INNOVATION
Beyond Networks

Ruijie XS-S1960-H Switch Series Datasheet

Highlights

- Efficient management using Ruijie Cloud, Web-UI and command lines
- Enterprise grade QoS, security and management features
- L3 features enables working in SMB campus core layer
- Unique security features like CPP and NFPP ensure network safety with smart counter measures
- Unique Smart+ features for CCTV networks

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.

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.

Unique Smart+ Features for CCTV

Using Smart+ features for CCTV, configurations for IP cameras can be done automatically, lots of man power and time saved on site.

- Auto Smart Deployment: IP cameras and NVRs will be identified by switch, and configurations like MTU, flow-control and port isolations will be deployed automatically.
- Remote Reboot Helper: With the help of Ruijie Cloud or switch's Web-UI, PoE IP cameras can be reboot without unplugging the wire on site.

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.

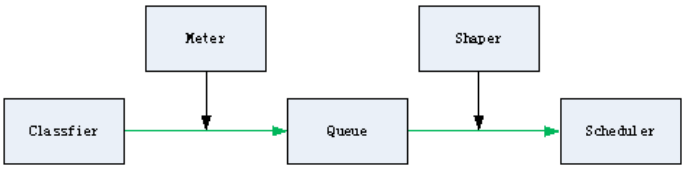

Figure 2: CPP protects the CPU by using the standard QoS DiffServ model

- **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.

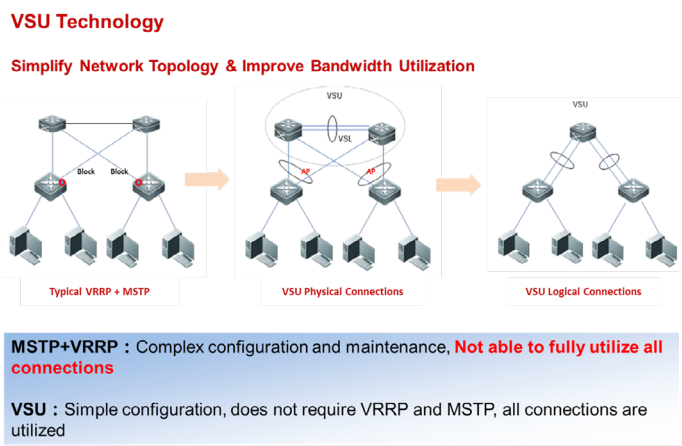

Figure 3: Simplified Network Topology Enabled by VSU

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.
- **Nonstop PoE (ZPoE):** Since more IoT (Internet of Things) devices depend on PoE (Power over Ethernet) power supply nowadays, ZPoE (Nonstop PoE) feature is introduced to Ruijie PoE switches. With such feature, the switch can provide nonstop PoE power supply to IP cameras, IP phones and other PD (Powered Device), even when a reboot happens. So operators can feel free to do maintenance job like firmware upgrade any time.

XCor-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.

Such Anti-Corrosion (XCor) feature is now applied to XS-S1960-24GT4SFP-UP-H and XS-S1960-48GT4SFP-H. The PCBs 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.

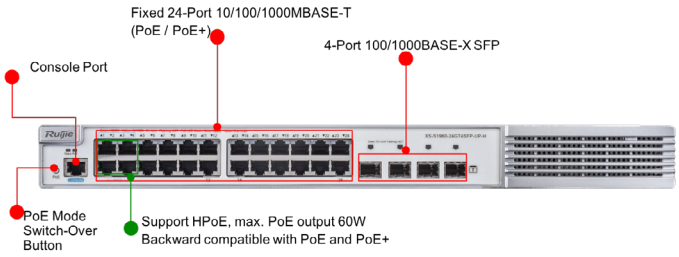

Figure 4: PoE/PoE+ Support

Technical Specifications

Product Model		XS-S1960-10GT2SFP-P-H	XS-S1960-24GT4SFP-H	XS-S1960-24GT4SFP-UP-H	XS-S1960-48GT4SFP-H
Ports	10/100/1000BASE-T	10	24	24	48
	1000M SFP	2	4	4	4
Power over Ethernet	PoE	✓	n/a	✓	n/a
	PoE/PoE+ Enabled Ports	8	n/a	24	n/a
	H-PoE Enabled Ports	n/a	n/a	4	n/a
	IEEE802.3bt (H-PoE)	n/a	n/a	✓	n/a
	IEEE802.3af (PoE)	✓	n/a	✓	n/a
	IEEE802.3at (PoE+)	✓	n/a	✓	n/a
	PoE Power Budget	125W	n/a	370W	n/a
Physical	Packet Buffer	12Mbit	12Mbit	12Mbit	12Mbit
	CPU Memory	512MB	512MB	512MB	512MB
	Flash	256MB	256MB	256MB	256MB
	Dimensions(WxDxH)	340x260x43.6mm	440x260x43.6mm	440x260x43.6mm	440x260x43.6mm
	Unit Weight	2.5kg	3.5kg	5.5kg	4kg
Power Supply	Type	Internal			
	Frequency	50/60Hz			
	AC Voltage	100~240V			
	AC Current	2A	0.6A	6.8A	1.5A
	Rated HVDC voltage	240V DC			
	Maximum HVDC voltage	192~290V DC			
	Maximum Power Rating	165W	24W	460W	40W
Cooling		Fanless	Fanless	Fan	Fan
Certifications	Safety	EN 60950-1			
	EMC	EN 300 386			
	Emissions	EN 55032			
	Immunity Generic	EN 55024			
	ESD	EN 61000-4-2			
	Radiated	EN 61000-4-3			
	EFT/Burst	EN 61000-4-4			

Product Model		XS-S1960-10GT2SFP-P-H	XS-S1960-24GT4SFP-H	XS-S1960-24GT4SFP-UP-H	XS-S1960-48GT4SFP-H
Certifications	Surge	EN 61000-4-5			
	Conducted	EN 61000-4-6			
	Power frequency magnetic field	EN 61000-4-8			
	Voltage dips and interruptions	EN 61000-4-11			
	Harmonics	EN 61000-3-2			
	Flicker	EN 61000-3-3			
RoHS		✓			
EEE		✓			
Operating Temperature		0°C ~ 45°C			
Storage Temperature		-40°C ~ 70°C			
Operating Humidity		10%~90% RH			
Storage Humidity		5%~95% RH			
Operating Altitude		-50m ~ 5000m			
MTBF(hours)		590278	602365	361712	524960
Warranty		3-Year Warranty Free of Charge			
Package Contents		Ruijie XS-S1960-H Series Switch Power Cord Mounting Kit Rubber Feet Console Cable RJ45-RJ45 UTP Cable Grounding Cable Quick Start Guide			
Performance	Switching Capacity	24Gbps	56Gbps	56Gbps	104Gbps
	Forwarding Rate	18Mpps	42Mpps	42Mpps	78Mpps
	ARP Table Size	500	1K	1K	1K
	MAC Table Size	16K			
L2 Switching	STP	✓			
	RSTP	✓			
	MSTP	✓(64 instances)			
	Port Grouping	✓(LACP)			
	VLAN	✓(IEEE802.1Q/MAC VLAN/Private VLAN/Protocol VLAN/Voice VLAN)			
	GVRP	✓			
	IGMP Snooping	✓((v1/v2/v3)/SGVL/IVGL/IGMP filter/IGMP fast leave)			
	Jumbo Frame	9KB			
	QinQ	✓			
	G.8032/ERPS	✓			
L3	IPv4 Routing	Static/RIP/OSPFv1/v2/VRRP			
	IPv6 Routing	Static/RIPng/OSPFv3/ND(Neighbor Discovery)/VRRPv3/VRRP+			
	Ping	✓ (IPv4 and IPv6)			
	Traceroute	✓ (IPv4 and IPv6)			
	DHCP	✓ (Server/Client/Relay)			
	ARP Features	✓(ARP Proxy/Trusted ARP/ARP-Based IP Guard/Gratuitous ARP/ARP-Check)			
Reliability	VSU	n/a	✓ (up to 4 members)	✓ (up to 4 members)	✓ (up to 4 members)
	GR	✓			
	REUP	✓			
	RLDP	✓			
	DLDP	✓			

Product Model		XS-S1960-10GT2SFP-P-H	XS-S1960-24GT4SFP-H	XS-S1960-24GT4SFP-UP-H	XS-S1960-48GT4SFP-H
Security	CPP	✓			
	NFPP	✓			
	SSH	✓			
	SSL	✓			
	IEEE802.1X	✓			
	Port Security	✓			
	Radius	✓			
	TACACS+	✓			
	DAI	✓			
	IP-MAC Binding	✓			
	ACL	✓(IPv4 and IPv6, Standard IP ACL, Extended IP ACL, MAC-extended ACL, Time-based ACL, Expert ACL, ACL80, IPv6 ACL, SVI router ACL, ACL logging, ACL counter, ACL remark, ACL redirection, Security channel, Protected port)			
	IP Source Guard	✓(IPv4 and IPv6)			
	DHCP Snooping	✓(IPv4 and IPv6)			
QoS	Stream classification	✓(Classification based on IEEE802.1p/DSCP/TOS)			
	Shaping	✓(Rate-limit on ingress/egress traffic on interface)			
	Congestion avoidance	✓(RED, WRED, Tail drop)			
	Congestion management	✓(SP, WRR, DRR, WFQ, SP+WFQ, SP+WRR, SP+DRR, 8 queue priorities per port)			
Management	Web User Interface	✓			
	HTTP/HTTPS	✓			
	Ruijie Cloud Management	✓			
	RG-SNC Management	✓			
	Command Line Interface	Telnet/Console			
	SNMP	✓			
	Smart+ for CCTV	✓(Auto Smart Deployment/Remote Reboot Helper)			
	SYSLOG	✓			
	NTP	✓			
	DNS	✓			
	SPAN	✓			
	RSPAN	✓			
	ERSPAN	✓			
	Public MIBs	✓			
	Private MIBs	✓			
	RMON	✓(1/2/3/9)			
	sFlow	✓			
	Firmware Upgrade	✓			
	Port Mirroring	✓			

Typical Application

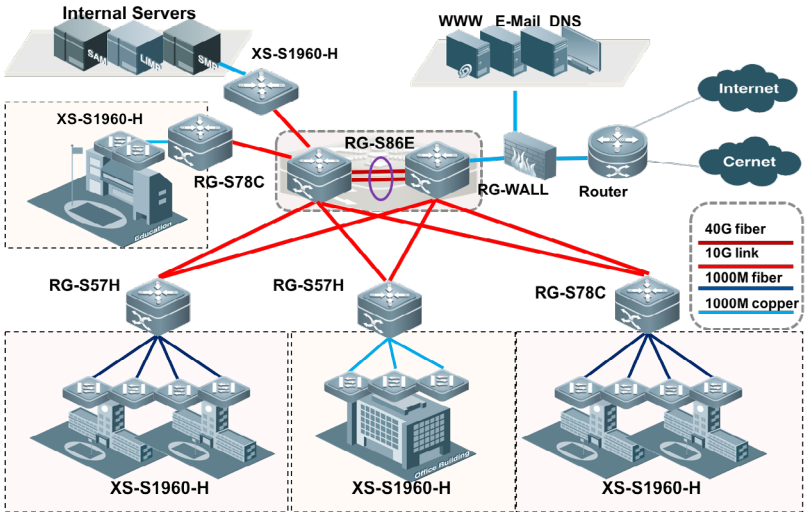

Figure 5: Network Topology Using XS-S1960-H Switch Series

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	Layer 2+ Managed Switch, 24 10/100/1000BASE-T ports, 4 1G SFP ports (non-combo); Managed by Ruijie Cloud, Web-UI and CLI. Bundled with Ruijie Cloud Service lifetime license
XS-S1960-48GT4SFP-H	Layer 2+ Managed Switch, 48 10/100/1000BASE-T ports, 4 1G SFP ports (non-combo); Managed by Ruijie Cloud, Web-UI and CLI. Bundled with Ruijie Cloud Service lifetime license
XS-S1960-24GT4SFP-UP-H	Layer 2+ Managed Switch, 24 ports 10/100/1000BASE-T (PoE/PoE+), 4 Gigabit SFP ports (non-combo) uplink, Port 1-4 for HPoE 370 Watts; Managed by Ruijie Cloud, Web-UI and CLI. Bundled with Ruijie Cloud Service lifetime license
XS-S1960-10GT2SFP-P-H	Layer 2+ Managed Switch, 10 ports 10/100/1000BASE-T, 2 ports 100/1000BASE-X SFP (non-combo), Port 1-8 support PoE/PoE+ 125 Watts; Managed by Ruijie Cloud, Web-UI and CLI. Bundled with Ruijie Cloud Service lifetime license
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/