



RG-S6980-64QC

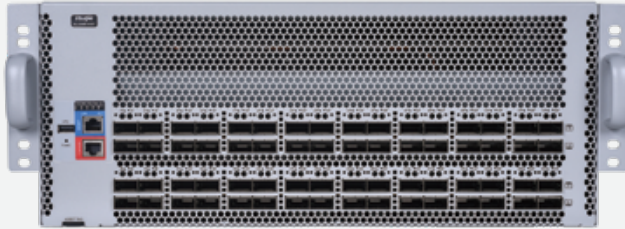
Next-Generation Data Center and Cloud Computing Core Switch



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Ruijie

Product Pictures



Front View



Rear View



Isometric View

Product Overview

The RG-S6980-64QC switch is a next-generation, high-performance, and high-density fixed switch developed by Ruijie Networks for high-end data centers and AIGC intelligent computing networks.

The switch adopts an advanced hardware architecture design, uses a single forwarding chip, and provides 64 x 400GE ports, all of which support line-rate forwarding. The power modules and fan modules are redundant and pluggable. Remote Adaptive Load Balancing (RALB) and Artificial Intelligence Scene Load Balancing (AILB) of Ruijie AI-Fabric solution increase the bandwidth and shorten the AI training time in AIGC intelligent computing scenarios. A typical two-tier network supports up to 2,000 x 400GE ports, while a typical three-tier network supports up to 8,000 x 400GE ports. One-click RoCE configuration can be employed to import Explicit Congestion Notification (ECN), Priority-based Flow Control (PFC) and other complicated RDMA-related configuration for quick deployment.

| Product Features

Next-Generation Data Center Network

With the rapid development of AI machine learning, big data, high-performance computing, distributed storage, and other applications, the next-generation data center network is evolving towards 100GE/400GE networks. The next-generation data center networks require switches to provide higher performance and greater bandwidth within a specific space. With a height of 4 RU, the RG-S6980-64QC switch provides a maximum of 64 400GE ports, which better meets the evolution requirements of the next-generation data center network.

High-Performance and Low-Delay Data Center Network

The RG-S6980-64QC switch can work with the RG-S6580 series switches to build end-to-end, lossless, low-latency remote direct memory access (RDMA) networks by using advanced network flow control technologies such as PFC and ECN, as well as the memory management unit (MMU) technology. In addition, the switch supports RALB and AILB of Ruijie AI-Fabric solution to resolve the equal-cost multi-path routing (ECMP) conflict caused by per-flow load balancing and increase the bandwidth in the AIGC intelligent computing scenario, thereby shortening the AI training time. This meets network deployment requirements across various scenarios including AI, machine learning, high-performance computing, distributed storage, big data, and other applications.

Carrier-Class High Reliability

The RG-S6980-64QC switch supports 2+2 power redundancy and 7+1 fan redundancy. All power supply modules and fan modules can be hot-swapped without affecting service continuity on the switch. It also supports fault detection and alarm functions for power modules and fan modules, and can automatically adjust fan speed based on ambient temperature to adapt to environment changes in data centers. The switch also supports device-level and link-level reliability protection as well as overcurrent protection, overvoltage protection, and over temperature protection.

In addition, the switch integrates various link reliability mechanisms such as networking through dual redundant ports, 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 overall reliability.

Quick Deployment

The switch features automatic configuration of network parameters and profile-based automatic provisioning, allowing for quick deployment and significantly shortening the project deployment time.

It also supports automated acceptance testing, including cable testing, optical transceiver testing, and device testing, to ensure high-quality delivery.

Intelligent O&M

The switch offers AI-powered automatic ECN tuning, real-time telemetry of key RoCE network metrics, visualization of server status and RoCE services, along with congestion and packet loss analytics.

IPv4/IPv6 Dual-Stack Protocols and Multilayer Switching

The hardware of the RG-S6980-64QC switch supports IPv4 and IPv6 protocol stacks and multilayer line-rate switching. It is capable of distinguishing IPv4 and IPv6 packets and supports multiple tunneling technologies (such as manually configured tunnels), providing flexible communication solutions based on IPv6 network planning and the current network environment.

The RG-S6980-64QC switch 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 switch also supports abundant IPv6 routing protocols, including static routing, Routing Information Protocol next generation (RIPng), OSPFv3, and BGP4+. Users can select

appropriate routing protocols to upgrade an existing network to an IPv6 network or build a new IPv6 network.

All-Round Management Performance

The RG-S6980-64QC switch provides various management ports such as the console port, management port, and USB port, and supports Simple Network Management Protocol (SNMP) v1/v2c/v3 and universal network management platform. It supports CLI-based management, telnet,

and cluster management, which facilitates device management. The switch also supports encryption protocols such as SSH2.0 and SSL to ensure the security of management operations.

In addition, the switch supports the Switched Port Analyzer (SPAN)/Remote Switched Port Analyzer (RSPAN) and multiple SPAN monitoring ports, making network traffic monitoring intuitive and helping users optimize the network structure and resource configuration promptly based on traffic analysis reports.

Product Specifications

Hardware Specifications

Item	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.)
Rack height	4 RU
Unit weight	32.8 kg (72.31 lbs., empty chassis) 42 kg (92.59 lbs., a chassis with four power modules and eight fan modules)
Switching capacity	51.2 Tbps
Packet forwarding rate	10300 Mpps
Service port	64 x 100GE/200GE/400GE QSFP-DD ports
Management port	1 x RJ45 console port 1 x RJ45 MGMT port
USB port	1 x USB 2.0 port (Type A connector)
Power consumption	4 x power module slots 8 x fan module slots
Power consumption	Maximum power consumption: 2400 W Typical power consumption: 1760 W Static power consumption: 500 W
Power input	RG-PA1200I-F (AC input) Rated input voltage: 100 V AC to 127 V AC, 200 V AC to 240 V AC, 50 Hz/60 Hz Maximum input voltage: 90 V AC to 140 V AC, 180 V AC to 264 V AC, 47 Hz to 63 Hz Rated input current: 13.8 A (100 V AC to 127 V AC) 8.5 A (200 V AC to 240 V AC) Power port type: C14

Item	RG-S6980-64QC
Power input	RG-PA1200I-F (HVDC input): Rated input voltage: 240 V DC Maximum input voltage: 180 V DC to 300 V DC Rated current: 6.5 A Power port type: C14
Temperature	Operating temperature: 0°C to 40°C (32°F to 104°F) Storage temperature: -40°C to +70°C (-40°F to +158°F) Note: At altitudes ranging from 2000 m (6561.68 ft.) to 5000 m (16,404.20 ft.), the maximum temperature decreases by 1°C (1.8°F) for every 200 m (656.17 ft.) increase in elevation.
Humidity	Operating humidity: 10% RH to 90% RH (non-condensing) Storage humidity: 5% RH to 95% RH (non-condensing)
Altitude	Operating altitude: ≤ 5,000 m (16,404.20 ft.) Storage altitude: ≤ 5000 m (16,404.20 ft.)
Cooling	Air cooling, front-to-rear airflow (port-side intake)

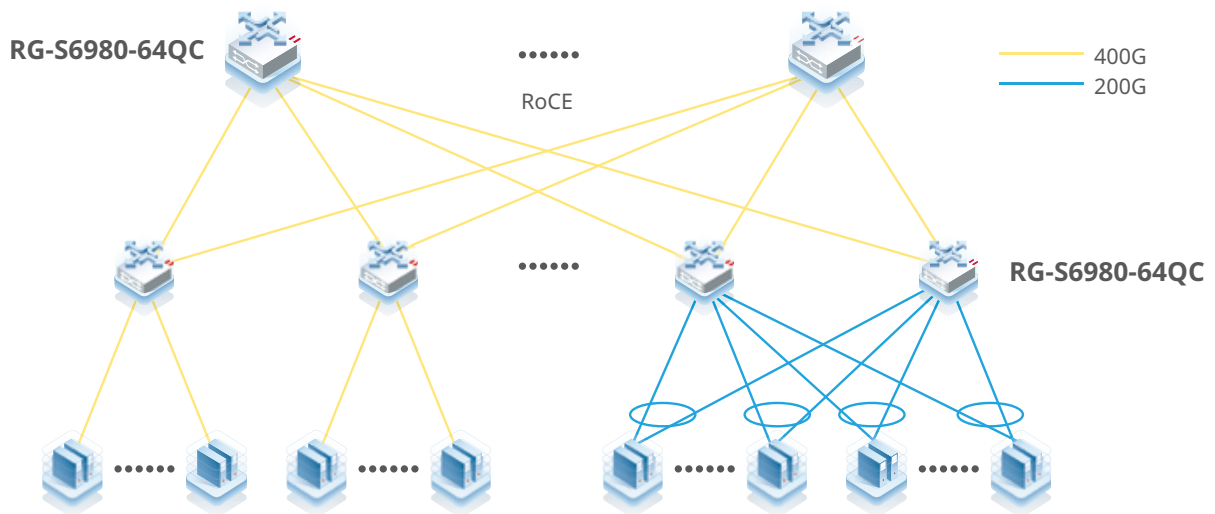
Software Specifications

Item	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, Policy-based Routing (PBR), route-policy, Equal-Cost Multi-Path Routing (ECMP), WCMP, VRRP
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, RIPv6, BGP4+
Data Center Features	PFC, ECN, and other data center features RDMA VXLAN, BGP-EVPN PFC deadlock prevention RALB, AILB
Visualization	gRPC sFLOW sampling

Item	RG-S6980-64QC
QoS	Mapping of IEEE 802.1p, DSCP, and ToS priorities 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
HA Design	GR for RIP/OSPF/BGP, BFD, DLDP, REUP dual-link fast switching, RLDP unidirectional link detection, 1+1 power redundancy and fan redundancy, and hot swapping for all cards and power supply modules
Security Features	Network foundation protection policy (NFPP), CPP, RADIUS/TACACS, IPv4/v6 packet filtering by basic ACL, extended ACL or VLAN-based ACL, 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
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 temperature alarm
Other Protocols	DHCP client, DHCP relay, DHCP server, DNS client, ARP proxy, and Syslog

Typical Applications

AIGC Network Scenario



Ordering Guide

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

- Select the switch.
- 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, and Power Modules

Model	Description
RG-S6980-64QC	Fixed 64 × 400GE ports, four power supply module slots, and eight fan slots
RG-PA1200I-F	Power supply module, supporting 2+2 redundancy, hot swapping, and front-to-rear ventilation design
M2EFAN II-F	Fan module, supporting 7+1 redundancy, hot swapping, and front-to-rear ventilation design

100G Optical Transceivers

Model	Description
100G-QSFP-iLR4-SM1310	100G iLR4 optical transceiver, QSFP28 form factor, Duplex LC, 1310 nm, 2 km (6,561.68 ft.) over single-mode fiber (SMF)
100G-QSFP-LR4-SM1310	100G LR4 optical transceiver, QSFP28 form factor, Duplex LC, 1310 nm, 10 km (32,808.40 ft.) over SMF
100G-QSFP-SR-MM850	100G SR optical transceiver, QSFP28 form factor, MPO, 850 nm, 100 m (328.08 ft.) over multimode fiber (MMF)
100G-QSFP-ER4-SM1310	100GE ER4 optical transceiver, QSFP28 form factor, Duplex LC, 1310 nm, 40 km (131,233.60 ft.) over SMF
100G-AOC-5M	100G AOC, QSFP28 form factor, 5 m (16.40 ft.)
100G-AOC-10M	100G AOC, QSFP28 form factor, 10 m (32.81 ft.)

400G Optical Transceivers

Model	Description
400G-QDD-SR8-MM850	400G SR8 optical transceiver, QSFP-DD form factor, MPO-16 APC, 850 nm, 100 m (328.08 ft.) over MMF
400G-QDD-FR4-SM1310	400G FR4 optical transceiver, QSFP-DD form factor, Duplex LC, 1310 nm, 2 km (6,561.68 ft.) over SMF
400G-QDD-DR4-SM1310	400G DR4 optical transceiver, QSFP-DD form factor, MPO-12 APC, 1310 nm, 500 m (1,640.42 ft.) over SMF

Warranty

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

- Warranty terms: <https://www.ruijie.com/support/servicepolicy>
- Warranty period: <https://www.ruijie.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.ruijie.com/>
- Online support: <https://www.ruijie.com/support>
- Hotline support: <https://www.ruijie.com/support/hotline>
- Email support: service_rj@ruijie.com



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