



RG-S6980-64QC

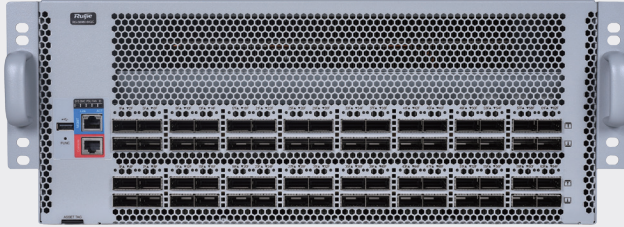
Data Center Switch Datasheet



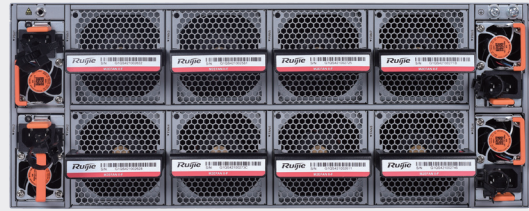
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Product Pictures



Front View



Rear View



Isometric View

Product Overview

The RG-S6980-64QC is a next-generation, high-performance, and high-density fixed switch launched by Ruijie Networks for high-end data centers and AI-generated content (AIGC) intelligent computing scenarios.

The RG-S6980-64QC features an advanced hardware architecture design, offering 64 x 400GE ports with support for line rate forwarding. Additionally, it is equipped with redundant pluggable power supplies and fans. The switch seamlessly integrates into the Ruijie AI Fabric solution, incorporating Remote Adaptive Load Balancing (RALB) and AI-based Load Balancing (AILB) technologies to enhance bandwidth for AIGC intelligent computing networks and accelerate AI training. In a typical 2-tier networking scenario, it supports up to 2,000 x 400GE ports, while in a typical 3-tier network scenario, it supports up to 8,000 x 400GE ports. Furthermore, the switch supports quick RoCE configuration and allows the import of complex settings such as priority-based flow control (PFC) and explicit congestion notification (ECN) on RDMA networks with a single click, facilitating fast deployment.

| Product Features

Building Next-Generation Data Center Networks

The rapid development of AI and machine learning (ML), big data, high-performance computing, distributed storage, and other applications is driving the evolution of next-generation data center networks to 100GE/400GE networks. To satisfy the demand for higher performance and greater bandwidth within confined spaces, the RG-S6980-64QC provides up to 64 x 400GE ports in a 4 RU rack space, meeting the evolution requirements of next-generation data center networks.

Building High-Performance and Low-Delay Data Center Networks

The RG-S6980-64QC works in conjunction with the RG-S6580 series switches to build an end-to-end, lossless, and low-latency Remote Direct Memory Access (RDMA) network, leveraging advanced flow control technologies such as PFC and ECN, as well as memory management unit (MMU) tuning. Moreover, it seamlessly integrates into the Ruijie AI Fabric solution, incorporating RALB and AILB technologies to mitigate the equal-cost multi-path (ECMP) problems inherent in traditional flow-based load balancing. This improves the bandwidth for AI computing scenarios and accelerate AI training. Additionally, the switch meets the network deployment requirements of AI and ML, high-performance computing, distributed storage, big data, and other application scenarios.

Carrier-Class Reliability Protection

The RG-S6980-64QC supports 2+2 power redundancy and 7+1 fan redundancy, guaranteeing hot-swappable functionality for all power and fan modules without disrupting the switch's normal operation. Additionally, it features fault detection and alarm capabilities for power supplies and fans, and automatically adjusts fan speed according to ambient temperature changes within the data center. The switch provides device-level reliability protection, including overcurrent, overvoltage, and overheat protection.

The switch also integrates various link-level reliability mechanisms, such as dual-homed access, graceful restart (GR), and 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.

Quick Deployment

The RG-S6980-64QC enables automatic network parameter configuration and deployment through template import, significantly reducing project deployment time. It supports automated acceptance testing, including cable, optical transceiver, and device testing, ensuring high delivery quality.

Intelligent O&M

The RG-S6980-64QC features automatic parameter adjustment through AI ECN, real-time RoCE telemetry, visibility of end-side status and RoCE services, and congestion and packet loss analysis.

IPv4/IPv6 Dual-Stack Protocols and Multilayer Switching

The RG-S6980-64QC supports IPv4/IPv6 dual stack and implements multilayer line rate switching. It distinguishes between IPv4 and IPv6 packets and integrates multiple tunneling technologies such as manual tunneling. You can flexibly work out communication solutions by using this switch based on IPv6 network planning and network conditions. The switch accommodates a wide variety of IPv4 routing protocols, including static routing, Routing Information Protocol (RIP), RIPv2, Open Shortest Path First (OSPF), and Border Gateway Protocol version 4 (BGP4). In addition, it supports an extensive array of IPv6 routing protocols, including static routing, Routing Information Protocol next generation (RIPng), OSPFv3, and BGP4+. You can flexibly select an IPv6 routing protocol to upgrade the live network to an IPv6 network or establish a new IPv6 network.

All-Round Management Performance

The RG-S6980-64QC provides various management ports, including the console port, management port, and USB port. It supports Simple Network Management Protocol (SNMP) v1/v2c/v3 and integrates with the universal network management platform. It facilitates device management through CLI-based management, Telnet, and

cluster management. The supported encryption modes such as SSH2.0 and SSL ensure secure management. Additionally, the switch supports Switched Port Analyzer (SPAN), Remote Switched Port Analyzer (RSPAN), and multiple SPAN monitoring ports, providing clear visibility into network service traffic. It can generate various traffic analysis reports, enabling users to optimize network structure and adjust resource deployment promptly.

Product Specifications

Hardware Specifications

System Specifications

System Specifications	RG-S6980-64QC
Ports	64 × 400GE ports (QSFP-DD), up to 128 × 200GE ports
Expansion Module Slots	Not supported
Expansion Modules	Four power supply module slots Eight fan module slots
Management Port	One management port, one console port, and one USB port, compliant with the USB2.0 standard
Switching Capacity	51.2 Tbps
Packet Forwarding Rate	10,300 Mpps
802.1Q VLAN	4,094

Dimensions and Weight

Dimensions and Weight	RG-S6980-64QC
Dimensions (W × D × H)	442 mm x 760 mm x 175 mm (17.40 in. x 29.92 in. x 6.89 in., 4 RU)
Weight	38 kg (83.78 lbs., including eight fan modules and four power supply modules)

Power Supply and Consumption

Power Supply and Consumption	RG-S6980-64QC
Power Consumption	• Max: 2,400 W • Typical: 1,760 W • Static: 500 W
AC	AC input: Rated voltage range: 100 V AC to 127 V AC Frequency: 50 Hz to 60 Hz Maximum rated input current: 13.8 A Rated voltage range: 200 V AC to 240 V AC Frequency: 50 Hz to 60 Hz Maximum rated input current: 8.5 A
High-Voltage DC	HVDC input: 180 V DC to 300 V DC Rated voltage: 240 V DC Rated input current: 6.5 A

Environment and Reliability

Environment and Reliability	RG-S6980-64QC
Operating Temperature	0°C to 40°C (32°F to 104°F)
Storage Temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Operating Humidity	10% RH to 90% RH (Non-condensing)
Storage Humidity	5% to 95% RH (non-condensing)
Altitude	Operating altitude: up to 5,000 m (16,404.20 ft.) Storage altitude: up to 5,000 m (16,404.20 ft.)

Software Specifications

Software Specifications	RG-S6980-64QC
Layer 2 Protocols	IEEE 802.3ae (10GBase), IEEE 802.3ak, IEEE 802.3an, IEEE 802.3x, IEEE 802.3ad (Link Aggregation Control Protocol), IEEE 802.1p, IEEE 802.1Q, IEEE 802.1D (STP), IEEE 802.1w (RSTP), IEEE 802.1s (MSTP), jumbo frame (9 KB)
Layer 3 Protocols (IPv4)	BGP4, OSPFv2, RIPv1, RIPv2, LPM routing, PBR, routing policy, ECMP, WCMP, VRRP

Software Specifications	RG-S6980-64QC
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
IPv6 Features	Static routing, ECMP, PBR, OSPFv3, RIPng, BGP4+
Data Center Features	PFC, ECN RDMA VXLAN, BGP-EVPN PFC deadlock prevention • AI ECN • ECN overlay RALB, AILB
Visualization	gRPC sFlow
QoS	802.1p, DSCP, and ToS mapping ACL-based traffic classification Priority marking/remarking Multiple queue scheduling mechanisms, including SP, WRR, WFQ, DRR, SP+WRR, SP+WFQ, and SP+DRR Congestion avoidance mechanisms such as WRED and tail discarding
Hgh Availability Design	GR for RIP/OSPF/BGP, BFD, DLDP, REUP dual-link fast switching, RLDP unidirectional link detection, 2+2 power redundancy and fan redundancy, and hot swappable line cards and power modules
Security Features	Network Foundation Protection Policy (NFPP), CPU Protection Policy (CPP), RADIUS/TACACS, IPv4/v6 packet filtering by basic ACL, extended ACL or VLAN-based ACL, cleartext and MD5-based authentication for OSPF, RIPv2, and BGPv4 packets, Telnet login from specified IP addresses, broadcast packet suppression, hierarchical user management
Management Mode	SNMP v1/v2c/v3, telnet, console, MGMT, RMON, SSHv1/v2, FTP/TFTP, NTP, Syslog, SPAN/RSPAN/ERSPAN, ZTP, NETCONF, Python, fan and power alarm, and overheat alarm
Other Protocols	DHCP client, DHCP relay, DHCP server, DNS client, proxy ARP, and Syslog

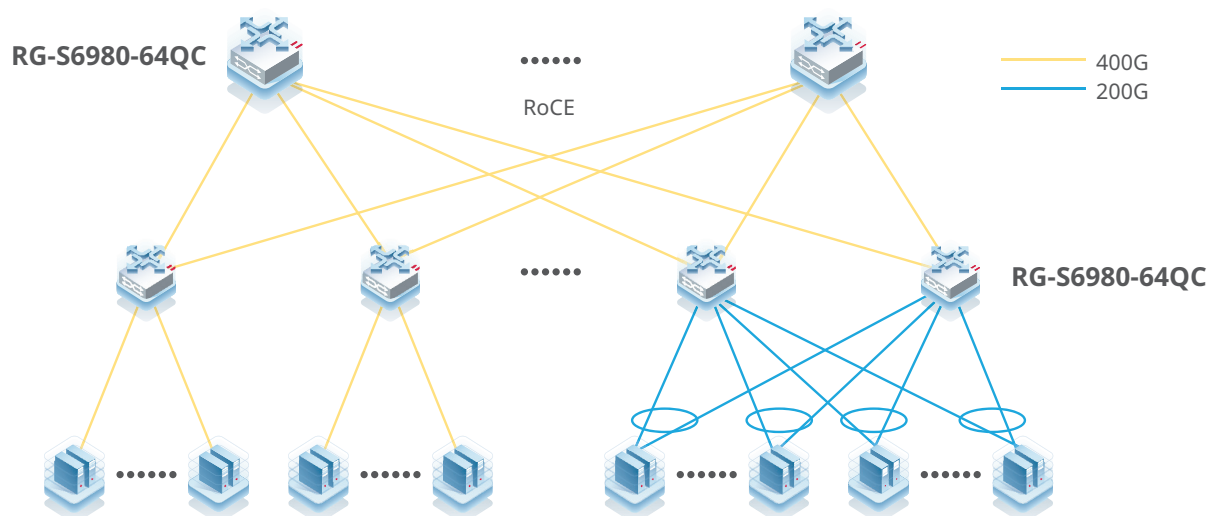
Safety and Regulatory Compliance

Specification	RG-S6980-64QC
Safety	• IEC 62368-1 • EN 62368-1 • BS EN 62368-1 • GB 4943.1
Electromagnetic Compatibility (EMC)	• EN 55032 • EN 55035 • EN 61000-3-2 • EN 61000-3-3 • BS EN55032 • BS EN 55035 • BS EN 61000-3-2 • BS EN 61000-3-3 • EN 300 386 • GB/T 9254.1
Environment	• 2011/65/EU EN 50581 • 2012/19/EU EN 50419 • (EC) No.1907/2006 • GB/T 26572

*For more country-specific regulatory information and approvals, contact your local sales agency.

Typical Applications

AIGC Network Scenario



Ordering Guide

Take the following steps to order an RG-S6980-64QC switch:

- Select the chassis.
- Select the fan and power supply modules.
- Select optical transceivers based on port requirements.

* in Ordering Information indicates that the product will be available in the future.

Ordering Information

Chassis, Fan Modules, and Power Modules

Model	Description
RG-S6980-64QC	64 x 400GE ports, four power supply module slots, eight fan slots
RG-PA1200I-F	Hot swappable power module, 2+2 redundancy, and front-to-rear airflow
M2EFAN II-F	Hot swappable fan module, 7+1 redundancy, and front-to-rear airflow

400GBASE Series Optical Transceivers

Model	Description
400G-QDD-SR8-MM850	400G SR8 transceiver, QSFP-DD form factor, MPO-16 APC, 850 nm, 100 m (328.08 ft.) over MMF
400G-QDD-FR4-SM1310	400G FR4 transceiver, QSFP-DD form factor, Duplex LC, 1310 nm, 2 km (6,561.68 ft.) over SMF
400G-QDD-DR4-SM1310	400G DR4 transceiver, QSFP-DD form factor, MPO-12 APC, 1310 nm, 500 m (1,640.42 ft.) over SMF
*400G-QDD-ZR-SM1550	400G ZR transceiver, QSFP-DD form factor, LC, tunable wavelength, P2P distance of up to 80 km (262,467.19 ft.) over SMF

* in Ordering Information indicates that the product will be available in the future.

100GBASE Series Optical Transceivers

Model	Description
100G-QSFP-iLR4-SM1310	100G iLR4 transceiver, QSFP28 form factor, Duplex LC, 1310 nm, 2 km (6,561.68 ft.) over SMF
100G-QSFP-LR4-SM1310	100G LR4 transceiver, QSFP28 form factor, Duplex LC, 1310 nm, 10 km (32,808.40 ft.) over SMF

Model	Description
100G-QSFP-SR-MM850	100G SR transceiver, QSFP28 form factor, MPO, 850 nm, 100 m (328.08 ft.) over MMF
100G-QSFP-ER4-SM1310	100G ER4 transceiver, QSFP28 form factor, Duplex LC, 1310 nm, 40 km (131,233.59 ft.) over SMF
100G-AOC-5M	100G AOC cable, QSFP28 form factor, 5 m (16.40 ft.)
100G-AOC-10M	100G AOC cable, QSFP28 form factor, 10 m (32.81 ft.)

| Warranty

For more information about warranty terms and period, contact your local sales agency:

- Warranty terms: <https://www.ruijienetworks.com/support/servicepolicy>
- Warranty period: <https://www.ruijienetworks.com/support/servicepolicy/Service-Support-Summary/>

Note: The warranty terms are subject to the terms of different countries and distributors.

| More Information

For more information about Ruijie Networks, visit the official Ruijie website or contact your local sales agency:

- Ruijie Networks official website: <https://www.ruijienetworks.com/>
- Online support: <https://www.ruijienetworks.com/support>
- Hotline support: <https://www.ruijienetworks.com/support/hotline>
- Email support: service_rj@ruijienetworks.com



Ruijie Networks Co., Ltd.

For more information, visit www.ruijienetworks.com or call 86-400-620-8818.