RG-S6120-20XS4VS2QXS

10G Switch Datasheet

Ruijie

Product Overview

RG-S6120 series switches are next-generation 10G Ethernet switches with high performance and high security newly launched by Ruijie. Adopting advanced hardware architecture design and Ruijie's new RGOS gen 12th modular operating system, the switches provide faster hardware processing performance and more convenient operating experience.

RG-S6120 series provides maximum 32 10G fiber access and supports high-performance 10/25/40G port uplink, which fully meets the user requirements of high-density access and high-performance aggregation.

RG-S6120 series switches provide high-performance and comprehensive end-to-end QoS, as well as flexible and feature-rich security settings for large-scale network aggregation as well as small and medium-sized network cores, meeting the needs of high-speed, high-security and smart enterprise networks.
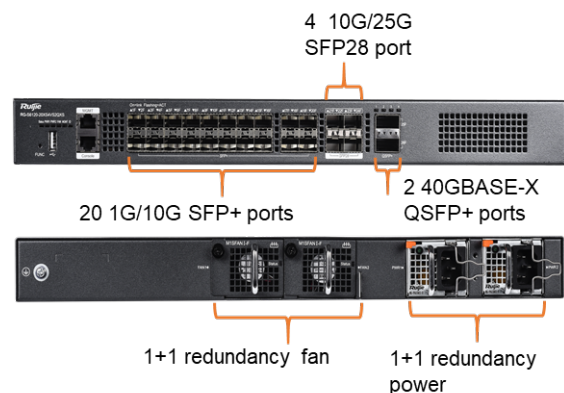
Product Highlights

• **Up to 32 x 10G Base-X Access Ports and 4 25G & 2 40G uplink**

• **Built-in Advanced Layer 3 Routing Support**

• **Power and Fan Redundancy Support (hot-swappable)**

• **Robust High Reliability Hardware Design (Guarantee for 30 Years MTBF)**

RG-S6120-20XS4VS2QXS Front (above) and Rear (bottom) product view

Product Features

IPv4/IPv6 Dual-Stack Multilayer Switching

RG-S6120 series provides hardware support for IPv4/IPv6 dual-stack multilayer switching at line rates, supports distinction and processing of IPv4 and IPv6 packets by hardware, and provides flexible IPv6 network communication solutions according to the requirements of the IPv6 network for network planning or maintaining the current network status.

The switches also support a wide range of IPv4 routing protocols, including static routing, RIP, OSPFv2, IS-ISv4, BGP4, etc., enabling users to select appropriate protocols for network building in different environments. The series also supports an abundant list of IPv6 routing protocols, such as static routing, RIPng, OSPFv3, IS-ISv6, BGP4+, etc., enabling users to select appropriate protocols for upgrading an existing network to IPv6 or building a new IPv6 network.

Virtual Switch Unit (VSU)

The Virtual Switch Unit technology, or VSU in short, enables interconnection of several physical devices via link aggregation by virtualizing them into one logical device. The logical device uses one single IP address, Telnet process, command-line interface (CLI), and enables auto version inspection and configuration for management. From the user perspective, they are only managing one device, but realizing the work efficiency and user experience brought by several devices operating at the same.

Link aggregation can be either 10G ports or dedicated stack cards for user's investment protection.

• **Easy management:** Administrators can centrally manage all the devices at the same time. It is no longer necessary to configure and manage the switches one by one.

• **Simplified typology:** The VSU is regarded as one switch in the network. By connection of aggregation link and peripheral network devices, MSTP protocol is unnecessary as there is no Layer 2 loop network. All protocols operate as one switch.

• **Millisecond failover:** The VSU and peripheral devices are connected via the aggregation link. Upon failure of any device or link, failover to another member link requires only 50 to 200ms.

• **Exceptional scalability:** The network is hot swappable. Any devices leaving or joining the virtualized network cause zero impact on other devices.

Comprehensive Security Policies

The RG-S6120 series effectively prevents and controls virus spread and hacker attacks with various inherent mechanisms such as anti-DoS attacks, hacker IP scanning, illegal ARP packets checking and multiple hardware-based ACL policies.

Hardware-based IPv6 ACL: 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 controls the resources access by IPv6 users, such as restricting access to sensitive network resources.

Hardware-based CPU protection mechanism: The CPU protection policy (CPP) distinguishes the data flows sent to the CPU, which are processed according to their priorities, and implements bandwidth limitations as needed. In this manner, users can prevent the CPU from being occupied by illegal traffic and protect against malicious attacks to guarantee security of the CPU and switch.

IP/MAC binding: Allow flexible binding of a port or the switch to the IP address and MAC address of users, strictly limiting user access on a port or in the entire switch.

DHCP snooping: Allow DHCP responses from trusted ports only to prevent spoofing by unauthorized DHCP servers. Based on DHCP snooping, the switches dynamically monitor ARP packets, check user IP addresses, and directly discard illegal packets inconsistent with the binding entries to effectively defends against ARP spoofing and source IP address spoofing.

IP-based Telnet access control: Prevent unauthorized users or hackers from attacking or controlling the devices and thereby strengthens security of the device network management.

SSH and SNMPv3: Implement Secure Shell (SSH) and Simple Network Management Protocol v3 (SNMPv3) to encrypt management information in Telnet and SNMP processes, thereby ensuring security of the management device information and preventing hacker from attacking or controlling the devices.

Access Control: Prevents unauthorized users from network access through multiple features including multi-element binding, port security, time-based ACL, and flow-based rate limiting. The RG-S6120 Series highly strengthens the access control of visitors and restricts the access of unauthorized users to meet the needs of enterprise networks and campus networks.

NFPP: The NFPP (Network Foundation Protection Policy) enhances switch security. It protects the switch processor and channel bandwidth by isolating the attacking sources. Normal packet forwarding and protocol status are hence guaranteed.

High Reliability Design

RG-S6120 series adopt multiple-tier hardware fault isolation and protection mechanism, guarantee for 30 Years MTBF. RG-S6120 series switches offer built-in power modules and fan modules redundancy. Both the power modules and the fan modules can be hot swapped without affecting the normal operation of the device. In addition, the switches also support fault detection and alarm for power modules and fan modules and automatically adjust the fan speed according to temperature changes to better adapt to the environment. The devices support front/rear ventilation to improve heat dissipation efficiency and provide multiple reliability protections at the equipment level and link level. Overcurrent protection, overvoltage protection and overheat protection technology are also adopted.

Redundancy Design for Fan Trays
Independent fan trays are deployed in a redundancy mode. Cleaning or replacing a fan does not affect the operation of other fans, ensuring device reliability.

Hardware-level Dual Flash Chip
Flash-related faults account for approximately 5% of total faults throughout the year. RG6120 series switches use dual flash chips to store boot software to implement hardware-level redundancy backup and prevent startup failures.
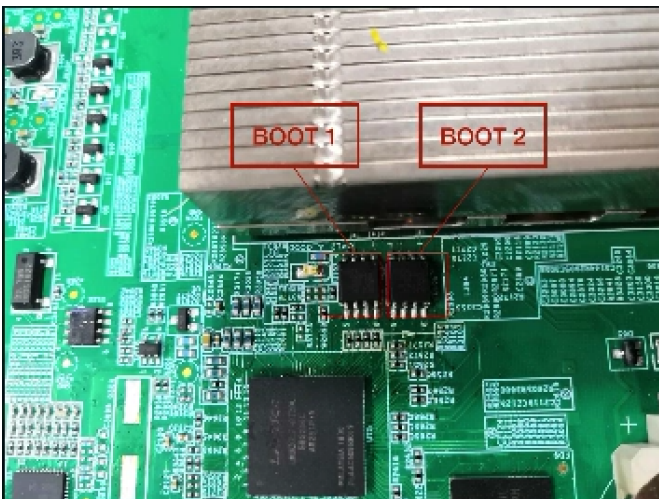
Fault Isolation Technology

A short-circuit in an optical module may cause an optical port failure or even a switch breakdown or burnout. Ruijie S6120 series switch design for protective circuits of optical ports, a short-circuit in an optical module can be detected promptly, and the faulty module is then isolated to avoid any impact on other ports and the entire device.

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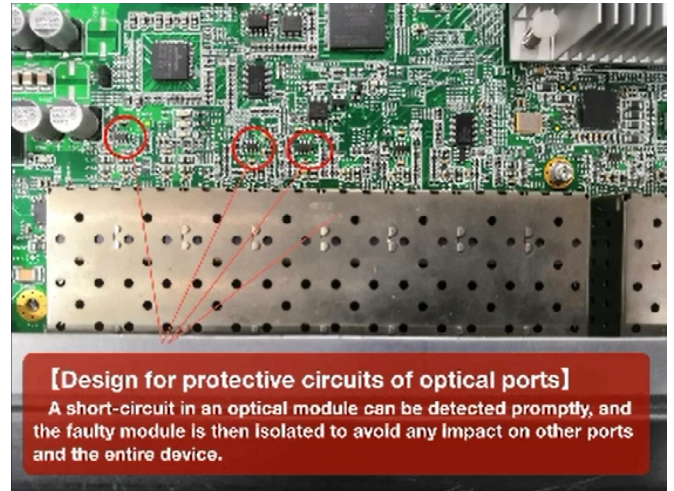
Other than robust hardware design, powered by Ruijie gen 12th RGOS, all Ruijie enterprise switches built-in with variety of high availability networking features for different scenario and applications:

Spotlight High Availability Features:
Spanning tree protocols: The series supports spanning tree protocols of 802.1D, 802.1w, and 802.1s to ensure rapid convergence, improve fault tolerance capabilities, ensure the stable operation of the network, load balancing of links and reasonable use of network channels, and increase the redundant link utilization.
Virtual Router Redundant Protocol (VRRP): The series supports Virtual Router Redundancy Protocol (VRRP) which effectively ensures network stability.
Rapid Link Detection Protocol (RLDP): The series supports Rapid Link Detection Protocol (RLDP), which can perform quick link connectivity detection and unidirectional link detection of the optical fiber links, and support port-based loop detection to prevent network failures caused by loops generated by the improper connection of devices such as hubs to the ports.

Rapid Ethernet Uplink Protection Protocol (REUP): When Spanning Tree Protocol (STP) is disabled, the Rapid Ethernet Uplink Protection Protocol (REUP) can provide basic link redundancy through the rapid uplink protection and provide millisecond fault recovery faster than STP.

Bidirectional Forwarding Detection (BFD): Provide a method for upper-layer protocols such as routing protocols to quickly detect the connectivity of forwarding paths between 2 routing devices, greatly reducing the convergence time of upper-layer protocols in the case of changes in link status.

Exceptional business support performance: Support IPv4 and IPv6 multicast with abundant multicast protocols, e.g. IGMP Snooping, IGMP, MLD, PIM, PIM for IPv6, MSDP, etc. The switches offer multicast service for IPv4 network, IPv6 network, and IPv4/IPv6 co-existing network. IGMP source port and source IP check are also supported to effectively eliminate unauthorized multicast sources and improve network security.

Abundant QoS Policies

The RG-S6120 series offers multilayer traffic classification and flow control for MAC traffic, IP traffic, application traffic, etc. and realizes various traffic policies such as refined bandwidth control and forwarding priority. The series also supports customized QoS features for various applications.

The DiffServ-based QoS system supports a complete set of QoS policies covering 802.1P, IP TOS, Layer 2 to 7 filtering, SP, WRR, etc., and realizes the multi-service QoS logic of the entire network system.

Energy Saving

The RG-S6120 series switches adopt the next-generation hardware architecture, advanced energy-saving circuit design and components to save energy for users and reduce noise pollution. The series adopts the variable-speed axial fans so that the devices can intelligently control the fan speed according to the current temperature to ensure stable operation of the device while reducing power consumption and noise.

Easy Network Maintenance

RG-S6120 series supports abundant features such as SNMP, RMON, Syslog, logs and configuration backup using USB for routine network diagnosis and maintenance. Administrators can use a wide variety of management and maintenance methods for easier device management and such include command line interface (CLI), web management, Telnet, etc.

Technical Specifications

Model	RG-S6120-20XS4VS2QXS
Basic specifications	
Fixed ports	20 1G/10GBASE-X SFP+ ports, 4 10G/25GBASE-X SFP28 ports, 2 40GBASE-X QSFP+ ports, Support up to 32 10G ports, 2 modular power slots, 2 modular fan slots
Management ports	1 MGMT port 1 console port 1 USB port
Switching capacity	2.56T/23.04T
Packet forwarding rate	570Mpps/1260Mpps

Model	RG-S6120-20XS4VS2QXS
Port Buffer	4MB
ARP Table	Up to 16K
MAC Address	Up to 32K
Routing Table Size (IPv4/IPv6)	4K/4K
ACL Entries	Up to 2500
Product Features	
VLAN	4K 802.1Q VLAN Port-based VLAN Private VLAN GVRP Super VLAN
QinQ	Basic QinQ
Link aggregation	LACP (802.3ad)
Port mirroring	Flow-based mirroring Many-to-one mirroring, One-to-many mirroring RSPAN Link aggregation mirroring
Multiple Spanning Tree (MST) Instances	64
Spanning tree protocols	STP, RSTP, MSTP
Maximum Aggregation Port (AP)	128
DHCP	DHCP Server DHCP Client DHCP Snooping DHCP Relay IPv6 DHCP Snooping IPv6 DHCP Client IPv6 DHCP Relay
IPv6 protocols	IPv6 addressing, ICMPv6, Path MTU Discovery
IP routing	Static routing RIP, RIPng OSPFv2, OSPFv3, IS-ISv4, IS-ISv6 BGP4, BGP4+, Policy based routing ECMP
Multicast	IGMP v1/v2/v3, IGMP proxy IGMP v1/v2/v3 snooping IGMP filtering, IGMP fast leave PIM-DM, PIM-SM, PIM-SSM MLD Snooping, MLD MSDP

| Model		RG-S6120-20XS4VS2QXS
ACL & QoS	ACL	Various hardware-based ACLs: Standard IP ACL (Based on IP address) Extended IP ACL (Based on IP address and TCP/UDP port number) Extended MAC ACL (Based on source and destination MAC addresses and Ethernet type) Time-based ACL Expert ACL (Based on the flexible combination of VLAN ID, Ethernet type, MAC address, IP address, TCP/UDP port, protocol type and time) ACL80 IPv6 ACL
	QoS	Port-based traffic recognition Port-based speed limit 802.1p/DSCP/TOS traffic classification 8 priority queues per port Queue scheduling algorithms: SP, WRR, DRR, SP+WRR, SP+DRR, RED/WRED
Security		Filter unauthorized MAC addresses Broadcast storm suppression Hierarchical management by administrators and password protection RADIUS and TACACS+ SSH BPDU Guard CPP, NFPP
Management		SNMP, CLI (Telnet/Console), RMON (1,2,4,9), Syslog, NTP, SNMP over IPv6, IPv6 MIB support for SNMP, Telnet v6, FTP/TFTP v6, DNS v6, NTP for v6, Traceroute v6 Support sFlow to sample the packets of the switch traffic using the random sampling technology of data stream
Reliability		VSU (virtualization technology for virtualizing multiple devices into 1); GR for RIP/OSPF/BGP; BFD; G.8032 (ERPS), REUP; RLDP; 1+1 power redundancy; Hot-swappable power module and fan module
VSU (Virtual Switch Unit)		Up to 2 stack members
Physical Specifications		
Power supply		Supported power module: RG-PA150I-F AC input: Rated voltage range: 100 to 240VAC; 50/60Hz Maximum voltage range: 90 to 264VAC; 47/63Hz Rated input current: 3A HVDC input: Rated voltage range: 240VDC Maximum voltage range: 192 to 288 VDC Rated current per input: 3A
Power Consumption		<85W
Power Surge Protection		4KV (MGMT Port) Power Supply Module (RG-PA150I-F): common mode 6KV/difference mode 6KV
Fan		Support 2 pluggable modular fans with front and rear air ducts Support fan speed adjustment and malfunction alert
Temperature alarm		Support temperature alarm function
Temperature		Operating temperature: 0°C to 50°C Storage temperature: -40°C to 70°C

Model	RG-S6120-20XS4VS2QXS
Humidity	Operating humidity: 10% to 90%RH Storage humidity: 5% to 90%RH
Operating Altitude	0 to 5,000m
Dimensions (W x D x H) (mm)	440 * 330 * 43.6
Rack Height	1RU
MTBF	30 Years
Safety Standards	GB4943-2011 EN 62368-1:2014+A11:2017
Emission Standards	GB9254-2008 CLASSA EN 55032:2015+AC:2016 EN 61000-3-2:2014 EN 61000-3-3:2013+A1:2019 EN 55035:2017 ETSI EN 300 386 V2.1.1 (2016-07)

Typical Applications

- Aggregation layer of large networks, core of small and medium-sized networks, full 10G layer 3 access for large enterprises or office buildings
- The wide variety of management mechanisms provides network security protection, high-security access control and effective network access control

- The comprehensive management policies help to manage bandwidth and guarantee the key services such as voice call, multicast audio and video services, and video on demand.
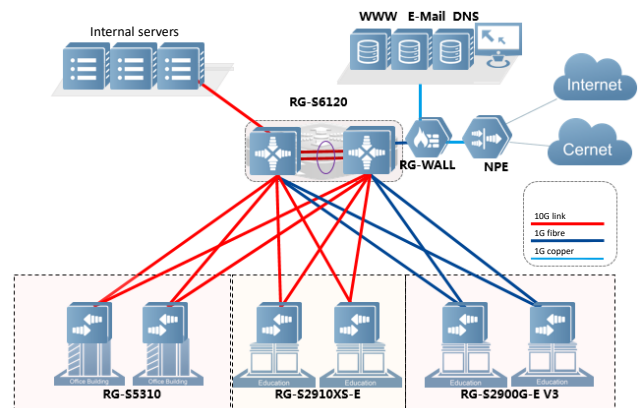
Scenario 1

As the aggregation layer switches of large campus networks, RG-S6120 series switches provide 10G bandwidth for access equipment, and 40G aggregation-to-core high-bandwidth link, which meets the users' growing needs.
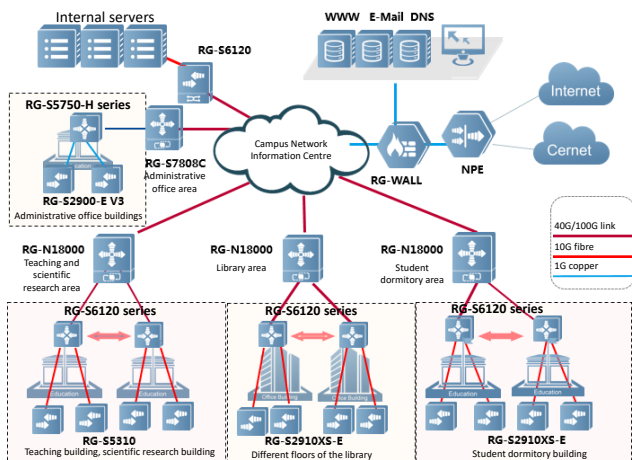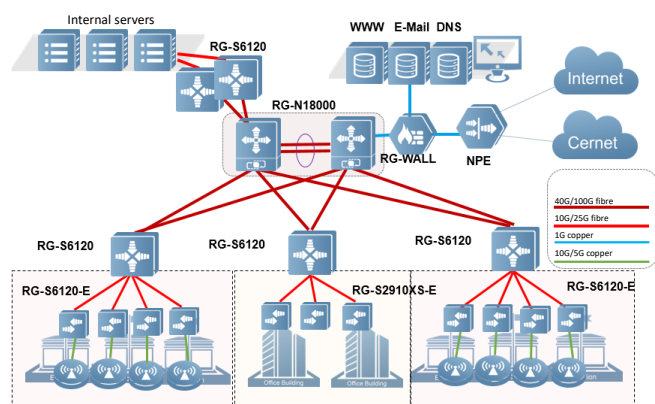

Scenario 2

The RG-S6120 series switches can also be deployed as 10-Gigabit core switches in small and medium-sized enterprises, which can greatly improve the reliability and efficiency of the network system while simplifying the network architecture through VSU technology.

Scenario 3

RG-S6120 can be deployed for the access or aggregation of small and medium campus networks. The 10G access ports can be used for high-speed AP access, forming 10G/25G access-to-aggregation and 40G aggregation-to-core high-bandwidth link to meet the users' growing needs.

Ordering Information

Please order according to the below sections including switch models, expansion modules and power modules selection. The expansion modules and power modules may be updated at any time. Please consult the related personnel before ordering.

Model	Description
RG-S6120-20XS4VS2QXS	20 1G/10GBASE-X SFP+ ports, 4 10G/25GBASE-X SFP28 Ports, 2 40GBASE-X QSFP+ ports, support up to 32 10G ports, 2 modular power supply slots (at least one RG-PA150I-F power module), 2 modular fan slots (2 fan modules are equipped by default)
RG-PA150I-F	150W AC power module for RG-S6120-20XS4VS2QXS
Mini-GBIC-GT	1000BASE-GT mini GBIC transceiver
XG-SFP-SR-MM850	10G LC interface module for SFP+ ports (62.5/125μm: 33m; 50/125μm: 66m; 300m when the modal bandwidth is 2000MHz•km)
XG-SFP-LR-SM1310	10G LC interface module for SFP+ ports (1310nm, 10km)
XG-SFP-ER-SM1550	10G LC interface module for SFP+ ports (1550nm, 40km)
VG-SFP-SR-MM850	25G fiber module VG-SFP-SR-MM850
VG-SFP-LR-SM1310	25G fiber module VG-SFP-LR-SM1310
XG-SFP-AOC1M	10G SFP+ optical cable, 1 meter, including one cable + both side transceivers
XG-SFP-AOC3M	10G SFP+ optical cable, 3 meters, including one cable + both side transceivers
XG-SFP-AOC5M	10G SFP+ optical cable, 5 meters, including one cable + both side transceivers
VG-SFP-AOC5M	25G SFP+ optical cable (including both side transceivers), 5 meters
40G-QSFP-SR-MM850	40G SR fiber module for QSFP+ ports (OM3/OM4 MPO, 8-core, 850nm, 100m with OM3 fiber, 150m with OM4 fiber)
40G-QSFP-LR4 SM1310	40G LR single-mode fiber module for QSFP+ ports, transmission distance up to 10km (LC, 2-core, 1310nm)
40G-AOC-5M	40G QSFP+ optical cable, 5 meters, including one cable + both side transceivers
40G-AOC-10M	40G QSFP+ optical cable, 10 meters, including one cable + both side transceivers