Ruijie RG-S6520 Series Switch Datasheet

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OVERVIEW

The RG-S6520 series switches are new-generation switches released by Ruijie Networks for cloud data centers. They are highlighted by their high performance, high density, and the data speed of up to 100 Gbps. The switches provide a maximum of 64 × 100GE ports. Each 100GE port is 100GE/40GE adaptive. The switches provide 1+1 power redundancy and 2+1 fan redundancy, and both the power supply modules and fan modules support hot swapping.

APPEARANCE

Front View

Isometric View

Product highlights

Non-blocking Data Center Networks and Powerful Buffer Capacity

The RG-S6520 series switches provide a maximum of 64 x 100GE ports. All the ports can forward data at the line rate. To meet the requirements for unblocked transmission of heavy-traffic data in data centers, the switch offers powerful buffer capacity and uses the advanced buffer scheduling mechanism, to ensure that the buffer capacity of the switch is effectively leveraged.

Data Center Virtualization

The RG-S6520 series switches adopt the virtual switching unit (VSU) 2.0 technology to virtualize multiple physical devices into one logical device, which reduces network nodes and enhances network reliability. These physical switches can be operated and managed in a unified manner. The switch can implement fast link switching within 50 ms to 200 ms in the case of a link failure, thereby ensuring the uninterrupted transmission of key services. The inter-device link aggregation feature implements dual active uplinks for data through access servers and switches.

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 products.

Hardware-based Traffic Visualization

The chip hardware enables the switch to visualize the end-to- end traffic of complex networks involving multiple paths and nodes. Then, users can focus on monitoring the forwarding path and delay of each session, dramatically raising the troubleshooting efficiency.

Carrier-Class Reliability Protection

The switch is equipped with built-in redundant power supply modules and modular fan assemblies. All power supply modules and fan modules can be hot-swapped without affecting the normal running of the switch. The switch provides fault detection and alarm functions for power supply modules and fans. It automatically adjusts the fan speed based on temperature changes, to better adapt to the environment in data centers. The switch also supports device-level and link-level reliability protection as well as overcurrent protection, overvoltage protection, and overheating protection.

In addition, the switch integrates various link reliability mechanisms such as Rapid Ethernet Uplink Protection Protocol (REUP), quick link switching, 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.

IPv4/IPv6 Dual-Stack Protocols and Multilayer Switching

The hardware of the RG-S6520 series switches supports IPv4 and IPv6 protocol stacks and multilayer line-rate switching. The hardware differentiates and processes IPv4 and IPv6 packets. The switch also integrates multiple tunneling technologies such as manually configured tunnels, automatic tunnels, and Intra-Site Automatic Tunnel Addressing Protocol (ISATAP) tunnels. Users can flexibly work out IPv6 inter-network communication solutions by using this switch based on IPv6 network planning and network conditions.

The RG-S6520 series switches support numerous IPv4 routing protocols, including static routing, Routing Information Protocol (RIP), Open Shortest Path First (OSPF), Intermediate System to Intermediate System (IS- IS), and Border Gateway Protocol version 4 (BGP4). Users can select required routing protocols based on network environments, to flexibly build networks.

The RG-S6520 series switches also support 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.

Flexible and Complete Security Policies

The RG-S6520 series switches effectively defend against and control virus spread and hacker attacks by using multiple inherent mechanisms such as anti-DoS attack, anti-IP scanning, validity check of ARP packets on ports, and multiple hardware ACL policies.

The hardware-based IPv6 ACL can easily control the access of IPv6 users at the network boundary even if there are IPv6 users on an IPv4 network. The switch supports the coexistence of IPv4 and IPv6 users and can control access permissions of IPv6 users, for example, restricting access to sensitive resources on the network.

The telnet access control based on source IP addresses can prevent illegitimate users and hackers from maliciously attacking and controlling the switch, enhancing network management security. The Secure Shell (SSH) and Simple Network Management Protocol version 3 (SNMPv3) can encrypt management information in the telnet and SNMP processes, thereby ensuring the information security of the switch and preventing hackers from attacking and controlling the switch.

The switch rejects network access from illegitimate users and enables legitimate users to use networks properly by employing multi-element binding, port security, time-based ACL, and data stream–based rate limit. It can strictly control user access to enterprise networks and campus networks and restrict the communication of unauthorized users.

All-Round Management Performance

The switch provides various management interfaces such as the console interface, management interface, and USB interface, 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 supported encryption modes such as SSH2.0 and SSL ensure more secure management.

In addition, the switch supports the Switched Port Analyzer (SPAN)/Remote Switched Port Analyzer (RSPAN) and multiple SPAN monitoring ports. It can analyze network traffic and take proper management and maintenance measures accordingly, clearly presenting 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.

Hardware Specifications

System Specifications

System Specifications	RG-S6520-64CQ
Ports	64 x 100GE ports (QSFP28)
Expansion Module Slots	Two power supply module slots, supporting 1+1 redundancy Three fan module slots, supporting 2+1 redundancy
Management Port	One management port, one console port, and one USB port, compliant with the USB2.0 standard
Switching Capacity	12.8 Tbps
Packet Forwarding Rate	4482 Mpps
802.1Q VLAN	4094

Dimensions

Dimensions and Weight	RG-S6520-64CQ
Dimensions (W × D × H)	442 mm x 450 mm x 88.1 mm (17.40 in. x 17.72 in. x 3.47 in., 1 RU)
Weight	About 20 kg (44.09 lbs., including two power supply modules and three fan modules)

Power Supply and Consumption

Power Supply and Consumption	RG-S6520-64CQ
AC	RG-PA800I-F module Rated voltage: 110 V AC/220 V AC Rated voltage range: 100 V AC to 240 V AC (50 Hz to 60 Hz) Max voltage range: 90 V AC to 264 V AC (47 Hz to 63 Hz) Rated input current range: 5 A to 10 A
High-voltage DC	RG-PA800I-F module Max voltage range: 180 V DC to 310 V DC Rated voltage: 240 V DC Rated input current: 5 A
Maximum Power Consumption	Max: 600 W Typical: 410 W Static: 222 W

Environment and Reliability

Environment and Reliability	RG-S6520-64CQ
Operating Temperature	0 ˚C to 45 ˚C (32 ˚F to 113˚F)
Storage temperature	-40 ˚C to 70 ˚C (-40 ˚F to 158 ˚F)
Operating Humidity	10% RH to 90% RH
Storage humidity	5% to 95% RH (non-condensing)
Working altitude	Operating altitude: up to 5000 m (16,404.20 ft.) Storage altitude: up to 5000 m (16,404.20 ft.)

Software Specifications

Software Specifications	RG-S6520-64CQ
L2 Protocols	IEEE802.3ad (Link Aggregation Control Protocol), IEEE802.1p, IEEE802.1Q, IEEE802.1D (STP), IEEE802.1w (RSTP), IEEE802.1s (MSTP), IGMP Snooping, MLD Snooping, Jumbo Frame (9 KB), IEEE802.1ad (QinQ and selective QinQ), GVRP
L3 Protocols (IPv4)	BGP4, OSPFv2, RIPv1, RIPv2, MBGP, LPM Routing, Policy-based Routing (PBR), Route-policy, Equal-Cost Multi-Path Routing (ECMP), WCMP, VRRP, IGMP v1/v2/v3, PIM-SSM/SM/DM, MSDP, Any-RP
IPv6 Basic 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+, MLDv1/v2, PIM-SMv6, manual tunnel, automatic tunnel, IPv4 over IPv6 tunnel, and ISATAP tunnel
Multicast	IGMPv1, v2, v3 IGMP Host Behavior Member Query and Response Querier Election IGMP Proxy Multicast Static Routing、MSDP PIM-DMv4(PIM-DM) PIM-SMv4(PIM-SM/PIM-SSM/ Enabling PIM on Layer-3 Subinterface) PIM-SMv6 MLD v1 and v2 MLD Proxy Enabling PIMv6 on Layer-3 Subinterface
ACL	Standard IP-based ACL、Extended MAC/IP-based ACL Expert-level ACL ACL 80 IPv6 ACL、 When the same ACL is applied to different physical interfaces or SVIs, resources can be multiplexed. ACL Logging、ACL Counter (Ingress and egress counters are supported in interface or global configuration modes) ACL Re-marking Global ACL、ACL-based Redirection、Displaying ACL Resources、Processing First Packet of TCP Handshake When Binding the ACL to Restrict SIP、Matching Against 5-Tuple of Pass-by VXLAN Inner IP Packets The expert-level ACL supports matching the IP flag and DSCP fields of VXLAN inner packets、Ingress/Egress ACLs

Software Specifications	RG-S6520-64CQ
Data Center Features	PFC, ECN, and other data center features M-LAG RDMA
Visualization	gRPC sFLOW sampling
QoS	Mapping of IEEE 802.1p, DSCP, and ToS priorities ACL-based traffic classification Priority marking/remarking Multiple queue scheduling mechanisms, including SP, WRR, DRR, SP+WRR, and SP+DRR
Virtualization	Virtual Switching Unit
Buffer Management	Buffer status monitoring and management, and identification of burst traffic
HA Design	GR for RIP/OSPF/BGP, BFD, REUP dual-link fast switching and 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, DDoS attack defense, illegitimate data packet detection, data encryption, source IP spoofing prevention, IP scanning prevention, 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, uRPF, broadcast packet suppression, DHCP Snooping, ARP spoofing prevention, and ARP check
Management Mode	SNMP v1/v2c/v3, Netconf, telnet, console, MGMT, RMON, SSHv1/v2, FTP/TFTP, NTP clock, syslog, SPAN/RSPAN/ERSPAN, and configuration rollback
Other Protocols	DHCP Client, DHCP Relay, DHCP Server, DNS Client, UDP relay, ARP Proxy, and Syslog

Safety and Regulatory Compliance

Specification	RG-S6520-64CQ
Safety	IEC 62368-1 EN 62368-1 NM EN 62368-1 NM CEI 62368-1 BS EN 62368-1 GB 4943.1

Specification	RG-S6520-64CQ
Electromagnetic Compatibility (EMC)	EN 55032 EN 55035 NM EN 55035 BS EN55032 BS EN 55035 BS EN 61000-3-2 BS EN61000-3-3 EN IEC 61000-3-3 EN IEC 61000-3-2 NM EN 61000-3-2 NM EN 61000-3-3 EN 300 386 VCCI-CLSPR 32 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.

Configuration Guide

The configuration procedure for the RG-S6520 series switches is as follows:

*Select the switch.
*Select the fan and power supply modules.
*Select optical transceivers based on port requirements.

NETWORK-SWITCH.COM ORDERING INFORMATION

Chassis, Fan, and Power Supply Modules

Product Model	Description
RG-S6520-64CQ	64 × 100GE ports Two power supply module slots and three fan module slots The power supply model is RG-PA800I-F, and the fan model is M6520-FAN-F.
RG-PA800I-F	Power supply module, supporting 1+1 redundancy, hot swapping, and front-to-rear ventilation design
M6520-FAN-F	Fan module, supporting 2+1 redundancy, hot swapping, and front-to-rear ventilation design

100GBASE Series Optical Modules

Product Model	Description
100G-QSFP-SR-MM850	100G SR module, QSFP28 form factor, MPO, 850 nm, 100 m (328.08 ft.) over MMF
100G-QSFP-LR4-SM1310	100G LR4 module, QSFP28 form factor, Duplex LC, 1310 nm, 10 km (32,808.40 ft.) over SMF
100G-QSFP-iLR4-SM1310	100G iLR4 module, QSFP28 form factor, Duplex LC, 1310 nm, 2 km (6,561.68 ft.) over SMF
100G-QSFP-ER4-SM1310	100G ER4 module, QSFP28 form factor, Duplex LC, 1310 nm, 40 km (131,233.59 ft.) over SMF
100G-AOC-10M	100G QSFP28 AOC cable, 10 m (32.81 ft.)
100G-AOC-5M	100G QSFP28 AOC cable, 5 m (16.40 ft.)

40G BASE Series Optical Modules

Product Model	Description
40G-QSFP-SR-MM850	40G SR module, QSFP+ form factor, MPO, 150 m (492.13 ft.) over MMF
40G-QSFP-LR4-SM1310	40G LR4 module, QSFP+ form factor, Duplex LC, 10 km (32,808.40 ft.) over SMF
40G-QSFP-LSR-MM850	40G LSR module, QSFP+ form factor, MPO, 400 m (1,312.34 ft.) over MMF
40G-QSFP-LX4-SM1310	40G LX4 module, QSFP+ form factor, Duplex LC connector, 150 m (492.13 ft.) over OM3/OM4 MMF, or 2 km (6,561.68 ft.) over SMF
40G-QSFP-iLR4-SM1310	40G iLR4 module, QSFP+ form factor, Duplex LC, 2 km (6,561.68 ft.) over SMF
40G-AOC-30M	40G QSFP+ AOC cable, 30 m (98.43 ft.)
40G-AOC-5M	40G QSFP+ AOC cable, 5 m (16.40 ft.)