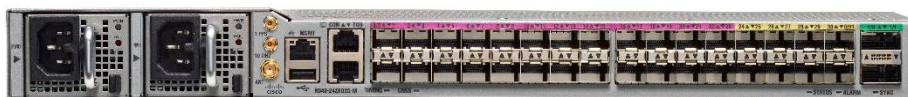


Cisco Network Convergence System 540 Router

The Cisco Visual Network Index™ forecasts that global IP traffic will increase threefold by 2021, driven by both mobile and wireline traffic. This explosion will be driven by next generation technologies such as 5G for mobile, Remote PHY for cable and Carrier Ethernet evolution. The service provider network of the future will not just provide exponentially higher bandwidth at lower operating costs but will also be capable of enabling new applications such as pervasive mobile broadband, massive IoT, tactile Internet, smart cities, and virtual reality.

The Cisco® Network Convergence System 540 Routers (NCS 540) are designed for cost-effective delivery of these next-generation services and applications. These routers are temperature-hardened, high-throughput, small form factor, low-power-consumption devices suitable for both outdoor and indoor deployments. They are powered by the industry-leading carrier-class 64-bit version of Cisco IOS XR Software designed for operational efficiency and service agility. Cisco IOS XR Software offers advanced features such as programmability, application awareness, network visibility, and automation. The Cisco NCS 540 series of routers is an intelligent converged access platform which enables service providers to deliver next-level business and entertainment experiences.

Figure 1. Cisco N540-ACC-SYS chassis



Specifications

Tables 1 through 7 list primary specifications for the Cisco NCS 540 fixed chassis.

Table 1. Cisco NCS 540 chassis specification

Chassis PID	N540-24Z8Q2C-SYS	N540-ACC-SYS N540X-ACC-SYS (Conformal Coated)	N540X-12Z16G-SYS **	N540X-16Z4G8Q2C **	N540-28Z4C-SYS **	N540-12Z20G-SYS **
Route Processor	4-core 1.5Ghz x86 CPU, 32GB, 128GB SATA	4-core 1.5Ghz x86 CPU, 16GB, 128GB SATA	4-core 1.7GHz x86 CPU, 8GB DRAM, 32G eMMC	8-core 1.7GHz x86 CPU, 8GB DRAM, 32G eMMC	8-core 1.7GHz x86 CPU, 8GB DRAM, 32G eMMC	4-core 1.7GHz x86 CPU, 8GB DRAM, 32G eMMC
Port Config	24x1GE/10GE 8x1GE/10GE/25G E 2x 40GE/100GE	24x1GE/10GE 8x1GE/10GE/25G E 2x 40GE/100GE	12x1G SFP 4x1G Cu 12x10G	16x10G 4x1GCu 8x25G+2x100G	28x10G 4x100G	20x1G 12x10G

Chassis PID	N540-24Z8Q2C-SYS	N540-ACC-SYS N540X-ACC-SYS (Conformal Coated)	N540X-12Z16G-SYS **	N540X-16Z4G8Q2C **	N540-28Z4C-SYS **	N540-12Z20G-SYS **
PSU/Fan	2 hot-swappable power supplies provide 1+1 redundancy 4 fans provide 3+1 redundant system cooling Front-to-back airflow	2 hot-swappable power supplies provide 1+1 redundancy 4 fans provide 3+1 redundant system cooling Front-to-back airflow	Fixed Dual DC Fixed Single AC Fixed Fans Side to Side Airflow	Fixed Dual DC Fixed Single AC Modular Fan Tray Side to Side Airflow	Fixed Dual DC Fixed Single AC Fixed Fans Front to Back Airflow	Fixed Dual DC Fixed Single AC Fixed Fans Front to Back Airflow
Temp Range	iTemp: -40C to +70C (1000ft.), +65C (6000ft.), +55C (13,000ft.)	iTemp: -40C to +70C (1000ft.), +65C (6000ft.), +55C (13,000ft.) Conformal coated SKU for hot humid conditions	iTemp: -40C to +70C Conformal coated SKU for hot humid conditions	iTemp: -40C to +70C Conformal coated SKU for hot humid conditions	Commercial Temperature: 0 to 50C	Commercial Temperature: 0 to 50C
Optics	24 x 10GE ports with SFP+ or SFP optics for 10GE or 1GE options 8 x 25GE with SFP28 or SFP+ optics for 25GE, 10GE or 1GE options 2 x 100GE with QSFP28 optics (supports 4 x 25GE breakout), or as 2 x 40GE with QSFP+ optics (supports 4 x 10GE breakout)	24 x 10GE ports with SFP+ or SFP optics for 10GE or 1GE options 8 x 25GE with SFP28 or SFP+ optics for 25GE, 10GE or 1GE options 2 x 100GE with QSFP28 optics (supports 4 x 25GE breakout), or as 2 x 40GE with QSFP+ optics (supports 4 x 10GE breakout)	1/10G:SR/LR/ER/ZR/ DWDM	1/10G:SR/LR/ER/ZR/DWDM 25G: SR/LR, 40G: SR/LR/ER, 100G: SR/LR/ER4L	1/10G:SR/LR 100G: SR/LR	1/10G:SR/LR
Timing	Internal GNSS module with GPS, GLONASS, Galileo, Beidou Interfaces: 1 PPS in/out, 10Mhz in/out, ToD in/out, antenna for internal GNSS Class-B	Internal GNSS module with GPS, GLONASS, Galileo, Beidou Interfaces: 1 PPS in/out, 10Mhz in/out, ToD in/out, antenna for internal GNSS Class-B	1588/SyncE,GNS S, 1PPS, ToD, 10MHz, Class-C	1588/SyncE, GNSS, 1PPS, ToD, 10MHz, Class-C	1588v2, TOD, BITS, 1PPS, 10MHz, Class-B	1588v2, TOD, BITS, 1PPS, 10MHz, Class-B
Physical Specs	1RU 1.72 in. x 17.3 in. x 10.02 in. Weight: 14 lb. (6.35kg)	1RU 1.72 in. x 17.3 in. x 10.02 in. Weight: 14 lb. (6.35kg)	1RU 1.75 in. x 17.5 in. x 9.84 in.	1RU 1.75 in. x 17.5 in. x 9.84 in.	1RU 1.75 in. x 17.5 in. x 9.84 in.	1RU 1.75 in. x 17.5 in. x 9.84 in.

**Coming 2HCY19

Table 2. Software feature support on NCS 540 in Cisco IOS XR 6.3.2 release or beyond

Description	Specification
Layer 2	<p>Layer 2 switch ports</p> <p>IEEE 802.1Q VLAN encapsulation / Q-in-Q encapsulation</p> <p>IEEE 802.1ad</p> <p>Ethernet Link Aggregation Group (LAG) (up to 32 ports)</p> <p>Link Aggregation Control Protocol (LACP): IEEE 802.3ad</p> <p>Jumbo frames on all ports (up to 9216 bytes)</p> <p>L2 ingress Access Control List (ACL)</p> <p>Ethernet Flow Point (EFP) and VLAN trunks</p> <p>L2 Bridge Domains</p>
Layer 3	<p>IPv4 and IPv6 unicast</p> <p>Layer 3 interfaces: physical interfaces and sub-interfaces</p> <p>Routing protocols: static, Open Shortest Path First (OSPFv2), OSPFv3, Intermediate System to Intermediate System (ISIS), ISISv6, and Border Gateway Protocol (BGP)</p> <p>32-way equal-cost multipath (ECMP)</p> <p>L3 ingress and egress IPv4 ACL and IPv6 ACL</p> <p>Bidirectional Forwarding Detection (BFD)</p> <p>Cisco bundle Ethernet technology (up to 32 ports per Ethernet bundle)</p> <p>Jumbo frame support (up to 9216 bytes)</p> <p>Virtual Router Redundancy Protocol (VRRP) Integrated Routing Bridging (IRB) with Bridge Virtual Interface (BVI)</p>
MPLS	<p>Label switching</p> <p>LDP</p> <p>SR-MPLS</p> <p>RSVP-TE and SR-TE MPLS Traffic Engineering</p> <p>Point-to-point L2VPN – T-LDP, BGP, EVPN-VPWS</p> <p>Multipoint L2VPN – VPLS, EVPN</p> <p>L2/L3 VPN EVPN with Anycast IRB</p>
Segment Routing (SR)	<p>Segment Routing with MPLS data plane</p> <p>ISIS extensions to segment routing</p> <p>OSPF extensions to segment routing</p> <p>BGP extensions to segment routing</p> <p>BGP egress peering engineering (BGP-EPE)</p> <p>Segment Routing Traffic Engineering (SR-TE)</p> <p>Segment routing Topology Independent Loop-Free Alternatives (TI-LFA)</p> <p>On-Demand Next-hop (ODN)</p>
Multicast	<p>IPv4, IPv6</p> <p>PIM-SM, PIM-SSM</p> <p>IGMPv3, MLDv2</p> <p>PIM-ECMP</p> <p>mLDP</p> <p>P2MP-TE</p>
Quality of Service (QoS)	<p>Hierarchical QoS</p> <p>Ingress classification based on class of service (L2)</p> <p>IP differentiated service code point (L3)</p> <p>IP precedence (type of service) (L3)</p> <p>Policing, Shaping</p> <p>4096 number of queues for user traffic</p> <p>Support for priority queuing</p> <p>3GB packet buffer</p>
Timing	<p>T-GM, T-BC, T-TSC</p> <p>Integrated GNSS module with GPS, GLONASS, Galileo, Beidou</p> <p>SyncE, G.8265.1, G.8275.1, G.8275.2</p> <p>G.8273.2 Class B</p>

Description	Specification
Automation	Zero-Touch Provisioning (ZTP) with iPXE Configuration management Network Configuration Protocol (NETCONF/YANG model)
Security	Control-plane and management plane protection Authentication, Authorization, and Accounting (AAA) Terminal Access Controller Access-Control System Plus (TACACS+) Secure Shell (SSH) Protocol Layer 2 ingress ACLs Layer 3 ingress ACLs
Management	MIB, XML, JSON, GPB, and SNMP
OAM	MPLS OAM Ethernet OAM MEF 3.0 certified (ELINE, ELAN, ETREE, ACCESS ELINE, TRANSIT ELINE).

Supported transceiver modules

Please refer NCS 5500/540 Series supported transceivers module matrix

<https://www.cisco.com/c/en/us/support/interfaces-modules/transceiver-modules/products-device-support-tables-list.html>.

Environment

Table 3. Environmental properties for NCS 540 fixed systems

Normal operating temperature	Industrial temperature –40°C to +70°C (1000 ft.), +65°C (6000 ft.), +55°C (13,000 ft.)
Nonoperating (storage) temperature	–40 to 158°F (–40 to 70°C)
Operating humidity	5% to 95% (noncondensing)
Storage (relative) humidity	5% to 95% at 40°C per NEBS GR-63-Core
Altitude	0 to 13,000 ft.
Power inputs	Worldwide ranging AC (90–265V; 50–60 Hz) Worldwide ranging DC (–40V to –72V)
Airflow	Front to Back

Regulatory standards compliance

Table 4. Regulatory standards compliance: safety and EMC

Specification	Description
Regulatory compliance	Products should comply with CE markings according to directives 2004/108/EC and 2006/95/EC
Network Equipment Building Standards (NEBS)	Designed to meet GR-63-CORE and GR-1089-CORE
Safety	UL 60950-1 Second Edition CAN/CSA-C22.2 No. 60950-1 Second Edition EN 60950-1 Second Edition IEC 60950-1 Second Edition AS/NZS 60950-1 GB4943

Specification	Description
EMC standards	47CFR Part 15 (CFR 47) Class A AS/NZS CISPR22 Class A CISPR22 Class A EN55022 Class A ICES003 Class A VCCI Class A EN61000-3-2 EN61000-3-3 KN22 Class A CNS13438 Class A
EMC immunity	EN55024 CISPR24 EN300386 KN 61000-4 series
ETSI	ETS/EN 300 119 Part 4 ETS/EN 300 019 - Storage: Class 1.2, Transportation: Class 2.3, In-Use/Operational: Class 3.2 ETS/EN 300 753
RoHS	The product is RoHS-6 compliant with exceptions for leaded-ball grid-array (BGA) balls and lead press-fit connectors

Ordering information

Table 5. Ordering information for NCS 540

	Part number	Description
Chassis	N540-ACC-SYS	NCS 540 24x1/10GE, 8x10/25GE, 2x100GE chassis
	N540-24Z8Q2C-SYS****	NCS 540 24x1/10GE, 8x10/25GE, 2x100GE chassis
	N540X-ACC-SYC	NCS 540 24x1/10GE, 8x10/25GE, 2x100GE conformal coated chassis
Compliance Model	N540-ACC-SYS	NCS 540 24x1/10GE, 8x10/25GE, 2x100GE chassis
	N540X-ACC-SYS	NCS 540 24x1/10GE, 8x10/25GE, 2x100GE conformal coated chassis
	N540-24Z8Q2C-M	NCS 540 24x1/10GE, 8x10/25GE, 2x100GE chassis
SW	XR-6.5-K9-AC-TRK	NCS 540 Cisco IOS XR 6.5 image
	TRK-6.5-54-K9	IOS XR 6.5 K9 Tracking PID
Fan	N540-FAN	NCS 540 chassis fan
Power supply	N540-PWR400-A	NCS 540 AC 400W power supply
	N540-PWR400-D	NCS 540 DC 400W power supply
Accessories	N540-RCKMT-19	NCS 540 19-inch rack mounting bracket
	NCS540-ACC-DCAP=	NCS 540 Dust Caps

**** For third party app hosting

Table 6. Ordering information for software licenses available on NCS 540

Part number	Description
ESS-AC-10G-RTU-1	Essentials SW Right-to-Use per 10G
ADV-AC-10G-RTU-1	Advanced SW Right-to-Use per 10G
ESS-10G-SIA-3	Essentials SW Innovation Access per 10G 3 year subscription
ESS-10G-SIA-5	Essentials SW Innovation Access per 10G 5 year subscription
ADV-10G-SIA-3	Advanced SW Innovation Access per 10G 3 year subscription
ADV-10G-SIA-5	Advanced SW Innovation Access per 10G 5 year subscription

Table 7. Ordering information for power cables supported on NCS 540

Part number	Description
CAB-AC-SA	Power Cord - South Africa, 16/10A,250V,1830mm, -40C to +85C
CAB-AC-ARG	Power Cord - Argentina, 10A,250V,2500mm, -40C to +85C
CAB-AC-ISR	Power Cord - Israel, 16/10A,250V,2500mm, -40C to +85C
CAB-AC-TAI	Power Cord - Taiwan, 15/10A,125V,2500mm, -40C to +85C
CAB-AC-CHI	Power Cord - China, 10A,250V,2500mm, -40C to +85C
CAB-AC-KOR	Power Cord - Korea, 16/10A,125V,2500mm, -40C to +85C
CAB-AC-EUR	Power Cord - Europe, 16/10A,250V, 2500mm, -40C to +85C
CAB-AC-ITL	Power Cord - Italy, 10A,250V, 2500mm, -40C to +85C
CAB-AC-UK	Power Cord - UK, 13/10A, 250V, 2500mm, -40C to +85C
CAB-AC-AUS	Power Cord - Australia, 10A,250V,2500mm, -40C to +85C
CAB-AC-US	Power Cord - US, 15A,125V,2500mm,-40C to +85C
CAB-AC-BRA	Power Cord - Brazil, 10A,250V,2500mm, -40C to +85C
CAB-AC-IND	Power Cord - India, 16/10A,250V,2500mm, -40C to +85C
CAB-AC-SUI	Power Cord - Swiss, 10A,250V,2500mm, -40C to +85C

Service and support

Cisco offers a wide range of services to help accelerate your success in deploying and optimizing the Cisco NCS 540. These innovative Cisco Services offerings are delivered through a unique combination of people, processes, tools, and partners, and they are focused on helping you increase operating efficiency and improve your network operation. Cisco Advanced Services uses an architecture-led approach to help you align your data center infrastructure with your business goals and achieve long-term value. Cisco SMARTnet[®] Service helps you resolve mission-critical problems with direct access at any time to Cisco network experts and award-winning resources. With this service, you can take advantage of the Cisco Smart Call Home service, which offers proactive diagnostics and real-time alerts on your Cisco NCS 540. Spanning the entire network lifecycle, Cisco Services offerings help increase investment protection, optimize network operations, support migration operations, and strengthen your IT expertise.

Cisco Capital

Flexible payment solutions to help you achieve your objectives

Cisco Capital makes it easier to get the right technology to achieve your objectives, enable business transformation and help you stay competitive. We can help you reduce the total cost of ownership, conserve capital, and accelerate growth. In more than 100 countries, our flexible payment solutions can help you acquire hardware, software, services and complementary third-party equipment in easy, predictable payments. [Learn more.](#)

Warranty

The Cisco NCS 540 has a 1-year limited hardware warranty. The warranty includes hardware replacement with a 10-day turnaround from receipt of a Return Materials Authorization (RMA).

For more information

For more information about the Cisco NCS 540, contact your Cisco representative.




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