N3K-C3172PQ-10GE Datasheet

Overview

The Cisco Nexus 3172PQ switch is a dense, high-performance Layer 2 and 3 10 and 40-Gbps switch that is a member of the Cisco Nexus 3100 switchesT. he Cisco Nexus 3172PQ is well suited for data centers that require a cost-effective, power-efficient line-rate Layer 2 and 3 top-of-rack (ToR) switch.

Quick Specs

Figure 1 shows the appearance of N3K-C3172PQ-10GE.

Table 1 shows the Quick Specs.

Product Code	N3K-C3172PQ-10GE
Performance	*1.4-Tbps switching capacity *Forwarding rate of up to 1 bpps *Line-rate traffic throughput (both Layer 2 and 3) on all ports *Configurable maximum transmission units (MTUs) of up to 9216 bytes (jumbo frames)

System memory	4 GB
Number of power supplies	2
Typical operating power	143 W
Maximum power	293W
Weight	18.6 lb (8 4 kg)
Dimensions (H x W x D)	1.72 x 17.3 x 17 in. (4.4 x 43.9 x 43.2 cm)

The SFP Transceiver and Cable Options

Table 2 shows the recommended elements for theN3K-C3172PQ-10GE.

Model	Description
SFP-H10GB-CU1M	10GBASE-CU SFP+ Cable 1 Meter
SFP-H10GB-ACU7M	Active Twinax cable assembly, 7m
SFP-H10GB-CU1-5M	10GBASE-CU SFP+ Cable 1.5 Meter
SFP-10G-LR	10GBASE-LR SFP Module

SFP-10G-SR	10GBASE-SR SFP Module

Compare to Similar Items

Table 3 shows the comparison between N3K-C3172PQ-10GE and N3K-C3172TQ-XL.

Model	N3K-C3172PQ-10GE.	N3K-C3172TQ-XL
Virtual extensible LAN (VXLAN) capable	Bridging	Bridging
Openflow support	Yes	Yes
Rack unit (RU)	1	1
Switching capacity	1.44 Tbps	1.44 Tbps
Interface-type	48 SFP+ and 6 QSFP+	48 RJ-45 and 6 Quad Small Form-Factor Pluggable Plus (QSFP+)
Maximum 1 Gigabit Ethernet (GE) ports	48	48
Maximum 10 GE ports	72	72
Maximum 40 GE ports	6	6

Specification

N3K-C3172PQ-10GE Specifications		
Physical	· 1RU fixed form factor · 72 x 10 Gigabit Ethernet ports (48 SFP+ and 6 QSFP+) ◦ 48 SFP ports support 1 and 10 Gigabit Ethernet ◦ 6 QSFP ports support 4 x 10 Gigabit Ethernet or 40 Gigabit Ethernet each ● Redundant fans (3+1) ● 2 redundant power supplies ● Management, console, and USB flash-memory ports	
Performance	● 1.4-Tbps switching capacity ● Forwarding rate of up to 1 bpps ● Line-rate traffic throughput (both Layer 2 and 3) on all ports ● Configurable maximum transmission units (MTUs) of up to 9216 bytes (jumbo frames)	
Hardware tables and scalability	Number of MAC addresses	288,000
	Number of VLANS	4096
	Number of spanning-tree instances	● RSTP: 512 ● MSTP: 64
	Number of ACL entries	● 4000 ingress ● 1000 egress
	Routing table	● 16,000 prefixes and 16,000 host entries* ● 8000 multicast routes*
	Number of EtherChannels	64 (with vPC)
	Number of ports per EtherChannel	32
	System memory	4 GB

	Buffer size	12 MB shared
	Boot flash	16 GB
Power	Number of power supplies	2
	Power supply types	● AC (forward and reversed airflow) ◦ - N2200-PAC-400W and N2200-PAC-400W-B (PQ models) ◦ - NXA-PAC-500W and NX-PAC-500W-B (TQ models) ● DC (forward and reversed airflow) ◦ - N2200-PDC-400W and N3K-PDC-350W-B (PQ models) ◦ - NXA-PDC-500W and NX-PDC-500W-B (TQ models)
	Typical operating power	143 W
	Maximum power	293W
	AC PSUs ● Input voltage ● Frequency ● Efficiency	 ● 100 to 240 VAC ● 50 to 60 Hz ● 89 to 91% at 220V
	DC PSUs ● Input voltage ● Maximum current (PSU output – System input) ● Efficiency	 ● -40 to -72 VDC ● 33A (400W unit), 42A (500W unit) ● 85 to 88%
Cooling	● Forward and reversed airflow schemes: ◦ Forward airflow: Port-side exhaust (air enters through fan-tray and power supplies and exits through ports) ◦ Reversed airflow: Port-side intake (air enters through ports and exits through fan-tray and power supplies) ● Redundant fans ● Hot swappable (must swap within 1 minute)	
Sound	Measured sound power (maximum) ● Fan speed: 40% duty cycle ● Fan speed: 70% duty cycle ● Fan speed: 100% duty cycle	 ● 64.9 dBA ● 69.3 dBA ● 76.7 dBA
Environment	Dimensions (height x width x depth)	1.72 x 17.3 x 17 in. (4.4 x 43.9 x 43.2 cm)
	Weight	18.6 lb (8 4 kg)
	Operating temperature	● 32 to 104°F (0 to 40°C)
	Storage temperature	● -40 to 158°F (-40 to 70°C)
	Operating relative humidity	● 10 to 85% noncondensing ● Up to 5 days at maximum (85%) humidity ● Recommend ASHRAE data center environment
	Storage relative humidity	● 5 to 95% noncondensing
	Altitude	● 0 to 10,000 ft (0 to 3000m)
Safety and EMC		
Regulatory compliance	● Products should comply with CE Markings per directives 2004/108/EC and 2006/95/EC.	
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: Emissions	• 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 • KN24
RoHS	• RoHS 5 compliant except for lead press-fit connectors
Management and Standards Support	
MIB Support	Generic MIBs • SNMPv2-SMI • CISCO-SMI • SNMPv2-TM • SNMPv2-TC • IANA-ADDRESS-FAMILY-NUMBERS-MIB • IANAifType-MIB • IANAiprouteprotocol-MIB • HCNUM-TC • CISCO-TC • SNMPv2-MIB • SNMP-COMMUNITY-MIB • SNMP-FRAMEWORK-MIB • SNMP-NOTIFICATION-MIB • SNMP-TARGET-MIB • SNMP-USER-BASED-SM-MIB • SNMP-VIEW-BASED-ACM-MIB • CISCO-SNMP-VACM-EXT-MIB • MAU-MIB • CISCO-SWITCH-QOS-MIB • CISCO-CLASS-BASED-QOS-MIB Ethernet MIBs • CISCO-VLAN-MEMBERSHIP-MIB • LLDP-MIB • IP-MULTICAST-MIB Configuration MIBs • ENTITY-MIB • IF-MIB • CISCO-ENTITY-EXT-MIB • CISCO-ENTITY-FRU-CONTROL-MIB • CISCO-ENTITY-SENSOR-MIB • CISCO-SYSTEM-MIB • CISCO-SYSTEM-EXT-MIB • CISCO-IP-IF-MIB • CISCO-IF-EXTENSION-MIB • CISCO-NTP-MIB • CISCO-VTP-MIB • CISCO-IMAGE-MIB • CISCO-IMAGE-UPGRADE-MIB	Monitoring MIBs • NOTIFICATION-LOG-MIB • CISCO-SYSLOG-EXT-MIB • CISCO-PROCESS-MIB • RMON-MIB • CISCO-RMON-CONFIG-MIB • CISCO-HC-ALARM-MIB Security MIBs • CISCO-AAA-SERVER-MIB • CISCO-AAA-SERVER-EXT-MIB • CISCO-COMMON-ROLES-MIB • CISCO-COMMON-MGMT-MIB • CISCO-SECURE-SHELL-MIB Miscellaneous MIBs • CISCO-LICENSE-MGR-MIB • CISCO-FEATURE-CONTROL-MIB • CISCO-CDP-MIB • CISCO-RF-MIB Layer 3 and Routing MIBs • UDP-MIB • TCP-MIB • OSPF-MIB • BGP4-MIB • CISCO-HSRP-MIB
Standards	• IEEE 802.1D: Spanning Tree Protocol • IEEE 802.1p: CoS Prioritization • IEEE 802.1Q: VLAN Tagging • IEEE 802.1s: Multiple VLAN Instances of Spanning Tree Protocol • IEEE 802.1w: Rapid Reconfiguration of Spanning Tree Protocol • IEEE 802.3z: Gigabit Ethernet • IEEE 802.3ad: Link Aggregation Control Protocol (LACP) • IEEE 802.3ae: 10 Gigabit Ethernet (Cisco Nexus 3064-X) • IEEE 802.3ba: 40 Gigabit Ethernet • IEEE 802.3an:10GBASE-T (Cisco Nexus 3064-T) • IEEE 802.1ab: LLDP • IEEE 1588-2008: Precision Time Protocol (Boundary Clock)	

RFC	BGP ● RFC 1997: BGP Communities Attribute ● RFC 2385: Protection of BGP Sessions with the TCP MD5 Signature Option ● RFC 2439: BGP Route Flap Damping ● RFC 2519: Framework for Interdomain Route Aggregation ● RFC 2545: Use of BGPv4 Multiprotocol Extensions ● RFC 2858: Multiprotocol Extensions for BGPv4 ● RFC 3065: Autonomous System Confederations for BGP ● RFC 3392: Capabilities Advertisement with BGPv4 ● RFC 4271: BGPv4 ● RFC 4273: BGPv4 MIB: Definitions of Managed Objects for BGPv4 ● RFC 4456: BGP Route Reflection ● RFC 4486: Subcodes for BGP Cease Notification Message ● RFC 4724: Graceful Restart Mechanism for BGP ● RFC 4893: BGP Support for 4-Octet AS Number Space OSPF ● RFC 2328: OSPF Version 2 ● 8431RFC 3101: OSPF Not-So-Stubby-Area (NSSA) Option ● RFC 3137: OSPF Stub Router Advertisement ● RFC 3509: Alternative Implementations of OSPF Area Border Routers ● RFC 3623: Graceful OSPF Restart ● RFC 4750: OSPF Version 2 MIB RIP ● RFC 1724: RIPv2 MIB Extension ● RFC 2082: RIPv2 MD5 Authentication ● RFC 2453: RIP Version 2 IP Services ● RFC 768: UDP ● RFC 783: Trivial File Transfer Protocol (TFTP) ● RFC 791: IP ● RFC 792: ICMP ● RFC 793: TCP ● RFC 826: ARP ● RFC 854: Telnet ● RFC 959: FTP ● RFC 1027: Proxy ARP ● RFC 1305: Network Time Protocol (NTP) Version 3 ● RFC 1519: Classless Interdomain Routing (CIDR) ● RFC 1542: BootP Relay ● RFC 1591: Domain Name System (DNS) Client ● RFC 1812: IPv4 Routers ● RFC 2131: DHCP Helper ● RFC 2338: VRRP IP Multicast ● RFC 2236: IGMPv2 ● RFC 3376: IGMPv3 ● RFC 3446: Anycast Rendezvous Point Mechanism Using PIM and MSDP ● RFC 3569: Overview of SSM ● RFC 3618: MSDP ● RFC 4601: PIM-SM: Protocol Specification (Revised) ● RFC 4607: SSM for IP ● RFC 4610: Anycast-RP using PIM ● RFC 5132: IP Multicast MIB
Software Features	
Layer 2	● Layer 2 switch ports and VLAN trunks ● IEEE 802.1Q VLAN encapsulation ● Support for up to 4096 VLANs ● Rapid Per-VLAN Spanning Tree Plus (PVRST+) (IEEE 802.1w compatible) ● MSTP (IEEE 802.1s): 64 instances ● Spanning Tree PortFast ● Spanning Tree Root Guard ● Spanning Tree Bridge Assurance ● Cisco EtherChannel technology (up to 32 ports per EtherChannel) ● LACP: IEEE 802.3ad ● Advanced port-channel hashing based on Layer 2, 3, and 4 information ● vPC ● Jumbo frames on all ports (up to 9216 bytes) ● Storm control (unicast, multicast, and broadcast) ● Private VLANs ● NvGRE entropy ● Resilient hashing

Layer 3	● Layer 3 interfaces: Routed ports on interfaces, switch virtual interfaces (SVIs), port channels, and subinterfaces (total: 1024) ● 64-way ECMP ● 4000 ingress and 1000 egress ACL entries ● IPv6 routing: Static, OSPFv3, and BGPv6 ● Routing protocols: Static, RIPv2, EIGRP, OSPF, and BGP ● Bidirectional Flow Detection (BFD) for BGP, OSPF, and IPv4 static routes ● HSRP and VRRP ● ACL: Routed ACL with Layer 3 and 4 options to match ingress and egress ACLs ● VRF: VRF-lite (IP VPN), VRF-aware unicast (BGP, OSPF, and RIP), and VRF-aware multicast ● Unicast Reverse-Path Forwarding (uRPF) with ACL; strict and loose modes ● Jumbo frame support (up to 9216 bytes) ● Generic Routing Encapsulation (GRE) tunneling ● Advanced BGP features including BGP add-path for eBGP and iBGP, remove-private-as enhancements and eBGP next hop unchanged ● IP-in-IP Tunnel support
Multicast	● Multicast: PIMv2, PIM-SM, and PIM-SSM ● Bootstrap router (BSR), Auto-RP, and Static RP ● MSDP and Anycast RP ● Internet Group Management Protocol (IGMP) Versions 2 and 3
Quality of Service (QoS)	● Layer 2 IEEE 802.1p (class of service [CoS]) ● 8 hardware queues per port ● Per-port QoS configuration ● CoS trust ● Port-based CoS assignment ● Modular QoS CLI (MQC) compliance ● ACL-based QoS classification (Layers 2, 3, and 4) ● MQC CoS marking ● Differentiated services code point (DSCP) marking ● Weighted Random Early Detection (WRED) ● CoS-based egress queuing ● Egress strict-priority queuing ● Egress port-based scheduling: Weighted Round-Robin (WRR) ● Explicit Congestion Notification (ECN) ● Configurable ECN marking per port ● Priority Flow Control (with 3 no-drop queues and 1 default queue with strict priority scheduling between queues ● Policy Based Routing (PBR)
Security	● Ingress ACLs (standard and extended) on Ethernet ● Standard and extended Layer 3 and 4 ACLs include IPv4, Internet Control Message Protocol (ICMP), TCP, and User Datagram Protocol (UDP) ● VLAN-based ACLs (VACLs) ● Port-based ACLs (PACLs) ● Named ACLs ● ACLs on virtual terminals (vtys) ● DHCP snooping with Option 82 ● Port number in DHCP Option 82 ● DHCP relay ● Dynamic Address Resolution Protocol (ARP) inspection ● Configurable CoPP ● SPAN with ACL filtering
Cisco Nexus Data Broker	● Topology support for TAP and SPAN aggregation ● Support for QinQ to tag input source TAP and SPAN ports ● Configuration of symmetric hashing to load-balance traffic to multiple tools ● Traffic filtering based on Layer 1 through Layer 4 header information ● Traffic replication and forwarding to multiple monitoring tools ● Robust RBAC ● Northbound representational state transfer (REST) API for all programmability support

Management	• POAP • Python scripting • Cisco EEM • Switch management using 10/100/1000-Mbps management or console ports • CLI-based console to provide detailed out-of-band management • In-band switch management • Locator and beacon LEDs • Configuration rollback • SSHv2 • Secure Copy (SCP) server • Telnet • AAA • AAA with RBAC • RADIUS • TACACS+ • Syslog • Syslog generation on system resources (for example, FIB tables) • Embedded packet analyzer • SNMP v1, v2, and v3 • Enhanced SNMP MIB support • XML (NETCONF) support • Remote monitoring (RMON) • Advanced Encryption Standard (AES) for management traffic • Unified username and passwords across CLI and SNMP • Microsoft Challenge Handshake Authentication Protocol (MS-CHAP) • Digital certificates for management between switch and RADIUS server • Cisco Discovery Protocol Versions 1 and 2 • RBAC • SPAN on physical layer, port channel, and VLAN • Tunable buffer allocation for SPAN • Encapsulated Remote SPAN (ERSPAN) • Ingress and egress packet counters per interface • PTP (IEEE 1588) boundary clock • Network Time Protocol (NTP) • Cisco OHMS • Comprehensive bootup diagnostic tests • Cisco Call Home • Cisco DCNM • Advanced buffer utilization monitoring • sFlow

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