## GFs

## FS N9510-64D Switch Data Sheet

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## I Product 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.

## | Product highlights

- Broadcom BCM56990 Switch Chip
- Support Ansible, NETCONF, Python, etc. Configuration and Automation Tools
- Flexible 100/200/400GbE Interface Speeds
- Support BGP4/BGP4+, REUP, GR, BFD
- Low-latency, Zero Packet Loss with PFC, ECN, RDMA over Converged Ethernet (RoCE)
- 2+2 Hot-swappable Power Supplies, 7+1 Smart Fans
- Support SPAN/RSPAN/ERSPAN for Visibility
- Support ACL, RADIUS, TACACS+, etc. for Security
- Support SNMP v1/v2c/v3, CLI, Telnet, SSH


## I Platform details

## Switch models and configurations

Figure 1 shows the FS N9510-64D switch.


Figure 1.
N9510-64D, 64-Port Ethernet L3 Data Center, $64 \times 400 G b$ QSFP-DD, Broadcom Chip, Software Installed

## Switch configurations and port density

Table 1 shows the FS N9510-64D configurations and port density.
Table 1. Switch configuration and port density

| FS P/N | N9510-64D |
| :---: | :---: |
| Description | 64-Port Ethernet L3 Data Center, $64 \times 400 \mathrm{~Gb}$ QSFP-DD, Broadcom Chip, Software Installed |
| Port |  |
| 100G port density | 64 |
| 200G port density | - |
| 400G port density | 64 |
| 200G port density with breakout cable | 128 |
| Management ports | 1 |
| Console port | 1 |
| USB port | 1 |
| Memory and processor |  |
| Switch chip | BCM56990 (100G per lane) |
| CPU | Intel Xeon D-1627 (4-core 8-thread processor with a clock speed of 2.9GHz) |
| SDRAM | DDR4 8GB (Compatible with 16GB) |
| Flash memory | 240GB |
| Latency | $1 \mu \mathrm{~s}$ |
| Packet buffer | 113.66 MB |

## Note:

QSFP-DD port can be configured as 100/400Gb, or as $2 \times 200 \mathrm{~Gb}$ via breakout cables.

## Power supplies and fans

Table 2 provides more details on the FS S5860 series power supplies and fan specifications.
Table 2. Power supply and fan specifications

| Description | N9510-64D |
| :---: | :---: |
| Power supply | $2+2$ redundant power supplies (AC) |
| Fan number | 8x Hot-swappable Fans (7+1 Redundancy) |
| Airflow | Front-to-Back |
| Acoustic noise | $<78 \mathrm{~dB}$ |
| Maximum fan speed | 10700rpm |
| Max. power consumption | 2524W |
| Power max rating | 1300W |
| Input-voltage range and frequency | 200-240VAC; $50-60 \mathrm{~Hz}$ |
| Power supply efficiency | 90\% |
| Input current | 10A (MAX) |
| Output ratings | 12V 107A |
| Output holdup time | 10 ms |
| Power-supply input receptacles | C13 |
| Power cord rating | 10A |

## Switch performance

Table 3 shows performance specifications for the FS N9510-64D switch.
Table 3. Performance specifications

| Performance | N9510-64D |
| :---: | :---: |
| Switching capacity | 51.2 Tbps |
| Forwarding rate | 10300 Mpps |
| Total number of MAC addresses | 8000 |
| Total number of IPv4 routes (indirect routes) | 200000 |
| Total number of IPv4 host routes (direct routes and ARP) | 200000 |
| Total number of IPv6 routes (indirect routes) | 128000 |
| Total number of IPv6 host routes (direct routes and NDP) | 128000 |
| Total number of IPv4 multicast routes | 200000 |
| Total number of IPv6 multicast routes | 128000 |
| QoS ACL scale | 1000 |
| Security ACL scale | 1000 |
| VLAN IDs | 4094 |
| STP virtual ports (port* VLANs) for MST | 64 |
| Total switched virtual interfaces (SVIs) | 4094 |
| Jumbo frame | 9216 |

## I Platform benefits

Table 4 lists the software spotlights for the FS N9510-64D switch.
Table 4. Software spotlights

| Functionality | Description |
| :---: | :---: |
| High Reliability | Support the Spanning Tree Protocols (IEEE802.1d STP, IEEE802.1w RSTP, standard 802.1s MSTP) <br> Support Virtual Router Redundancy Protocol (VRRP) <br> Support Rapid Link Detection Protocol (RLDP) <br> Support Rapid Ethernet Uplink Protection Protocol (REUP) <br> Support GR perfect restart, BFD fast forwarding detection and other mechanisms <br> Support modular power redundancy <br> Support modular fan redundancy <br> Support Hot swap without affecting normal operation of other devices |
| Sound Security Protection Policies | Detected by professional vulnerability scanning tool (Nessus) <br> Support hardware-based IPv6 ACLs <br> Support hardware CPU protection mechanism <br> Support DHCP snooping <br> Support the Secure Shell (SSH) and SNMPv3 <br> Support Network Foundation Protection Policy (NFPP) |
| IPv4/IPv6 Dual-Stack Multi-Layer Switching | Support line-rate IPv4/IPv6 dual-stack multi-layer switching <br> Support IPv4 router protocol static routing <br> Support RIP, OSPFv2, BGP4, RIPng, OSPFv3, BGP4+, and ECMP <br> Support IPv6 addressing, ICMPv6, path MTU discovery |
| RDMA Lossless Ethernet | Support PFC, ECN <br> Realized lossless Ethernet low-latency forwarding based on RDMA (Remote Direct Memory Access) |
| Strong Multi-Service Support Capability | Support the IPv4 and IPv6 multicast functions |
| Easy Network Maintenance | Support SNMP (SNMPv1,v2c,v3), RMON, gRPC, Syslog Support Telnet, SSHv1/v2 |

## Software requirements

## The FS N9510-64D Switch run on FS OS Software version.

Table 5 lists the latest software requirements for the switch model.

## Table 5. Latest software requirements

| FS P/N | Description | Latest software requirements |
| :--- | :--- | :--- |
| N9510-64D | N9510-64D, 64-Port Ethernet L3 Data Center, $64 \times 400$ Gb QSFP-DD, <br> Broadcom Chip, Software Installed | - |

## | Product specifications

Table 6 shows the product specifications for the FS N9510-64D switch.
Table 6. Product specifications

| FS P/N | N9510-64D |
| :---: | :---: |
| Environmental |  |
| Operating temperature | $32^{\circ} \mathrm{F}$ to $122^{\circ} \mathrm{F}\left(0^{\circ} \mathrm{C}\right.$ to $\left.50^{\circ} \mathrm{C}\right)$ |
| Storage temperature | $-40^{\circ} \mathrm{F}$ to $158^{\circ} \mathrm{F}\left(-40^{\circ} \mathrm{C}\right.$ to $\left.70^{\circ} \mathrm{C}\right)$ |
| Operating humidity | 10\% to 90\% (Non-condensing) |
| Storage humidity | 10\% to 90\% (Non-condensing) |
| Temperature alarm | Supported |
| Acoustic noise | $<78 \mathrm{~dB}$ |
| Physical specifications |  |
| Dimensions (HxWxD) | 6.89 "x17.40"x29.92" (175x442x760mm) |
| Rack units (RU) | 4 RU |
| Weight | About 48 kg (including eight fan modules and four power modules) |
| Electrical |  |
| Voltage (auto ranging) | 200-240VAC |
| Frequency | $50-60 \mathrm{~Hz}$ |
| Current | 10A Max |
| Power rating (maximum consumption) | 2524W |
| Mean-time between failures |  |
| MTBF (hours) | 122000 |

MTBF (hours) 122000

FS P/N

## Connectors

Connectors and cabling

## Standards

Standards
IEEE802.1d STP, IEEE802.1w RSTP, 802.1s MSTP, RMON, SNMPV1 V2 V3

## | Quality certification

At FS, our Quality Commitment lies in all aspects of processes, resources, and methods that enable us to build superior networks for our customers. Through a quality policy focusing on continuous improvement of products and services, we're able to achieve the highest levels of satisfaction for our customers. To that end, every FS employee is accountable for contributing to the value of the products and services we deliver.

Figures 2 shows some of the authoritative certifications obtained by FS N9510-64D Switch.


Figure 2.

## | Optics supported

For details about the optical modules available, visit:
N9510-64D: Transceivers DACs and AOCs Supported on N9510-64D Switch

## I Warranty, service and support

FS N9510-64D Switch enjoy 5 years limited warranty against defects in materials or workmanship. For more information for FS Returns \& Refunds policy, visit https://www.fs.com/policies/warranty.html or https://www.fs.com/policies/day_return_policy.html

FS provides a personal account manager, free professional technical support, and 24/7 live customer service to each customer.

- Professional Lab: Test each product with the latest and advanced networking equipment.
- Free Technical Support: Provide free \& tailored solutions and services for your businesses.
- 80\% Same-day Shipping: Immediate shipping for in-stock items.
- Fast Response: Direct and immediate assistance from an expert.

For more information, visit https://www.fs.com/service/fs_support.html

## I Ordering information

Table 7 provides the ordering information for N9510-64D switch.
Table 7. Ordering information

```
FS P/N Product description
```


## Switch hardware

## | Additional information

For more information about the N9510-64D Switch, contact your account manager or visit https://www.fs.com/search_result?keyword=N9510-64D

## I Document history

| New or revised topic | Described in | Date |
| :--- | :--- | :--- |
| Optics supported | Added "Transceivers DACs and AOCs Supported on N9510-64D <br> Switch" document | 18/11/2022 |
| Updates to FS N9510-64D Switch Data Sheet | Updated all | $9 / 30 / 2022$ |

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