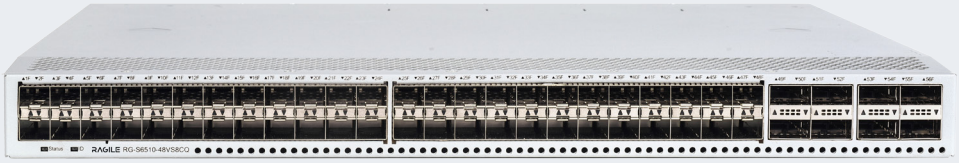
RAGILE

RG-S6510 Series CLOUD DATA CENTER SWITCHES DATASHEET

PRODUCT OVERVIEW

Ragile' s RG-S6510 Switch Series is a high-speed, high-density, 25 or 100 Gigabit Ethernet switch designed to power next-generation data centers and cloud computing services. It meets the requirements for a spine-and-leaf network architecture.



PRODUCT FEATURES

Non-blocking Performance with Powerful Caching Capacity

The RG-S6510 Series is a powerful collection of line-rate switches customized to power the next-generation data centers and cloud computing. It meets the requirements for a spine-and-leaf network architecture.

The RG-S6510 Series provides ports in the form of 48 x 25G ports + 8 x 100G ports, or 32 x 100G ports. All the ports can forward data at the line rate.

The switches employ an advanced cache scheduling mechanism to maximize the device' s cache capability, ensuring truly non-blocking transmission in the increasingly demanding data center environment.

Data Center Virtualization

The RG-S6510 Series adopts the industry-leading Virtual Switch Unit(VSU) technology to achieve unified network management, reduce network nodes and enhance network reliability. The failover time for link failure is within 50 to 200ms to guarantee uninterrupted operation for mission-critical applications. The cross-device link aggregation feature enables access to servers or switches to achieve active-active uplinks.

Data Center Overlay Networking

The RG-S6510 Series supports VXLAN to meet the data center overlay networking requirements. This addresses the difficulty to expand traditional data center networks due to insufficient VLANs.

The basic network built by the RG-S6510 Series 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, supporting the EVPN protocol, can automatically discover and authenticate virtual tunnel end point (VTEPs), thereby reducing flooding at the VXLAN data plane and eliminating dependency of VXLAN on underlying multicast services. This simplifies VXLAN deployment and improves the efficiency of large layer-2 network building 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 service products.

Hardware-based Traffic Visualization

The RG-S6510 Series is equipped with the switch chips allowing end-to-end traffic visualization in a multipath, multinode network. In this way, the forwarding path and delay of each session can be monitored in a centralized manner, thereby raising the fault locating efficiency by more than 10 times.

Carrier-Class Reliability Protection

The RG-S6510 Series supports built-in redundant power modules and modularized fan components. All the power modules and fan modules are hot-pluggable to guarantee undisturbed switching operation. In addition, the switches support fault detection and automatic alarms for the power and fan modules. The rotation speed of the fans automatically adjusts to the ambient temperature. The switches further provide device-level and link-level reliability protection with the over-current, over-voltage, and overheating protection measures.

The RG-S6510 Series also supports features like REUP (Rapid Ethernet Uplink Protection), Graceful Restart (GR) and Bidirectional Forwarding (BFD) mechanisms. All the features ensure the network convergence time is unaffected even when the network bears abundant services and heavy traffic, and therefore ensure normal operation.

IPv4/IPv6 Dual-Stack Multi-Layer Switching

The hardware of the RG-S6510 Series supports line-rate IPv4/IPv6 dual-stack multi-layer switching, and distinguishes and processes IPv4 and IPv6 protocol packets. The switches also support multiple tunneling technologies including manually configured tunnels, automatic tunnels, ISATAP tunnels and so on. The switches provide flexible IPv6 inter-network communication solutions to be realized according the requirement plan and status quo of the IPv6 networks. The switch series is also applicable to an IPv4-only or IPv6-only network, or a hybrid of IPv4 and IPv6 network, fulfilling the transition requirements from IPv4 to IPv6 network.

The series supports a wide range of IPv4 routing protocols including static routing, RIP, OSPF, IS-IS and BGP4, which can be selected flexibly according to the network environment. The series also supports an abundant list of IPv6 routing protocols, such as static routing, RIPng, OSPFv3, and BGP4+, which can be selected flexibly either to upgrade the existing network to IPv6 network or to construct a new IPv6 network.

Flexible and Comprehensive Security Policies

The RG-S6510 Series features multiple security features, which effectively defend against and control virus flooding and hacker attacks. These features include anti-DoS attack, validity check of ARP packets on ports, and multiple hardware-based ACL policies.

The switches support hardware-based IPv6 ACLs, which can easily control IPv6 users' access to edge devices even when IPv6 users exist within an IPv4 network. It allows coexistence of IPv4 and IPv6 users on the network and can control access permissions of IPv6 users, such as restricting access to sensitive resources on the network.

The switches also support Telnet access control based on source IP addresses. The measure prevents unauthorized users or hackers from attacking or controlling devices and thereby enhances security of the device NMS. The RG-S6510 Series also implement Secure Shell (SSH) and SNMPv3 to encrypt management information in Telnet and SNMP processes, thereby ensuring security of management device information and preventing hacker from waging attacks or controlling devices.

The series prevents unauthorized users from network access through multiple functions. These functions include multi-element binding, port security, time ACL, and bandwidth limit based on data traffic. The RG-S6510 Series highly strengthens access security and are perfect match for large-sized networks.

Advanced Management

The RG-S6510 Series supports a family of management ports such as Console, MGMT and USB. The switches also support SNMP v1/v2c/v3, a universal network management platform. In addition, the switch console port can be managed via Telnet / SSHv2, HTTP or HTTPS. The switches enable Command Line Interface (CLI), Telnet, and cluster management, which simplify device management and provide various encryption modes such as SSH2.0 to enhance network security.

The switches support SPAN/RSPAN mirroring and multiple mirroring observation ports, offering users high visibility and transparency for easy maintenance. The switches also provide a wide range of network traffic reports to help users optimize network structure and adjust resources deployment accordingly.

TECHNICAL SPECIFICATIONS

Model	RG-S6510-48VS8CQ	RG-S6510-48VS8CQ-X	RG-S6510-32CQ
Ports	48 x fixed 25G SFP28 ports 8 x 100G QSFP+ ports		32 x100G QSFP+ ports
Slots	2 slots for power supply modules 4 slots for fan modules		2 slots for power supply modules. 5 slots for fan modules.
Management Ports	1 console port 1 MGMT port 1 USB 2.0 port		
Switching Capacity	4.8Tbps/76.8Tbps		6.4Tbps/64Tbps
Packet Forwarding Rate	2000Mpps		2030Mpps
802.1q VLAN	4K		
Layer 2 Protocols	IEEE802.3ae (10Gbase), IEEE802.3ak, IEEE802.3an, IEEE802.3x, IEEE802.3ad (link aggregation), IEEE802.1p, IEEE802.1x, IEEE802.1Q, IEEE802.1D (STP), IEEE802.1w (RSTP), IEEE802.1s (MSTP), IGMP Snooping , Jumbo Frame (9Kbytes), IEEE802.1ad (QinQ and flexible QinQ), GVRP		
Layer 3 Protocols (IPv4)	BGP4, OSPFv2, RIPv1, RIPv2, MBGP, LPM Routing, Policy-based Routing, Route-policy, ECMP, WCMP, VRRP, IGMP v1/v2/v3, DVMRP, PIM-SSM/SM/DM, MSDP, Any-RP		
Basic IPv6 Protocols	ND, 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 Routing Protocols	Static routing, Equal-cost routing, Policy-based routing, OSPFv3, RIPng, BGP4+, MLDv1/v2, PIM-SMv6, Manual tunnel, Auto tunnel, IPv4 over IPv6 tunnel, ISATAP tunnel		
Data Center Features	PFC, ECN, RDMA; VXLAN routing, VXLAN bridging; BGP-EVPN VXLAN; *RoCE over VXLAN; OpenFlow 1.3		
Visualization	gRPC, sFlow		
QoS	EXP priority mapping based on 802.1p, DSCP and ToS; ACL traffic classification; Priority marking/remarking; Multiple queue scheduling mechanisms, such as SP, WRR, DRR, SP+WRR, and SP+DRR		
VSU (Virtual Switch Unit)	VSU (virtualization technology for virtualizing multiple devices into 1)		
Buffer Management	Buffer monitoring and management, traffic burst identification		
Reliability	GR for RIP/OSPF/BGP; BFD detection; REUP dual-link fast switching technology; RLDP (Rapid Link Detection Protocol); 1+1 power redundancy; fan redundancy; Hot-swappable line cards and power modules		
Security	Network Foundation Protection Policy (NFPP); CPU Protection (CPP); DoS protection; Detection of unauthorized data packets; Data encryption; IP source guard; RADIUS / TACACS+; IPv4 / IPv6 ACL packet filtering based on standard or extended VLANs; Plaintext authentication and MD5 cipher-text authentication of OSPF, RIPv2, and BGPv4 packets; Telnet login through limited IP addresses and the password mechanism; u-RPF; Broadcast packet suppression; DHCP snooping, Anti-gateway ARP spoofing; ARP check		
Manageability	SNMP v1/v2c/v3; Netconf; Telnet; Console; MGMT; RMON; SSHv1/v2; FTP/TFTP for file upload and download management; NTP clock; Syslog; SPAN/RSPAN/ERSPAN; Telemetry; VXLAN OAM; VXLAN ping VXLAN tracert		
Other Protocols	DHCP Client, DHCP Relay, DHCP Server, DNS Client, UDP relay, ARP Proxy, Syslog		
Dimensions(W x D x H) (mm)	442 x 387 x 44 (1U-height)	442 x 560 x 44 (1U-height)	442 x 560 x 44 (1U-height)
Operating Temperature	0°C to 45°C	0°C to 40°C	0°C to 40°C
Operating Humidity	10% to 90%RH (non-condensing)		
Weight	8kg (incl. 4 fan modules and 2 power supply modules)	10kg (incl. 4 fan modules and 2 power supply modules)	11kg incl. 5 fan modules and 2 power supply modules)
Power Consumption	<300W		<400w
Power Supply	AC input: Rated voltage range: 100V to 240V AC Max. voltage range: 90V to 264V AC Frequency: 50-60Hz Rated current: 7.2A-3.5A HVDC input: Input voltage range: 192V to 288V DC Input current range: 3.6A		

ORDERING INFORMATION

1. Switches, fans, and power modules

Model	Description
RG-S6510-48VS8CQ	48 fixed 25G SFP28 ports, 8 100G QSFP+ ports. 2 slots for power supply modules. 4 slots for fan modules.
RG-S6510-48VS8CQ-X	48 fixed 25G SFP28 ports, 8 100G QSFP+ ports. 2 slots for power supply modules. 4 slots for fan modules.
RG-S6510-32CQ	32 fixed 100G QSFP+ ports. 2 slots for power supply modules. 5 slots for fan modules.
RG-PA550I-F	AC power supply module, front-to-rear airflow. With up to 2 power modules, support 1+1 redundancy.
M6510-FAN-F	Fan module for RG-S6510-48VS8CQ/ RG-S6510-48VS8CQ-X, front-to-rear airflow. With up to 4 fan modules, support 3+1 redundancy.
M1HFAN I-F	Fan module for RG-S6510-32CQ, front-to-rear airflow. With up to 5 fan modules, support 4+1 redundancy.

2. Optional 10G and 40G fiber module and cables

Model	Description
40G-QSFP-SR-MM850	40G SR Fiber Module for QSFP+ ports, 100m (OM3) / 150m (OM4) (8 or 12 cores, 850nm)
40G-QSFP-LR4-SM1310	40G LR Single-mode Fiber Module for QSFP+ ports, 10km (LC) (2 cores, 1310nm)
40G-QSFP-LSR-MM850	40G SR Fiber Module for QSFP+ ports, 300m (OM3) / 400m (OM4) (8 or 12 cores, 850nm)
XG-SFP-SR-MM850	10G SR Fiber Module for SFP+ ports, 300m
XG-SFP-LR-SM1310	10G LR Fiber Module for SFP+ ports, 10km
XG-SFP-ER-SM1550	10G ER Fiber Module for SFP+ ports, 40km
XG-SFP-ZR-SM1550	10G ZR Fiber Module for SFP+ ports, 80km

3. Optional 100G fiber module and cables

Model	Description
100G-QSFP-SR-MM850	100GBASE-SR, QSFP28 transceiver (850nm, 100m with OM4 fiber)
100G-QSFP-LR4-SM1310	100G LR single-mode fiber module, QSFP28 transceiver, 10km (LC, dual-core, 1310nm)
100G-QSFP-iLR4-SM1310	100G iLR fiber module, QSFP28 transceiver, 2km (LC, dual-core, 1310nm)
100G-AOC-10M	100G QSFP28 Optical Stack Cable (included both side transceivers), 10m
VG-SFP-AOC10M	25G SFP+ Optical Cable (included both side transceivers), 10m
VG-SFP-AOC3M	25G SFP+ Optical Cable (included both side transceivers), 3m

MORE INFORMATION

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For more information about the Ragile RG-S6510 switch, please visit
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