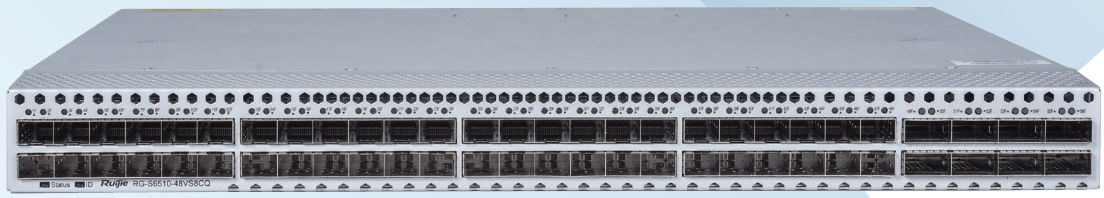

RG-S6510 Series
Data Center Switch Datasheet

Scan QR Code
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Product Pictures

RG-S6510-48VS8CQ Isometric View

RG-S6510-48VS8CQ Isometric View

RG-S6510-32CQ Isometric View

Product Overview

The RG-S6510 series switches are new-generation switches released by Ruijie Networks for cloud data centers and high-end campuses. They are highlighted by their high performance, high density, and the data speed of up to 25 Gbps/100 Gbps. They meet the Spine-Leaf network architecture design requirements.

Product Features

Non-blocking Data Center Networks and Powerful Buffer Capacity

The whole series of switches oriented towards next-generation data centers and cloud computing are line-rate products. They are in line with the development trend of East-West traffic of data centers and apply to heavy-traffic next-generation data centers. They meet the Spine-Leaf network architecture design requirements.

The RG-S6510 series switches provide 48 × 25GE ports and 8 × 100GE ports or 32 × 100GE ports. All the ports can forward data at the line rate. The 100GE ports are backward compatible with 40GE ports.

To meet the requirements for non-blocking 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-S6510 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.

Data Center Overlay Networking

The RG-S6510 series switches support VXLAN to meet the data center overlay networking requirements. This addresses the difficulty to expand traditional data center networks due to VLAN limit.

The basic network built by the RG-S6510 series switches can be divided into new subnets based on the overlay technology, without changing the physical topology or considering the restrictions on IP addresses and broadcast domains of physical networks.

Data Center Layer-2 Network Expansion

The VXLAN technology encapsulates layer-2 packets into User Datagram Protocol (UDP) packets, which enables the establishment of a logically layer-2 network on the layer-3 network. The RG-S6510 series switches support the EVPN protocol to automatically discover and authenticate virtual tunnel endpoints (VTEPs), thereby reducing flooding on the VXLAN data plane and preventing VXLAN from relying on deployed underlying multicast services. This simplifies VXLAN deployment and improves the large layer-2 network building efficiency to better meet the requirements of deploying a large layer-2 network in data centers.

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 RG-S6510 series switches are 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 device. The switch provides fault detection and alarm functions for power supply modules and fan modules. 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-S6510 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-S6510 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-S6510 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-S6510 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 supports various management ports, such as the console port, management port, and USB port, and supports the SNMP traffic analysis report to help users optimize the network structure and adjust resource deployment in a timely manner.

Technical Specifications

Hardware Specifications

System Specifications

System Specifications	RG-S6510-48VS8CQ	RG-S6510-32CQ
Ports	48 x 25GE SFP28 ports and 8 × 100GE QSFP28 ports	32 x 100GE QSFP28 ports

System Specifications	RG-S6510-48VS8CQ	RG-S6510-32CQ
Expansion Module Slots	Two power module slots, supporting 1+1 redundancy Four fan module slots, supporting 3+1 redundancy	Two power module slots, supporting 1+1 redundancy Five fan module slots, supporting 4+1 redundancy
Management Port	One management port, one console port, and one USB port, compliant with the USB2.0 standard	
Switching Capacity	4.0Tbps	6.4 Tbps
Packet Forwarding Rate	2000 Mpps	2030 Mpps
802.1Q VLAN	4094	

Dimensions and Weight

Dimensions and Weight	RG-S6510-48VS8CQ	RG-S6510-32CQ
Dimensions (W × D × H)	442 mm x 387 mm x 44 mm (17.40 in. x 15.24 in. x 1.73 in., 1 RU)	442 mm x 560 mm x 44 mm (17.40 in. x 22.05 in. x 1.73 in., 1 RU)
Weight	About 8.2 kg (18.08 lbs., including two power supply modules and four fan modules)	About 11.43 kg (25.20 lbs., including two power supply modules and five fan modules)

Power Supply and Consumption

Power Supply and Consumption	RG-S6510-48VS8CQ	RG-S6510-32CQ
AC	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: 3.5 A to 7.2 A	
High-voltage DC	Input voltage range: 192 V DC to 288 V DC Input current: 3.6 A	
Low-voltage DC	Input voltage range: –36 V DC to –72 V DC Rated input voltage: –48 V DC Rated input current: 23 A	N/A
Maximum Power Consumption	Max: 300 W Typical: 172 W Static: 98 W	Max: 450 W Typical: 270 W Static: 150 W

Environment and Reliability

Environment and Reliability	RG-S6510-48VS8CQ	RG-S6510-32CQ
Operating Temperature	0°C to 45°C (32°F to 113°F)	0°C to 40°C (32°F to 104°F)

Environment and Reliability	RG-S6510-48VS8CQ	RG-S6510-32CQ
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)	
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-S6510-48VS8CQ	RG-S6510-32CQ
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, DVMRP, 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-DM、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、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	
	When the same ACL is applied to different physical interfaces or SVIs, resources can be multiplexed	N/A

Software Specifications	RG-S6510-48VS8CQ	RG-S6510-32CQ
Data Center Features	VXLAN routing and VXLAN bridging IPv6 VXLAN over IPv4 and EVPN VXLAN PFC, ECN, and RDMA M-LAG *RoCE over VxLAN OpenFlow 1.3	
Visualization	gRPC sFLOW sampling INT	
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 Congestion avoidance mechanisms such as WRED and tail discarding	
Virtualization	Virtual Switching Unit	
Buffer Management	Buffer status monitoring and management, and identification of burst traffic	
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, 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, ARP check, and hierarchical user management	
Management Mode	SNMP v1/v2c/v3, Netconf, telnet, console, MGMT, RMON, SSHv1/v2, FTP/TFTP, NTP clock, Syslog, SPAN/RSPAN/ERSPAN, Telemetry, ZTP, Python, fan and power alarm, and temperature alarm	
Other Protocols	DHCP Client, DHCP Relay, DHCP Server, DNS Client, UDP relay, ARP Proxy, and Syslog	

Safety and Regulatory Compliance

Specification	RG-S6510-48VS8CQ	RG-S6510-32CQ
Safety	• IEC 62368-1 • EN 62368-1 • NM EN 62368-1 • NM CEI 62368-1 • EN IEC 62368-1 • BS EN IEC 62368-1 • UL 62368-1 • CSA C22.2#62368-1 • GB 4943.1	• IEC 62368-1 • EN 62368-1 • EN IEC 62368-1 • UL 62368-1 • CAS C22.2#62368-1 • GB 4943.1

Specification	RG-S6510-48VS8CQ	RG-S6510-32CQ
Electromagnetic Compatibility (EMC)	• EN 55032 • EN 55035 • EN IEC 61000-3-2 • EN IEC 61000-3-3 • EN 61000-3-3 • EN 300 386 • ETSI EN 300 386 • NM EN 55035 • NM EN CEI61000-3-2 • NM EN 61000-3-3 • CNS 13438 • ICES-003 Issue 7 • ANSI C63.4-2014 • FCC CFR Title 47, Part 15, Subpart B • ANSI C63.4-2014 • VCCI-CLSPR 32 • GB/T 9254.1	• EN 55032 • EN 55035 • EN 61000-3-2 • EN 61000-3-3 • EN IEC 61000-3-3 • EN IEC 61000-3-2 • EN 300 386 • ETSI EN 300 386 • CES-003 Issue 7 • ANSI C63.4-2014 • FCC CFR Title 47, Part 15,Subpart B • VCCI-CISPR 32 • GB/T 9254.1
Environment	• 2011/65/EU EN 50581 • 2012/19/EU EN 50419 • (EC) No.1907/2006 • GB/T 26572	• 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-S6510 series switches is as follows:

- Select the switch based on the port types and quantity required by the service.
- Select the fan and power supply modules based on the switch model.
- Select optical transceivers based on port requirements.

Ordering Information

Chassis

Product Model	Description
RG-S6510-48VS8CQ	48 × 25GE ports and 8 × 100GE ports. Two power supply module slots and four fan module slots. The power module model is RG-PA550I-F, and the fan model is M6510-FAN-F.
RG-S6510-32CQ	Provides 32 × 100G ports. Two power supply module slots and five fan module slots. The power module model is RG-PA550I-F, and the fan model is M1HFAN I-F.

Fan and Power Supply Modules

Product Model	Description
RG-PA550I-F	550 W power supply module (AC and 240 V HVDC)
RG-PD800I-F	800 W power supply module (48 V LVDC), applicable only to RG-S6510-48VS8CQ
M6510-FAN-F	Fan module of RG-S6510-48VS8CQ and RG-S6510-48VS8CQ-X, supporting 3+1 redundancy, hot swapping, and front-to-rear ventilation design.
M1HFAN I-F	Fan module of RG-S6510-32CQ, supporting 4+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.)

40GBASE 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-iLR4-SM1310	40G iLR4 module, QSFP+ form factor, Duplex LC, 2 km (6,561.68 ft.) over SMF

Product Model	Description
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-AOC-30M	40G QSFP+ AOC cable, 30 m (98.43 ft.)
40G-AOC-5M	40G QSFP+ AOC cable, 5 m (16.40 ft.)

25GBASE Series Optical Modules

Product Model	Description
VG-SFP-AOC5M	25G SFP28 AOC cable, 5 m (16.40 ft.)
VG-SFP-LR-SM1310	25G LR module, SFP28 form factor, Duplex LC, 1310 nm, 10 km (32,808.40 ft.) over SMF
VG-SFP-SR-MM850	25G SR module, SFP28 form factor, Duplex LC, 850 nm, 100 m (328.08 ft.) over MMF

10GBASE Series Optical Modules

Product Model	Description
XG-LR-SM1310	10G LR module, SFP+ form factor, Duplex LC, 10 km ((32,808.40 ft.) over SMF
XG-SR-MM850	10G SR module, SFP+ form factor, Duplex LC, 300 m (984.25 ft.) over MMF
XG-SFP-AOC1M	10G SFP+ AOC cable, 1 m (3.28 ft.)
XG-SFP-AOC3M	10G SFP+ AOC cable, 3 m (9.84 ft.)
XG-SFP-AOC5M	10G SFP+ AOC cable, 5 m (16.40 ft.)
XG-SFP-SR-MM850	10G SR module, SFP+ form factor, Duplex LC, 300 m (984.25 ft.) over MMF
XG-SFP-LR-SM1310	10G LR module, SFP+ form factor, Duplex LC, 10 km ((32,808.40 ft.) over SMF
XG-SFP-ER-SM1550	10G ER module, SFP+ form factor, Duplex LC, 40 km (131,233.60 ft.) over SMF
XG-SFP-ZR-SM1550	10G ZR module, SFP+ form factor, Duplex LC, 80 km (262,467.19 ft.) over SMF

1000BASE Series Optical Modules

Product Model	Description
GE-SFP-LH40-SM1310-BIDI	1G LH module, SFP form factor, BIDI LC, 40 km (131,233.60 ft.) over SMF
GE-SFP-LX20-SM1310-BIDI	1G LX module, SFP form factor, BIDI LC, 20 km (65,616.80 ft.) over SMF
GE-SFP-LX20-SM1550-BIDI	1G LX module, SFP form factor, BIDI LC, 20 km (65,616.80 ft.) over SMF
MINI-GBIC-LH40-SM1310	1G LH module, SFP form factor, Duplex LC, 40 km (131,233.60 ft.) over SMF
MINI-GBIC-LX-SM1310	1G LX module, SFP form factor, Duplex LC, 10 km (32,808.40 ft.) over SMF
MINI-GBIC-SX-MM850	1G SR module, SFP form factor, Duplex LC, 550 m (1,804.46 ft.) over MMF
MINI-GBIC-ZX80-SM1550	1G ZX module, SFP form factor, Duplex LC, 80 km (262,467.19 ft.) over SMF

1000BASE Series Electrical Modules

Product Model	Description
Mini-GBIC-GT(F)	1G SFP copper module, SFP form factor, RJ45, 100 m (328.08 ft.) over Cat 5e/6/6a
Mini-GBIC-GT	1G SFP copper module, SFP form factor, RJ45, 100 m (328.08 ft.) over Cat 5e/6/6a

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-Summany/

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

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