



# Cisco NCS 540 Small Density Routers Overview

The Cisco NCS 540 Small Density Routers are temperature-hardened, fixed port, one rack unit form-factor router. An IOS XR-based cell site router, the router extends Cisco's 5G Converged SDN Transport to edge of the networks as a cell site (CSR)/Network Interface Device (NID)/Customer Premises Equipment (CPE), with the smallest footprint, ever.

This document includes the following small density router variants:

- N540X-6Z18G-SYS-A/D
- N540X-8Z16G-SYS-A/D
- N540X-4Z14G2Q-A/D
- N540-6Z18G-SYS-A/D

For more information about the router features and benefits, see the [Cisco Network Convergence System 540 Small Density Router Data Sheet](#).

The Cisco N540X-6Z18G-SYS-A/D, N540X-8Z16G-SYS-A/D, and N540X-4Z14G2Q-A/D router variants include the following components:

- The PSU is conformal coated. The PSU is fixed and non-removable. The dual power supplies (AC and DC) are installed inside the router.
- The mother board has no conformal coating.



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**Note** The Cisco N540-6Z18G-SYS-A/D router has no conformal coating.

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## **PSU Redundancy Lost Alarm:**

PSU redundancy lost alarms are generated when there's no proper input feed applied on any one of Power Modules (PMs) (PM0 or PM1). The alarms are also generated when the output for PM0 or PM1 isn't proper. This is applicable to Cisco N540X-6Z18G-SYS-A/D, N540X-8Z16G-SYS-A/D, and N540X-4Z14G2Q-A/D routers with fixed PSUs.

The following alarms are raised for PSU redundancy lost event with a faulty PM0:

- Power Module Generic Fault
- Power Module Error

- Power Group Redundancy Lost
- [Network Interfaces, on page 2](#)
- [Cisco NCS 540 Small Density Router Features, on page 4](#)
- [Specification, on page 6](#)
- [Interface Naming, on page 6](#)
- [External Alarm Inputs, on page 8](#)
- [Air Plenum, on page 8](#)
- [Console, on page 8](#)
- [Online Insertion and Removal, on page 9](#)
- [Supported Transceiver Modules, on page 9](#)

## Network Interfaces

The Cisco N540X-6Z18G-SYS-A/D and N540-6Z18G-SYS-A/D routers have the following network interfaces:

- 18 x 1G SFP+ ports
- 6 x 1G/10G SFP+ ports

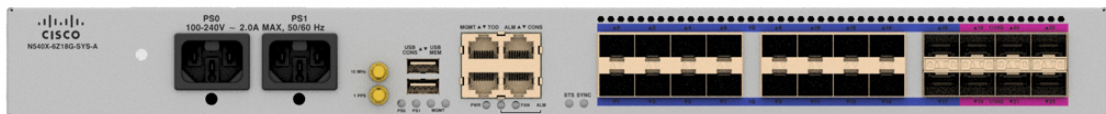
The Cisco N540X-8Z16G-SYS-A/D router has the following network interfaces:

- 8 CSFP ports
- 4 SFP ports
- 4 Copper ports
- 8 x 1/10GSFP+ ports

The Cisco N540X-4Z14G2Q-A/D router has the following network interfaces:

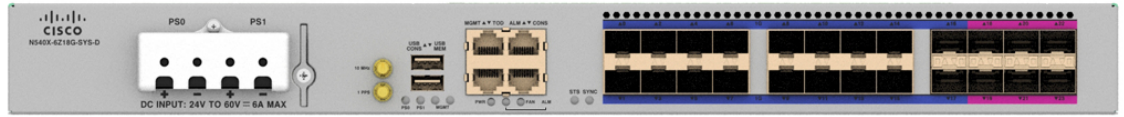
- 4 x 1G/10G SFP+ ports
- 2 x 25G SFP28 ports
- 4 Copper ports/SFP ports
- 10 x 1G SFP ports

**Figure 1: Cisco N540X-6Z18G-SYS-A Router**



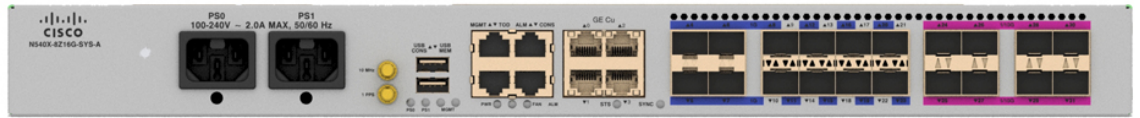
521065

Figure 2: Cisco N540X-6Z18G-SYS-D Router



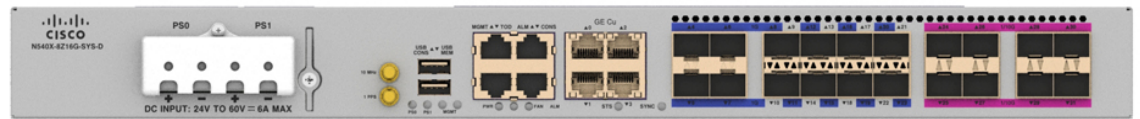
521066

Figure 3: Cisco N540X-8Z16G-SYS - A Router



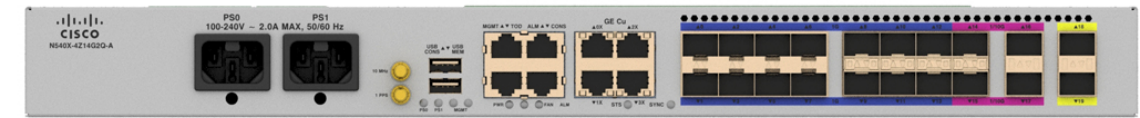
521470

Figure 4: Cisco N540X-8Z16G-SYS - D Router



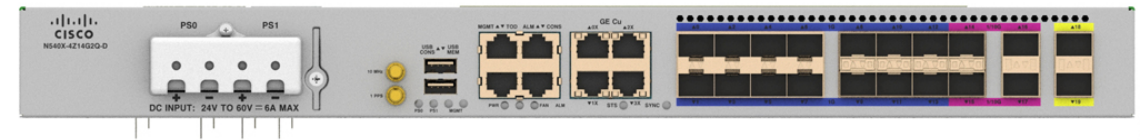
521471

Figure 5: Cisco N540X-4Z14G2Q-A Router



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Figure 6: Cisco N540X-4Z14G2Q-D Router



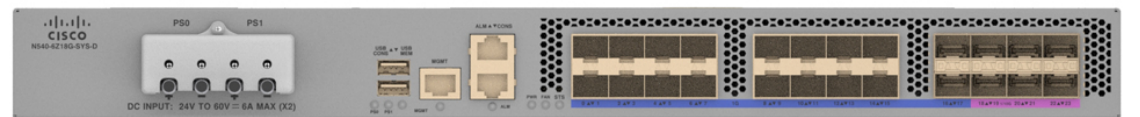
521064

Figure 7: Cisco N540-6Z18G-SYS-A Router



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Figure 8: Cisco N540-6Z18G-SYS-D Router



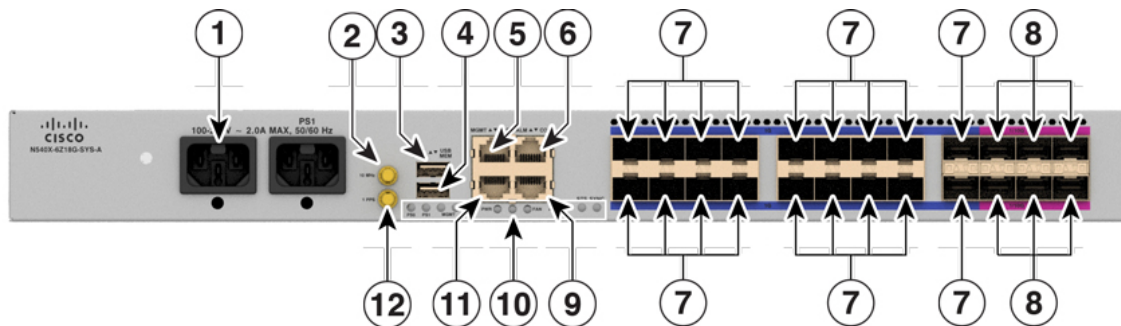
522662



**Note** All ports are color coded in the chassis for ease of identification; for example, the 10G SFP+ ports are in pink, the 1G SFP ports are in blue, and 25G ports are in yellow.

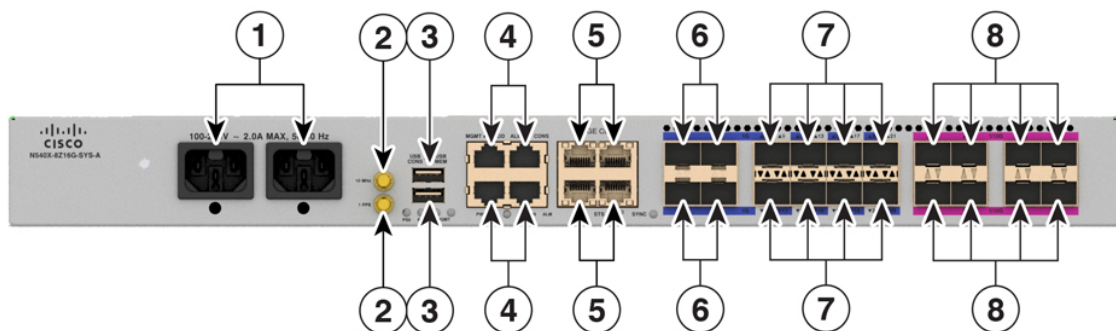
# Cisco NCS 540 Small Density Router Features

Figure 9: Cisco N540X-6Z18G-SYS-A/D Router Components on Front View



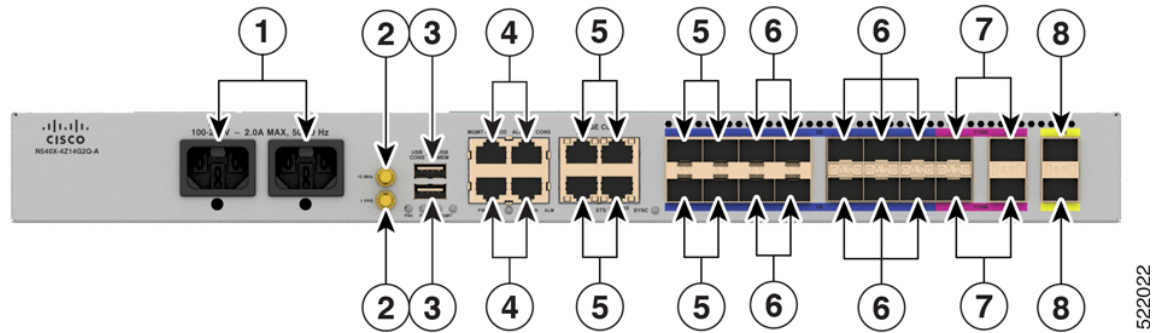
1	AC Power Input	2	10 MHz Input or Output
3	USB Console	4	USB 2.0 MEM port
5	Management Port	6	Alarm Port
7	1G ports (port 0 to 17)	8	10G SFP ports (port 18 to 23)
9	Console Port	10	Status LEDs
11	Time of Day (TOD) Port	12	1 PPS Input or Output Port

Figure 10: N540X-8Z16G-SYS-A/D Router Port and LED details on Front View



1	AC Power Input	2	10 MHz Input or Output Port 1 PPS Input or Output Port
3	USB Console USB 2.0 MEM port	4	Management Port Alarm Port
5	4 - Cu ports (ports 0 to 3)	6	4 - 1G SFP ports (ports 4 to 7)
7	8 - 1G SFP ports (ports 8 to 23)  For these cages, each cage opening has two port names, hence total number of ports 8X2 =16 ( port 8 to 23).  You can also use CSFP optical modules in these cages.	8	8 - 1/10G SFP+ ports (ports 24 to 31)

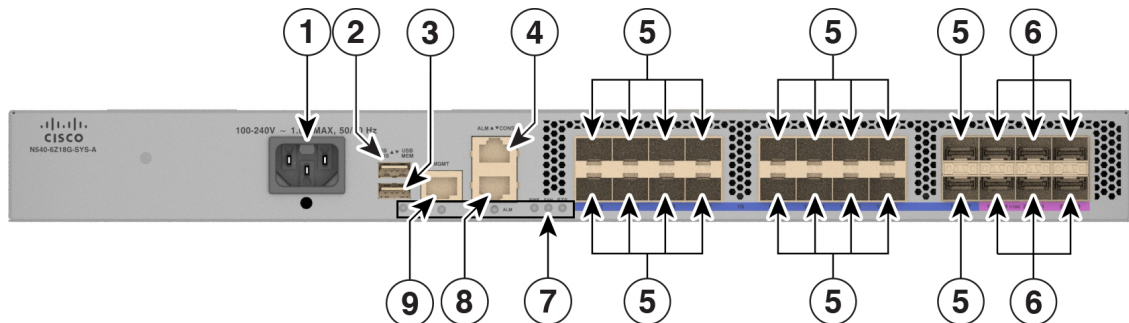
Figure 11: N540X-4Z14G20-A/D Router Port and LED details on Front View



1	AC Power Input	2	10 MHz Input or Output Port 1 MHz Input or Output Port
3	USB Console USB 2.0 MEM port	4	Management Port Alarm Port TOD Port CONS Port
5	1G copper/SFP combo (ports 0 to 3)	6	10X 1G SFP ports (4 to 13)

7	4X 1G/10G SFP+ ports (14 to 17)	8	2X 25G SFP28 ports (18 to 19)
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Figure 12: Cisco N540-6Z18G-SYS-A/D Router Port and LED details on Front View



1	AC Power Input	2	USB Console
3	USB 2.0 MEM port	4	Alarm Port
5	1G ports (port 0 to 17)	6	10G SFP ports (port 18 to 23)
7	Status LEDs	8	Console Port
9	Management Port	-	-

## Specification

For information on physical specification, temperature, and other details for the router, see *Cisco NCS 540 chassis specification* in the [Cisco Network Convergence System 540 Small Density Router Data Sheet](#).

## Interface Naming

The following table shows the interface naming of the Cisco N540X-6Z18G-SYS-A/D and Cisco N540-6Z18G-SYS-A/D routers:

Table 1: Port Numbering

1G ports (SFP)	1G/10G Dual rate ports (SFP+)
0/0 to 0/17	0/18 to 0/23

The *interface-path-id* is *rack / slot / module / port*. The slashes between values are required as part of the notation.

- GigE — 0/0/0/0 - 0/0/0/17
- TenGigE — 0/0/0/18 - 0/0/0/23



**Note** Dual-Rate functionality is supported only with the supported SFP.

**Table 2: Maximum Number of Ports**

Category	Maximum Number of Ports	Port Number
1GE	24	0/0 - 23
10GE	6	0/18 - 23

The following table shows the interface naming of the N540X-8Z16G-SYS-A/D router:

**Table 3: Port Numbering**

1G Copper ports	1G SFP ports	1G SFP ports (Including CSFP)	1G/10G Dual rate SFP+ ports
0/0 to 0/3	0/4 to 0/7	0/8 to 0/23*	0/24 to 0/31

\* ports 9, 10, 13, 14, 17, 18, 21, and 22 are enabled only with CSFP optical modules.

The *interface-path-id* is *rack/slot/module/port*. The slash between values is required as part of the notation.

- **GigE** — 0/0/0/0 to 0/0/0/23 (ports 9, 10, 13, 14, 17, 18, 21, and 22 are enabled only with CSFP optics)
- **TenGigE** — 0/0/0/24- 0/0/0/31

**Table 4: Maximum Number of Ports**

Category	Maximum Number of Ports	Port Number
1GE copper	4	0/0 to 0/3
1GE SFP	20 (including CSFP ports)	0/4 to 0/23
10GE	8	0/24 to 0/31

The following table shows the interface naming of the N540X-4Z14G2Q-A/D router:

**Table 5: Port Numbering**

1G Copper/SFP combo Ports	1G SFP Ports	10G SFP+ Ports	25G SFP28 Ports
0/0 to 0/3	0/4 to 0/13	0/14 to 0/17	0/18 and 0/19

- 1GE Combo – 0/0/0/0-0/0/0/3



- 1GE SFP – 0/0/0/4-0/0/0/13
- 10GE – 0/0/0/14-0/0/0/17
- 25GE- 0/0/0/18-0/0/0/19

**Table 6: Maximum Number of Ports**

Category	Maximum Number of Ports	Port Number
1GE	14	0/0 to 0/13
10GE	4	0/14 to 0/17
25GE	2	0/18 and 0/19

## External Alarm Inputs

The router supports four dry contact alarm inputs through an RJ-45 jack at the front panel.

- Normally Open—indicates that no current flows through the alarm circuit and the alarm is generated when the current is flowing.

Each alarm input can be provisioned as critical, major, or minor.

## Air Plenum

Air plenum or air baffle assembly is used to change the air flow pattern of the unit. When the router is installed with the plenum, the air flow pattern is changed from, from front-to-side to front-to-back. The air flow front-to-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 Air Plenum*.




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**Note** The system operating temperature is limited to 50 degrees Celsius. The air plenum changes the direction from front-to-side to front-to-back.

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The air plenum is only available for Cisco N540-6Z18G-SYS-A/D router variant.

## Console

The RS232 console port provides transmission (Tx), reception (Rx), and ground (Gnd).



## USB Console

A single USB 2.0 Type-A receptacle on the front panel of the router provides console access to uboot, Cisco IOS-XR and diagnostics. While it uses the Type-A connector, it operates as a USB peripheral only for connection to an external host computer. This interface requires the use of a Type-A to Type-A connector instead of a standard USB cable.



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**Note** Use of the USB console is mutually exclusive of the RS232 console port. This interface requires the use of a Type-A to Type-A USB cable. If you insert the USB cable and connect to the host computer, then you can only enter the commands using the USB.

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## Online Insertion and Removal

The router supports the following Online Insertion and Removal (OIR) operations:

- When an SFP is removed, there is no effect on traffic flowing on other ports.
- When an SFP is installed, the system initializes that port for operation based on the current configuration. If the inserted SFP is incompatible with the current configuration of that port, the port does not become operational until the configuration is updated.
- When both power supplies are installed and active, the load may be shared between them or a single PSU supports the whole load. When a power supply is not working or the input cable is removed, the remaining power supply takes the entire load without disruption.
- The power supply modules are fixed and cannot be removed.

## Supported Transceiver Modules

For more information on the supported transceiver modules, see [Transceiver Module Group \(TMG\) Compatibility Matrix](#). In the **Begin your Search** search box, enter the keyword and click **Enter**.

