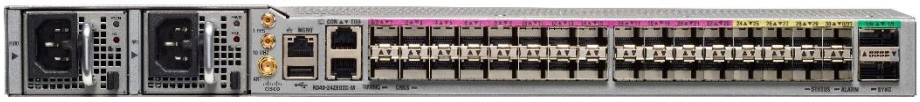
Cisco Network Convergence System 540 Router

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 N540-24Z8Q2C-SYS chassis



Specifications

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

Table 1. Cisco NCS 540 chassis specification

Feature	Specification
Chassis PIDs	N540-24Z8Q2C-SYS N540X-24Z8Q2C-SYS (conformal coated)
Port configuration	24 ports of 1GE/10GE 8 ports of 1GE/10GE/25GE 2 ports of 40GE/100GE
Integrated route processor	Cisco IOS XR 64-bit software running on a 4-core 1.5Ghz x86 CPU
Management ports	2x RJ45, 1 for console and 1 for management LAN port
Flexible forwarding ports	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)
Performance	300 Gbps and 300 Mpps of system throughput
Route scale	Up to 128K IPv4 and 32K IPv6 FIB entries
Timing	Internal GNSS module with GPS, GLONASS, Galileo, Beidou Interfaces: 1 PPS in/out, 10Mhz in/out, ToD in/out, antenna for internal GNSS

Feature	Specification
Power and cooling	2 hot-swappable power supplies provide 1+1 redundancy 4 fans provide 3+1 redundant system cooling Front-to-back airflow
Power consumption	Typical: 200W at 25°C Maximum: 240W at 40/45°C, 270W at 50/55/70°C
Physical specification	Height: 1RU 1.72 in. (4.37cm) Width: 17.3 in. (43.94cm) Depth: 10.02 in. (25.45cm) Weight: 14 lb. (6.35kg)

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

Description	Specification
Layer 2	Layer 2 switch ports IEEE 802.1Q VLAN encapsulation / Q-in-Q encapsulation IEEE 802.1ad Ethernet Link Aggregation Group (LAG) (up to 32 ports) Link Aggregation Control Protocol (LACP): IEEE 802.3ad Jumbo frames on all ports (up to 9216 bytes) L2 ingress Access Control List (ACL) Ethernet Flow Point (EFP) and VLAN trunks L2 Bridge Domains
Layer 3	IPv4 and IPv6 unicast Layer 3 interfaces: physical interfaces and subinterfaces Routing protocols: static, Open Shortest Path First (OSPFv2), OSPFv3, Intermediate System to Intermediate System (ISIS), ISISv6, and Border Gateway Protocol (BGP) 32-way equal-cost multipath (ECMP) L3 ingress and egress IPv4 ACL and IPv6 ACL Bidirectional Forwarding Detection (BFD) Cisco bundle Ethernet technology (up to 32 ports per Ethernet bundle) Jumbo frame support (up to 9216 bytes) Virtual Router Redundancy Protocol (VRRP)Integrated Routing Bridging (IRB) with Bridge Virtual Interface (BVI)
MPLS	Label switching LDP SR-MPLS RSVP-TE and SR-TE MPLS Traffic Engineering Point-to-point L2VPN – T-LDP, BGP, EVPN-VPWS Multipoint L2VPN – VPLS, EVPN L2/L3 VPN EVPN with Anycast IRB
Segment Routing (SR)	Segment Routing with MPLS data plane ISIS extensions to segment routing OSPF extensions to segment routing BGP extensions to segment routing BGP egress peering engineering (BGP-EPE) Segment Routing Traffic Engineering (SR-TE) Segment routing Topology Independent Loop-Free Alternatives (TI-LFA) On-Demand Next-hop (ODN)
Multicast	IPv4, IPv6 PIM-SM, PIM-SSM IGMPv3, MLDv2 PIM-ECMP mLDP P2MP-TE

Description	Specification
Quality of Service (QoS)	Hierarchical QoS Ingress classification based on class of service (L2) IP differentiated service code point (L3) IP precedence (type of service) (L3) Policing, Shaping 4096 number of queues for user traffic Support for priority queuing 3GB packet buffer
Timing	T-GM, T-BC, T-TSC Integrated GNSS module with GPS, GLONASS, Galileo, Beidou SyncE, G.8265.1, G.8275.1, G.8275.2 G.8273.2 Class B
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 MPLS OAM Ethernet OAM

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
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
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	N540-24Z8Q2C-SYS	NCS 540 24x1/10GE, 8x10/25GE, 2x100GE chassis
	N540-X-24Z8Q2C-SYC	NCS 540 24x1/10GE, 8x10/25GE, 2x100GE conformal coated chassis
SW	XR-NC54-P-06.03	NCS 540 Cisco IOS XR 6.3 image
	XR-NC54-PK9-06.03	NCS 540 Cisco IOS XR 6.3 PK9 image
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

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-10G-RTU-1	Advanced SW Right-to-Use per 10G
ESS-10G-SIA-3Y	Essentials SW Innovation Access per 10G 3 year subscription
ESS-10G-SIA-4Y	Essentials SW Innovation Access per 10G 4 year subscription

Part number	Description
ESS-10G-SIA-5Y	Essentials SW Innovation Access per 10G 5 year subscription
ADV-10G-SIA-3Y	Advanced SW Innovation Access per 10G 3 year subscription
ADV-10G-SIA-4Y	Advanced SW Innovation Access per 10G 4 year subscription
ADV-10G-SIA-5Y	Advanced SW Innovation Access per 10G 5 year subscription

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

Part number	Description
CAB-250V-10A-BR	Power cord, 250V, 10A, Brazil
CAB-250V-10A-ID	AC power cord, 250V, 10A, India
CAB-250V-10A-IS	AC power cord, 250V, 10A, Israel
CAB-C13-C14-2M	Power cord jumper, C13–C14 connectors, 2m length
PWR-CORD-ROK-A	Power cord ROK 1.8m black YP-22K to YC-12
15454-M-CBL-R-JPN	AC power cable, Japan right exit
CAB-250V-10A-AR	AC power cord, 250V, 10A, Argentina
CAB-250V-10A-CN	AC power cord, 250V, 10A, PRC
CAB-9K10A-IT	Power cord, 250VAC 10A CEI 23-16/VII plug, Italy
CAB-AC-L620-C13	AC power cord, NEMA L6-20, C13, 2m/6.5 ft.
CAB-C13-CBN	Cabinet jumper power cord, 250VAC 10A, C14–C13 connectors
CAB-N5K6A-NA	Power cord, 200/240V 6A North America
CAB-3P-JPN	AC power cord (Japan), C13, 3-prong plug, 2.3m
CAB-9K10A-SW	Power cord, 250VAC 10A MP232 plug, SWITZ
CAB-9K10A-UK	Power cord, 250VAC 10A BS1363 plug (13A fuse), UK
CAB-ACTW	AC power cord (Taiwan), C13, EL 302, 2.3m
CAB-IND-10A	10A power cable for India
15454-M-CBL-L-JPN	AC power cable, Japan left exit
CAB-9K10A-EU	Power cord, 250VAC 10A CEE 7/7 plug, EU
CAB-9K12A-NA	Power cord, 125VAC 13A NEMA 5-15 plug, North America
CAB-C13-C14-JMPR	Recessed receptacle AC power cord 27 in.
CAB-9K10A-AU	Power cord, 250VAC 10A 3112 plug, Australia

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).

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

Financing to help you achieve your objectives

Cisco Capital® financing can help you acquire the technology you need to achieve your objectives and stay competitive. Cisco Capital can help you reduce Capital Expenditures (CapEx), accelerate your growth, and optimize your investment dollars and ROI while giving you flexibility in acquiring hardware, software, services, and complementary third-party equipment. And you have just one predictable payment. Cisco Capital financing is available in more than 100 countries. Learn more.

For more information

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