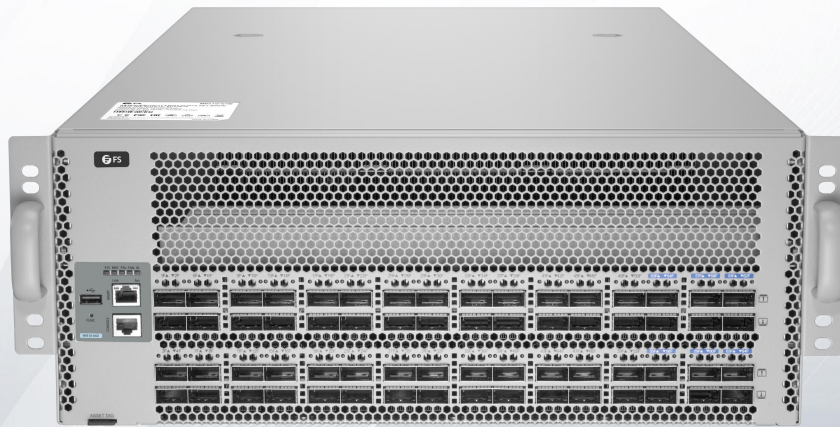FS

N9510-64D Switch

HIGH PERFORMANCE 400GB SWITCH FOR DATA CENTERS

N9510-64D switch is a new generation of high-density 400G core switch for AI machine learning, big data, high performance computing, distributed storage and other application scenarios

Overview

The N9510-64D switch is a new generation of high-density 400G port core switch for data centers. It supports 400G access, low latency, and has complete data center features. A single N9510-64D switch can provide a maximum of 64 400G ports. The N9510-64D switch can form a high-performance and high-reliability data center network with other access and aggregation switches of FS.

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, PFC, ECN, etc, meeting the growing demands of data center environment.

Benefits

- Broadcom BCM56990 Switch Chip
- Low-latency, Zero Packet Loss with PFC/ECN
- GR and BFD Enhance Reliability
- IPv4/IPv6 Dual-stack Multi-layer Switching
- Support VRRP, RLDP, REUP
- 2+2 Redundant Power Supplies
- 7+1 Redundant Fan Modules
- CLI/ SNMPv1/v2c/v3/Telnet

Product Characteristics

Building of Next-Generation Data Center Networks

The rapid development of AI machine learning, big data, high-performance computing, distributed storage, and other applications is driving the evolution of next-generation data center networks to 100G/400G networks. The next-generation data center networks require devices to provide higher performance and greater bandwidth in unit space. The N9510-64D can provide a maximum of 64 × 400G ports in the 4U height, to better meet the evolution requirements of the next-generation data center networks.

Building of High-Performance and Low-Latency Data Center Networks

By utilizing the priority-based flow control (PFC), explicit congestion notification (ECN), and other network flow control technologies as well as the memory management unit (MMU) technology, an end-to-end, lossless, low-latency remote direct memory access (RDMA) basic bearer networks can be built to meet network deployment requirements in various scenarios including AI/machine learning, high-performance computing, and distributed storage, and big data.

Carrier-Class Reliability Protection

N9510-64D supports 2+2 power redundancy and 7+1 fan redundancy. All power modules and fan modules can be hot-swapped without affecting the normal operation of the device. The switch provides fault detection and alarm functions for power modules and fans. It automatically adjusts the fan speed based on temperature changes, to better adapt to the environment in data centers. The device also supports device-level and link-level reliability protection as well as overcurrent protection, overvoltage protection and overheating protection.

In addition, the product integrates various link reliability mechanisms such as graceful restart (GR), bidirectional forwarding detection (BFD). When multiple services and heavy traffic are carried over the network, these mechanisms can reduce the impact of exceptions on network services and enhance the overall reliability.

IPv4/IPv6 Dual-Stack Protocols and Multilayer Switching

The hardware of N9510-64D supports IPv4 and IPv6 protocol stacks and multilayer line-rate switching. The hardware differentiates and processes IPv4 and IPv6 packets. The switch also supports multiple tunneling technologies (such as manual tunneling). Users can flexibly work out IPv6 inter-network communication solutions by using this switch based on IPv6 network planning and network status quo.

N9510-64D supports a wide range of IPv4 routing protocols, including static routing, Routing Information Protocol (RIP), RIPv2, Open Shortest Path First (OSPF), and Border Gateway Protocol version 4 (BGP4). Users can select appropriate routing protocols based on network environments, to flexibly build networks.

The device also supports abundant IPv6 routing protocols, including static routing, Routing Information Protocol next generation (RIPng), OSPFv3, and BGP4+. Appropriate routing protocols can be selected to upgrade an existing network to an IPv6 network or build a new IPv6 network.

All-Round Management Performance

The switch provides various management interfaces such as the console interface, MGMT interface, and USB interface, and supports Simple Network Management Protocol (SNMP) v1/v2/v3 and universal network management platform. CLI-based management, telnet, and cluster management supported by the device facilitate device management. The supported encryption modes such as SSH2.0 and SSL makes the management more secure.

In addition, the device supports the switched port analyzer (SPAN)/remote switched port analyzer (RSPAN) and multiple SPAN observation ports. It can analyze network traffic, take proper management and maintenance measures accordingly, and clearly present the service traffic on a network. The switch can provide various network traffic analysis reports so that users can optimize the network structure and adjust resource deployment in a timely manner.

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Technical Specification

N9510-64D switch comes with the industry-standard hardware and FSOS. Here's a look at the details.

CHARACTERISTICS

	N9510-64D
Ports	
400G QSFP-DD / 100G QSFP28	64
RJ45 Management Port	1
Console Port	1
USB Port	1
Operating System	
OS	FSOS
Key Components	
Switch Chip	BCM56990
CPU	Intel Xeon D-1627: 4-core 8-thread processor with a clock speed of 2.9 GHz
SDRAM	DDR4 8 GB (Compatible with 16 GB)
Performance	
Layer Type	Layer 3
Switching Capacity	51.2 Tbps
Forwarding Rate	10300 Mpps
Flash Memory	240 GB
BOOT ROM	16 MB
MAC Address	8K
Packet Buffer	113.66 MB
Latency	<1μs
Jumbo Frame	9,216
MTBF (Hours)	122,000

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CHARACTERISTICS

	N9510-64D
Status Indicators	Status, System, BMC, QSFPDD Port Status, Link, ACT, Fan Module, Power Supply Module
Remote Management Protocol	SNMP V1/V2C/V3, CLI, Telnet
Power	
Input Voltage	200-240V AC, 50-60Hz
Max. Power Consumption	2524W
Typical Power Consumption	1760W
Physical and Environmental	
Dimensions (HxWxD)	6.89"x 17.40"x 29.92" (175x 442x 760mm)
Rack Space	4U
Fan Number	8 (7+1 Redundancy)
Hot-swappable Power Supplies	4 (2+2 Redundancy)
Airflow	Front-to-Back
Weight	About 48 kg (including eight fan modules and four power modules)
Operating Temperature	32ºF to 104ºF (0ºC to 40ºC)
Storage Temperature	-40°F to 158°F (-40ºC to 70ºC)
Operating Humidity	10% to 90% RH (non-condensing)
Storage Humidity	10% to 90% RH (non-condensing)
Warranty	
Warranty	5 Years

FEATURES
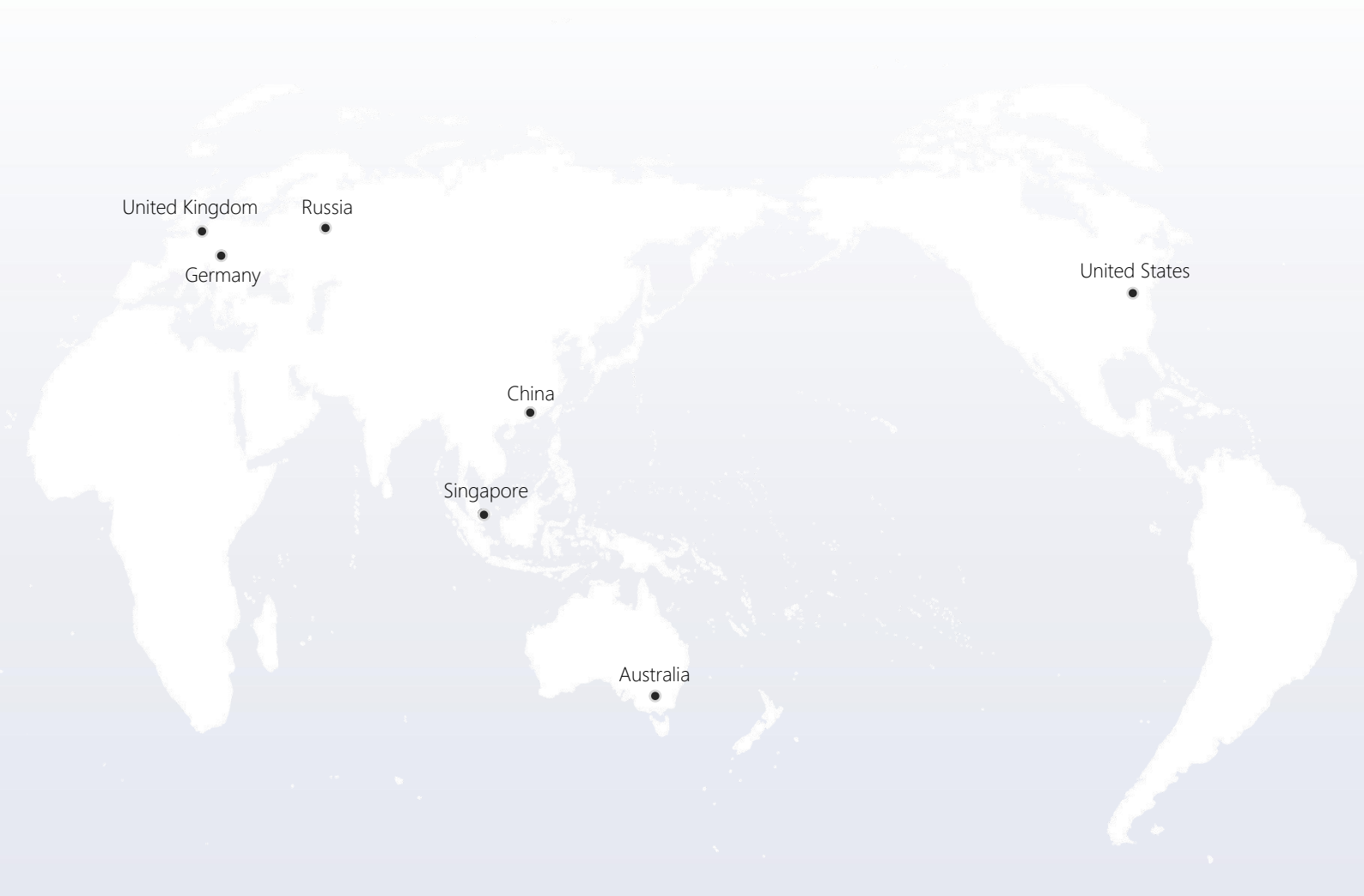
Functionality	Description
Layer 2 Protocols	- IEEE802.3ae (10GBase) - IEEE802.3ak - IEEE802.3an - IEEE802.3x - IEEE802.3ad (Link aggregation) - IEEE802.1p - IEEE802.1Q - IEEE802.1D (STP) - IEEE802.1w (RSTP) - IEEE802.1s (MSTP) - Jumbo Frame (9Kbytes)
Layer 3 Protocols (IPv4)	- BGP4 - OSPFv2 - RIPv1 - RIPv2 - LPM Routing - Policy-based Routing - Route-policy - ECMP - WCMP - VRRP
Basic IPv6 Protocols	- Neighbor Discovery - ICMPv6 - Path MTU Discovery - DNSv6 - DHCPv6 - ICMPv6 - ICMPv6 redirection - ACLv6 - TCP/UDP for IPv6 - SNMP v6 - Ping /Traceroute v6 - IPv6 RADIUS - Telnet/SSH v6 - FTP/TFTP v6 - NTP v6 - IPv6 MIB support for SNMP - VRRP for IPv6 - IPv6 QoS

FEATURES

Functionality	Description
IPv6 Features	• Static routing • ECMP • Policy-based routing • OSPFv3 • RIPng • BGP4+
Data Center Network Features	• PFC, ECN • RDMA
Visualization	• gRPC protocol • sFLOW high-precision sampling
QoS	• Mapping of IEEE 802.1p, DSCP, and ToS priorities • ACL-based traffic classification • Priority mark/remark • Multiple queue scheduling mechanisms (including SP, WRR, WFQ, DRR, SP+WRR, SP+WFQ, SP+DRR), and congestion avoidance mechanisms (WRED, and trail drop)
High Reliability	• GR for RIP/OSPF/BGP • BFD detection • DLDP • REUP dual-link fast switching • RLDP unidirectional link detection • 2+2 power redundancy • 7+1 fan redundancy • Hot-swappable fans and power modules
Security	• Network Foundation Protection Policy (NFPP) • CPU Protection (CPP) • RADIUS/TACACS • ACL-based IPv4/v6 packet filtering by standard and extended VLANs • Plaintext-based and MD5 ciphertext-based authentication for OSPF, RIPv2, and BGPv4 packets • Telnet login and password mechanisms for restricted IP addresses • Broadcast packet suppression • Hierarchical user management
Manageability	• SNMP v1/v2c/v3 • Telnet • Console • MGMT • RMON • SSHv1/v2 • FTP/TFTP for file upload and download management

FEATURES

Functionality	Description
Manageability	- NTP clock - Syslog - SPAN/RSPAN/ERSPAN - ZTP - NETCONF - PYTHON - Fan and power alarm function, and temperature exception alarm function
Other Protocols	- DHCP Client - DHCP Relay - DHCP Server - DNS Client - ARP Proxy - Syslog
Power Supply	AC input: - Rated voltage range: 200-240VAC - Maximum voltage range: 200-240VAC - Frequency: 50-60Hz - Rated input current range: 8A MAX HVDC input: - Rated voltage: 240VDC - Rated input current: 8A

United Kingdom

Russia

Germany

United States

China

Singapore

Australia

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