Cisco Network Convergence System 6000 Series 60-Port 10Gbps Multiservice Line Card

Cisco® Network Convergence System (NCS) 6000 Series Routers offer exceptional network agility, packet optical convergence, and petabit-per-second system scale. The Cisco NCS 6000 Series also facilitates the buildout of the next-generation core to support elastic capacity at a low TCO and to deliver high-bandwidth mobile, video, and cloud services.

Using the industry-leading Cisco IOS® XR operating system, running in a virtualized environment, the Cisco NCS 6000 Series advances the concept of distributed routing and virtualization. Using virtualized Cisco IOS XR, the Cisco NCS 6000 Series brings new levels of programmability and virtualization to support a wider range of new offerings, accelerate provisioning, and make the network more cost effective.

The Cisco NCS 6000 Series is powered by Cisco nPower Network Processor Units (NPUs). Cisco nPower devices are state-of-the-art programmable forwarding application-specific integrated circuits (ASICs), designed to deliver the industry's first zero-packet loss (ZPL) and zero-topology loss (ZTL) software upgrade capability based on Cisco patented technologies.

The Cisco NCS 6000 Series is engineered for environmental efficiency by offering an adaptable power-consumption model for its ASICs and the use of revolutionary complementary metal-oxide semiconductor (CMOS) photonics technology. With these technologies together, the Cisco NCS 6000 Series can offer a highly power-efficient footprint for service provider routing.

Figure 1. Cisco NCS 6000 Series 60-Port 10-Gbps Multiservice Line Card with SFP+ Optics

Features and Benefits

Cisco NCS 6000 Series 60-Port 10Gbps Multiservice Line Cards (Figure 1) are industry-leading solutions that allow service providers to offer very high throughput over 60 ports with 10-Gbps interfaces. Optimized for high-speed IP and Multiprotocol Label Switching (MPLS) forwarding applications, they provide industry-leading forwarding scale and quality of service (QoS) at wire rate.

Cisco NCS 6000 Series 60-port 10Gbs Multiservice Line Cards use the state-of-the-art Cisco nPowerX1e intelligent silicon design. Using enhanced small form-factor pluggable (SFP+) 10 Gigabit Ethernet modules, these cards support a variety of optical fibers, reaches, and optical capabilities.

The Cisco NCS 6000 Series 60-port 10Gbps Multiservice Line Cards offer significant advantages to service providers:

- Industry-leading throughput with full IPv4, IPv6, and MPLS forwarding capabilities, optimized for high-throughput Internet core, peering, and edge applications
- Advanced Cisco nPowerX1e Layer 3 forwarding NPU with industry-leading wire-rate lookup, forwarding, and QoS performance for IP and MPLS flows
- Built-in hardware acceleration for critical network control traffic
- Support across all Cisco NCS 6000 Series single-chassis and multichassis configurations for investment protection
- Efficient environmental design by adapting the power consumption to active Cisco nPower resources only
- In-service software upgrade
- Independently programmable and upgradable NPUs with fault protection and isolation
- Enhanced onboard multicore CPU for accelerated and scalable software processing
- Integrated WAN physical layer (PHY), OTU-2 framers for G.709 termination at 10-Gbps speeds
- Up to 1024 license-activated queues per 10 Gigabit Ethernet physical interface, with more than 61000 license-activated queues per card
- Accurate hardware-assisted time-stamping support for OAM and service-level agreement (SLA) monitoring
- Industry-leading environmental efficiency with a low power and weight profile per Gbps

Product Specifications

Table 1 provides a summary of the Cisco NCS 6000 Series 60-port 10Gbps line card specifications.

Table 1. Product Specifications

Feature	Description
Software compatibility	Virtualized Cisco IOS-XR Software Release 5.0.1 or later
Port density	• 60 ports of 10 Gigabit Ethernet per line card slot
Ethernet	• IEEE 802.3b compliant • 10 Gigabit Ethernet PHY monitoring • IEEE 802.x flow control
Optical transport network (OTN) framing	• Support for WANPHY and OTN framing (OTU-2)
Features and protocols	IP features: • IPv4 unicast services • IPv6 unicast services • IPv4 and IPv6 equal-cost multipath (ECMP) routing • IPv4 and IPv6 load balancing Forwarding features: • Access control lists (ACLs and xACLs) • QoS and class of service (CoS) using modular QoS command line interface (CLI) • IP packet classification and marking • Queuing (both ingress and egress) • Policing (both ingress and egress) • Diagnostic and network management support

Feature	Description
	IPv4 multicast features: • Protocol-independent multicast (PIM) forwarding • IP multicast priority propagation • Multicast reverse path forwarding (RPF) • Multicast nonstop forwarding (NSF) • Multicast forwarding information base (MFIB) MPLS features: • MPLS forwarding • MPLS load balancing • Traffic engineering and point-to-multipoint (P2MP) traffic engineering • Policy-based traffic engineering selection (PBTS) • MPLS OAM • User-Network Interface (UNI) • Link Management Protocol (LMP) Security features: • Access control list • Unicast reverse path forwarding (uRPF) • Dynamic control plane protection (DCoPP) • Management plane protection • QoS-based policy propagation through Border Gateway Protocol (BGP) Error detection and fast convergence features: • Bidirectional Forwarding Detection (BFD) • Ethernet OA&M (802.1ag and 802.3ah) • IP and MPLS fast reroute (FRR) • BGP Prefix-Independent Convergence Accounting: • Cisco NetFlow • BGP policy accounting • MAC accounting
Performance	• Line-rate packet forwarding and service • Nonblocking fabric performance for all IPv4, IPv6, and MPLS packet sizes • Maximum number of line cards per chassis: 8
Reliability and availability	• Line card online insertion and removal (OIR) support without affecting system • In-service system upgrade of the switch fabric from single-chassis to multichassis • In-service software upgrade • Coexistence of Multiservice and Label Switch Router (LSR) cards in the same system
Network management	• Cisco IOS XR Software CLI • Simple Network Management Protocol (SNMP) • Extensible Markup Language (XML) interface • Cisco Prime™ Network
Physical dimensions	• Occupies a full slot in a Cisco NCS 6000 Series chassis • Size (H x D x W): 21.5 in. x 15.58 in. x 2.125 in • Weight: 26 lbs (11.8 Kg)
Environmental conditions	• Compliant with GR-63-CORE requirements • Storage temperature: -40 to 158°F (-40 to 70°C) • Operating temperature: ◦ Normal: 41 to 104°F (5 to 40°C) ◦ Short-term: 23 to 122°F (-5 to 50°C)[1] • Relative humidity: ◦ Normal: 5 to 85%

Cisco NCS 6000 Series 60-port 10Gbps Multiservice Line Cards can be ordered in various optics configurations. Optics specifications are listed in Table 2.

[1] Short-term refers to a period of not more than 96 consecutive hours and a total of not more than 15 days in 1 year. (This number refers to a total of 360 hours in any given year, but no more than 15 occurrences during that 1-year period.)

Table 2. Optical Modules Specifications

Part Number	Product Description	Product Datasheet
SFP-10G-SR	10GBASE-SR 850 nm MMF (LANPHY)	CLICK HERE
SFP-10G-LR	10GBASE-LR 1310 nm SMF (LANPHY)	
SFP-10G-SR-X	10GBASE-SR 850 nm MMF (LANPHY & WANPHY)	
SFP-10G-LR-X	10GBASE-LR 1310 nm SMF (LANPHY & WANPHY)	
SFP-10G-ER	10GBASE-ER 1550 nm SMF1	
SFP-10G-ZR	10GBASE-ZR SFP+, SMF 80km	
SFP-10G-DWDM-TUNE(*)	10GBase Tunable DWDM	

(*) Tunable DWDM support on Cisco NCS 6000 Series 60 port 10Gbps MS line cards is planned in a future release.

Ordering Information

To place an order, visit the Cisco Ordering homepage. Table 3 provides ordering information for the products listed in this datasheet.

Table 3. Ordering Information

Product Part Number	Product Name
NC6-60x10GE-M-S	Cisco NCS 6000 Series 60 Port 10Gigabit Ethernet Multiservice Line Card SFP+ Optics

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Services from Cisco and our partners help you get the most value from your investments in Cisco's converged IP plus optical solutions, quickly and cost effectively. We can help you design, implement, and validate your solution to speed migration and cutover. We can also help coordinate every step, strengthen your team, and make the most of tomorrow's opportunities.

For More Information

For more information about the Cisco NCS 6000 Series Routers, contact your local Cisco representative or visit: http://www.cisco.com/go/ncs6000.

Learn more about Cisco services at http://www.cisco.com/go/spservices.

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