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## Overview

The Cisco Nexus 56128P (N5K-C56128P) is a 2RU (2 rack unit) switch that supports 2.56 Tbps of bandwidth across 48 fixed 1 Gigabit and 10 Gigabit Ethernet SFP+ ports, and four 40-Gbps QSFP+ ports. The 48 fixed SFP+ ports and 4 40Gbps QSFP+ ports support FCoE also, in addition to Ethernet. The Cisco Nexus 56128P runs the industry-leading Cisco NX-OS Software operating system, providing features and capabilities that are widely deployed.

## Quick Specs

Figure 1 shows the appearance of N5K-C56128P.



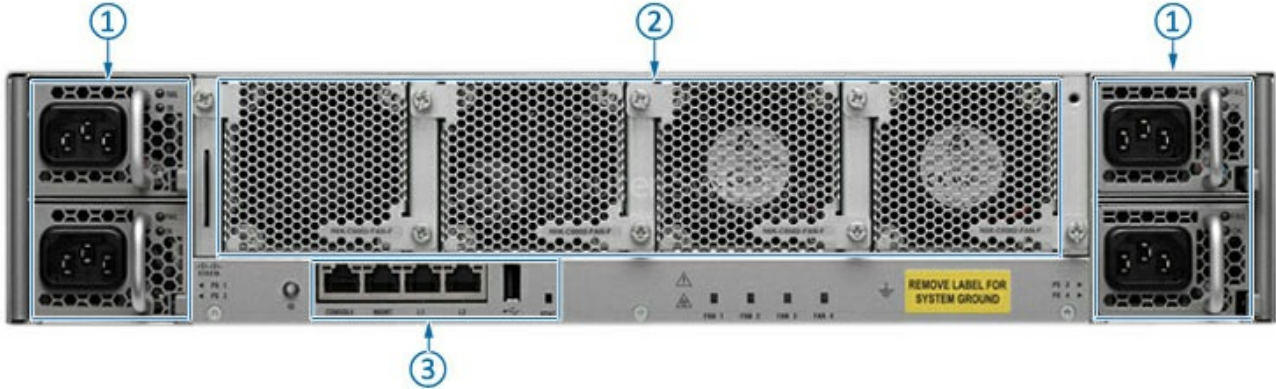
Table 1 shows the Quick Specs.

<b>Product Code</b>	N5K-C56128P
<b>Bandwidth</b>	2.56 Tbps
<b>Fixed Interfaces</b>	48 fixed 1 Gigabit and 10 Gigabit Ethernet SFP+ ports, and four 40-Gbps QSFP+ ports
<b>Form Factor</b>	2-rack unit
<b>Expansion slots</b>	2
<b>Power Supplies</b>	four 2+2 redundant, hot-swappable power supplies
<b>Fan Modules</b>	four 3+1 redundant, hot-swappable independent fans
<b>Number of ports</b>	1152 with FEX
<b>10 GE</b>	Up to 96 wire-rate ports
<b>40 GE</b>	Up to 8 QSFP ports
<b>Unified ports</b>	Up to 48 ports (Ethernet; FCoE; 2/4/8-gigabit FC)
<b>10 and 40 Gbps FCoE</b>	Yes
<b>Hardware VXLAN</b>	Yes
<b>NVGRE capable</b>	Yes
<b>Latency</b>	1 microsecond
<b>Airflow</b>	supporting both port-side intake (red handle) and fan-side intake (blue handle) airflow options.

Physical (height x width x depth)	3.5 x 17.3 x 30 in (8.8 x 43.9 x 76.2 cm)
Weight	60 lb (2 expansion modules and 4 power supplies)

## Product Details

Figure 2 shows the back panel of N5K-C56128P.



Note:

(1)	Hot-Swappable N+1 Redundant AC/DC Power Supplies
(2)	Hot-Swappable N+1 Redundant Fan Trays(4 per switch)-Choice of reverse airflow
(3)	Mgmto/Console/USB

## The Accessories

Table 2 shows the recommended elements for the N5K-C56128P.

Category	Model	Description
N5600 SFP Transceiver and Optics	<a href="#">SFP-10G-SR</a>	10GBASE-SR SFP Module
	<a href="#">SFP-H10GB-CU1-5M</a>	10GBASE-CU SFP+ Cable 1.5 Meter
Software License Options	<a href="#">N56-LAN1K9-P</a>	Limited Time Promotion for Nexus 5600 Series LAN Enterprise

## Compare to Similar Items

Table 3 shows the comparison of N5K-C56128P and N5K-C5672UP.

Product Code	N5K-C56128P	<a href="#">N5K-C5672UP</a>
Form factor	2-rack unit	1-rack unit
Power Supplies	four 2+2 redundant, hot-swappable power supplies	two 1+1 redundant, hot-swappable power supplies
Airflow	supporting both port-side intake (red handle) and fan-side intake (blue handle) airflow options.	supporting both port-side intake (red handle) and fan-side intake (blue handle) airflow options for flexible mounting
Number of ports	1152 with FEX	Up to 1152 with FEX
10 GE	Up to 96 wire-rate ports	48 ports
40 GE	Up to 8 QSFP ports	6 true QSFP ports
Unified ports	Up to 48 ports (Ethernet; FCoE; 2/4/8-gigabit FC)	16 ports (Ethernet; FCoE; 2/4/8-gigabit FC)

<b>10 and 40 Gbps FCoE</b>	Yes	Yes
<b>Hardware VXLAN</b>	Yes	Yes
<b>NVGRE capable</b>	Yes	Yes
<b>Latency</b>	1 microsecond	1 microsecond

## Get more information

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## Specification

<b>N5K-C56128P Specifications</b>	
Form factor	2-rack unit
Expansion slots	2
Number of ports	1152 with FEX
10 GE	Up to 96 wire-rate ports
40 GE	Up to 8 QSFP ports
Unified ports	Up to 48 ports (Ethernet; FCoE; 2/4/8-gigabit FC)
10 and 40 Gbps FCoE	Yes
Hardware VXLAN	Yes
NVGRE capable	Yes
Latency	1 microsecond
Performance	<ul style="list-style-type: none"> <li>● Layer 2 and 3 hardware forwarding at 2.56 Tbps; 1904 mpps (64-byte packets)</li> <li>● Support for up to 256,000 combined entries of MAC addresses and Address Resolution Protocol (ARP) entries</li> <li>● Low latency of approximately 1 microsecond using cut-through forwarding for predictable, consistent traffic latency regardless of packet size, traffic pattern, or features enabled on 10 and 40 Gigabit Ethernet interfaces</li> <li>● 25-MB buffer per 12 x 10 Gigabit Ethernet SFP+ interfaces</li> <li>● Line-rate traffic throughput on all ports in Layer 2 and 3 mode</li> </ul>
Interfaces	<ul style="list-style-type: none"> <li>● 48 fixed 1/10 Gigabit Ethernet SFP+ ports with 4 x 40 Gigabit Ethernet QSFP+ fixed ports and 2 expansion slots</li> <li>● Expansion module: 24 SFP+ unified ports plus 2 x 40 Gigabit Ethernet QSFP+ ports</li> <li>● Conversion of 40 Gigabit Ethernet ports to 10 Gigabit Ethernet interfaces through QSFP+ breakout cable</li> <li>● Fabric extension through the Cisco Nexus 2200 and 2300 platforms</li> </ul>

<p>Layer 2 Features</p>	<ul style="list-style-type: none"> <li>● Layer 2 switch ports and VLAN trunks</li> <li>● IEEE 802.1Q VLAN encapsulation</li> <li>● Support for up to 4000 VLANs</li> <li>● Support for up to 4000 access control list (ACL) entries</li> <li>● Rapid Per-VLAN Spanning Tree Plus (PVRST+) (IEEE 802.1w compatible)</li> <li>● Multiple Spanning Tree Protocol (MSTP) (IEEE 802.1s): 64 instances</li> <li>● Spanning Tree PortFast</li> <li>● Spanning Tree root guard</li> <li>● Spanning Tree Bridge Assurance</li> <li>● Cisco EtherChannel technology (up to 16 ports per EtherChannel)</li> <li>● Cisco vPC technology</li> <li>● vPC configuration synchronization</li> <li>● vPC shutdown</li> <li>● Link Aggregation Control Protocol (LACP): IEEE 802.3ad</li> <li>● Advanced port-channel hashing based on Layer 2, 3, and 4 information</li> <li>● Jumbo frames on all ports (up to 9216 bytes)</li> <li>● Pause frames (IEEE 802.3x)</li> <li>● Storm control (unicast, multicast, and broadcast)</li> <li>● Private VLANs</li> <li>● Private VLAN over trunks (isolated and promiscuous)</li> <li>● Private VLANs over vPC and EtherChannels</li> <li>● VLAN remapping</li> <li>● FabricPath</li> <li>● EvPC and vPC+ with FabricPath</li> <li>● Adapter FEX</li> <li>● Data Center VM-FEX</li> <li>● Support for up to 24 fabric extenders (Layer 2) with each Cisco Nexus 5672UP, 5672UP-16G, and 56128P Switch</li> <li>● RDMA over Converged Ethernet (RoCE) using Data Center Bridging (DCB) support (DCB Exchange [DCBX] no drop and priority flow control [PFC])</li> </ul>
<p>Layer 3 Features</p>	<ul style="list-style-type: none"> <li>● Layer 3 interfaces: Routed ports, switch virtual interface (SVI), port channels, subinterfaces, and port-channel subinterfaces</li> <li>● Support for up to 32,000 IPv4 and 8000 IPv6 host prefixes</li> <li>● Support for up to 8000 multicast routes (IPv4)</li> <li>● Support for up to 8000 IGMP snooping groups</li> <li>● Support for 4000 Virtual Routing and Forwarding (VRF) entries</li> <li>● Support for up to 4096 VLANs</li> <li>● Equal-Cost Multipathing (ECMP) up to 64 ways</li> <li>● 4000 flexible ACL entries</li> <li>● Routing protocols: Static, Routing Information Protocol Version 2 (RIPv2), Enhanced Interior Gateway Routing Protocol (EIGRP), Open Shortest Path First Version 2 (OSPFv2), Border Gateway Protocol (BGP), and Intermediate System-to-Intermediate System (IS-IS)</li> <li>● IPv6 routing protocols: Static, OPFv3, BGPv6, and EIGRPv6</li> <li>● IPv6 VRF-lite</li> <li>● BFD support: OSPFv2, BGPv4, EIGRP, and VRF instances</li> <li>● Policy-Based Routing (IPv4 and IPv6)</li> <li>● Hot-Standby Router Protocol (HSRP) and Virtual Router Redundancy Protocol (VRRP)</li> <li>● IP direct broadcast</li> <li>● vPC+ routing protocol peering</li> <li>● ACL: Routed ACL with Layer 3 and 4 options to match ingress and egress ACL</li> <li>● Multicast: Protocol Independent Multicast Version 2 (PIMv2) sparse mode, Source-Specific Multicast (SSM), Bidir-PIM, Multicast Source Discovery Protocol (MSDP), IGMPv2 and v3, and Multicast VLAN Registration (MVR)</li> <li>● VRF: VRF-lite (IP VPN); VRF-aware unicast; and BGP-, OSPF-, RIP-, and VRF-aware multicast</li> <li>● Unicast Reverse-Path Forwarding (uRPF) with ACL; strict and loose modes</li> <li>● Jumbo frame support (up to 9216 bytes)</li> <li>● Support for up to 24 fabric extenders on each Cisco Nexus 5600 10-Gbps platform switch</li> </ul>
<p>Quality of Service (QoS)</p>	<ul style="list-style-type: none"> <li>● Layer 2 IEEE 802.1p (class of service [CoS])</li> <li>● 8 unicast queues and 8 multicast queues per port</li> <li>● Per-port QoS configuration</li> <li>● CoS trust</li> <li>● Port-based CoS assignment</li> <li>● Modular QoS CLI (MQC) compliance: IPv4 and IPv6</li> <li>● ACL-based QoS classification (Layers 2, 3, and 4)</li> <li>● Flexible TCAM carving</li> <li>● MAC and ARP hardware carving</li> <li>● MQC CoS marking</li> <li>● Per-port virtual output queuing</li> <li>● CoS-based egress queuing</li> <li>● Egress strict-priority queuing</li> <li>● Egress port-based scheduling: Deficit Weighted Round-Robin (DWRR)</li> <li>● Control-Plane Policing (CoPP): IPv4 and IPv6</li> </ul>

Security	<ul style="list-style-type: none"> <li>● Ingress ACLs (standard and extended) on Ethernet and virtual Ethernet ports</li> <li>● Standard and extended Layer 2 ACLs: MAC addresses, protocol type, etc.</li> <li>● Standard and extended Layer 3 and 4 ACLs: IPv4 and IPv6, Internet Control Message Protocol (ICMP and ICMPv6), TCP, User Datagram Protocol (UDP), etc.</li> <li>● Ingress policing</li> <li>● VLAN-based ACLs (VACLs)</li> <li>● Port-based ACLs (PACLs)</li> <li>● Named ACLs</li> <li>● Optimized ACL distribution</li> <li>● ACLs on virtual terminals (vty)</li> <li>● ACL logging (IPv4 only)</li> <li>● Dynamic Host Configuration Protocol (DHCP) snooping with Option 82</li> <li>● Dynamic ARP Inspection</li> <li>● IP source guard</li> <li>● DHCP relay (up to 32 destinations)</li> <li>● Ethernet port security</li> <li>● IPv6 RACL, PACL, and VACL</li> <li>● iSCSI type-length-value (TLV)</li> </ul>
High-Availability Features	<ul style="list-style-type: none"> <li>● Cisco In-Service Software Upgrade (ISSU) for Layer 2</li> <li>● Hot-swappable field-replaceable power supplies and fan modules</li> <li>● N+1 and N+N power redundancy</li> <li>● N+1 fan module redundancy</li> </ul>
Management	<ul style="list-style-type: none"> <li>● Switch management using 10/100/1000-Mbps management or console ports</li> <li>● CLI-based console to provide detailed out-of-band management</li> <li>● In-band switch management</li> <li>● Port-based locator and beacon LEDs</li> <li>● Configuration synchronization</li> <li>● Configuration rollback</li> <li>● Secure Shell Version 2 (SSHv2)</li> <li>● Telnet</li> <li>● Authentication, authorization, and accounting (AAA)</li> <li>● AAA with RBAC</li> <li>● RADIUS</li> <li>● TACACS+</li> <li>● Syslog (8 servers)</li> <li>● Embedded packet analyzer</li> <li>● SNMPv1, v2, and v3 (IPv4 and IPv6)</li> <li>● Enhanced SNMP MIB support</li> <li>● XML (NETCONF) support</li> <li>● Remote monitoring (RMON)</li> <li>● Advanced Encryption Standard (AES) for management traffic</li> <li>● Unified username and passwords across CLI and SNMP</li> <li>● Microsoft Challenge Handshake Authentication Protocol (MS-CHAP)</li> <li>● Digital certificates for management between switch and RADIUS server</li> <li>● Cisco Discovery Protocol Versions 1 and 2</li> <li>● RBAC</li> <li>● SPAN on physical, PortChannel and VLAN</li> <li>● ERSPAN</li> <li>● Ingress and egress packet counters per interface</li> <li>● Network Time Protocol (NTP)</li> <li>● Cisco Generic Online Diagnostics (GOLD)</li> <li>● Comprehensive bootup diagnostic tests</li> <li>● Cisco Embedded Event Manager (EEM)</li> <li>● Cisco Call Home</li> <li>● Cisco Smart Call Home</li> <li>● Default Interface</li> <li>● Cisco Fabric Manager</li> <li>● Cisco Prime DCNM</li> <li>● CiscoWorks LAN Management Solution (LMS)</li> </ul>
Data Center Bridging	<ul style="list-style-type: none"> <li>● CEE- and IEEE-compliant PFC (per-priority Pause frame support: IEEE 802.1Qbb)</li> <li>● PFC link distance support: 20 km</li> <li>● CEE-compliant DCBX Protocol</li> <li>● CEE- and IEEE-compliant enhanced transmission selection</li> </ul>

FCoE Features (Require Storage Services License)	<ul style="list-style-type: none"> <li>● T11 standards-compliant FCoE (Fibre Channel-BB-5)</li> <li>● T11 FCoE Initialization Protocol (FIP) (Fibre Channel-BB-5)</li> <li>● Any 10 or 40 Gigabit Ethernet port configurable as FCoE</li> <li>● SAN administration separate from LAN administration</li> <li>● Fibre Channel forwarding (FCF)</li> <li>● Fibre Channel enhanced port types: VE, VF and VNP</li> <li>● Direct attachment of FCoE targets</li> <li>● Fabric Device Management Interface (FDMI)</li> <li>● Fibre Channel ID (FCID) persistence</li> <li>● Distributed device alias services</li> <li>● In-order delivery</li> <li>● Port tracking</li> <li>● Cisco FCoE NPV technology</li> <li>● N-port identifier virtualization (NPIV)</li> <li>● Fabric services: Name server, registered state change notification (RSCN), login services, and name-server zoning</li> <li>● Per-VSAN fabric services</li> <li>● Cisco Fabric Services</li> <li>● Distributed device alias services</li> <li>● Host-to-switch and switch-to-switch Fibre Channel-SP authentication</li> <li>● Fabric Shortest Path First (FSPF)</li> <li>● Standard zoning</li> <li>● Enhanced zoning</li> <li>● Cisco Fabric Analyzer</li> <li>● Cisco DCNM-SAN</li> <li>● Storage Management Initiative Specification (SMI-S)</li> <li>● Boot from SAN over vPC and Enhanced vPC (EvPC)</li> <li>● FCP</li> <li>● VSAN trunking</li> <li>● Fabric Device Management Interface (FDMI)</li> <li>● Fibre Channel ID (FCID) persistence</li> <li>● Distributed device alias services</li> <li>● In-order delivery</li> <li>● Port tracking</li> <li>● Cisco NPV technology</li> <li>● Fabric binding for Fibre Channel</li> <li>● Port security</li> <li>● Fibre Channel traceroute</li> <li>● Fibre Channel ping</li> <li>● Fibre Channel debugging</li> </ul>
<b>SNMP MIBs</b>	
Generic MIBs	<ul style="list-style-type: none"> <li>● SNMPv2-SMI</li> <li>● CISCO-SMI</li> <li>● SNMPv2-TM</li> <li>● SNMPv2-TC</li> <li>● IANA-ADDRESS-FAMILY-NUMBERS-MIB</li> <li>● IANAifType-MIB</li> <li>● IANAiprouteprotocol-MIB</li> <li>● HCNM-TC</li> <li>● CISCO-TC</li> <li>● SNMPv2-MIB</li> <li>● SNMP-COMMUNITY-MIB</li> <li>● SNMP-FRAMEWORK-MIB</li> <li>● SNMP-NOTIFICATION-MIB</li> <li>● SNMP-TARGET-MIB</li> <li>● SNMP-USER-BASED-SM-MIB</li> <li>● SNMP-VIEW-BASED-ACM-MIB</li> <li>● CISCO-SNMP-VACM-EXT-MIB</li> </ul>
Layer 3 MIBs	<ul style="list-style-type: none"> <li>● UDP-MIB</li> <li>● TCP-MIB</li> <li>● OSPF-MIB</li> <li>● BGP4-MIB</li> <li>● CISCO-HSRP-MIB</li> </ul>
Ethernet MIBs	<ul style="list-style-type: none"> <li>● CISCO-VLAN-MEMBERSHIP-MIB</li> <li>● CISCO-Virtual-Interface-MIB</li> <li>● CISCO-VTP-MIB</li> </ul>

Configuration MIBs	<ul style="list-style-type: none"> <li>● ENTITY-MIB</li> <li>● IF-MIB</li> <li>● CISCO-ENTITY-EXT-MIB</li> <li>● CISCO-ENTITY-FRU-CONTROL-MIB</li> <li>● CISCO-ENTITY-SENSOR-MIB</li> <li>● CISCO-FLASH-MIB</li> <li>● CISCO-SYSTEM-MIB</li> <li>● CISCO-SYSTEM-EXT-MIB</li> <li>● CISCO-IP-IF-MIB</li> <li>● CISCO-IF-EXTENSION-MIB</li> <li>● CISCO-SERVER-INTERFACE-MIB</li> <li>● CISCO-NTP-MIB</li> <li>● CISCO-IMAGE-MIB</li> <li>● CISCO-IMAGE-CHECK-MIB</li> <li>● CISCO-IMAGE-UPGRADE-MIB</li> <li>● CISCO-CONFIG-COPY-MIB</li> <li>● CISCO-ENTITY-VENDORTYPE-OID-MIB</li> <li>● CISCO-BRIDGE-MIB</li> </ul>
Monitoring MIBs	<ul style="list-style-type: none"> <li>● DIFFSERV-DSCP-TC</li> <li>● NOTIFICATION-LOG-MIB</li> <li>● DIFFSERV-MIB</li> <li>● CISCO-CALLHOME-MIB</li> <li>● CISCO-SYSLOG-EXT-MIB</li> <li>● CISCO-PROCESS-MIB</li> <li>● RMON-MIB</li> <li>● CISCO-RMON-CONFIG-MIB</li> <li>● CISCO-HC-ALARM-MIB</li> <li>● LLDP-MIB</li> </ul>
Security MIBs	<ul style="list-style-type: none"> <li>● CISCO-AAA-SERVER-MIB</li> <li>● CISCO-AAA-SERVER-EXT-MIB</li> <li>● CISCO-COMMON-ROLES-MIB</li> <li>● CISCO-COMMON-MGMT-MIB</li> <li>● CISCO-RADIUS-MIB</li> <li>● CISCO-SECURE-SHELL-MIB</li> <li>● TCP/IP MIBs</li> <li>● INET-ADDRESS-MIB</li> <li>● TCP-MIB</li> <li>● CISCO-TCP-MIB</li> <li>● UDP-MIB</li> <li>● IP-MIB</li> <li>● CISCO-IP-PROTOCOL-FILTER-MIB</li> <li>● CISCO-DNS-CLIENT-MIB</li> <li>● CISCO-PORTSECURITY-MIB</li> </ul>
Miscellaneous MIBs	<ul style="list-style-type: none"> <li>● START-MIB</li> <li>● CISCO-LICENSE-MGR-MIB</li> <li>● CISCO-FEATURE-CONTROL-MIB</li> <li>● CISCO-CDP-MIB</li> <li>● CISCO-RF-MIB</li> <li>● CISCO-ETHERNET-FABRIC-EXTENDER-MIB</li> <li>● CISCO-BRIDGE-MIB</li> <li>● CISCO-FCOE-MIB</li> <li>● CISCO-PORTCHANNEL-MIB</li> <li>● CISCO-ZS-MIB</li> </ul>
<b>Standards</b>	
Industry Standards	<ul style="list-style-type: none"> <li>● IEEE 802.1D: Spanning Tree Protocol</li> <li>● IEEE 802.1p: CoS prioritization</li> <li>● IEEE 802.1Q: VLAN tagging</li> <li>● IEEE 802.1Qaz: Enhanced transmission selection</li> <li>● IEEE 802.1Qbb: Per-priority Pause</li> <li>● IEEE 802.1s: Multiple VLAN instances of Spanning Tree Protocol</li> <li>● IEEE 802.1w: Rapid reconfiguration of Spanning Tree Protocol</li> <li>● IEEE 802.3: Ethernet</li> <li>● IEEE 802.3ad: LACP with fast timers</li> <li>● IEEE 802.3ae: 10 Gigabit Ethernet</li> <li>● IEEE 802.3ba: 40 Gigabit Ethernet (Applies to 40G SR4, SR4-S, LR4, LR4-S, and CSR4 optics only)</li> <li>● SFF 8431 SFP+ CX1 support</li> <li>● RMON</li> </ul>

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