

# N8560-48BC Switch

## HIGH PERFORMANCE 25GB SWITCH WITH 100GB FOR DATA CENTERS

N8560-48BC leaf switch is ideal for medium and large data centers and cloud computing services, providing stable, reliable and secure Layer 2/Layer 3 switching services.



## Overview

The N8560-48BC leaf switch is ideal for medium and large data centers and cloud computing services. Compact 1U ToR high-density switch with full line-rate 48 10G/25G and 8 40/100G ports, delivering low-latency, zero packet loss, 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, PFC, ECN, etc, meeting the growing demands of data center environment.

## Benefits

- Broadcom BCM56873 Switch Chip
- Low-latency, Zero Packet Loss with PFC/ECN
- VXLAN Scales Data Center Capacity
- MLAG, GR and BFD Enhance Reliability
- 1+1 Redundant Power Supplies
- 3+1 Redundant Fan Modules
- CLI/ SNMPv1/v2c/v3/Telnet

## Product Characteristics

### Non-blocking Performance with Powerful Caching Capacity

The N8560-48BC is a line-rate switch to power the next-generation data centers and cloud computing. It meets the requirements for a spine-and-leaf network architecture. The N8560-48BC switch provides ports in the form of 48x 25G ports and 8x 100G ports and all the ports can forward data at the line rate.

The switch employs an advanced cache scheduling mechanism to maximize the device's cache capability, ensuring truly non-blocking transmission in the increasingly demanding data center environment.

### Data Center Virtualization

The N8560-48BC switch adopts the industry-leading stacking technology to achieve unified network management, reduce network nodes and enhance network reliability. The failover time for link failure is within 50 to 200ms to guarantee uninterrupted operation for mission-critical applications. The cross-device link aggregation feature enables access to servers or switches to achieve active-active uplinks.

### Data Center Overlay Networking

The N8560-48BC switch supports VXLAN to meet the data center overlay networking requirements. This addresses the difficulty to expand traditional data center networks due to insufficient VLANs.

The basic network built by the N8560-48BC switch can be divided into new subnets based on the overlay technology, without changing the physical topology or considering the restrictions on IP addresses and broadcast domains of physical networks.

### Data Center Layer-2 Network Expansion

The VXLAN technology encapsulates layer-2 packets into User Datagram Protocol (UDP) packets, which enables the establishment of a logically layer-2 network on the layer-3 network. The N8560-48BC switch, supporting the EVPN protocol, can automatically discover and authenticate virtual tunnel end points (VTEPs) thereby reducing flooding at the VXLAN data plane and eliminating dependency of VXLAN on underlying multicast services. This simplifies VXLAN deployment and improves the efficiency of large layer-2 network building to better meet the requirements of deploying a large layer-2 network in data centers.

### 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.

### Hardware-based Traffic Visualization

The N8560-48BC switch is equipped with the switch chips allowing end-to-end traffic visualization in a multipath, multinode network. In this way, the forwarding path and delay of each session can be monitored in a centralized manner, thereby raising the fault locating efficiency by more than 10 times.

## Carrier-Class Reliability Protection

The N8560-48BC switch supports built-in redundant power modules and modularized fan components. All the 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.

The N8560-48BC switch also supports 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.

## IPv4/IPv6 Dual-Stack Multi-Layer Switching

The hardware of the N8560-48BC switch 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 N8560-48BC supports a wide range of IPv4 routing protocols including static routing, RIP, OSPF, IS-IS and BGP4, which can be selected flexibly according to the network environment. It 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.

## Flexible and Comprehensive Security Policies

The N8560-48BC switch features multiple security features, which effectively defend against and 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 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 N8560-48BC switch also implements Secure Shell (SSH) and SNMPv3 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.

It 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 N8560-48BC switch highly strengthens access security and is a perfect match for large-sized networks.

## Advanced Management

The N8560-48BC 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, HTTP or HTTPS. The switch enables Command Line Interface (CLI), Telnet, and cluster management, which simplify device management and

provide 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 adjust resources deployment accordingly.

## Technical Specification

N8560-48BC switch comes with the industry-standard hardware and FSOS. Here's a look at the details.

### CHARACTERISTICS

	N8560-48BC
<b>Ports</b>	
10G/25G SFP28	48
40G/100G QSFP28	8
RJ45 Management Port	1
Console Port	1
USB	1
<b>Operating System</b>	
OS	FSOS
<b>Key Components</b>	
Switch Chip	Broadcom BCM56873
CPU	Intel® Xeon D-1527 (Quad-core,2.20 GHz)
SDRAM	4GB
<b>Performance</b>	
Layer Type	Layer 3
Switching Capacity	4.0 Tbps
Forwarding Rate	2.98 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

N8560-48BC	
<b>Status Indicators</b>	Status, ID, SFP28 Port, QSFP28 Port, Status, Link, ACT, Fan Module, Power Supply Module
<b>Remote Management Protocol</b>	SNMP V1/V2C/V3, CLI, Telnet
<b>Power</b>	
<b>Input Voltage</b>	90 to 264 V AC, 50-60Hz
<b>Max. Power Consumption</b>	300W
<b>Physical and Environmental</b>	
<b>Dimensions (HxWxD)</b>	1.73"x 17.4"x 16.5" (44x 442x 420mm)
<b>Rack Space</b>	1U
<b>Fan Number</b>	4 (3+1 Redundancy)
<b>Hot-swappable Power Supplies</b>	2 (1+1 Redundancy)
<b>Airflow</b>	Front-to-Back
<b>Weight</b>	27.6 lbs (12.5kg), with 2 installed PSUs and 4 Fans
<b>Operating Temperature</b>	32°F to 113°F (0°C to 45°C)
<b>Storage Temperature</b>	-40°F to 158°F (-40°C to 70°C)
<b>Operating Humidity</b>	10% to 90% (Non-condensing)
<b>Storage Humidity</b>	10% to 90% (Non-condensing)
<b>Warranty</b>	
<b>Warranty</b>	5 Years

## FEATURES

Functionality	Description
<b>Layer 2 Protocols</b>	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
<b>Layer 3 Protocols (IPv4)</b>	BGP4
	OSPFv2
	RIPv1
	RIPv2
	Policy-based Routing
	Route-policy
	ECMP
	WCMP
	VRRP
	IGMP v1/v2c/v3
	PIM-SSM/SM/DM
<b>Basic IPv6 Protocols</b>	MSDP
	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
<b>Basic IPv6 Protocols</b>	<ul style="list-style-type: none"> <li>FTP/TFTP v6</li> <li>NTP v6</li> <li>IPv6 MIB support for SNMP</li> <li>VRRP for IPv6</li> </ul>
<b>IPv6 Routing Protocols</b>	<ul style="list-style-type: none"> <li>Static routing</li> <li>Equal-cost routing</li> <li>Policy-based routing</li> <li>OSPFv3</li> <li>RIPng</li> <li>BGP4+</li> <li>MLDv1/v2</li> <li>PIM-SMv6</li> <li>Manual tunnel</li> <li>Auto tunnel</li> <li>IPv4 over IPv6 tunnel</li> <li>ISATAP tunnel</li> </ul>
<b>Data Center Features</b>	<ul style="list-style-type: none"> <li>PFC, ECN, RDMA</li> <li>VXLAN routing, VXLAN bridging</li> <li>BGP-EVPN VXLAN</li> </ul>
<b>Visualization</b>	<ul style="list-style-type: none"> <li>Support gRPC communication protocol</li> <li>Support sFlow sampling</li> </ul>
<b>QoS</b>	<ul style="list-style-type: none"> <li>EXP priority mapping based on 802.1p, DSCP and ToS</li> <li>ACL traffic classification</li> <li>Priority marking/remarking</li> <li>Multiple queue scheduling mechanisms, such as SP, WRR, DRR, SP+WRR, and SP+DRR</li> </ul>
<b>Stacking</b>	<ul style="list-style-type: none"> <li>Stacking technology for virtualizing 2 devices into 1</li> </ul>
<b>Buffer Management</b>	<ul style="list-style-type: none"> <li>Buffer monitoring and management, traffic burst identification</li> </ul>
<b>Reliability</b>	<ul style="list-style-type: none"> <li>GR for RIP/OSPF/BGP</li> <li>BFD detection</li> <li>RLDP (Rapid Link Detection Protocol)</li> <li>1+1 power redundancy</li> <li>Fan redundancy</li> <li>Hot-swappable fans and power modules</li> </ul>
<b>Security</b>	<ul style="list-style-type: none"> <li>Network Foundation Protection Policy (NFPP)</li> </ul>



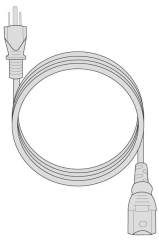
## FEATURES

Functionality	Description
<b>Security</b>	CPU Protection (CPP) DoS protection Detection of unauthorized data packets Data encryption RADIUS / TACACS+ IPv4 / IPv6 ACL packet filtering based on standard or extended VLANs Plaintext authentication and MD5 cipher-text authentication of OSPF, RIPv2, and BGPv4 packets; Telnet login through limited IP addresses and the password mechanism u-RPF Broadcast packet suppression DHCP snooping
<b>Manageability</b>	SNMP v1/v2c/v3 Netconf Telnet Console MGMT RMON SSHv1/v2 FTP/TFTP for file upload and download management NTP clock Syslog SPAN/RSPAN/ERSPAN Telemetry VXLAN OAM VXLAN ping VXLAN tracet In-band Network Telemetry (INT)
<b>Other Protocols</b>	DHCP Client DHCP Relay DHCP Server DNS Client ARP Proxy Syslog
<b>Power Supply</b>	AC input: Rated voltage range: 100V to 240V AC Max. voltage range: 90V to 264V AC Frequency: 50-60Hz Rated current: 7.2A-3.5A

## FEATURES

Functionality	Description
<b>Power Supply</b>	HVDC input: Input voltage range: 192V to 288V DC Input current range: 3.6A

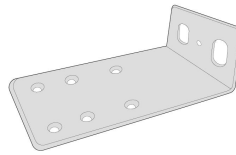
## Accessories



Power Cord x2



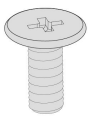
Grounding Cable x1



Mounting Bracket x2



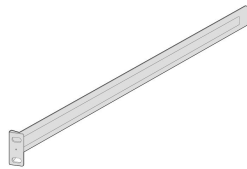
M4 Screw x14



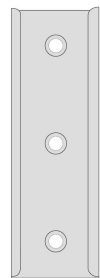
M6 Screw x8



M6 Nut x8



Slide Rail x2



Inner Rail x2



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