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# Ruijie XS-S1960-H Switch Series Datasheet

## Highlights

- Smart web and managed at Ruijie Cloud
- PoE+ support with up to 370W power budget and up to 60W by a single port
- Delivers enhanced network security, network reliability
- Design for Durability

## Overview

XS-S1960 Switch Series is the newest access switch series for SMB market. XS-S1960-H Series Switches are fixed-configuration, Gigabit Ethernet switches that provide enterprise-class access switching for branch offices, the switches are managed switches offer advanced Layer 2 and basic Layer 3 features as well as High-power PoE Technology (IEEE 802.3bt). The switches adopt new web interface and can be managed at the Ruijie Cloud platform, provides easy device onboarding, configuration, monitoring, and troubleshooting.

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# Product Features

## Easy Network Maintenance

The XS-S1960-H Series supports abundant features such as SNMP V1/V2/V3, RMON, Syslog, and logs and configuration backup using USB for routine diagnosis and maintenance. Administrators can use a wide variety of methods for easier management and such include CLI, web management, CWMP(TR069), etc. With a friendly browser UI, administrators can do most of their job, such as performance monitoring, configuration.


Figure 1: Easy Network Maintenance

The XS-S1960-H Series fully supports Ruijie Cloud which is a cloud-based service that help user manage and control devices and networks. It can monitor the network and configure or remote control devices.

## Comprehensive Security Policies

The XS-S1960-H 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 ACL policies.

- **Industry-leading CPU protection mechanism:** The CPU Protect Policy (CPP) provides policies for protecting the CPU of a switch. In network environments, various attack packets spread, which may cause high CPU usages of the switches, affect protocol running and even difficulty in switch management. To this end, switch CPUs must be protected, that is, traffic control and priority-based processing must be performed for various incoming packets to ensure the processing capabilities of the switch CPUs.
  - ◊ CPP can effectively prevent malicious attacks in the network and provide a clean environment for legitimate protocol packets.
  - ◊ CPP is enabled by default. It provides protection during the entire operation of switches.

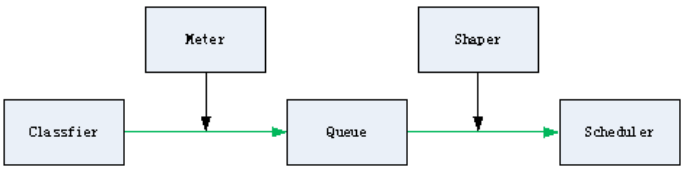


Figure 2: CPP protects the CPU by using the standard QoS DiffServ model

- **IP/MAC binding:** Implement flexible binding of a port or the system to the IP address and MAC address of users, strictly limiting user access on a port or in the entire system.
- **DHCP snooping:** Allow DHCP responses from trusted ports only; based on DHCP listening and by monitoring ARP dynamically and checking the user IP address, directly discard illegal packets inconsistent with binding entries to effectively prevents ARP frauds and source IP address frauds.
- **Secure Shell and SNMPv3:** Secure Shell (SSH) and Simple Network Management Protocol v3 (SNMPv3) cryptographic network protocol ensure the security of management information. Provides services such as multi-element binding, port security, time-based ACL and bandwidth rate limiting to block unauthorized users.
- **NFPP:** Network Foundation Protection Policy (NFPP) provides guards for switches. Malicious attacks are always found in the network environment. These attacks bring heavy burdens to switches, resulting in high CPU usage and operational troubles. These attacks are as follows:
  - ◊ Denial of Service (DoS) attacks may consume lots of memory, entries, or other resources of a switch, which will cause system service termination.
  - ◊ Massive attack traffic is directed to the CPU, occupying the entire bandwidth of the CPU. In this case, normal protocol traffic and management traffic cannot be processed by the CPU, causing protocol flapping or management failure. The forwarding in the data plane will also be affected and the entire network will become abnormal.
  - ◊ A great number of attack packets directed to the CPU consume massive CPU resources, making the CPU highly loaded and thereby influencing device management and performance.

  NFPP can effectively protect the system from these attacks. Facing attacks, NFPP maintains the proper running of various system services with a low CPU load, thereby ensuring the stability of the entire network.

## Virtual Switch Unit (VSU)

The Virtual Switch Unit technology, or VSU in short, enables interconnection of several physical devices 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. From the user perspective, the benefits are multiplied work efficiency and enhanced user experience of several devices operating at the same. And they only have to manage one device. The VSU technology also offers multiple benefits below:

- **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 event 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.

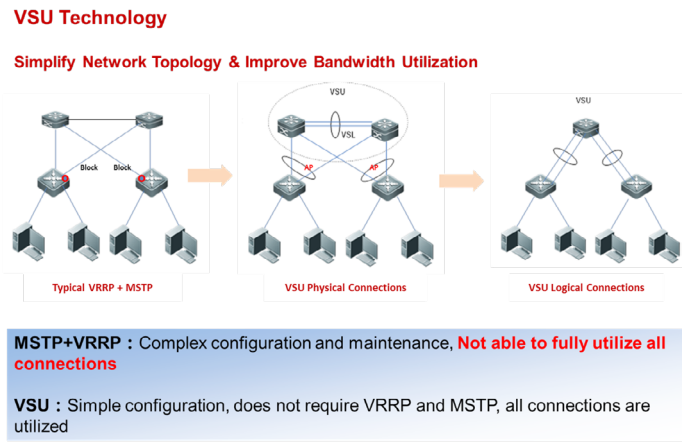


Figure 3: Simplified Network Topology Enabled by VSU

## High Reliability

The XS-S1960-H Series supports spanning tree protocols of 802.1d, 802.1w, and 802.1s to ensure rapid convergence, improves fault tolerance capabilities, ensures stable running of networks and load balancing of links, and provides redundant links.

- **Rapid Link Detection Protocol (RLDP):** Detect the connectivity of links and whether an optical fiber link is normal from both ends, and supports the loop detection function based on the port to prevent network faults caused by loops generated by the connection of devices such as hubs to ports.
- **Ethernet Ring Protection Switching (ERPS) (G.8032):** Implements loop blocking and link recovery on the master device. Other devices directly report link status to the master device. Without passing through other standby devices, the failover time of loop interruption and recovery is hence faster than STP. The ERSP's link failover rate can be completed within milliseconds under ideal conditions.
- **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 function and provide faster sub second-level fault recovery than STP.

## Design for Durability

In the corrosive gas, high humidity environment, electronic products will accelerate corrosion, reliability and lifetime will be shortened, However, deployment environments of access switch are different, there may be lack of temperature and humidity regulation and close to the source of pollution or the sea. Through the design for durability, such as conformal coating, XS-S1960-H Switch Series can operate stably in a variety of deployment environments.

The PCBA of XS-S1960-24GT4SFP-UP-H and XS-S1960-48GT4SFP-H have conformal coating with excellent insulation and protection against moisture, dust, corrosion, mildew and salt spray to enhance environmental adaptability.

## New Option for High Power IP Devices

There used to be only two options available for remote power supply scenarios, namely PoE and PoE+ standards. Both XS-S1960-10GT2SFP-H and XS-S1960-24GT4SFP-UP-H can support PoE and PoE+. But PoE standard would fail to meet the needs if more than 30W power is required. Instead, electrical wiring or even high power has to be deployed. Such implementation gives an enormous burden to total investment cost, completion schedule, post-sale maintenance, as well as installation safety. XS-S1960-24GT4SFP-UP-H pushes the frontier with leading IEEE802.3bt standard, delivering 60W power output per port. It guarantees the best security, efficiency, stability and energy-saving experiences.

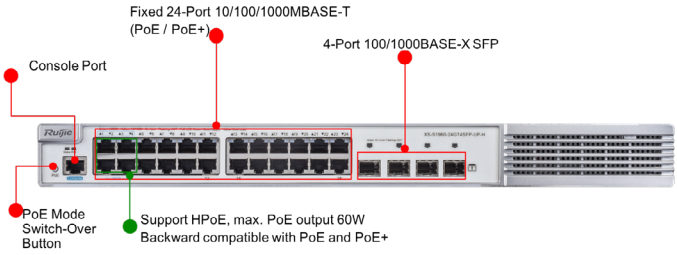


Figure 4: PoE/PoE+ Support

## Technical Specifications

| Model | XS-S1960-24GT4SFP-H | XS-S1960-48GT4SFP-H | XS-S1960-24GT4SFP-UP-H | XS-S1960-10GT2SFP-P-H |
|---|---|---|---|---|
| Ports | 24 10/100/1000BASE-T ports<br>4 1G SFP ports (non-combo) | 48 10/100/1000BASE-T ports<br>4 1G SFP ports (non-combo) | 24 10/100/1000BASE-T ports (PoE/PoE+) and 4 Gigabit SFP ports (non-combo) uplink, Port 1-4 for HPoE | 10 10/100/1000BASE-T ports, 2 100/1000BASE-X SFP ports (non-combo), Port 1-8 support PoE/PoE+ |
| Fan Slots | Fanless | Fixed | Fixed | Fanless |
| Management Ports | 1 console port | | | |
| Switching Capacity | 56Gbps | 104Gbps | 128Gbps | 24Gbps |
| Packet Forwarding Rate | 42Mpps | 78Mpps | 42Mpps/96Mpps | 18Mpps |
| Port Buffer | 1.5MB | | | |
| ARP Table | 1,000 | | | 500 |
| MAC Address | Up to 16K | | | |
| Routing Entries | 500 | | | 64 |
| IP Host Entries (IPv4/IPv6) | 500 (IPv4/IPv6) | | | |
| ACL Entries | Up to 1,500 | | | Up to 750 |
| ACL | Standard/Extended/Expert ACL, Extended MAC ACL, ACL 80, IPv6 ACL, ACL logging, ACL counter, ACL remark, Global ACL, ACL redirect | | | |
| QoS | 802.1p/DSCP/TOS traffic classification; Multiple queue scheduling mechanisms, such as SP, WRR, DRR, SP+WFQ, SP+WRR, SP+DRR; Input port-based speed limit; Port-based traffic recognition; Each port supports 8 queue priorities | | | |
| VLAN | 4K 802.1q VLANs, Port-based VLAN, MAC-based VLAN, Protocol-based VLAN, Private VLAN, Voice VLAN, QinQ, IP subnet-based VLAN, GVRP | | | |
| QinQ | Basic QinQ, Flexible QinQ, 1:1 VLAN switching | | | |
| Link Aggregation | AP, LACP, Flow balance | | | |
| Port Mirroring | Many-to-one mirroring, One-to-Many mirroring, Flow-based mirroring, Over devices mirroring, VLAN-based mirroring, VLAN-filtering mirroring, AP-port mirroring, RSPAN, ERSPAN | | | |
| Spanning Tree Protocols | IEEE802.1d STP, IEEE802.1w RSTP, Standard 802.1s MSTP, Port fast, BPDU filter, BPDU guard, TC guard, TC filter, TC protection, LOOP guard, ROOT guard | | | |
| DHCP | DHCP server, DHCP client, DHCP snooping, DHCP relay, IPv6 DHCP snooping, IPv6 DHCP client, IPv6 DHCP relay | | | |
| Multiple Spanning Tree Protocol (MSTP) Instances | 64 | | | |
| Maximum Aggregation Port (AP) | Up to 128 | | | |
| Multicast | IGMP v1/v2 snooping, IGMP SGVL/IVGL, IGMP filter, IGMP fast leave | | | |
| EEE Format | Support IEEE 802.3az standard | | | |
| G.8032 | Support | | | |
| L2 Features | MAC, EEE, ARP, VLAN, QinQ, Link aggregation, Mirroring, STP, RSTP, MSTP, Broadcast storm control, IGMP v1/v2 snooping, IGMP SGVL/IVGL, IGMP filter, IGMP fast leave, DHCP, Jumbo frame, RLDP, LLDP, REUP, G.8032 ERPS, Layer 2 protocol tunnel | | | |
| Layer 2 Protocols | IEEE802.3, IEEE802.3u, IEEE802.3z, IEEE802.3x, IEEE802.3ad, IEEE802.1p, IEEE802.1x, IEEE802.3ab, IEEE802.1Q (GVRP), IEEE802.1d, IEEE802.1w, IEEE802.1s | | | |
| Security | Binding of the IP address, MAC address, and port address; Binding of the IPv6, MAC address, and port address; Filter illegal MAC addresses; Port-based and MAC-based 802.1x; MAB; Portal and Portal 2.0 authentication; ARP-check; DAI; Restriction on the rate of ARP packets; Gateway anti-ARP spoofing; Broadcast suppression; Hierarchical management by administrators and password protection; RADIUS and TACACS+; AAA security authentication (IPv4/IPv6) in device login management; SSH and SSH V2.0; BPDU guard; IP source guard; CPP, NFPP; Port protection | | | |
| Layer 3 Features | IPv4 static routing, IPv6 static routing, RIP, RIPng, ARP proxy, Neighbor Discovery | | | |
| Layer 3 Protocols (IPv4) | Static routing, RIP, RIPng | | | |
| IPv4 Features | Ping, Traceroute | | | |
| IPv6 Features | 0-64 any length mask, ICMPv6, Neighbor Discovery, Manually configure local address, Automatically create local address, IPv6 Ping, IPv6 Tracert, IPv6 extender option head | | | |
| Basic IPv6 Protocols | IPv6 addressing, Neighbor Discovery (ND), IPv6 ACL, ICMPv6, IPv6 Ping, IPv6 Tracert | | | |
| IPv6 Routing Protocols | Static routing, RIPng | | | |
| VSU (Virtual Switch Unit) | Support (Up to 4 stack members) | | | N/A |

| Model | XS-S1960-24GT4SFP-H | XS-S1960-48GT4SFP-H | XS-S1960-24GT4SFP-UP-H | XS-S1960-10GT2SFP-P-H |
|---|---|---|---|---|
| Reliability | RAS<br>VSU (virtualization technology for virtualizing multiple devices into 1); GR for RIP; ERPS (G.8032); REUP dual-link fast switching technology; RLDP (Rapid Link Detection Protocol) | | | RAS GR for RIP ERPS (G.8032); REUP dual-link fast switching technology; RLDP (Rapid Link Detection Protocol) |
| Manageability | SNMPv1/v2c/v3, CLI (Telnet/Console), RMON (1, 2, 3, 9), SSH, Syslog/Debug, RSPAN/ERSPAN, NTP/SNTP, FTP, TFTP, Web, SFLOW, support cable detection and port sleep mode | | | |
| Smart Temperature Control | Fanless | Auto fan speed adjustment; Fan malfunction alerts; Fan status check | | Fanless |
| Other Protocols | FTP, TFTP, DNS client, DNS static | | | |
| Dimensions (W x D x H) (mm) | 440 × 268 × 44.5 | 440 × 268 × 44.5 | 440×260×44 | 340 × 260 × 44 |
| Rack Height | 1RU | | | |
| Weight | ≤3.5kg | ≤4kg | TBC | <2.5kg |
| MTBF | >200K hours | | | |
| Lightning Protection | 6KV | | | |
| Power Supply | AC input:<br>Rated voltage range: 100V to 240V AC<br>Maximum voltage range: 90V to 264V AC<br>Frequency: 50 to 60Hz | | | |
| PoE Power Budget | N/A | N/A | 370W | 125W |
| Power Consumption | ≤24W | ≤40W | ≤460W | ≤165W |
| Temperature | Operating temperature: 0°C to 50°C | | | |
| | Storage temperature: -40°C to 70°C | | | |
| Humidity | Operating humidity: 10% to 90%RH | | | |
| | Storage humidity: 5% to 95%RH | | | |
| Operating Altitude | -500m to 5,000m | | | |
| Safety Standards | IEC 60950-1,EN60960-1 | | | |
| Emission Standards | EN 300 386, EN 55022/55032, EN 61000-3-2, EN 61000-3-3, EN 55024, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11<br>FCC Part 15, Subpart B<br>ANSI-C63.4-2014 | | | |

## Typical Application

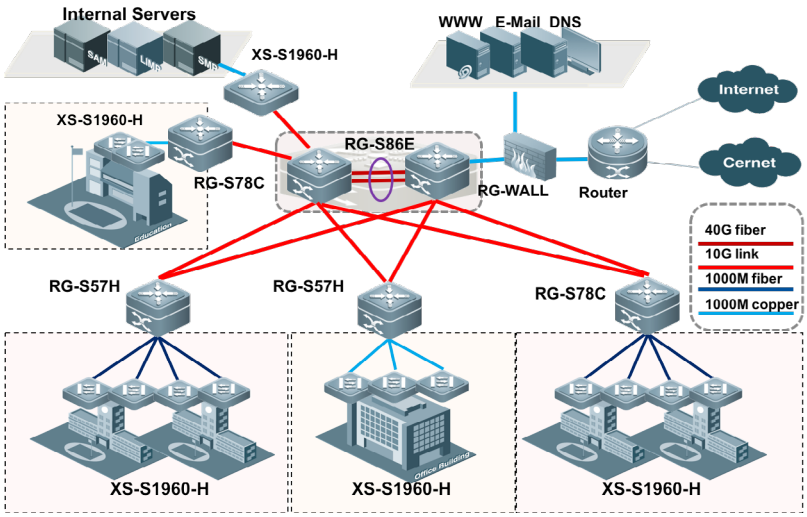


Figure 5: Network Topology Using XS-S1960-H Switch Series

This networking topology enables XS-S1960-H series to cooperate with convergence switches (eg.RG-S5750-H) in an entire building and core switches (eg.RG-S86E series) in the core area to provide gigabit services for desktops.

## Ordering Information

| Model | Description |
|---|---|
| XS-S1960-24GT4SFP-H | 24 10/100/1000BASE-T ports<br>4 1G SFP ports (non-combo) |
| XS-S1960-48GT4SFP-H | 48 10/100/1000BASE-T ports<br>4 1G SFP ports (non-combo) |
| XS-S1960-24GT4SFP-UP-H | 24 10/100/1000BASE-T ports (PoE/PoE+) and 4 Gigabit SFP ports (non-combo) uplink, Port 1-4 for HPoE |
| XS-S1960-10GT2SFP-P-H | 10 10/100/1000BASE-T Ports, 2 100/1000BASE-X SFP Ports (non-combo), Port 1-8 support PoE/PoE+ |
| Mini-GBIC-GT | 1000BASE-GT mini GBIC Transceiver |
| MINI-GBIC-SX-MM850 | 1000BASE-SX mini GBIC Transceiver (850nm) |
| MINI-GBIC-LX-SM1310 | 1000BASE-LX mini GBIC Transceiver (1310nm) |
| MINI-GBIC-LH40-SM1310 | 1000BASE-LH mini GBIC Transceiver (1310nm, 40km) |
| MINI-GBIC-ZX50-SM1550 | 1000BASE-ZX mini GBIC Transceiver (1550nm, 50km) |
| MINI-GBIC-ZX80-SM1550 | 1000BASE-ZX mini GBIC Transceiver (1550nm, 80km) |
| MINI-GBIC-ZX100-SM1550 | 1000BASE-ZX mini GBIC Transceiver (1550nm, 100km) |
| GE-SFP-LX20-SM1310-BIDI | 1000BASE-LX, SFP Transceiver, BIDI-TX1310/RX1550, 20km, LC |
| GE-SFP-LX20-SM1550-BIDI | 1000BASE-LX, SFP Transceiver, BIDI-TX1550/RX1310, 20km, LC |
| GE-SFP-LH40-SM1310-BIDI | 1000BASE-LH, SFP Transceiver, BIDI-TX1310/RX1550, 40km, LC |
| GE-SFP-LH40-SM1550-BIDI | 1000BASE-LH, SFP Transceiver, BIDI-TX1550/RX1310, 40km, LC |

For further information, please visit our website: https://www.ruijienetworks.com/