Cisco Network Convergence System 520

Cisco® Network Convergence System (NCS) 520 are next-generation Layer 2 and Layer 3 capable, MEF 3.0 Certified, customer-located devices and network demarcation devices for service providers. These 10 Gigabit Ethernet demarcation points redefine the demarcation between the customer LAN and a service provider's mobile and cloud applications. They provide standards-based demarcation as defined by the Metro Ethernet Forum (MEF) for Carrier Ethernet services such as Ethernet point-to-point line (ELINE) and Ethernet multipoint-to-multipoint (ELAN) services, E-Tree, Access E-Line, Transit E-Line with advanced clocking and Quality of Service (QoS).

The Cisco NCS 520 (Figure 1) is designed to be deployed as a "touchless" Network Interface Device. That means Zero-Touch Provisioning (ZTP) to simplify deployment.

Figure 1. Cisco NCS 520

Product overview

The Cisco NCS 520 comes in a small form factor (1RU) and is fixed, in these configurations:

- Cisco NCS 520 4G4Z-A with an AC power supply, two RJ45 GE interfaces, two SFP GE interfaces, and four dual-rate 1GE/10GE SFP+ interfaces.
- Cisco NCS 520 X–4G4Z-A with an AC power supply, two RJ45 GE interfaces, two SFP GE interfaces, four dual-rate 1GE/10GE SFP+ interfaces. Can withstand highly humid and dusty environments. Has timing (pending software support) interfaces.
- Cisco NCS 520 X–4G4Z-D with dual DC power supply, two RJ45 GE interfaces, two SFP GE, four dual-rate 1GE/10GE SFP+ interfaces. Can withstand highly humid and dusty environments. Has timing (pending software support) interfaces.
- Cisco NCS 520 -20G4Z-A with dual AC power supply, four RJ45 GE interfaces, sixteen SFP GE interfaces, and four dual-rate 1GE/10GE SFP+ interfaces.
- Cisco NCS 520 -20G4Z-D with dual DC power supply, four RJ45 GE interfaces, sixteen SFP GE interfaces, and four dual-rate 1GE/10GE SFP+ interfaces.

- Cisco NCS 520 X–20G4Z-A with dual AC power supply, four RJ45 GE interfaces, sixteen SFP GE interfaces, four dual-rate 1GE/10GE SFP+ interfaces. Can withstand highly humid and dusty environments. Has timing (pending software support) interfaces.
- Cisco NCS 520 X–20G4Z-D with dual DC power supply, four RJ45 GE interfaces, sixteen SFP GE, four dual-rate 1GE/10GE SFP+ interfaces. Can withstand highly humid and dusty environments. Has timing (pending software support) interfaces.

Designed for Ethernet demarcation and carrier Ethernet access, the Cisco NCS 520's differentiating features include:

- Robust device security with features such as TrustAnchor module, secure JTAG, runtime defenses
- Line-rate performance for all Layer 2 interfaces
- Built on a carrier Ethernet Application-Specific Integrated Circuit (ASIC) with critical functions in hardware
- EVC architecture and QoS model as per MEF standards
- Extended operating temperatures
- Dense small form factor: 1RU with 9 in. depth
- Redundant power options

Features and benefits

Pay-as-you-grow investment model

The Return on Investment (ROI) on an access element is heavily influenced by its location in the network and proximity to customers. The ability to deploy the Cisco NCS 520 and later activate features on demand delivers investment protection. This protection allows flexibility for deploying timing (To be developed), 10 GE services, and boosting service capacity.

ZTP

ZTP automates configuration of the Cisco NCS 520 when it is deployed in the network. The ZTP process is activated by pressing the ZTP button on the front of the Cisco NCS 520. This minimizes manual operator intervention, minimizes configuration time, and helps reduce customers' initial deployment costs.

Ethernet services with enhanced QoS

The Cisco NCS 520 provides all the features required for MEF 3.0 service initiation, including services such as ELINE, ELAN, ETREE, ACCESS ELINE, TRANSIT ELINE. To help maintain proper QoS for these services, the Cisco NCS 520 offers rich traffic classification and hierarchical QoS for per-port services. To help ensure that Service-Level Agreements (SLAs) are enforced, ingress traffic policing and egress shaping are also supported.

Rich OAM for service assurance

Service assurance is provided through a rich feature set of Operations, Administration, and Maintenance (OAM) functionalities. The performance management traffic is time stamped in hardware to help ensure great accuracy. The Cisco NCS 520 offers standards-based fault and performance management in adherence with 1731 PM and 802.1ag Connectivity Fault Management (CFM) standards. The Cisco NCS 520 comes with service turn-up

capabilities (Y.1564) that include both generation and reflection of traffic. This feature contributes to significant reduction in OpEx and allows for troubleshooting without expensive service calls.

Software

The Cisco NCS 520 runs on Cisco IOS® XE Polaris Software, which is a modular operating system. Cisco IOS XE Software is designed to provide modular packaging, feature velocity, and powerful resiliency. For more information about the supported features and software capabilities, see the Cisco IOS XE Software data sheet.

Product specifications

Tables 1 through 4 list the product, power, environmental, safety and compliance specifications for the Cisco NCS 520

Table 1. Cisco NCS 520 system specifications

Description	Cisco NCS 520 Series – 8 Port	Cisco NCS 520 Series – 24 Port
Physical specifications	Height: 1.75 in., 1 RU Width: 12.2 in. Depth: 9 in. Weight: • 6.33 lb. (2.87 kg) for DC Variant • 6.22 lb. (2.82 kg) for AC Variant	Height: 1.75 in., 1 RU Width: 17.5 in. Depth: 9 in. Weight: • 8.16 lb. (3.7 kg) for DC Variant • 8.38 lb (3.8 kg) for AC Variant
Rack mounts	ETSI rack mount kit 19 in. rack mount kit 23 in. rack mount kit	ETSI rack mount kit 19 in. rack mount kit 23 in. rack mount kit
Power supplies	Single AC power supply Or Dual DC Power Supply	Dual AC Or Dual DC Power Supply
Chassis MTBF at 40ºC operating temperature	N520-4G4Z-A: 493,000 hours N520-X-4G4Z-A: 454,000 hours N520-X-4G4Z-D: 389,000 hours	N520-20G4Z-A: 371,000 hours N520-20G4Z-D: 346,000 hours N520-X-20G4Z-A: 348,000 hours N520-X-20G4Z-D: 326,000 hours
Airflow	Front-to-back airflow	Front-to-back airflow

Table 2. Power specifications

Description	Cisco NCS 520 System
Power consumption	Maximum input power for NCS 520 (8 Port) is 70W. This is equivalent to 239 BTU per hr. Maximum input power for NCS 520 (24 Port) is 110W. This is equivalent to 375 BTU per hr.
AC input voltage and frequency	Voltage range: 85V AC to 264V AC, nominal 100V to 240V AC Frequency range: 47 to 63 Hz, nominal 50 to 60 Hz
DC input voltage	Voltage range: -19.2V DC to -72V DC, nominal -24V DC to -60V DC

Table 3. Environmental specifications

Description	Cisco NCS 520			
Product ID	N520-X-4G4Z-A/D [Industrial]	N520-4G4Z-A [Commercial]	N520-X-20G4Z-A/D [Industrial]	N520-20G4Z-A/D [Commercial]
Fans	3 Integrated Fans[1]		5 Integrated Fans[2]	
Operating Environment[2]	-40 to 70ºC, up to 1,000 feet (300m) -40 to 65ºC, up to 6,000 feet (1800m) -40 to 55ºC, up to 13,000 feet (4000m) GR3108 Class-2[4]	0 to 55ºC, up to 1,000 feet (300m) 0 to 50ºC, up to 6,000 feet (1800m) 0 to 40ºC, up to 13,000 feet (4000m) GR3108 Class-1[4]	-40 to 70ºC, up to 1,000 feet (300m) -40 to 65ºC, up to 6,000 feet (1800m) -40 to 55ºC, up to 13,000 feet (4000m) GR3108 Class-2[4]	0 to 55ºC, up to 1,000 feet (300m) 0 to 50ºC, up to 6,000 feet (1800m) 0 to 40ºC, up to 13,000 feet (4000m) GR3108 Class-1[4]

Relative humidity	5 to 95 percent, noncondensing			
Noise	48 dBA at 30ºC (ETSI Desktop Mount - ETSI EN 300 753 V1.2.1 (2009-03))		57 dBA at 30ºC	
	77 dBA at highest system performance	74 dBA at highest system performance	79 dBA at highest system performance	77 dBA at highest system performance
Outside Plant	For an outside plant installation, it is required that the system be protected against airborne contaminants, dust, moisture, insects, pests, corrosive gases, polluted air, or other reactive elements present in the outside air. To achieve this level of protection, it is recommended that the unit be installed in a fully sealed enclosure			
Storage Environment	Temperature: -40 to 70ºC Altitude: 15,000 feet (4570m)			
Seismic	Zone 4			
Hazardous substances	Reduction of Hazardous Substances (ROHS) 6			

[1] -Fans operate in a 2+1 redundant configuration where the system will continue to function with only 2 operational fans, which will run at full speed

[2] -Fans operate in a 4+1 redundant configuration where the system will continue to function with 4 operational fans, which will run at full speed

[3] -During Fan Fail, the system will comply with respective class of GR3108 specifications

[4] -Temperature & Humidity of GR3108 Classes

Table 4. Safety and compliance

Type	Standards
Safety	• UL 60950-1, 2nd edition • CAN/CSA C22.2 No. 60950-1-07 2nd edition • IEC 60950-1, 2nd edition • EN 60950-1, 2nd edition • AS/NZS 60950.1:2003
Emissions & Immunity	• FCC CFR47 Part 15 • KN 32: 2015 • EN 55032:2012/ AC:2013 • EN 55032:2015 • CISPR 32 Edition 2 • EN61000-3-2: 2014 • EN61000-3-3: 2013 • EN 300 386 V1.6.1 • ICES-003 Issue 6: 2016 • V-2/2015.04 • V-3/2015.04 • TCVN 7189: 2009 • CNS13438: 2006 • CISPR24: 2010 + A1: 2015 • EN55024: 2010 + A1: 2015 • KN35: 2015 • TCVN 7317: 2003 • EN 61000-6-1 : 2007
NEBS	• GR-63-CORE • GR-1089-CORE • SR-3580 NEBS Level 3 • GR-3108
ETSI	• ETS/EN 300 019 - Storage: Class 1.2, Transportation: Class 2.3, In-Use/Operational: Class 3.2 • ETS/EN 300 753

Ordering information

Table 5 provides ordering information.

Table 5. Ordering information

Part Number	Description
NCS 520 System	
N520-4G4Z-A	Cisco NCS 520 - 4xGE + 4x10GE, Commercial Temp, AC power supply
N520-X-4G4Z-A	Cisco NCS 520 - 4xGE + 4x10GE, Industrial Temp, AC power
N520-X-4G4Z-D	Cisco NCS 520 - 4xGE + 4x10GE, Industrial Temp, DC power
N520-20G4Z-A	Cisco NCS 520 - 20xGE + 4x10GE, Commercial Temp, AC power
N520-20G4Z-D	Cisco NCS 520 - 20xGE + 4x10GE, Commercial Temp, DC power
N520-X-20G4Z-A	Cisco NCS 520 - 20xGE + 4x10GE, Industrial Temp, AC power
N520-X-20G4Z-D	Cisco NCS 520 - 20xGE + 4x10GE, Industrial, Temp, DC power
NCS 520 Licenses	
N520-S-M	Metro Access License (base software)
N520-1G-8	Cisco NCS 520 Series 8 Ports GE Upgrade License
N520-10G-2	Cisco NCS 520 Series 2-Port 10G Upgrade License
NCS 520 Accessories	
N520-CBL-BRKT	NCS 520 Cable Bracket
N520-RCKMT-19-D2A	NCS 520 19 Rackmount for 8 Port AC
N520-RCKMT-19-D2D	NCS 520 19 Rackmount for 8 Port DC
N520-RCKMT-23-D2A	NCS 520 23 Rackmount for 8 Port AC
N520-RCKMT-23-D2D	NCS 520 23 Rackmount for 8 Port DC
N520-RMT-ETSI-D2A	NCS 520 ETSI Rackmount for 8 Port, AC
N520-RMT-ETSI-D2D	NCS 520 ETSI Rackmount for 8 Port, DC
N520-RCKMT-19-D3A	NCS 520 19" Rackmount for 24 Port, AC
N520-RCKMT-19-D3D	NCS 520 19" Rackmount for 24 Port, DC
N520-RCKMT-23-D3A	NCS 520 23" Rackmount for 24 Port, AC
N520-RCKMT-23-D3D	NCS 520 23" Rackmount for 24 Port, DC
N520-RMT-ETSI-D3A	NCS 520 ETSI Rackmount for 24 Port, AC
N520-RMT-ETSI-D3D	NCS 520 ETSI Rackmount for 24 Port, DC
N520-WALLMT	NCS 520 Wall Mount
N520-CONS-KIT-S	NCS 520 Series Serial Console Cabling Kit
NCS 520 Optics	
GLC-FE-100FX	100BASE-FX SFP for FE port
GLC-FE-100FX-RGD	100Base-FX Multi ModeRugged SFP
GLC-FE-100EX	100BASE-EX SFP (40km)
GLC-FE-100ZX	100BASE-ZX SFP (80km)
GLC-FE-100LX	100BASE-LX SFP for FE port
GLC-FE-100LX-RGD	100Mbps Single Mode Rugged SFP
GLC-FE-100BX-U	100BASE-BX10-U SFP
GLC-FE-100BX-D	100BASE-BX10-D SFP
GLC-LH-SMD	1000BASE-LX/LH SFP transceiver module, MMF/SMF, 1310nm, DOM

GLC-SX-MM	1000BASE-SX SFP transceiver module
GLC-SX-MMD	1000BASE-SX SFP transceiver module, MMF, 850nm, DOM
GLC-SX-MM-RGD	1000Mbps Multi-Mode Rugged SFP
GLC-EX-SMD	1000BASE-EX SFP transceiver module, SMF, 1310nm, DOM
GLC-ZX-SMD	1000BASE-ZX SFP transceiver module, SMF, 1550nm, DOM
GLC-ZX-SM-RGD	1000BASE-ZX Single Mode RuggedSFP
GLC-BX-U	1000BASE-BX SFP, 1310NM
GLC-BX-D	1000BASE-BX SFP, 1490NM
GLC-TE	1000BASE-T SFP transceiver module for Category 5 copper wire
SFP-10G-SR	10GBASE-SR SFP Module
SFP-10G-LR	10GBASE-LR SFP Module
SFP-10G-LR-S	10GBASE-LR SFP Module
SFP-10G-ER	10GBASE-ER SFP Module
SFP-10G-ZR	Cisco 10GBASE-ZR SFP10G Module for SMF
SFP-10G-SR-X	10GBASE-SR SFP Module for Extended Temp range
SFP-10G-LR-X	10GBASE-LR SFP Module for Extended Temp range
SFP-10G-LRM	10GBASE-LRM SFP Module
SFP-H10GB-CU1M	10GBASE-CU SFP+ Cable 1 Meter
SFP-H10GB-CU3M	10GBASE-CU SFP+ Cable 3 Meter
SFP-H10GB-CU5M	10GBASE-CU SFP+ Cable 5 Meter
CWDM-SFP10G-1570	CWDM 1570 nm SFP+ 10 Gigabit Ethernet Transceiver Module
DWDM-SFP10G-38.19=	10GBASE-DWDM 1538.19 nm SFP10G (100-GHz ITU grid)

Warranty information

Warranty information is available on Cisco.com at the Product Warranties page.

Service and support

Cisco offers a wide range of services programs to help accelerate customer success. These innovative services programs are delivered through a unique combination of people, processes, tools, and partners, promoting high levels of customer satisfaction. Cisco Services help you protect your network investment, optimize network operations, and prepare your network for new applications to extend network intelligence and the power of your business. For more information about Cisco Services, refer to Cisco Technical Support Services or Cisco Advanced Services.

Cisco is committed to reducing your total cost of ownership. Cisco offers a portfolio of technical support services to help ensure that Cisco products operate efficiently, remain highly available, and benefit from the most up-to-date system software. The services and support programs described in Table 6 are available as part of the Cisco Carrier Ethernet Switching Service and Support solution and are available directly from Cisco and through resellers.

Table 6. Service and support

Advanced services	Features	Benefits
Cisco Total Implementation Solutions (TIS), available directly from Cisco **Cisco Packaged TIS, available through resellers**	• Project management • Site survey, configuration, and deployment • Installation, text, and cutover	• Supplement existing staff • Help ensure functions meet needs • Mitigate risk

	• Training • Major moves, adds, and changes • Design review and product staging	
Cisco SP Base Support and Service Provider–Based Onsite Support, available directly from Cisco **Cisco Packaged Service Provider–Based Support, available through resellers**	• 24-hour access to software updates • Web access to technical repositories • Telephone support through the Cisco Technical Assistance Center (TAC) • Advance replacement of hardware parts	• Facilitate proactive or expedited problem resolution • Lower total cost of ownership by taking advantage of Cisco expertise and knowledge • Reduce network downtime

For more information

For more information about the NCS 520, contact your local Cisco account representative.

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Printed in USA C78-740294-01 05/18