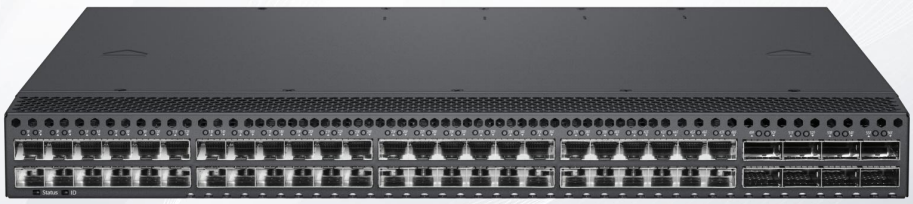
N5860-48SC Switch

HIGH PERFORMANCE 10GB SWITCH WITH 100GB FOR DATA CENTERS

N5860-48SC leaf switch is ideal for small-sized data centers and cloud computing services, providing stable, reliable and secure Layer 2/Layer 3 switching services.



Overview

The N5860-48SC leaf switch is ideal for small-sized data centers and cloud computing services. Compact 1U ToR high-density switch with full line-rate 48 1G/10G and 8 40/100G ports, delivering zero packet loss, low latency, non-blocking lossless Ethernet.

The switch incorporates multiple features that optimize data center network flexibility, efficiency, and reliability, including industry-leading chip, redundant hot-swappable power supplies and fans, VXLAN, MLAG (VAP), PFC, ECN, etc, meeting the growing demands of data center environment.

Benefits

- Broadcom BMC56770 Switch Chip
- Low-latency, Zero Packet Loss with PFC/ECN
- VXLAN Scales Data Center Capacity
- MLAG (VAP), GR and BFD Enhance Reliability
- 1+1 Redundant Power Supplies
- 3+1 Redundant Fan Modules
- CLI/ SNMPv1/v2c/v3/Telnet

Product Characteristics

Non-Blocking Forwarding

Ideal for the next generation data center and cloud computing, the switch is of the line speed products, which conforms to the East-West development trend of traffic in the data center. The switch employs an advanced cache scheduling mechanism to maximize the cache capability of the device, ensuring truly non-blocking transmission in the increasingly demanding data center environment.

Data Center Virtualization

The N5860-48SC adopts the industry-leading stacking technology to achieve unified network management, reducing network nodes and enhancing network reliability. The failover time for link failure is within 50-200ms to guarantee uninterrupted operation for mission-critical applications. The cross-device link aggregation feature enables access to the server or switch to achieve active-active uplinks.

Overlay Network Connection

The switch supports VXLAN, which can meet the requirements of overlay network construction in data centers, and solves the problem of insufficient VLAN number and difficult scale expansion of traditional data center networks. Based on the N5860-48SC switch, the basic network can be divided into new subnets without changing the physical topology. At the same time, there is no need to consider the restrictions of physical network IP address and broadcast domain.

Data Center Layer 2 Network Expansion

Vxlan technology has the ability to build a logical layer-2 network on the basis of L3 network by encapsulating layer-2 message in UDP tunnel message.

The switch supports EVPN protocol and provides VTEP (tunnel terminal) automatic discovery and authentication, which can reduce the flooding of VxLAN data plane and avoid vxlan's dependence on the underlying deployment multicast, simplify the deployment of VxLAN , improve the construction efficiency of layer-2 network, and better meet the deployment requirements of layer-2 network in the data center.

RDMA-based Lossless Ethernet

The switch implements low-delay forwarding of the lossless Ethernet based on the Remote Direct Memory Access (RDMA) and optimizes service forwarding performance. It greatly reduces the operation cost per bit of the entire network and enhances the competitive edge of service products.

Carrier-Class Reliability Protection

The switch supports built-in redundant power modules and modularized fan components. All the interface boards, power modules, and fan modules are hot-pluggable to guarantee undisturbed switching operation. In addition, the switch supports fault detection and automatic alarms for the power and fan modules. The rotation speed of the fans automatically adjusts to the ambient temperature. The switch further provides device-level and link-level reliability protection with the over-current, over-voltage, and overheating protection measures.

And it supports the features like Graceful Restart (GR) and Bidirectional Forwarding (BFD) mechanisms. All the features ensure the network convergence time is unaffected even when the network bears abundant services and heavy traffic, and therefore ensure normal operation.

Flexible and Comprehensive Security Policies

The N5860-48SC features multiple security features, which effectively defend against or control virus flooding and hacker attacks. These features include anti-DoS attack, validity check of ARP packets on ports, and multiple hardware-based ACL policies.

The switch supports hardware-based IPv6 ACLs, which can easily control IPv6 users' access to edge devices even when IPv6 users exist within an IPv4 network. It allows coexistence of IPv4 and IPv6 users on the network and can control access permissions of IPv6 users, such as restricting access to sensitive resources on the network.

The switch adopts industry-leading CPU Protection Policy (CPP) technology, which is an advanced hardware-based CPU protection mechanism, to distinguish data traffic destined to the CPU and process data according to queue priorities. The switch implements bandwidth control to protect the CPU against unauthorized traffic consumption, malicious attacks and resource consumption and hence to ensure switch security. The hardware of the N5860-48SC allows flexible binding of a user IP address or a MAC address to a port or a switch to strictly control user access. The switch supports DHCP snooping, which allows only a DHCP response to a trusted port to prevent spoofing by unauthorized DHCP servers. Based on DHCP snooping, the switch dynamically monitors ARP packets, checks user IP addresses, and directly discards packets that do not comply with the bound entries. The N5860-48SC effectively defends against ARP spoofing and source IP address spoofing.

The switch also supports Telnet access control based on source IP addresses. The measure prevents unauthorized users or hackers from attacking or controlling devices and thereby enhances security of the device NMS. The N5860-48SC also implements Secure Shell (SSH) and SNMP V3 to encrypt management information in Telnet and SNMP processes, thereby ensuring security of management device information and preventing hackers from waging attacks or controlling devices.

The switch prevents unauthorized users from network access through multiple functions. These functions include multi-element binding, port security, time ACL, and bandwidth limit based on data traffic. The N5860-48SC highly strengthens access security and is a perfect match for large-sized networks.

IPv4/IPv6 Dual-Stack Multi-Layer Switching

The hardware of the N5860-48SC supports line-rate IPv4/IPv6 dual-stack multi-layer switching, and distinguishes and processes IPv4 and IPv6 protocol packets. The switch also supports multiple tunneling technologies including manually configured tunnels, automatic tunnels, ISATAP tunnels and so on. The switch provides flexible IPv6 inter-network communication solutions to be realized according to the requirement plan and status quo of the IPv6 networks. The switch is also applicable to an IPv4-only or IPv6-only network, or a hybrid of IPv4 and IPv6 network, fulfilling the transition requirements from IPv4 to IPv6 network.

The switch supports a wide range of IPv4 routing protocols including static routing, RIP, OSPF, and BGP4, which can be selected flexibly according to the network environment. The series also supports an abundant list of IPv6 routing protocols, such as static routing, RIPng, OSPFv3, and BGP4+, which can be selected flexibly either to upgrade the existing network to IPv6 network or to construct a new IPv6 network.

Advanced Management

The switch supports a family of management ports such as Console, MGMT and USB. The switch also supports SNMP V1/V2C/V3, a universal network management platform. In addition, the switch console port can be managed via Telnet / SSHv2. The switch enables Command Line Interface (CLI), Telnet, and cluster management, which simplify device management and provides various encryption modes such as SSH2.0 to enhance network security.

The switch supports SPAN/RSPAN mirroring and multiple mirroring observation ports, offering users high visibility and transparency for easy maintenance. The switches also provide a wide range of network traffic reports to help users optimize network structure and adjustresources deployment accordingly.

Technical Specification

N5860-48SC switch comes with the industry-standard hardware and FSOS. Here's a look at the details.

CHARACTERISTICS

	N5860-48SC
Ports	
1G/10G SFP+	48
40G/100G QSFP28	8
RJ45 Management Port	1
Console Port	1
USB	1
Operating System	
OS	FSOS
Key Components	
Switch Chip	Broadcom BMC56873
CPU	Cavium CN7130 (Quad-core, 1.2 GHz)
SDRAM	4GB
Performance	
Layer Type	Layer 3
Switching Capacity	2.56 Tbps
Forwarding Rate	1.90 Bpps
MAC Address	96K
Packet Buffer	32MB
Flash Memory	8GB
Latency	<1μs
Number of VLANs	4K
Jumbo Frame	9KB
Stackability	Up to 2 Units
MTBF (Hours)	330K

CHARACTERISTICS

	N5860-48SC
Status Indicators	Status, ID, SFP+ Port, QSFP28 Port Status, Link, ACT, Fan Module, Power Supply Module
Remote Management Protocol	SNMP V1/V2C/V3, CLI, Telnet
Power	
Input Voltage	90 to 264 V AC, 50-60Hz
Max. Power Consumption	300W
Physical and Environmental	
Dimensions (HxWxD)	1.73"x 17.4"x 16.5" (44x 442x 420mm)
Rack Space	1U
Fan Number	4 (3+1 Redundancy)
Hot-swappable Power Supplies	2 (1+1 Redundancy)
Airflow	Front-to-Back
Weight	17.6 lbs (8kg), with 2 installed PSUs and 4 Fans
Operating Temperature	32°F to 113°F (0°C to 45°C)
Storage Temperature	-40°F to 158°F (-40°C to 70°C)
Operating Humidity	10% to 90% (Non-considensing)
Storage Humidity	10% to 90% (Non-considensing)
Warranty	
Warranty	5 Years

FEATURES

Functionality	Description
Layer 2 Protocols	IEEE802.3ae (10GBase) IEEE802.3ak IEEE802.3an IEEE802.3x IEEE802.3ad (Link aggregation) IEEE802.1p IEEE802.1Q IEEE802.1D (STP) IEEE802.1w (RSTP) IEEE802.1s (MSTP) IGMP Snooping Jumbo Frame (9Kbytes) IEEE802.1ad (QinQ and flexible QinQ) GVRP
Layer 3 Protocols (IPv4)	BGP4 OSPFv2 RIPv1 RIPv2 Policy-based routing Route-policy ECMP WCMP VRRP IGMP v1/v2/v3 PIM-SSM/SM/DM MSDP
Basic IPv6 Protocols	ND ICMPv6 Path MTU Discovery DNSv6 DHCPv6 ICMPv6 ICMPv6 redirection ACLv6 TCP/UDP for IPv6 SNMP v6 Ping /Traceroute v6 IPv6 RADIUS Telnet/SSH v6

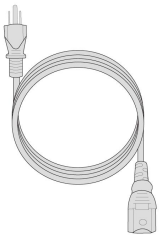
FEATURES

Functionality	Description
Basic IPv6 Protocols	FTP/TFTP v6 NTP v6 IPv6 MIB support for SNMP VRRP for IPv6
IPv6 Features	Static routing Policy-based routing OSPFv3 RIPng BGP4+ MLDv1/v2 PIM-SMv6 Manual tunnel Auto tunnel IPv4 over IPv6 tunnel ISATAP tunnel
Data Center Network Features	PFC, ECN, RDMA VXLAN routing, VXLAN bridging BGP-EVPN VXLAN OpenFlow 1.3
Visualization	Support gRPC communication protocol Support sFlow sampling
QoS	EXP priority mapping based on 802.1p, DSCP, TOS and IP Precedence ACL traffic classification Priority marking/remarking Multiple queue scheduling mechanisms, such as SP, WRR, DRR, SP+WRR, and SP+DRR
Stacking	Stacking technology for virtualizing 2 devices into 1
Cache Management	Support cache state monitoring and management, identify traffic micro burst
Reliability	GR for OSPF/IS-IS/BGP BFD detection RLDP (Rapid Link Detection Protocol) 1+1 power redundancy 3+1 fan redundancy Hot-swappable fans and power modules
Security	Network Foundation Protection Policy (NFPP) CPU Protection (CPP)

FEATURES

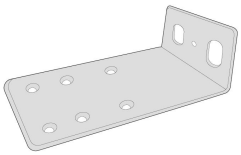
Functionality	Description
Security	Detection of unauthorized data packets Data encryption RADIUS / TACACS+ Pv4 / IPv6 ACL packet filtering based on standard or extended VLANs Plaintext authentication and MD5 cipher-text authentication of OSPF Telnet login through limited IP addresses and the password mechanism uRPF Broadcast packet suppression DHCP Snooping
Manageability	SNMP v1/v2c/v3 Telnet Console Hardware support RCMI (combo interface for MGMT) RMON SSHv1/v2 FTP/TFTP for file upload and download management NTP clock Syslog SPAN/RSPAN/ERSPAN In-band Network Telemetry (INT) NETCONF
Other Protocols	DHCP Client DHCP Relay DHCP Server DNS Client ARP Proxy Syslog
Power Supply	AC input: Rated voltage range: 100-240V Maximum voltage range: 90-264V Frequency: 50-60Hz Rated current: 7.2A-3.5A HVDC input: Input voltage range: 192-288V Input current: 3.6A

Accessories



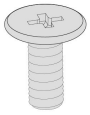
Power Cord x2

Grounding Cable x1



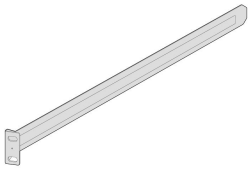
Mounting Bracket x2

M4 Screw x14

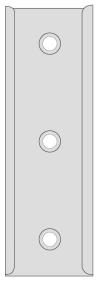


M6 Screw x8

M6 Nut x8



Slide Rail x2



Inner Rail x2

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