4200-1T8LR-PS	All
	8-port T1/E1 CEM Interface Module	NCS4200-8E1T1-CE	All
	1-port OC48[4]/ STM-16 or 4-port OC-12/OC-3 / STM-1/STM-4 + 12-port T1/E1 + 4-Port T3/E3 CEM Interface Module	NCS4200-3GMS	2,3,4, and 5

[4] If OC48 is enabled, then the remaining 3 ports are disabled.

Cisco NCS 4216 Supported Interface Modules

For information on supported interface modules, see Supported Interface Modules.

Cisco NCS 4216 F2B Supported Interface Modules

For information on supported interface modules, see Supported Interface Modules.

Restrictions and Limitations

Note The error message "PLATFORM-1-NOSPACE: SD bootflash : no space alarm assert" may occur in the following scenarios:

- Any sector of SD Card gets corrupted
- Improper shut down of router
- power outage.

This issue is observed on platforms which use EXT2 file systems.

We recommend performing a reload of the router. As a result, above alarm will not be seen during the next reload due to FSCK(file systems check) execution.

However, If the error persists after a router reload, we recommend to format the bootflash or FSCK manually from IOS.

- Embedded Packet Capture (EPC) is not supported on ASR 900NCS 4200 routers.
- From the Cisco IOS XE 16.6.1 releases, In-Service Software Upgrade (ISSU) is not supported on the router to the latest releases. For more information on the compatible release versions, see ISSU Support Matrix.
- ISSU is not supported between a Cisco IOS XE 3S release and the Cisco IOS XE Bengaluru 17.6.x release.
- The port restriction on 1-port OC-192 or 8-port low rate CEM interface module is on port pair groups. If you have OC48 configured on a port, the possible port pair groups are 0–1, 2–3, 4–5, 6–7. If one of the ports within this port group is configured with OC48 rate, the other port cannot be used.
- RS422 pinout works only on ports 0–7.
- The **ip cef accounting** command is *not* supported on the router.
- Configuration sync does *not* happen on the Standby RSP when the active RSP has Cisco Software Licensing configured, and the standby RSP has Smart Licensing configured on the router. If the active RSP has Smart Licensing configured, the state of the standby RSP is undetermined. The state could be pending or authorized as the sync between the RSP modules is not performed.
- Evaluation mode feature licenses may not be available to use after disabling, and enabling the smart licensing on the RSP2 module. A reload of the router is required.

- Ingress counters are not incremented for packets of the below format on the RSP3 module for the 10-Gigabit Ethernet interfaces, 100-Gigabit Ethernet interfaces, and 40-Gigabit Ethernet interfaces:

  Packet Format

  MAC header---->VLAN header---->Length/Type

  When these packets are received on the RSP3 module, the packets are not dropped, but the counters are not incremented.

- T1 SAToP, T3 SAToP, and CT3 are supported on an UPSR ring only with local connect mode. Cross-connect configuration of T1, T3, and CT3 circuits to UPSR are not supported.

- PTP is not supported when 8-port 10-Gigabit Ethernet interface module is in oversubscribed mode.

- Port channel 61–64 is not supported in the 16.11.1a release. The range of configurable port channel interfaces has been limited to 60.

- Effective with Cisco IOS XE Everest 16.6.1, the VPLS over Port-channel (PoCH) scale is reduced from 48 to 24 for Cisco ASR 903 RSP3 module.

Note The PoCH scale for Cisco ASR 907 routers is 48.

- The frame drops may occur for packets with packet size of less than 100 bytes, when there is a line rate of traffic over all 1G or 10G interfaces available in the system. This restriction is applicable only on RSP2 module, and is not applicable for RSP3 module.

- One Ternary Content-Addressable Memory (TCAM) entry is utilized for Segment Routing Performance Measurement. This is required for the hardware timestamping to function.

- While performing an auto upgrade of ROMMON, only primary partition is upgraded. Use the **upgrade rom-mon filename** command to upgrade the secondary partition of the ROMMON during the auto upgrade. However, the router can be reloaded during the next planned reload to complete the secondary ROMMON upgrade. This is applicable to ASR 903 and ASR 907 routers.

- In the Cisco IOS XE 17.1.1 release, the EVPN EVI type is VLAN-based by default, and while configuring for the EVPN EVI type, it is recommended to configure the EVPN EVI type as VLAN-based, VLAN bundle and VLAN aware model.

- For Cisco IOS XE Gibraltar Release 16.9.5, Cisco IOS XE Gibraltar Release 16.12.3, and Cisco IOS XE Amsterdam 17.1.x, a minimum disk space of 2 MB is required in the boot flash memory file system for a successful ROMMON auto upgrade process. For a disk space lesser than 2 MB, ROMMON auto upgrade fails and the router reboots. This is applicable to Cisco ASR 903 and Cisco ASR 907 routers.

- In the Cisco IOS XE 16.12.1, 17.1.1, and 17.2.1 releases, IPsec is not supported on the Cisco RSP3 module.

- CEM circuit provisioning issues may occur during downgrade from Cisco IOS XE Amsterdam 17.3.1 to any lower versions or during upgrade to Cisco IOS XE Amsterdam 17.3.1 from any lower versions, if the CEM scale values are greater than 10500 APS/UPSR in protected CEM circuits. So, ensure that the CEM scale values are not greater than 10500, during ISSU to or from 17.3.1.

- Some router models are not fully compliant with all IETF guidelines as exemplified by running the pyang tool with the **lint** flag. The errors and warnings that are exhibited by running the pyang tool with the **lint** flag are currently noncritical as they do not impact the semantic of the models or prevent the models from being used as part of the toolchains. A script has been provided, "check-models.sh", that runs pyang with **lint** validation enabled, but ignoring certain errors. This allows the developer to determine what issues may be present.

As part of model validation for the Cisco IOS XE Amsterdam 17.3.1 release, "LEAFREF_IDENTIFIER_NOT_FOUND" and "STRICT_XPATH_FUNCTIONS" error types are ignored.

- Test Access Port (TAP) is not supported when the iMSG VLAN handoff feature is enabled on the same node.
- Data Communication Channel (DCC) is not supported in the A900-IMA1Z8S-CXMSNCS4200-1T8S-20CS interface module for the Cisco IOS XE Cupertino 17.8.1 release.
- SF and SD alarms are NOT supported on T1 and T3 ports for the following interface modules:
  - A900-IMA3G-IMSG
  - A900-IMA48D-C
  - A900-IMA48T-C
  - NCS4200-3GMS
  - NCS4200-48T3E3-CE
  - NCS4200-48T1E1-CE
- In RSP2 and RSP3 modules, during In-Service Software Upgrade (ISSU), interface modules undergo FPGA upgrade.

  The following table details the IM Cisco IOS XE versions during ISSU with respect to FPGA upgrade and the impact of traffic flow for these IMs:

Table 3: Impact on IM during ISSU and FPGA Upgrade

IM	IM Version During ISSU	Pre-ISSU FPGA Upgrade	Post-ISSU Impact on IM	FPGA Version post ISSU
Phase 1	Cisco IOS XE 17.3.x or earlier version to Cisco IOS XE 17.4.x	FPGA upgrade completes and IM starts after the reload process. FPGA version (phase -1) - 0.47	Traffic is impacted during upgrade.	0.75

IM	IM Version During ISSU	Pre-ISSU FPGA Upgrade	Post-ISSU Impact on IM	FPGA Version post ISSU
Phases 1 and 2	Version earlier to Cisco IOS XE 17.8.x	FPGA upgrade completes and IM starts after the reload process. • FPGA version (Phase 1)—0.47 • FPGA version (Phase 2) • A900-IMA8Z—69.22 • NCS4200-8T-PS—69.22 • Combo IM: 69.24	Traffic is impacted during upgrade.	• FPGA version (Phase 1)—0.75 • FPGA version (Phase 2) • A900-IMA8Z—69.24 • NCS4200-8T-PS—69.24 • Combo IM: 69.32
Phase 1	Cisco IOS XE 17.4.1 or later versions to Cisco IOS XE 17.8.1	IM FPGA already upgraded with the latest version and reload is not required.	Traffic is not impacted.	0.75

For more information on the FPGA versions, see Supported FPGA, HoFPGA, and ROMMON VersionsSupported FPGA Versions.

Refer the following table for supported IMs:

Table 4: ASR 900 Supported Ethernet Interface Module

Phase 1 IM	Phase 2 IM	Phase 3 IM
A900-IMA8S	A900-IMA8S1Z	A900-IMA8Z
A900 -IMA8T	A900-IMA8T1Z	A900-IMA2F
A900-IMA1X	A900-IMA2Z	A900-IMA2C

Table 5: NCS 4200 Supported Ethernet Interface Module

Phase 1 IM	Phase 2 IM	Phase 3 IM
NCS4200-1T8LR	NCS4200-1T8LR-PS	NCS4200-8T-PS
		NCS4200-2Q-P
		NCS4200-2H-PQ

Determining the Software Version

You can use the following commands to verify your software version:

- Consolidated Package—**show version**
- Individual sub-packages—**show version installed** (lists all installed packages)

Upgrading to a New Software Release

Only the latest consolidated packages can be downloaded from Cisco.com; users who want to run the router using individual subpackages must first download the image from Cisco.com and extract the individual subpackages from the consolidated package.

For information about upgrading to a new software release, see the Upgrading the Software on the Cisco ASR 900 Series Routers Upgrading the Software on the Cisco NCS 4200 Series Routers .

Upgrading the FPD Firmware

FPD Firmware packages are bundled with the software package. FPD upgrade is automatically performed ont the router.

If you like to manually change the FPD Firmware software, use the **upgrade hw-module subslot 0/0 fpd bundle** to perform FPD frmware upgrade.

ROMMON Version

We recommend you to upgrade the ROMMON version to 15.6(49r)S.

For more information on the ROMMON package, see Cisco Software Download.

Note ROMMON upgrade is mandatory to boot RSP3 images.

Supported FPGA Versions for NCS 4206 and NCS 4216

Use the **show hw-module all fpd** command to display the IM FPGA version on the chassis.

Use the **show platform software agent iomd** [*slot/subslot*] **firmware cem-fpga** command to display the CEM FPGA version on the chassis.

The table below lists the FPGA version for the software releases.

Note During ISSU, TDM interface modules are reset for FPGA upgrade.

Table 6: Supported TDM IM and CEM FPGAs for NCS 4206-RSP3 and NCS 4216

Category	Cisco IOS XE Release	48 X T1/E1 CEM Interface Module FPGA	48 X T3/E3 CEM Interface Module FPGA	OC-192 Interface Module + 8-port Low Rate Interface Module FPGA	NCS 4200-1T8S-20CS	NCS4200-3GMS
IM FPGA	17.11.1a	1.22	1.22	1.15	0.95	2.0
CEM FPGA		7.0	5.6	5G mode: 6.5 10G mode: 7.9	10G mode: 7.4 20G mode: 7.5	9.3
IM FPGA	17.10.1	1.22	1.22	1.15	0.95	2.0
CEM FPGA		6.0	5.2	5G mode: 6.5 10G mode: 7.9	10G mode: 7.3 20G mode: 7.3	9.3
IM FPGA	17.9.2	1.22	1.22	1.15	0.95	2.0
CEM FPGA		6.0	5.2	5G mode: 6.5 10G mode: 7.9	10G mode: 7.2 20G mode: 7.2	9.1
IM FPGA	17.9.1	1.22	1.22	1.15	0.93	2.0
CEM FPGA		6.0	5.2	5G mode: 6.5 10G mode: 7.9	10G mode: 7.2 20G mode: 7.2	9.1
IM FPGA	17.8.1	1.22	1.22	1.15	0.93	2.0
CEM FPGA		6	5.2	5G mode: 6.5 10G mode: 7.9	10G mode: 7.0 20G mode: 6.0	9.0

Category	Cisco IOS XE Release	48 X T1/E1 CEM Interface Module FPGA	48 X T3/E3 CEM Interface Module FPGA	OC-192 Interface Module + 8-port Low Rate Interface Module FPGA	NCS 4200-1T8S-20CS	NCS4200-3GMS
IM FPGA	17.7.1	1.22	1.22	1.15	0.93	2.0
CEM FPGA		0x52110052	0x52520052	5G mode: 0x10090065 10G mode: 0x10070079	10G mode: 0x10290051 20G mode: 0x10290051	0x10030076
IM FPGA	17.6.2	1.22	1.22	1.15	0.93	2.0
CEM FPGA		0x52110052	0x52520052	5G mode: 0x10090065 10G mode: 0x10070079	10G mode: 0x10290051 20G mode: 0x10290051	0x10030076
IM FPGA	17.6.1	1.22	1.22	1.15	0.93	2.0
CEM FPGA		0x52110052	0x52520052	5G mode: 0x10090065 10G mode: 0x10070079	10G mode: 0x10290051 20G mode: 0x10290051	0x10030076
IM FPGA	17.5.1	1.22	1.22	1.15	0.93	2.0
CEM FPGA		0x52050052	0x52420052	5G mode: 0x10210063 10G mode: 0x10530078	10G mode: 0x10090051 20G mode: 0x10090051	0x10020076

Table 7: Supported Ethernet IM FPGA/FPD versions for NCS 4206-RSP3 and NCS 4216

Cisco IOS XE Release	NCS4200-1T16G -PS	NCS4200-1T8LR -PS	NCS4200-8T -PS	NCS4200-2Q -P	NCS4200-1H -PK	NCS4200-2H -PQ	NCS4200 -1T16LR
17.11.1a	1.129	69.32	0.21	0.21	0.20	0.20	69.24
17.10.1	1.129	69.32	0.21	0.21	0.20	0.20	69.24
17.10.1	1.129	69.32	0.21	0.21	0.20	0.20	69.24
17.9.2	1.129	69.32	0.21	0.21	0.22	0.20	69.24
17.9.1	1.129	69.32	0.21	0.21	0.22	0.20	69.24

Cisco IOS XE Release	NCS4200-1T16G -PS	NCS4200-1T8LR -PS	NCS4200-8T -PS	NCS4200-2Q -P	NCS4200-1H -PK	NCS4200-2H -PQ	NCS4200 -1T16LR
17.8.1	1.129	69.32	0.21	0.21	0.22	0.20	69.24
17.7.1	1.129	1.129	0.21	0.21	0.22	0.20	69.24
17.6.1	1.129	1.129	0.21	0.21	0.22	0.20	69.24
17.5.1	1.22	1.22	1.15	0.93	2.0	0.23	0.20
17.4.1	1.129	69.24	0.21	0.22	0.20	3.4	1.129

Table 8: FPGA, HoFPGA, and ROMMON Versions for Cisco IOS XE 17.11.1 Release

Platform	Interface Module	FPGA Current Version	FPGA Minimum Required Version	RSP HoFPGA Active	RSP HoFPGA Standby	ROMMON
NCS420X-RSP-128	NCS4200-1T8LR-PS	0.75	0.75	0X00030011	0X00030011	15.6(54r)S
NCS4206-RSP	NCS4200-1H-PK	0.20	0.20	40035	40035	15.6(57r)S
	NCS4200-8T-PS	0.22	0.21			
	NCS4200-1T8LR-PS	69.32	69.32			
NCS4216-RSP	NCS4200-1H-PK	0.20	0.20	20040034	20040034	15.6(57r)S

Additional References

Deferrals

Cisco IOS software images are subject to deferral. We recommend that you view the deferral notices at the following location to determine whether your software release is affected: http://www.cisco.com/en/US/products/products_security_advisories_listing.html.

Field Notices and Bulletins

- Field Notices—We recommend that you view the field notices for this release to determine whether your software or hardware platforms are affected. You can find field notices at http://www.cisco.com/en/US/support/tsd_products_field_notice_summary.html.
- Bulletins—You can find bulletins at http://www.cisco.com/en/US/products/sw/iosswrel/ps5012/prod_literature.html.

MIB Support

The below table summarizes the supported MIBs on the Cisco NCS 4206 and Cisco NCS 4216.

Supported MIBs		
BGP4-MIB (RFC 1657)	CISCO-IMAGE-LICENSE-MGMT-MIB	MPLS-LDP-STD-MIB (RFC 3815)
CISCO-BGP-POLICY-ACCOUNTING-MIB	CISCO-IMAGE-MIB	MPLS-LSR-STD-MIB (RFC 3813)
CISCO-BGP4-MIB	CISCO-IPMROUTE-MIB	MPLS-TP-MIB
CISCO-BULK-FILE-MIB	CISCO-LICENSE-MGMT-MIB	MSDP-MIB
CISCO-CBP-TARGET-MIB	CISCO-MVPN-MIB	NOTIFICATION-LOG-MIB (RFC 3014)
CISCO-CDP-MIB	CISCO-NETSYNC-MIB	OSPF-MIB (RFC 1850)
CISCO-CEF-MIB	CISCO-OSPF-MIB (draft-ietf-ospf-mib-update-05)	OSPF-TRAP-MIB (RFC 1850)
CISCO-CLASS-BASED-QOS-MIB	CISCO-OSPF-TRAP-MIB (draft-ietf-ospf-mib-update-05)	PIM-MIB (RFC 2934)
CISCO-CONFIG-COPY-MIB	CISCO-PIM-MIB	RFC1213-MIB
CISCO-CONFIG-MAN-MIB	CISCO-PROCESS-MIB	RFC2982-MIB
CISCO-DATA-COLLECTION-MIB	CISCO-PRODUCTS-MIB	RMON-MIB (RFC 1757)
CISCO-EMBEDDED-EVENT-MGR-MIB	CISCO-PTP-MIB	RSVP-MIB
CISCO-ENHANCED-MEMPOOL-MIB	CISCO-RF-MIB	SNMP-COMMUNITY-MIB (RFC 2576)
CISCO-ENTITY-ALARM-MIB	CISCO-RTTMON-MIB	SNMP-FRAMEWORK-MIB (RFC 2571)
CISCO-ENTITY-EXT-MIB	CISCO-SONET-MIB	SNMP-MPD-MIB (RFC 2572)
CISCO-ENTITY-FRU-CONTROL- MIB	CISCO-SYSLOG-MIB	SNMP-NOTIFICATION-MIB (RFC 2573)
CISCO-ENTITY-SENSOR-MIB	DS1-MIB (RFC 2495)	SNMP-PROXY-MIB (RFC 2573)
CISCO-ENTITY-VENDORTYPE-OID-MIB	ENTITY-MIB (RFC 4133)	SNMP-TARGET-MIB (RFC 2573)
CISCO-FLASH-MIB	ENTITY-SENSOR-MIB (RFC 3433)	SNMP-USM-MIB (RFC 2574)
CISCO-FTP-CLIENT-MIB	ENTITY-STATE-MIB	SNMPv2-MIB (RFC 1907)
CISCO-IETF-ISIS-MIB	EVENT-MIB (RFC 2981)	SNMPv2-SMI
CISCO-IETF-PW-ATM-MIB	ETHERLIKE-MIB (RFC 3635)	SNMP-VIEW-BASED-ACM-MIB (RFC 2575)
CISCO-IETF-PW-ENET-MIB	IF-MIB (RFC 2863)	SONET-MIB
CISCO-IETF-PW-MIB	IGMP-STD-MIB (RFC 2933)	TCP-MIB (RFC 4022)
CISCO-IETF-PW-MPLS-MIB	IP-FORWARD-MIB	TUNNEL-MIB (RFC 4087)
CISCO-IETF-PW-TDM-MIB	IP-MIB (RFC 4293)	UDP-MIB (RFC 4113)
CISCO-IF-EXTENSION-MIB	IPMROUTE-STD-MIB (RFC 2932)	CISCO-FRAME-RELAY-MIB
CISCO-IGMP-FILTER-MIB	MPLS-LDP-GENERIC-STD-MIB (RFC 3815)	

MIB Documentation

To locate and download MIBs for selected platforms, Cisco IOS and Cisco IOS XE releases, and feature sets, use Cisco MIB Locator found at the following location: http://tools.cisco.com/ITDIT/MIBS/servlet/index. To access Cisco MIB Locator, you must have an account on Cisco.com. If you have forgotten or lost your account information, send a blank e-mail to cco-locksmith@cisco.com. An automatic check will verify that your e-mail address is registered with Cisco.com. If the check is successful, account details with a new random password will be e-mailed to you. Qualified users can establish an account on Cisco.com by following the directions found at the following location: http://tools.cisco.com/RPF/register/register.do

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Cisco Bug Search Tool

Cisco Bug Search Tool (BST) is a web-based tool that acts as a gateway to the Cisco bug tracking system that maintains a comprehensive list of defects and vulnerabilities in Cisco products and software. BST provides you with detailed defect information about your products and software.

CHAPTER 2

What's New for Cisco IOS XE Dublin 17.11.x

This chapter describes the new hardware and software features supported in Cisco IOS XE Dublin 17.11.x.

For information on features supported for each release, see Feature Compatibility Matrix .

What's New in Hardware for Cisco IOS XE Dublin 17.11.1a

There are no new features in this release.

What's New in Software for Cisco IOS XE Dublin 17.11.1a

Feature	Description
CEM	
Support for 3-in-24 BERT patterns	Support for 3-in-24 BERT patterns on the following interface modules and modes: • 48-port T1 or E1 interface module • 48-port T3/E3 interface module • 1-Port OC-48 or 4-Port OC-12/OC-3 interface module • NCS 4200 Combo 8-Port SFP GE and 1-Port 10 GE 20G Interface Module (NCS4200-1T8S-20CS) • STS-1 mode

Feature	Description
System CESoP NxDS0 BERT	You can configure BERT patterns at the DS0 level on the following interface modules for both the system and line directions. • 48-Port T1 or E1 CEM interface module • 48-Port T3 or E3 CEM interface module • 1-port OC-48/STM-16 or 4-port OC-12/OC-3 / STM-1/STM-4 + 12-port T1/E1 + 4-port T3/E3 CEM interface module • NCS 4200 Combo 8-port SFP GE and 1-port 10 GE 20G interface module You can configure speed with bandwidth of 56 kbps or 64 kbps along with the BERT pattern. With DS0 level BERT configuration, you can verify the end-to-end connectivity.
Frame Relay Port Mode	Frame Relay (FR) port mode provides transport between two Provider Edge (PE) devices, where the complete FR frame is transported using the same encapsulation configured for the HDLC or FR pseudowire. On the PE device, the multiple FR Virtual Circuits (VCs) are carried over a single interface and the traffic is passed into a single transparent HDLC or FR pseudowire in an MPLS network. Thus with port mode, there are many-to-one mappings between multiple FR VCs and a pseudowire in a secure manner. You can configure HDLC or FR port mode on the following interface modules: • NCS4200-3GMS and NCS4200-1T8S-20CS
Layer 3 Termination for Frame Relay	You can configure layer 3 termination on the Frame Relay (FR) and Mulitlink Frame Relay (MFR) sub interface for the following interface modules: • NCS4200-3GMS • NCS4200-1T8S-20CS You can assign IP address on the FR sub interface and terminate the Layer 3 traffic where ever required in the network. • Layer 3 Termination for Frame Relay • Multilink Frame Relay (MFR) Layer 3 Termination
IP Routing: BFD	
Micro BFD Support on Port Channel with EFPs	A Micro Bidirectional Forwarding Detection (Micro-BFD) session can detect failures in member links of a port channel. You can now enable Micro-BFD sessions for a port channel on which Ethernet flow Point (EFP) or service instance is configured. This feature ensures that traffic is forwarded to a member link only when the micro-BFD session for that member link is in the UP state. As part of this feature, the **source-service-instance** *number* keyword has been added to the **port-channel bfd** command. The specified service instance provides the source IP address for the micro-BFD session.

Feature	Description
Timing and Synchronization	
NTP Support for IPv6 Networks	Network Time Protocol (NTP) synchronizes device clocks across networks to maintain system accuracy. In this release, NTP supports IPv6 multicast networks. The NTP server sends clock updates as multicast messages to the clients across IPv6 networks. As NTP packets are sent only to the intended clients, it reduces timing traffic in the network.
Programmability	
gNMI Dial-Out Using gRPC Tunnel Service	This feature allows you to configure a network device (tunnel client) to register certain targets (preapproved services) with a gRPC tunnel server through the CLI. These targets are defined as ports on the network device. You can use the gRPC tunnel server to forward connections from external clients, such as gRPC Network Management Interface (gNMI)/gRPC Network Operations Interface (gNOI), to connect to the network device without establishing a direct connection. The following commands are introduced for the tunnel and target configurations respectively: • **gnxi grpctunnel destination** *server name* • **gnxi grpctunnel target**
Software Activation	
No License Snapshot Support	License snapshot won't be generated starting from this release and the software relies only on the existing snapshot for any PAK license information.
Strong Crypto Algorithms	
Strong Crypto Algorithms	We strongly recommend stronger cryptographic algorithms instead of weak cryptographic algorithms, such as RSA keys of less than 2048 bits, MD5 for authentication, DES, and 3DES for encryption. Soon, such weak algorithms will no longer be allowed by default. An explicit configuration is required to continue using such weak algorithms. For SNMP v3 users with weak cryptographic properties, the SNMP operations to the device will fail, resulting in loss of management access to device through SNMP. Similarly, if the RSA key pair is not updated to be at least 2048 bits for SSH, the SSH server will be disabled, resulting in loss of remote access to the device through SSH. For more information on how to migrate to stronger cryptographic algorithms for SNMP, see the Field Notice Number: FN72509. For more information on how to migrate to stronger cryptographic algorithms for SSH, see Field Notice Number: FN72511.
YANG	

Feature	Description
YANG Support for show l2vpn atom vc detail Command	The Cisco-IOS-XE-l2vpn-oper native model is a collection of YANG definitions for L2VPN services operational data. Additional leaves and lists are now supported in the following sensor path: **Cisco-IOS-XE-l2vpn-oper\l2vpn-oper-data\l2vpn-services\l2vpn-atom-vc-info** With this model, you can get detailed information, such as the L2VPN service name, service type, interface name, peer address, status, encapsulation type, virtual circuit ID, and packet information by using a NETCONF RPC. In earlier releases, you could perform this action by using the following CLI: **show l2vpn atom vc detail** **Note** There is existing YANG support for the following related CLIs in the **Cisco-IOS-XE-l2vpn-oper** native model: • **show l2vpn service xconnect peer peer_id vcid vcid** • **show l2vpn atom commands** YANG Data Models—For the list of Cisco IOS XE YANG models available with this release, navigate to https://github.com/YangModels/yang/tree/main/vendor/cisco/xe. Revision statements embedded in the YANG files indicate if there has been a model revision. The README.md file in the same GitHub location highlights changes that have been made in the release.

CHAPTER 3

Caveats

This chapter describes open and resolved severity 1 and 2 caveats and select severity 3 caveats:

- The "Open Caveats" sections list open caveats that apply to the current release and may apply to previous releases. A caveat that is open for a prior release and is still unresolved applies to all future releases until it is resolved.
- The "Resolved Caveats" sections list caveats resolved in a specific release, but open in previous releases.

The bug IDs are sorted alphanumerically.

Note The Caveats section includes the bug ID and a short description of the bug. For details on the symptoms, conditions, and workaround for a specific caveat you must use the Bug Search Tool.

Resolved Caveats - Cisco IOS XE Dublin 17.11.1a

Identifier	Headline
CSCwc80493	APS - K2 byte not reflecting proper value during LRDI and LAIS conditions.
CSCwd87661	Router Fan running at high speed and creating noise(Fan PID A903-FAN-H) - SW version 17.03.04
CSCwd16666	Ony in 3GMS OC3 port with network loop Bert pattern is not syncing
CSCwd40951	CEM getting removed successfully even with wrong T1 number provided from same T3/E3
CSCwd66728	The uea_mgr crash seen with uea_brcm_update_hw_stats
CSCwd38074	Alarm reporting to IOS and L-bit propagation missing with STS-1E, CT-3, and E1 mode

Identifier	Headline
CSCwe19162	RSP3: After SSO, False Alarm on CNAAP
CSCwd11926	Need support for dual options in CLI for setting clock rate for x21
CSCwd09785	Overhead DCC tunnel pseudowire not working in port 8 of NCS4200-1T8S-10CS
CSCwc41115	APS 1+1 Uni - Tx K2 to reflect Rx K1 channel number
CSCwd28121	STS-1E & CT-3:E1 loopback syslog and alarm reporting issues
CSCwd28107	RSP3: Bundle rommon version 15.6(57r)S to polaris_dev
CSCwc65971	RSP3: MPLS pseudowirte - Incorrect label stack pushed to packet
CSCwd05100	IM booting up on unsupported slot
CSCwd04198	Wwhen configurations are pasted in a specific order, line config is missing
CSCwd16099	Not able to unconfigure channel-group under STS-48c when 192 STS are used
CSCwd26330	IMA3G does not generate FEBE's when BPV, P-bit, C-bit error are detected on the T3 port
CSCwd48164	EVPN statd resource leak after protocol flaps
CSCwd44817	After router reload E1 framing gets changed to unframed in SDH VC12 mode with channe-group config
CSCwc10211	IMSG: Random VT's are down with LP_AIS due to Peer IMOIR with scale config with AU-4/tug-3/vc11-T1
CSCwe13024	RSP2: All readings for Power supply unit reflect as zero though the unit is functional
CSCwd67723	In IMA32D/IMA8D card, sometimes change in E1 controller config(after ctrlr flap) results in IM reboot
CSCwd26357	rs485 with half-duplex configuration when reloaded, it gets into default full-duplex mode
CSCwd86980	High traffic drop is observed on RPFO
CSCwb68238	CSPN SSH requirement

Open Caveats - Cisco IOS XE Dublin 17.11.1a

Identifier	Headline
CSCwd88680	High Convergence after Port channel member failure.
CSCwd05362	Performance issue on router platform.

Identifier	Headline
CSCwe42290	Netconf intermittent connection issue due to checksum issue.
CSCwe34672	High CPU on ptp_uea process.
CSCwe33848	RSP3: Micro-bfd failed when trunk EFP is configured on the port channel

Cisco Bug Search Tool

Cisco Bug Search Tool (BST), the online successor to Bug Toolkit, is designed to improve effectiveness in network risk management and device troubleshooting. You can search for bugs based on product, release, and keyword, and aggregates key data such as bug details, product, and version. For more details on the tool, see the help page located at http://www.cisco.com/web/applicat/cbsshelp/help.html