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CISCO NCS
4206 Network
Convergence
System

CISCO NCS 4206 Network Convergence System User Guide

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Contents

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CISCO NCS 4206 Network Convergence System

Specifications

- Product: Cisco NCS 4206
- Power Supply: A900-PWR900-D2 DC Power Supply
- Input Voltage: Minimum – Maximum
- Output Voltage: +12 VDC
- Maximum Power Output: 900W

Product Information

- Cisco NCS 4206 Overview
  The Cisco NCS 4206 chassis design includes interface modules, RSP unit, fan tray, and redundant power units.
- Power Supply Features
  The Cisco NCS 4206 supports DC power supplies. Redundancy is supported with optional redundant power supplies for uninterrupted power.
- Redundancy
  If you install a redundant power supply, connect each supply to a separate input source for continuous power in case of failure.
- Status LEDs
  LEDs on each power supply indicate input power status and supply health.
- DC Power Specifications
  The DC power supply is field replaceable and hot-swappable. The supported model is A900-PWR900-D2 with a maximum power output of 900W.
- Fan Tray
  The fan tray module contains twelve fans for continuous operation even in case of individual fan failure.

Product Usage Instructions

- **Installing the Power Supply**
  Refer to the user manual for detailed instructions on installing the DC power supplies.
- **Redundant Power Supply Installation**
  To install a redundant power supply, connect each supply to a separate input power source for continuous operation during failures.

- **LED Troubleshooting**

  Refer to the Troubleshooting section in the user manual for information on interpreting the LEDs on the Cisco NCS 4206.

- **Installing the Fan Tray**

  Follow the installation instructions provided in the user manual for installing the fan tray module.

FAQ

- **Q: Can I use different power supply models with Cisco NCS 4206?**

  A: The Cisco NCS 4206 supports the A900-PWR900-D2 DC power supply model. It is recommended to use compatible models for optimal performance and safety.

- **Q: How many fans are included in the fan tray of Cisco NCS 4206?**

  A: The fan tray of Cisco NCS 4206 contains twelve fans to ensure proper cooling and operation.

Cisco NCS 4206 Overview

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.
The Cisco NCS 4206 is positioned as a pre-aggregation chassis in IP RAN (GSM, UMTS, iMAX, CDMA, and LTE) networks or an aggregation chassis in Carrier Ethernet networks.
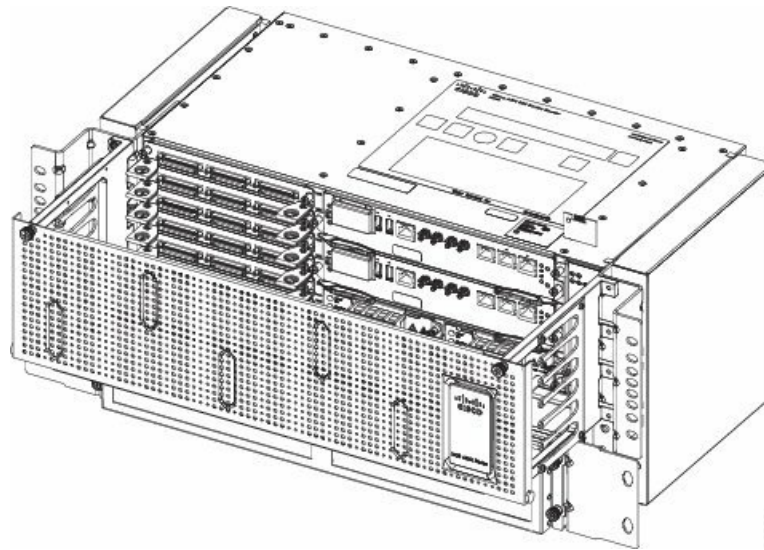
Cisco NCS 4206 Features
The Cisco NCS 4206 has the following hardware features:

- 3-RU modular chassis designed for installation in a 23-inch EIA rack
- Dedicated slots in the chassis that support the following:
- Up to six interface modules
- Up to two Route Switch Processors (RSP)
- Up to two DC power supply units
- One fan tray
- Network frequency, phase, and time inputs and outputs for network interfaces (SyncE and TDM), BITS, 1 PPS or 10 MHz and Timing over Packet (IEEE 1588-2008)
- Adjustable front and rear rail mounting locations
- Front panel access to power supplies, fan tray, RSPs, and interface modules
- Online insertion and removal (OIR) of RSP, interface modules, power supplies, and fan tray
- Discrete status LEDs on power supply, interface module, RSP, and fan tray units
- Four alarm dry contact inputs (either normally open or normally closed)
- Environmental monitoring and reporting functions

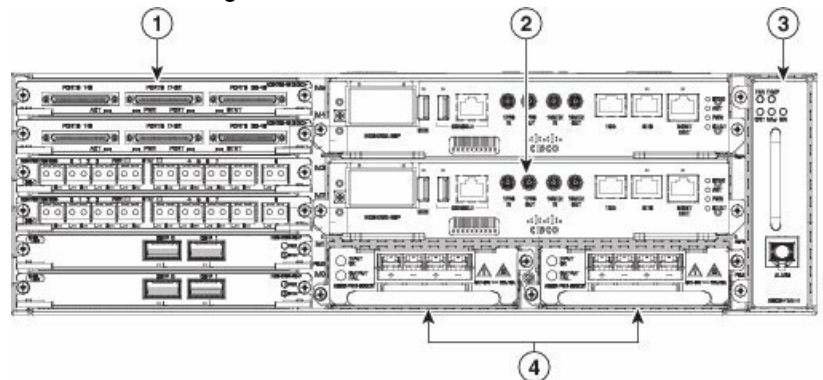- LED indicators for critical, major, and minor alarms

Side-to-side forced air cooling

Figure 1: Cisco NCS 4206 Chassis with Door

The figure below illustrates the Cisco NCS 4206 chassis design.
Figure 2: Cisco NCS 4206 Chassis Design

1	Interface modules
2	RSP unit
3	Fan tray
4	Redundant power units (two DC power units are shown)

Power Supply Features
The Cisco NCS 4206 support DC power supplies. For more information about installing the Cisco NCS 4206 power supplies, see Installing the Power Supply.

- To estimate the required power supply, use the Cisco Power Calculator.
- The power sections provide more information about the power supply.

Redundancy

- The Cisco NCS 4206 chassis includes a slot for an optional redundant power supply. The redundant power supply option provides a second power supply to ensure that power to the chassis continues uninterrupted if

one power supply fails or input power on one line fails. Redundancy is supported either with identical power supplies or a combination of DC power supply. The Cisco NCS 4206 supports current sharing between the power supplies.

- If you install a redundant power supply on the Cisco NCS 4206, we recommend that you connect each power supply to a separate input power source in order to ensure that the chassis maintains power in the event of a power interruption caused by an electrical failure, a wiring fault, or a tripped circuit breaker.

Status LEDs
LEDs are also provided on each power supply to indicate the status of the input power and the health of the power supply. For more information about the LEDs on the Cisco NCS 4206, see Troubleshooting.

DC Power Specifications

- The power supply contains a front panel with mounting screws, a handle for insertion and removal, and two status LEDs. No ON/OFF switch is provided. The power supply is field replaceable and hot-swappable.
- The DC power supply model supported on the chassis is:
- A900-PWR900-D2—Provides 900 W output power for system. See the figure below.

Figure 3: A900-PWR900-D2 DC Power Supply
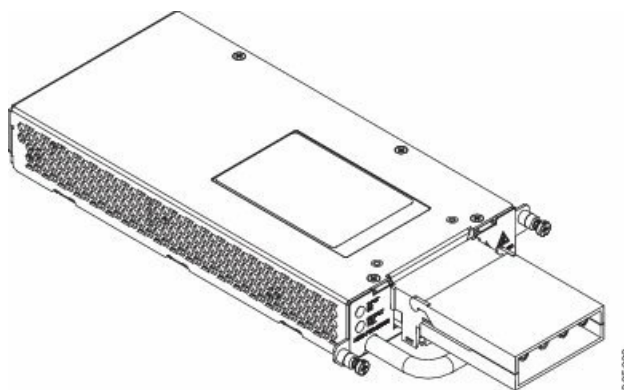
The A900-PWR900-D2 DC power supply module comes with a protective front cover.

Part numbers	A900-PWR900-D2
Input power specification	48V, GND, –48V
Minimum input voltage	–40.0 V
Maximum input voltage	–72 VDC
Input current specification	22A @–48VDC 18A @–60VDC
Output voltage	+12 VDC
Wire gauge for DC input power connections	6 or 8 or 10 AWG for –48/–60 VDC
Maximum power output	900 W

For more information on installing the power supply, see Installing DC Power Supply Unit (A900-PWR900-D2).

Fan Tray

The fan tray has the following hardware features:

- It provides side-to-side forced air cooling
- It is field replaceable
- It contains status LEDs
- It contains an alarm port with four external alarm inputs

The fan tray module supported on the chassis is:
A903-FAN-H

For more information about air flow guidelines, see Air Flow Guidelines. For instructions on how to install the fan tray, see Installing the Fan Tray. For a summary of the LEDs on the fan tray, see LED Summary.

Fan Tray (A903-FAN-H)
The Cisco NCS 4206 uses a modular fan tray that is separate from the power supply. The fan tray contains twelve fans and provides sufficient capacity to maintain operation indefinitely in the event of an individual fan failure.

Figure 4: Cisco NCS 4206 Fan Tray (A903FANH)
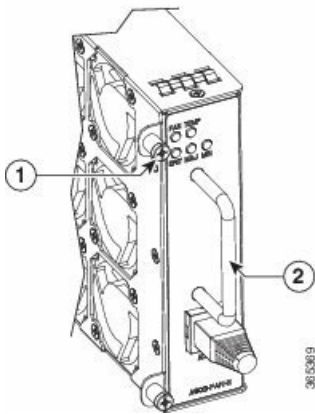
1	Fan tray screw	2	Handle

Plenum
Plenum or air baffle assembly (see the figure below) is used to change the air flow pattern of the unit. When the chassis is installed with the plenum, the air flow pattern is changed from side-side to front-back. The air flow front-back pattern provides a rack installation bay with a cool front zone and hot rear zone. For installing the plenum, see Installing the Chassis in the Plenum.

Figure 5: Chassis in Plenum
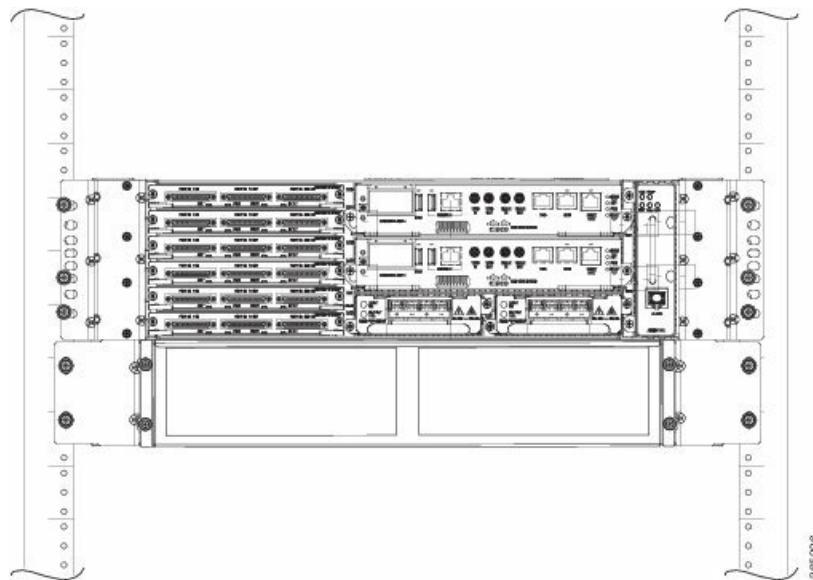
Note

When the plenum and air filter are installed in the chassis, the system operating temperature is 55 degrees Celsius.

- The air filter must be removed for cleaning or for a replacement.

Air Filter Maintenance

- A periodic health check of the filter, every 3 months based on the level of dust in the environment helps in avoiding over clogging of the filters and provide better life. The filter may be used as a single use or reused depending upon the local deployment needs. If reuse of the filter is prohibited, it may be replaced every six months.
- If reused, this filter media may be cleaned with slightly compressed air, vacuumed, and/or rinsed with clean water. If a degreaser is required, use only a mild detergent, such as, dish washing liquid.
- Caution Avoid using harsh solvents or cleaning agents.
- If filter is cleaned with water, the filter should be completely dry before reinstalling. Even though this type of filter may be cleaned, replacement is recommended every two to three years to ensure media durability and eliminate residual dust build-up and subsequent air flow resistance.

RSP Modules

- The Cisco NCS 4206 is designed to use up to two RSP modules to handle the data plane, network timing, and control plane functionalities for the chassis. The RSP configuration allows you to use Cisco
- IOS software to control chassis management, redundancy, external management, and system status indications on the chassis.
- RSP features include:
  - Loading software onto processor-based interface modules
  - Redundant RSP management—The RSP manages detection of RSPs, exchange of health and status information, role negotiation, function for detection, health and status exchange, role negotiation
  - Packet processing
  - Traffic management, including buffering, queuing, and scheduling, Ethernet MAC functions

- Network clocking functions including phase and time-of-day for BITS, 1 PPS, 10 MHz, and 1588 PTP clock references
- Storage of software images, system configuration, OBFL, SysLog
- PTP packet processing including IEEE 1588-2008 for recovering network timing (frequency, phase, and time) from upstream PTP clocks, for generating PTP frequency and phase references as inputs to the SETS, and for distributing them to downstream PTP clocks
- External management interfaces (RS232 console, management ENET, USB console, USB storage) and system status LED indicators

Supported RSPs
The Cisco NCS 4206 supports the following RSP module:

- NCS420X-RSP—Provides 8 GB DDR3 memory, 64MB flash memory, 20 Mb of TCAM memory, 400 Gbps throughput, and a USB port for mass storage on the faceplate.
- NCS4206-RSP—Provides 4 GB double data rate type three (DDR3) memory, 128 Gbps aggregate throughput.

The RSP modules do not provide external network interfaces for user traffic. All network interfaces are provided via separate interface modules.

Figure 6: NCS420X-RSP RSP Module
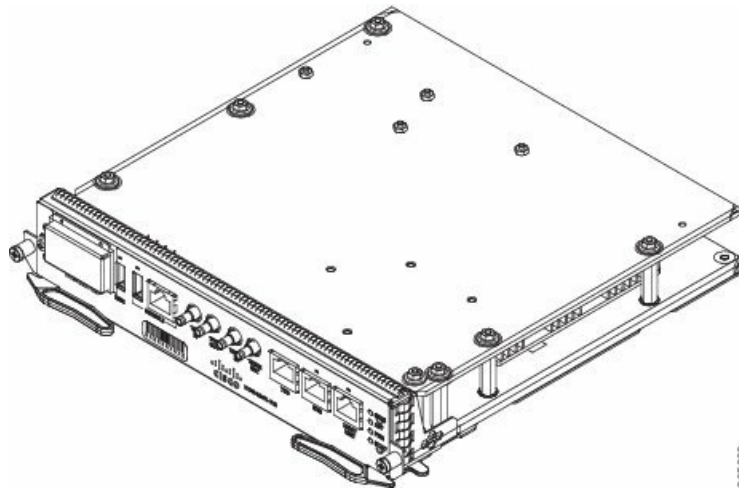
Supported Interface Modules

- 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 2: 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 3: 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

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

Supported RSP Features

The RSP provides the following features:

- Centralized data plane, timing, and control plane functions for the system.
- High-level control of interface modules.
- Management functionalities for the chassis.
- Control plane (host) CPU and associated memory in which IOS-XE and platform control software runs.
- Nonvolatile memory for storage of software images, configurations, and system files.
- Enabling and monitoring the health and presence of fan trays, interface modules, and power supplies.
- Field replacement and hot-swap capabilities.

RSP Redundancy

The Cisco NCS 4206 chassis includes two RSP slots to allow for redundant RSPs. When the chassis uses redundant RSPs, one RSP operates in the active mode and the other operates in the hot standby mode. Removal or failure of the active RSP results in an automatic switchover to the standby RSP.

Network Timing Interfaces

The RSP supports the following network timing interfaces:

- BITS input/output port—RJ48 jack
- 1 PPS input and output—Mini coax connectors
- 2.048 or 10 MHz input and output—Mini coax connectors
- Time of Day (ToD) or input/output port and 1 PPS input port—Shielded RJ45 jack

  Network timing interfaces support redundancy in a redundant RSP configuration. Network timing interfaces on

  a redundant RSP remain in operation while the RSP is in hot standby mode.

RSP Interfaces

The figure below summarizes the interfaces on the RSP module.
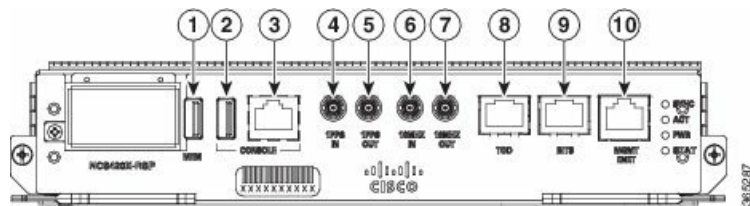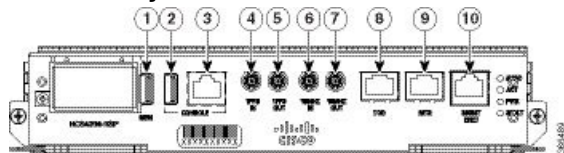
Figure 7: RSP Interface Summar

Figure 8: NCS4206-RSP Interface Summary

Label	Interface
1	USB memory port

Label	Interface
2	USB console port
3	Console port
4	1 PPS input timing port
5	1 PPS output timing port
6	10 MHz input timing port
7	10 MHz output timing port
8	Time of Day (ToD) timing port
9	BITS timing port
10	Ethernet management port

The Cisco NCS420X-RSP module has the following front panel interfaces. For information on cable pinout, see Pinouts.

- 1 USB Type-A Connector for USB-flash (Label = "MEM")
- 1 USB Type-A Connector for alternate console port (Label = "CONSOLE")
- RJ45 Connector for Con/Aux (Label = "CONSOLE")
- RJ48 Jack for BITS interface. (Label = "BITS")
- RJ48 Jack for Time-of-Day interface. (Label= "TOD")
- RJ45 Connector for Con/Aux (Label = "MGMT ENET")
- 4 Mini-Coax connectors (Label = "1PPS IN", "1PPS OUT", "10MHZ IN", "10MHZ OUT")

For more information about installing the RSP, see RSP Installation. For more information about the RSP LEDs, see RSP LEDs.

Power Supply Features

- The Cisco NCS 4206 support DC power supplies. For more information about installing the Cisco NCS 4206 power supplies, see Installing the Power Supply.
- To estimate the required power supply, use the Cisco Power Calculator.
- The power sections provide more information about the power supply.

Interface Modules

The Cisco NCS 4206 Router interface modules are a field-replaceable unit. In addition to the ports provided on an RSP, the Cisco NCS 4206 Router supports the following interface modules:

8-port 10 Gigabit Ethernet Interface Module (8X10GE)

- Figure 9: 8×10 Gigabit Ethernet Interface Module
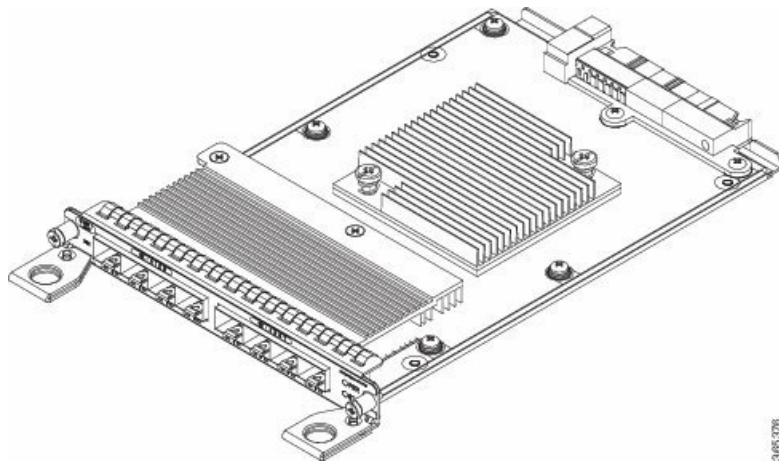
- Figure 10: NCS4200-8T-PS Faceplate
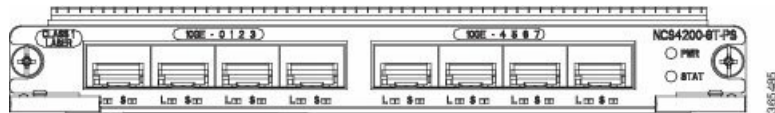
- The high density 8×10 Gigabit Ethernet interface module supports eight 10 Gigabit Ethernet ports using SFP+ transceivers cages on the faceplate.
- Note 8×10 Gigabit Ethernet interface module does not support XFP transceivers on the ports.

  For more information about installing a 8X10GE module, see Interface Module Installation.

1-port 100 Gigabit Ethernet Interface Module (1X100GE)
The single port 100 Gigabit Ethernet interface module supports 100 Gigabit Ethernet port.

Figure 11: 1×100 Gigabit Ethernet Interface Module
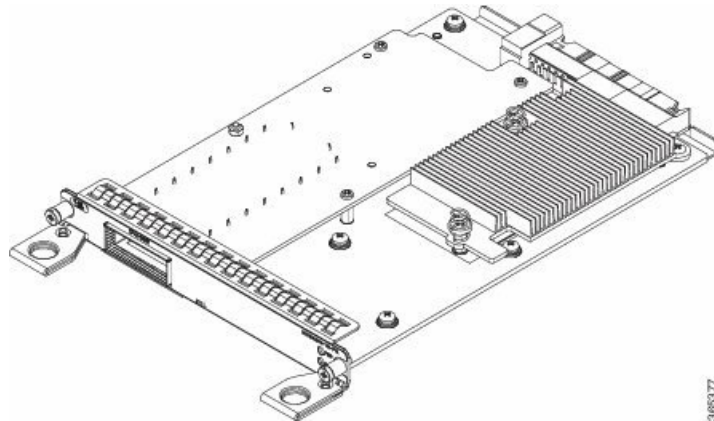
Figure 12: NCS4200-1H-PK Faceplate
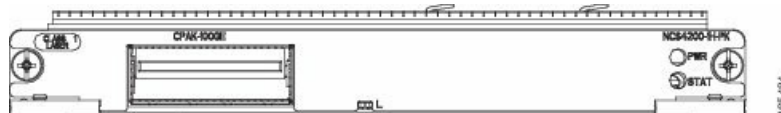
For more information about installing a 1X100GE module, see Interface Module Installation.

2-Port 100 Gigabit Ethernet Interface Module (2X100GE)
The 2-port 100 Gigabit Ethernet Interface Module (NCS4200-2H-PQ) design supports only one 100G QSFP28 optics on Port 0. Port 1 is disabled with RSP3. It currently supports only one mode of operation with 100Gbps of traffic with RSP3.
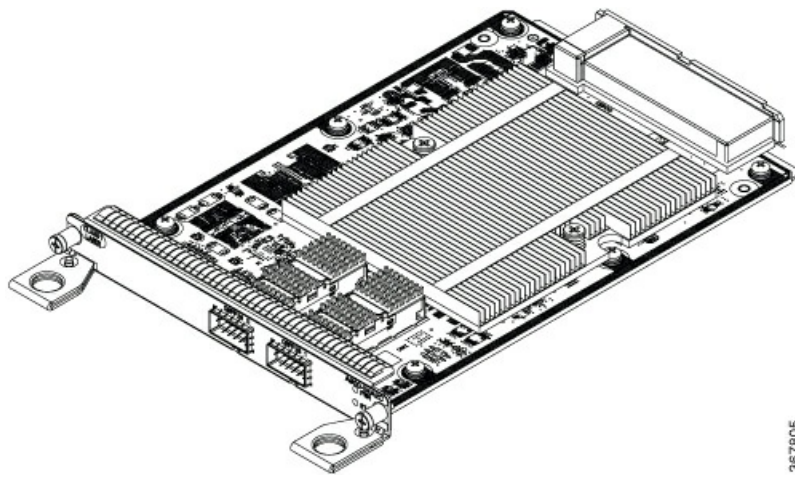
Limitations of 2X100 GE IM

- After any QSFP28 100G optics is inserted, it takes approximately 10 seconds for the optics to be detected and the link to come up. We recommend this time delay for complete initialization and operation.
- After inserting the cable or after unshutting the 100G interface, the 100G link may take approximately about 2 seconds to come up.
- Note QSFP-100G-SR4-S and QSFP-100G-LR4-S are the supported optics for 2X100GE IM for the release 16.10.1.

8×1 Gigabit Ethernet SFP + 1×10 Gigabit Ethernet SFP+ Combination Interface Module

The 8-port 1 Gigabit Ethernet SFP interface module with the 1-port 10 Gigabit Ethernet interface module is a high density combination interface module. This module supports 8 Gigabit Ethernet SFP ports and 1 10 Gigabit Ethernet SFP+ port.

Figure 13: 2×40 Gigabit Ethernet Interface Module
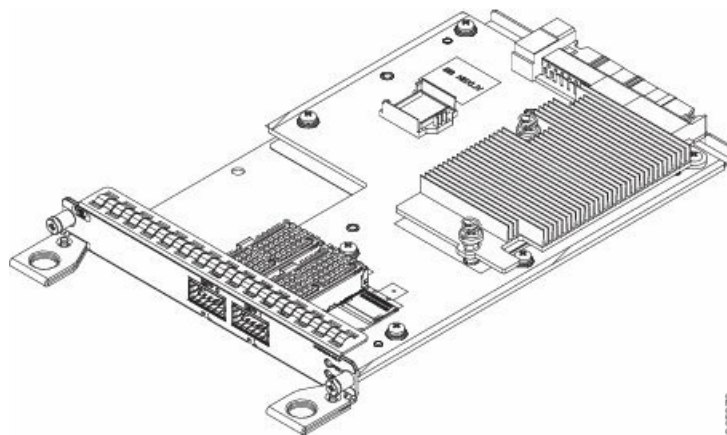
Figure 14: NCS4200-20Q-P Faceplate
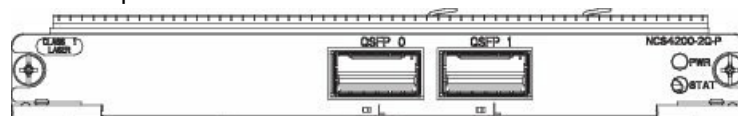
For more information about installing the 8X1 GE SFP + 1X10 SFP Gigabit Ethernet module, seeInterface Module Installation.

**2-port 40 Gigabit Ethernet QSFP Interface Module (2X40GE)**

- The dual port 40 Gigabit Ethernet interface module supports the 40 Gigabit Ethernet port. The 40G interface is supported using QSFP+ optics.

For more information about installing a 2X40 GE module, see Installing an Interface Module.
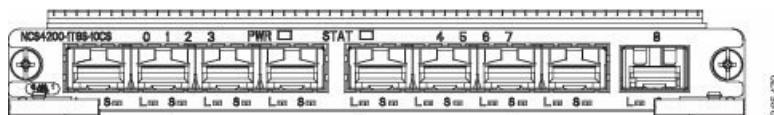
- **1-port OC-192 or 8-port Low Rate CEM Interface Module (10G HO / 10G LO)**
  The OC-192 interface module with 8-port low rate CEM interface module is a high density combination interface module. This module supports 1-port OC-192 port or 8 low rate CEM or 1 Gigabit Ethernet port.
- Figure 15: OC-192 Interface Module
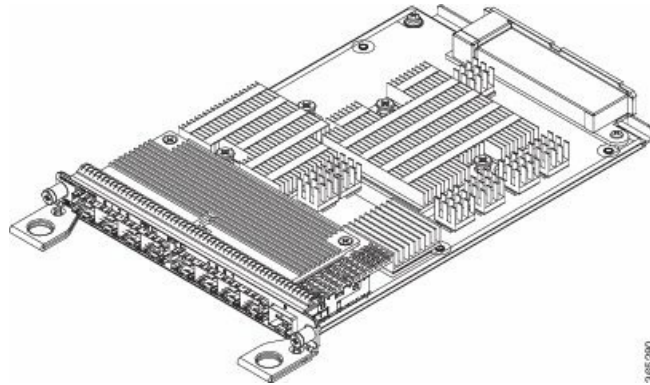
- Figure 16: NCS4200-1T8S-10CS Faceplate

- The OC-192 interface modules are supported on slots 2, 3, 4 and 5 on the chassis.
- Ports on the OC-192 are numbered from 1 to 8.
- Ports 0 to 7 are multi-rate ports, that support OC-3, OC-12, OC-48, Fast Ethernet interfaces, and the 1 Gigabit Ethernet interfaces.
- Port 8 is the 10 Gigabit Ethernet port that supports the OC-192 interfaces.

Port Restrictions

- The SFP+ port configuration is supported only on OC-192 interfaces port. If this port is enabled, other SFP ports cannot be used (see the table below).
- Each SFP port can be configured for SONET or Ethernet.
- SFP ports configuration parameter, (see the table below):
- Maximum of 4 x OC-48 interfaces are supported per interface module
- For each OC-48 port enabled, neighboring SFP ports cannot be configured
- OC-3 and OC-12 port configuration is supported on all ports simultaneously
- 1 Gigabit Ethernet port configuration is supported on all ports simultaneously

Note 1 Gigabit Ethernet port configuration is not supported in Cisco IOS XE Release 3.18S.
Seamless migration from SONET to 1 Gigabit Ethernet interfaces is supported on all SFP ports.

Port Combinations Usage Guidelines

SFP + Port	SFP + Port 8	OC-192		SFP + Port	SFP + Port 8	—		SFP + Port	SFP + Port 8	—		SFP + Port	SFP + Port 8	—
	7	—			7	OC-48			7	OC-3			7	1 GE
SPF Port	6	—		SPF Port	6	—		SPF Port	6	OC-12		SPF Port	6	1 GE
	5	—	Or		5	OC-48	Or		5	OC-12	Or		5	1 GE
	4	—			4	—			4	OC-3			4	1 GE
	3	—			3	OC-48			3	OC-3			3	1 GE
	2	—			2	—			2	OC-12			2	1 GE
	1	—			1	OC-48			1	OC-12			1	1 GE
	0	—			0	—			0	OC-3			0	1 GE

For more information about installing the OC-192 interface module, see Interface Module Installation.

NCS 4200 1-Port OC-192 or 8-Port Low Rate CEM 20G Bandwidth Interface Module (NCS4200-1T8S-20CS)

- The NCS 4200 1-Port OC-192 or 8-Port Low Rate CEM 20G Bandwidth Interface Module, iMSG is a cost-effective interface module (IM) that supports CEM and Multiservice Gateway features on the OCn interfaces.
- Note The Multiservice Gateway features are not supported on this IM on Cisco IOS XE Release 16.12.1.

Figure 17: CEM and iMSG Interface Module
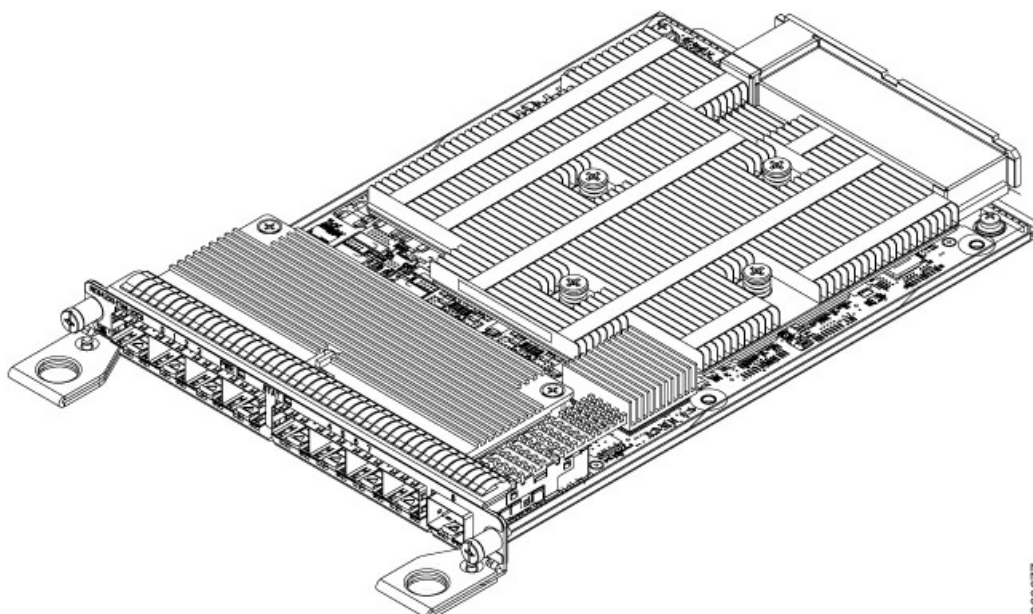
The NCS 4200 1-Port OC-192 or 8-Port Low Rate CEM 20G Bandwidth Interface Module, iMSG IM supports eight SFP optical interfaces supporting at OC-3/OC-12/OC-48/1G rates and a single SFP+ optical interface supporting at OC-192/10G.

This IM operates in two modes:

- 20G mode; uses two XFI lanes towards the system
- 10G mode; uses single XFI lane towards the system

The benefits of this IM are:

- Improves backplane efficiency
- Increases system capacity
- Increases client flexibility

The most important feature of the NCS 4200 1x10G MR + 8x20G LR CEM, iMSG IM is it provides more flexibility from the interface, which allows you to configure any interface speed on the OCn port irrespective of the IM bandwidth. The bandwidth restriction comes into effect only when the circuit is configured.

For example, you can configure the SFP+ port as an OC-192 and the other eight optical ports as OC-48 to have the total interface speed of 30G. However, if you configure only one STS-1 HO CEP on each port that will take only 9xSTS-1, which is equivalent to 500 Mbps (9 x 52Mbps x1.06) of the backplane traffic.

- On the port capable of OC-192 speed, lower speed such as, OC-3, OC-12, or OC-48 are not supported.
- No license is required to enable the Ethernet, OTN and Sonet/SDH functionalities.
- The SFP port supports OC-3, OC-12, and OC-48. SFP+ port supports OC-192.

Support Information

Table 4: Supported RSP and Slots

Router	RSP Module	Recommended Slots	Supported Mode
NCS 4206	A900-RSP3-400	2, 3, 4, 5	10G or 20G
NCS 4216[5]	A900-RSP3-400	3, 7, 11	10G or 20G **Note** To enable this IM on slot 0 or slot 1, do the following: Router # configure t Router(config)# license feature service-offload enable Reload the router.
		5, 9, 13, 15	10G
NCS 4216 F2B	A900-RSP3-400	0, 1, 2, 5, 6, 9, 10, 13, 14, 15	10G
	A900-RSP3-400	3, 4, 7, 8, 11, 12	20G

If this IM is inserted in any of the even-numbered slots, the corresponding odd-numbered slot must be unused and filled with a blank.

8/16-Port 1 Gigabit Ethernet (SFP / SFP) + 1-port 10 Gigabit Ethernet (SFP+) /2-port 1 Gigabit Ethernet
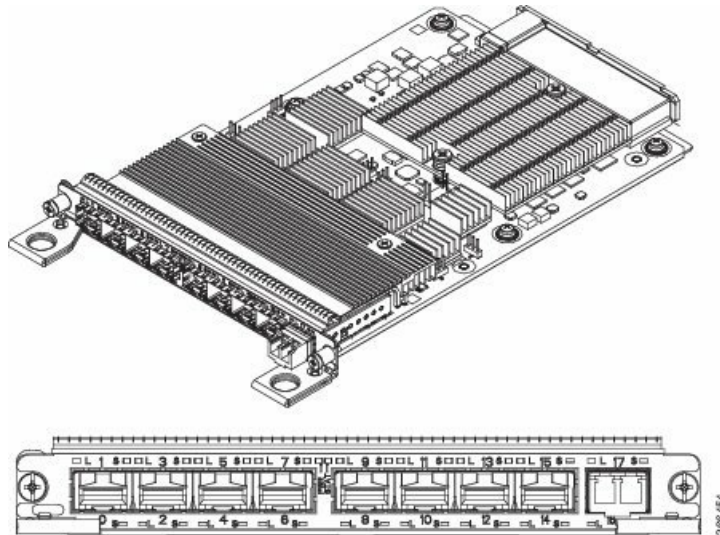
(CSFP) Interface Module

The NCS4200-1T16G-PS interface module has the flexibility to support SFP+/SFP/CSFP on the modules as mentioned below:

- The 8-port 1 Gigabit Ethernet ports can also be used as 16-port 1 Gigabit Ethernet ports Small Form-Factor Pluggable (SFP) .
- The 1-port 10 Gigabit Ethernet port can also be used as 2-port 1 Gigabit Ethernet ports with Small Form-Factor Pluggable (SFP+).

Figure 18: NCS4200-1T16G-PS Gigabit Ethernet Interface Module

The following modes are supported for the Interface Module, based on slot capacity:

- 8 x 1GigE (SFP) Fully subscribed mode (FS)
- 8 x 1GigE (SFP) + 1 x 10GigE (SFP+) Fully subscribed mode (FS)
- 16 x 1GigE (C-SFP) + 1 x 10GigE (SFP+) Fully subscribed mode (FS)
- 16 or 18 x 1GigE (C-SFP) Oversubscribed mode (OS)
- 16 x 1GigE (C-SFP) + 1 x 10GigE (SFP+) Oversubscribed mode (OS)
- 8 or 9 x 1GigE (SFP) Fully subscribed mode (FS)
- 1 x 10GigE (SFP+) Fully subscribed mode (FS)

For more information about installing a 1xSFP or CSFP and 8xSFP or CSFP, see Installing an Interface Module. For more information on port numbering, see Configuring 8/16-port 1 Gigabit Ethernet (SFP/SFP) + 1-port 10 Gigabit Ethernet (SFP+) / 2-port 1 Gigabit Ethernet (CSFP) Interface Module chapter of the Cisco NCS 4200 Series Software Configuration Guide, Cisco IOS XE Fuji 16.7.x.

1-Port OC48/ STM-16 or 4-port OC-12/OC-3 / STM-1/STM-4 + 12-port T1/E1 + 4-Port T3/E3 CEM Interface Module

The NCS4200-3GMS interface module supports:

- 12xDS1/E1 + 4xDS3/E3/STS-1e interface over the high-density port.
- 1xOC48/12/3 or 1GE interface and 3xOC12/3 or 1GE interface.

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

Figure 19: NCS4200-3GMS Gigabit Ethernet Interface Module
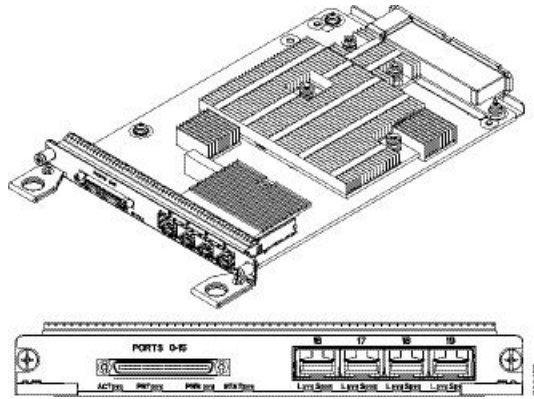
For more information on the supported SFP modules, see the Cisco NCS 4200 Series Network Convergence System Interface Modules Data Sheet.

48-port T1/E1 CEM Interface Module

The 48-port T1/E1 interface module provides connectivity for up to 48-port T1/E1 ports through 3 high-density connectors on the front panel (see the figure below). Each port supports 16 TX and RX ports. For information on LEDs, see Troubleshooting.

Figure 20: 48-port T1/E1 Interface Module
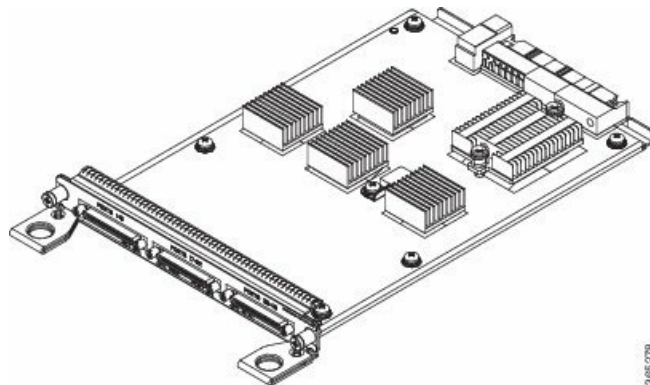
Figure 21: NCS4200-48T1E1-CE Faceplate
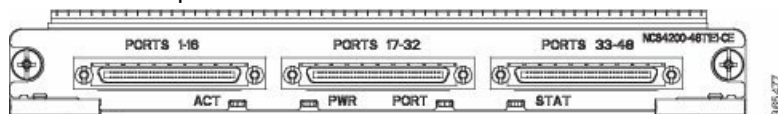
For more information about installing the 48-port T1/E1 interface module, see Interface Module Installation.

48-port T3/E3 CEM Interface Module

The 48-port T3/E3 interface module provides connectivity for up to 48-port T3/E3 ports through 3 high-density connectors on the front panel (see the figure below). Each port supports 16 TX and RX ports. For information on LEDs, see Troubleshooting.

Figure 22: 48-port T3/E3 Interface Module
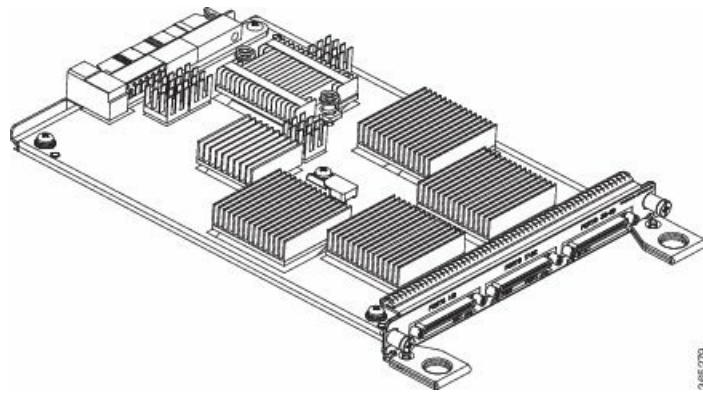
Figure 23: NCS4200-T3E3-CE Faceplate
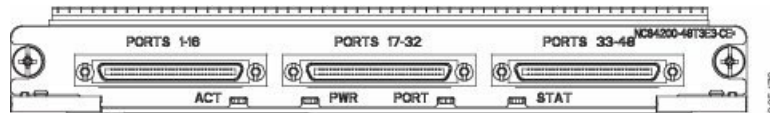
For more information about installing the 48-port T3/E3 interface module, seeInterface Module Installation.

8-port T1/E1 Interface Module (A900-IMA8D)
The 8-port T1/E1 interface module provides connectivity for up to 8 T1/E1 ports through RJ48C port connectors on the front panel. The figure below shows the interface module. For information on supported slots, see Supported RSPs.

Figure 24: 8-portT1/E1 Interface Module
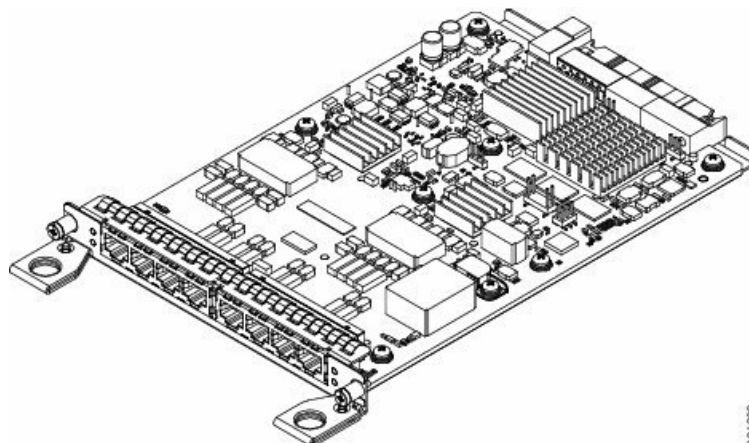
Temperature Sensor

The Cisco NCS 4206 has a temperature sensor to detect overtemperature conditions inside the chassis.

Temperature Sensors on the RSP modules

- The maximum operating temperature of NCS420X-RSP module and the interface modules is less than the maximum operating temperature of the Cisco NCS 4206.
- The IOS XE software decides the appropriate temperature thresholds to generate warnings, and shuts down the system when abnormally high temperature is detected.

Patch Panels

- The Cisco router has patch panels modules that provide interconnections with the interface modules.

- The following table shows different types of patch panel:

Table 5: T1/E1 Patch Panel

Patch Panel	Description
PANEL-48-1-DIN	48X75 ohm E1/DS1 termination, through DIN 1.0/2.3 connectors
PANEL-48-1-RJ48	48X120 ohm E1/110 ohm DS1 termination, through RJ 48C connector
PANEL-48-1-AMP64	48X120 ohm E1/110 ohm DS1 termination, through 4xAMP 64-pin
PANEL-144-1-AMP64	144X120 ohm E1/110 ohm DS1 termination, through 12XAMP64-pin

Patch Panel	Description
PANEL-48-3-DIN	48X75 ohm E3/DS3 termination, through DIN 1.0/2.3 connectors
PANEL-48-3-HDBNC	48X75 ohm E3/DS3 termination, through HDBNC connectors

The 48 X T1/E1 TDM interface modules and 48 X T3/E3 TDM interface modules supports a maximum of 48 TDM ports. These ports are available on the interface modules through three Very-High-Density Cable Interconnect (VHDCI) 16-port connectors. The patch panels listed above make these 48 ports available to the user via different port densities (48- or 144-port patch panels) with standard Telco connectors (DIN, RJ48, and AMP64 for T1/E1 and DIN, HDBNC for T3/E3).

- **Figure 25: VHDCI 16-port Connectors Interface View**
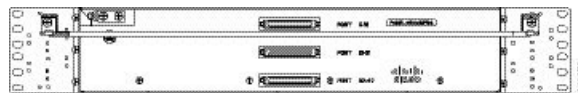
- **Figure 26: PANEL-48-1-RJ48 Interface View**

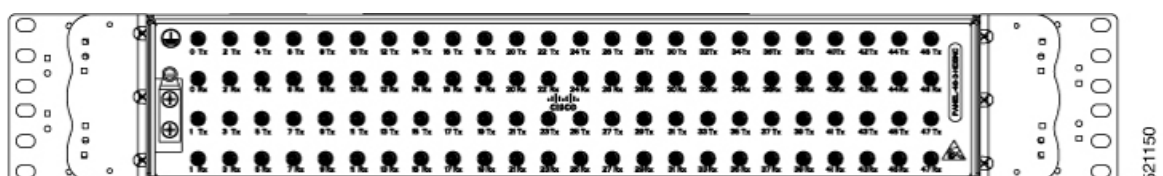- **Figure 27: PANEL-48-1-AMP64 Interface View**

- **Figure 28: PANEL-48-1-DIN or PANEL-48-3-DIN Interface View**
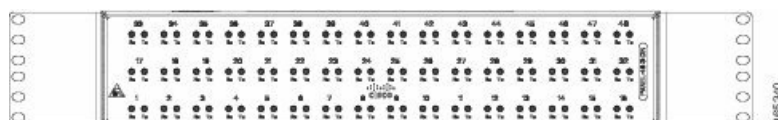
- **Figure 29: PANEL-144-1-AMP64 Interface View**
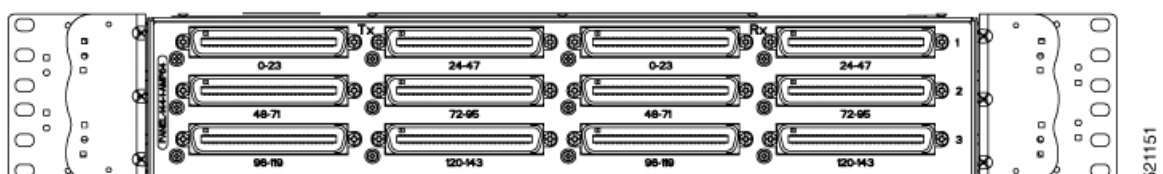
- **Figure 30: PANEL-48-3-HDBNC InterfaceView**
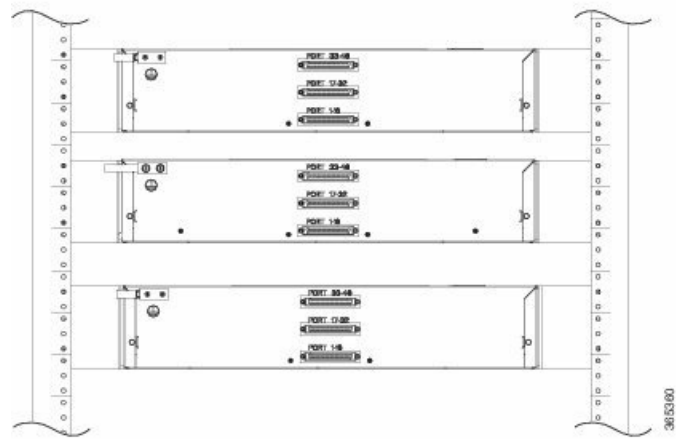
- **Figure 31: Patch Panel System Interface View**

Table 7: PANEL-16-DIN

Patch Panel	Description
PANEL-16-DIN	16X75 ohm E1 termination, through DIN 1.0/2.3 connectors

The 48 X T1/E1 TDM interface modules and the 48 X T3/E3 TDM interface modules support a maximum of 48 TDM ports. These ports are available on the interface modules through three Very-High-Density Cable Interconnect (VHDCI) 16-port connectors. The patch panels listed above make these 48 ports available to the user via different port densities (48- or 144-port patch panels) with standard Telco connectors (DIN, RJ48, and AMP64 for T1/E1 and DIN, HDBNC for T3/E3).

- Figure 32: PANEL-16-DIN Interface View
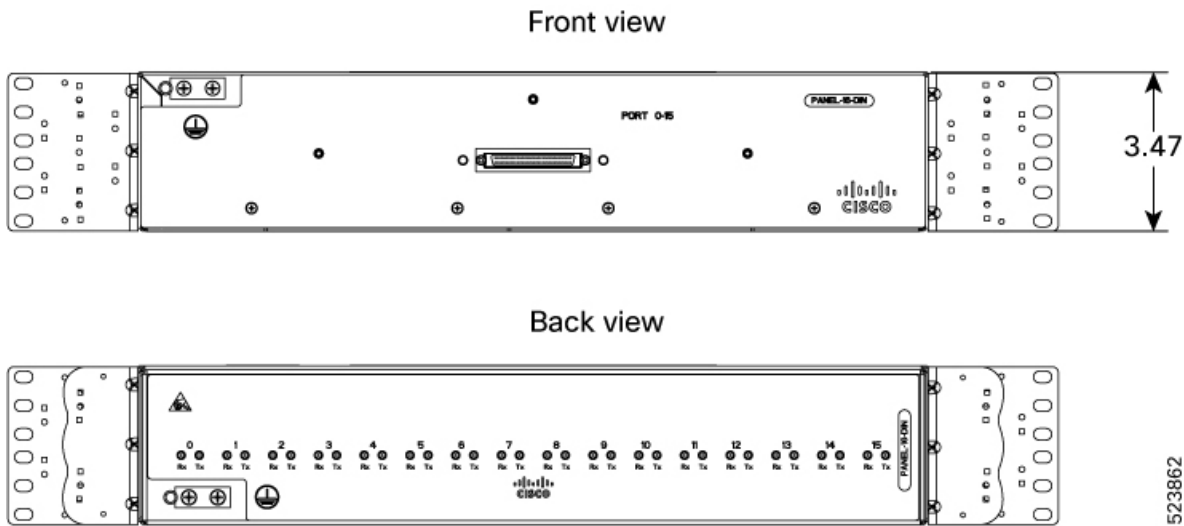
Interface Numbering

The Cisco NCS 4206 chassis includes:

- Six interface module slots
- Two RSP module slots
- Two power supply slots
- One fan tray slot

Each network interface on a Cisco NCS 4206 is identified by a slot number and a port number.
The figure below shows interface numbering in a Cisco NCS 4206.

Figure 33: Cisco NCS 4206 Slot Numbers
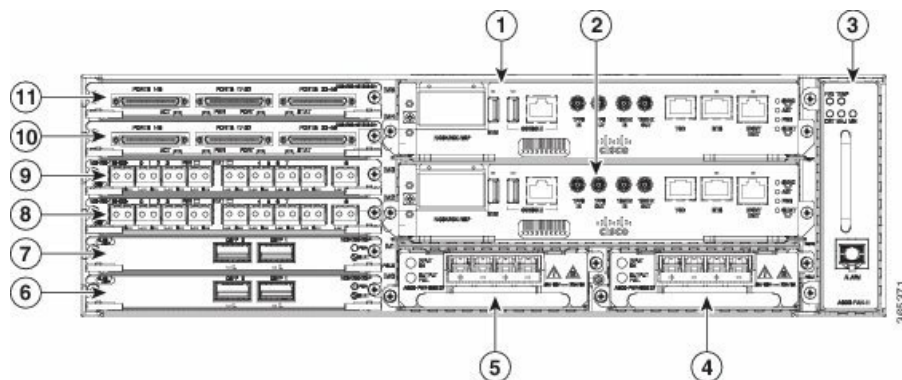
1	RSP slot 1
2	RSP slot 0
3	Fan tray slot

4	Power supply slot 1
5	Power supply slot 0
6	Interface module slot 0
7	Interface module slot 1
8	Interface module slot 2
9	Interface module slot 3
10	Interface module slot 4
11	Interface module slot 5

Following is an explanation of the slot or port numbering

- The numbering format is Interface type slot or interface number. Interface (port) numbers begin at logical 0 for each interface type.
- Interface module slots are numbered from bottom to top, with logical interfaces on each module numbered from left to right. Interfaces are hard-wired. Therefore, port 0 is always logical interface 0/0, port 1 is always logical interface 0/1, and so on.
- The input parameter for the following commands changes based on the active RSP slot number. The active RSP in slot 0 is refereed to as "0/ slot_num", else if the active RSP is slot 1, it is refereed as 1/"slot_num". The output for the command is displayed accordingly:
  - show diag all eeprom detail
  - show platform software trace message iomd
  - show platform software agent iomd
  - show platform software peer shell-manager brief

- show platform software peer chassis-manager
- show platform software memory iomd
- set platform software trace iomd

Regulatory Compliance

For regulatory compliance and safety information, see the Regulatory Compliance and Safety Information for the Cisco NCS 4206 document.

Documents / Resources

	CISCO NCS 4206 Network Convergence System [pdf] User Guide NCS 4206 Network Convergence System, NCS 4206, Network Convergence System, Convergence System, System

References

- **User Manual**