Huawei S5330-HI Series Switches Product

Huawei S5330-HI gigabit ethernet switches are Huawei-developed next-generation agile switches that provide fixed full gigabit access and 10GE uplink interfaces as well as one or two slots for uplink interface extension.

Product Overview

The S5330-HI series switches (S5330-HI) are the next-generation agile fixed switches developed by Huawei. The S5330-HI builds on Huawei's unified Versatile Routing Platform (VRP) and boasts various features. For example, the free mobility feature ensures consistent user experience; the VXLAN functionality implements network virtualization; and built-in security probes support abnormal traffic detection, threat analysis even in encrypted traffic, and network-wide threat deception. With these merits, the S5330-HI is ideal for branches of medium- and large-sized campus networks, the core layer of small-sized campus networks, and the access layer of data center networks.

Models and Appearances

The following models are available in the S5330-HI series.

Models and Appearances	Description
 S5330-36C-HI-24S	• 24 GE SFP ports, 8 of which are dual-purpose 10/100/1000 or SFP,4 10GE SFP+ ports • One extended slot • 1+1 power backup, with AC, DC, or AC+DC power supply • Switching capacity: 336 Gbit/s
 S5330-60C-HI-48S	• 48 GE SFP ports, 4 10GE SFP+ ports • One extended slot • 1+1 power backup, with AC, DC, or AC+DC power supply • Switching capacity: 336 Gbit/s

Features and Highlights

Enabling Networks to Be More Agile for Services

- S5330-HI has a built-in high-speed and flexible processor chip. The chip's flexible packet processing and traffic control capabilities can meet current and future service requirements, helping build a highly scalable network.
- In addition to capabilities of traditional switches, the S5330-HI provides open interfaces and supports user-defined forwarding behavior. Enterprises can use the open interfaces to develop new protocols and functions independently or jointly with equipment vendors to build campus networks meeting their own needs.

- S5330-HI series switches, on which enterprises can define their own forwarding models, forwarding behavior, and lookup algorithms. Microcode programmability makes it possible to provide new services within six months, without the need of replacing the hardware. In contrast, traditional ASIC chips use a fixed forwarding architecture and follow a fixed forwarding process. For this reason, new services cannot be provisioned until new hardware is developed to support the services one to three years later.

Delivering Abundant Services More Agilely

- The unified user management function supports various authentication methods, including 802.1x, MAC address, and Portal authentication, and is capable of managing users based on user groups, domains, and time ranges. These functions visualize user and service management and boost the transformation from device-centric management to user-centric management.
- The S5330-HI provides excellent quality of service (QoS) capabilities and supports queue scheduling and congestion control algorithms. Additionally, it adopts innovative priority queuing and multi-level scheduling mechanisms to implement fine-grained scheduling of data flows, meeting service quality requirements of different user terminals and services.

Providing Fine Granular Network Management More Agilely

- The S5330-HI uses the Packet Conservation Algorithm for Internet (iPCA) technology that changes the traditional method of using simulated traffic for fault location. iPCA technology can monitor network quality for any service flow anywhere and anytime, without extra costs. It can detect temporary service interruptions in a very short time and can identify faulty ports accurately. This cutting-edge fault detection technology turns "extensive management" to "fine granular management".
- The S5330-HI supports Two-Way Active Measurement Protocol (TWAMP) to accurately check any IP link and obtain the entire network's IP performance. This protocol eliminates the need of using a dedicated probe or a proprietary protocol.
- The S5330-HI supports SVF and functions as a parent switch. With this virtualization technology, a physical network with the "Small-sized core/aggregation switches + Access switches + APs" structure can be virtualized into a "super switch", offering the industry's simplest network management solution.
- With the Easy Deploy function, the S5330-HI manages access switches in a similar way an AC manages APs. In deployment, access switches and APs can go online with zero-touch configuration. In the Easy Deploy solution, the Commander collects topology information about the connected clients and stores the clients' startup information based on the topology. Clients can be replaced with zero-touch configuration. The Commander can deliver configurations and scripts to clients in batches and query the delivery results. In addition, the Commander can collect and display information about power consumption on the entire network.

Comprehensive VPN Technologies

- The S5330-HI supports the MPLS function, and can be used as access devices of high-quality enterprise leased line. The S5330-HI allows users in different VPNs to connect to the same switch and isolates users through multi-instance routing. Users in multiple VPNs connect to a provider edge (PE) device through the same physical port on the switch, which reduces the cost on VPN network deployment.

Flexible Ethernet Networking

- In addition to traditional Spanning Tree Protocol (STP), Rapid Spanning Tree Protocol (RSTP), and Multiple Spanning Tree Protocol (MSTP), the S5330-HI supports Huawei-developed Smart Ethernet Protection (SEP) technology and the latest Ethernet Ring Protection Switching (ERPS) standard. SEP is a ring protection protocol specific to the Ethernet link layer, and applies to various ring network topologies, such as open ring topology, closed ring topology, and cascading ring topology. This protocol is reliable, easy to maintain, and implements fast protection switching within 50 ms. ERPS is defined in ITU-T G.8032. It implements millisecond-level protection switching based on traditional Ethernet MAC and bridging functions.
- The S5330-HI supports Smart Link and Virtual Router Redundancy Protocol (VRRP), which implement backup of uplinks. One S5330-HI switch can connect to multiple aggregation switches through multiple links, significantly improving reliability of access devices.
- The S5330-HI has large entry sizes and 512MB buffers, coping with the fast growth of data volume in the big data era. With the support for 256K MAC addresses, 512K FIB entries, the S5330-HI meets the requirements of educational networks and metro area networks and allows the access of a large number of terminals. The S5330-HI is the best choice in cloud computing era.

Various Security Control Methods

- The S5330-HI supports 802.1x authentication, MAC address authentication, Portal authentication, and hybrid authentication, and can dynamically delivery user policies such as VLANs, QoS policies, and access control lists (ACLs). It also supports user management based on user groups.
- The S5330-HI provides a series of mechanisms to defend against DoS and user-targeted attacks. DoS attacks are targeted at switches and include SYN flood, Land, Smurf, and ICMP flood attacks. User-targeted attacks include bogus DHCP server attacks, IP/MAC address spoofing, DHCP request flood, and change of the DHCP CHADDR value.
- The S5330-HI sets up and maintains a DHCP snooping binding table, and discards the packets that do not match the table entries. You can specify DHCP snooping trusted and untrusted ports to ensure that users connect only to the authorized DHCP server.
- The S5330-HI supports strict ARP learning, which prevents ARP spoofing attackers from exhausting ARP entries.

Mature IPv6 Features

- The S5330-HI is developed based on the mature, stable VRP and supports IPv4/IPv6 dual stacks, IPv6 routing protocols (RIPng, OSPFv3, BGP4+, and IS-IS for IPv6). With these IPv6 features, the S5330-HI can be deployed on a pure IPv4 network, a pure IPv6 network, or a shared IPv4/IPv6 network, helping achieve IPv4-to-IPv6 transition.

Intelligent Stack (iStack)

- The S5330-HI supports the iStack function that combines multiple switches into a logical switch. Member switches in a stack implement redundancy backup to improve device reliability and use inter-device link aggregation to improve link reliability. iStack provides high network scalability. You can increase a stack's ports, bandwidth, and processing capacity by simply adding member switches. iStack also simplifies device configuration and management. After a stack is set up, up to nine physical switches can be virtualized into one logical device. You can log in to any member switch in the stack to manage all the member switches in the stack.

PoE Power Supply

- PoE++: The S5330-HI series PoE switches provide a maximum of 60 W PoE output power on a single interface, and can provide power for high-power terminals such as APs and surveillance cameras. This solves the problem of power supply in specific scenarios.
- Perpetual PoE: When a PoE switch is rebooted after the software version is upgraded, the power supply to PDs is not interrupted. This capability ensures that PDs are not powered off during the switch reboot.
- Fast PoE: PoE switches can supply power to PDs within 10s after they are powered on. This is different from common switches that generally take 1 to 3 minutes to start to supply power to PDs. When a PoE switch reboots due to a power failure, the PoE switch continues to supply power to the PDs immediately after being powered on without waiting until it finishes reboot. This greatly shortens the power failure time of PDs.

VXLAN Features

- VXLAN is used to construct a Unified Virtual Fabric (UVF). As such, multiple service networks or tenant networks can be deployed on the same physical network, and service and tenant networks are isolated from each other. This capability truly achieves 'one network for multiple purposes'. The resulting benefits include enabling data transmission of different services or customers, reducing the network construction costs, and improving network resource utilization.
- The S5330-HI series switches are VXLAN-capable and allow centralized and distributed VXLAN gateway deployment modes. These switches also support the BGP EVPN protocol for dynamically establishing VXLAN tunnels and can be configured using NETCONF/YANG.

Big Data Security Collaboration

- Agile switches use NetStream to collect campus network data and then report such data to the Huawei Cybersecurity Intelligence System (CIS). The purposes of doing so are to detect network security threats, display the security posture across the entire network, and enable automated or manual response to security threats. The CIS delivers the security policies to the Agile Controller. The Agile Controller then delivers such policies to agile switches that will handle security events accordingly. All these ensure campus network security.
- The S5330-HI supports Encrypted Communication Analytics (ECA). It uses built-in ECA probes to extract characteristics of encrypted streams based on NetStream sampling and Service Awareness (SA), generates metadata, and reports the metadata to Huawei Cybersecurity Intelligence System (CIS). The CIS uses the AI algorithm to train the traffic model and compare

characteristics of extracted encrypted traffic to identify malicious traffic. The CIS displays detection results on the GUI, provides threat handling suggestions, and automatically isolates threats with the Agile Controller to ensure campus network security.

- The S5330-HI supports deception. It functions as a sensor to detect threats such as IP address scanning and port scanning on a network and lures threat traffic to the honeypot for further checks. The honeypot performs in-depth interaction with the initiator of the threat traffic, records various application-layer attack methods of the initiator, and reports security logs to the CIS. The CIS analyzes security logs. If the CIS determines that the suspicious traffic is an attack, it generates an alarm and provides handling suggestions. After the administrator confirms the alarm, the CIS delivers a policy to the Agile Controller. The Agile Controller delivers the policy to the switch for security event processing, ensuring campus network security.

Open Programmability System (OPS)

- Open Programmability System (OPS) is an open programmable system based on the Python language. IT administrators can program the O&M functions of a switch through Python scripts to quickly innovate functions and implement intelligent O&M.

Adapting to Network Evolution

- The S5330HI series switches provide a buffer size of 4 GB and an SSD storage card slot (240 GB) for VNF evolution.

Intelligent O&M

- The S5330-HI provides telemetry technology to collect device data in real time and send the data to Huawei campus network analyzer CampusInsight. The CampusInsight analyzes network data based on the intelligent fault identification algorithm, accurately displays the real-time network status, effectively demarcates and locates faults in a timely manner, and identifies network problems that affect user experience, accurately guaranteeing user experience.
- The S5330-HI supports a variety of intelligent O&M features for audio and video services, including the enhanced Media Delivery Index (eMDI). With this eDMI function, the switch can function as a monitored node to periodically conduct statistics and report audio and video service indicators to the CampusInsight platform. In this way, the CampusInsight platform can quickly demarcate audio and video service quality faults based on the results of multiple monitored nodes.

Product Specifications

Item	S5330-36C-HI-24S	S5330-60C-HI-48S
Fixed port	24 GE SFP ports, 8 of which are dual-purpose 10/100/1000 or SFP, 4 10GE SFP+ ports	48 GE SFP ports, 4 10GE SFP+ ports
Dimensions (W x D x H)	442 mm x 420 mm x 44.4 mm	442 mm x 420 mm x 44.4 mm
Extended slot	One extended slot, supporting 8-port 10GE electrical, 8-port 10GE optical, or 2-port 40GE optical interface card	One extended slot, supporting 8-port 10GE electrical, 8-port 10GE optical, or 2-port 40GE optical interface card
Input voltage	AC: • Rated AC voltage: 100 V AC to 240 V AC; 50/60 Hz • Max. AC voltage: 90 V AC to 264 V AC; 47-63 Hz	AC: • Rated AC voltage: 100 V AC to 240 V AC; 50/60 Hz • Max. AC voltage: 90 V AC to 264 V AC; 47-63 Hz
	DC: • Rated DC voltage: -48 V DC to -60 V DC • Max. DC voltage: -38.4 V DC to -72 V DC	DC: • Rated DC voltage: -48 V DC to -60 V DC • Max. DC voltage: -38.4 V DC to -72 V DC
Power consumption	66 W	100 W
Operating temperature	• 0-1800 m altitude: 0°C to 45°C • 1800-5000 m altitude: The operating temperature reduces by 1ºC every time the	• 0-1800 m altitude: 0°C to 45°C • 1800-5000 m altitude: The operating temperature reduces by 1ºC every time the altitude increases by

Item	S5330-36C-HI-24S	S5330-60C-HI-48S
	altitude increases by 220 m.	220 m.
Relative humidity	5% to 95% (non-condensing)	5% to 95% (non-condensing)
Heat dissipation	Air cooling heat dissipation and intelligent speed adjustment	Air cooling heat dissipation and intelligent speed adjustment

Service Features

Item	Description
MAC address table	IEEE 802.1d standards compliance
	256K MAC address entries
	MAC address learning and aging
	Static, dynamic, and blackhole MAC address entries
	Packet filtering based on source MAC addresses
VLAN	4K VLANs
	Guest VLAN and voice VLAN
	GVRP
	MUX VLAN
	VLAN assignment based on MAC addresses, protocols, IP subnets, policies, and ports
	VLAN mapping
Ethernet loop protection	RRPP ring topology and RRPP multi-instance
	Smart Link tree topology and Smart Link multi-instance, providing millisecond-level protection switching
	SEP
	ERPS (G.8032)
	BFD for OSPF, BFD for IS-IS, BFD for VRRP, and BFD for PIM
	STP (IEEE 802.1d), RSTP (IEEE 802.1w), and MSTP (IEEE 802.1s)
	BPDU protection, root protection, and loop protection
MPLS	MPLS L3VPN
	MPLS L2VPN (VPWS/VPLS)
	MPLS-TE
	MPLS QoS
IP routing	Static routes, RIP v1/2, RIPng, OSPF, OSPFv3, IS-IS, IS-ISv6, BGP, BGP4+, ECMP, routing policy
Interoperability	VLAN-Based Spanning Tree (VBST), working with PVST, PVST+, and RPVST
	Link-type Negotiation Protocol (LNP), similar to DTP

Item	Description
	VLAN Central Management Protocol (VCMP), similar to VTP
IPv6 features	Neighbor Discover (ND)
	PMTU
	IPv6 Ping, IPv6 Tracert, and IPv6 Telnet
	ACLs based on source IPv6 addresses, destination IPv6 addresses, Layer 4 ports, or protocol types
	Multicast Listener Discovery snooping (MLDv1/v2)
	IPv6 addresses configured for sub-interfaces, VRRP6, DHCPv6, and L3VPN
Multicast	IGMP v1/v2/v3 snooping and IGMP fast leave
	Multicast forwarding in a VLAN and multicast replication between VLANs
	Multicast load balancing among member ports of a trunk
	Controllable multicast
	Port-based multicast traffic statistics
	IGMP v1/v2/v3, PIM-SM, PIM-DM, and PIM-SSM
	MSDP
	MVPN
QoS/ACL	Rate limiting in the inbound and outbound directions of a port
	Packet redirection
	Port-based traffic policing and two-rate three-color CAR
	Eight queues per port
	DRR, SP and DRR+SP queue scheduling algorithms
	WRED
	Re-marking of the 802.1p and DSCP fields of packets
	Packet filtering at Layer 2 to Layer 4, filtering out invalid frames based on the source MAC address, destination MAC address, source IP address, destination IP address, TCP/UDP port number, protocol type, and VLAN ID
	Queue-based rate limiting and shaping on ports
Security	Hierarchical user management and password protection
	DoS attack defense, ARP attack defense, and ICMP attack defense
	Binding of the IP address, MAC address, port number, and VLAN ID
	Port isolation, port security, and sticky MAC
	MAC Forced Forwarding (MFF)
	Blackhole MAC address entries
	Limit on the number of learned MAC addresses
	IEEE 802.1x authentication and limit on the number of users on a port
	AAA authentication, RADIUS authentication, and HWTACACS authentication

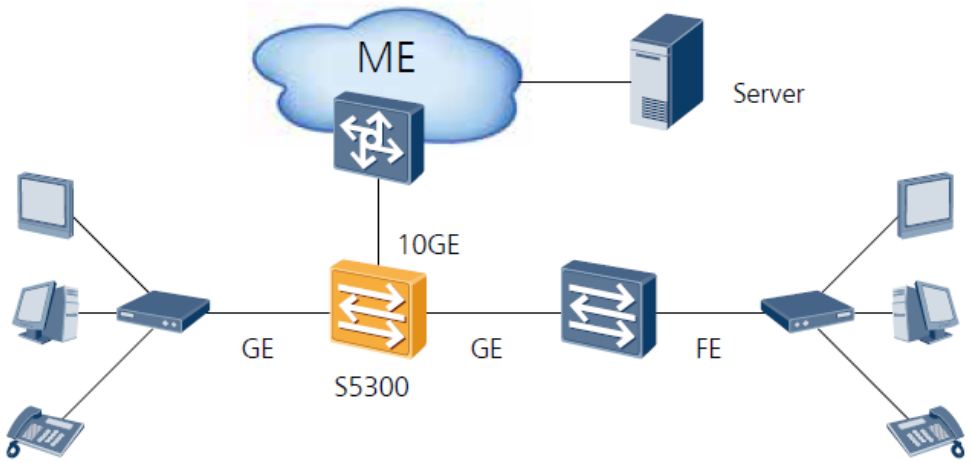
Item	Description
	NAC
	SSH V2.0
	HTTPS
	CPU protection
	Blacklist and whitelist
	Attack source tracing and punishment for IPv6 packets such as ND, DHCPv6, and MLD packets
	Secure Boot
	IPSec
	ECA
	Deception
Reliability	LACP
	E-trunk
	Ethernet OAM (IEEE 802.3ah and IEEE 802.1ag)
	ITU-Y.1731
	DLDP
	LLDP
	BFD for BGP, BFD for IS-IS, BFD for OSPF, BFD for static route
VXLAN	VXLAN L2 and L3 gateways
	Centralized and distributed gateway
	BGP-EVPN
	Configured through the NETCONF protocol
Super Virtual Fabric (SVF)	Working as an SVF Parent to vertically virtualize downlink switches and APs as one device for management.
	A two-layer client architecture is supported.
	IGMP snooping can be enabled on access switches (ASs) and the maximum number of access users on a port can be configured.
	ASs can be independently configured. Services that are not supported by templates can be configured on the parent.
	Third-party devices are allowed between SVF parent and clients.
	Working as an SVF client that is plug-and-play with zero configuration
iPCA	Directly coloring service packets to collect real-time statistics on the number of lost packets and packet loss ratio
	Collection of statistics on the number of lost packets and packet loss ratio at network and device levels
TWAMP	Two-way IP link performance measurement
	Measurement on two-way packet delay, one-way packet loss rate, and one-way packet jitter

Item	Description
Management and maintenance	iStack
	Virtual cable test
	SNMP v1/v2c/v3
	RMON
	Web-based NMS
	System logs and alarms of different levels
	GVRP
	MUX VLAN
	802.3az Energy Efficient Ethernet (EEE)
	NetStream
	Dying gasp upon power-off
	Intelligent O&M

Networking and Applications

On Metro Networks

The S5320-HI can function as the access device and aggregation device on Metro networks and improves network reliability by link binding, dual-homing, and ringing.



Ordering Information

The following table lists ordering information of the S5330-HI series switches.

Model	Product Description
S5330-36C-HI-24S	S5330-36C-HI-24S (24*GE SFP ports, 8 of which are dual-purpose 10/100/1000 or SFP, 4*10GE SFP+ ports, 1*expansion slot, without power module)
S5330-60C-HI-48S	S5330-60C-HI-48S (48*GE SFP ports, 4*10GE SFP+ ports, 1*expansion slot, without power module)

Model	Product Description
ES0W2PSA0150	150W AC Power Module (Black)
ES0W2PSD0150	150W DC Power Module (Black)
PAC-500WA-BE	500W AC PoE Power Module (Black, Power panel side exhaust)
PDC-650WA-BE	650W DC PoE Power Module (Black, Power panel side exhaust)
PAC1000D5412	1000W AC PoE Power Module
W2PSA1150	1150W AC PoE Power Module
ES5D21Q02Q00	2-port 40GE QSFP+ interface card
ES5D21X08T00	8-port 10GE BASE-T interface card
ES5D21X08S00	8-port 10GE SFP+ interface card
SSD-240GB	240GB SSD card

More Information

For more information, visit http://www.huawei.com or contact your local Huawei sales office.

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