Huawei Enterprise
Product Quick Reference Guide

HUAWEI TECHNOLOGIES CO., LTD.

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Huawei Enterprise Product Quick Reference Guide

Contents

Huawei Enterprise
S Series Switch Product

Huawei Enterprise S9300 Series Terabit Routing Switches

Product Overview

The S9300 switches (S9300 for short) are next-generation high-end terabit routing switches developed by Huawei designed for multiservice convergence. The S9300 is designed based on Huawei's intelligent multilayer switching technology to provide high-definition video services, large-capacity wireless networks, elastic cloud computing, IPv6-capable hardware, and integrated security in addition to stable, reliable, and secure high performance L2/L3 switching services. The S9300 is a highly extensible and reliable platform integrating switching and routing functions to facilitate end-to-end integrated networks, and is widely used in WANs, MANs, campus networks, and data centers to help enterprises build application-oriented networks.

Product Appearance

The S9300 offers three models: S9303, S9306, and S9312. Their switching capacity and port density can be expanded. Each model has a modular design with interchangeable modules and components, ensuring device extensibility to allow enterprises to maximize their return on investment (ROI). In addition, the S9300 uses various innovative energy saving technologies, greatly reducing energy consumption and noise without compromising performance and stability.

S9303	S9306	S9312
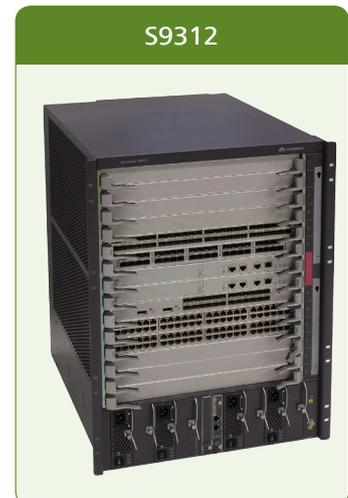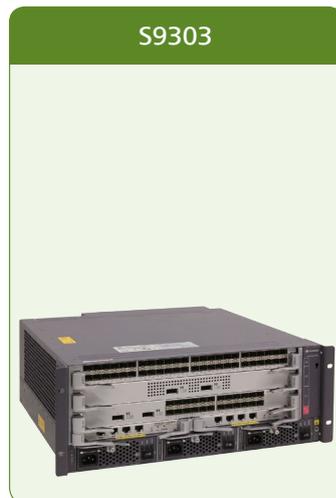
Product Features

Advanced Switching Architecture to Improve Network Expansibility

- Huawei's advanced switching architecture permits rapid bandwidth expansion. The highly expansible backplane enables the port rates to be upgraded to 40 Gbit/s and 100 Gbit/s, and is compatible with the currently used cards, helping enterprises maximize their ROI.

- Each S9300 supports 480 10GE ports. The high density of 10GE ports brings enterprise campus networks and data centers into an era of all-10GE core network.

Carrier-Level High Availability Design to Ensure Service Consistency

- Huawei's carrier-level high reliability design ensures that the S9300 is 99.999% reliable, which meets and exceeds carrier-level operation requirements. The S9300 provides redundant backup for key components, including MPUs/SRUs, power supply units, and fans, all of which are hot swappable. The S9300 also supports the in-service software upgrade (ISSU), which can minimize disruption of mission-critical data and services.

- Cluster requires multiple switching processes cross chassises and therefore reduces the switching efficiency. The S9300 implements the Cluster Switching System (CSS) function through switching fabrics to solve this problem. In this way, switching fabrics of the switches in a cluster are connected. This method saves line card slots and provides 256 Gbit/s bandwidth, which is the highest in the industry. In addition, inter-chassis link aggregation can be used to improve link usage and eliminate single-point faults.

- The S9300 can monitor network running status, rapidly locate device faults, and accurately calculate parameters such as the transmission delay and jitter using its well-designed maintenance and management mechanisms and performance management functions, such as 802.3ah, 802.1ag, and ITU-Y.1731.

S9300 CSS

Improved QoS Mechanism

- The S9300's QoS control mechanisms perform traffic classification based on Layer 2 to Layer 7 information. Additionally, with the advanced queue scheduling algorithm and congestion control algorithm, the S9300 performs accurate multi-level scheduling for data flows, satisfying QoS requirements for a variety of users at different levels.

- The S9300 supports Hierarchical QoS scheduling at the access side to satisfy service requirements of access users at different levels.

Full-Service Ethernet Switching Platform

- The S9300 supports distributed Layer 2/Layer 3 MPLS VPN functions, MPLS, VPLS, HVPLS, and VLL, meeting the access requirements of enterprise VPNs.

- The S9300 supports Layer 2 and Layer 3 multicast protocols, implements multicast replication among VLANs at the line rate, provides independent multicast QoS queues, and gives priority to services requiring a low delay such as voice and video services.

- The software platform provides various routing protocols to meet enterprise network requirements, supports large routing tables for both SMB networks and large-scale multinational company networks, supports IPv6, and enables enterprise networks to be smoothly upgraded.

Virtualized Data Center Switching Platform

- The S9300 innovatively implements the CSS function through switching fabrics. Inter-chassis link aggregation can be implemented to improve usage of bandwidth resources in the data center. This technology hides physical links from data switching in the data center.

- The S9300 provides line cards with large caches specific to the service model of large distributed data centers. Each port of such a line card provides 200ms caching of data flows. This prevents packet loss caused by high burst traffic on the distributed computing network.

- The S9300 supports refined QoS guarantee and traffic management. It uses various queue scheduling algorithms and congestion control algorithms to control data traffic accurately and hierarchically. In this way, the S9300 can assign different priorities and queues to flows of different users and services according to their QoS requirements and provides different bandwidth, delay, and jitter for them.

High-Performance IPv6 Service Support

- Both the hardware platform and software platform of the S9300 support IPv6. The S9300 has gained IPv6 Ready Phase 2 (Gold) designation.

- The S9300 supports IPv4/IPv6 dual stack, various tunneling technologies, IPv6 static routes, RIPng, OSPFv3, BGP+, IS-ISv6, and IPv6 multicast to meet the requirements of independent IP networks and IPv4/IPv6 integrated networks.

Highly-Integrated and Valued-Added Service Processing

- The S9300 load balancer supports multiple load balancing algorithms, including weighted round robin (WRR) algorithm, least connection algorithm, hash algorithm based on the IP address, and hash algorithm based on the URL in HTTP packets.

- The integrated traffic service analysis module supports NetStream V5, V8, and V9 formats, the aggregation traffic template, real-time traffic collection, dynamic report generation, traffic attribute analysis, and traffic exception report.

Excellent Security Design

- The S9300 has an integrated firewall card installed and also supports virtual firewalls and NAT multi-instance, allowing multiple VPN customers to share the same firewall. The application-layer packet filtering technology detects and filters application layer packets according to rules.

- The S9300 performs authentication, authorization, and accounting (AAA) on access users according to pre-defined policies. In addition, the S9300 supports 802.1x, portal, guest VLAN, and dynamic user access authentication. Therefore, it can work well with NAC produced by other mainstream manufacturers.

- The S9300 uses a two-level CPU protection mechanism and supports 1K hardware queues for CPU protection. It separates the data plane and the control plane and prevents DoS attacks, unauthorized access, and overload of the control plane. With these features, the S9300 provides industry-leading integrated security solutions.

Wireless and Passive Integrated Access

- The S9300 EPON OLT card provides symmetric upstream and downstream bandwidths of 1.25 Gbit/s, which meets customers' increasing bandwidth requirements. In addition, it provides different transmission distances, enabling the S9300 to be applicable to various access network environments.

- The S9300 wireless AC card supports radio frequency management. The S9300 allows APs to select their radio channels and power automatically. In an AP region, APs automatically adjust radio channels and power in the event of signal interference, enabling the receive signal strength indicator (RSSI) and signal-to-noise ratio (SNR) to be continuously updated. The system then can monitor the electromagnetic environment of every wireless user, improving network availability.

- The S9300 wireless AC card supports Layer 2 and Layer 3 roaming and allows STAs to rapidly switch to the radio of another AP. It supports 1+1 and N+1 backup between ACs and load balancing among ACs, improving network reliability.

Innovative Energy Saving Design

- The S9300 uses a rotating ventilation channel, improving heat dissipation efficiency. In addition, it uses a variable current chip to dynamically adjust the power according to traffic, reducing power consumption by 11%. Ports can hibernate, when they do not transmit traffic or consume power.

- The S9300 uses intelligent fan speed adjustment technology, where the fan module monitors and controls the temperature in each zone, adjusting the speed of each fan individually, extending the service life of each fan and reducing power consumption.

- The S9300 supports the smart PoE technology and uses different energy management configurations according to the Powered Device (PD) type, ensuring flexible energy management.

- The S9300 supports IEEE 802.3az Energy Efficient Ethernet, provides the low power idle mode for the line card PHY, and switches to a lower speed (power) PHY during low link utilization.

Product Specifications

Item	S9303	S9306	S9312
Backplane capacity	3 Tbps	6 Tbps	12 Tbps
Switching capacity	720 G/1.92 T	2 T/5.12 T	2 T/5.12 T
Throughput	540 Mpps/1440 Mpps	1152 Mpps/ 2880Mpps	1344 Mpps/3360 Mpps
LPU slots	3	6	12
VLAN	Supports access, trunk, and hybrid VLAN.		
	Supports the default VLAN.		
	Supports VLAN switching.		
	Supports QinQ and selective QinQ.		
	Supports dynamic VLAN allocation based on MAC.		
MAC address	Supports dynamic learning and aging of MAC addresses.		
	Supports static, dynamic, and blackhole MAC address entries.		
	Filters packets based on source MAC addresses.		
	Restricts MAC address learning based on ports and VLANs.		
STP	Supports STP, RSTP, and MSTP.		
	Supports BPDU protection, root protection, and loop protection.		
	Supports BPDU tunnels.		
IP routing	Supports IPv4 routing protocols, such as RIP, OSPF, BGP, and IS-IS.		
	Supports IPv6 routing protocols, such as RIPng , OSPFv3, ISISv6, and BGPv4.		
Multicast	Supports IGMP v1/v2/v3 and IGMP v1/v2/v3 snooping.		
	Supports PIM DM, PIM SM and PIM SSM		
	Supports MSDP and MBGP.		
	Supports prompt leave of multicast members.		
	Supports multicast traffic control.		
	Supports the multicast querier.		
	Supports suppression on multicast packets.		
	Supports multicast CAC.		
	Supports multicast ACL.		
MPLS	Supports basic MPLS functions.		
	Supports MPLS OAM.		
	Supports MPLS TE.		
	Supports MPLS VPN/VLL/VPLS.		
Reliability	Supports LACP and Enhanced-Trunk.		
	Supports VRRP and BFD for VRRP.		
	Supports BFD for BGP, IS-IS, OSPF, and Static routing.		
	Supports NSF and GR for BGP, IS-IS, OSPF and LDP.		
	Supports TE FRR and IP FRR.		
	Supports Ethernet OAM (802.3ah and 802.1ag).		
	Supports ITU-Y.1731.		
	Supports DLDP.		
	Supports ISSU.		
	Supports CSS.		

| Item	S9303	S9306	S9312
QoS	Supports traffic classification based on the Layer-2 header, Layer-3 information, Layer-4 information, and 802.1p priority.		
	Supports the actions of ACL, CAR, re-mark, and schedule.		
	Supports the queue scheduling algorithms of PQ, WRR, DRR, PQ+WRR, and PQ+DRR.		
	Supports the congestion avoidance mechanisms such as WRED and tail drop.		
	Supports H-QoS.		
	Supports traffic shaping.		
EPON OLT	Supports IEEE 802.3ah.		
	Supports DBA.		
	Limit of ONU both downstream and upstream bandwidth.		
	Loopback test of ONU.		
Configuration and maintenance	Supports Console, Telnet, and SSH terminals.		
	Supports the network management protocols, such as SNMPv1/v2/v3.		
	Supports file uploading and downloading through FTP and TFTP.		
	Supports BootROM upgrade and remote upgrade.		
	Supports hot patches.		
	Supports user operation logs.		
Security and management	Supports 802.1x authentication and portal authentication.		
	Supports NAC.		
	Supports RADIUS and HWTACACS authentication for login users.		
	Provides hierarchical protection for commands to prevent unauthorized users from accessing the equipment.		
	Defends against DoS attack, TCP SYN Flood attack, UDP Flood attack, broadcast storm, and heavy traffic attack.		
	Provides 1K CPU queues for CPU protection.		
	Supports the ping and tracert functions based on ICMP packets.		
	Supports RMON.		
Service function	Supports Firewall.		
	Supports NAT.		
	Supports Netstream.		
	Supports IPSec.		
	Supports Load Balance.		
	Supports WLAN AC.		
Energy management	Supports IEEE 802.3az Energy Efficient Ethernet.		
Chassis dimensions (width x depth x height) (mm)	442×476×175	442×476×442	442×476×664
Chassis weight (empty)	<15Kg	<30Kg	<45Kg
Working voltage	DC: −38.4V to −72V AC: 90V to 290V		
Chassis power supply capability (without POE power supply)	800W	1600W	1600W
Chassis POE power supply capability	2200W	8800W	8800W

Applications

1 Application in Large-Scale Campus Networks

The S9300 can be used to build highly reliable, expansible, and manageable high performance enterprise campus networks. The S9300 supports distributed IPv4/IPv6/MPLS wire-speed switching and provides high-density 10G data throughput for core and convergence nodes on enterprise campus networks. The S9300 supports the wireless AC module and can integrate it with the campus core device, saving the network investment. The S9300 also supports hardware CPU queues to protect the enterprise core against DDoS attacks and security threats.
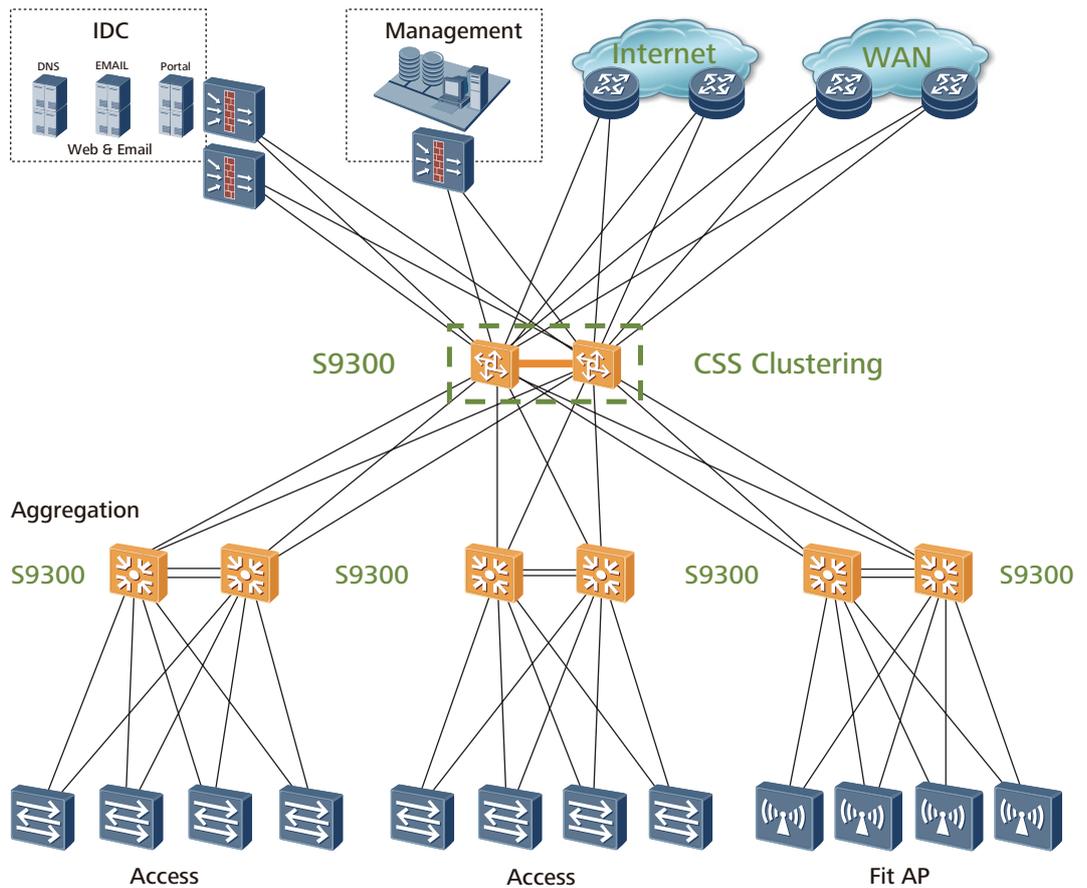
2 Applications in Large-Scale Data Centers

The S9300 functions as a high-density 10G core and convergence node in large-scale data centers, helping enterprises build highly reliable, non-blocking, and virtualized data center networks. The S9300 deploys various technologies to ensure uninterrupted services, including ISSU upgrades, IP FRR, hardware-level BFD, NSF, VRRP, and E-Trunk. Using the CSS and integrated load balancing solutions, the S9300 improves the network efficiency and reduces network maintenance costs.
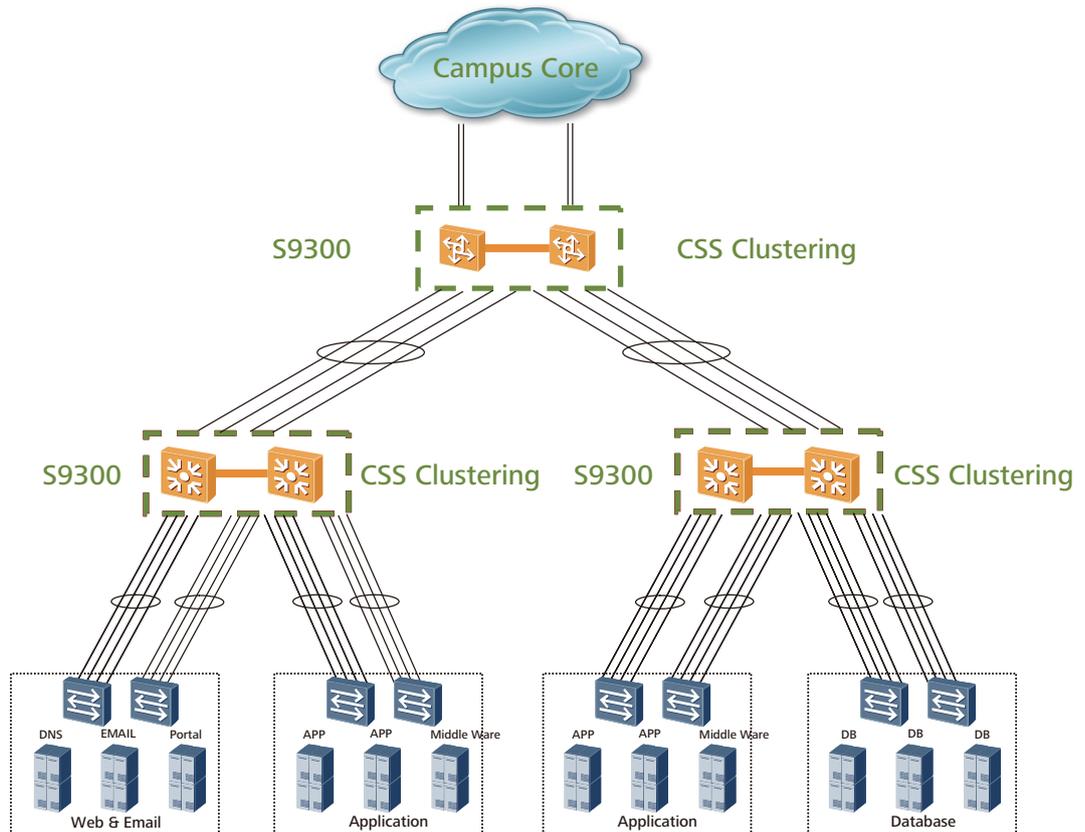
Product List

The S9300 is modular configuration. Product configuration includes basic configuration, software License, Line Processing Units (LPU), Service Processing Unit (SPU), daughter units, and other types of units (CSS Service Unit, Clock Pinch Card), transceiver and fiber connectors.

The product configuration must include the basic configuration for the first purchase. The basic S9300 configuration includes the assembly chassis, SRUs, and power modules. At least one SRU must be installed; to improve device reliability, you are advised to install two SRUs. At least one power module must be installed; to improve device reliability, you are advised to install two or four power modules for 1+1 or 2+2 redundancy backup, dependent upon the device power. DC power modules and AC power modules cannot be installed on the same S9300. Software licenses, service cards, value-added service cards and daughter cards, and other cards can be customized to satisfy different service requirements. Use the following order information table to customize the S9300 to your specific need. Transceivers and optical fibers can be selected as required, also. For their specifications, see the bill of quotation.

To expand the capacity of cards and upgrade the software beyond basic configurations, select additional configurations from the order information table.

Basic Configuration	
LE0BN66EDC	DC Assembly Rack(600X600X2200mm)
LE0BN66EAC	AC Assembly Rack(600X600X2200mm)
LE0KS9303	S9303 Assembly Chassis
LE0KS9306	S9306 Assembly Chassis
LE0KS9312	S9312 Assembly Chassis
LE0BS9306P1	S9306 POE Assembly Chassis
LE0BS9312P1	S9312 POE Assembly Chassis
LE0M00FBXB00	Wide Voltage Fan Box
LE0MACPJBX01	APD32-2-4 Distribution Box

Monitoring Board

LE0DCMUA0000	Centralized Monitoring Board

Main Control Unit

LE0MMCUA	S9303 Main Control Unit A
LE0DMCUA	S9303 Main Control Unit A,Clock
LE0MSRUA	S9306/S9312 Main Control Unit A
LE0DSRUA	S9306/S9312 Main Control Unit A,Clock
LE0D00SRUB00	S9306/S9312 Main Control Unit B,Clock

Clock Board

LE0DCKMA00	Clock Pinch Board,1588

SRU Service Card

LE0MFSUA	Enhanced Flexible Service Unit
LE0D0VSTSA00	Cluster Switching System Service Unit

10/100BASE-T Interface Card

LE0MF48TA	48-Port 10/100BASE-T Interface Card(EA,RJ45)
LE0DF48TFA00	48-Port 10/100BASE-T Interface Card(FA,RJ45)
LE0MF48TC	48-Port 10/100BASE-T Interface Card(EC,RJ45)

100BASE-X Interface Card

LE0MF48SA	48-Port 100BASE-X Interface Card(EA,SFP)
LE0MF48SC	48-Port 100BASE-X Interface Card(EC,SFP)

10/100/1000BASE-T Interface Card

LE0DT24XEA00	24-Port 10/100/1000BASE-T and 2-Port 10GBASE-X Interface Card (EA,RJ45/XFP)
LE0DG24TFA00	24-Port 10/100/1000BASE-T Interface Card(FA,RJ45)
LE0MG48TA	48-Port 10/100/1000BASE-T Interface Card(EA,RJ45)
LE0DG48TFA00	48-Port 10/100/1000BASE-T Interface Card(FA,RJ45)
LE0DG48TBC00	48-Port 10/100/1000BASE-T Interface Card(BC,RJ45)*
LE0MG48TC	48-Port 10/100/1000BASE-T Interface Card(EC,RJ45)
LE0MG48TD	48-Port 10/100/1000BASE-T Interface Card(ED,RJ45)

100/1000BASE-X Interface Card

LE0MG24SA	24-Port 100/1000BASE-X Interface Card(SA,SFP)
LE0MG24SC	24-Port 100/1000BASE-X Interface Card(EC,SFP)
LE0MG24SD	24-Port 100/1000BASE-X Interface Card(ED,SFP)
LE0MG24CA	24-Port 100/1000BASE-X and 8-Port 10/100/1000BASE-T Combo Interface Card(SA,SFP/RJ45)
LE0DG24CEAS0	24-Port 100/1000BASE-X and 8-Port 10/100/1000BASE-T Combo Interface Card(EA,SFP/RJ45,1588)
LE0DS24XEA00	24-Port 100/1000BASE-X and 2-Port 10GBASE-X Interface Card(EA,SFP/XFP)

Basic Configuration	
LE0D024XC00	24-Port 100/1000BASE-X and 2-Port 10GBASE-X Interface Card(EC,SFP/XFP)
LE0MG48SA	48-Port 100/1000BASE-X Interface Card(EA,SFP)
LE0DG48SFA00	48-Port 100/1000BASE-X Interface Card(FA,SFP)
LE0DG48SBC00	48-Port 100/1000BASE-X Interface Card(BC,SFP)*
LE0MG48SC	48-Port 100/1000BASE-X Interface Card(EC,SFP)
LE0MG48SD	48-Port 100/1000BASE-X Interface Card(ED,SFP)

100/1000BASE-X and 10/100/1000BASE-T Interface Card

LE0DG48CEAT0	36-Port 10/100/1000BASE-T and 12-Port 100/1000BASE-X Interface Card(EA,RJ45/SFP)

10GBASE-X Interface Card

LE0MX2UXA	2-Port 10GBASE-X Interface Card(EA,XFP)
LE0MX2UXC	2-Port 10GBASE-X Interface Card(EC,XFP)
LE0MX4UXA	4-Port 10GBASE-X Interface Card(EA,XFP)
LE0MX4UXC	4-Port 10GBASE-X Interface Card(EC,XFP)
LE0DX4UXED00	4-Port 10GBASE-X Interface Card(ED,XFP)
LE0DX12XSA00	12-Port 10GBASE-X Interface Card(SA,SFP+)
LE0DX16SFC00	16-Port 10GBASE-X Interface Card(FC,SFP +)
LE0DX40SFC00	40-Port 10GBASE-X Interface Card(FC,SFP+)

POE Interface Card

LE0DG48VEA00	48-Port 10/100/1000BASE-T POE Interface Card(EA,RJ45,POE)

EPON Interface Card

LE0D0E12GA00	12-Port 1000BASE-PX EPON Interface and 12-Port 100/1000BASE-X Interface Card (SFP)

Service Processing Unit

LE0D0VAMPA00	Value-added Service Unit**

WAN Interface Card

LE0D0WMNPA00	WAN Interface Service Card

WAN POS Card

CR53-P10-4xPOS/STM1-SFP	4-port OC-3c/STM-1c POS-SFP Flexible Card
CR53-P10-4xPOS/STM4-SFP	4-port OC-12c/STM-4c POS-SFP Flexible Card
CR53-P10-1xPOS/STM16-SFP	1-port OC-48c/STM-16c POS SFP Flexible Pluggable Interface Daughter Card

Optical Transceiver

FE-SFP Optical Transceiver

SFP-FE-SX-MM1310	Optical Transceiver,SFP,100M/155M,Multi-mode Module(1310nm,2km,LC)
eSFP-FE-LX-SM1310	Optical Transceiver,eSFP,100M/155M,Single-mode Module(1310nm,15km,LC)
S-SFP-FE-LH40-SM1310	Optical Transceiver,eSFP,FE,Single-mode Module(1310nm,40km,LC)
S-SFP-FE-LH80-SM1550	Optical Transceiver,eSFP,FE,Single-mode Module(1550nm,80km,LC)

622M-SFP Optical Transceiver

OST015N00	Optical Transceiver,eSFP,622M,Single-mode Module(1310nm,15km,LC)
OST040N00	Optical Transceiver,eSFP,622M,Single-mode Module(1310nm,40km,LC)

Basic Configuration	
OST080N00	Optical Transceiver,eSFP,622M,Single-mode Module(1550nm,80km,LC)

GE-SFP Optical Transceiver

SFP-1000BaseT	Electrical Transceiver,SFP,GE,Electrical Interface Module(100m,RJ45)
eSFP-GE-SX-MM850	Optical Transceiver,eSFP,GE,Multi-mode Module(850nm,0.5km,LC)
SFP-GE-LX-SM1310	Optical Transceiver,eSFP,GE,Single-mode Module(1310nm,10km,LC)
S-SFP-GE-LH40-SM1310	Optical Transceiver,eSFP,GE,Single-mode Module(1310nm,40km,LC)
S-SFP-GE-LH40-SM1550	Optical Transceiver,eSFP,GE,Single-mode Module(1550nm,40km,LC)
S-SFP-GE-LH80-SM1550	Optical Transceiver,eSFP,GE,Single-mode Module(1550nm,80km,LC)
eSFP-GE-ZX100-SM1550	Optical Transceiver,eSFP,GE,Single-mode Module(1550nm,100km,LC)

2.5G-SFP Optical Transceiver

OSU015N00	Optical Transceiver,eSFP,2.5G,Single-mode Module(1310nm,15km,LC)
OSU040N00	Optical Transceiver,eSFP,2.5G,Single-mode Module(1310nm,40km,LC)
OSU080N00	Optical Transceiver,eSFP,2.5G,Single-mode Module(1550nm,80km,LC)

10GE-XFP Optical Transceiver

XFP-SX-MM850	Optical Transceiver,XFP,10G,Multi-mode Module(850nm,0.3km,LC)
XFP-STM64-LX-SM1310	Optical Transceiver,XFP,10G,Single-mode Module(1310nm,10km,LC)
XFP-STM64-LH40-SM1550	Optical Transceiver,XFP,10G,Single-mode Module(1550nm,40km,LC)
XFP-STM64-SM1550-80km	Optical Transceiver,XFP,10G Single-mode Module(1550nm,80km,LC)

10GE-SFP+ Optical Transceiver

OMXD30000	Optical Transceiver,SFP+,10G,Multi-mode Module(850nm,0.3km,LC)
OSX010000	Optical Transceiver,SFP+,10G,Single-mode Module(1310nm,10km,LC)
OSX040N01	Optical Transceiver,SFP+,10G,Single-mode Module(1550nm,40km,LC)
OSXD22N00	Optical Transceiver,SFP+,10G,Single-mode Module(1310nm,0.22km,LC,LRM)

BIDI-SFP Optical Transceiver

SFP-FE-LX-SM1310-BIDI	Optical Transceiver,eSFP,FE,BIDI Single-mode Module(TX1310/RX1550,15km,LC)
SFP-FE-LX-SM1550-BIDI	Optical Transceiver,eSFP,FE,BIDI Single-mode Module(TX1550/RX1310,15km,LC)
SFP-GE-LX-SM1310-BIDI	Optical Transceiver,eSFP,GE,BIDI Single-mode Module(TX1310/RX1490,10km,LC)
SFP-GE-LX-SM1490-BIDI	Optical Transceiver,eSFP,GE,BIDI Single-mode Module(TX1490/RX1310,10km,LC)

EPON Optical Transceiver

OSG020B00	Optical Transceiver,SFP,GE,BIDI Single-mode EPON Module(TX1490/RX1310,20km,SC)

Power

LE0MPSD16	DC Power Module
LE0MPSA08	800W AC Power Module
W0PSA2200	2200W AC Power Module
LE0MDCPDBX00	Front-access-maintained Cabinet Power Distribution Box
LE0MACPJBX00	INtess ICD,IN6W18L10A,Intelligent Value Added Special Service Power Junction Box,8-Channel Output,Each With Rated Current Of 10A

Cable & Converter

LE0CQP10QP00	QSFP High Speed Cable,10m
Software	

Basic Configuration	
LE0SMS129300	S9300 Basic SW,V100R002
LE0SMS139300	S9300 Basic SW,V100R003
LS0SMS169300	S9300 Basic SW,V100R006
LE0STO129300	S9300 SW Upgrade,V100R001 to V100R002
LE0STO139300	S9300 SW Upgrade,V100R002 to V100R003
LS0STO169300	S9300 SW Upgrade,V100R003 to V100R006
LE0SMPLS9300	MPLS Function License
LE0SNQAF9300	NQA Function License
LE0SIPV69300	IPV6 Function License
LE0SWLAN9300	WLAN Access Controller AP Resource License-128AP

Document

LE0I000DOC00	S9300 Terabit Routing Switch Product Documentation

Installation Material

E000FMT00	Subassembly for Fiber Winding Box

*: has 200 ms caching capability.

**: supports firewall, IPSec, wireless AC, load balancing, and NetStream.

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

Huawei Enterprise S7700 Series Smarter Routing Switches

Product Overview

The S7700 series switches (S7700 for short) are high-end smarter routing switches designed for next-generation enterprise networks. The S7700 is designed based on the intelligent multi-layer switching technology of Huawei to provide intelligent service optimization methods such as MPLS VPN, traffic analysis, comprehensive QoS policies, controllable multicast, load balancing, integrated security guarantee in addition to stable, reliable, secure, and high performance Layer 2 to Layer 4 switching services. In addition, it features superb scalability and reliability.

The S7700 can function as core or aggregation nodes on campus networks or data centers to provide integrated wireless access, voice, video, and data services, helping enterprises build an integrated end-to-end network.

Product Appearance

The S7700 offers three models: S7703, S7706, and S7712. Their switching capacity and port density can be expanded. The S7700 is developed based on a new hardware platform and adopts a left-to-rear ventilation channel to achieve better energy efficiency ratio. Key components work in redundancy mode to minimize risks of system breakdown and service interruption. Using innovative energy-saving chips, the S7700 provides an industry-leading solution to a sustainable energy-saving network.
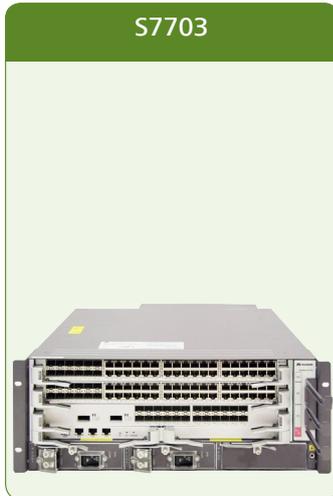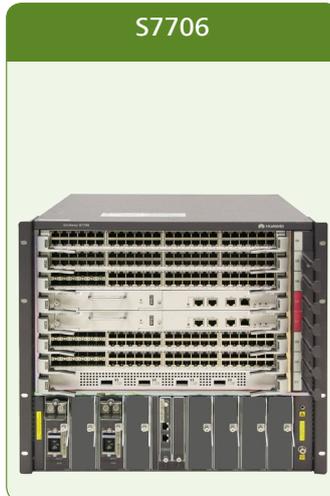
S7703	S7706	S7712

Product Features

Powerful service processing capabilities, facilitating network expansion

- The S7700's multi-service routing and switching platform meets requirements for service bearing at the access layer, aggregation layer, and core layer of enterprise networks. The S7700 provides wireless access, voice, video, and data services, helping enterprises build an integrated full service network with high availability and low latency.

- The S7700 supports distributed Layer 2/Layer 3 MPLS VPN functions, including MPLS, VPLS, HVPLS, and VLL, implementing VPN access for enterprise users.

- The S7700 supports various Layer 2/Layer 3 multicast protocols such as PIM SM, PIM DM, PIM SSM, MLD, and IGMP snooping. It can provide multi-terminal high definition video surveillance and video conference services for enterprises.

Carrier-class reliability and visual fault diagnosis

- Huawei's carrier-class high reliability design ensures that the S7700 is 99.999% reliable. The S7700 provides redundancy backup for key components, including switch routing units, power supply units and fans, all of which are hot swappable.

- The S7700 has a dedicated fault detection daughter-card with a processing capacity of 300Mpps and fault detection time within 3.3ms. It provides hardware-based OAM function conforming to IEEE 802.3ah, 802.1ag, and ITU-Y.1731. When a network fault occurs, the S7700 will check session connectivity of all terminals in real time. The S7700 can also work with an NMS. The NMS provides a graphical fault diagnosis interface and traversals network elements and links automatically to help users detect and locate faults quickly.

- The S7700 implements seamless switchover between the master and slave switch routing units and supports graceful restarts to ensure non-stop forwarding. The in-service software upgrade (ISSU) function of the S7700 prevents interruption of key services during software upgrade.

Well-designed QoS mechanism, improving the voice and video user experience

- The S7700's QoS control mechanisms perform traffic classification based on information at the link layer to application layer. With advanced queue scheduling and congestion control algorithms, the S7700 performs accurate multi-level scheduling for data flows, satisfying QoS requirements for a variety of services and user terminals in an enterprise.

- The S7700 supports hardware-based low delay queues for multicast packets so that the video service can be processed preferentially. This feature guarantees high quality of key services in an enterprise, such as video conference and surveillance.

- The S7700 uses innovative priority scheduling algorithms to optimize the QoS queue scheduling mechanism for voice and video services. The improved scheduling mechanism shortens delay of the VoIP service and eliminates pixelation effect in the video service, improving user experience.

High performance in IPv6 service processing, realizing smooth transition from IPv4 to IPv6

- Both the hardware platform and software platform of the S7700 support IPv6. The S7700 has gained IPv6 Ready Phase 2 (Gold) designation.

- The S7700 supports IPv4/IPv6 dual stack, various tunneling technologies, IPv6 static routing, RIPng, OSPFv3, BGP+, IS-ISv6, and IPv6 multicast, meeting demand for IPv6 networking and combined IPv4 and IPv6 networking.

Intelligent traffic load balancing, improving enterprises' network efficiency

- The S7700's load balancer supports multiple load balancing algorithms, including weighted round robin (WRR) algorithm, least connection algorithm, hash algorithm based on the IP address, and hash algorithm based on the URL in HTTP packets.

- The S7700's load balancer supports multiplexing of TCP and HTTP connections to reduce the workloads for establishing and closing TCP connections, hence increasing the access rate of Web portal servers.

- The S7700's load balancer supports dynamic traffic locking to implement load balancing for online shopping on ecommerce websites.

Superb traffic analysis capability, helping with real-time network performance monitoring

- The S7700 supports distributed NetStream for real-time collection and analysis of network traffic statistics.

- The S7700 supports Netstream of V5, V8, and V9 formats and provides aggregation traffic templates to reduce the burden of the network collector system. In addition, the S7700 supports real-time traffic collection, dynamic report generation, traffic attribute analysis, and traffic exception trap.

- NetStream monitors network traffic in real time and analyzes the device's throughput, providing data for network structure optimization and capacity expansion.

Comprehensive security mechanisms, defending enterprises against internal and external security threats

- The S7700 has an integrated firewall card installed and also supports virtual firewalls and NAT multi-instance, allowing multiple VPN customers to share the same firewall. The application-layer packet filtering technology detects and filters application layer packets according to rules.

- The S7700 provides comprehensive NAC solutions for enterprise networks. It supports MAC address authentication, Portal authentication, 802.1x authentication, and DHCP snooping-triggered authentication. These authentication methods ensure security of various access modes such as dumb terminal access, mobile access, and centralized IP address allocation.

- The S7700 is the industry leader in integrated security solutions. It uses a 2-level CPU protection mechanism and supports 1K CPU queues, and protects the CPU by separating the data plane and control plane. Additionally, the S7700 defends against DoS attacks, prevents unauthorized access, and prevents control plane overloading.

Wireless AC boards, meeting requirements for mobile office

- The S7700 can use an access controller (AC) board to provide radio frequency management functions. The AC board allows access points (APs) to select their radio channels and power automatically. In an AP region, APs automatically adjust radio channels and power in the event of signal interference, enabling the receive signal strength indicator (RSSI) and signal-to-noise ratio (SNR) to be continuously updated. The system then can monitor the electromagnetic environment of every wireless user to improve network availability.

- The S7700's AC board supports multiple authentication methods, including 802.1x authentication, MAC address authentication, Portal authentication, and WAPI authentication. These authentication methods meet requirements of users using types of STAs and requiring different security levels.

- The S7700's AC board supports Layer 2 and Layer 3 roaming, allowing STAs to rapidly switch between APs. The S7700 supports 1+1 and N+1 cold backup between ACs and load balancing among ACs, improving network reliability.

Integrated EPON board, simplifying PON maintenance

- The S7700's EPON board provides 12 EPON ports and 12 GE Ethernet ports. All these ports implement line-speed packet forwarding, maximizing bandwidth usage and reducing network construction costs.

- The S7700 provides symmetric uplink and uplink bandwidth of 1.25 Gbit/s and supports a transmission distance OF 20 km.

- An S7700 can function as an EPON access device and a core routing switch simultaneously. This reduces the number of network layers and network construction costs.

Innovative energy-saving chips, allowing intelligent power consumption control

- The S7700 adopt innovative energy-saving chips and can dynamically adjust power on ports based on traffic volume. A port with no traffic transmitted enters sleep mode to reduce power consumption.

- The S7700 supports the Power over Ethernet (PoE) function and uses different energy management modes according to the powered device (PD) type, ensuring flexible energy management.

- The S7700 supports IEEE 802.3az Energy Efficient Ethernet and provides the low power idle mode for the line card PHY. When the link utilization is low, it switches to a lower speed (power) PHY to reduce power consumption.

Product Specifications

| Item	S7703	S7706	S7712
Backplane capacity	1.2 Tbps	2.4 Tbps	4.8 Tbps
Switching capacity	720 Gbit/s	2 Tbit/s	2 Tbit/s
Forwarding performance	540 Mpps	1080 Mpps	1320 Mpps
Service Slot	3	6	12
VLAN	Three types of interfaces: access, trunk, and hybrid.		
	Default VLAN		
	VLAN switching		
	QinQ and selective QinQ		
	MAC address-based VLAN assignment		
MAC address	MAC address learning and aging		
	Static, dynamic, and blackhole MAC address entries		
	Packet filtering based on source MAC addresses		
	Limit on the number of MAC addresses learned on ports and VLANs		
STP	STP, RSTP, and MSTP		
	BPDU protection, root protection, and loop protection		
	BPDU tunnel		
IP routing	IPv4 routing protocols, such as RIP, OSPF, BGP, and IS-IS		
	IPv6 dynamic routing protocols, such as RIPng, OSPFv3, ISISv6, and BGP4+		

Item	S7703	S7706	S7712
Multicast	IGMPv1/v2/v3 and IGMP v1/v2/v3 snooping		
	PIM-DM, PIM-SM, and PIM-SSM		
	MSDP and MBGP		
	Fast leave		
	Multicast traffic control		
	Multicast querier		
	Multicast packets suppression		
	Multicast CAC		
	Multicast ACL		
MPLS	Basic MPLS functions		
	MPLS OAM		
	MPLS-TE		
	MPLS VPN/VLL/VPLS		
Reliability	LACP and E-Trunk between devices		
	VRRP and BFD for VRRP		
	BFD for BGP/IS-IS/OSPF/static route		
	NSF and GR for BGP/IS-IS/OSPF/LDP		
	TE FRR and IP FRR		
	Ethernet OAM (IEEE 802.3ah and 802.1ag)		
	ITU-Y.1731		
	DLDP		
	ISSU		
QoS	Traffic classification based on Layer 2 protocol packet header, Layer 3 protocol information, Layer 4 protocol information, and 802.1p priority		
	ACL, CAR, re-mark, and scheduling		
	Queue scheduling algorithms including PQ, WRR, DRR, PQ+WRR, and PQ+DRR		
	Congestion avoidance mechanisms such as WRED and tail drop		
	Traffic shaping		
EPON OLT	IEEE 802.3ah		
	DBA		
	Limit on uplink and downlink bandwidth for ONUs		
	ONU loopback		
Configuration and maintenance	Console, Telnet, and SSH terminals		
	Network management protocols such as SNMPv1/v2/v3		
	File uploading and downloading using FTP and TFTP		
	BootROM upgrade and remote upgrade		
	Hot patches		
	User operation logs		
Security and management	802.1x authentication and portal authentication		
	NAC		
	RADIUS and HWTACACS authentication		
	Different user levels for commands, preventing unauthorized users from using certain commands		
	Defense against DoS attacks, TCP SYN Flood attacks, UDP Flood attacks, broadcast storms, and heavy traffic attacks		
	1K CPU queues		
	Ping and traceroute		
	RMON		

Item	S7703	S7706	S7712
Value-added service	Firewall		
	NAT		
	IPSec		
	Load balancing		
	AC		
Energy conservation	IEEE 802.3az: Energy Efficient Ethernet (EEE)		
Dimensions (W x D x H)	442 mm x 476 mm x 175 mm	442 mm x 476 mm x 442 mm	442 mm x 476 mm x 664 mm
Chassis weight (empty)	< 15 kg	<30 kg	< 45 kg
Working voltage	DC: −38.4 V to −72 V AC: 90 V to 290 V		
Maximum power (excluding PoE power)	800 W	1600 W	1600 W
Maximum PoE power	2200 W	8800 W	8800 W

Applications

Large-sized Campus Networks

The S7700 provides a switching capacity of 2 Tbit/s and high-density 10GE ports. It can be used as an aggregation switch on a large-sized campus network, helping to build a highly reliable, scalable, and manageable, enterprise network. With hardware-based CPU queue scheduling and firewall modules, the S7700 enhances security at the aggregation layer and protects core network of the enterprise against DDoS attacks and other security threats.
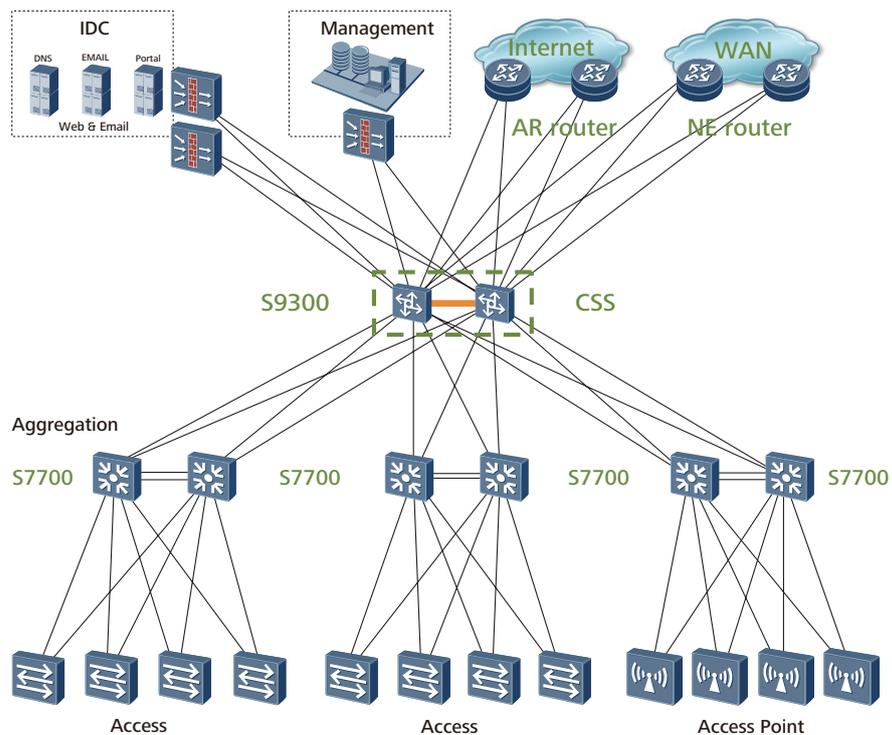
Small and Medium-sized Campus Networks

The S7700 implements line-speed forwarding of OSPF, BGP, and MPLS packets. With its 2 Tbit/s switching capacity, firewall module, and IPSec module, the S7700 can work at the core layer of small and medium-sized campus networks. It provides a cost-effective, reliable, and easy-to-deploy network solution for small and medium-sized enterprises.
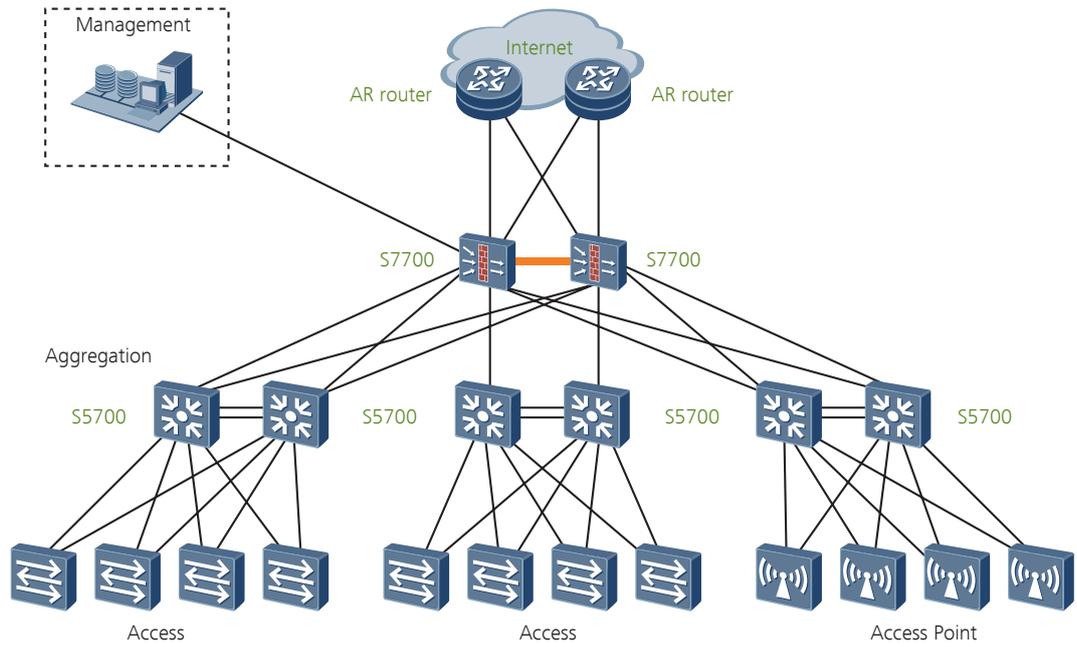
EPON Video Surveillance Solution

The S7700 can function as an optical line terminal (OLT), with a maximum transmission distance of 20 km and an optical split ratio of 1:64. It can work with 1:2 or 5:95 low-attenuation optical splitters to provide surveillance services on highways, railways, roads in cities, and factories of manufacturing enterprises.
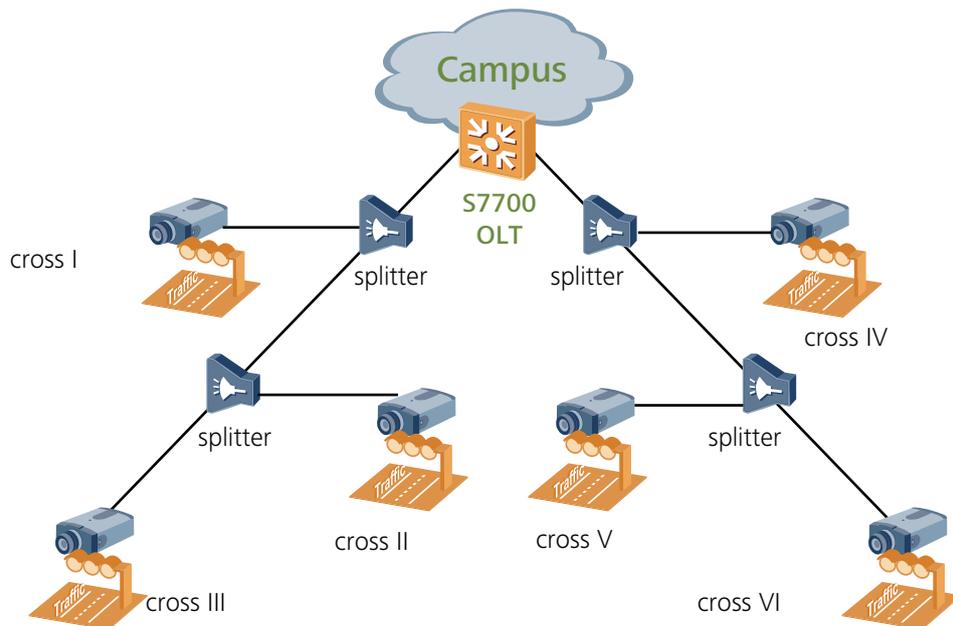
Product List

Basic Configuration	
LE0BN66EDC	DC Assembly Rack(600X600X2200mm)
LE0BN66EAC	AC Assembly Rack(600X600X2200mm)
ES0B00770300	S7703 Assembly Chassis
ES0B00770600	S7706 Assembly Chassis
ES0B00771200	S7712 Assembly Chassis
ES0B017706P0	S7706 POE Assembly Chassis
ES0B017712P0	S7712 POE Assembly Chassis

Monitoring Board

LE0DCMUA0000	Centralized Monitoring Board

Main Control Unit

ES0D00MCUA00	S7703 Main Control Unit A
ES0D00SRUA00	S7706/S7712 Main Control Unit A
ES0D00SRUB00	S7706/S7712 Main Control Unit B,Clock

SRU Service Card

ES0D00FSUA00	Enhanced Flexible Service Unit

10/100BASE-T Interface Card

ES0D0F48TA00	48-Port 10/100BASE-T Interface Card(EA,RJ45)
ES0DF48TFA00	48-Port 10/100BASE-T Interface Card(FA,RJ45)
ES0D0F48TC00	48-Port 10/100BASE-T Interface Card(EC,RJ45)

10/100/1000BASE-T Interface Card

ES0DG24TFA00	24-Port 10/100/1000BASE-T Interface Card(FA,RJ45)
ES0D0G48TA00	48-Port 10/100/1000BASE-T Interface Card(EA,RJ45)
ES0DG48TFA00	48-Port 10/100/1000BASE-T Interface Card(FA,RJ45)
ES0D0G48TC00	48-Port 10/100/1000BASE-T Interface Card(EC,RJ45)
ES0D0T24XA00	24-Port 10/100/1000BASE-T and 2-Port 10GBASE-X Interface Card (EA,RJ45/XFP)

100BASE-X Interface Card

ES0D0G24SA00	24-Port 100/1000BASE-X Interface Card(SA,SFP)
ES0D0G24SC00	24-Port 100/1000BASE-X Interface Card(EC,SFP)
ES0D0G24CA00	24-Port 100/1000BASE-X and 8-Port 10/100/1000BASE-T Combo Interface Card(SA,SFP/RJ45)
ES0D0S24XA00	24-Port 100/1000BASE-X and 2-Port 10GBASE-X Interface Card(EA,SFP/XFP)
ES0D0G48SA00	48-Port 100/1000BASE-X Interface Card(EA,SFP)
ES0D0G48SC00	48-Port 100/1000BASE-X Interface Card(EC,SFP)

100/1000BASE-X Interface Card

ES0DG48CEAT0	36-Port 10/100/1000BASE-T and 12-Port 100/1000BASE-X Interface Card(EA,RJ45/SFP)

10GBASE-X Interface Card

ES0D0X2UXA00	2-Port 10GBASE-X Interface Card(EA,XFP)
ES0D0X2UXC00	2-Port 10GBASE-X Interface Card(EC,XFP)
ES0D0X4UXA00	4-Port 10GBASE-X Interface Card(EA,XFP)
ES0D0X4UXC00	4-Port 10GBASE-X Interface Card(EC,XFP)
ES0DX12XSA00	12-Port 10GBASE-X Interface Card(SA,SFP+)

POE Interface Card

ES0D0G48VA00	48-Port 10/100/1000BASE-T POE Interface Card(EA,RJ45,POE)

Basic Configuration	
EPON Interface Card	
ES0D0E12GA00	12-Port 1000BASE-PX EPON Interface and 12-Port 100/1000BASE-X Interface Card (SFP)
Service Processing Unit	
LE0D0VAMPA00	Value-added Service Unit*
Power	
LE0MPSD16	DC Power Module
LE0MPSA08	800W AC Power Module
W0PSA2200	2200W AC Power Module

In the preceding table, *indicates a value-added board that supports the firewall, IPSec, AC, and load balancing functions.

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

Huawei Enterprise S6700 Series 10G Switches

Product Overview

The S6700 series switches (S6700 for short) are next-generation 10G case-shaped switches. It can function as an access switch in an Internet data center (IDC) or a core switch on a campus network.

The S6700 has an industry-leading performance and provides up to 24 or 48 line-speed 10GE ports. It can be used in a data center to provide 10 Gbit/s access to servers or function as a core switch on a campus network to provide 10 Gbit/s traffic aggregation. In addition, the S6700 provides rich services, comprehensive security policies, and various QoS features to help customers build scalable, manageable, reliable, and secure data centers. The S6700 series switches have two models: S6700-48-EI and S6700-24-EI.

Product Appearance

S6700-48-EI	

- Forty-eight GE SFP or 10 GE SFP+ ports, two power supply slots, and one USB port
- AC power supply
- Forwarding performance: 715 Mpps
- Switching capacity: 960 Gbps

S6700-24-EI	

- Twenty-four GE SFP or 10 GE SFP+ ports, two power supply slots, and one USB port
- AC power supply
- Forwarding performance: 358 Mpps
- Switching capacity: 480 Gbps

Product Features

Large-capacity, high-density 10 Gbit/s access

- To provide sufficient bandwidth for users, many servers use 10G network adapters, especially servers in data centers. The S6700 can be used in data centers to provide high forwarding performance and 10GE ports. The S6700 has the highest density of 10GE ports and largest switching capacity among counterpart switches. Each S6700 provides a maximum of 48 line-speed 10GE ports.

- Ports of the S6700 support 1GE access and 10GE access and can identify optical module types, maximizing the return on investment and allowing users to deploy service flexibly.

- The S6700 has a large buffering capacity and uses advanced buffer scheduling mechanism to ensure non-block transmission of high traffic volume in data centers.

Comprehensive security policies

- The S6700 provides multiple security measures to defend against Denial of Service (DoS) attacks, and attacks against networks or users. DoS attack types include SYN Flood attacks, Land attacks, Smurf attacks, and ICMP Flood attacks. Attacks to networks refer to STP BPDU/root attacks. Attacks to users include bogus DHCP server attacks, man-in-the-middle attacks, IP/MAC spoofing attacks, DHCP request flood attacks. DoS attacks that change the CHADDR field in DHCP packets are also attacks against users.

- The S6700 supports DHCP snooping, which generates user binding entries based on MAC addresses, IP addresses, IP address leases, VLAN IDs, and access interfaces of users. DHCP snooping discards invalid packets that do not match any binding entries, such as ARP spoofing packets and IP spoofing packets. This prevents man-in-the-middle attacks to campus networks that hackers initiate by using ARP packets. The interface connected to a DHCP server can be configured as a trusted interface to protect the system against bogus DHCP server attacks.

- The S6700 supports strict ARP learning, which prevents ARP spoofing attacks that will exhaust ARP entries. It also provides IP source check to prevent DoS attacks caused by MAC address spoofing, IP address spoofing, and MAC/IP spoofing. URPF provided by the S6700 checks packet transmission path reversely to authenticate packets, which can protect the network against source address spoofing attacks.

- The S6700 supports centralized MAC address authentication and 802.1x authentication. It authenticates users based on statically or dynamically bound user information such as the user name, IP address, MAC address, VLAN ID, access interface, and flag indicating whether antivirus software is installed. VLANs, QoS policies, and ACLs can be applied to users dynamically.

- The S6700 can limit the number of MAC addresses learned on an interface to prevent attackers from exhausting MAC address entries by using bogus source MAC addresses. This function minimizes packet flooding that occurs when MAC addresses of users cannot be found in the MAC address table.

Well-designed reliability mechanisms

- The S6700 supports redundant power supplies. Users can choose a single power supply or use two power supplies to ensure device reliability. With two fans, the S6700 has a longer MTBF time than counterpart switches.

- The S6700 supports MSTP multi-process that enhances the existing STP, RSTP, and MSTP implementation. This function increases the number of MSTIs supported on a network. It also supports enhanced Ethernet reliability technologies such as Smart Link and RRPP, which implement millisecond-level protection switchover and ensure network reliability. Smart Link and RRPP both support multi-instance to implement load balancing among links, optimizing bandwidth usage.

- The S6700 supports enhanced trunk (E-Trunk). When a CE is dual-homed to two S6700s (PEs), E-Trunk protects the links between the CE and PEs and implements backup between PEs. E-trunk enhances link reliability between devices.

- The S6700 supports the Smart Ethernet Protection (SEP) protocol, a ring network protocol applied to the link layer on an Ethernet network. SEP can be used on open ring networks and can be deployed on upper-layer aggregation devices to provide fast switchover (within 50 ms), ensuring non-stop transmission of services. SEP features simplicity, high reliability, fast switchover, easy maintenance, and flexible topology, facilitating network planning and management.

- The S6700 supports VRRP. Two S6700s can form a VRRP group to ensure nonstop and reliable communication. Multiple equal-cost routes to an upstream device can be configured on the S6700 to provide route redundancy. When an active route is unreachable, traffic is switched to a backup route.

Various QoS control mechanisms

- The S6700 implements complex traffic classification based on packet information such as the 5-tuple, IP preference, ToS, DSCP, IP protocol type, ICMP type, TCP source port, VLAN ID, Ethernet protocol type, and CoS. ACLs can be applied to inbound or outbound direction on an interface. The S6700 supports a flow-based two-rate three-color CAR. Each port supports eight priority queues, multiple queue scheduling algorithms such as WRR, DRR, SP, WRR+SP, and DRR+SP, and congestion avoidance algorithm WRED. All of these ensure the quality of voice, video, and data services.

High scalability

- The S6700 supports the iStack function that allows switches far from each other to form a stack. A port of the S6700 can be configured as a stack port using a command for flexible stack deployment. The distance between stacked switches is further increased when the switches are connected with optical fibers. A stack is easier to expand, more reliable, and has a higher performance than a single switch. New member switches can be added to a stack without interrupting services when the system capacity needs to be increased or a member switch fails. Compared with stacking of chassis-shaped switches, the iStack function can increase system capacity and port density without restricted by the hardware structure. Multiple devices in a stack can be considered as one logical device, which simplifies network management and configuration.

Convenient management

- The S6700 supports automatic configuration, plug-and-play, deployment using a USB flash drive, and batch remote upgrade. These capabilities simplify device management and maintenance and reduce maintenance costs.

- The S6700 supports SNMP v1/v2/v3 and provides flexible methods for managing devices. Users can manage the S6700 using the CLI, Web NMS, Telnet, and HGMP. The NQA function helps users with network planning and upgrades. In addition, the S6700 supports NTP, SSH v2, HWTACACS, RMON, log hosts, and port-based traffic statistics.

- The S6700 supports GARP VLAN Registration Protocol (GVRP), which dynamically distributes, registers, and propagates VLAN attributes to reduce manual configuration workloads of network administrators and to ensure correct VLAN configuration. In a complex network topology, GVRP simplifies VLAN configuration and reduces network communication faults caused by incorrect VLAN configuration.

- The S6700 supports Multiplex VLAN (MUX VLAN). MUX VLAN isolates Layer 2 traffic between interfaces in a VLAN. Interfaces in a subordinate separate VLAN can communicate with ports in the principal VLAN but cannot communicate with each other. MUX VLAN is usually used on an enterprise intranet to isolate user interfaces from each other but allow them to communicate with server interfaces. This function prevents communication between network devices connected to certain interfaces or interface groups but allows the devices to communicate with the default gateway.

- The S6700 supports BFD, which provides millisecond-level fault detection for protocols such as OSPF, IS-IS, VRRP, and PIM to improve network reliability. Complying with IEEE 802.3ah and 802.1ag, the S6700 supports point-to-point Ethernet fault management and can detect faults in the last mile of an Ethernet link to users. Ethernet OAM improves the Ethernet network management and maintenance capabilities and ensures a stable network.

Various IPv6 features

- The S6700 supports IPv4/IPv6 dual stack and can migrate from an IPv4 network to an IPv6 network. S6700 hardware supports IPv4/IPv6 dual stack, IPv6 over IPv4 tunnels (including manual tunnels, 6to4 tunnels, and ISATAP tunnels), and Layer 3 line-speed forwarding. The S6700 can be deployed on IPv4 networks, IPv6 networks, or networks that run both IPv4 and IPv6. This makes networking flexible and enables a network to migrate from IPv4 to IPv6.

- The S6700 supports various IPv6 routing protocols including RIPng and OSPFv3. It uses the IPv6 Neighbor Discovery Protocol (NDP) to manage packets exchanged between neighbors. It also provides a path MTU (PMTU) discovery mechanism to select a proper MTU on the path from the source to the destination, optimizing network resource utilization and obtaining the maximum throughput.

Product Specifications

| Item	S6700-24-EI	S6700-48-EI
Port	Twenty-four GE SFP/10 GE SFP+ ports	Forty-eight GE SFP/10 GE SFP+ ports
MAC address table	128 K MAC address entries MAC address learning and aging Static, dynamic, and blackhole MAC address entries Packet filtering based on source MAC addresses	
VLAN	4 K VLANs Guest VLAN and voice VLAN VLAN assignment based on MAC addresses, protocols, IP subnets, policies, and ports 1:1 and N:1 VLAN Mapping QinQ and selective QinQ	
IPv4 routing	Static routing, RIPv1, RIPv2, ECMP, and URPF OSPF, IS-IS, and BGP VRRP Policy-based routing Routing policy	
IPv6 routing	Static route RIPng Manually configured tunnel 6to4 tunnel, ISTAP tunnel OSPFv3	
IPv6 features	Neighbor Discovery (ND) PMTU IPv6 ping, IPv6 tracert, and IPv6 Telnet 6to4 tunnel, ISATAP tunnel, and manually configured tunnel ACLs based on the source IPv6 address, destination IPv6 address, Layer 4 ports, or protocol type MLD v1/v2 snooping	
multicast	Static Layer 2 multicast MAC address MAC-based multicast forwarding IGMP snooping and IGMP fast leave Multicast VLAN MLD snooping IGMP proxy Controllable multicast Port-based multicast traffic statistics IGMP v1/v2/v3 PIM-SM, PIM-DM, and PIM-SSM MSDP	

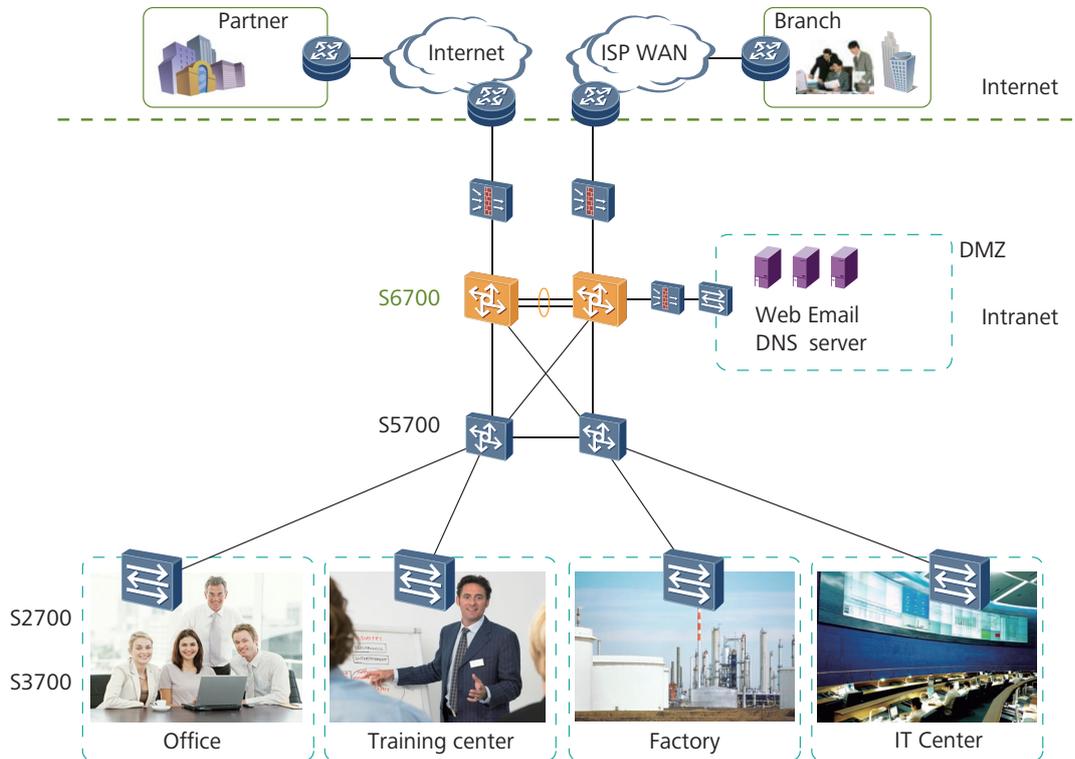| Item	S6700-24-EI	S6700-48-EI
QoS/ACL	Rate limiting on packets sent and received by an interface Packet redirection Port-based traffic policing and two-rate three-color CAR Eight queues on each port WRR, DRR, SP, WRR+SP, and DRR+SP queue scheduling algorithms Re-marking of the 802.1p priority and DSCP priority 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, port number, protocol type, and VLAN ID Rate limiting in each queue and traffic shaping on ports	
Reliability	STP, RSTP, and MSTP BPDU protection, root protection, and loop protection RRPP ring topology and RRPP multi-instance Smart Link tree topology and Smart Link multi-instance, providing the millisecond-level protection switchover SEP BFD for OSPF, BFD for IS-IS, BFD for VRRP, and BFD for PIM E-Trunk	
Security	User privilege management and password protection DoS attack defense, ARP attack defense, and ICMP attack defense Binding of the IP address, MAC address, interface, and VLAN Port isolation, port security, and sticky MAC Blackhole MAC address entries Limit on the number of learned MAC addresses 802.1x authentication and limit on the number of users on an interface AAA authentication, RADIUS authentication and TACACS authentication SSH v2.0 Hypertext Transfer Protocol Secure (HTTPS) CPU defense Blacklist and whitelist	
Management and maintenance	Stacking (using service ports as stack ports) MAC Forced Forwarding (MFF) Virtual cable test Ethernet OAM (IEEE 802.3ah and 802.1ag) Local port mirroring and remote switched port analyzer (RSPAN), allowing an observing port to forward packets Remote configuration and maintenance by using Telnet SNMP v1/v2/v3 RMON Web NMS HGMP System logs and alarms of different levels GVRP MUX VLAN	
Operating environment	Operating temperature: 0℃–45℃ (long term); -5℃–50℃ (short term) Relative humidity: 10%–90% (non-condensing)	
Input voltage	AC: Rated voltage range: 100 V to 240 V AC, 50/60 Hz Maximum voltage range: 90 V to 264 V AC, 50/60 Hz	
Dimensions (W x D x H)	442 mm x 420 mm x 43.6 mm	
Power consumption	165 watt	237 watt

Applications

In Data Centers

The S6700 can be used in Huawei's sustainable data center solution, which has four major highlights: evolution, availability, pooling, and visualization.

As shown in the following figure, the S9300 Terabit routing switches function as core switches in a data center and use firewall and load balancer boards to ensure security and perform load balancing. The S6700s function as access switches and provide high-density 10GE ports to connect to 10G servers.
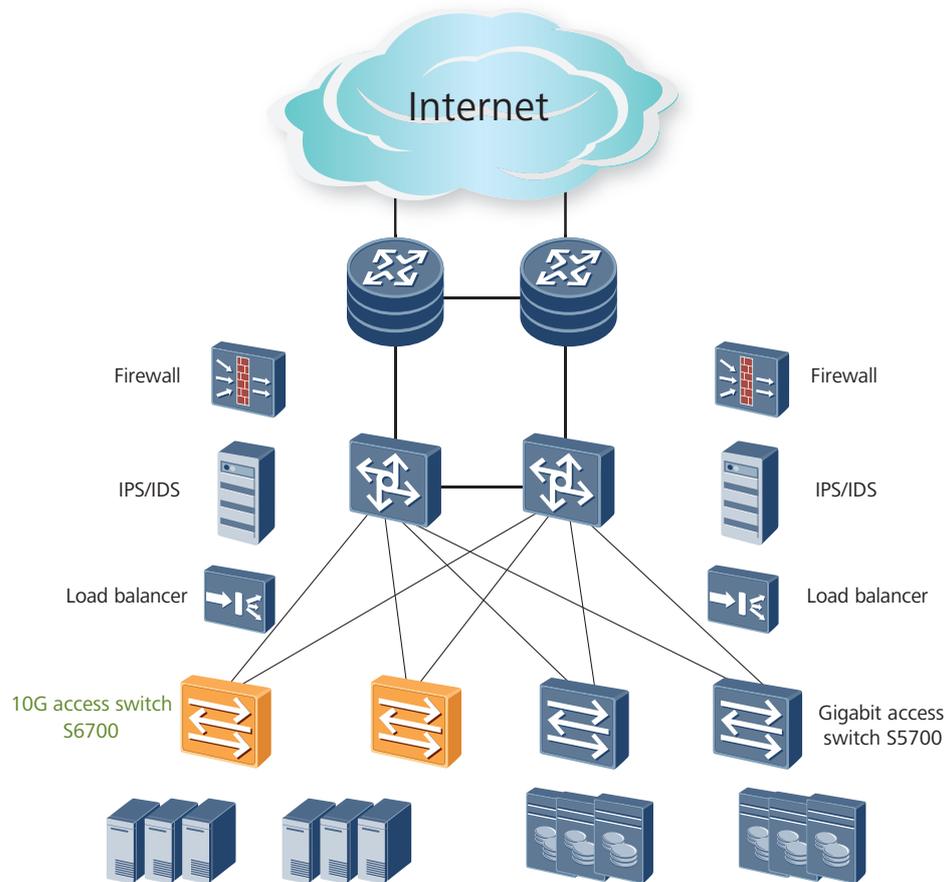
On Campus Networks

The S6700 can function as a core switch on a campus network and provide high-density line-speed 10GE ports, rich service features, and comprehensive security mechanism. This makes the S6700 cost effective on campus network.

Product List

Product Description
S6700-24-EI
S6700-48-EI
AC power supply

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

Huawei Enterprise S5700 Series Gigabit Switches

Product Overview

The S5700 series gigabit enterprise switches (S5700 for short) are next-generation energy-saving switches developed by Huawei to meet the demand for high-bandwidth access and Ethernet multi-service aggregation. Based on the cutting-edge hardware and Huawei Versatile Routing Platform (VRP) software, the S5700 provides a large switching capacity and high-density GE ports to implement 10 Gbit/s upstream transmissions. The S5700 can be used in various enterprise network scenarios. For example, it can function as an access or aggregation switch on a campus network, a gigabit access switch in an Internet data center (IDC), or a desktop switch to provide 1000 Mbit/s access for terminals. The S5700 is easy to install and maintain, reducing workloads for network planning, construction, and maintenance. Featuring advanced reliability, security, and energy conservation technologies, the S5700 helps enterprise customers build a next generation IT network.

The S5700 is a 1 U high case-shaped device and comes in a standard version (SI), an enhanced version (EI), and an advanced version (HI). The SI version provides Layer 2 functions and basic Layer 3 functions. The EI version supports complex routing protocols and provides more functions than the SI version. In addition to the functions of EI, HI supports some advanced functions such as MPLS and hardware OAM.

Product Appearance

S5700-24TP-SI	• Twenty 10/100/1000Base-T ports and four GE combo ports
	• Two models: AC model and DC model, supporting RPS (12 V redundant power supply)
	• USB port
	• Forwarding performance: 36 Mpps

S5700-24TP-PWR-SI	• Twenty 10/100/1000Base-T ports and four GE combo ports
	• Double hot swappable AC power supplies
	• PoE+
	• USB port
	• Forwarding performance: 36 Mpps

S5700-48TP-SI	• Forty-four10/100/1000Base-T ports and four GE combo ports
	• Two models: AC model and DC model, supporting RPS (12 V redundant power supply)
	• USB port
	• Forwarding performance: 72 Mpps

S5700-48TP-PWR-SI

- Forty-four 10/100/1000Base-T ports and four GE combo ports
- AC power supply
- PoE+
- USB port
- Forwarding performance: 72 Mpps

S5700-28C-SI

- Twenty 10/100/1000Base-T ports and four GE combo ports
- Subcards supported: 4x1000Base-X SFP subcard, 2x10GE SFP+ subcard, and 4x10GE SFP+ subcard
- Double hot swappable power supplies
- USB port
- Forwarding performance: 96 Mpps

S5700-28C-EI

- Twenty-four 10/100/1000Base-T ports
- Subcards supported: 4x1000Base-X SFP subcard, 2x10GE SFP+ subcard, and 4x10GE SFP+ subcard
- Double hot swappable power supplies
- Forwarding performance: 96 Mpps

S5700-28C-EI-24S

- Twenty 100/1000Base-X ports and four GE combo ports
- Subcards supported: 4x1000Base-X SFP subcard, 2x10GE SFP+ subcard, and 4x10GE SFP+ subcard
- Double hot swappable power supplies
- Forwarding performance: 96 Mpps

S5700-28C-PWR-EI

- Twenty-four 10/100/1000Base-T ports
- Subcards supported: 4x1000Base-X SFP subcard, 2x10GE SFP+ subcard, and 4x10GE SFP+ subcard
- Double hot swappable AC power supplies
- PoE+
- Forwarding performance: 96 Mpps

S5700-52C-SI

- Forty-eight 10/100/1000Base-T ports
- Subcards supported: 4x1000Base-X SFP subcard, 2x10GE SFP+ subcard, and 4x10GE SFP+ subcard
- Double hot swappable power supplies
- USB port
- Forwarding performance: 132 Mpps

S5700-52C-EI

- Forty-eight 10/100/1000Base-T ports
- Subcards supported: 4x1000Base-X SFP subcard, 2x10GE SFP+ subcard, and 4x10GE SFP+ subcard
- Double hot swappable power supplies
- Forwarding performance: 132 Mpps

S5700-52C-PWR-EI

- Forty-eight 10/100/1000Base-T ports
- Subcards supported: 4x1000Base-X SFP subcard, 2x10GE SFP+ subcard, and 4x10GE SFP+ subcard
- Double hot swappable AC power supplies
- PoE+
- Forwarding performance: 132 Mpps

S5700-28C-HI

- Twenty-four 10/100/1000Base-T ports
- Subcards supported: 4x1000Base-X SFP subcard, 2x10GE SFP+ subcard, and 4x10GE SFP+ subcard
- Double hot swappable power supplies
- Forwarding performance: 96 Mpps

S5700-28C-HI-24S

- Twenty-four 10/100/1000Base-X ports
- Subcards supported: 4x1000Base-X SFP subcard, 2x10GE SFP+ subcard, and 4x10GE SFP+ subcard
- Double hot swappable power supplies
- Forwarding performance: 96 Mpps

Product Features

Powerful support for services

- The S5700 supports IGMP v1/v2/v3 snooping, IGMP filter, IGMP fast leave, and IGMP proxy. It supports wire-speed replication of multicast packets between VLANs, multicast load balancing among member interfaces of a trunk, and controllable multicast, meeting requirements for IPTV services and other multicast services.

- The S5700 provides the Multi-VPN-Instance CE (MCE) function to isolate users in different VLANs on a device, ensuring data security and reducing costs.

- The S5700HI switches are cost-effective case-shaped MPLS switches. They support MPLS and VLL functions and can be used as high-quality access devices to provide leased line services for enterprises.

Comprehensive reliability mechanisms

- Besides STP, RSTP, and MSTP, the S5700 supports enhanced Ethernet reliability technologies such as Smart Link and RRPP (Rapid Ring Protection Protocol), which implement millisecond-level protection switchover and ensure network reliability. It also provides Smart Link multi-instance and RRPP multi-instance to implement load balancing among links, optimizing bandwidth usage.

- The S5700 supports enhanced trunk (E-Trunk) that enables a CE to be dual-homed to two PEs (S5700s). E-Trunk greatly enhances link reliability between devices and implements link aggregation between devices. This improves reliability of access devices.

- The S5700 supports the Smart Ethernet Protection (SEP) protocol, a ring network protocol applied to the link layer on an Ethernet network. SEP can be used on open ring networks and can be deployed on upper-layer aggregation devices to provide fast switchover (within 50 ms), ensuring non-stop transmission of services. SEP features simplicity, high reliability, fast switchover, easy maintenance, and flexible topology, facilitating network planning and management.

- The S5700 supports redundant power supplies, and can use an AC power supply and a DC power simultaneously. Users can choose a single power supply or use two power supplies to ensure device reliability.

- The S5700EI supports VRRP, and can set up VRRP groups with other Layer 3 switches. VRRP provides redundant routes to ensure stable and reliable communication. Multiple equal-cost routes to an uplink device can be configured on the S5700 to provide route redundancy. When an active route is unreachable, traffic is switched to a backup route.

- The S5700 supports BFD, which provides millisecond-level fault detection for protocols such as OSPF, IS-IS, VRRP, and PIM to improve network reliability. Complying with IEEE 802.3ah and 802.1ag, the S5700 supports point-to-point Ethernet fault management and can detect faults in the last mile of an Ethernet link to users.

- The S5700HI provide 3.3 millisecond hardware-based Ethernet OAM function and Y.1731, which can quickly detect and locate faults. By using the Ethernet OAM technology and switchover technologies, the S5700 can provide millisecond-level protective switchover for networks.

Well-designed QoS policies and security mechanisms

- The S5700 implements complex traffic classification based on packet information such as the 5-tuple, IP preference, ToS, DSCP, IP protocol type, ICMP type, TCP source port, VLAN ID, Ethernet protocol type, and CoS. ACLs can be applied to inbound or outbound direction on an interface. The S5700 supports a flow-based two-rate three-color CAR. Each port supports eight priority queues and multiple queue scheduling algorithms such as WRR, DRR, SP, WRR+SP, and DRR+SP. All of these ensure the quality of voice, video, and data services.

- The S5700 provides multiple security measures to defend against Denial of Service (DoS) attacks, and attacks against networks or users. DoS attack types include SYN Flood attacks, Land attacks, Smurf attacks, and ICMP Flood attacks. Attacks to networks refer to STP BPDU/root attacks. Attacks to users include bogus DHCP server attacks, man-in-the-middle attacks, IP/MAC spoofing attacks, DHCP request flood attacks. DoS attacks that change the CHADDR field in DHCP packets are also attacks against users.

- The S5700 supports DHCP snooping, which generates user binding entries based on MAC addresses, IP addresses, IP address leases, VLAN IDs, and access interfaces of users. DHCP snooping discards invalid packets that do not match any binding entries, such as ARP spoofing packets and IP spoofing packets. This prevents man-in-the-middle attacks to campus networks that hackers initiate by using ARP packets. The interface connected to a DHCP server can be configured as a trusted interface to protect the system against bogus DHCP server attacks.

- The S5700 supports strict ARP learning, which prevents ARP spoofing attacks that will exhaust ARP entries. It also provides IP source check to prevent DoS attacks caused by MAC address spoofing, IP address spoofing, and MAC/IP spoofing.

- The S5700 supports centralized MAC address authentication, 802.1x authentication, and NAC. It authenticates users based on statically or dynamically bound user information such as the user name, IP address, MAC address, VLAN ID, access interface, and flag indicating whether antivirus software is installed. VLANs, QoS policies, and ACLs can be applied to users dynamically.

- The S5700 can limit the number of MAC addresses learned on an interface to prevent attackers from exhausting MAC address entries by using bogus source MAC addresses. This function minimizes packet flooding that occurs when MAC addresses of users cannot be found in the MAC address table.

Easy deployment and maintenance free

- The S5700 supports automatic configuration, plug-and-play, deployment using a USB flash drive, and batch remote upgrade. These capabilities simplify device management and maintenance and reduce maintenance costs. The S5700 supports SNMP v1/v2/v3 and provides flexible methods for managing devices. Users can manage the S5700 using the CLI, Web NMS, Telnet, and HGMP. The NQA function helps users with network planning and upgrades. In addition, the S5700 supports NTP, SSH v2, HWTACACS , RMON, log hosts, and port-based traffic statistics.

- The S5700 supports GVRP（GARP VLAN Registration Protocol）, which dynamically distributes, registers, and propagates VLAN attributes to reduce manual configuration workloads of network administrators and to ensure correct VLAN configuration. In a complex network topology, GVRP simplifies VLAN configuration and reduces network communication faults caused by incorrect VLAN configuration.

- The S5700 supports MUX VLAN. MUX VLAN isolates Layer 2 traffic between interfaces in a VLAN. Interfaces in a subordinate separate VLAN can communicate with ports in the principal VLAN but cannot communicate with each other. MUX VLAN is usually used on an enterprise intranet to isolate user interfaces from each other but allow them to communicate with server interfaces. This function prevents communication between network devices connected to certain interfaces or interface groups but allows the devices to communicate with the default gateway.

PoE function

- The S5700 PWR can use PoE power supplies with different power levels to provide -48V DC power for powered devices (PDs) such as IP Phones, WLAN APs, and Bluetooth APs. In its role as power sourcing equipment (PSE), the S5700 PWR complies with IEEE 802.3af and 802.3at (PoE+) and can work with PDs that are incompatible with 802.3af or 802.3at. Each port provides a maximum of 30 W power, complying with IEEE 802.3at. The PoE+ function increases the maximum power of each port and implements intelligent power management for high-power consumption applications. This facilitates the use of PDs. PoE ports can work in power-saving mode. The S5700 PWR provides improved PoE solutions. Users can configure whether and when a PoE port supplies power.

High scalability

- The S5700 supports intelligent stacking (iStack). Multiple S5700s can be connected with stack cables to set up a stack, which functions as a virtual switch. A stack consists of a master switch, a backup switch, and several slave switches. The backup switch takes over services when the master switch fails, reducing service interruption time. Stacks support intelligent upgrade so that users do not need to change the software version of a switch when adding it to a stack. The iStack function allows users to connect multiple switches with stack cables to expand system capacity. These switches can be managed using a single IP address, which greatly reduces the costs of system expansion, operation, and maintenance. Compared with traditional networking technologies, iStack has advantages in scalability, reliability, and system architecture.

Various IPv6 features

- The S5700 supports IPv4/IPv6 dual stack and can migrate from an IPv4 network to an IPv6 network. S5700 hardware supports IPv4/IPv6 dual stack, IPv6 over IPv4 tunnels (including manual tunnels, 6to4 tunnels, and ISATAP tunnels), and Layer 3 line-speed forwarding. The S5700 can be deployed on IPv4 networks, IPv6 networks, or networks that run both IPv4 and IPv6. This makes networking flexible and enables a network to migrate from IPv4 to IPv6.

Product Specifications

| Item	S5700-SI				S5700-EI			S5700-HI	
	S5700-24TP-SI/S5700-24TP-PWR-SI	S5700-28C-SI	S5700-48TP-SI/S5700-48TP-PWR-SI	S5700-52C-SI	S5700-28C-EI/S5700-28C-PWR-EI	S5700-28C-EI-24S	S5700-52C-EI/S5700-52C-PWR-EI	S5700-28C-HI	S5700-28C-HI-24S
1000M port	20*10/100/1000Base-TX, 4*GE Combo		44*10/100/1000BaseTX, 4*GECombo	48*10/100/1000Base-TX	24*10/100/1000Base-TX	20*100/1000Base-X, 4*GE Combo	48*10/100/1000Base-TX	24*10/100/1000Base-TX	24*100/1000Base-X
Extended slot	The S5700TP provides an extended slot for a stack card The S5700-28C and S5700-52C provide two extended slots, one for an uplink subcard and the other for a stack card. The S5700HI provides an extended slot for an uplink subcard								
MAC address table	IEEE 802.1d compliance 32 K MAC address entries on the S5700EI and S5700HI, 16 K MAC address entries on the S5700SI MAC address learning and aging Static, dynamic, and blackhole MAC address entries Packet filtering based on source MAC addresses								
VLAN	4 K VLANs Guest VLAN and voice VLAN VLAN assignment based on MAC addresses, protocols, IP subnets, policies, and ports 1:1 and N:1 VLAN Mapping								
Reliability	RRPP ring topology and RRPP multi-instance Smart Link tree topology and Smart Link multi-instance, providing the millisecond-level protection switchover SEP BFD for OSPF, BFD for IS-IS, BFD for VRRP, and BFD for PIM (S5700EI and S5700HI) STP, RSTP, and MSTP BPDU protection, root protection, and loop protection E-Trunk								
MPLS features	Not supported							MPLS MPLS VLL	
IP routing	Static routing, RIPv1, RIPv2, and ECMP				Static routing, RIPv1, RIPv2, OSPF, IS-IS, BGP, and ECMP				
IPv6 features	Neighbor Discovery (ND) Path MTU (PMTU) IPv6 ping, IPv6 tracert, and IPv6 Telnet 6to4 tunnel, ISATAP tunnel, and manually configured tunnel ACLs based on the source IPv6 address, destination IPv6 address, Layer 4 ports, or protocol type MLD v1/v2 snooping								
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 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				

Item	S5700-SI				S5700-EI			S5700-HI	
	S5700-24TP-SI/S5700-24TP-PWR-SI	S5700-28C-SI	S5700-48TP-SI/S5700-48TP-PWR-SI	S5700-52C-SI	S5700-28C-EI/S5700-28C-PWR-EI	S5700-28C-EI-24S	S5700-52C-EI/S5700-52C-PWR-EI	S5700-28C-HI	S5700-28C-HI-24S
QoS/ACL	Rate limiting on packets sent and received by an interface Packet redirection Port-based traffic policing and two-rate three-color CAR Eight queues on each port WRR, DRR, SP, WRR+SP, and DRR+SP queue scheduling algorithms WRED (supported by the S5700HI) Re-marking of the 802.1p priority and DSCP priority 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, port number, protocol type, and VLAN ID Rate limiting in each queue and traffic shaping on ports								
Security	User privilege management and password protection DoS attack defense, ARP attack defense, and ICMP attack defense Binding of the IP address, MAC address, interface, and VLAN Port isolation, port security, and sticky MAC Blackhole MAC address entries Limit on the number of learned MAC addresses 802.1x authentication and limit on the number of users on an interface AAA authentication, RADIUS authentication, HWTACACS authentication, and NAC SSH v2.0 Hypertext Transfer Protocol Secure (HTTPS) CPU defense Blacklist and whitelist								
OAM	Supports							Hardware implementation EFM OAM CFM OAM Y.1731 performance test supports hardware-level delay and jitter detection	
Management and maintenance	Stacking (The S5700HI do not support this function) MAC Forced Forwarding (MFF) Virtual cable test Port mirroring and RSPAN (remote port mirroring) Remote configuration and maintenance by using Telnet SNMP v1/v2/v3 RMON Web NMS HGMP System logs and alarms of different levels GVRP MUX VLAN 802.3az EEE (supported by the S5700HI)								
Operating environment	Operating temperature: 0℃–50℃ (long term); -5℃–55℃ (short term) Relative humidity: 10%–90% (non-condensing)								
Input voltage	AC: Rated voltage range: 100 V to 240 V AC, 50/60 Hz Maximum voltage range: 90 V to 264 V AC, 50/60 Hz DC: Rated voltage range: –48 V to –60 V, DC Maximum voltage range: –36 V to –72 V DC Note: PoE-support switches do not use DC power supplies.								
Dimensions (W x D x H)	442 mm x 220 mm x 43.6 mm	442 mm x 420 mm x 43.6 mm						442 mm x 220 mm x 43.6 mm	

Item	S5700-SI				S5700-EI			S5700-HI	
	S5700-24TP-SI/S5700-24TP-PWR-SI	S5700-28C-SI	S5700-48TP-SI/S5700-48TP-PWR-SI	S5700-52C-SI	S5700-28C-EI/S5700-28C-PWR-EI	S5700-28C-EI-24S	S5700-52C-EI/S5700-52C-PWR-EI	S5700-28C-HI	S5700-28C-HI-24S
Power consumption	Non-POE: < 40 W POE: < 455 W (PoE power: 370 W)	< 56 W	Non-POE: < 64 W POE: < 907 W (PoE power: 740 W)	< 78 W	Non-POE: < 60 W POE: < 472 W (PoE power: 370 W)	< 63 W	Non-POE: < 88 W POE: < 930 W (PoE power: 740 W)	< 93 W	

Applications

On Large-sized Enterprise Networks

The S5700 can function as an access device on a large-sized enterprise network or an aggregation device on a small-sized or medium-sized campus network. It supports link aggregation and dual-homing to improve network reliability.
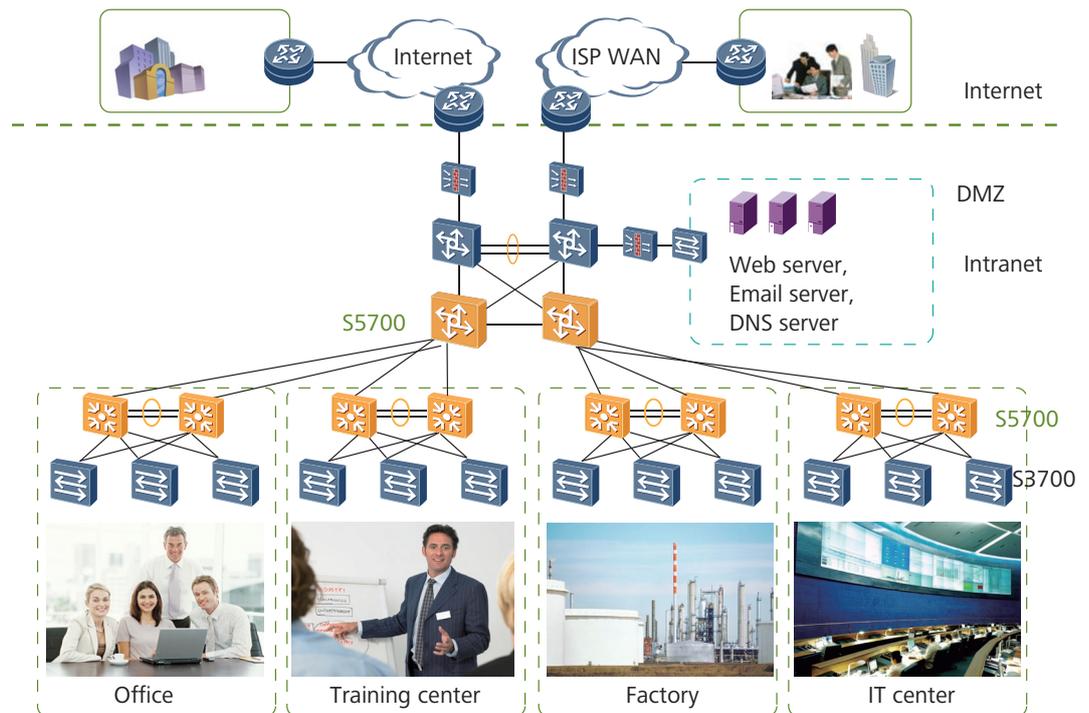
In Data Centers

The S5700 can be used in a data center. It connects to gigabit servers and aggregates traffic from the servers to uplink devices through trunk links. If multiple servers are available, an S5700 stack can be used to facilitate network maintenance and improve network reliability.
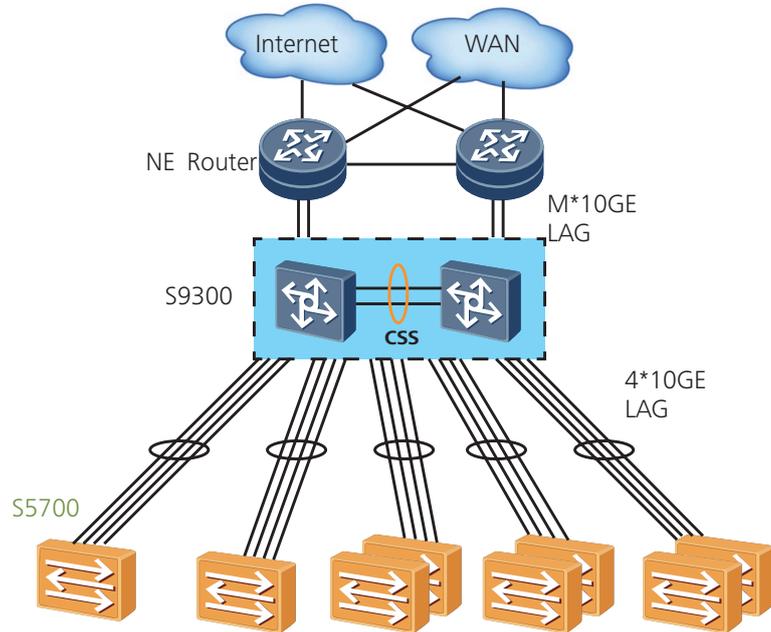
1000 Mbit/s Access Rate for Terminals

Several S5700s can constitute a stack to provide 1000 Mbit/s access rate for terminals. Only four pairs of optical fibers are required to connect the stack to uplink devices. This reduces the number of optical fibers and ports needed on uplink devices and enhances network reliability.
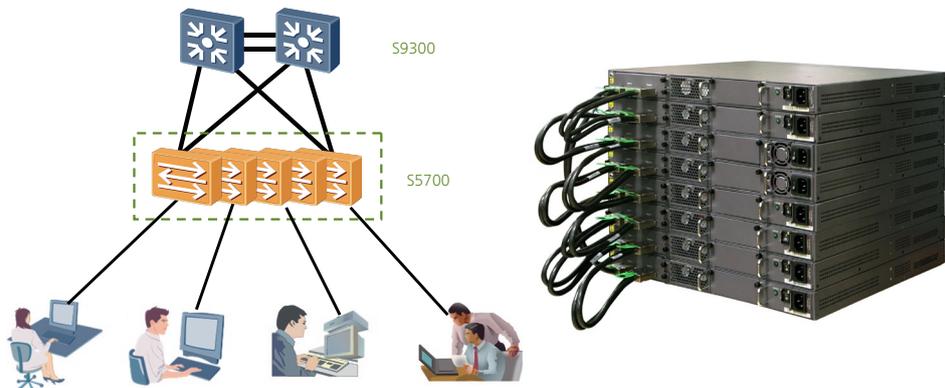
Product List

Product Description
S5700-28C-HI (two hot-swappable power supplies, with the input voltage of 220 V AC or –48 V DC)
S5700-28C-HI-24S (two hot-swappable power supplies, with the input voltage of 220 V AC or –48 V DC)
S5700-24TP-SI-AC (input voltage: 220 V AC)
S5700-24TP-SI-DC (input voltage: –48 V DC)
S5700-48TP-SI-AC (input voltage: 220 V AC)
S5700-48TP-SI-DC (input voltage: –48 V DC)
S5700-28C-SI (two hot-swappable power supplies, with the input voltage of 220 V AC or –48 V DC)
S5700-28C-EI (two hot-swappable power supplies, with the input voltage of 220 V AC or –48 V DC)
S5700-52C-SI (two hot-swappable power supplies, with the input voltage of 220 V AC or –48 V DC)
S5700-52C-EI (two hot-swappable power supplies, with the input voltage of 220 V AC or –48 V DC)
S5700-28C-EI-24S (two hot-swappable power supplies, with the input voltage of 220 V AC or –48 V DC)
S5700-24TP-PWR-SI (two hot-swappable AC power supplies, with the input voltage of 220 V, providing the PoE function)
S5700-48TP-PWR-SI (two hot-swappable AC power supplies, with the input voltage of 220 V, providing the PoE function)
S5700-28C-PWR-EI (two hot-swappable AC power supplies, with the input voltage of 220 V, providing the PoE function)
S5700-52C-PWR-EI (two hot-swappable AC power supplies, with the input voltage of 220 V, providing the PoE function)
4*GE SFP subcard
2*10GE SFP+ subcard
4*10GE SFP+ subcard
Stack card
250 W PoE power supply unit
500 W PoE power supply unit

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

Huawei Enterprise S3700 Series Switches

Product Overview

The S3700 enterprise switches (S3700 for short) are next-generation energy-saving Layer 3 switches. The S3700 utilizes cutting-edge hardware and Huawei Versatile Routing Platform (VRP) software to provide high-performance access and aggregation to an enterprise campus network. It is easy to install and maintain. With its flexible VLAN deployment, PoE capabilities, comprehensive routing functions, and capability to migrate to an IPv6 network, the S3700 helps enterprise customers build a next generation IT network. In addition, the S3700 uses advanced reliability technologies such as stacking, VRRP, and RRPP, enhancing network robustness.

The S3700 is a 1 U high case-shaped device, provided in a standard version (SI), an enhanced version (EI), and an advanced version (HI). The SI version provides Layer 2 functions and basic Layer 3 functions. The EI version supports complex routing protocols and provides more functions than the SI version. The HI version supports higher-specification MAC addresses, routes, and multicast table entries, and more powerful hardware capabilities.

Product Appearance

S3700-26C-HI

- Twenty-two 10/100Base-TX ports, two gigabit combo ports (10/100/1000Base-T or 100/1000Base-X); a two-port gigabit optical-port card can be selected as the uplink interface card
- Supports dual pluggable power supplies, AC power supplies, and DC power supplies
- Forwarding performance: 9.3 Mpps

S3700-28TP-SI/EI

- Twenty-four 10/100Base-TX ports, two 1000Base-X SFP ports, and two gigabit combo ports (10/100/1000Base-T or 100/1000Base-X)
- Two models: AC model and DC model
- Forwarding performance: 9.6 Mpps

S3700-28TP-EI-MC-AC

- Twenty-four 10/100Base-TX ports, two 1000Base-X SFP ports, and two gigabit combo ports (10/100/1000Base-T or 100/1000Base-X)
- AC power supply
- Forwarding performance: 9.6 Mpps

S3700-28TP-PWR-EI

- Twenty-four 10/100Base-TX ports, two 1000Base-X SFP ports, and two gigabit combo ports (10/100/1000Base-T or 100/1000Base-X)
- AC power supply
- PoE+
- Forwarding performance: 9.6 Mpps

S3700-28TP-EI-24S-AC

- Twenty-four 100Base-FX SFP ports, two 1000Base-X SFP ports, and two gigabit combo ports (10/100/1000Base-T or 100/1000Base-X)
- AC power supply
- Forwarding performance: 9.6 Mpps

S3700-52P-SI-AC

- Forty-eight 10/100Base-TX ports, two 100/1000Base-X SFP ports, and two 1000Base-X SFP ports
- AC power supply and DC power supply for the EI version; AC power supply for the SI version
- Forwarding performance: 13.2 Mpps

S3700-52P-EI

- Forty-eight 10/100Base-TX ports, two 100/1000Base-X SFP ports, and two 1000Base-X SFP ports
- AC power supply and DC power supply for the EI version; AC power supply for the SI version
- Forwarding performance: 13.2 Mpps

S3700-52P-PWR-EI

- Forty-eight 10/100Base-TX ports, two 100/1000Base-X SFP ports, and two 1000Base-X SFP ports
- AC power supply
- PoE+
- Forwarding performance: 13.2 Mpps

S3700-52P-EI-48S

- Forty-eight 100Base-FX SFP ports, two 100/1000Base-X SFP ports, and two 1000Base-X SFP ports
- Two models: AC model and DC model
- Forwarding performance: 13.2 Mpps

S3700-52P-EI-24S

- Twenty-four 10/100Base-TX ports, twenty-four 100Base-FX SFP ports, two 100/1000Base-X SFP ports, and two 1000Base-X SFP ports
- Two models: AC model and DC model
- Forwarding performance: 13.2 Mpps

Product Features

Powerful support for services

- The S3700 provides the Multi-VPN-Instance CE (MCE) function to isolate users in different VLANs on a device, ensuring data security and reducing costs.

- The S3700 supports multicast functions such as IGMP snooping, IGMP filter, fast leave, and IGMP proxy. It supports line-speed replication of multicast packets between VLANs, multicast load balancing among member interfaces of a trunk, and controllable multicast, meeting requirements for IPTV services and other multicast services.

PoE function

- The S3700 PWR support improved Power over Ethernet (PoE) function, and users can determine whether a PoE port provides power and the time a PoE port provides power.

- The S3700 PWR can use PoE power supplies with different power levels to provide -48V DC power for powered devices (PDs) such as IP Phones, WLAN APs, and Bluetooth APs. In its role as power sourcing equipment (PSE), the S3700 PWR complies with IEEE 802.3af and 802.3at (PoE+) and can work with PDs that are incompatible with 802.3af or 802.3at. Each port provides a maximum of 30W power, complying with IEEE 802.3at. The PoE+ function increases the maximum power of each port and implements intelligent power management for high-power consumption applications. This facilitates the use of PDs. PoE ports can work in power-saving mode.

Comprehensive QoS policies and security mechanisms

- The S3700 implements complex traffic classification based on packet information such as the 5-tuple, IP preference, ToS, DSCP, IP protocol type, ICMP type, TCP source port, VLAN ID, Ethernet protocol type, and CoS. It supports a flow-based two-rate three-color CAR. Each port supports eight priority queues and multiple queue scheduling algorithms such as WRR, DRR, SP, WRR+SP, and DRR+SP. All of these ensure the quality of voice, video, and data services.

- The S3700 provides multiple security measures to defend against Denial of Service (DoS) attacks, and attacks against networks or users. DoS attack types include SYN Flood attacks, Land attacks, Smurf attacks, and ICMP Flood attacks. Attacks to networks refer to STP BPDU/root attacks. Attacks to users include bogus DHCP server attacks, man-in-the-middle attacks, IP/MAC spoofing attacks, DHCP request flood attacks. DoS attacks that change the CHADDR field in DHCP packets are also attacks against users.

- The S3700 supports DHCP snooping, which generates user binding entries based on MAC addresses, IP addresses, IP address leases, VLAN IDs, and access interfaces of users. DHCP snooping discards invalid packets that do not match any binding entries, such as ARP spoofing packets and IP spoofing packets. This prevents man-in-the-middle attacks to campus networks that hackers initiate by using ARP packets. The interface connected to a DHCP server can be configured as a trusted interface to protect the system against bogus DHCP server attacks.

- The S3700 supports strict ARP learning, which prevents ARP spoofing attacks that will exhaust ARP entries. It also provides IP source guard to prevent DoS attacks caused by MAC address spoofing, IP address spoofing, and MAC/IP spoofing.

- The S3700 supports centralized MAC address authentication and 802.1x authentication. It authenticates users based on statically or dynamically bound user information such as the user name, IP address, MAC address, VLAN ID, access interface, and flag indicating whether antivirus software is installed. VLANs, QoS policies, and ACLs can be applied to users dynamically.

- The S3700 can limit the number of MAC addresses learned on an interface to prevent attackers from exhausting MAC address entries by using bogus source MAC addresses. This function minimizes packet flooding that occurs when MAC addresses of users cannot be found in the MAC address table.

Various routing and IPv6 features

- The S3700 supports various routing protocols, including static routing, RIPv1, RIPv2, OSPF, IS-IS and BGP.

- S3700 hardware supports IPv4/IPv6 dual stack, IPv6 over IPv4 tunnels (including manual tunnels, 6to4 tunnels, and ISATAP tunnels), and Layer 3 line-speed forwarding. The S3700 can be deployed on IPv4 networks, IPv6 networks, or networks that run both IPv4 and IPv6. This makes networking flexible and enables a network to migrate from IPv4 to IPv6.

- The S3700 supports various IPv6 routing protocols including RIPng and OSPFv3. It uses the IPv6 Neighbor Discovery Protocol (NDP) to manage packets exchanged between neighbors. It also provides a path MTU (PMTU) discovery mechanism to select a proper MTU on the path from the source to the destination, optimizing network resource utilization and obtaining the maximum throughput.

High scalability and excellent reliability

- The S3700 supports intelligent stacking (iStack). Multiple S3700s can be connected with stack cables to set up a stack, which functions as a virtual switch. The backup switch takes over services when the master switches fails, reducing service interruption time. Stacks support intelligent upgrade so that users do not need to change the software version of a switch when adding it to a stack. The iStack function allows users to connect multiple switches with stack cables to expand system capacity. These switches can be managed using a single IP address, which greatly reduces the costs of system expansion, operation, and maintenance. Compared with traditional networking technologies, iStack has advantages in scalability, reliability, and system architecture.

- Besides STP, RSTP, and MSTP, the S3700 supports enhanced Ethernet reliability technologies such as Smart Link and RRPP, which implement millisecond-level protection switchover and ensure network reliability. It also provides RRPP multi-instance for load balancing among links, optimizing bandwidth usage.

- The S3700 supports BFD, which provides millisecond-level fault detection for protocols such as OSPF, IS-IS, VRRP, and PIM to improve network reliability. Complying with IEEE 802.3ah and 802.1ag, the S3700 supports point-to-point Ethernet fault management and can detect faults in the last mile of an Ethernet link to users.

- The reliability design of the S3700 is highly expansible and compatible. The S3700 can work with devices on existing networks, which protects investments of customers and enables customer to deploy new services.

Considerate maintenance-free design and manageability

- The S3700 adopts a maintenance-free design and supports batch remote upgrade. It provides multiple maintenance and management modes to help users to monitor various data. In addition, it supports HGMP v2, SNMP, NTP, SSH v2, HWTACACS+, RMON, port-based traffic statistics, and NQA.

- The S3700 supports GVRP（GARP VLAN Registration Protocol）, which dynamically distributes, registers, and propagates VLAN attributes to reduce manual configuration workloads of network administrators and to ensure correct VLAN configuration. In a complex network topology, GVRP simplifies VLAN configuration and reduces network communication faults caused by incorrect VLAN configuration.

- The S3700 supports MUX VLAN. MUX VLAN isolates Layer 2 traffic between interfaces in a VLAN. Interfaces in a subordinate separate VLAN can communicate with ports in the principal VLAN but cannot

communicate with each other. MUX VLAN is usually used on an enterprise intranet to isolate user interfaces from each other but allow them to communicate with server interfaces. This function prevents communication between network devices connected to certain interfaces or interface groups but allows the devices to communicate with the default gateway.

Unique fan-free and energy-saving design

- The S3700s with 24 electrical ports adopt a fan-free design, which dramatically reduces the power consumption and eliminates noises. This design reduces mechanical faults and protects the device against damages caused by condensed water and dust.

- The S3700 adopts an energy-saving integrated circuit design to ensure even heat dissipation. Idle ports can enter the sleep mode to further reduce power consumption.

- Radiation of the S3700 is within the range of radiation standards for electric appliances and has no harm to the human body.

Product Specifications

| Item | S3700-SI | | S3700-EI | | | | | | | S3700-HI |
	S3700-28TP-SI	S3700-52P-SI	S3700-28TP-EI, S3700-28TP-EI-MC	S3700-28TP-PWR-EI	S3700-28TP-EI-24S	S3700-52P-EI	S3700-52P-EI-24S	S3700-52P-EI-48S	S3700-52P-PWR-EI	S3700-26C-HI
100M port	24*10/100 Base-TX	48*10/100 Base-TX	24*10/100 Base-TX	24*10/100 Base-TX	24*100 Base-FX	48*10/100 Base-TX	24*10/100 Base-TX, 24*100 Base-FX	48*100 Base-FX,	48*10/100 Base-TX	22*10/100 Base-TX
1000M port	2*1000 Base-X, 2*(10/100/ 1000Base-T, or 100/1000 Base-X)	2*100/1000 Base-X, 2*1000 Base-X	2*1000 Base-X, 2*(10/100/ 1000Base-T, or 100/1000 Base-X)	2*1000 Base-X, 2*(10/100/ 1000Base-T, or 100/1000 Base-X)	2*1000 Base-X, 2*(10/100/ 1000Base-T, or 100/1000 Base-X)	2*100/1000 Base-X, 2*1000 Base-X	2*100/1000 Base-X, 2*1000 Base-X	2*100/1000 Base-X, 2*1000 Base-X	2*100/1000 Base-X, 2*1000 Base-X	2*(10/100/ 1000Base-T or 100/1000 Base-X)
Extended slot	The S3700HI provides an extended slot for an uplink subcard									
MAC address table	IEEE 802.1d compliance 16 K MAC address entries MAC address learning and aging Static, dynamic, and blackhole MAC address entries Packet filtering based on source MAC addresses									32 K MAC address entries Same as EI for the other items
VLAN	4 K VLANs Guest VLANs, voice VLAN, and super VLAN VLAN assignment based on MAC addresses, protocols, and IP subnets QinQ Selective QinQ 1:1 VLAN mapping N:1 VLAN mapping									

Item	S3700-SI		S3700-EI							S3700-HI
	S3700-28TP-SI	S3700-52P-SI	S3700-28TP-EI, S3700-28TP-EI-MC	S3700-28TP-PWR-EI	S3700-28TP-EI-24S	S3700-52P-EI	S3700-52P-EI-24S	S3700-52P-EI-48S	S3700-52P-PWR-EI	S3700-26C-HI
Reliability	RRPP (ring topology, intersecting rings, and multi-instance), implementing protection switchover within 50 ms Smart Link tree topology and Smart Link multi-instance, providing the millisecond-level protection switchover STP, RSTP, and MSTP BPDU protection, root protection, and loop protection Smart Ethernet Protection (SEP)									Enhanced Trunk (E-Trunk) Same as EI for the other items
	N/A		BFD for OSPF, BFD for IS-IS, BFD for VRRP, and BFD for PIM							
IP routing	Static routing, RIPv1, RIPv2, and ECMP									
	N/A		OSPF, IS-IS, and BGP							
IPv6 features	Neighbor Discovery (ND) Path MTU (PMTU) IPv6 ping, IPv6 tracert, and IPv6 Telnet Manually configured tunnel 6to4 tunnel ISATAP tunnel ACLs based on the source IPv6 address, destination IPv6 address, Layer 4 ports, or protocol type MLD v1/v2 snooping									
Multicast	1 K multicast groups IGMP v1/v2/v3 snooping and IGMP fast leave Multicast VLAN and multicast replication between VLANs Multicast load balancing among member ports of a trunk Controllable multicast Port-based multicast traffic statistics									2048 multicast groups Same as EI for the other items
	N/A		IGMP v1/v2/v3, PIM-SM, PIM-DM, and PIM-SSM							
QoS/ACL	Rate limiting on packets sent and received by an interface Packet redirection Port-based traffic policing and two-rate three-color CAR Eight queues on each port WRR, DRR, SP, WRR+SP, and DRR+SP queue scheduling algorithms WRED (S3700HI) Re-marking of the 802.1p priority and DSCP priority 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, port number, protocol type, and VLAN ID Rate limiting in each queue and traffic shaping on ports									
Security	User privilege management and password protection DoS attack defense, ARP attack defense, and ICMP attack defense Binding of the IP address, MAC address, interface, and VLAN Port isolation, port security, and sticky MAC Blackhole MAC address entries Limit on the number of learned MAC addresses 802.1x authentication and limit on the number of users on an interface AAA authentication, RADIUS authentication, HWTACACS authentication, and NAC SSH v2.0 CPU defense Blacklist and whitelist									
Surge protection	All service ports have a surge protection capability of 6 KV, which can be increased to 15 KV by using additional surge protection devices.									

Item	S3700-SI		S3700-EI							S3700-HI
	S3700-28TP-SI	S3700-52P-SI	S3700-28TP-EI, S3700-28TP-EI-MC	S3700-28TP-PWR-EI	S3700-28TP-EI-24S	S3700-52P-EI	S3700-52P-EI-24S	S3700-52P-EI-48S	S3700-52P-PWR-EI	S3700-26C-HI
Management and maintenance	iStack (except the S3700HI) MAC Forced Forwarding (MFF) Remote configuration and maintenance by using Telnet Auto-Config. Virtual cable test Ethernet OAM (IEEE 802.3ah and 802.1ag) Dying gasp power-off alarm(S3700-28TP-EI-MC-AC and S3700-26C-HI) Port mirroring and RSPAN (remote port mirroring) SNMPv1/v2/v3 and RMON MUX VLAN and GVRP Web NMS Auto-Config and HGMP SSHv2 HTTPS (S3700HI) 802.3az EEE(S3700HI) System logs and alarms of different levels									
Operating environment	Operating temperature: 0℃–50℃ (long term); -5℃–55℃ (short term) Relative humidity: 10%–90% (non-condensing)									
Power supply	AC: Rated voltage range: 100 V to 240 V AC; 50/60 Hz Maximum voltage range: 90 V to 264 V AC; 50/60 Hz DC: Rated voltage range: –48 V to –60 V DC Maximum voltage range: –36 V to –72 V DC Note: PoE-support switches do not use DC power supplies.									
Dimensions (W x D x H)	S3700-28TP-EI/SI, S3700-28TP-EI-MC, S3700-28TP-EI-24S, S3700-52P-EI/SI , S3700-26C-HI: 442 mm x 220 mm x 43.6 mm S3700-28TP-PWR-EI, S3700-52P-EI-48S, S3700-52P-EI-24S, S3700-52P-PWR-EI: 442 mm x 420 mm x 43.6 mm									
Weight	< 2.5 kg	< 3 kg	E I: < 2.5 kg MC: < 2.4 kg	< 4.3 kg (without power supply)	< 2.6 kg	< 3 kg	< 4.8 kg	< 4.8 kg	< 4.5 kg (without power supply)	<3.3 kg (without power supply)
Power consumption	< 20 W	< 38 W	< 20 W	<875 W (PoE power: 740 W)	<52 W	< 38 W	< 66 W	< 92 W	<880 W (PoE power: 740 W)	< 62 W

Applications

On Large-sized Enterprise Networks

The S3700 can function as an access device on large-sized enterprise networks.
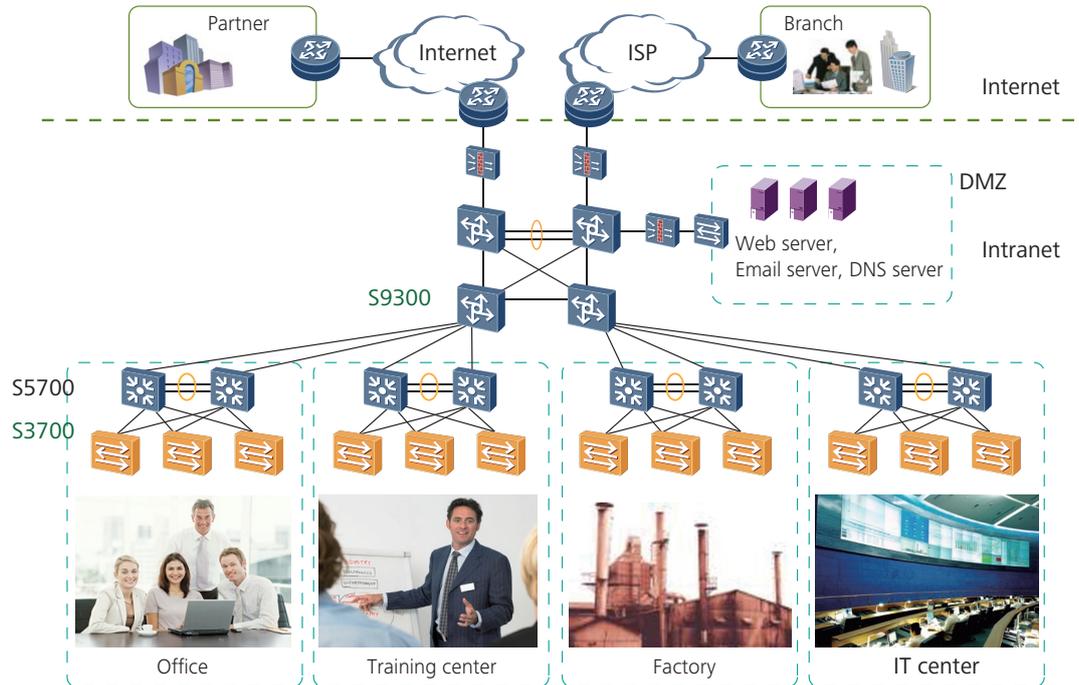
On Middle-sized and Small-sized Enterprise Networks

Middle-sized and small-sized enterprises can use S3700s as core switches. The S3700s provide routing functions to help users in different departments to communicate with each other. Multiple S3700s can set up a stack to expand system capacity and increase the number of ports.
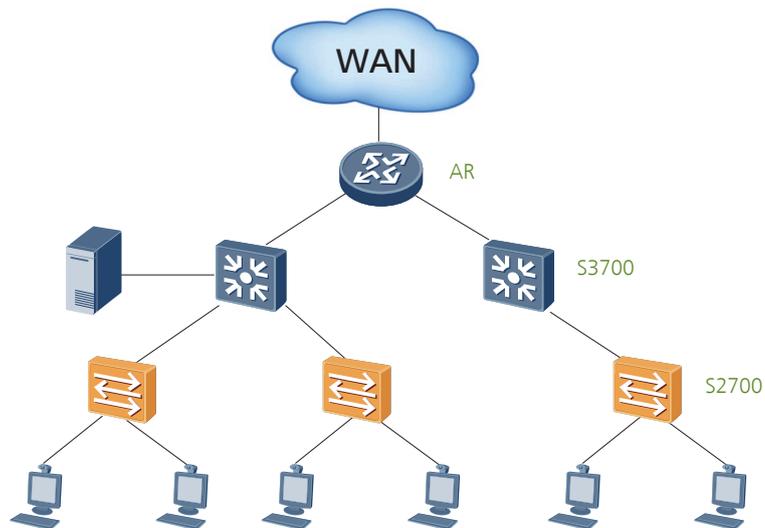
Product List

Product Description
S3700-26C-HI (supports two pluggable AC and DC power supplies, with the input voltage of 220 VAC or –48 VDC)
S3700-28TP-SI (input voltage: 220 V AC or –48 V DC)
S3700-28TP-EI (input voltage: 220 V AC or –48 V DC)
S3700-28TP-EI-MC (input voltage: 220 V AC)
S3700-28TP-EI-24S (input voltage: 220 V AC)
S3700-52P-SI (input voltage: 220 V AC)
S3700-52P-EI (input voltage: 220 V AC or –48 V DC)
S3700-52P-EI-48S (input voltage: 220 V AC or –48 V DC)
S3700-52P-EI-24S (input voltage: 220 V AC or –48 V DC)
S3700-28TP-PWR-EI (two hot swappable AC power supplies, with the input voltage of 220 V, providing the PoE function)
S3700-52P-PWR-EI (two hot swappable AC power supplies, with the input voltage of 220 V, providing the PoE function)
250 W PoE power supply unit
500 W PoE power supply unit
2-port GE optical-port card (the 37HI only)

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

Huawei Enterprise S2700 Series Switches

Product Overview

The S2700 enterprise switches (S2700 for short) are next-generation energy-saving 100M Ethernet intelligent switches. The S2700 utilizes cutting-edge switching technologies and Huawei Versatile Routing Platform (VRP) software to meet the demand for multi-service provisioning and access on Ethernet networks. It is easy to install and maintain and is for use in various enterprise network scenarios. With its flexible VLAN deployment, comprehensive security and QoS policies, and energy-saving technologies, the S2700 helps enterprise customers build a next generation IT network.

The S2700 is a 1 U high case-shaped device and comes in a standard version (SI) or an enhanced version (EI).

Product Appearance

S2700-9TP-EI/SI	

- Eight 10/100Base-TX ports and one gigabit combo port (10/100/1000Base-T or 100/1000Base-X)
- AC power supply and DC power supply for the EI version; AC power supply for the SI version
- Forwarding performance: 2.7 Mpps

S2700-9TP-PWR-EI	

- Eight 10/100Base-TX ports and one gigabit combo port (10/100/1000Base-T or 100/1000Base-X)
- AC power supply
- PoE+
- Forwarding performance: 2.7 Mpps

S2700-18TP-EI/SI	

- Sixteen 10/100Base-TX ports and two gigabit combo ports (10/100/1000Base-T or 100/1000Base-X)
- AC power supply
- Forwarding performance: 5.4 Mpps

S2700-26TP-EI/SI	

- Twenty-four 10/100Base-TX ports and two gigabit combo ports (10/100/1000Base-T or 100/1000Base-X)
- AC power supply and DC power supply for the EI version; AC power supply for the SI version
- Forwarding performance: 6.6 Mpps

S2700-26TP-PWR-EI	• Twenty-four 10/100Base-TX ports and two gigabit combo ports (10/100/1000Base-T or 100/1000Base-X)
	• AC power supply
	• PoE+
	• Forwarding performance: 6.6 Mpps

S2700-52P-EI	• Forty-eight 10/100Base-TX ports, two 100/1000Base-X SFP ports, and two 1000Base-X SFP ports
	• AC power supply
	• Forwarding performance: 13.2 Mpps

Product Features

Maintenance free, easy deployment, and easy management

• The S2700 supports automatic configuration and plug-and-play, which dramatically reduces maintenance costs. It adopts new application-specific integrated circuit (ASIC) switching technique and a fan-free design. This design reduces mechanical faults and protects the device against damages caused by condensed water and dust, reducing 53% of the maintenance workloads.

• The S2700 supports batch remote upgrade, which makes the device easy to use and deploy. It provides a Web NMS system with a user-friendly GUI to implement automatic topology discovery, alarm management, and visual configuration, facilitating operation and maintenance. The NQA (Network Quality Analyzing) function helps users with network planning and upgrades. In addition, the S2700 supports HGMP v2, SSH v2, HWTACACS, RMON, and port-based traffic statistics.

• The S2700 supports GVRP （GARP VLAN Registration Protocol）, which dynamically distributes, registers, and propagates VLAN attributes to reduce manual configuration workloads of network administrators and to ensure correct VLAN configuration.

Flexible service control

• The S2700-EI supports various ACLs. ACL rules can be applied to VLANs to flexibly control ports and schedule resources in VLANs.

• The S2700 supports port-based VLAN assignment and MAC address-based VLAN assignment. Port-based VLAN assignment is applicable to networks where users move frequently, and MAC address-based VLAN assignment is applicable to networks that require high security.

Excellent security features

• The S2700 supports DHCP snooping, which generates user binding entries based on MAC addresses, IP addresses, IP address leases, VLAN IDs, and access interfaces of users. The DHCP snooping function protects enterprises against common attacks such as bogus IP packet attack, man-in-the-middle attack, and bogus DHCP server attack.

• The S2700 can limit the number of MAC addresses learned on an interface to prevent attackers from exhausting MAC address entries by using bogus source MAC addresses. This function minimizes packet flooding that occurs when MAC addresses of users cannot be found in the MAC address table. The S2700 can also limit the number of ARP entries to prevent ARP spoofing attacks. In addition, it provides the IP source check function to prevent malicious users from using spoofed IP address to initiate DoS attacks.

- The S2700 supports centralized MAC address authentication and 802.1x authentication. It authenticates users based on statically or dynamically bound user information such as the user name, IP address, MAC address, VLAN ID, access interface, and flag indicating whether antivirus software is installed. VLANs, QoS policies, and ACLs can be applied to users dynamically.

PoE function

- The S2700 PWR can use PoE (Power over Ethernet) power supplies with different power levels to provide -48V DC power for powered devices (PDs) such as IP Phones, WLAN APs, and Bluetooth APs. In its role as power sourcing equipment (PSE), the S2700 PWR complies with IEEE 802.3af and 802.3at (PoE+) and can work with PDs that are incompatible with 802.3af or 802.3at （POE+）. Each port provides a maximum of 30W power, complying with IEEE 802.3at. The PoE+ function increases the maximum power of each port and implements intelligent power management for high-power consumption applications. This facilitates the use of PDs. PoE ports can work in power-saving mode.

High scalability

- The S2700 supports intelligent stacking (iStack). Multiple S2700s can be connected with stack cables to set up a stack, which functions as a virtual switch. The backup switch takes over services when the master switch fails, reducing service interruption time. Stacks support intelligent upgrade so that users do not need to change the software version of a switch when adding it to a stack. The iStack function allows users to connect multiple switches with stack cables to expand system capacity. These switches can be managed using a single IP address, which greatly reduces the costs of system expansion, operation, and maintenance. Compared with traditional networking technologies, iStack has advantages in scalability, reliability, and system architecture.

Comprehensive QoS policies

- The S2700 supports complex traffic classification based on VLAN IDs, source MAC/IP addresses, destination MAC/IP addresses, IP protocols, priorities, or port numbers of packets. By limiting the traffic rate based on traffic classification results, the S2700 implements line-speed forwarding on each port to ensure high quality of the voice, video, and data services. Each port supports four queues and multiple queue scheduling algorithms such as WRR, SP, and WRR+SP.

Powerful surge protection capability

- The S2700 adopts a Huawei patented surge protection technique to prevent lightning induced overvoltage. All ports of the S2700 have a surge protection capability of 6 KV, increasing lightning-proof capacity for 8 times than 4KV switches. The Huawei patented surge protection technique greatly reduces the possibility of lightning damages on the equipment even in atrocious environments or in scenarios where grounding cannot be implemented.

No noise, energy conservation, and low radiation

- The S2700 adopts an energy-saving integrated circuit design to ensure even heat dissipation. Idle ports can enter the sleep mode to further reduce power consumption. The S2700 generates no noises because it does not have any fans. Radiation of the S2700 is within the range of radiation standards for electric appliances and has no harm to the human body.

Product Specifications

Item	S2700-EI						S2700-SI		
	S2700-9TP-EI	S2700-9TP-PWR-EI	S2700-18TP-EI	S2700-26TP-EI	S2700-26TP-PWR-EI	S2700-52P-EI	S2700-9TP-SI	S2700-18TP-SI	S2700-26TP-SI
100M port	8*10/100 Base-TX	8*10/100 Base-TX	16*10/100 Base-TX	24*10/100 Base-TX	24*10/100 Base-TX	48*10/100 Base-TX	8*10/100 Base-TX	16*10/100 Base-TX	24*10/100 Base-TX
1000M port	1*Combo	1*Combo	2*combo	2*combo	2*combo	2*100/1000 Base-X, 2*1000Base-X	1*combo	2*combo	2*combo
MAC address table	8 K MAC address entries Manual creation and deletion of MAC address entries Aging time of MAC address entries Disabling MAC address learning on an interface or aggregation group Limit on the number of MAC addresses learned on an interface Blackhole MAC address entries								
VLAN	4 K VLANs, complying with IEEE 802.1Q Port-based VLAN assignment								
	MAC address-based VLAN assignment QinQ						N/A		
QoS	Port-based rate limiting and flow-based rate limiting Four queues of different priorities on each port Mapping between 802.1p priorities and queues SP, WRR, and SP+WRR algorithms								
	Traffic classification based on the source MAC address, destination MAC address, source IP address, destination IP address, Layer 4 port number, protocol type, VLAN ID, Ethernet protocol, and CoS. Flow-based priority marking and packet redirection						N/A		
IPv6 features	IPv6 host Static IPv6 routes IPv6 ACLs MLD v1/v2 snooping						IPv6 host Static IPv6 routes		
Multicast	IGMP v1/v2/v3 snooping Multicast load balancing among member ports of a trunk Port-based rate limiting and traffic statistics for multicast packets								
Port mirroring	1:1 and N:1 port mirroring								
	Traffic mirroring						N/A		
Security	802.1x authentication and limit on the number of users on an interface Dynamic ARP detection IP source guard						N/A		
	AAA authentication, RADIUS authentication, HWTACACS+ authentication, and NAC Binding of the IP address, MAC address, interface, and VLAN Port-based rate limiting Port isolation, port security, and sticky MAC Packet filtering Packet filtering based on MAC addresses Suppression of multicast, broadcast, and unknown unicast packets Limit on the number of learned MAC addresses CPU defense						Port isolation Suppression of multicast, broadcast, and unknown unicast packets CPU defense		
Surge protection	All service ports have a surge protection capability of 6 KV, which can be increased to 15 KV by using additional surge protection devices.								

Item	S2700-EI						S2700-SI		
	S2700-9TP-EI	S2700-9TP-PWR-EI	S2700-18TP-EI	S2700-26TP-EI	S2700-26TP-PWR-EI	S2700-52P-EI	S2700-9TP-SI	S2700-18TP-SI	S2700-26TP-SI
Device management	Stacking Auto-Config CLI-based configuration Remote configuration using Telnet SNMP V1/V2/V3 RMON HGMP v2 SSHv2 Web-based device management GVRP								
Operating environment	Operating temperature: 0℃–50℃ (long term); -5℃–55℃ (short term) Relative humidity: 10%–90% (non-condensing)								
Power supply	AC: Rated voltage range: 100 V to 240 V AC, 50/60 Hz Maximum voltage range: 90 V to 264 V AC, 50/60 Hz								
	DC: Rated voltage range: –48 V to –60 V DC Maximum voltage range: –36 V to –72 V DC Note: PoE-support switches do not use DC power supplies.						N/A		
Dimensions (W x D x H)	S2700-9TP-EI/SI: 250 mm x 180 mm x 43.6 mm S2700-9TP-PWR-EI: 320 mm x 220 mm x 43.6 mm S2700-18TP-EI/SI, S2700-26TP-EI/SI: 442 mm x 220 mm x 43.6 mm S2700-26TP-PWR-EI: 442 mm x 420 mm x 43.6 mm S2700-52P-EI: 442 mm x 220 mm x 43.6 mm								
Weight	< 1.4 kg	<2.5 kg	< 2.4 kg	< 2.4 kg	< 4 kg (without power supply)	< 3 kg	< 1.4 kg	< 2.4 kg	< 2.4 kg
Power consumption	< 12.8 W	Max. 154 W (PoE power supply provides 124 W power for PDs)	< 14.5 W	< 15.5 W	Max. 868 W (PoE power supply provides 740 W power for PDs)	< 38 W	< 12.8 W	< 14.5 W	< 15.5 W

Applications

100 Mbit/s Access Rate for Terminals

The S2700 can function as a desktop access device that provides 100 Mbit/s access rate for terminals and 1000 Mbit/s uplink interfaces to communicate with uplink devices.
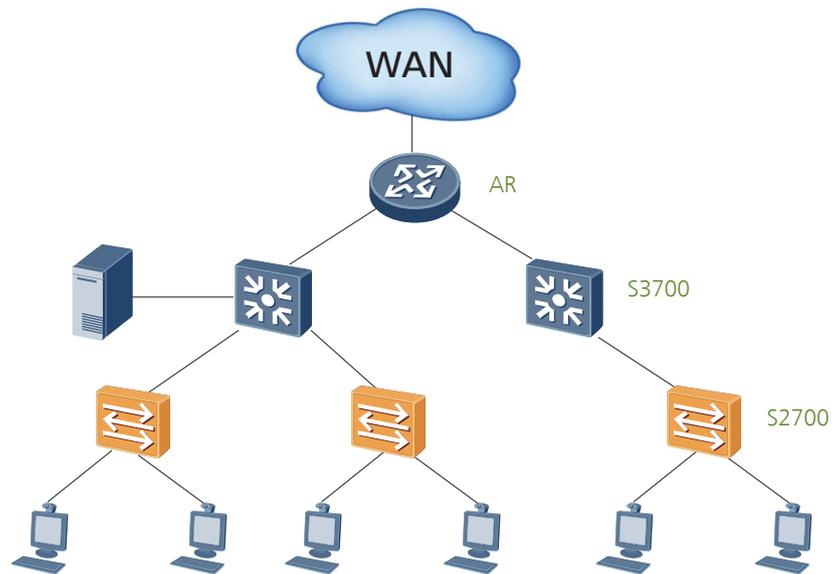
100 Mbit/s Access Rate for Terminals

The S2700 can function as a desktop access device that provides 100 Mbit/s access rate for terminals and 1000 Mbit/s uplink interfaces to communicate with uplink devices.

Product List

Product Description
S2700-9TP-EI (input voltage: 220 V AC or −48 V DC)
S2700-9TP-SI (input voltage: 220 V AC)
S2700-18TP-EI (input voltage: 220 V AC)
S2700-18TP-SI (input voltage: 220 V AC)
S2700-26TP-EI (input voltage: 220 V AC or −48 V DC)
S2700-26TP-SI (input voltage: 220 V AC)
S2700-52P-EI (input voltage: 220 V AC)
S2700-9TP-PWR-EI (input voltage: 220 V AC, providing the PoE function)
S2700-26TP-PWR-EI (two hot swappable AC power supplies, with the input voltage of 220 V, providing the PoE function)
250 W PoE power supply unit
500 W PoE power supply unit

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

Huawei Enterprise S1700 Series Switches

Product Overview

The Huawei Quidway® S1700 enterprise switch (S1700) is a next-generation energy-saving Ethernet access switch. The S1700 uses high-performance hardware provides a rich array of features to help customers build secure, reliable high-performance networks. It is easy to install and maintain and is suitable for use by middle-size and small-size enterprises, Internet cafes, hotel, and schools.

The S1700 series consist of SNMP-based switches, a web-managed switch, and unmanaged switches

Maintenance-free switches include S1700-8-AC, S1700-24-AC, S1700-52R-2T2P-AC, S1700-8G-AC, and S1724G; the web-managed switch is S1728GWR-4P; SNMP-based switches include S1700-28FR-2T2P-AC, S1700-52FR-2T2P-AC, S1700-28GFR-4P-AC, and S1700-52GFR-4P-AC.

Product Appearance

S1700-8-AC

- Eight 10/100 Mbit/s Ethernet electrical ports and AC power supply
- Packet forwarding rate: 1.2 Mpps
- Switching capacity: 1.6 Gbps

S1700-24-AC

- Twenty-four 10/100 Mbit/s Ethernet electrical ports and AC power supply
- Packet forwarding rate: 3.6 Mpps
- Switching capacity: 4.8 Gbps

S1700-52R-2T2P-AC

- Forty-eight 10/100 Mbit/s Ethernet electrical ports, two GE electrical ports, and two GE optical ports, and AC power supply
- Packet forwarding rate: 13.2 Mpps
- Switching capacity: 17.6 Gbps

S1700-8G-AC

- Eight 10/100/1000 Mbit/s Ethernet electrical ports and AC power supply
- Packet forwarding rate: 12 Mpps
- Switching capacity: 16 Gbps

S1724G

- Twenty-four 10/100/1000 Mbit/s Ethernet electrical ports and AC power supply
- Packet forwarding rate: 36 Mpps
- Switching capacity: 48 Gbps

S1728GWR-4P

- Twenty-four 10/100/1000 Mbit/s Ethernet electrical ports and four GE SFP optical ports, and AC power supply
- Packet forwarding rate: 42 Mpps
- Switching capacity: 56 Gbps

S1700-28FR-2T2P-AC

- Forty-eight 10/100 Mbit/s Ethernet electrical ports, two GE RJ45 ports, and two GE SFP ports, and AC power supply
- Packet forwarding rate: 9.6Mpps
- Switching capacity: 12.8 Gbps

S1700-52FR-2T2P-AC

- Forty-eight 10/100 Mbit/s Ethernet electrical ports, two GE RJ45 ports, and two GE SFP ports, and AC power supply
- Packet forwarding rate: 13.2Mpps
- Switching capacity: 17.6 Gbps

S1700-28GFR-4P-AC

- Twenty-four 10/100/1000 Mbit/s Ethernet electrical ports and four GE SFP ports, and AC power supply
- Packet forwarding rate: 42 Mpps
- Switching capacity: 56 Gbps

S1700-52GFR-4P-AC

- Forty-eight 10/100/1000 Mbit/s Ethernet electrical ports and four GE SFP ports, and AC power supply
- Packet forwarding rate: 78 Mpps
- Switching capacity: 104 Gbps

Product Features

Innovative energy saving design

- All the S1700 series switches except the S1700-52GFR-4P-AC use a fan-free design that reduces power consumption and noise.
- The S1700 supports Energy Efficient Ethernet (EEE) that enables the switch to enter power-saving mode when the traffic is light.
- The S1700 can adjust power output for transmissions based on the cable length and set ports that are

transmitting no traffic to sleep mode.

Non-blocking and high-speed forwarding

- All S1700 ports provide Layer 2 wire-speed forwarding capabilities to ensure non-blocking packet forwarding. Most S1700 models provide optical and electrical GE uplink ports, which facilitate user access and are cost-effective.

- The S1700 MAC address table supports up to 8K of MAC addresses, making it easy to expand networks and deploy new services.

Convenient management and maintenance

- The S1700 is easy to manage and maintain and comes with one-key operation button on the front panel.

- Web-managed S1700 models come with a web network management system, making it easy to configure switches.

- SNMP-based S1700 models allow for the use of an SNMP-based NMS for centralized configuration and management.

Powerful security performance

- The S1700 provides a range of security features, including 802.1x, RADIUS, and NAC. The S1700 also supports packet filtering based on MAC addresses or ports to defend against hacker and virus attacks.

Great networking and bandwidth extensibility

- The S1700 provides LACP, STP, RSTP, and MSTP functions to implement link aggregation and backup. SNMP-based switches support up to eight MSTP instances for flexible networking.

Product Specifications

S1700 hardware specifications

Type	Unmanaged Switch					Web-managed Switch	SNMP-based Switch			
Model	S1700-8-AC	S1700-24-AC	S1700-52R-2T2P-AC	S1700-8G-AC	S1724G	S1728GWR-4P	S1700-28FR-2T2P-AC	S1700-52FR-2T2P-AC	S1700-28GFR-4P-AC	S1700-52GFR-4P-AC
Downlink port	Eight 10/100 Mbit/s electrical interfaces	Twenty-four 10/100 Mbit/s electrical ports	Forty-eight 10/100 Mbit/s electrical ports	Eight 10/100/1000 Mbit/s electrical ports	Twenty-four 10/100/1000 Mbit/s electrical ports	Twenty-four 10/100/1000 Mbit/s electrical ports	Twenty-four 10/100 Mbit/s electrical ports	Forty-eight 10/100 Mbit/s electrical ports	Twenty-four 10/100/1000 Mbit/s electrical ports	Forty-eight 10/100/1000 Mbit/s electrical ports
Uplink port	None	None	2 GE electrical ports 2 GE SFP optical ports	None	None	4 GE SFP optical ports	2 GE electrical ports 2 GE SFP optical ports	2 GE electrical ports 2 GE SFP optical ports	4 GE SFP optical ports	4 GE SFP optical ports
MAC address table	8 K MAC	8 K MAC	8 K MAC	8 K MAC	8 K MAC	8 K MAC	8 K MAC	8 K MAC	8 K MAC	8 K MAC
Dimensions (W*D *H)	160*134*30mm	320*208*43.6mm	442*220*43.6mm	160*134*30mm	330*208*43.6mm	442*220*43.6mm	442*220*43.6mm	442*220*43.6mm	442*220*43.6mm	442*220*43.6mm

Type	Unmanaged Switch					Web-managed Switch	SNMP-based Switch			
Model	S1700-8-AC	S1700-24-AC	S1700-52R-2T2P-AC	S1700-8G-AC	S1724G	S1728GWR-4P	S1700-28FR-2T2P-AC	S1700-52FR-2T2P-AC	S1700-28GFR-4P-AC	S1700-52GFR-4P-AC
Input voltage	100 V to 240 V AC, 50/60 Hz	100 V to 240 V AC, 50/60 Hz	100 V to 240 V AC, 50/60 Hz	100 V to 240 V AC, 50/60 Hz	100 V to 240 V AC, 50/60 Hz	100 V to 240 V AC, 50/60 Hz	100 V to 240 V AC, 50/60 Hz	100 V to 240 V AC, 50/60 Hz	100 V to 240 V AC, 50/60 Hz	100 V to 240 V AC, 50/60 Hz
EEE	Not supported	Not supported	Not supported	Supported	Supported	Supported	Not supported	Not supported	Supported	Supported
Power consumption	<5W	<10W	<20W	<10W	<20W	<20W	<20W	<30W	<25W	<45W
Operating temperature	0℃ to 45℃	0℃ to 45℃	0℃ to 45℃	0℃ to 45℃	0℃ to 45℃	0℃ to 45℃	0℃ to 45℃	0℃ to 45℃	0℃ to 45℃	0℃ to 45℃
Humidity	20% to 85% (non-condensing)	20% to 85% (non-condensing)	20% to 85% (non-condensing)	20% to 85% (non-condensing)	20% to 85% (non-condensing)	20% to 85% (non-condensing)	20% to 85% (non-condensing)	20% to 85% (non-condensing)	20% to 85% (non-condensing)	20% to 85% (non-condensing)
Storage humidity	10% to 90% (non-condensing)	10% to 90% (non-condensing)	10% to 90% (non-condensing)	10% to 90% (non-condensing)	5% to 95% (non-condensing)	5% to 95% (non-condensing)	10% to 90% (non-condensing)	10% to 90% (non-condensing)	10% to 90% (non-condensing)	10% to 90% (non-condensing)
Heat dissipation	natural heat dissipation	natural heat dissipation	natural heat dissipation	natural heat dissipation	natural heat dissipation	natural heat dissipation	natural heat dissipation	natural heat dissipation	natural heat dissipation	fan modules for heat dissipation.

Service Features

Item	Web-managed Switch	SNMP-based Switch
Security features	Packet filtering based on MAC addresses Port-based 802.1x authentication RADIUS authentication Port isolation	Hardware ACL Packet filtering based on MAC addresses MAC address authentication Port-based 802.1x authentication. RADIUS authentication Port isolation Storm suppression Attack defense, which prevents broadcast traffic, ARP attacks, ICMP attacks, TCP attacks, worm viruses, and DoS attacks DHCP snooping
VLAN	256 VLANs Access port Trunk port Hybrid port Management VLAN Voice VLAN	4 K VLANs Access port Trunk port Hybrid port Management VLAN Voice VLAN
QOS	PQ and WRR Four queues on each port Queue scheduling based on 802.1p or DSCP priorities	PQ and WRR Four queues on each port Queue scheduling based on 802.1p or DSCP priorities
STP	STP/RSTP	STP/RSTP/MSTP
Multicast	IGMP snooping and a maximum of 256 multicast groups	IGMP snooping and a maximum of 256 multicast groups Fast leave
Link aggregation	12 link aggregation groups (LAGs) and a maximum of eight ports in each LAG Static LACP	12 link aggregation groups (LAGs) and a maximum of eight ports in each LAG Static LACP

Item	Web-managed Switch	SNMP-based Switch
Port mirroring	Port-based bidirectional flow mirroring	Port-based bidirectional flow mirroring Configuring a trunk as a mirrored interface
Bandwidth control	Rate limiting for incoming and outgoing packets, with the granularity of 64 kbit/s	Rate limiting for incoming and outgoing packets, with the granularity of 64 kbit/s
Broadcast storm suppression	Broadcast storm suppression based on the interface rate Sending alarms when the traffic rate reaches the upper limit	Broadcast storm suppression based on the interface rate Sending alarms when the traffic rate reaches the upper limit
Device management	Web system network management DHCP client One-key restoration	SNMP Web system network management (HTTPS) DHCP client User password protection One-key restoration
Device maintenance	System log Ping Virtual Cable Test (VCT) Link Layer Discovery Protocol (LLDP)	Remote Network Monitoring (RMON) System log Ping and traceroute Virtual Cable Test (VCT) Link Layer Discovery Protocol (LLDP)

Applications

Deploying S1700s in Internet cafes
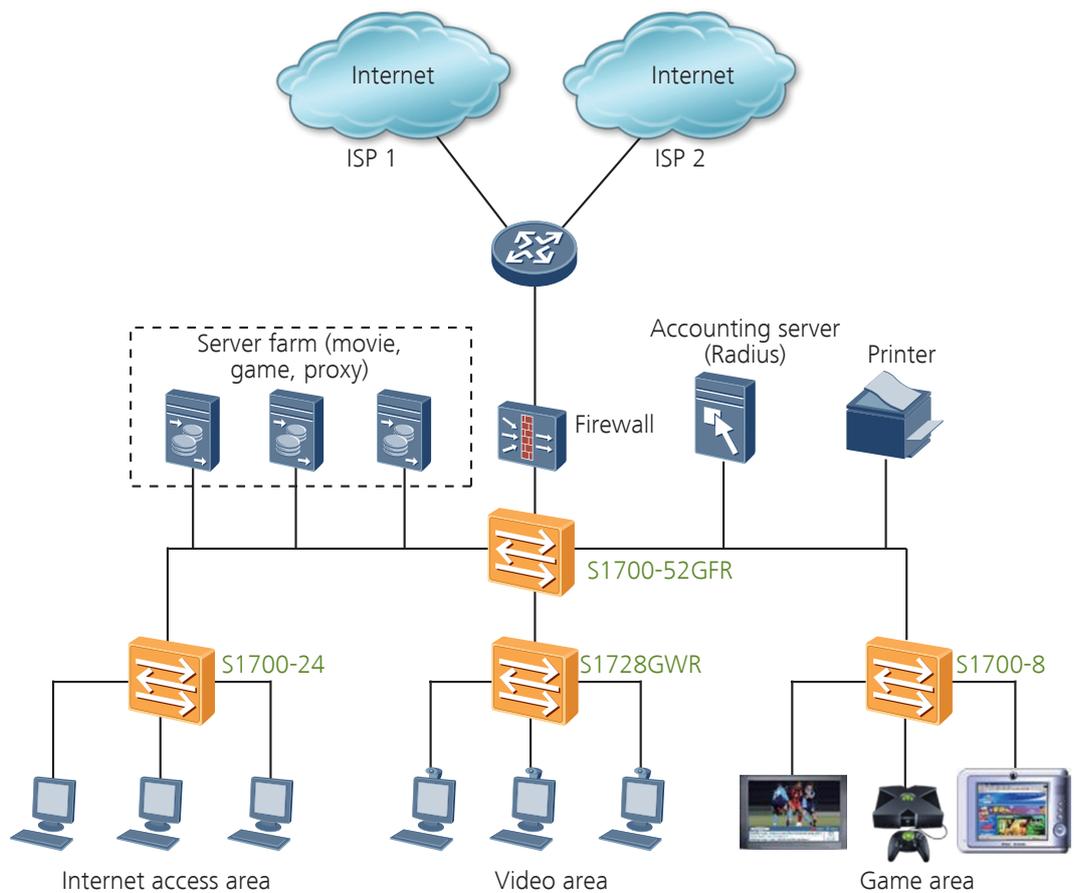
Deploying S1700s in hotels
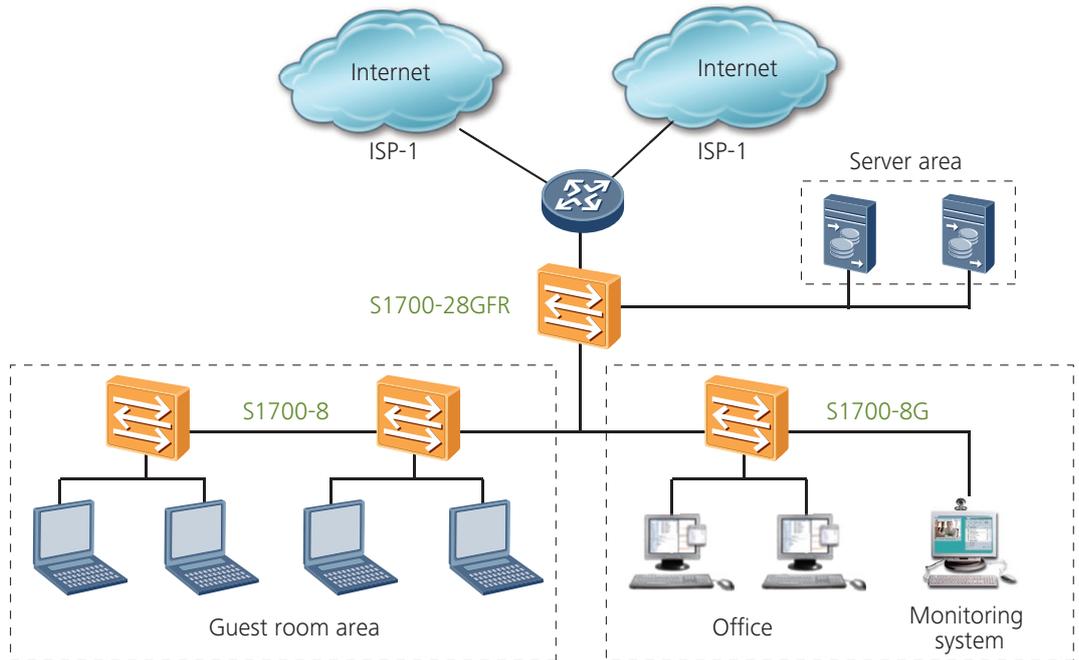
Deploying S1700s in schools
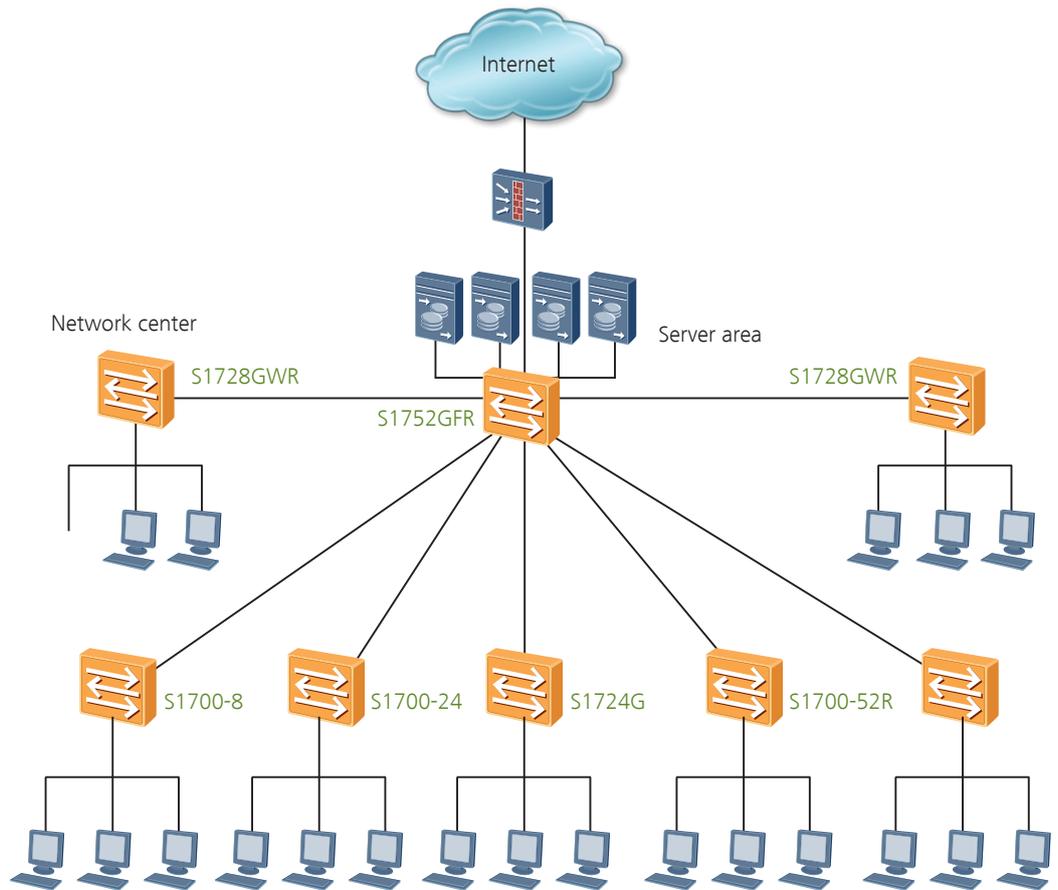
Product List

S1700 switch models and optical modules

Product Description
S1700-8-AC
S1700-24-AC
S1700-52R-2T2P-AC
S1700-8G-AC
S1724G
S1728GWR-4P
S1700-28FR-2T2P-AC
S1700-52FR-2T2P-AC
S1700-28GFR-4P-AC
S1700-52GFR-4P-AC
GE-SFP optical module
Optical Transceiver, eSFP, GE, Multi-mode Module(850nm,0.5km,LC)
SFP Optical Interface Module(1310nm, 10km)
Optical Transceiver, eSFP, GE, Single-mode Module(1310nm,40km,LC)
Optical Transceiver, eSFP, GE, Single-mode Module(1550nm,40km,LC)
Optical Transceiver, eSFP, GE, Single-mode Module(1550nm,80km,LC)
Optical Transceiver, eSFP, GE, Single-mode Module(1550nm,100km,LC)
BIDI-SFP optical module
Optical Transceiver, eSFP, GE,BIDI Single-mode Module(TX1490/RX1310,10km,LC)
Optical Transceiver, eSFP, GE,BIDI Single-mode Module(TX1310/RX1490,10km,LC)

For more information, visit http://enterprise.huawei.com or contact the Huawei local sales office.
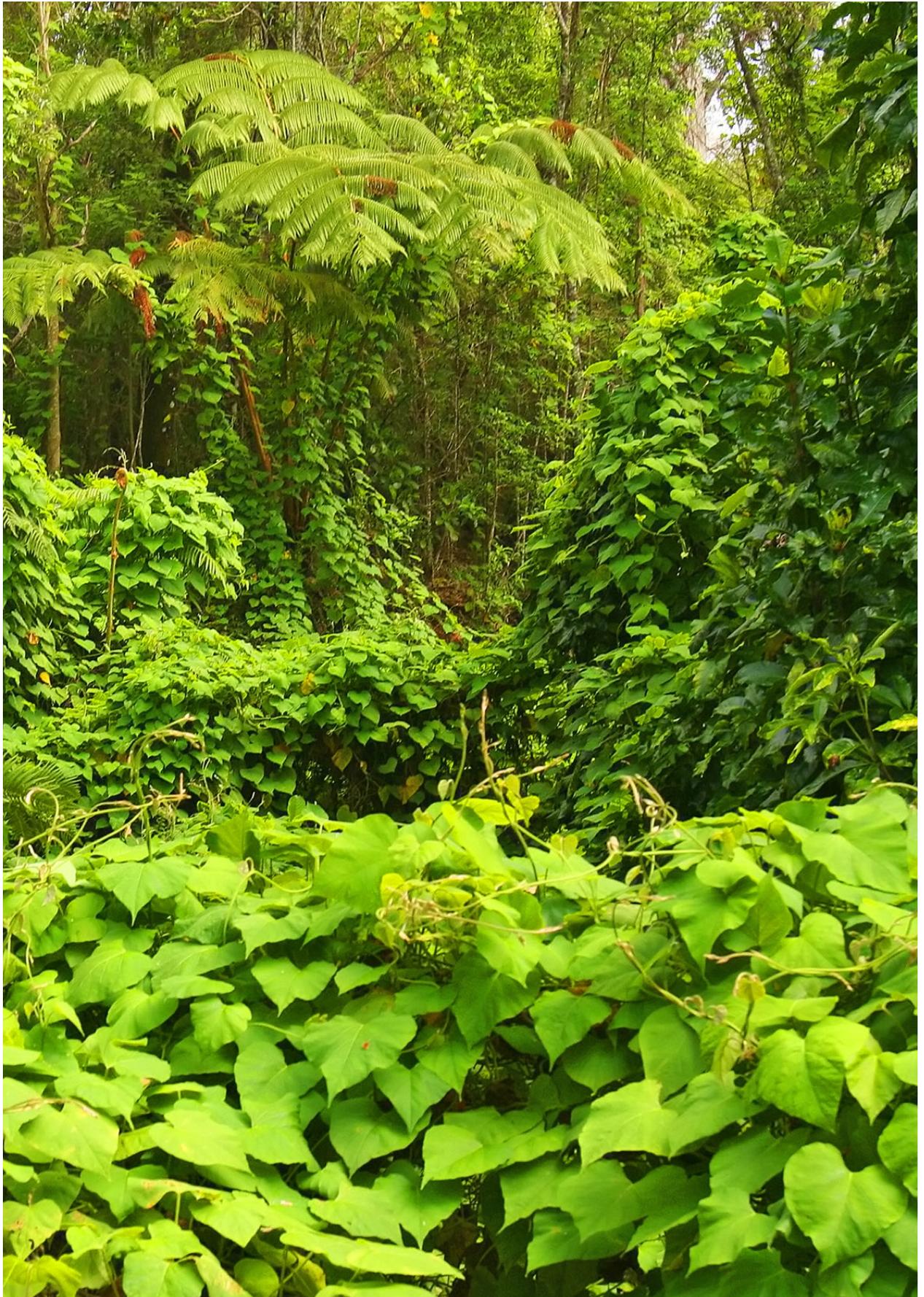
Huawei Enterprise
AR G3 Series Router Product

2

AR150 & AR200 Series Enterprise Routers

As fixed interface routers for the AR G3 series, AR150&AR200 Series routers provide a comprehensive set of functions, such as routing, switching, voice, security and wireless. They are next-generation routers for enterprise branches and small businesses.

Product Overview

AR150&AR200 Series routers use the embedded hardware encryption technique and support the voice Digital Signal Processor (DSP). In addition, they support firewall, call processing, voice mailbox, and application program functionalities. The AR150&AR200 series includes: the AR151, AR157, AR201, AR206, AR207, AR207V, AR207V-P and AR208E, whose appearances and specifications are shown in the following table.

AR151	
	• Forwarding performance: 300 Kpps
	• Fixed ports: 4 x FE LAN, 1 x FE WAN
	• Dimensions (H x W x D): 44.5 mm x 300 mm x 220 mm (1.75 in. x 11.8 in. x 8.66 in.)

AR157	
	• Forwarding performance: 300 Kpps
	• Fixed ports: 4 x FE LAN, 1 x ADSL2+ Annex A/M
	• Dimensions (H x W x D): 44.5 mm x 300 mm x 220 mm (1.75 in. x 11.8 in. x 8.66 in.)

AR201	
	• Forwarding performance: 450 Kpps
	• Fixed ports: 8 x FE LAN, 1 x FE WAN
	• Dimensions (H x W x D): 44.5 mm x 300 mm x 220 mm (1.75 in. x 11.8 in. x 8.66 in.)

AR206	
	• Forwarding performance: 450 Kpps
	• Fixed ports: 8 x FE LAN, 1 x ADSL2+ Annex B
	• Dimensions (H x W x D): 44.5 mm x 300 mm x 220 mm (1.75 in. x 11.8 in. x 8.66 in.)

AR207	
	• Forwarding performance: 450 Kpps
	• Fixed ports: 8 x FE LAN, 1 x ADSL2+ Annex A/M
	• Dimensions (H x W x D): 44.5 mm x 300 mm x 220 mm (1.75 in. x 11.8 in. x 8.66 in.)

AR207V

- Forwarding performance: 450 Kpps
- Fixed ports: 8 x FE LAN, 1 x ADSL2+ Annex A/M,
- Fixed Voice ports: 4 x FXS, 1 x FXO
- Dimensions (H x W x D): 44.5 mm x 300 mm x 220 mm (1.75 in. x 11.8 in. x 8.66 in.)

AR207V-P

- Forwarding performance: 450 Kpps
- Fixed ports: 8 x FE LAN(PoE), 1 x ADSL2+ Annex A/M
- Fixed Voice ports: 4 x FXS, 1 x FXO
- Dimensions (H x W x D): 44.5 mm x 300 mm x 220 mm (1.75 in. x 11.8 in. x 8.66 in.)

AR208E

- Forwarding performance: 450 Kpps
- Fixed ports: 8 x FE LAN, 1 x G.SHDSL 8-wire
- Dimensions (H x W x D): 44.5 mm x 300 mm x 220 mm (1.75 in. x 11.8 in. x 8.66 in.)

Product Highlights

❶ Small Size and High Performance

- More applications: Huawei series routers use the dual-core processor that isolates the control plane from the forwarding plane and processes more enterprise applications. Huawei series routers improve user experience for multimedia service when streams overlap.

- Higher performance: The AR150&AR200 can process various enterprise applications, and its service processing capability is four times that in the industry.

- Greater potential: Huawei series routers provide the capability to migrate services to the 3G and LTE networks.

❷ Low Investment with High Returns

- Easy to construct: The AR150&AR200 supports plug-and-play, intelligent configuration, and deployment using the USB flash drive. It can function immediately after being installed. Users do not need to configure an IP address manually. The PPP and VPN indicators show the status of corresponding services. The AR150&AR200 helps to quickly construct an enterprise IT network.

- Simplified solution: Huawei provides an all-around solution that integrates the routing, switching, voice, security, and wireless services. Customers can customize solutions as required.

- Easy to expand: Huawei series routers have eight FE ports(except AR150 series), can access more employee for small enterprises. The two uplink WAN ports implement load balancing and link protection, maximizing the return on investments.

❸ Small Product on a Comprehensive Platform

- Maturity and Stableness: The AR150&AR200 uses the Huawei VRP operating system and VSP voice platform. In addition, the AR150&AR200 uses modularized hardware design, which brings good user experience.

- Low-noise office: Huawei series routers have no fan, which brings low noise and good user experience.

- Secure environment: The lightning failure rate of AR150&AR200 is only 3% of industry average. The AR150&AR200 can be applied in the harsh environment.

Typical Applications

WAN Access
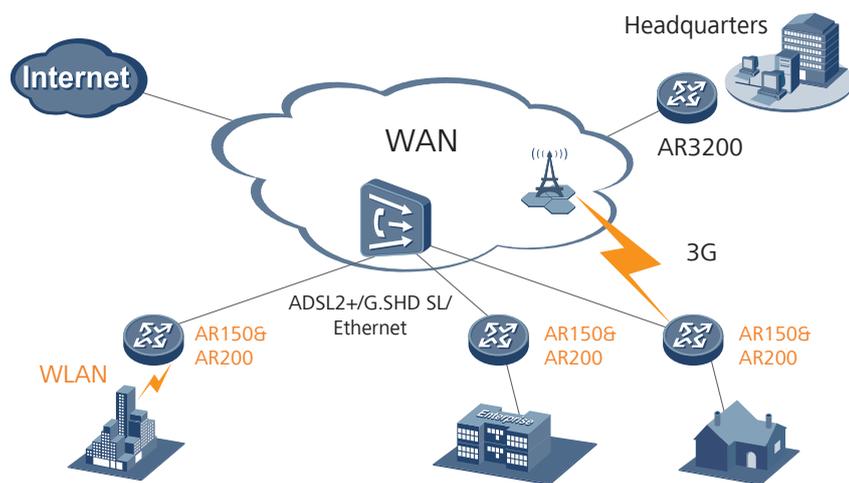
AR150&AR200 Series routers function as the egress routers on enterprise branch networks and provide flexible access methods to ensure remote network connections. The access modes include Ethernet, xDSL, 3G(already planned in the roadmap) and WLAN (already planned in the roadmap). AR150&AR200 Series routers reduce deployment and maintenance costs while offering maximum value to customers.

High-Quality Voice Service

Apart from functioning as a voice service gateway for enterprises, AR150&AR200 Series routers can also be used as an IP PBX or an SIP access gateway.

IP PBX application
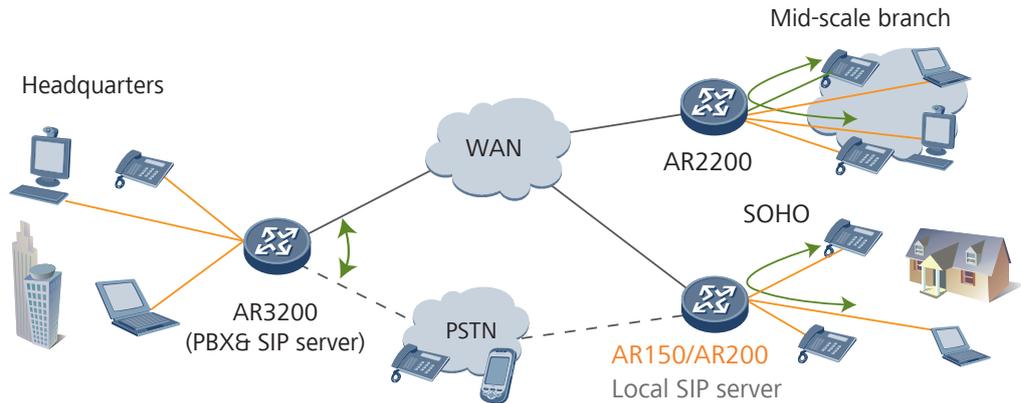
AR150&AR200 Series routers have built-in PBX, which supports the enterprise main number, interactive voice response (IVR), and bill query functions for enhanced corporate image and improved enterprise communication efficiency. AR150&AR200 Series routers are deployed at enterprise branches to provide the intelligent dialing function. When a fault occurs on the WAN, the backup PSTN network ensures the continuity of call services. AR150&AR200 Series routers also provide a built-in SIP server. When the SIP server at the headquarters is unreachable, the built-in SIP server ensures uninterrupted communication between branches and between branches and the PSTN network. This ensures reliability of voice services.

SIP access gateway application

AR150&AR200 Series routers integrate voice, fax, and IP services. When telecom carriers deploy voice services for enterprises, AR150&AR200 Series routers can function as the SIP access gateway for enterprise branches to transform phone signals into voice over IP (VoIP) signals. AR150&AR200 Series routers connect upstream to the IMS/NGN network to allow for anytime voice communication on any media, such as phones, handsets, and PCs.
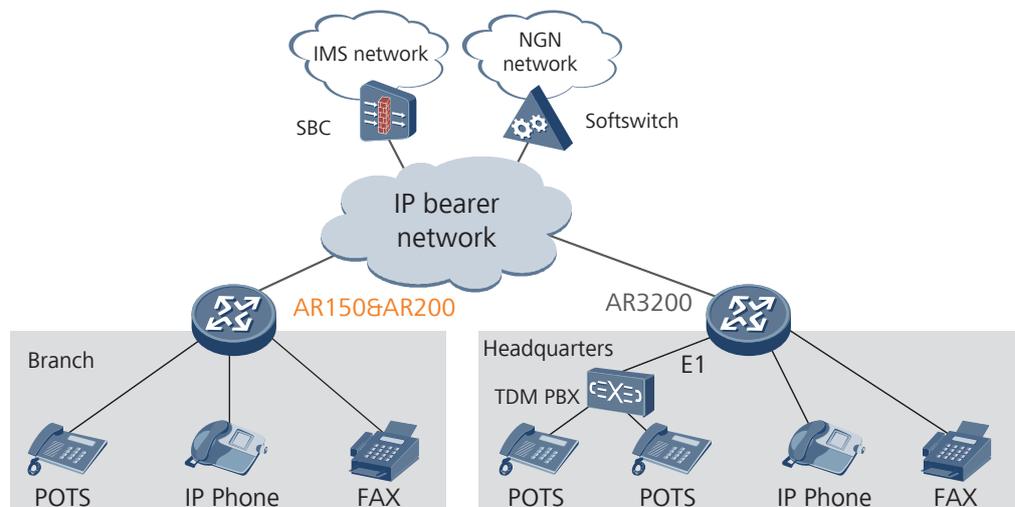
VPN for Enterprise Branches

AR150&AR200 Series routers provide various secure access functions to ensure secure communication between enterprise branches and between branches and the headquarters, and to enable partners to access enterprise resources. Tunnels such as GRE VPN, IPSEC VPN, DSVPN and SSL VPN tunnels are set up between the headquarters and branches to implement secure data access and transmission. AR150&AR200 Series routers also support fast tunnel set-up and authentication for branches. Using remote tunnels, partners can flexibly access enterprise resources. All these ensure the security and sharing of enterprise resources.
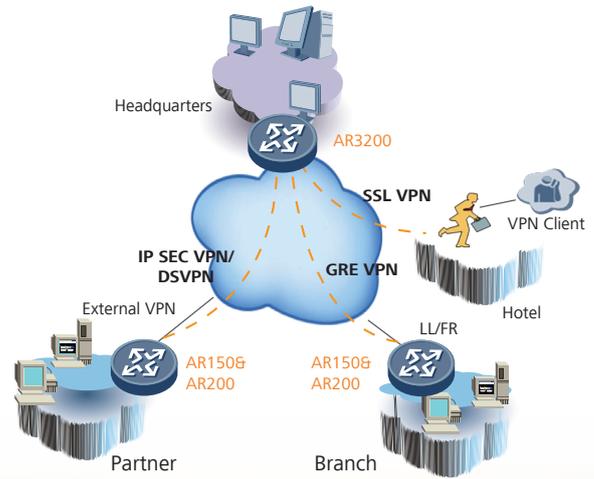
Technical Specifications

The following table lists the technical specifications of AR150&AR200 Series routers.

Item	AR201/AR151	AR206	AR207/AR157	AR207V	AR207V-P	AR208E
Hardware						
Forwarding performance	450 Kpps/300 Kpps	450 Kpps	450 Kpps/300 Kpps	450 Kpps	450 Kpps	450 Kpps
Fixed WAN ports	1 x FE	1 x ADSL2+ Annex B	1 x ADSL2+ Annex A/M	1 x ADSL2+ Annex A/M	1 ADSL2+ Annex A/M	1 x G.SHDSL 8-wire
Fixed Ethernet switching ports	8 x FE/4 x FE	8 x FE	8 x FE/4 x FE	8 x FE	8 x FE	8 x FE
Fixed voice ports	-	-	-	4 x FXS, 1 x FXO	4 x FXS, 1 x FXO	-
USB 2.0 ports	1	1	1	1	1	1
Serial auxiliary/ console ports	1	1	1	1	1	1
Memory size (default/ maximum)	512 MB	512 MB	512 MB	512 MB	512MB	512 MB
Flash memory (default/ maximum)	512 MB	512 MB	512 MB	512 MB	512MB	512 MB
Maximum power	24 W	24 W	24 W	36 W	36 W	24 W
Power supply (AC)	100V to 240V	100V to 240V	100V to 240V	100V to 240V	100 to 240V	100V to 240V
Frequency	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60HZ	50/60 Hz
Dimensions (H x W x D)	44.5 mm x 300 mm x 220 mm (1.75 in. x 11.8 in. x 8.66 in.)	44.5 mm x 300 mm x 220 mm (1.75 in. x 11.8 in. x 8.66 in.)	44.5 mm x 300 mm x 220 mm (1.75 in. x 11.8 in. x 8.66 in.)	44.5 mm x 300 mm x 220 mm (1.75 in. x 11.8 in. x 8.66 in.)	44.5 mm x 300 mm x 220 mm (1.75 in. x 11.8 in. x 8.66 in.)	44.5 mm x 300 mm x 220 mm (1.75 in. x 11.8 in. x 8.66 in.)
Operating temperature	0°C to 40°C	0°C to 40°C	0°C to 40°C	0°C to 40°C	0°C to 40°C	0°C to 40°C
Relative humidity	5% to 90% (non-condensing)	5% to 90% (non-condensing)	5% to 90% (non-condensing)	5% to 90% (non-condensing)	5% to 90% (non-condensing)	5% to 90% (non-condensing)

Software	
Basic feature	DHCP server/client, PPPoE server/client, PPPoA client, PPPoEoA client, NAT, Sub interface management
Voice	RTP, SIP, SIP AG, IP PBX/TDM PBX, FXO/FXS, VoIP
LAN	IEEE 802.1P, IEEE 802.1Q, IEEE 802.3, VLAN management, MAC address management, MSTP, etc.
IPv4 unicast routing	Routing policy, static route, RIP, OSPF, IS-IS, BGP
IPv6 unicast routing	Routing policy, static route, RIPng, OSPFv3, IS-ISv6, BGP4+
Multicast	IGMP version1/2/3, PIM SM, PIM DM, MSDP
	IGMP snooping version1/2/3
VPN	IPSec VPN, GRE VPN, DSVPN(except AR150 series), SSL VPN(except AR150 series), L2TP VPN
QoS	Diffserv mode, Priority mapping, traffic policing (CAR), traffic shaping, congestion avoidance (based on IP precedence/DSCP WRED), congestion management (LAN interface: SP/WRR/SP+WRR; WAN interface: PQ/CBWFQ), MQC (traffic classification, traffic behavior, and traffic policy), H-QoS
Security	ACL, firewall, 802.1x authentication, AAA authentication, RADIUS authentication, HWTACACS authentication, broadcast storm suppression, ARP security, ICMP attack defense, URPF, CPCAR, blacklist, IP source tracing, PKI
Management and maintenance	Upgrade management, device management, GTL, SNMP(v1/v2c/v3), RMON, NTP, CWMP, Auto-Config, site deployment using USB disk, NetConf, CLI

How to Configure

AR150&AR200 Series routers are configured in two steps: selecting an appropriate model and configuring software.

- Selecting an appropriate model

Select an appropriate model based on the uplink port type.

- Configuring software

AR150&AR200 Series router software includes basic software and licensed software. The basic software provides basic functions such as routing, switching, voice, and security. The licensed software provides additional functions such as PBX.

Ordering Information

Model	Description
Host Configuration	
AR0M0001BA00	AR201 Basic Configuration(Includes AR201 Chassis,with Basic Software and Document),1FE WAN,8FE LAN,1 USB Interfaces
AR0M0006BA00	AR206 Basic Configuration(Includes AR206 Chassis,with Basic Software and Document),ADSL2+ ANNEX B WAN,8FE LAN,1 USB Interfaces
AR0M0007BA00	AR207 Basic Configuration(Includes AR207 Chassis,with Basic Software and Document),ADSL2+ ANNEX A/M WAN, 8FE LAN,1 USB Interfaces
AR0M007VBA00	AR207V Basic Configuration(Includes AR207V Chassis,with Basic Software and Document),ADSL2+ ANNEX A/M WAN,8FE LAN,4FXS+1FXO,1 USB Interfaces
AR0M07VPBA00	AR207V-P Basic Configuration(Includes AR207V-P Chassis,with Basic Software and Document),ADSL2+ ANNEX A/M WAN,8FE LAN(POE),4FXS+1FXO,1 USB Interfaces
AR0M008EBA00	AR208E Basic Configuration(Includes AR208E Chassis,with Basic Software and Document),4 copper pair G.SHDSL WAN,8FE LAN,1 USB Interfaces
AR0M1510BA00	AR151 Basic Configuration(Includes AR151 Chassis,with Basic Software and Document),1FE WAN,8FE LAN,1 USB Interfaces
AR0M1570BA00	AR157 Basic Configuration(Includes AR157 Chassis,with Basic Software and Document),ADSL2+ ANNEX A/M WAN, 4FE LAN,1 USB Interfaces
Software	
AR0S000PBX00	PBX Function
AR0S0DSVPN00	DSVPN Function
AR0SSSLVPN01	AR SSLVPN License-Access 10 users
AR0S000PBX00	PBX Function
SD Card & USB Disk	
NUSBDSK01	Storage USB DISK,4GB,USB 2.0
Power Module	
AR0MPSAP1000	Adapter,0degC,40degC,90V,264V,+48V/2.08A,
W0ACPSE03	Adapter,0degC,40degC,90V,264V,12V/3A,C8/4pin

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

AR1200 Series Enterprise Routers

Huawei AR1200 series enterprise routers (AR1200 for short) are next-generation enterprise-class routers based on the Huawei proprietary Versatile Routing Platform (VRP), which take advantage of Huawei long-term accumulation in data communication, wireless, access network, and core network fields. The AR1200 integrates routing, switching, 3G, WLAN, voice, and security functions. It uses the multi-core CPU and non-blocking switching structure and provides industry-leading system performance and extensibility, meeting service development requirements in the future. The AR1200 provides an integrated solution for enterprise networks, speeds up multi-service provision, and protects customers' investments.

Product Overview

The AR1200 uses the embedded hardware encryption technique and supports the voice Digital Signal Processor (DSP). It supports firewall functions, call processing, voice mail, and various application programs. The AR1200 supports various wired and wireless access modes, such as E1/T1, xDSL, xPON, WiFi, 3G, etc. The AR1220V, AR1220W, AR1220VW and AR1220W-S provide the PoE function by using fixed 100M Ethernet interfaces.

The AR1200 series include: AR1220, AR1220V, AR1220W, AR1220VW, AR1220-S, AR1220W-S.

AR1220

- Forwarding capacity: 450 Kpps
- WAN speed with services: 25Mbps
- Fixed port: 8*FE, 2*GE
- Slot: 2*SIC
- Dimensions (WxDxH): 390 mm x 220 mm x 44.5mm

AR1220V

- Forwarding capacity: 450 Kpps
- WAN speed with services: 25Mbps
- Fixed port: 8*FE(four FE ports support PoE), 2*GE
- PoE: compliance with IEEE 802.3af and 802.3at
- DSP: 32 channels supported
- Slot: 2*SIC
- Dimensions (WxDxH): 390 mm x 220 mm x 44.5mm

AR1220W

- Forwarding capacity: 450 Kpps
- WAN speed with services: 25Mbps
- Fixed port: 8*FE (four FE ports support PoE), 2*GE
- PoE: compliance with IEEE 802.3af and 802.3at
- Slot: 2*SIC
- WiFi: compliance with 802.11b/g/n
- Dimensions (WxDxH): 390 mm x 220 mm x 44.5mm

AR1220VW

- Forwarding capacity: 450 Kpps
- WAN speed with services: 25Mbps
- Fixed port: 8*FE (four FE ports support PoE), 2*GE
- PoE: compliance with IEEE 802.3af and 802.3at
- DSP: 32 channels supported
- Slot: 2*SIC
- WiFi: compliance with 802.11b/g/n
- Dimensions (WxDxH): 390 mm x 220 mm x 44.5mm

AR1220-S

- Forwarding capacity: 450 Kpps
- WAN speed with services: 25Mbps
- Fixed port: 8*FE, 2*GE
- Slot: 2*SIC
- Dimensions (WxDxH): 390 mm x 220 mm x 44.5mm

AR1220W-S

- Forwarding capacity: 450 Kpps
- WAN speed with services: 25Mbps
- Fixed port: 8*FE (four FE ports support PoE), 2*GE
- PoE: compliance with IEEE 802.3af and 802.3at
- Slot: 2*SIC
- WiFi: compliance with 802.11b/g/n
- Dimensions (WxDxH): 390 mm x 220 mm x 44.5mm

The AR1200 supports various interface cards, including Ethernet interface cards, E1/T1/PRI/VE1/VT1 interface cards, synchronous/asynchronous interface cards, ADSL2+/G.SHDSL interface cards, FXS/FXO voice cards, ISDN interface cards and EPON/GPON interface cards. These cards are classified into SIC (Smart Interface Card) cards and WSIC (Double-Width SIC) cards depending on slot type. The following are the appearances and description of main interface cards.

SIC card

Channelized E1/T1/PRI/VE1/VT1 multifunctional interface card

- Sends, receives, and processes E1/T1 data traffic.
- Provides channelized E1/T1 access, and groups and binds channels.
- Provides the VoIP function over the E1/T1 line.
- Provides the ISDN PRI function.
- Provides the local and remote loopback functions for test and troubleshooting.

SIC card

FXS/FXO voice card

- Supports access and processing of AT0 loop trunk of analog phone, fax, and telephone exchange.
- Transmits voice signals over IP network.

SIC card	
Sync/Async Serial Port Interface Card	• A synchronous serial interface can function as a DCE or DTE. It supports multiple physical layer protocols, such as V.24, V.35, and X.21, but does not support X.21 DCE. The interface provides a maximum transmission rate of 2.048 Mbit/s. • An asynchronous serial interface supports the RS232 protocol and provides a maximum transmission rate of 115.2 kbit/s. • Provides in-service upgrade by using system management channels. • The system powers on or off the 1SA/2SA and monitors the current of the 1SA/2SA; the backplane provides 12 V voltage for the 1SA/2SA.
SIC card	
GE Combo WAN Interface Card	• Provides one GE optical and electrical Combo interface to implement data access and line-speed switching. • The Combo interface sends, receives, and processes GE data traffic. • The electrical interface works at 10/100/1000 Mbit/s in auto-sensing mode. • The optical interface works at 100/1000 Mbit/s in auto-sensing mode.
SIC card	
GPON/EPON Dual-Mode Interface Card	• Supports OLT clock synchronization but not the 1588 function. • Supports EPON/GPON but not GE. • Supports the DyingGasp function. • Supports rogue ONT detection and isolation. • Detects the receiving optical power. • Supports delayed reset.

Features and Benefits

① 3rd Generation AR with Industry-Leading Performance

The AR1200 uses the multi-core CPU and non-blocking switching structure and provides industry-leading system performance, meeting network extension requirements and service development requirements of enterprises.

- Multi-core CPU

  The multi-core CPU improves the speed of concurrent processing of data and voice services, which makes it possible to deploy a large number of services.

- Non-blocking switching

- Independent protocol management, service processing, and data switching, ensuring high performance and improving service reliability

- Integrated routing and switching functions

  This feature improves the data switching efficiency between interface cards and simplifies device configurations and maintenance.

- Hot swappable interface cards and redundant components such as fan modules, ensuring service reliability and stability

② Dual-Mode Network, Supporting Flexible Access

1) Wireless Mode

Access Mode	Description
WLAN	• Compliance with 802.11n and compatible with 802.11b/g, saving investment • Multiple-input and multiple-output (MIMO), increasing bandwidth and improving user experience • Authentication technologies such as WEP, WPA/WPA2, WAPI and 802.1x, ensuring security
3G	• Compliance with 3G standards, including CDMA2000 EV-DO, WCDMA, and TD-SCDMA, providing flexible network access • NQA, monitoring the link real-time status and ensuring SLA • Link backup for enterprise services, improving reliability • Security VPN over 3G links, ensuring reliable service transmission
LTE	• Switching from 3G networks to LTE networks supported in future, protecting customers' investments

2) Wired Mode

Access Mode	Description
Fiber	• Support for GigabitEthernet optical interfaces, allowing flexible network access • 1 Gbit/s bandwidth or higher bandwidth, meeting transmission requirements of bandwidth-thirsty services such as voice services • Support EPON/GPON interface cards
Copper cable	• Support for various interfaces, including xDSL interfaces, E1/T1 interfaces, serial ports, and ISDN interfaces, to protect customers' investments • Uplink access rates ranging from 64 kbit/s to 1 Gbit/s, which can be selected by customers • PoE support on Ethernet interfaces, providing power for powered devices over twisted pair cables and facilitating installation of powered devices

③ Services Integrated on One Router

The AR1200 integrates routing, switching, 3G, WLAN, voice, and security functions.

Open Service Platform

The AR1200 interconnects with the third-party IT systems by using the Open Service Platform (OSP) to provide a unified communication solution for enterprise users. The customers, agents, third-party vendors, and manufacturers can develop and use the AR1200 as required.

• Fast service integration and customization, meeting customized requirements

• Service integration without deploying dedicated servers, saving investments and simplifying management

• Services synchronized with cloud-side services, and local services processed locally, which improves service quality and efficiency.

Outstanding Voice Experience

The AR1200 provides various voice functions for enterprise data networks, enabling the enterprises to communicate flexibly and efficiently.

- Basic voice functions provided by the built-in PBX, SIP server, and SIP access gateway
- Value-added voice services, including multi-party communication, IVR automatic connection, ring-back-tone, parallel ringing, sequential ringing, one number link you (ONLY), bill management, and subscriber management
- Intelligent call routing, ensuring high reliability of voice services
- Interconnection with the NGN/IMS/PBX/terminal of mainstream vendors
- QoE, detecting voice service quality in real time
- Jitter buffer, echo cancellation, and packet loss compensation, improving customer experiences

Secure Service Access

During service provision, the AR1200 ensures security of enterprise networks. It provides a complete security protection mechanism including user access control, packet detection, and active attack defense. This mechanism protects customers' investments.

- Built-in firewall
- Authentication technologies on ports, such as 802.1x authentication and MAC address authentication
- Authentication methods, including RADIUS and HWTACACS
- VPN technologies, including IPSec VPN, GRE VPN, DSVPN and SSL VPN

Intelligent Service Deployment

As the enterprise scale increases, enterprise users have high requirements on service deployment. The AR1200 provides the following service deployment functions:

- The AR1200 provides a mini-USB port. By using the mini-USB, users can configure the devices through GUI.
- Users can use the USB disk to deploy devices, and the devices are plug-and-play.
- The AR1200 supports the auto-config function. The auto-config function enables the AR1200 to automatically obtain configurations.

Simplified Service Management

Enterprise users require simply service management. The AR1200 provides the following functions to simplify service management:

- The AR1200 works with the eSight network management system to simplify device management.
- The AR1200 provides the NQA function to monitor links in real time.
- By using the NetStream function provided by the AR1200, users can view traffic characteristics and statistics clearly, which is basis for network optimization.

Typical Application

1. WAN Access

The AR1200 functions as the egress routers of enterprise branches and provide flexible access methods to support remote network connections. AR1200 meets various access requirements, including leased line, Ethernet, xDSL, 3G, and WLAN. This saves deployment and maintenance costs and provides a large value to customers. The fixed 100M Ethernet interfaces of AR1220V, AR1220W and AR1220VW support the PoE function in compliance with IEEE 802.3af and 802.3at; therefore, the AR1220V, AR1220W and AR1220VW can provide power for powered devices (PDs), such as IP phones. An 802.3at interface provides more than 30 W power, ensuring power for large-power PDs.
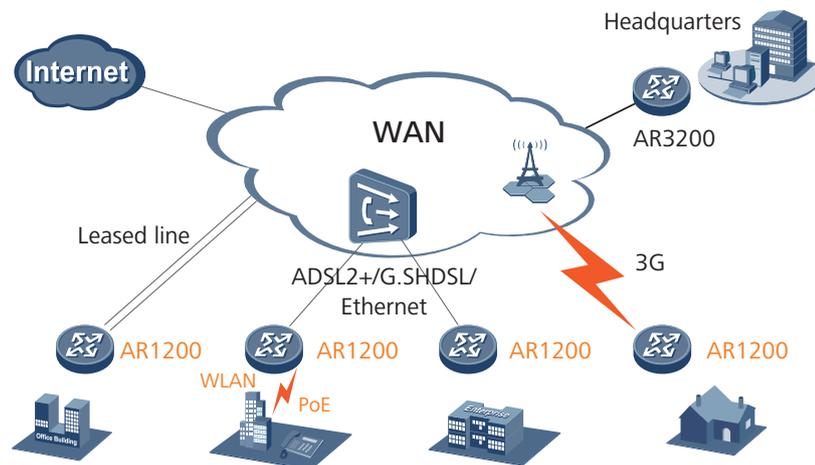
2. High-Quality Voice Service

As a voice gateway for enterprise networks, the AR1200 can function as an IP PBX or SIP gateway.
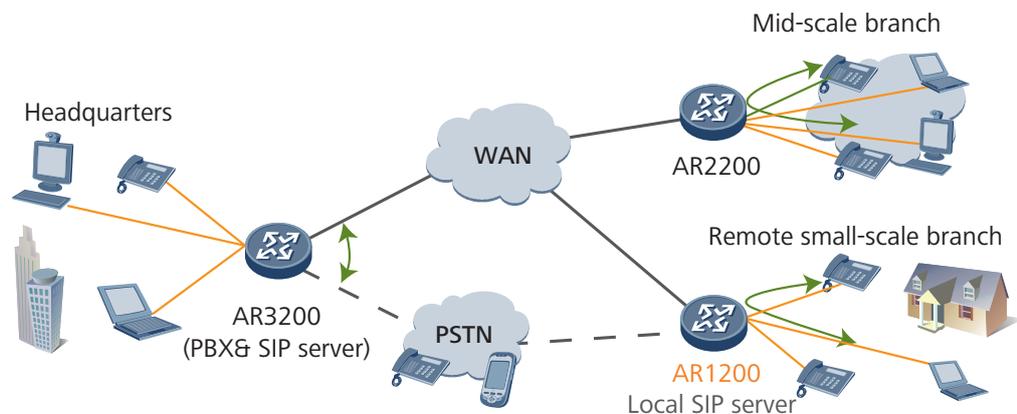
IP PBX application

The AR routers have built-in PBX, which supports the enterprise main number, IVR, and bill query functions to enhance corporate image and improve enterprise communication efficiency. And also the AR1200 can be located in a branch to provide the intelligent dialing function.

SIP gateway application

The AR1200 integrates voice, fax, and IP services. When providing voice services for enterprise users, the AR1200 functions as the SIP access gateway of a branch to transform phone signals into VoIP signals. The AR1200 uplink interfaces are connected to the IMS/NGN network to allow any media including phones, handsets, and computers to communicate at any time.
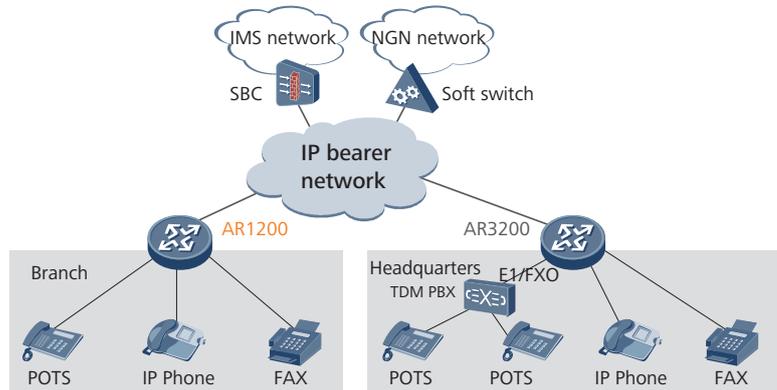
3. 3G Wireless Access in Branch

The AR1200 complies with 3G standards including CDMA2000 EV-DO, WCDMA, and TD-SCDMA, meeting the wireless communication requirements between branches and the headquarters. Users can use a 3G USB disk to deploy 3G services on the AR1200, saving service card slots. In addition, the 3G data link can be used as a backup for wired link to protect the xDSL, FE/GE, and ISDN uplinks. The backup link improves network stability and reduces network construction costs. The AR1200 provides the NQA function to detect 3G link quality, ensuring the SLA.
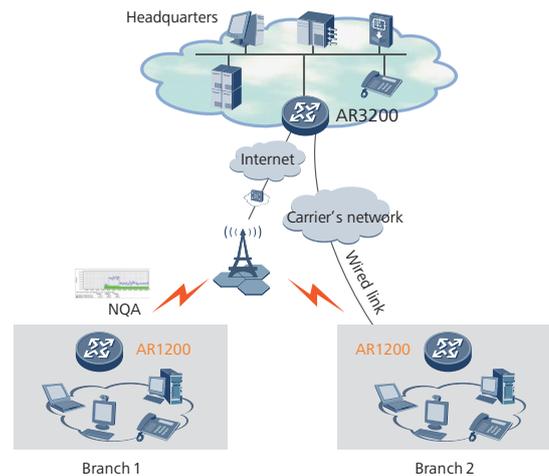
4. VPN in Branch

The AR1200 provides various secure access functions to implement communication between enterprise branches and between branches and the headquarters, and to enable partners to access enterprise resources. Tunnels such as GRE VPN, IPSEC VPN, DSVPN and SSL VPN are set up between the headquarters and branches to implement secure data access and transmission. The AR1200 implements fast tunnel deployment and authentication for branches. Using a tunnel, partners can access and share enterprise resources.
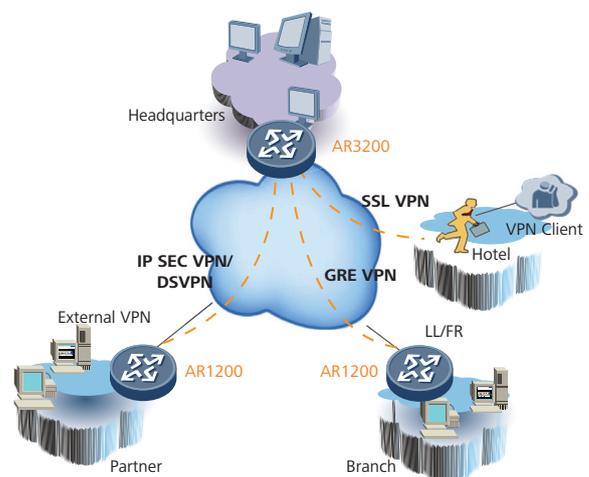
Technical Specifications

Item	AR1220	AR1220V	AR1220W	AR1220VW	AR1220-S	AR1220W-S
Hardware						
Forwarding capacity	450 Kpps	450 Kpps	450 Kpps	450 Kpps	450 Kpps	450 Kpps
WAN speed with services	25 Mbps	25 Mbps	25 Mbps	25 Mbps	25 Mbps	25 Mbps
Device switching capacity	8 Gbps	8 Gbps	8 Gbps	8 Gbps	8 Gbps	8 Gbps
Slot switching bandwidth	SIC & WSIC slots 2 Gbps					
Fixed WAN ports	2 * GE	2 * GE	2 * GE	2 * GE	2 * GE	2 * GE
Fixed LAN ports	8 * FE	8 * FE	8 * FE	8 * FE	8 * FE	8 * FE
SIC slots	2	2	2	2	2	2
WSIC slots (default/max)	0/1	0/1	0/1	0/1	0/1	0/1
DSP slots	-	32 channels supported by default	-	32 channels supported by default	-	-
WiFi	-	-	802.11 b/g/n	802.11 b/g/n	-	802.11 b/g/n
USB 2.0 ports	2	2	2	2	2	2
Mini-USB ports	1	1	1	1	1	1
Serial auxiliary/ console port	1	1	1	1	1	1
Memory	512 MB	512 MB	512 MB	512 MB	512 MB	512 MB
Flash	256 MB	256 MB	256 MB	256 MB	256 MB	256 MB
Max. power	54 W	54 W	54 W	54 W	54 W	54 W
PoE power	-	External 100 W	External 100 W	External 100 W	-	External 100 W
AC power	100 V-240 V	100 V-240 V	100 V-240 V	100 V-240 V	100 V-240 V	100 V-240 V
Frequency	50 Hz/60 Hz	50 Hz/60 Hz	50 Hz/60 Hz	50 Hz/60 Hz	50 Hz/60 Hz	50 Hz/60 Hz
Dimensions (width x depth x height)	390 mm x 220 mm x 44.5 mm	390 mm x 220 mm x 44.5 mm	390 mm x 220 mm x 44.5 mm	390 mm x 220 mm x 44.5 mm	390 mm x 220 mm x 44.5 mm	390 mm x 220 mm x 44.5 mm
Weight	2.9 KG (without interface cards)	2.9 KG (without interface cards)	2.9 KG (without interface cards)	2.9 KG (without interface cards)	2.9 KG (without interface cards)	2.9 KG (without interface cards)

Item	AR1220	AR1220V	AR1220W	AR1220VW	AR1220-S	AR1220W-S
Hardware						
Ambient temperature	0℃-40℃	0℃-40℃	0℃-40℃	0℃-40℃	0℃-40℃	0℃-40℃
Relative humidity	5-90% (non-condensing)	5-90% (non-condensing)	5-90% (non-condensing)	5-90% (non-condensing)	5-90% (non-condensing)	5-90% (non-condensing)
Software						
Basic feature	DHCP server/client, PPPoE server/client, PPPoA client, PPPoEoA client, NAT, Sub interface management					
Voice	RTP, SIP, SIP AG, IP PBX/TDM PBX, FXO/FXS, VoIP/conference call					
WLAN	AP management, WLAN QoS (WMM), WLAN security (WEP/WPA/WPA2/key management), WLAN radio management (802.11b/g/n), WLAN user management					
3G	CDMA 2000 EV-DO Rev A, WCDMA, TD-SCDMA, individual 3G uplink/backup link					
LAN	IEEE 802.1P, IEEE 802.1Q, IEEE 802.3, VLAN management, MAC address management, MSTP					
IPv4 unicast routing	Routing policy, static route, RIP, OSPF, IS-IS, BGP				Routing policy, static route, RIP, OSPF, IS-IS,	
Multicast	IGMP V1/V2/V3, IGMP-Snooping V1/V2/V3, PIM SM, PIM DM, MSDP					
MPLS	LDP, MPLS L3 VPN, static LSP, dynamic LSP				-	
VPN	IPSec VPN, GRE VPN, DSVPN, SSL VPN, L2TP VPN					
QoS	Diffserv mode, MPLS QoS(except –S model), priority mapping, traffic policing (CAR), traffic shaping, congestion avoidance (based on IP precedence/DSCP WRED), congestion management (LAN interface: SP/WRR/SP+WRR; WAN interface: PQ/CBWFQ), MQC (traffic classifier, traffic behavior, and traffic policy), H-QoS, WLAN QoS, FR QoS					
Security	ACL, firewall, 802.1x authentication, AAA authentication, RADIUS authentication, HWTACACS authentication, broadcast storm suppression, ARP security, ICMP attack defense, URPF, CPCAR, blacklist, IP source tracing					
Management and maintenance	Upgrade management, device management, GTL, SNMP(v1/v2c/v3), NTP, CWMP, Auto-Config, deployment using USB disk, NetConf, CLI					

**Note: The maximum number of slots includes the number of combined slots.

How to Configure

Before choosing an AR1200, determine the device model, interface cards, and software configurations.

- Device model

The device model is determined by the slot quantity and forwarding capacity that you require.

- Interface card

The interface cards, including SIC cards and WSIC cards, are inserted into service card slots. Two SIC slots can be combined into one WSIC slot by removing the guide rail.

- Software

The basic software and licensed software are available. The basic software provides basic functions such as routing, switching, voice, and security. The licensed software provides additional functions such as PBX.

Ordering Information

Model	Description
Host Configuration	
AR0M0012BA00	AR1220 Basic Configuration(Includes AR1220 Chassis,with Basic Software and Document),2GE WAN,8FE LAN,2 USB Interfaces,2 SIC Slots
AR0M012VBA00	AR1220V Basic Configuration(Includes AR1220 Chassis,32-Channel DSP,with Basic Software and Document),2GE WAN,8FE LAN,2 USB Interfaces,2 SIC Slots
AR0M012WBA00	AR1220W Basic Configuration (Includes AR1220 Chassis,802.11b/g/n AP ETSI Complian,with Basic Software and Document),2GE WAN,8FE LAN,2 USB Interfaces,2 SIC Slots
AR0M12VWBA00	AR1220VW Basic Configuration (Includes AR1220 Chassis,32-channel DSP ,802.11b/g/n AP ETSI Complian, with Basic Software and Document),2GE WAN,8FE LAN,2 USB Interfaces,2 SIC Slots
AR0M012SBA00	AR1220-S Basic Configuration(Includes AR1220-S Chassis,with Basic Software and Document),2GE WAN,8FE LAN,2 USB Interfaces,2 SIC Slots
AR0M12WSBA00	AR1220W-S Basic Configuration(Includes AR1220W-S Chassis,802.11b/g/n AP ETSI Complian,with Basic Software and Document),2GE WAN,8FE LAN,2 USB Interfaces,2 SIC Slots
SIC Interface Module	
AR0MSEG1CA00	1-Port GE Combo WAN Interface Card
AR0MSEF2TA00	2-Port FE WAN Interface Card
AR0MSDME1A00	1-Port Channelized E1/T1/PRI/VE1 Multiflex Trunk Interface Card

Model	Description
AR0MSDE11A00	1-Port Fractional Channelized E1/T1 WAN Interface Card
AR0MSDME2A00	2-Port Channelized E1/T1/PRI/VE1 Multiflex Trunk Interface Card
AR0MSDE12A00	2-Port Fractional Channelized E1/T1 WAN Interface Card
AR0MSDSA1A00	1-Port Sync/Async Serial Port Interface Card
AR0MSDSA2A00	2-Port Sync/Async Serial Port Interface Card
AR0MSVA4B1A0	4-Port FXS and 1-Port FXO Voice Interface Card
AR0MSLA1XA01	1-Port ADSL2+ ANNEX A/M WAN Interface Module
AR0MSLB1XA01	1-Port ADSL2+ ANNEX B WAN Interface Module
AR0MSLS1XA00	1-Port 4 Pair G.SHDSL WAN Interface Module
AR0MSDS1XA00	1-Port ISDN S/T WAN Interface Card
AR0MSVS2XA00	2-Port ISDN S/T Voice Interface Module
AR0MSOPP2A00	1-Port GPON/EPON Dual-mode Interface Card

WSIC Interface Module

Model	Description
AR0MWMF9TT00	8-Port 10/100BASE(RJ45) and 1-Port 10/100/1000BASE(RJ45)-L2/L3 Ethernet Interface Card
AR0MWDAS8A01	8-Port Async Serial Port Interface Card
AR0MWDME2A00	2-Port Channelized E1/T1/PRI/VE1 Multiflex Trunk Interface Card
AR0MWVS2XA00	2-Port ISDN S/T Voice Interface Card (WSIC)

Software

Model	Description
AR0S000PBX00	PBX Function
AR0S0DSVPN00	DSVPN Function
AR0SSSLVPN01	AR SSLVPN License-Access 10 users
AR0SSSLVPN02	AR SSLVPN License-Access 25 users

SD Card & USB Disk

Model	Description
NUSBDSK01	Storage USB DISK,4GB,USB 2.0

Power Module

Model	Description
AR0MPSAP1000	Adapter,0degC,40degC,90V,264V,+48V/2.08A,

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

AR2200 Series Enterprise Routers

Huawei AR2200 series enterprise routers (AR2200 for short) are next-generation enterprise-class routers based on the Huawei proprietary Versatile Routing Platform (VRP), which take advantage of Huawei long-term accumulation in data communication, wireless, access network, and core network fields. The AR2200 integrates routing, switching, 3G, voice, and security functions. It uses the multi-core CPU and non-blocking switching structure and provides industry-leading system performance and extensibility, meeting service development requirements in the future. The AR2200 provides an integrated solution for enterprise networks, speeds up multi-service provision, and protects customers' investments.

Product Overview

The AR2200 uses the embedded hardware encryption technique and supports the voice Digital Signal Processor (DSP). It supports firewall functions, call processing, voice mail, and various application programs. The AR2200 supports various wired and wireless access modes, such as E1/T1, xDSL, xPON, CPOS and 3G.

The AR2200 series include: AR2220 and AR2240.

AR2220	
	• Forwarding capacity: 1Mpps
	• WAN speed with services: 75Mbps
	• Fixed port: 3*GE (one combo port)
	• Slot: 4*SIC + 2*WSIC
	• Dimensions (WxDxH): 442 mm x 420 mm x 44.5 mm

AR2240	
	• Forwarding capacity: 2Mpps (With SRU40), 3.5Mpps (With SRU80)
	• WAN speed with services: 150Mbps
	• Fixed port: 3*GE (two combo ports)
	• Slot: 4*SIC + 2*WSIC + 2*XSIC
	• Dimensions (WxDxH): 442 mm x 470 mm x 88.1 mm

**Note: There're two kind of main control board for AR2240, SRU40 and SRU80(Serive and Router Unit). SRU40 can provide 2Mpps packet forwarding performance and SRU80 can provice 3.5Mpps packet forwarding performance and hardware-based TM(Traffic Management) function.

The AR2200 supports various interface cards, including Ethernet interface cards, E1/T1/PRI/VE1/VT1 interface cards, synchronous/asynchronous interface cards, ADSL2+/G.SHDSL interface cards, FXS/FXO voice cards, ISDN interface cards, CPOS interface cards and EPON/GPON interface cards. These cards can be classified into SIC (Smart Interface Card) cards, WSIC (Double-Width SIC) cards, and XSIC (Double-Height WSIC) cards depending on slot type. The following are the appearances and description of main interface cards.

WSIC/XSIC card

L2/L3 Ethernet interface card

- Interfaces work in 10/100 Mbit/s or 10/100/1000 Mbit/s auto-sensing mode.
- Provides the Layer 2 and Layer 3 Ethernet switching function, and enables the AR2200 to communicate with other devices in a LAN network

SIC card

Channelized E1/T1/PRI/VE1/VT1 multifunctional interface card

- Sends, receives, and processes E1/T1 data traffic.
- Provides channelized E1/T1 access, and groups and binds channels.
- Provides the VoIP function over the E1/T1 line.
- Provides the ISDN PRI function.
- Provides the local and remote loopback functions for test and troubleshooting.

SIC card

FXS/FXO voice card

- Supports access and processing of AT0 loop trunk of analog phone, fax, and telephone exchange.
- Transmits voice signals over IP network.

SIC card

Sync/Async Serial Port Interface Card

- A synchronous serial interface can function as a DCE or DTE. It supports multiple physical layer protocols, such as V.24, V.35, and X.21, but does not support X.21 DCE. The interface provides a maximum transmission rate of 2.048 Mbit/s.
- An asynchronous serial interface supports the RS232 protocol and provides a maximum transmission rate of 115.2 kbit/s.
- Provides in-service upgrade by using system management channels.
- The system powers on or off the 1SA/2SA and monitors the current of the 1SA/2SA; the backplane provides 12 V voltage for the 1SA/2SA.

SIC card

GPON/EPON Dual-Mode Interface Card

- Supports OLT clock synchronization but not the 1588 function.
- Supports EPON/GPON but not GE.
- Supports the DyingGasp function.
- Supports rogue ONT detection and isolation.
- Detects the receiving optical power.
- Supports delayed reset.

Features and Benefits

❶ 3rd Generation AR with Industry-Leading Performance

The AR2200 uses the multi-core CPU and non-blocking switching structure and provides industry-leading system performance, meeting network extension requirements and service development requirements of enterprises.

- Multi-core CPU

  The multi-core CPU improves the speed of concurrent processing of data and voice services, which makes it possible to deploy a large number of services.

- Non-blocking switching for service traffic

  The bus channel bandwidth of single slot is up to 10 Gbit/s.

- Independent protocol management, service processing, and data switching, ensuring high performance and improving service reliability

- Integrated routing and switching functions

  This feature improves the data switching efficiency between interface cards and simplifies device configurations and maintenance.

- Hot swappable interface cards and redundant components such as fan modules and power modules ensuring service reliability and stability

❷ Dual-Mode Network, Supporting Flexible Access

1) Wireless Mode

Access Mode	Description
3G	• Compliance with 3G standards, including CDMA2000 EV-DO, WCDMA, and TD-SCDMA, providing flexible network access • NQA, monitoring the link real-time status and ensuring SLA • Link backup for enterprise services, improving reliability • Security VPN over 3G links, ensuring reliable service transmission
LTE	• Switching from 3G networks to LTE networks supported in future, protecting customers' investments

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Access Mode	Description
Fiber	• Support for GigabitEthernet and CPOS optical interfaces, allowing flexible network access • 1 Gbit/s bandwidth or higher bandwidth, meeting transmission requirements of bandwidth-thirsty services such as voice services • Support EPON/GPON interface cards
Copper cable	• Support for various interfaces, including xDSL interfaces, E1/T1 interfaces, serial ports, and ISDN interfaces, protecting customers' investments • Uplink access rates ranging from 64 kbit/s to 1 Gbit/s, which can be selected by customers

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Open Service Platform

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- Service integration without deploying dedicated servers, saving investments and simplifying management
- Service synchronized with cloud-side services, and local services processed locally, which improves service quality and efficiency.

Outstanding Voice Experience

The AR2200 provides various voice functions for enterprise data networks, enabling the enterprises to communicate flexibly and efficiently.

- Basic voice functions provided by the built-in PBX, SIP server, and SIP access gateway
- Value-added voice services, including multi-party communication, IVR automatic connection, ring-back-tone, parallel ringing, sequential ringing, one number link you (ONLY), bill management, and subscriber management
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- Built-in firewall
- Authentication technologies on ports, such as 802.1x authentication, MAC address authentication, and portal authentication
- Authentication methods, including RADIUS and HWTACACS
- VPN technologies, including IPSec VPN, GRE VPN, DSVPN and SSL VPN

Intelligent Service Deployment

As the enterprise scale increases, enterprise users have high requirements on service deployment. The AR2200 provides the following service deployment functions:

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- Users can use the USB disk to deploy devices, and the devices are plug-and-play.
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Enterprise users require simply service management. The AR2200 provides the following functions to simplify service management:

- The AR2200 works with the eSight network management system to simplify device management.
- The AR2200 provides the NQA function to monitor links in real time.
- By using the NetStream function provided by the AR2200, users can view traffic characteristics and statistics clearly, which is basis for network optimization.

Typical Application

1. High-Density GE Access

The AR2200 provides 24GE interface cards to implement high-density GE access. This interface card facilitates network operation and maintenance and protects customers' investment.
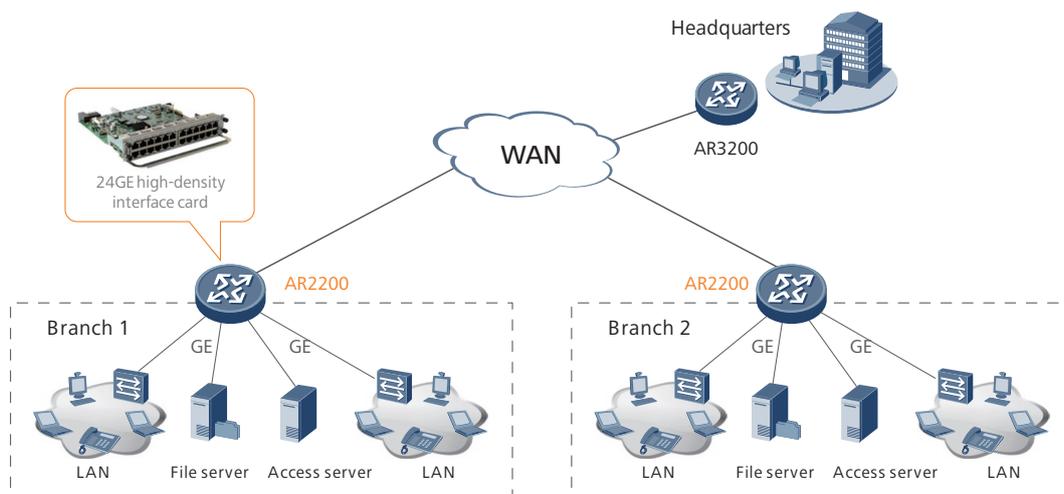
2. High-Quality Voice Service

As a voice gateway for enterprise networks, the AR2200 can function as an IP PBX or SIP gateway.
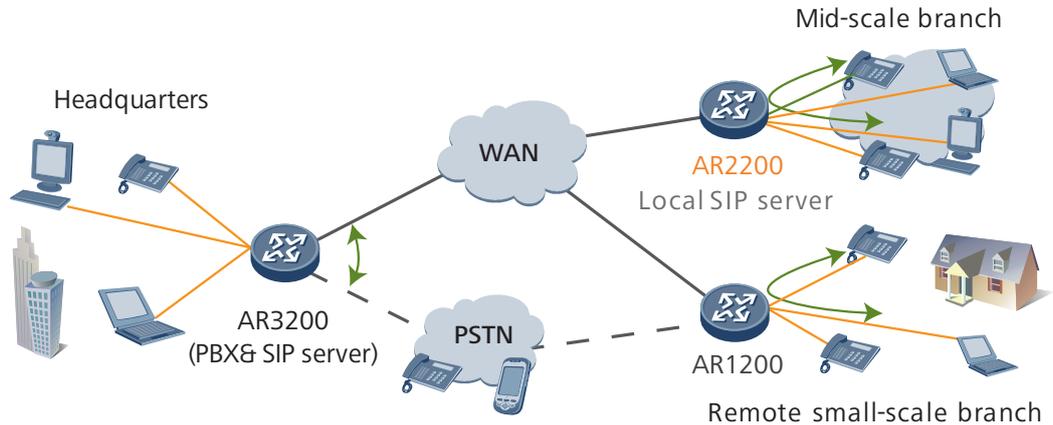
IP PBX application

The AR routers have built-in PBX, which supports the enterprise main number, IVR, and bill query functions to enhance corporate image and improve enterprise communication efficiency. And also the AR1200 can be located in a branch to provide the intelligent dialing function.

SIP gateway application

The AR2200 integrates voice, fax, and IP services. When providing voice services for enterprise users, the AR2200 functions as the SIP access gateway of a branch to transform phone signals into VoIP signals. The AR2200 uplink interfaces are connected to the IMS/NGN network to allow any media including phones, handsets, and computers to communicate at any time.
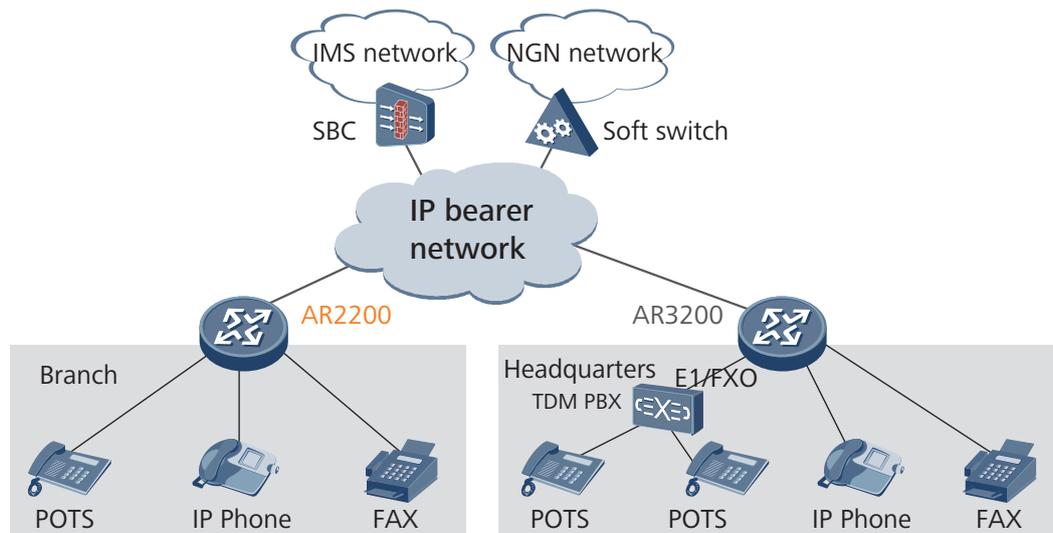
3. 3G Wireless Access in Branch

The AR2200 complies with 3G standards including CDMA2000 EV-DO, WCDMA, and TD-SCDMA, meeting the wireless communication requirements between branches and the headquarters. Users can use a 3G USB disk to deploy 3G services on the AR2200, saving service card slots. In addition, the 3G data link can be used as a backup for wired link to protect the xDSL, FE/GE, ISDN, and CPOS uplinks. The backup link improves network stability and reduces network construction costs. The AR2200 provides the NQA function to detect 3G link quality, ensuring the SLA.
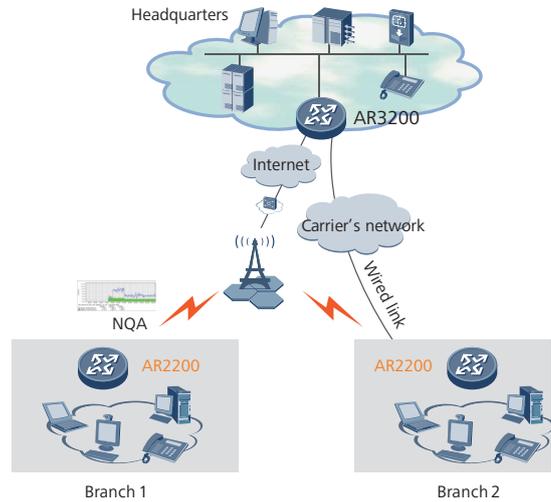
4. VPN in Branch
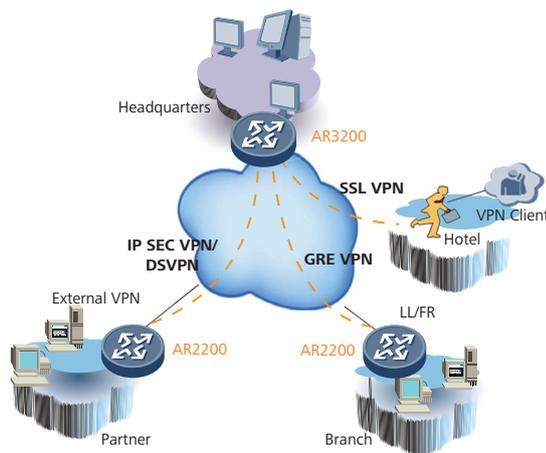
VPN over the Internet

The AR2200 provides various secure access functions to implement communication between enterprise branches and between branches and the headquarters, and to enable partners to access enterprise resources. Tunnels such as GRE VPN, IPSEC VPN, DSVPN and SSL VPN are set up between the headquarters and branches to implement secure data access and transmission. The AR2200 implements fast tunnel deployment and authentication for branches. Using a tunnel, partners can access and share enterprise resources. The AR2200 provides authentication and authorization for users.

VPN over the MPLS network

As the PEs of an MPLS network, the AR2200s are located in the branches. Different types of services are separated by MPLS L3 VPN. The AR2200 implements flexible deployment, fast distribution, and secure transmission of VPN services, and supports enterprise service operation over networks.
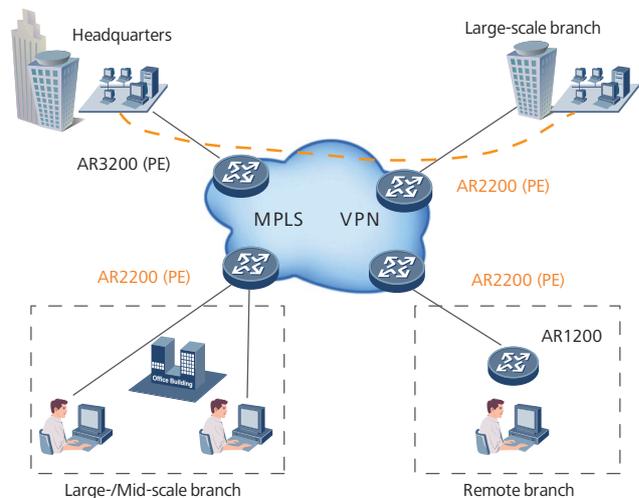
Technical Specifications

Item	AR2220	AR2240
Hardware		
Forwarding capacity	1 Mpps	2 Mpps (With SRU40) 3.5 Mpps (With SRU80)
WAN speed with services	75 Mbps	150 Mbps
Device switching capacity	32 Gbps	80 Gbps
Slot switching bandwidth	SIC & WSIC slots 2 Gbps XSIC & EXSIC slots 20 Gbps	
Fixed WAN ports	3 * GE (1 * combo port)	3 * GE (2 * combo ports)
SIC slots	4	4
WSIC slots (default/max**)	2/4	2/4
XSIC slots (default/max**)	0/2	2/4
EXSIC slot (shared with XSIC slots)	0	1
DSP slots	1	3
USB 2.0 ports	2	2
Mini-USB ports	1	1
Serial auxiliary/console port	1	1
Memory	2 GB	2 GB
Flash (default/max)	2 GB/4 GB	2 GB/4 GB
Max. power	150 W	350 W(Single Power Module)/700 W(Dual Power Module)
AC power	100 V-240 V	100 V-240 V
Frequency	50 Hz/60 Hz	50 Hz/60 Hz
DC power	-48 V~-60 V	-48 V~-60 V

Item	AR2220	AR2240
Hardware		
Dimensions (width x depth x height)	442 mm x 420 mm x 44.5 mm	442 mm x 470 mm x 88.1 mm
Weight	4.95 KG (without Power Module and Interface Card)	8.85 KG (without Power Module and Interface Card)
Ambient temperature	0°C-40°C	0°C-40°C
Relative humidity	5-90% (non-condensing)	5-90% (non-condensing)
Software		
Basic feature	DHCP server/client, PPPoE server/client, PPPoA client, PPPoEoA client, NAT, Sub interface management	
Voice	RTP, SIP, SIP AG, IP PBX/TDM PBX, FXO/FXS, VoIP/conference call	
3G	CDMA 2000 EV-DO Rev A, WCDMA, TD-SCDMA, individual 3G uplink/backup link	
LAN	IEEE 802.1P, IEEE 802.1Q, IEEE 802.3, VLAN management, MAC address management, MSTP	
IPv4 unicast routing	Routing policy, static route, RIP, OSPF, IS-IS, BGP	
Multicast	IGMP V1/V2/V3, IGMP-Snooping V1/V2/V3, PIM SM, PIM DM, MSDP	
MPLS	LDP, MPLS L3 VPN, static LSP, dynamic LSP	
VPN	IPSec VPN, GRE VPN, DSVPN, SSL VPN, L2TP VPN	
QoS	Diffserv mode, MPLS QoS, priority mapping, traffic policing (CAR), traffic shaping, congestion avoidance (based on IP precedence/DSCP WRED), congestion management (LAN interface: SP/WRR/SP+WRR; WAN interface: PQ/CBWFQ), MQC (traffic classifier, traffic behavior, and traffic policy), H-QoS, FR QoS	
Security	ACL, firewall, 802.1x authentication, MAC address authentication, Web authentication, AAA authentication, RADIUS authentication, HWTACACS authentication, broadcast storm suppression, ARP security, ICMP attack defense, URPF, IP Source Guard, DHCP snooping, CPCAR, blacklist, IP source tracing	
Management and maintenance	Upgrade management, device management, GTL, SNMP(v1/v2c/v3), NTP, CWMP, Auto-Config, deployment using USB disk, NetConf, CLI	

**Note: The maximum number of slots includes the number of combined slots.

How to Configure

Before choosing an AR2200, determine the device model, main control board, service cards, and software configurations.

- Device model and main control board

1.AR2220(fixed main control board):

The device model is determined by the slot quantity and forwarding capacity that you require.

2.AR2240(Selective main control board):

The device model and main control board are determined by the slot quantity and forwarding capacity that you require.

- Service card

The AR2200 service cards are classified into interface cards and DSP cards. The interface cards, including SIC cards, WSIC cards, and XSIC cards, are inserted into service card slots. Two SIC slots can be combined into one WSIC slot by removing the guide rail, and two WSIC slots can be combined into one XSIC slot by removing the panel. The DSP card is inserted into the DSP slot and works together with the FXO/FXS/ISDN/VE1 voice card.

- Software

The basic software and licensed software are available. The basic software provides basic functions such as routing, switching, voice, and security. The licensed software provides additional functions such as PBX.

Ordering Information

Model	Description
Host Configuration	
AR0M0022BA00	AR2220 Basic Configuration(Includes AR2220 Chassis,150W AC Power,with Basic Software and Document),2GE WAN,1GE Combo WAN,2 USB Interfaces,2GB MicroSD Card,4 SIC Slots,2 WSIC Slots
AR0M0022BD00	AR2220 Basic Configuration(Includes AR2220 Chassis,150W DC Power,with Basic Software and Document),2GE WAN,1GE Combo WAN, 2 USB Interfaces,2GB MircoSD Card,4 SIC Slots, 2 WSIC Slots
AR0M0024BA00	AR2240 Basic Configuration(Includes AR2240 Chassis,350W AC Power,Service and Router Unit 40,with Basic Software and Document),1GE WAN,2GE Combo WAN,2 USB Interfaces,2GB MicroSD Card,4 SIC Slots,2 WSIC Slots,2 XSIC Slots

Model	Description
AR0M0024EA00	AR2240 Basic Configuration(Includes AR2240 Chassis,350W AC Power,Service and Router Unit 80,with Basic Software and Document), 1GE WAN,2GE Combo WAN,2 USB Interfaces,2GB MircoSD Card,4 SIC Slots,2 WSIC Slots,2 XSIC Slots
AR0M0024DC00	AR2240 Basic Configuration(Includes AR2240 Chassis,350W DC Power,Service and Router Unit 40,with Basic Software and Document), 1GE WAN,2GE Combo WAN,2 USB Interfaces,2GB MircoSD Card,4 SIC Slots,2 WSIC Slots,2 XSIC Slots
AR0M0024ED00	AR2240 Basic Configuration(Includes AR2240 Chassis,350W DC Power,Service and Router Unit 80,with Basic Software and Document), 1GE WAN,2GE Combo WAN,2 USB Interfaces,2GB MircoSD Card,4 SIC Slots,2 WSIC Slots,2 XSIC Slots
AR0MDF05A000	Fan Box For AR2240

Main Control Board

Model	Description
AR0MSRU40A00	Service and Router Unit 40
AR0MSRU80A00	Service and Router Unit 80

DSP Module

Model	Description
AR0MDD016A00	16-channel vioce DSP module
AR0MDD032A00	32-channel vioce DSP module
AR0MDD064A00	64-channel vioce DSP module
AR0MDD128A00	128-channel vioce DSP module

SIC Interface Module

Model	Description
AR0MSEG1CA00	1-Port GE Combo WAN Interface Card
AR0MSEF2TA00	2-Port FE WAN Interface Card
AR0MSDME1A00	1-Port Channelized E1/T1/PRI/VE1 Multiflex Trunk Interface Card
AR0MSDE11A00	1-Port Fractional Channelized E1/T1 WAN Interface Card
AR0MSDME2A00	2-Port Channelized E1/T1/PRI/VE1 Multiflex Trunk Interface Card
AR0MSDE12A00	2-Port Fractional Channelized E1/T1 WAN Interface Card
AR0MSDSA1A00	1-Port Sync/Async Serial Port Interface Card
AR0MSDSA2A00	2-Port Sync/Async Serial Port Interface Card
AR0MSVA4B1A0	4-Port FXS and 1-Port FXO Voice Interface Card
AR0MSLA1XA01	1-Port ADSL2+ ANNEX A/M WAN Interface Module
AR0MSLB1XA01	1-Port ADSL2+ ANNEX B WAN Interface Module
AR0MSLS1XA00	1-Port 4 Pair G.SHDSL WAN Interface Module
AR0MSDS1XA00	1-Port ISDN S/T WAN Interface Card

Model	Description
AR0MSVS2XA00	2-Port ISDN S/T Voice Interface Module
AR0MSPC31A00	1-Port 155M Channelized POS Optical Interface Card
AR0MSOPP2A00	1-Port GPON/EPON Dual-mode Interface Card

WSIC Interface Module

Model	Description
AR0MWMF9TT00	8-Port 10/100BASE(RJ45) and 1-Port 10/100/1000BASE(RJ45)-L2/L3 Ethernet Interface Card
AR0MWDAS8A01	8-Port Async Serial Port Interface Card
AR0MWDME2A00	2-Port Channelized E1/T1/PRI/VE1 Multiflex Trunk Interface Card
AR0MWVS2XA00	2-Port ISDN S/T Voice Interface Card (WSIC)

XSIC Interface Module

Model	Description
AR0MXEGFTA00	24-Port 10/100/1000BASE(RJ45)-L2/L3 Ethernet Interface Card

Software

Model	Description
AR0S000PBX00	PBX Function
AR0S0DSVPN00	DSVPN Function
AR0SSSLVPN01	AR SSLVPN License-Access 10 users
AR0SSSLVPN02	AR SSLVPN License-Access 25 users
AR0SSSLVPN03	AR SSLVPN License-Access 100 users

SD Card & USB Disk

Model	Description
NUSBDSK01	Storage USB DISK,4GB,USB 2.0
N0MSD2G00	Storage Medium,Micro SD Card,2GB,2.7~3.6V,English SPEC,Support the Interface of the SD 1.1 Standard,11mm*15mm*1mm (L*W*T),No Adapter and Bar Code,Independence Box,for Datacom Enterprise Network AR production only
N0MSD4G01	Micro SD card,4GB, CLASS6,2.7~3.6V,English SPEC,Compatible with SD Specification Ver.2.0,11mm*15mm*1mm (L*W*T),No Adapter and Bar Code,Independence Box, Datacom Enterprise Network AR production only

Power Module

Model	Description
AR0MPSDP1500	150W DC Power Module
AR0MPSDP3500	350W DC Power Module
AR0MPSAP1500	150W AC Power Module
AR0MPSAP3500	350W AC Power Module

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

AR3200 Series Enterprise Routers

Huawei AR3200 series enterprise routers (AR3200 for short) are next-generation enterprise-class routers based on the Huawei proprietary Versatile Routing Platform (VRP), which take advantage of Huawei long-term accumulation in data communication, wireless, access network, and core network fields. The AR3200 integrates routing, switching, 3G, voice, and security functions. It uses the multi-core CPU and non-blocking switching structure and provides industry-leading system performance and extensibility, meeting service development requirements in the future. The AR3200 provides an integrated solution for enterprise networks, speeds up multi-service provision, and protects customers' investments.

Product Overview

The AR3200 uses the embedded hardware encryption technique and supports the voice Digital Signal Processor (DSP). It supports firewall functions, call processing, voice mail, and various application programs. The AR3200 supports various wired and wireless access modes, such as E1/T1, xDSL, xPON, CPOS, and 3G.

The AR3200 provides one model: AR3260.

AR3260

- Forwarding capacity: 2 Mpps (With SRU40), 3.5 Mpps (With SRU80)
- WAN speed with services: 1000Mbps
- Fixed port: 3*GE (two combo ports)
- Slot: 4*SIC + 2*WSIC + 4*XSIC
- Dimensions (WxDxH): 442 mm x 470 mm x 130.5 mm

**Note: There're two kind of main control board for AR3260, SRU40 and SRU80(Serive and Router Unit). SRU40 can provide 2Mpps packet forwarding performance and SRU80 can provide 3.5Mpps packet forwarding performance and hardware-based TM(Traffic Management) function.

The AR3200 supports various interface cards, including Ethernet interface cards, E1/T1/PRI/VE1/VT1 interface cards, synchronous/asynchronous interface cards, ADSL2+/G.SHDSL interface cards, FXS/FXO voice cards, ISDN interface cards, CPOS interface cards and EPON/GPON interface cards. The cards can be classified into SIC (Smart Interface Card) cards, WSIC (Double-Width SIC) cards, and XSIC (Double-Height WSIC) cards depending on slot type. The following are the appearances and description of interface cards.

WSIC/XSIC card
L2/L3 Ethernet interface card

- Interfaces work in 10/100 Mbit/s or 10/100/1000 Mbit/s auto-sensing mode.
- Provides the Layer 2 and Layer 3 Ethernet switching function, and enables the AR3200 to communicate with other devices in a LAN network.

SIC card

Channelized E1/T1/PRI/VE1/VT1
multifunctional interface card

- Sends, receives, and processes E1/T1 data traffic.
- Provides channelized E1/T1 access, and groups and binds channels.
- Provides the VoIP function over the E1/T1 line.
- Provides the ISDN PRI function.
- Provides the local and remote loopback functions for test and troubleshooting.

SIC card

FXS/FXO voice card

- Supports access and processing of AT0 loop trunk of analog phone, fax, and telephone exchange.
- Transmits voice signals over IP network.

SIC card

Sync/Async Serial Port Interface Card

- A synchronous serial interface can function as a DCE or DTE. It supports multiple physical layer protocols, such as V.24, V.35, and X.21, but does not support X.21 DCE. The interface provides a maximum transmission rate of 2.048 Mbit/s.
- An asynchronous serial interface supports the RS232 protocol and provides a maximum transmission rate of 115.2 kbit/s.
- Provides in-service upgrade by using system management channels.
- The system powers on or off the 1SA/2SA and monitors the current of the 1SA/2SA; the backplane provides 12 V voltage for the 1SA/2SA.

SIC card

GPON/EPON Dual-Mode Interface Card

- Supports OLT clock synchronization but not the 1588 function.
- Supports EPON/GPON but not GE.
- Supports the DyingGasp function.
- Supports rogue ONT detection and isolation.
- Detects the receiving optical power.
- Supports delayed reset.

Features and Benefits

1 3rd Generation AR with Industry-Leading Performance

The AR3200 uses the multi-core CPU and non-blocking switching structure and provides industry-leading system performance, meeting network extension requirements and service development requirements of enterprises.

- Multi-core CPU
  The multi-core CPU improves the speed of concurrent processing of data and voice services, which makes it possible to deploy a large number of services.
- Non-blocking switching for service traffic
  The bus channel bandwidth of single slot is up to 10 Gbit/s.

- Independent protocol management, service processing, and data switching, ensuring high performance and improving service reliability
- Integrated routing and switching functions
  This feature improves the data switching efficiency between interface cards and simplifies device configurations and maintenance.
- Hot swappable interface cards and redundant components such as fan modules and power modules ensuring service reliability and stability

② Dual-Mode Network, Supporting Flexible Access

1) Wireless Mode

Access Mode	Description
3G	• Compliance with 3G standards, including CDMA2000 EV-DO, WCDMA, and TD-SCDMA, providing flexible network access • NQA, monitoring the link real-time status and ensuring SLA • Link backup for enterprise services, improving reliability • Security VPN over 3G links, ensuring reliable service transmission
LTE	• Switching from 3G networks to LTE networks supported in future, protecting customers' investments

2) Wired Mode

Access Mode	Description
Fiber	• Support for GigabitEthernet and CPOS optical interfaces, allowing flexible network access • 1 Gbit/s bandwidth or higher bandwidth, meeting transmission requirements of bandwidth-thirsty services such as voice services • Support EPON/GPON interface cards
Copper cable	• Support for various interfaces, including xDSL interfaces, E1/T1 interfaces, serial ports, and ISDN interfaces, protecting customers' investments • Uplink access rates ranging from 64 kbit/s to 1 Gbit/s, which can be selected by customers

③ Services Integrated on One Router

The AR3200 integrates routing, switching, 3G, voice, and security functions.

Open Service Platform

The AR3200 interconnects with the mainstream third-party IT systems by using the Open Service Platform (OSP) to provide a unified communication solution for enterprise users. The customers, agents, third-party vendors, and manufacturers can develop and use the AR3200 as required.

- Fast service integration and customization, meeting customized requirements

- Service integration without deploying dedicated servers, saving investments and simplifying management

- Services synchronized with cloud-side services, local services processed locally, which improves service quality and efficiency.

Outstanding Voice Experience

The AR3200 provides various voice functions for enterprise data networks, enabling the enterprises to communicate flexibly and efficiently.

- Basic voice functions provided by the built-in PBX, SIP server, and SIP access gateway
- Value-added voice services, including multi-party communication, IVR automatic connection, ring-back-tone, parallel ringing, sequential ringing, one number link you (ONLY), bill management, and subscriber management
- Intelligent call routing, ensuring high reliability of voice services
- Interconnection with the NGN/IMS/PBX/terminal of mainstream vendors
- QoE, detecting voice service quality in real time
- Jitter buffer, echo cancellation, and packet loss compensation, improving customer experiences

Security

During service provision, the AR3200 ensures security of enterprise networks. It provides a complete security protection mechanism including user access control, packet detection, and active attack defense. This mechanism protects customers' investments.

- Built-in firewall
- Authentication technologies on ports, such as 802.1x authentication, MAC address authentication, and portal authentication
- Authentication methods, including RADIUS and HWTACACS
- VPN technologies, including IPSec VPN, GRE VPN, DSVPN and SSL VPN

Intelligent Service Deployment

As the enterprise scale increases, enterprise users have high requirements on service deployment. The AR3200 provides the following service deployment functions:

- The AR3200 provides a mini-USB port. By using the mini-USB, users can configure the devices through GUI.
- Users can use the USB disk to deploy devices, and the devices are plug-and-play.
- The AR3200 supports the auto-config function. The auto-config function enables the AR3200 to automatically obtain configurations.

Simplified Service Management

Enterprise users require simply service management. The AR3200 provides the following functions to simplify service management:

- The AR3200 works with the eSight network management system to simplify device management.
- The AR3200 provides the NQA function to monitor links in real time.
- By using the NetStream function provided by the AR3200, users can view traffic characteristics and statistics clearly, which is basis for network optimization.

Typical Application

1. High-Density Ethernet Access
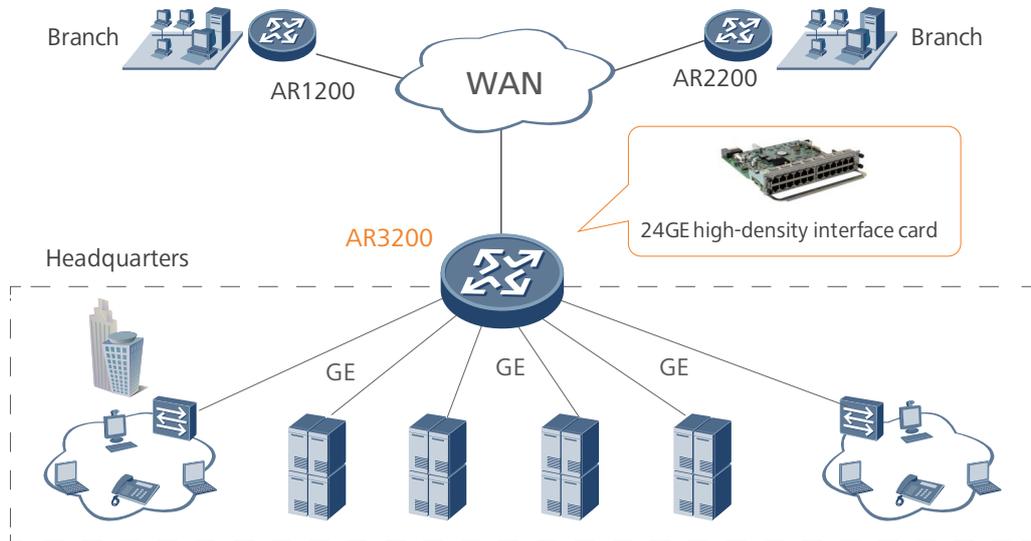
The AR3200 provides 24GE interface cards to implement high-density GE access. This interface card facilitates network operation and maintenance and protects customers' investment.

2. High-Quality Voice Service

As a voice gateway for enterprise networks, the AR3200 can function as an IP PBX or SIP gateway.
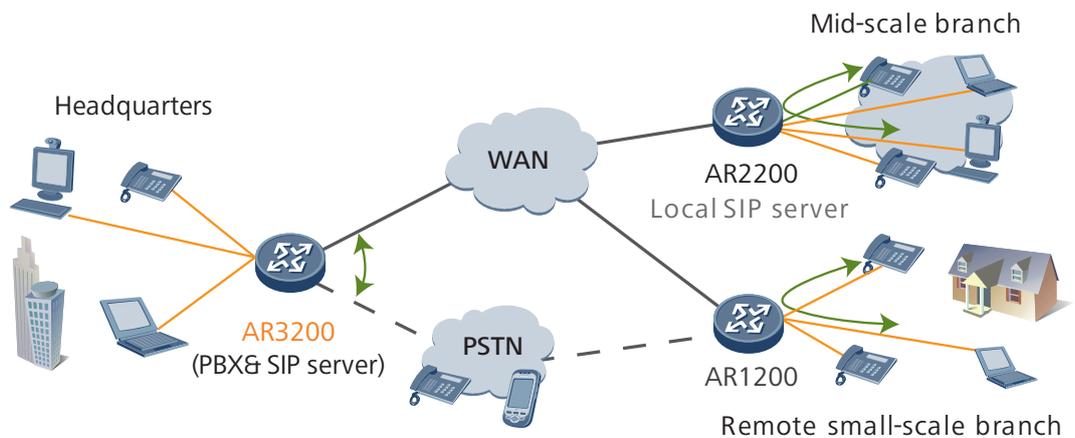
IP PBX application

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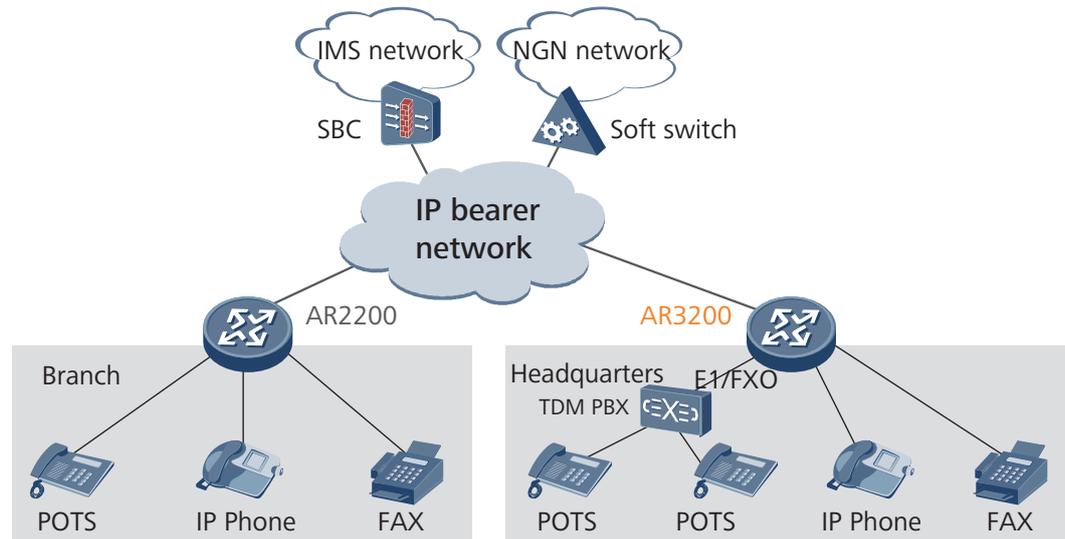
3. VPN in Branch

VPN over the Internet

The AR3200 provides various secure access functions to implement communication between enterprise branches and between branches and the headquarters, and to enable partners to access enterprise resources. Tunnels such as GRE VPN, IPSEC VPN, DSVPN and SSL VPN are set up between the headquarters and branches to implement secure data access and transmission. The AR3200 implements fast tunnel deployment and authentication for branches. Using a tunnel, partners can access and share enterprise resources. The AR3200 provides authentication and authorization for users.
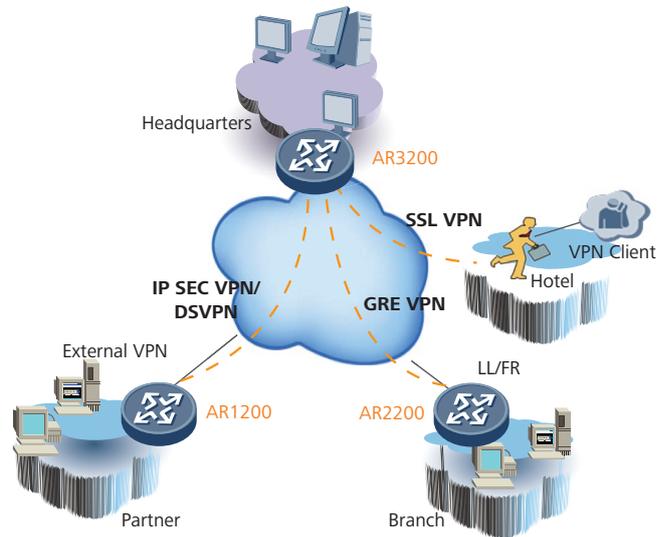
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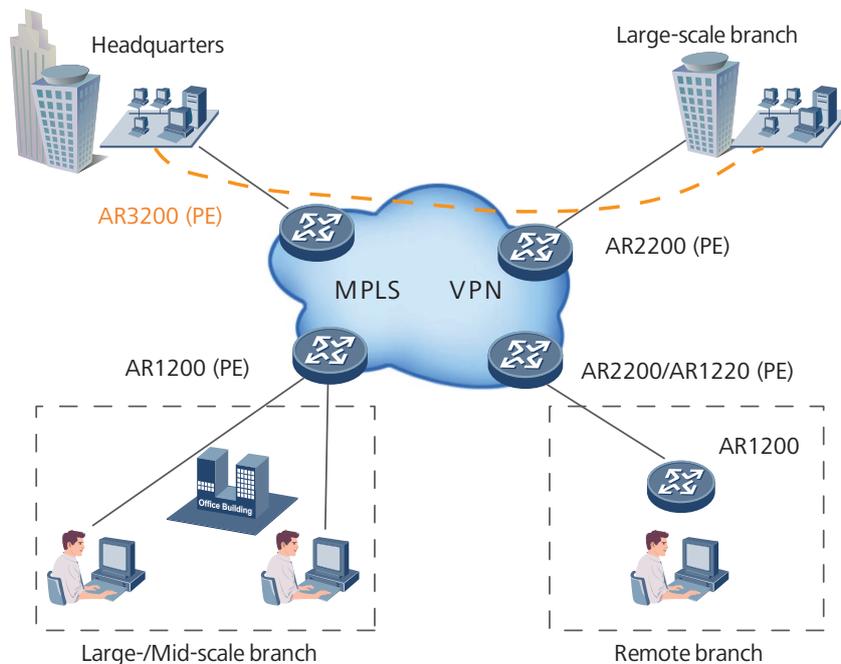
Technical Specifications

Item	AR3260
Hardware	
Forwarding capacity	2 Mpps (With SRU40), 3.5 Mpps (With SRU80)
WAN speed with services	1000 Mbps
Device switching capacity	160 Gbps
Slot switching bandwidth	SIC & WSIC slots 2 Gbps XSIC & EXSIC slots 20 Gbps
Fixed WAN ports	3 * GE (2 * combo ports)
SIC slots	4
WSIC slots	2
XSIC slots (default/max**)	4/6
EXSIC slots (share with XSIC)	1
DSP slots	3
USB 2.0 ports	2
Mini-USB ports	1
Serial auxiliary/ console port	1
Memory	2 GB
Flash(default/max)	2 GB/4 GB
Max. power	350 W(Single Power Module)/700 W(Dual Power Module)
AC power	100 V-240 V
Frequency	50 Hz/60 Hz
DC power	-48 V~-60 V
Dimensions (width x depth x height)	442 mm x 470 mm x 130.5 mm
Weight	11 KG (without Power Module and Interface Card)
Ambient temperature	0° C-40° C
Relative humidity	5-90% (non-condensing)

Software	
Basic feature	DHCP server/client, PPPoE server/client, PPPoA client, PPPoEoA client, NAT, Sub interface management
Voice	RTP, SIP, SIP AG, IP PBX/TDM PBX, FXO/FXS, VoIP/conference call
3G	CDMA 2000 EV-DO Rev A, WCDMA, TD-SCDMA, individual 3G uplink/backup link
LAN	IEEE 802.1P, IEEE 802.1Q, IEEE 802.3, VLAN management, MAC address management, MSTP
IPv4 unicast routing	Routing policy, static route, RIP, OSPF, IS-IS, BGP
Multicast	IGMP V1/V2/V3, IGMP-Snooping V1/V2/V3, PIM SM, PIM DM, MSDP
MPLS	LDP, MPLS L3 VPN, static LSP, dynamic LSP
VPN	IPSec VPN, GRE VPN, DSVPN, SSL VPN, L2TP VPN
QoS	Diffserv mode, MPLS QoS, priority mapping, traffic policing (CAR), traffic shaping, congestion avoidance (based on IP precedence/DSCP WRED), congestion management (LAN interface: SP/WRR/SP+WRR; WAN interface: PQ/CBWFQ), MQC (traffic classifier, traffic behavior, and traffic policy), H-QoS, FR QoS
Voice	RTP, SIP, SIP AG, IP PBX/TDM PBX, FXO/FXS, VoIP/conference call
Security	ACL, firewall, 802.1x authentication, MAC address authentication, Web authentication, AAA authentication, RADIUS authentication, HWTACACS authentication, broadcast storm suppression, ARP security, ICMP attack defense, URPF, IP Source Guard, DHCP snooping, CPCAR, blacklist, IP source tracing
Management and maintenance	Upgrade management, device management, GTL, SNMP(v1/v2c/v3), NTP, CWMP, Auto-Config, deployment using USB disk, NetConf, CLI

**Note: The maximum number of slots includes the number of combined slots.

How to Configure

Before choosing an AR3200, determine the device model, main control board, service cards, and software configurations.

- Device model and main control board

The device model and main control board are determined by the slot quantity and forwarding capacity that you require.

- Service card

The AR3200 service cards are classified into interface cards and DSP cards. The interface cards, including SIC cards, WSIC cards, and XSIC cards, are inserted into service card slots. Two SIC slots can be combined into one WSIC slot by removing the guide rail, and two WSIC slots can be combined into one XSIC slot by removing the panel. The DSP card is inserted into the DSP slot and works together with the FXO/FXS/ISDN/VE1 voice card.

- Software

The basic software and licensed software are available. The basic software provides basic functions such as routing, switching, voice, and security. The licensed software provides additional functions such as PBX.

Ordering Information

Model	Product Description
Host Configuration	
AR0M0036SA00	AR3260 Basic Configuration(Includes AR3260 Chassis,350W AC Power,Service and Router Unit 40,with Basic Software and Document), 1GE WAN, 2GE Combo WAN,2 USB Interfaces,2GB MircoSD Card,4 SIC Slots,2 WSIC Slots, 4XSIC Slots
AR0M0036BA00	AR3260 Basic Configuration(Includes AR3260 Chassis,350W AC Power,Service and Router Unit 80,with Basic Software and Document),1GE WAN,2GE Combo WAN,2 USB Interfaces,2GB MicroSD Card,4 SIC Slots,2 WSIC Slots,4 XSIC Slots
AR0M0036SD00	AR3260 Basic Configuration(Includes AR3260 Chassis,350W DC Power,Service and Router Unit 40,with Basic Software and Document), 1GE WAN, 2GE Combo WAN,2 USB Interfaces,2GB MircoSD Card,4 SIC Slots,2 WSIC Slots, 4XSIC Slots
AR0M0036BD00	AR3260 Basic Configuration(Includes AR3260 Chassis,350W DC Power,Service and Router Unit 80,with Basic Software and Document), 1GE WAN, 2GE Combo WAN,2 USB Interfaces,2GB MircoSD Card,4 SIC Slots,2 WSIC Slots, 4XSIC Slots
AR0MDF03A000	Fan Box For AR3260
Main Control Board	
AR0MSRU40A00	Service and Router Unit 40
AR0MSRU80A00	Service and Router Unit 80
DSP Module	
AR0MDD016A00	16-channel vioce DSP module
AR0MDD032A00	32-channel vioce DSP module
AR0MDD064A00	64-channel vioce DSP module
AR0MDD128A00	128-channel vioce DSP module
SIC Interface Module	
AR0MSEG1CA00	1-Port GE Combo WAN Interface Card
AR0MSEF2TA00	2-Port FE WAN Interface Card
AR0MSDME1A00	1-Port Channelized E1/T1/PRI/VE1 Multiflex Trunk Interface Card

Model	Product Description
AR0MSDE11A00	1-Port Fractional Channelized E1/T1 WAN Interface Card
AR0MSDME2A00	2-Port Channelized E1/T1/PRI/VE1 Multiflex Trunk Interface Card
AR0MSDE12A00	2-Port Fractional Channelized E1/T1 WAN Interface Card
AR0MSDSA1A00	1-Port Sync/Async Serial Port Interface Card
AR0MSDSA2A00	2-Port Sync/Async Serial Port Interface Card
AR0MSVA4B1A0	4-Port FXS and 1-Port FXO Voice Interface Card
AR0MSLA1XA01	1-Port ADSL2+ ANNEX A/M WAN Interface Module
AR0MSLB1XA01	1-Port ADSL2+ ANNEX B WAN Interface Module
AR0MSLS1XA00	1-Port 4 Pair G.SHDSL WAN Interface Module
AR0MSDS1XA00	1-Port ISDN S/T WAN Interface Card
AR0MSVS2XA00	2-Port ISDN S/T Voice Interface Module
AR0MSPC31A00	1-Port 155M Channelized POS Optical Interface Card
AR0MSOPP2A00	1-Port GPON/EPON Dual-mode Interface Card

WSIC Interface Module

AR0MWMF9TT00	8-Port 10/100BASE(RJ45) and 1-Port 10/100/1000BASE(RJ45)-L2/L3 Ethernet Interface Card
AR0MWDAS8A01	8-Port Async Serial Port Interface Card
AR0MWDME2A00	2-Port Channelized E1/T1/PRI/VE1 Multiflex Trunk Interface Card
AR0MWVS2XA00	2-Port ISDN S/T Voice Interface Card (WSIC)

XSIC Interface Module

AR0MXEGFTA00	24-Port 10/100/1000BASE(RJ45)-L2/L3 Ethernet Interface Card

Software

AR0S000PBX00	PBX Function
AR0S0DSVPN00	DSVPN Function
AR0SSSLVPN01	AR SSLVPN License-Access 10 users

Model	Product Description
AR0SSSLVPN02	AR SSLVPN License-Access 25 users
AR0SSSLVPN03	AR SSLVPN License-Access 100 users

SD Card & USB Disk

Model	Product Description
NUSBDSK01	Storage USB DISK,4GB,USB 2.0
N0MSD2G00	Storage Medium,Micro SD Card,2GB,2.7~3.6V,English SPEC,Support the Interface of the SD 1.1 Standard,11mm*15mm*1mm (L*W*T),No Adapter and Bar Code,Independence Box,for Datacom Enterprise Network AR production only
N0MSD4G01	Micro SD card,4GB, CLASS6,2.7~3.6V,English SPEC,Compatible with SD Specification Ver.2.0,11mm*15mm*1mm (L*W*T),No Adapter and Bar Code,Independence Box, Datacom Enterprise Network AR production only

Power Module

Model	Product Description
AR0MPSDP3500	350W DC Power Module
AR0MPSAP3500	350W AC Power Module

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

Huawei Enterprise
WLAN Series Product

3

WA601 Indoor Access Point

Highly reliable wireless access
High network security
Superb environment adaptability
Flexible network deployment and management

Highly reliable wireless access

Complies with IEEE 802.11b/g; provides up to 54 Mbit/s transmission rate; supports the well-designed QoS mechanism; provides priority scheduling based on service types (voice, video, and data); supports wired link integrity check.

High network security

Supports 64/128-bit WEP, WPA, WPA2, WAPI authentication keys; supports 802.1x authentication, ACLs, DDoS defense, VLAN trunk, and wireless user isolation.

Superb environment adaptability

Supports wireless transmission rate adaptation; selects the optimal channel automatically; adjusts the radio transmit power dynamically.

Flexible network deployment and management

Manageable by ACs as a fit AP; supports IEEE 802.3af/at PoE; provides SNMP/CLI management, the system log function, and real-time network status monitoring; supports in-service software upgrade.

The WA601 indoor AP (WA601 for short) is an IEEE 802.11b/g-compliant WLAN access point device. It is applicable to the places with simple building structure, small size, dense users, and high capacity demands, such as small-size conference room, classroom, and library. The WA601, providing effective radio transmission and high receiver sensitivity, is easy to deploy and manage on carrier-level wireless networks.

The WA601 has the following advantages on a wireless local area network (WLAN):

Reliable network security

The WA601 supports a variety of authentication and encryption modes:

• Wired Equivalent Privacy (WEP) authentication and encryption

• Wi-Fi Protected Access (WPA)/WPA2 authentication and encryption

• WLAN Authentication and Privacy Infrastructure (WAPI) authentication and encryption

• 802.1x authentication and encryption

Superb environment adaptability

The WA601 dynamically chooses the optimal connection rate and allows roaming users to automatically maintain their network connections.

Intelligent device management and maintenance

The WA601 is managed by an AC as a fit AP. After being powered on, the WA601 automatically gets online, discovers the AC, and loads configurations from the AC. Authentication, data forwarding, AP management, configurations of security protocols, routing, and QoS are performed on the AC and monitored in real time by the NMS. This simplifies AP management and maintenance. In addition, the WA601 provides the functions of automatic channel and frequency adjustment, in-service fast roaming, and load balancing.

Typical Networking

The following figure shows the typical networking of the WA601.
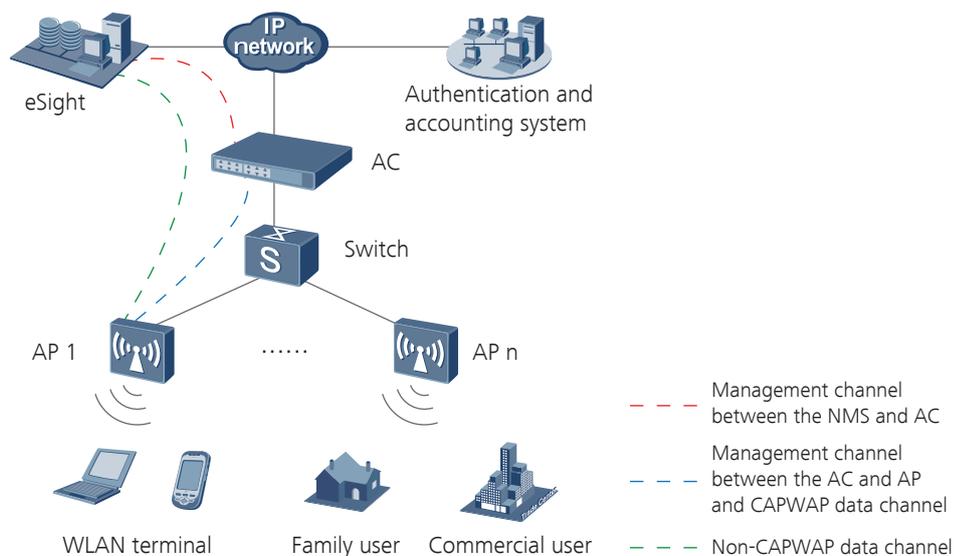
In this networking, the WA601 functions as a fit AP and is only responsible for data forwarding. The AC is responsible for user access, AP management, authentication, routing, security, and QoS.

Hardware Specifications
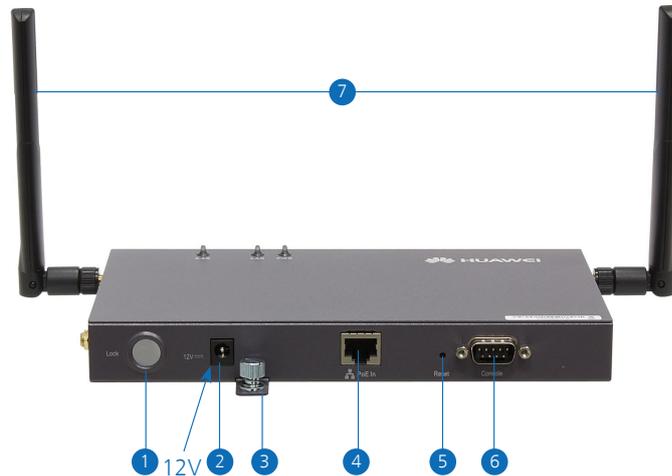
Port/button

1. Lock port: protects the WA601 against unauthorized use.

2. DC power port: 12 V DC.

3. Latch: installs the device to the wall.

4. Ethernet port: connects to the Ethernet port of a PC or switch.

5. Reset button: restarts the system (hold for less than 10s) or restores the factory settings (hold for more than 10s).

6. Console port: is used for out-of-band device management.

7. Radio antenna ports (two ports are connecting to antennas, and one antenna port is reserved).

Indicator

*   One power supply indicator (PWR)

*   One link status indicator: LAN

*   One radio status indicator: specifies the 2.4G radio module status.

Functions and Features

WLAN uplink

- Provides one 10/100base-T/Tx port and complies with IEEE 802.3.

- Supports IEEE 802.3af/at PoE.

- Supports DHCP for WAN IP address allocation.

WLAN downlink

- Provides two single-frequency antenna ports, each of which is connected using the RP-SMA connector.

- Complies with IEEE 802.11b/g.

- Adjusts the radio transmit power automatically: full (20 dBm), half (17 dBm), quarter (14 dBm), eighth (11 dBm).

- Supports the power saving mode. When a terminal enters the power saving mode, an AP buffers data frames and notifies the terminal using a Beacon frame.

- Supports automatic or manual rate adjustment. Automatic rate adjustment is as follows:

  » 802.11b: 11, 5.5, 2, or 1 Mbit/s

  » 802.11g: 54, 48, 36, 24, 18, 12, 9, or 6 Mbit/s

  » In mixed mode: 54, 48, 36, 24, 18, 12, 9, 6, 11, 5.5, 2, or 1 Mbit/s

- Supports multiple SSIDs, one management virtual AP (VAP), and eight data VAPs.

  » A management VAP is used to query and monitor the device status but is not allowed to access the Internet.

  » Each data VAP has its own SSID and parameters. Each VAP is a physical AP for users.

  » All the SSIDs of VAPs can be hidden.

- Provides the following configurations:

  » Long or short preamble for the IEEE 802.11b mode

  » Beacon interval

  » DTIM interval (1 to 255 Beacons)

- Supports 13 channels and automatic or manual channel selection in IEEE 802.11b/g mode.

- Supports signal quality query, including receive signal strength and signal-to-noise ratio (SNR).

- Supports background scanning and invalid AP detection.

Link layer

- Supports CAPWAP tunnel integrity check. When an Ethernet link fails, wireless service automatically stops. This function can be enabled or disabled.

- Associates with up to 128 terminals.

- Specifies a service VLAN for each VAP. The VLAN ID ranges from 1 to 4095.

QoS

- Supports IEEE 802.11e (WMM) and four priority queues.

Attack defense

- Defends against DoS attacks.

- Defends against TCP/UDP port scanning.

- Defends against malformed packet attacks, such as Ping of Death attacks and Teardrop attacks.

Security

- Supports WPA/WPA2 PSK encryption.

- Supports 64/128-bit WEP encryption.

- Supports WAPI.

- Supports 802.1x authentication.

- Supports 802.11i security, including EAP-TLS/user/session key, EAP-TTLS/user/session key, PEAP, MD5, and AES/TKIP encryption.

- Management VAP users cannot access data services.

Management

- Managed by ACs.

- Supports AP debugging through the serial interface and Telnet.

- Supports DHCP and obtain IP addresses from WAN interfaces as a DHCP terminal.

- Supports watchdog and prevents system lock.

- Supports the system log function and complies with RFC 3164.

- A management VAP is not allowed to access the Internet.

Hot-Spot

- Prohibits communication between wireless terminals. This function can be enabled or disabled.

- Supports local management filtering to prevent terminals from managing the device.

Technical Specifications

Power specifications

- Power adapter input: 90 V-264 V AC; 50 Hz-60 Hz

- Power adapter output: 12 V, 1.25 A

- Maximum power consumption: 13 W

- PoE input voltage: -48 V DC

Operating environmental specifications

- Temperature:

  » Operating temperature: -10° C to +55° C

  » Storage temperature: -40° C to +70° C

- Humidity: 5% to 95% (non-condensing)

Physical specifications

- Dimensions (W x D x H): 210 mm $\times$ 125 mm $\times$ 25 mm

- Weight: 0.960 kg

Security

- CSA/NRTL (UL1950,CSA 22.2.950)

- TUV/GS (EN60950)

- IC (CSA C22.2,ICES-003 Class A)

Wireless specifications

- Radio

  » 802.11b/g

  » 2.412 to 2.462 GHz (for US, Canada)

  » 2.412 to 2.472 GHz (for ETSI, China)

  » 802.11b

  » 2.412 to 2.462 GHz (for US, Canada)

  » 2.412 to 2.472 GHz (for ETSI, China)

- Channel

  » 802.11g

  » 11 channels in base mode (US, Canada)

  » 13 channels (ETSI, China)

  » 802.11b

  » 11 channels in base mode (US, Canada)

- » 13 channels (ETSI, China)
- Radio technology
  - » Direct Sequence Spread Spectrum (DSSS)/Orthogonal Frequency Division Multiplexing(OFDM)
- Data transmission rate
  - » 1/2/5.5/11 (11b) Mbit/s
  - » 6/9/12/18/24/36/48/54 Mbit/s (11g)
- Media access protocol
  - » CSMA/CA with ACK

Wireless parameters

- Antenna type: removable antennas
- Antenna gain: 2.5 dBi
- Maximum number of concurrent users: 128
- Transmit power: 20 dBm (100 mW)

WA603DN Settled Indoor Access Point

Highly reliable wireless access service
Highly secure network
Highly self-adaptive to the environment
Easy administration and maintenance

Highly reliable wireless access service

Compatible with the IEEE 802.11a/b/g/n standards

Supporting frequency ranges or 2.4 GHz and 5 GHz and a maximum rate of 600 Mbit/s

Supporting QoS protocols and priority scheduling based on the service type (voice, video, and data)

Supporting the completeness test on a wired link

Highly secure network

Supporting the WEP, WPA/WPA2, WAPI, and IEEE 802.1X authentication/encryption

Easy network deployment and configuration

Automatically selecting the transmission rate, channel and transmit power, Self-adapting to the radio environment, Avoiding interference in real time, Improving signal noise ratio (SNR), Increasing throughput, Increasing access rate.

Easy administration and maintenance

AC auto-discovery when an AP goes online, automatic configuration loading, and plug-and-play

In-service roaming switching for users

Real-time monitoring on the NMS to facilitate remote configuration and quick fault locating

The WA603DN is a settled indoor AP that supports the two frequency ranges of 2.4 GHz and 5 GHz with compliance with the IEEE 802.11a/b/g/n standards. It is a wireless local area network (WLAN) access device that supports the fit mode. The WA603DN is characterized by its high reliability, high security, easy deployment, automatic going online and configuration, and real-time administration and maintenance. This product meets the requirements for indoor network deployment. It is applied in open wireless network scenarios with a simple construction structure, small signal coverage area, concentrated user group, and high demand for capacity. Examples of such a scenario include the WLANs in hotels, airports, schools, and small-and-medium-sized enterprises.

The WA603DN has the following advantages in a WLAN:

Highly secure network

The WA603DN supports multiple authentication and encryption modes:

- Wired equivalent privacy (WEP) authentication/encryption

- Wi-Fi protected access (WPA/WPA2) authentication/encryption

- WLAN authentication and privacy infrastructure (WAPI) authentication/encryption, which is a national standard of WLAN in China

- IEEE 802.1X authentication/encryption

Easy network deployment and configuration

- Dynamic rate adjustment, automatically matching the best connection rate, Auto discovery when a device goes online and automatic configuration loading, Automatic adjustment of channel and frequency for load balancing, In-service roaming switching for users.

- It supports the multiple-input and multiple-output (MIMO) (2x2) antenna system, including six removable antennas (three at radio frequency 2.4 GHz and three at 5 GHz). Customers can add external antennas with different gains based on practical demands to adjust the wireless coverage area.

Easy administration and maintenance

The WA603DN, as a fit AP managed by an AC, automatically goes online after it is powered on. Configurations are automatically loaded by the AC. In addition, the AC also completes the authentication, data forwarding, AP management, security protocols, routing, and QoS. All the tasks are monitored by the NMS in real time. In this way, administration and maintenance of APs is simplified. The WA603DN also provides terminal users with functions including automatic adjustment of channel and frequency, in-service roaming switching, and load balancing.

Network Application

The following figure shows the typical network of the WA603DN.
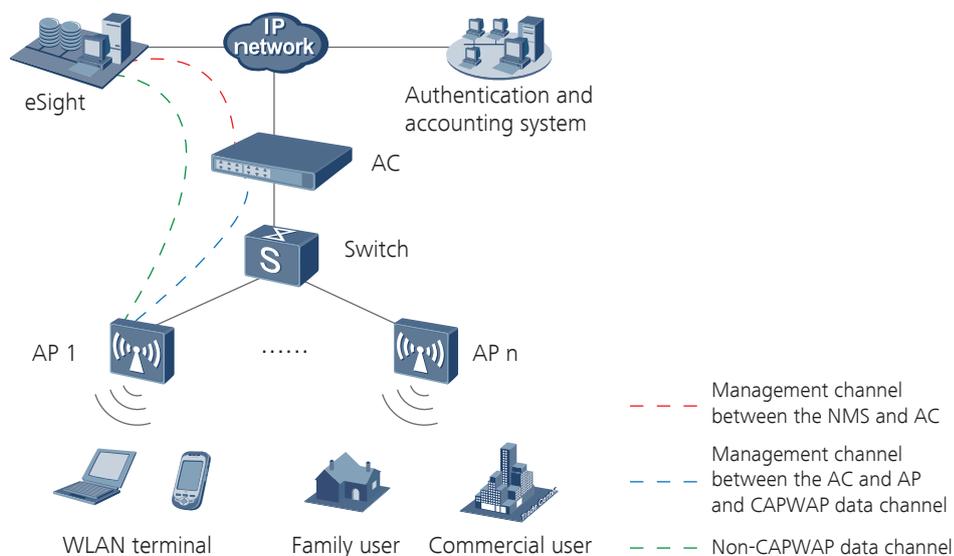
In the preceding network, the WA603DN, as the fit AP, only carries the bridge forwarding function. Functions including the user access, AP going online, authentication, routing, AP administration, security protocols, and QoS are all carried by the AC.

Hardware Characteristics
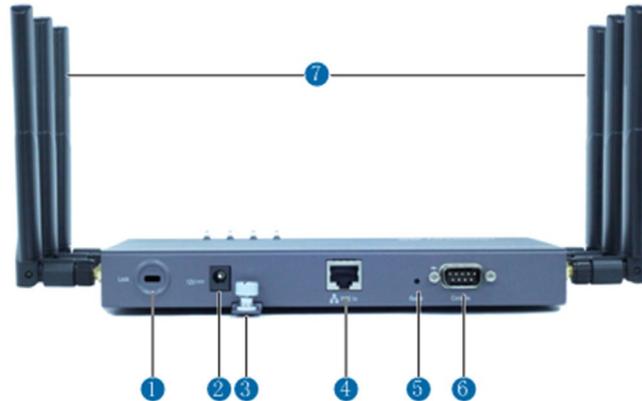
1. Lock: for the safety of the WA603DN

2. DC power supply port: 12 V DC

3. Captive screw: for fixing the WA603DN on a wall or level surface

4. PoE In port: 10/100/1000 Mbit/s port, for wired Ethernet connection. PoE is also supported by the port by connecting the WA603DN to a PoE switch or PoE power supply. This AP supports both PoE and DC power supplies, The PoE power supply is recommended.

5. Reset button: restarting the device by a short press (less than 10s), and restoring the factory defaults by a long press (over 10s)

6. RS-232 console port: for outband management of the device

7. Six removable RP-SMA wireless antennas

LED

- Wireless-connection status indicator: 2.4 GHz and 5 GHz

    » On in green: The radio unit is on.

    » Blinking (0.25s): Data is being transmitted.

    » Off: The radio unit is off.

- Link status indicator: LAN

    » On in green: A 10/100/1000 Mbit/s Ethernet connection is established.

    » Blinking (0.25s): The 10/100/1000 Mbit/s Ethernet link is transmitting data.

    » Off: The 10/100/1000 Mbit/s Ethernet connection is off or there is not Ethernet connection.

- Power indicator:

    » On in green: The device is working properly.

    » Off: The device malfunctions or is powered off.

    » Blinking when the device is starting (1.0s): The system is self-checking or loading software.

    » Blinking when the device is working (0.5s): The system has detected an abnormality while the device is working.

Functions and Features

WLAN Features

- Compliance with the IEEE 802.11a/b/g/n standards. 2.4 GHz and 5 GHz frequencies are supported in IEEE 802.11n and the maximum rate reaches 600 Mbit/s.

- Automatic (default) and manual rate adjustment.

- Channel rate adjustment:

    » Optional rates in IEEE 802.11a: 6, 9, 12, 18, 24, 36, 48, and 54 Mbit/s

    » Optional rates in IEEE 802.11b: 1, 2, 5.5, and 11 Mbit/s

    » Optional rates in IEEE 802.11g: 6, 9, 12, 18, 24, 36, 48, and 54 Mbit/s

    » The rate in IEEE 802.11n is adjustable between MCS0 and MCS15

- WLAN channel management:

    » Number of channels in the IEEE 802.11a mode: 27 (only 5 in China)

    » Number of channels in the IEEE 802.11b/g modes: 13

    » Number of channels in the IEEE 802.11n mode: 13 when the frequency is 2.4 GHz and 27 when the frequency is 5 GHz (only 5 supported in China)

- Automatic channel scanning. The device automatically scans the surrounding AP-used channels and interferences, and then reports the results to the AC to trigger a channel adjustment.

- Independent configuration of hidden functions by each SSID of an AP

- Signal sustain technology (SST)

- Station power management mode

- Control and provisioning of wireless access points (CAPWAP)

- Auto discovery of the AC by an AP

Network Features

- Adding users to specific VLANs based on the SSIDs

- VLAN trunk function on the upstream Ethernet port

- Isolation of wireless terminals in the same VLAN

- Concentrated forwarding and local forwarding of user data

- VLAN IDs (1–4093) and 32 VAPs

- IGMP snooping

- IGMP proxy

- Fast leave mode

- DHCP client, obtaining the IP addresses using DHCP

- Configuring the working mode of multicast IGMP snooping based on the VAP

QoS Features

- Mapping and priority scheduling rules based on Wi-Fi multimedia (WMM) standards, which process and forward data based on the priority

- Management of Wi-Fi multimedia parameters based on the radio frequency

- WMM power management mode

- Packet priority mapping

- Queue mapping and scheduling

Security Features

- OPEN-SYS authentication

- WEP authentication/encryption

- WPA/WPA2 authentication/encryption

- IEEE 802.1X authentication/encryption

- WAPI authentication/encryption

- SMS4 decryption of data packets

- MAC address filtering

- Access control based on the MAC address, including blacklist and whitelist

- Link completeness check. The device automatically disables wireless signal transmission when the channel between the AP and AC is disconnected.

Ethernet Features

- Compliance with IEEE 802.3u

- Auto-negotiation of rate and duplex mode

- Automatic MDI/MDI-X

- 1024 unicast MAC addresses

Maintenance Features

- Administration and maintenance of an AP by the AC

- Management on the CLI

- Commissioning using Telnet

- Default maintenance IP address: 192.168.0.1/255.255.255.0. Default user name: admin, default password: admin

- Upgrade using the AC CLI or using the ESight

- User configuration monitoring and fast fault locating by the NMS in real time

- AP system state alarming

Technical Specifications

Power Parameters

- Power adapter input: 90–264 V AC

- Power adapter output: 12 V DC, 1.25 A

- PoE switch or PoE power supply: –48 V DC (not delivered with the device)

- Compliance with the IEEE 802.3at power over Ethernet (PoE) standard

- Maximum power consumption: 15 W

Environment Parameters

- Working temperature: −10° C to +55° C

- Storage temperature: −40° C to +70° C

- Environment humidity: 5%–95% (non-condensing)

Physical Description

- Dimensions (H x W x D): 210 mm x 125 mm x 25 mm

- Weight: about 1040 g

Certificates

- Radio admission permit, passing China's radio commission certificate for transmit spectrum and transmit power

- Restriction of hazardous substances (RoHS) certificate

Wireless Parameters

- Antenna type: six removable RP-SMA wireless antennas

- Antenna gain: 2 dBi

- Number of simultaneously online users: ≤ 128

- Transmit power: 20 dBm (100 mW)

WA603SN Settled Indoor Access Point

Highly reliable wireless access service
Highly secure network
Highly self-adaptive to the environment
Easy administration and maintenance

Highly reliable wireless access service

Compatible with the IEEE 802.11b/g/n standards

Supporting 2.4 GHz frequency and a maximum rate of 300 Mbit/s

Supporting QoS protocols and priority scheduling based on the service type (voice, video, and data)

Supporting the completeness test on a wired link

Highly secure network

Supporting the WEP, WPA/WPA2, WAPI, and IEEE 802.1X authentication/encryption

Highly self-adaptive to the environment

Automatically selecting the transmission rate, channel and transmit power, Self-adapting to the radio environment, Avoiding interference in real time, Improving signal noise ratio (SNR), Increasing throughput, Increasing access rate.

Easy administration and maintenance

AC auto discovery when an AP goes online, automatic configuration loading, and plug-and-play

In-service roaming switching for users

Real-time monitoring on the NMS to facilitate remote configuration and quick fault locating

The WA603SN is a settled indoor AP that supports the 2.4 GHz frequency with compliance to the IEEE 802.11b/g/n standards. It is a wireless local area network (WLAN) access device supporting the fit mode. The WA603SN is characterized by its high reliability, high security, easy deployment, automatic going online and configuration, and real-time administration and maintenance. This product meets the requirements for indoor network deployment. It is applied in open wireless network scenarios with a simple construction structure, small signal coverage area, concentrated user group, and high demand for capacity. Examples of such a scenario include the WLANs in hotels, airports, schools, and small-and-medium-sized enterprises.

The WA603SN has the following advantages in a WLAN:

Highly secure network

The WA603SN supports multiple authentication and encryption modes:

- Wired equivalent privacy (WEP) authentication/encryption

- Wi-Fi protected access (WPA/WPA2) authentication/encryption

- WLAN authentication and privacy infrastructure (WAPI) authentication/encryption, which is a national standard of WLAN in China

- IEEE 802.1X authentication/encryption

Easy network deployment and configuration

- Dynamic rate adjustment, automatically matching the best connection rate, Auto discovery when a device goes online and automatic configuration loading, Automatic adjustment of channel and frequency for load balancing, In-service roaming switching for users.

- It supports the multiple-input and multiple-output (MIMO) (2x2) antenna system, including three removable antennas at radio frequency 2.4 GHz. Customers can add external antennas with different gains based on practical demands to adjust the wireless coverage area.

Easy administration and maintenance

The WA603SN, as a fit AP managed by an AC, automatically goes online after it is powered on. Configurations are automatically loaded by the AC. In addition, the AC completes the authentication, data forwarding, AP management, security protocols, routing, and QoS. All the tasks are monitored by the NMS in real time. In this way, administration and maintenance of APs is simplified. The WA603SN also provides terminal users with functions including automatic adjustment of channel and frequency, in-service roaming switching, and load balancing.

Network Application

The following figure shows the typical network of the WA603SN.
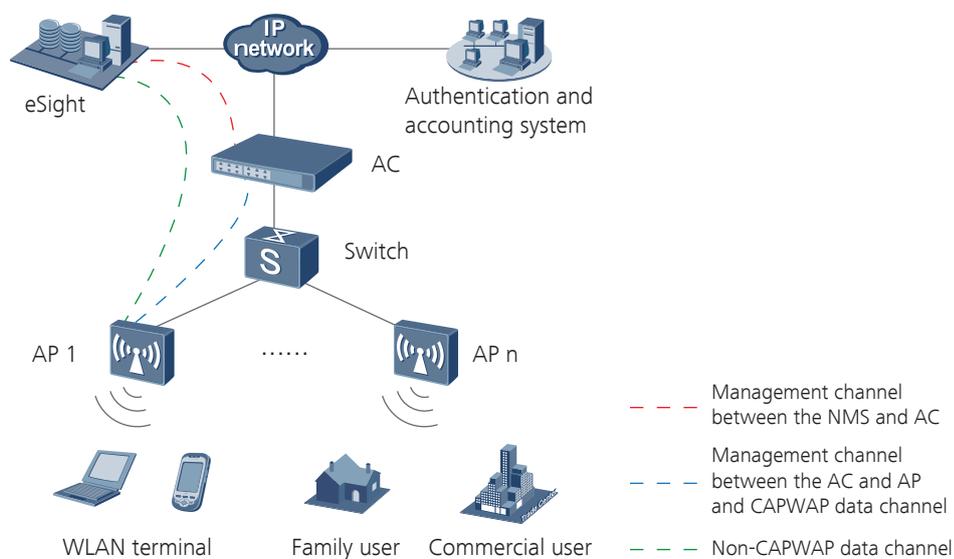
In the preceding network, the WA603SN, as the fit AP, only carries the bridge forwarding function. Functions including the user access, AP going online, authentication, routing, AP management, security protocols, and QoS are all carried by the AC.

Hardware Characteristics

Port/Button
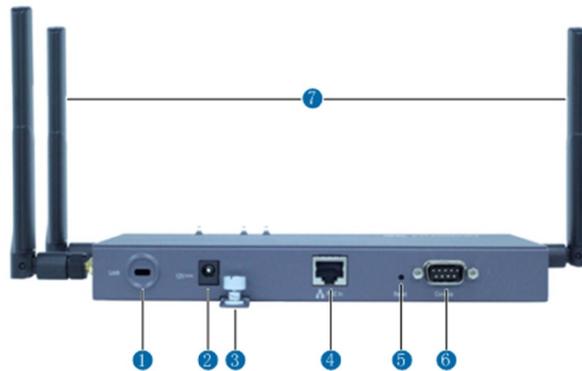
1. Lock: for the safety of the WA603SN

2. DC power supply port: 12 V DC

3. Captive screw: for fixing the WA603SN on a wall or level surface

4. PoE In port: 10/100/1000 Mbit/s port, for wired Ethernet connection. PoE is also supported by the port by connecting the WA603SN to a PoE switch or PoE power supply. This AP supports both PoE and DC power supplies, The PoE power supply is recommended.

5. Reset button: restarting the device by a short press (less than 10s), and restoring the factory defaults by a long press (over 10s)

6. RS-232 console port: for outband management of the device

7. Three removable RP-SMA wireless antennas

LED

- Wireless-connection status indicator: 2.4 GHz

  » On in green: The radio unit is on.

  » Blinking (0.25s): Data is being transmitted.

  » Off: The radio unit is off.

- Link status indicator: LAN

  » On in green: A 10/100/1000 Mbit/s Ethernet connection is established.

  » Blinking (0.25s): The 10/100/1000 Mbit/s Ethernet link is transmitting data.

  » Off: The 10/100/1000 Mbit/s Ethernet connection is off or there is not Ethernet connection.

- Power indicator:

  » On in green: The device is working properly.

  » Off: The device malfunctions or is powered off.

  » Blinking when the device is starting (1.0s): The system is self-checking or loading software.

  » Blinking when the device is working (0.5s): The system has detected an abnormality while the device is working.

Functions and Features

WLAN Features

- Compliance with the IEEE 802.11b/g/n standards with 2.4 GHz frequency supported

- Automatic (default) and manual rate adjustment

- Channel rate adjustment:

  » Optional rates in IEEE 802.11b: 1, 2, 5.5, and 11 Mbit/s

  » Optional rates in IEEE 802.11g: 6, 9, 12, 18, 24, 36, 48, and 54 Mbit/s

  » The rate in IEEE 802.11n is adjustable between MCS0 and MCS15

- WLAN channel management:

  » Number of channels in the IEEE 802.11b/g modes: 13

  » Number of channels in the IEEE 802.11n mode: 13

- Automatic channel scanning. The device automatically scans the surrounding AP-used channels and interferences, and then reports the results to the AC to trigger a channel adjustment.

- Independent configuration of hidden functions by each SSID of an AP

- Signal sustain technology (SST)

- Station power management mode

- Control and provisioning of wireless access points (CAPWAP)

- Auto discovery of the AC by an AP

Network Features

- Adding users to specific VLANs based on the SSIDs

- VLAN trunk function on the upstream Ethernet port

- Isolation of wireless terminals in the same VLAN

- Concentrated forwarding and local forwarding of user data

- VLAN IDs (1–4093) and 16 VAPs

- IGMP snooping

- IGMP proxy

- Fast leave mode

- DHCP client, obtaining IP addresses using DHCP

- Configuring the working mode of multicast IGMP snooping based on the VAP

QoS Features

- Mapping and priority scheduling rules based on Wi-Fi multimedia (WMM) standards, which process and forward data based on the priority

- Management of Wi-Fi multimedia parameters based on the radio frequency

- WMM power management mode

- Packet priority mapping

- Queue mapping and scheduling

Security Features

- OPEN-SYS authentication

- WEP authentication/encryption

- WPA/WPA2 authentication/encryption

- IEEE 802.1X authentication/encryption

- WAPI authentication/encryption

- SMS4 decryption of data packets

- MAC address filtering

- Access control based on the MAC address, including blacklist and whitelist

- Wired link completeness. The device automatically disables wireless signal transmission when the channel between the AP and AC is interrupted.

Ethernet Features

- Compliance with IEEE 802.3u

- Auto-negotiation of rate and duplex mode

- Automatic MDI/MDI-X

- 1024 unicast MAC addresses

Maintenance Features

- Administration and maintenance of an AP by the AC

- Management on the CLI

- Commissioning using Telnet

- Default maintenance IP address: 192.168.0.1/255.255.255.0. Default user name: admin, default password: admin

- Upgrade using the AC CLI or using the ESight

- User configuration monitoring and fast fault locating by the NMS in real time

- AP system state alarming

Technical Specifications

Power Parameters

- Power adapter input: 90–264 V AC

- Power adapter output: 12 V DC, 1.25 A

- PoE switch or PoE power supply: –48 V DC (not delivered with the device)

- Compliance with the IEEE 802.3af/at power over Ethernet (PoE) standard

- Maximum power consumption: 13 W

Environment Parameters

- Working temperature: –10° C to +55° C

- Storage temperature: –40° C to +70° C

- Environment humidity: 5%–95% (non-condensing)

Physical Description

- Dimensions (H x W x D): 210 mm x 125 mm x 25 mm

- Weight: about 960 g

Certificates

- Radio admission permit, passing the China's radio commission certificate for transmit spectrum and transmit power

- Restriction of hazardous substances (RoHS) certificate

- European CE certificate

Wireless Parameters

- Antenna type: three removable RP-SMA wireless antennas

- Antenna gain: 2.5 dBi

- Number of simultaneously online users: ≤ 128

- Transmit power: 20 dBm (100 mW)

WA603DE Indoor Access Point

Highly reliable wireless access
High network security
Superb environment adaptability
Convenient deployment and configuration
Easy device management and maintenance

Highly reliable wireless access

Complies with IEEE 802.11 a/b/g/n.

Uses 2.4 GHz or 5 GHz frequency band, with a rate of up to 600 Mbit/s.

Functions as a fit access point (AP) or a fat AP.

Supports QoS to implement priority-based scheduling for voice, video, and data services.

Fit AP supports wired link integrity check.

High network security

Supports WEP, WPA/WPA2, and 802.1x authentication and encryption.

Superb environment adaptability

Provides surge protection grade 4 kV, waterproof grade IP41, improving protection performance.

Uses built-in smart antennas to adapt to the radio environment, preventing radio interference, increasing the signal noise ratio, improving the throughput, and speeding up the access rate.

Convenient deployment and configuration

Automatically discovers ACs and loads configurations after startup.

Automatically adjusts channels and frequencies to implement load balancing for user services.

Supports roaming without interrupting services.

Easy device management and maintenance

Managed by an AC as a fit AP and has the plug-and-play function.

Managed by the NMS in real time, implementing remote configuration and fast fault location.

The WA603DE is an indoor AP complying with IEEE 802.11a/b/g/n. It features high reliability, high security, powerful safeguard capability, simple network deployment, automatic AC discovery and configuration, and real-time management and maintenance. The WA603DE applies to open wireless networks with simple structure, small signal coverage, dense users, and high capacity demands, for example, networks for hotels, airports, schools, and medium- and small-sized enterprises.

The WA603DE on a wireless local area network (WLAN) has the following advantages.

Support for switchover between the fat AP and fit AP

The following table lists the differences between fat AP and fit AP solutions.

Item	Fat AP	Fit AP
Applicable Scenario	Traditional enterprise networks.	WLAN. This solution provides dynamic management and optimizes operation and maintenance.
Security	Low security. This solution uses traditional encryption and authentication.	High security. This solution provides radio environment monitoring and security policies based on users' locations.
Network Management	APs must be configured one by one.	APs can be configured in batches on an AC.
User Management	User rights are managed on the AP.	User rights are managed by the AC.
Network Scale	This solution supports Layer 2 roaming and applies to small-sized networks.	This solution supports Layer 2 roaming and applies to large-sized networks.
Value-added Service Capability	This solution only supports data services.	This solution supports voice services in addition to data services.

The WA603DE can work in any of the following modes:

- Mandatory fit AP: The WA603DE working in fit mode is managed by the AC. The AC can switch the fit mode to fat or automatic mode.

- Mandatory fat AP: The NMS can switch the WA603DE to work in fit mode or automatic mode.

- Automatic mode: In this mode, whether the WA603DE works in fat or fit mode is determined by the actual networking. The automatic mode is the default mode.

Reliable network security

The WA603DE supports a variety of authentication and encryption modes:

- Wired Equivalent Privacy (WEP) authentication and encryption

- Wi-Fi Protected Access (WPA)/WPA2 authentication and encryption

- 802.1x authentication and encryption

Superb environment adaptability

The WA603DE uses built-in smart antennas to adapt to the radio environment and selects the optimal transmission path for radio signals, preventing radio interference, increasing the signal noise ratio, improving the throughput, and speeding up the access rate.

The WA603DE provides surge protection level of 4 kV and waterproof grade of IP41, ensuring secure transmission of radio signals.

Intelligent device management and maintenance

The WA603DE functioning as a fit AP is managed by an AC. After being powered on, the WA603DE can automatically discover the AC and load configurations from the AC. Authentication, AP management, security protocol configuration, routing, and QoS are performed by the AC and monitored in real time by the NMS. This simplifies AP management and maintenance. In addition, the WA603DE provides the functions of automatic channel and frequency adjustment and in-service fast roaming.

Typical Networking

The following figure shows the typical networking of the WA603DE functioning as a fat AP.
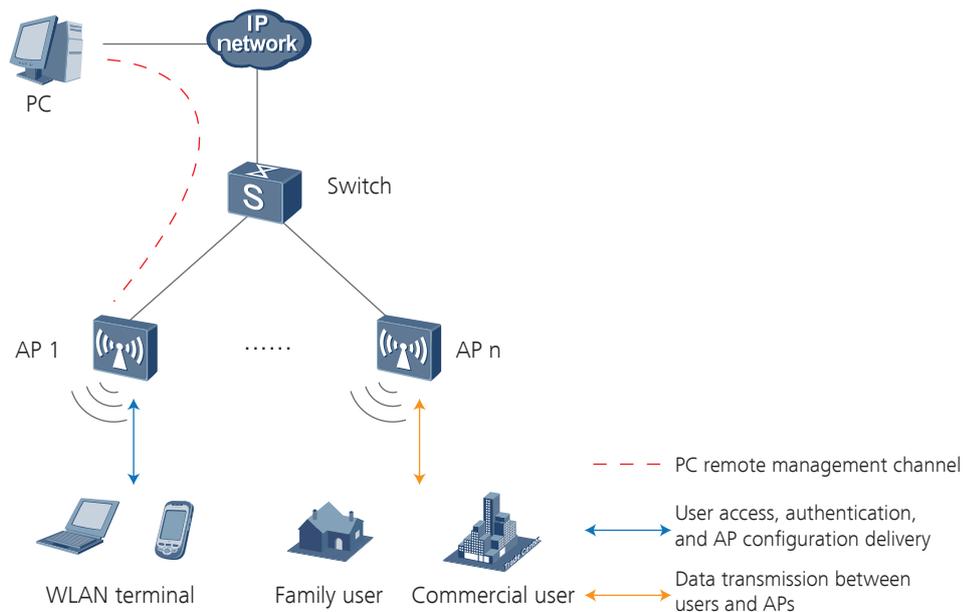
On this network, each WA603DE (a fat AP) provides 802.11 functions and functions as an independent network entity. The AC is responsible for user access, authentication, data forwarding, AP management, security protocol configuration, routing, and QoS.

The following figure shows the typical networking of the WA603DE functioning as a fit AP.
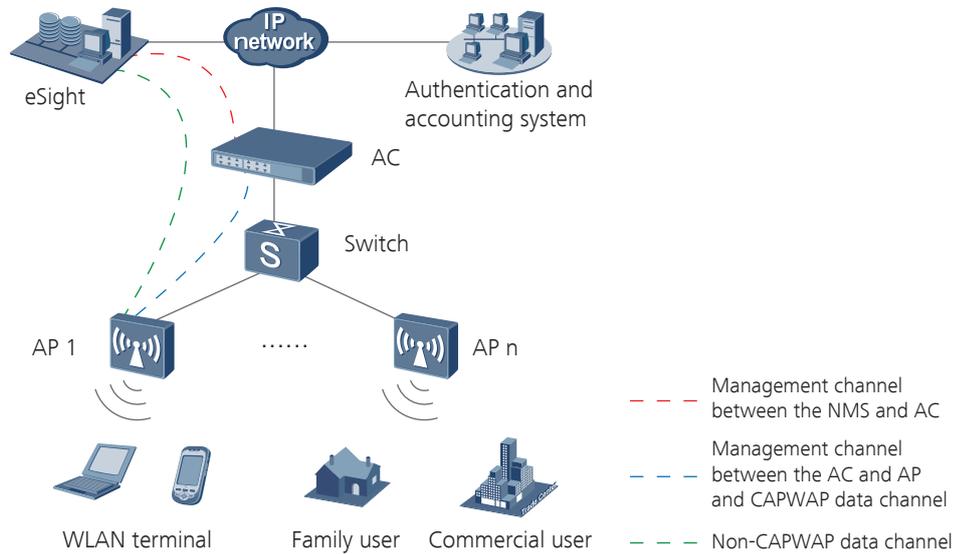
On this network, the WA603DE (a fit AP) functions as a bridge to forwards data. The AC is responsible for user access, authentication, AP management, security protocol configuration, routing, and QoS.

Hardware Specifications

The following device appearance is for illustration only and may be different from the actual device appearance. These differences will not affect device functions.

Port/Button

1. DC power port: 12V DC.

2. Latch hook: fastens the WA603DE.

3. PoE port: a 10/100/1000M PoE port, which is connected to a PoE switch or PoE power supply to provide power for the WA603DE. This port can also connect to the wired Ethernet network.

4. LAN port: a 10/100/1000M PoE port, which is connected to the wired Ethernet network. It cannot connect to a PoE device.

5. OPTIONAL button: It is reserved.

6. SOFT RESET button: resets the system, but cannot restore factory settings.

7. Protective cover: protects the ports after cables are connected to the ports.

LDE indicator on the left side/Button

1. OPTIONAL button: It is reserved.

2. Fat/Fit indicator: DIR

   » When the indicator is steady green, the WA603DE functions as a fit AP.

   » When the indicator blinks green twice every second, the WA603DE functions as a fit AP and the AC is delivering configurations to the AP or the software is being loaded on the AP.

   » When the indicator blinks green every 2s, the WA603DE functions as a fit AP, but cannot communicate with an AC.

   » When the indicator is off, the WA603DE functions as a fat AP.

3. 2.4G radio signal indicator: 2.4G

   » When the indicator is steady green, the WLAN service has been configured and the WA603DE has been associated with at least one client.

   » When the indicator blinks, the WLAN service has been configured but the AP is not associated with any client.

   » When the indicator is off, the WLAN service has been interrupted.

4. 5G radio signal indicator: 5G

   » When the indicator is steady green, the WLAN service has been configured and the WA603DE has been associated with at least one client.

   » When the indicator blinks, the WLAN service has been configured but the AP is not associated with any client.

   » When the indicator is off, the WLAN service has been interrupted.

5. HARD RESET button: restarts the system (hold for less than 6s) or restores the factory settings (hold for more than 6s).
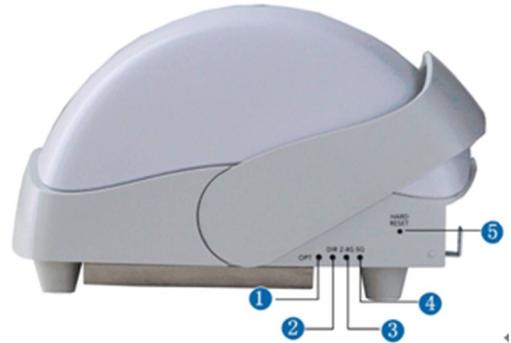
Kensington lock

- Kensington lock: prevents the WA603DE from being theft.

Indicator on the rear side

Power supply indicator: When the indicator is steady green, the power supply is working properly. When the indicator is off, the WA603DE has been powered off or a power supply failure occurs.

Functions and Features

WLAN features

- Compliance with IEEE 802.11a/b/g/n.

- Automatic and manual rate adjustment

  By default, the rate is adjusted automatically.

- Channel rate adjustment

  » 802.11a-compliant rates: 54, 48, 36, 24, 18, 12, 9, or 6 Mbit/s

  » 802.11b-compliant rates: 11, 5.5, 2, or 1 Mbit/s

  » 802.11g-compliant rates: 54, 48, 36, 24, 18, 12, 9, or 6 Mbit/s

  » 802.11b- and 802.11g-compliant rates: 54, 48, 36, 24, 18, 12, 9, 6, 11, 5.5, 2, or 1 Mbit/s

  » Adjustable 802.11n-compliant rates

  20 MHz (HT20): 144.4, 130, 117, 115.6, 104, 86.7, 78, 72.2, 65, 58, 57.8, 52, 43.3, 28.9, 26, 21.7, 19.5, 14.4, 13, 7.2, 6.5

  40 MHz (HT40): 300, 270, 243, 240, 216, 180, 162, 150, 135, 121.5, 120, 108, 90, 81, 60, 54, 45, 40.5, 30, 27, 15, 13.5

- WLAN channel management

  » Number of channels in 802.11a mode: 5 (China)

  » Number of channels in 802.11b/g mode: 13

  » Number of channels in 802.11n mode: 13 in 2.4 GHz frequency band and 27 in 5 GHz frequency band

- Automatic channel scanning

  The WA603DE (fit AP) scans channels used by other APs, measures the interference, and reports the scanning result to the AC to trigger channel adjustment.

- Service set identifier (SSID) hiding

- A fat AP or fit AP supports a maximum of eight VAPs for each radio

- Signal sustain technology (SST)

- Power-saving mode of stations

- Identifying and using the antenna that can discover the strongest signal

- Control And Provisioning of Wireless Access Points (CAPWAP)

- Automatic AC discovery in fit AP mode

Network features

- VLAN assignment based on SSIDs

- VLAN trunk supported by uplink Ethernet ports

- STA isolation in the same VLAN on a VAP

- Centralized data forwarding and local data forwarding

- 4093 VLAN IDs (1-4093) and 16 VAPs

- IGMP snooping in fat AP mode

- Prompt leave from multicast groups

- Aging of multicast forwarding entries (5 minutes)

- NTP in fat AP mode

- DHCP client in fit AP mode, obtaining IP addresses through DHCP

- IGMP snooping on each VAP in fat AP mode

Integrating the functions of the fit AP and fat AP

- Fat AP functions

- Fit AP functions

- Switching between the fat and fit modes

- Saving the configuration to ensure information completeness during restart

QoS features

- Packet filtering based on MAC addresses in fat AP mode

- Priority mapping based on the WMM profile, implementing priority-based data processing and forwarding

- WMM parameter management for each radio frequency

- WMM power saving

- Priority mapping for upstream and downstream packets

- Queue mapping and scheduling

- Rate limiting for STAs on the VAP

Security features

- Open system authentication

- WEP authentication and encryption

- WPA/WPA2 authentication and encryption

- 802.1x authentication and encryption

- Access control based on MAC addresses

- Fit AP supports link integrity check (the AP stops sending radio signals when the tunnel between the AP and AC is terminated)

- SSL in fat AP mode

Ethernet features

- Compliance with IEEE 802.3u

- Auto-negotiation of the rate and duplex mode

- Automatic switchover between the Media Dependent Interface (MDI) and Media Dependent Interface Crossover (MDI-X)

- 1024 unicast MAC addresses

Maintenance features

- Web page management in fat AP mode

- AP management and maintenance on an AC

- AP management through the command line interface (CLI)

- AP debugging through Telnet

- Default maintenance IP address: 192.168.1.1/255.255.255.0

- Upgrade using the CLI on the AC or using the ESight

- Factory setting recovery through software

- Real-time configuration monitoring and fast fault location using the NMS

- System status alarm

Technical Specifications

Power specifications

- Maximum power consumption: 13 W

- Input of the PoE switch or PoE power supply: -48 V DC (it is not delivered with the product and needs to be prepared by the customer)

- PoE function complying with IEEE 802.3at

Operating environmental specifications

- Operating temperature: 0° C to 40° C

- Storage temperature: -40° C to +70° C

- Humidity: 10% to 95% (non-condensing)

- Waterproof grade: IP41

- Pressure: 70 Kpa to 106 Kpa

Physical specifications

- Dimensions (H x W x D): 194.3 mm x 144.3 mm x 123.8 mm

- Weight: 0.680 kg

Certification

- European CE certificate

- Wi-Fi certification

- RoHS certificate

Antenna parameters

- Antenna type: built-in high-gain smart antenna array (MIMO is supported)

- Number of built-in smart antennas: 12 (dual-polarized antennas), antenna gain 7 dBi (2.4 GHz and 5 GHz are supported)

- Maximum number of concurrent users: 128

- Maximum transmit power: 27 dBm (100 mw)

WA631 Indoor High Power Access Point

Highly reliable wireless access
High network security
Superb environment adaptability
Flexible network deployment and management

Highly reliable wireless access

Complies with IEEE 802.11b/g; provides up to 54 Mbit/s transmission rate and radio output power of 500 mW; supports the well-designed QoS mechanism; provides priority scheduling based on service types (voice, video, and data); supports wired link integrity check.

High network security

Supports 64/128-bit WEP, WPA, WPA2, WAPI authentication keys; supports 802.1x authentication, ACLs, DDoS defense, VLAN trunk, and wireless user isolation.

Superb environment adaptability

Supports wireless transmission rate adaptation; selects the optimal channel automatically; adjusts the radio transmit power dynamically.

Flexible network deployment and management

Manageable by ACs as a fit AP; supports IEEE 802.3af/at PoE; provides SNMP/CLI management, the system log function, and real-time network status monitoring; supports in-service software upgrade.

The WA631 indoor AP (WA631 for short) is an IEEE 802.11b/g-compliant WLAN access point device. The 500 mW output power provides effective radio transmission and high receiver sensitivity. The WA631 combines APs' Wi-Fi signals into existing wireless signals and functions as the signal source for the WLAN system to implement WLAN signal coverage indoors. The WA631 uses existing resources, maximizes return on investment (ROI), and implements rapid deployment and management on carrier-level wireless networks.

The WA631 has the following advantages on a wireless local area network (WLAN):

Reliable network security

The WA631 supports a variety of authentication and encryption modes:

Wired Equivalent Privacy (WEP) authentication and encryption

Wi-Fi Protected Access (WPA)/WPA2 authentication and encryption

WLAN Authentication and Privacy Infrastructure (WAPI) authentication and encryption

802.1x authentication and encryption

Superb environment adaptability

The WA631 dynamically chooses the optimal connection rate and allows roaming users to automatically maintain their network connections.

Intelligent device management and maintenance

The WA631 is managed by an AC as a fit AP. After being powered on, the WA631 automatically gets online, discovers the AC, and loads configurations from the AC. Authentication, data forwarding, AP management, configurations of security protocols, routing, and QoS are performed on the AC and monitored in real time by the NMS. This simplifies AP management and maintenance. In addition, the WA631 provides the functions of automatic channel and frequency adjustment, in-service fast roaming, and load balancing.

Typical Networking

The following figure shows the typical networking of the WA631.
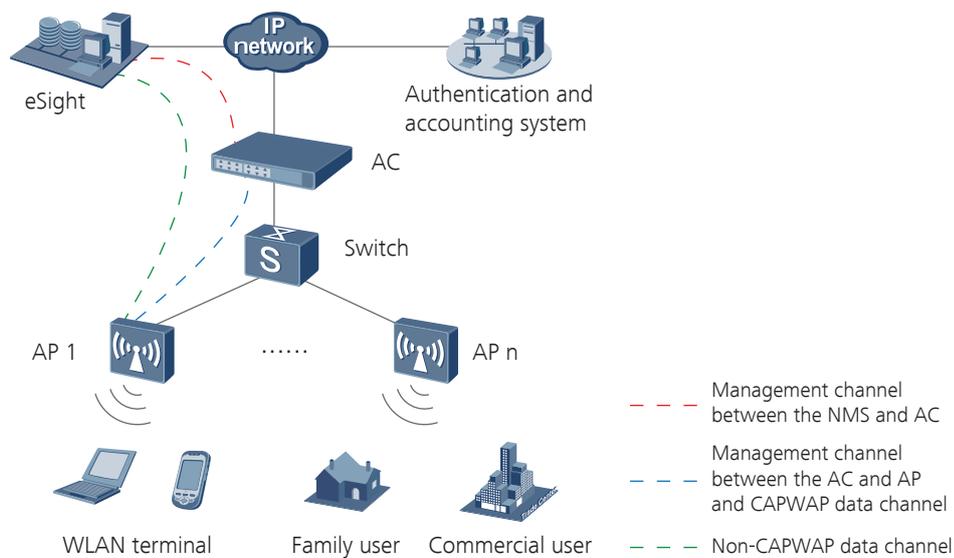
In this networking, the WA631 functions as a fit AP and is only responsible for data forwarding. The AC is responsible for user access, AP management, authentication, routing, security, and QoS.

Hardware Specifications

Port/button

1. Lock port: protects the WA631 against unauthorized use.

2. DC power port: 12 V DC.

3. Latch: installs the device to the wall.

4. Ethernet port: connects to the Ethernet port of a PC or switch.

5. Reset button: restarts the system (hold for less than 10s) or restores the factory settings (hold for more than 10s).

6. Console port: is used for out-of-band device management.

7. One radio antenna port

Indicator

- One power supply indicator (PWR)

- One radio status indicator: specifies the 2.4G radio module status.

- One link status indicator: LAN

Functions and Features

WLAN uplink

- Provides one 10/100base-T/Tx port and complies with IEEE 802.3.

- Supports IEEE 802.3af/at PoE.

- Supports DHCP for WAN IP address allocation.

WLAN downlink

- Provides one single-frequency antenna port, which is connected using the RP-SMA connector.

- Complies with IEEE 802.11b/g.

- Adjusts the radio transmit power automatically: full (27 dBm), half (24 dBm), quarter (21 dBm), eighth (18 dBm).

- Supports the power saving mode. When a terminal enters the power saving mode, an AP buffers data frames and notifies the terminal using a Beacon frame.

- Supports automatic or manual rate adjustment. Automatic rate adjustment is as follows:

  » 802.11b: 11, 5.5, 2, or 1 Mbit/s

  » 802.11g: 54, 48, 36, 24, 18, 12, 9, or 6 Mbit/s

  » In mixed mode: 54, 48, 36, 24, 18, 12, 9, 6, 11, 5.5, 2, or 1 Mbit/s

- Supports multiple SSIDs, one management virtual AP (VAP), and eight data VAPs.

  » A management VAP is used to query and monitor the device status but is not allowed to access the Internet.

  » Each data VAP has its own SSID and parameters. Each VAP is a physical AP for users.

  » All the SSIDs of VAPs can be hidden.

- Provides the following configurations:

  » Long or short preamble for the IEEE 802.11b mode

  » Beacon interval

  » DTIM interval (1 to 255 Beacons)

- Supports 13 channels and automatic or manual channel selection in IEEE 802.11b/g mode.

- Supports signal quality query, including receive signal strength and signal-to-noise ratio (SNR).

- Supports background scanning and invalid AP detection.

Link layer

- Supports CAPWAP tunnel integrity check. When an Ethernet link fails, wireless service automatically stops. This function can be enabled or disabled.

- Associates with up to 128 terminals.

- Specifies a service VLAN for each VAP. The VLAN ID ranges from 1 to 4095.

QoS

- Supports IEEE 802.11e (WMM) and four priority queues.

Attack defense

- Defends against DoS attacks.

- Defends against TCP/UDP port scanning.

- Defends against malformed packet attacks, such as Ping of Death attacks and Teardrop attacks.

Security

- Supports WPA/WPA2 PSK encryption.

- Supports 64/128-bit WEP encryption.

- Supports WAPI.

- Supports 802.11i security, including EAP-TLS/user/session key, EAP-TTLS/user/session key, PEAP, MD5, and AES/TKIP encryption.

- Supports 802.1x authentication.

- Management VAP users cannot access data services.

Management

- Managed by ACs.

- Supports AP debugging through the serial interface and Telnet.

- Supports DHCP and obtain IP addresses from WAN interfaces as a DHCP terminal.

- Supports watchdog and prevents system lock.

- Supports the system log function and complies with RFC 3164.

- A management VAP is not allowed to access the Internet.

Hot-Spot

- Prohibits communication between wireless terminals. This function can be enabled or disabled.

- Supports local management filtering to prevent terminals from managing the device.

Technical Specifications

Power specifications

- DC adapter input: 90 V-264 V AC; 50 Hz-60 Hz

- DC adapter output: 12 V, 1.25 A

- Maximum power consumption: 13 W

- PoE input voltage: -48 V DC

Operating environmental specifications

- Temperature:

  » Operating temperature: -10° C to +55° C

  » Storage temperature: -40° C to +70° C

- Humidity: 5% to 95% (non-condensing)

Physical specifications

- Dimensions (W x D x H): 210 mm × 125 mm × 25 mm

- Weight: 0.960 kg

Security

- CSA/NRTL (UL1950, CSA 22.2.950)

- TUV/GS (EN60950)

- IC (CSA C22.2, ICES-003 Class A)

Wireless specifications

- Radio

  » 802.11b/g

  » 2.412 to 2.462 GHz (for US, Canada)

  » 2.412 to 2.472 GHz (for ETSI, China)

  » 802.11b

  » 2.412 to 2.462 GHz (for US, Canada)

  » 2.412 to 2.472 GHz (for ETSI, China)

- Channel

  » 802.11g

  » 11 channels in base mode (US, Canada)

  » 13 channels (ETSI, China)

  » 802.11b

  » 11 channels in base mode (US, Canada)

  » 13 channels (ETSI, China)

- Radio technology

  » Direct Sequence Spread Spectrum (DSSS)/Orthogonal Frequency Division Multiplexing(OFDM)

- Data transmission rate

  » 1/2/5.5/11 (11b) Mbit/s

  » 6/9/12/18/24/36/48/54 Mbit/s (11g)

- Media access protocol

  » CSMA/CA with ACK

Wireless parameters

- Antenna type: removable antennas

- Antenna gain: 2.5 dBi

- Maximum number of concurrent users: 128

- Transmit power: 27 dBm (500 mW)

WA633SN Distributed Indoor Access Point

Highly reliable wireless access service
Highly secure network
Highly self-adaptive to the environment
Easy administration and maintenance

Highly reliable wireless access service

Compatible with the IEEE 802.11b/g/n standards. A maximum rate of 150 Mbit/s

2.4 GHz frequency

500 mW radio transmit power

Supporting QoS protocols and priority scheduling based on the service type (voice, video, and data)

Supporting the completeness test on a wired link

Highly secure network

Supporting the WEP, WPA/WPA2, WAPI, and IEEE 802.1X authentication/encryption

Easy network deployment and configuration

Automatically selecting the transmission rate, channel and transmit power

Self-adapting to the radio environment

Avoiding interference in real time

Improving signal noise ratio (SNR)

Increasing throughput

Increasing access rate

Easy administration and maintenance

AC auto-discovery when an AP goes online, automatic configuration loading, and plug-and-play

In-service roaming switching for users

Real-time monitoring on the NMS to facilitate remote configuration and quick fault locating

The WA633SN is a distributed indoor AP that supports the 2.4 GHz frequency and 500 mW transmit power with compliance to the IEEE 802.11b/g/n standards. It is a wireless local area network (WLAN) access device supporting the fit mode. The WA633SN is characterized by its high reliability, high security, easy deployment, automatic going online and configuration, and real-time administration and maintenance. This product

meets the requirements for indoor network deployment. It is applied in open wireless network scenarios with a simple construction structure, small signal coverage area, concentrated user group, and high demand for capacity. Examples of such a scenario include the WLANs in hotels, airports, schools, and small-and-medium-sized enterprises.

The WA633SN has the following advantages in a WLAN:

Highly secure network

The WA633SN supports multiple authentication and encryption modes:

- Wired equivalent privacy (WEP) authentication/encryption

- Wi-Fi protected access (WPA/WPA2) authentication/encryption

- WLAN authentication and privacy infrastructure (WAPI) authentication/encryption, which is a national standard of WLAN in China

- IEEE 802.1X authentication/encryption

Easy network deployment and configuration

- Dynamic rate adjustment, automatically matching the best connection rate, Auto discovery when a device goes online and automatic configuration loading, Automatic adjustment of channel and frequency for load balancing,In-service roaming switching for users.

- Customers can provide wireless coverage by connecting an external distributed indoor passive antenna-feed system to a 2.4 GHz high-power (500 mW) removable radio port.

Easy and smart administration and maintenance

The WA633SN, as a fit AP managed by an AC, automatically goes online after it is powered on. Configurations are automatically loaded by the AC. In addition, the AC also completes the authentication, data forwarding, AP management, security protocols, routing, and QoS. All the tasks are monitored by the NMS in real time. In this way, administration and maintenance of APs is greatly simplified. The WA633SN also provides terminal users with functions including automatic adjustment of channel and frequency, in-service roaming switching, and load balancing.

Network Application

The following figure shows the typical network of the WA633SN.
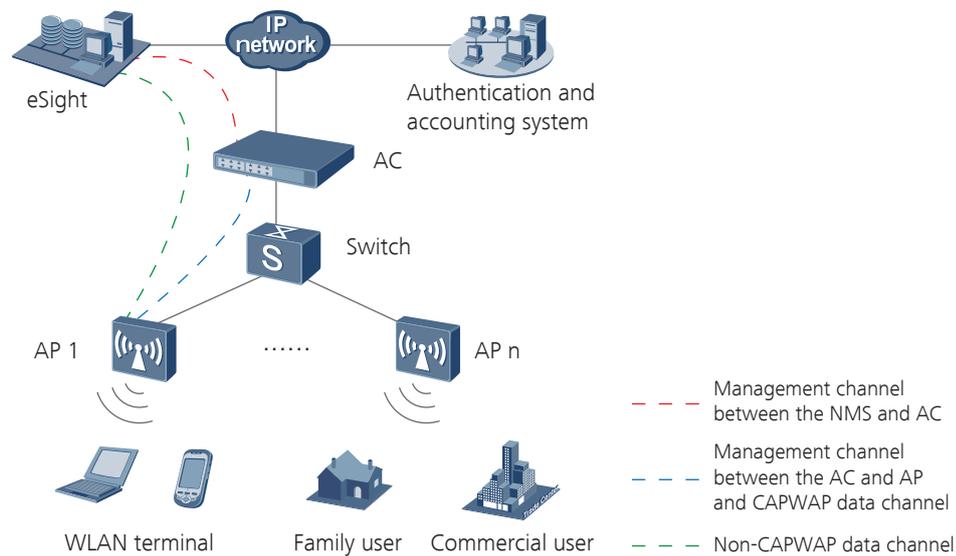
In the preceding network, the WA633SN, as the fit AP, only carries the bridge forwarding function. Functions including the user access, AP going online, authentication, routing, AP management, security protocols, and QoS are all carried by the AC.

Hardware Characteristics

Port/Button
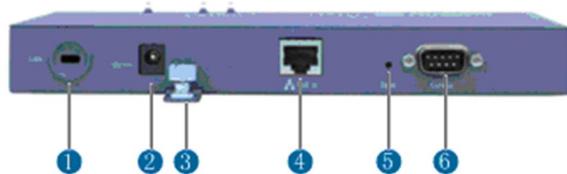
1. Lock: for the safety of the WA633SN

2. DC power supply port: 12 V DC

3. Captive screw: for fixing the WA633SN on a wall or level surface

4. PoE In port: 10/100/1000 Mbit/s port, for wired Ethernet connection. PoE is also supported by the port by connecting the WA633SN to a PoE switch or PoE power supply. This AP supports both PoE and DC power supplies, The PoE power supply is recommended.

5. Reset button: restarting the device by a short press (less than 10s), and restoring the factory defaults by a long press (over 10s)

6. RS-232 console port: for outband management of the device

LED

- Wireless-connection status indicator: 2.4 GHz

  » On in green: The radio unit is on.

  » Blinking (0.25s): Data is being transmitted.

  » Off: The radio unit is off.

- Link status indicator: LAN

  » On in green: A 10/100/1000 Mbit/s Ethernet connection is established.

  » Blinking (0.25s): The 10/100/1000 Mbit/s Ethernet link is transmitting data.

  » Off: The 10/100/1000 Mbit/s Ethernet connection is off or there is not Ethernet connection.

- Power indicator:

  » On in green: The device is working properly.

  » Off: The device malfunctions or is powered off.

  » Blinking when the device is starting (1.0s): The system is self-checking or loading software.

  » Blinking when the device is working (0.5s): The system has detected an abnormality while the device is working.

Functions and Features

WLAN Features

- Compliance with the IEEE 802.11b/g/n standards with 2.4 GHz frequency and 500 mW radio transmit power supported

- Automatic (default) and manual rate adjustment.

- Channel rate adjustment:

  » Optional rates in IEEE 802.11b: 1, 2, 5.5, and 11 Mbit/s

  » Optional rates in IEEE 802.11g: 6, 9, 12, 18, 24, 36, 48, and 54 Mbit/s

  » The rate in IEEE 802.11n is adjustable between MCS0 and MCS7

- WLAN channel management:

  » Number of channels in the IEEE 802.11b/g modes: 13

  » Number of channels in the IEEE 802.11n mode: 13

- Automatic channel scanning. The device automatically scans the surrounding AP-used channels and interferences, and then reports the results to the AC to trigger a channel adjustment.

- Independent configuration of hidden functions by each SSID of an AP

- Signal sustain technology (SST)

- Station power management mode

- Control and provisioning of wireless access points (CAPWAP)

- Auto discovery of the AC by an AP

Network Features

- Adding users to specific VLANs based on the SSIDs

- VLAN trunk function on the upstream Ethernet port

- Isolation of wireless terminals in the same VLAN

- Concentrated forwarding and local forwarding of user data

- VLAN IDs (1–4093) and 16 VAPs

- IGMP snooping

- IGMP proxy

- Fast leave mode

- DHCP client, obtaining the IP addresses using DHCP

- Configuring the working mode of multicast IGMP snooping based on the VAP

QoS Features

- Mapping and priority scheduling rules based on Wi-Fi multimedia (WMM) standards, which process and forward data based on the priority

- Management of Wi-Fi multimedia parameters based on the radio frequency

- WMM power management mode

- Packet priority mapping

- Queue mapping and scheduling

Security Features

- OPEN-SYS authentication

- WEP authentication/encryption

- WPA/WPA2 authentication/encryption

- IEEE 802.1X authentication/encryption

- WAPI authentication/encryption

- SMS4 decryption of data packets

- MAC address filtering

- Access control based on the MAC address, including blacklist and whitelist

- Wired link completeness. The device automatically disables wireless signal transmission when the channel between the AP and AC is interrupted.

Ethernet Features

- Compliance with IEEE 802.3u

- Auto-negotiation of rate and duplex mode

- Automatic MDI/MDI-X

- 1024 unicast MAC addresses

Maintenance Features

- Administration and maintenance of an AP by the AC

- Management on the CLI

- Commissioning using Telnet

- Default maintenance IP address: 192.168.0.1/255.255.255.0. Default user name: admin, default password: admin

- Upgrade using the AC CLI or using the ESight

- User configuration monitoring and fast fault locating by the NMS in real time

- AP system state alarming

Technical Specifications

Power Parameters

- Power adapter input: 90–264 V AC

- Power adapter output: 12 V DC, 1.25 A

- PoE switch or PoE power supply: −48 V DC (not delivered with the device)

- Compliance with the IEEE 802.3af/at power over Ethernet (PoE) standard

- Maximum power consumption: 13 W

Environment Parameters

- Working temperature: −10°C to +55°C

- Storage temperature: −40°C to +70°C

- Environment humidity: 5%–95% (non-condensing)

Physical Description

- Dimensions (H x W x D): 210 mm x 125 mm x 25 mm

- Weight: about 950g

Certificates

- Radio admission permit, passing the China's radio commission certificate for transmit spectrum and transmit power

- Restriction of hazardous substances (RoHS) certificate

- European CE certificate

Wireless Parameters

- Antenna type: one removable RP-SMA wireless antenna

- Antenna gain: 2.5 dBi

- Number of simultaneously online users: ≤ 128

- Transmit power: 27 dBm (500 mW)

WA653DE Outdoor Access Point

Highly reliable wireless access
High network security
Superb environment adaptability
Convenient deployment and configuration
Easy device management and maintenance

Highly reliable wireless access

Complies with IEEE 802.11a/b/g/n.

Uses 2.4 GHz or 5 GHz frequency band, with a rate of up to 600 Mbit/s.

Supports QoS to implement priority-based scheduling for voice, video, and data services.

Supports wired link integrity check.

High network security

Supports WEP, WPA/WPA2, and 802.1x authentication and encryption.

Superb environment adaptability

Supports waterproof grade IP67, improving protection performance.

Working temperature: –40° C to +60° C

Uses built-in smart antennas to adapt to the radio environment, preventing radio interference, increasing the signal noise ratio, improving the throughput, and speeding up the access rate.

Convenient deployment and configuration

Automatically discovers ACs and loads configurations after startup.

Automatically adjusts channels and frequencies to implement load balancing for user services.

Supports roaming without interrupting services.

Functions as a fit access point (AP) or a fat AP.

Easy device management and maintenance

Managed by an AC as a fit AP and has the plug-and-play function.

Managed by the NMS in real time, implementing remote configuration and fast fault location.

The WA653DE is an outdoor AP complying with IEEE 802.11a/b/g/n. The WA653DE uses the metallic shell and features durability and powerful safeguard capability. It can work at a low temperature and in the harsh environment. The WA653DE features high reliability, high security, simple network deployment, automatic AC discovery and configuration, and real-time management and maintenance. The WA653DE applies to open wireless networks with simple structure, small signal coverage, dense users, and high capacity demands, for example, networks for hotels, airports, schools, and medium- and small-sized enterprises.

The WA653DE on a wireless local area network (WLAN) has the following advantages.

Reliable network security

The WA653DE supports a variety of authentication and encryption modes:

- Wired Equivalent Privacy (WEP) authentication and encryption

- Wi-Fi Protected Access (WPA)/WPA2 authentication and encryption

- 802.1x authentication and encryption

Superb environment adaptability

The WA653DE uses built-in smart antennas to adapt to the radio environment and selects the optimal transmission path for radio signals, preventing radio interference, increasing the signal noise ratio, improving the throughput, and speeding up the access rate.

The WA653DE uses the metallic shell with special materials and provides waterproof grade of IP67. It can work even at a temperature of –40° C, ensuring secure transmission of radio signals in the outdoor environment.

Intelligent device management and maintenance

The WA653DE functioning as a fit AP is managed by an AC. After being powered on, the WA653DE can automatically discover the AC and load configurations from the AC. Authentication, AP management, security protocol configuration, routing, and QoS are performed by the AC and monitored in real time by the NMS. This simplifies AP management and maintenance. In addition, the WA653DE provides the functions of automatic channel and frequency adjustment and in-service fast roaming.

### Support for switchover between the fat AP and fit AP

The following table lists the differences between fat AP and fit AP solutions.

Item	Fat AP	Fit AP
Applicable Scenario	Traditional enterprise networks.	WLAN. This solution provides dynamic AP management and optimizes operation and maintenance.
Security	Low security. This solution uses traditional encryption and authentication.	High security. This solution provides radio environment monitoring and security policies based on user's location.

Item	Fat AP	Fit AP
Network Management	APs must be configured one by one.	APs can be configured in batches on an AC.
User Management	User rights are managed on the AP.	User rights are managed on the AC.
Network Scale	This solution supports Layer 2 roaming and applies to small-sized networks.	This solution supports Layer 2 roaming and applies to large-sized networks.
Value-added Service Capability	This solution only supports data services.	This solution supports voice services in addition to data services.

Typical Networking

The following figure shows the typical networking of the WA653DE functioning as a fat AP.
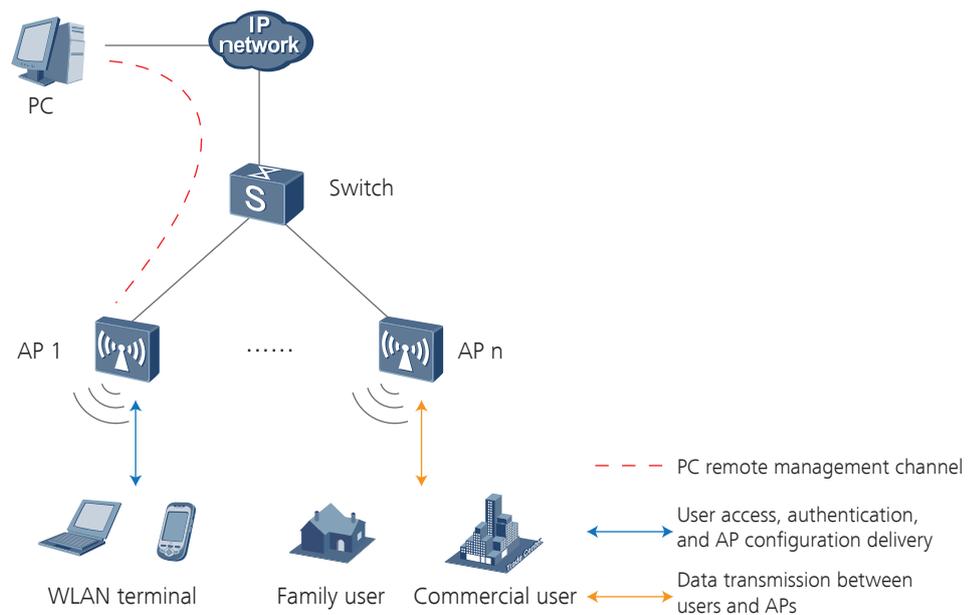
On this network, each WA653DE (a fat AP) provides 802.11 functions and functions as an independent network entity. The AC is responsible for user access, authentication, data forwarding, AP management, security protocol configuration, routing, and QoS.

The following figure shows the typical networking of the WA653DE functioning as a fit AP.
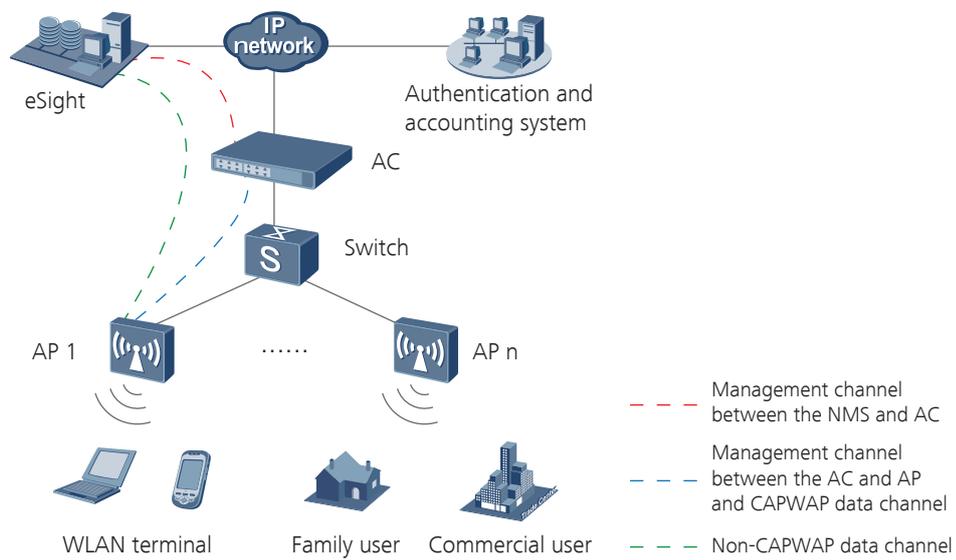
On this network, the WA653DE (a fit AP) functions as a bridge to forwards data. The AC is responsible for user access, authentication, AP management, security protocol configuration, routing, and QoS.

Hardware Specifications

The following device appearance is for illustration only and may be different from the actual device appearance. These differences will not affect device functions.

Port/Button

1. PoE IN port: a 10/100/1000M PoE port, which is connected to a PoE switch or PoE power supply to provide power for the WA653DE. When both the PoE power supply and DC power supply are available, the PoE power supply functions as the backup for the DC power supply. This port can also connect to the wired Ethernet network.

2. DC power port: 12V DC.

3. Three dustproof covers: protect the ports that are not in use.

4. PoE OUT port: connects to the built-in PoE module of the WA653DE to provide power for other devices. This power supply mode is not recommended.

LDE indicator/Port

1. Ground screw: connects to a ground cable.

2. WLAN status indicator: STATUS

    » When the indicator is steady green, the WA653DE functions as a fit AP and is connected properly, and the WLAN service has been configured and the AP has been associated with at least one client.

    » When the indicator is steady amber, the WA653DE functions as a fat AP and is connected properly, and that the WLAN service has been configured and the AP has been associated with at least one client.

    » When the indicator blinks green twice every second, the WA653DE functions as a fit AP and signals on the uplink port of the WA653DE are transmitted correctly.

    » When the indicator blinks green once every 2s, the WA653DE functions as a fit AP and is searching for an AC to establish a connection.

    » When the indicator blinks amber, the WA653DE functions as a fat AP and is not associated with any users.

    » When the indicator is off, the WLAN service has been interrupted.

3. Power supply indicator: POWER

    » When the indicator is steady green, the power supply is working properly.

    » When the indicator is steady red, the WA653DE is being powered on.

    » When the indicator is off, the WA653DE has been powered off or a power supply failure occurs.

4. 5GHz N-Type radio port

Functions and Features

WLAN features

*   Compliance with IEEE 802.11a/b/g/n

*   Automatic and manual rate adjustment

    By default, the rate is adjusted automatically.

*   Channel rate adjustment

    » 802.11a-compliant rates: 54, 48, 36, 24, 18, 12, 9, or 6 Mbit/s

    » 802.11b-compliant rates: 11, 5.5, 2, or 1 Mbit/s

    » 802.11g-compliant rates: 54, 48, 36, 24, 18, 12, 9, or 6 Mbit/s

- » 802.11b- and 802.11g-compliant rates: 54, 48, 36, 24, 18, 12, 9, 6, 11, 5.5, 2, or 1 Mbit/s

- » Adjustable 802.11n-compliant rates

- » 20 MHz (HT20): mcs0-15

- » 40 MHz (HT40): mcs0-15

- WLAN channel management

- » 2.4 GHz frequency band: 13 channels

- » 5 GHz frequency band: 27 channels (the number of supported channels varies according to country code)

- Automatic channel scanning

  The WA653DE (fit AP) scans channels used by other APs, measures the interference, and reports the scanning result to the AC to trigger channel adjustment.

- A fat AP or fit AP supports a maximum of eight VAPs for each radio

- Signal sustain technology (SST)

- Power-saving mode of stations

- Identifying and using the antenna that can discover the strongest signal

- Service set identifier (SSID) hiding

- Control And Provisioning of Wireless Access Points (CAPWAP)

- Automatic AC discovery in fit AP mode

Network features

- VLAN assignment based on SSIDs

- VLAN trunk supported by uplink Ethernet ports

- STA isolation in the same VLAN on a VAP

- Centralized data forwarding and local data forwarding

- 4093 VLAN IDs (1-4093) and 16 VAPs

- IGMP snooping in fat AP mode

- Prompt leave from multicast groups

- Aging of multicast forwarding entries (5 minutes)

- NTP in fat AP mode

- DHCP client in fit AP mode, obtaining IP addresses through DHCP

- IGMP snooping on each VAP in fat AP mode

Integrating the functions of the fit AP and fat AP

- Fat AP functions

- Fit AP functions

- Switching between the fat and fit modes

- Saving the configuration to ensure information completeness during restart

QoS features

- Packet filtering based on MAC addresses in fat AP mode

- Priority mapping based on the WMM profile, implementing priority-based data processing and forwarding

- WMM parameter management for each radio frequency

- WMM power saving

- Priority mapping for upstream and downstream packets

- Queue mapping and scheduling

- Rate limiting for STAs on the VAP

Security features

- Open system authentication

- WEP authentication and encryption

- WPA/WPA2 authentication and encryption

- 802.1x authentication and encryption

- Access control based on MAC addresses

- Link integrity check (the AP stops sending radio signals when the tunnel between the AP and AC is terminated)

- SSL in fat AP mode

Ethernet features

- Compliance with IEEE 802.3u

- Auto-negotiation of the rate and duplex mode

- Automatic switchover between the Media Dependent Interface (MDI) and Media Dependent Interface Crossover (MDI-X)

- 1024 unicast MAC addresses

Maintenance features

- Web page management in fat AP mode

- AP management and maintenance on an AC

- AP management through the command line interface (CLI)

- AP debugging through Telnet

- Default maintenance IP address: 192.168.1.1/255.255.255.0

- Upgrade using the CLI on the AC or using the ESight

- Factory setting recovery through software

- Real-time configuration monitoring and fast fault location using the NMS

- System status alarm

Technical Specifications

Power specifications

- Maximum power consumption: 20 W at a low temperature and 13 W at a normal temperature

- Input of the PoE switch or PoE power supply: -48 V DC (it is not delivered with the product and needs to be prepared by the customer)

- PoE function complying with IEEE 802.3at

Operating environmental specifications

- Operating temperature: -40°C to +60°C

- Storage temperature: -45°C to +70°C

- Humidity: 10% to 95% (non-condensing)

- Waterproof grade: IP67

- Pressure: 70 Kpa to 106 Kpa

Physical specifications

- Dimensions (H x W x D): 239.5 mm x 195.5 mm x 141 mm

- Weight: 1.900 kg

Certification

- European CE certificate

- Wi-Fi certification

- RoHS certificate

Antenna parameters

- Antenna type: built-in high-gain smart antenna array (MIMO is supported)

- Number of built-in smart antennas: 12 (dual-polarized antennas), antenna gain 7 dBi (2.4 GHz and 5 GHz are supported)

- Maximum transmit power:

    » 2.4G: 27dBm(500mw)

    » 5G: 23dBm(200mw)

- Maximum number of concurrent users: 128

WA653SN Outdoor Access Point

Highly reliable wireless access

High network security

Superb environment adaptability

Easy device management and maintenance

Highly reliable wireless access

Complies with IEEE 802.11b/g/n.

Provides 2.4 GHz frequency band, with a rate of up to 300 Mbit/s.

Supports QoS to implement priority-based scheduling for voice, video, and data services.

Supports wired link integrity check.

High network security

Supports WEP, WPA/WPA2, WAPI, and 802.1x authentication and encryption.

Superb environment adaptability

Supports automatic selection of the transmission rate, channel, and transmit power to adapt to the radio environment, prevents radio interference, increases the signal noise ratio, improves the throughput, and speeds up access.

Easy device management and maintenance

Automatically discovers ACs and loads configurations after startup (plug and play).

Supports roaming without interrupting services.

Managed by the NMS in real time, implementing remote configuration and fast fault location.

The WA653SN is an outdoor access point (AP). It provides 2.4 GHz frequency band, complies with IEEE 802.11b/g/n, and supports the fit AP mode. The WA653SN is deployed outdoors and features high reliability, high security, simple network deployment, automatic AC discovery, automatic configuration loading, and real-time management and maintenance.

The WA653SN has the following advantages on a WLAN:

High network security

The WA653SN supports a variety of authentication and encryption modes:

- Wired Equivalent Privacy (WEP) authentication and encryption

- Wi-Fi Protected Access (WPA)/WPA2 authentication and encryption

- WLAN Authentication and Privacy Infrastructure (WAPI) authentication and encryption

- 802.1x authentication and encryption

Convenient network deployment and configuration

- Dynamically changes the transmission rate to obtain the optimal connection rate.

- Automatically discovers ACs and loads configurations after startup.

- Automatically adjusts channels and frequencies to implement load balancing.

- Allows users to roam to different areas without interrupting services.

- Supports the Multiple-Input Multiple-Output (MIMO) antenna system, provides two removable antennas (2.4 GHz frequency band), and allows users to select antennas of different gains to adjust the radio coverage.

Simple device management and maintenance

The WA653SN is managed by an AC as a fit AP. After power on, the WA653SN can automatically discover the AC and load configurations from the AC. Authentication, AP management, security protocol configuration, routing, and QoS are performed by the AC and monitored in real time by the NMS. This simplifies AP management and maintenance. In addition, the WA653SN provides the functions of automatic channel and frequency adjustment, in-service fast roaming, and load balancing.

Typical Networking

The following figure shows the typical networking of the WA653SN.
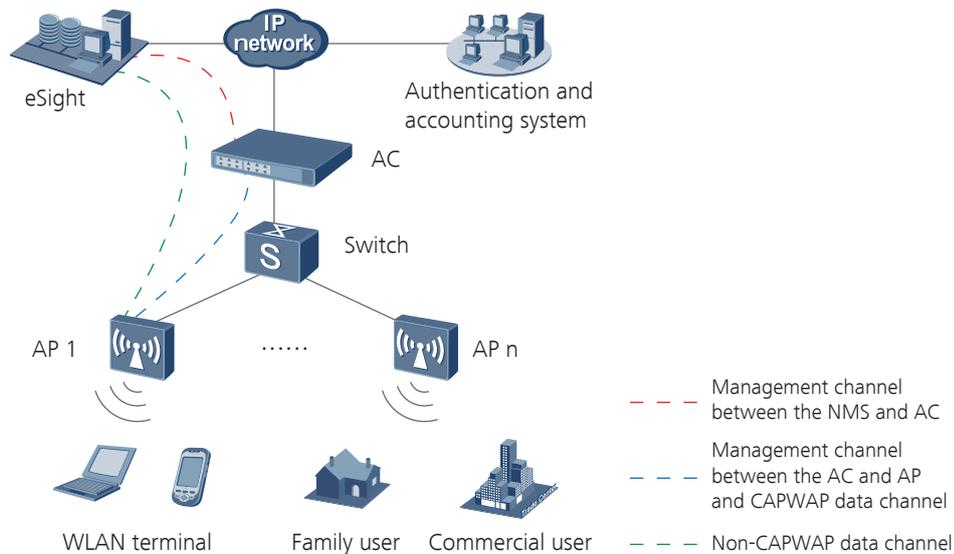
In this networking, the WA653SN (fit AP) only forwards data as a bridge. The AC is responsible for user access, authentication, AP management, security protocol configuration, routing, and QoS.

Hardware Specifications

The following device appearance is for illustration only and may be different from the actual device appearance. These differences will not affect device functions.

Port/button
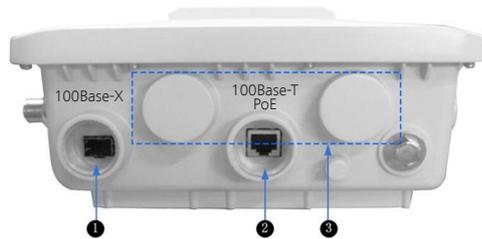
1. 1000Base-X/100Base-FX SFP port.

2. PoE In port: 10/100/1000M PoE, which can connect to a high-power PoE to provide power for the WA653SN. The PoE function is supported when the ambient temperature ranges from −40°C to +60°C.

3. Reserved port.
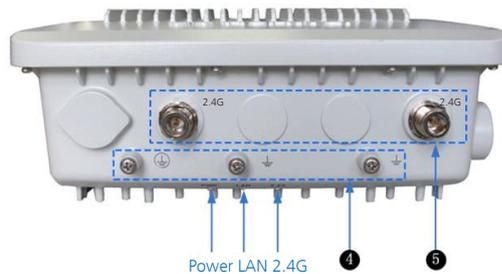
4. Ground port: The ground cable can connect to the leftmost ground port. The remaining two ground ports each connect to a surge protection device.

5. 2.4G antenna port: connects to a 2.4G outdoor dual-polarized antenna (standard antenna). The WA653SN is an outdoor AP, so a surge protection device is required between the WA653SN and a 2.4G dual-polarized antenna. The antenna is connected to the WA653SN through the feeder to ensure that the antenna is grounded properly.
   The following figures show a surge protection device and a dual-polarized antenna.

Surge protection device

Dual-polarized antenna

LED indicator

- Radio signal indicator (2.4G)

    » If the indicator is steady green, radios are enabled.

    » If the indicator blinks four times a second, data is being transmitted.

    » If the indicator is off, radios are disabled.

- Link indicator (LAN)

    » If the indicator is steady green, a 10/100/1000 Mbit/s Ethernet link has been established.

    » If the indicator blinks four times a second, data is being transmitted over the 10/100/1000 Mbit/s Ethernet link.

    » If the indicator is off, the Ethernet link has not been connected or has been disconnected.

- Power supply indicator (PWR)

    » If the indicator is steady green, the power supply is working properly.

    » If the indicator is off, the device has been powered off or a power supply failure has occurred.

    » If the indicator blinks once a second during device startup, the system is performing self-check or loading the software program.

    » If the indicator blinks twice a second during device operation, the system has detected exceptions.

Functions and Features

WLAN features

- Compliance with IEEE 802.11b/g/n

- In compliance with 802.11n, the WA653SN supports 2.4 GHz frequency band and provides a transmission rate of up to 300 Mbit/s.

- Priority mapping based on the Wi-Fi multimedia (WMM) profile, implementing priority-based data processing and forwarding

- Automatic and manual rate adjustment

- By default, the rate is adjusted automatically.

- Channel rate adjustment

    » 802.11b-compliant rates: 1, 2, 5.5, or 11 Mbit/s

    » 802.11g-compliant rates: 6, 9, 12, 18, 24, 36, 48, or 54 Mbit/s

    » 802.11n-compliant rate: up to 300 Mbit/s

- WLAN channel management

    » Number of 802.11b/g channels: 13

    » Number of 802.11n channels: 13

- Automatic channel scanning

  The WA653SN scans channels used by other APs, measures the interference, and reports the scanning result to the AC to trigger channel adjustment.

- Service set identifier (SSID) hiding

- Signal sustain technology (SST)

- Power-saving mode of stations

- Control And Provisioning of Wireless Access Points (CAPWAP)

- Automatic AC discovery

Network Features

- VLAN assignment based on SSIDs

- VLAN trunk supported by uplink Ethernet ports

- STA isolation in the same VLAN

- Centralized data forwarding and local data forwarding

- 4093 VLAN IDs (1-4093) and 16 virtual APs (VAPs)

- Prompt leave from multicast groups

- DHCP client, obtaining IP addresses through DHCP

QoS Features

- Priority mapping based on the WMM profile, implementing priority-based data processing and forwarding.

- WMM parameter management for each radio frequency

- WMM power saving

- Priority mapping for upstream and downstream packets

- Queue mapping and scheduling

Security Features

- Open system authentication

- WEP authentication and encryption

- WPA/WPA2 authentication and encryption

- 802.1x authentication and encryption

- WAPI authentication and encryption

- SMS4 decryption

- Link integrity check (the AP stops sending radio signals when the tunnel between the AP and AC is terminated)

Ethernet Features

- Compliance with IEEE 802.3u

- Auto-negotiation of the rate and duplex mode

- Automatic switchover between the Media Dependent Interface (MDI) and Media Dependent Interface Crossover (MDI-X)

- 1024 unicast MAC addresses

Maintenance Features

- AP management and maintenance by the AC

- Debugging performed using Telnet

- Upgrade using the CLI on the AC or using the ESight

- Real-time configuration monitoring and fast fault location by using the NMS

- System status alarm

Technical Specifications

Power Parameters

- Input power provided by a switch or an external PoE power supply: 48 V DC (it is not delivered with the product and needs to be prepared by the customer)

- PoE function complying with IEEE 802.3at

- Maximum power consumption: 26 W

Operating environmental specifications

- Temperature:

  » Operating temperature: –40°C to +60°C

  » Storage temperature: –45°C to +70°C

- Humidity: 5% to 95% (non-condensing)

- Altitude: lower than 4000 m

Physical specifications

- Dimensions (H x W x D): 80 mm x 240 mm x 240 mm

- Weight: 3.5 kg

Certificates

- European CE certificate

- Wi-Fi certification

- RoHS certificateWireless Parameters

Antenna parameters

- Antenna type: dual-polarized antenna or common outdoor antenna

- Maximum number of concurrent users: 128

- Maximum transmit power: 27 dBm (500 mw) for 2.4 GHz

WS6603 WLAN Access Controller

Abundant Interface-types

Large-capacity, high-performance

Highly-reliability

Easy installation, and easy maintenance

Energy conservation

Abundant types of ports

2 10GE optical ports

8 GE optical ports

16 GE electrical ports

Large-capacity, high-performance

Manages up to 1024 access points (APs)

Fast roaming switching

Hardware line rate forwarding function through the CAPWAP tunnel.

Highly-reliability

Supports Link Aggregation Control Protocol (LACP)-based and Multiple Spanning Tree Protocol (MSTP)-based port redundancy;Supports dual backup of the AC/DC power supply;Supports redundancy of fans;Supports a single power supply when the power module is hot swapped;Supports hot swapping of fans.

Easy installation, easy maintenance

The power module and fan tray support hot swapping, which facilitates maintenance.

NMS provides abundant northbound interfaces (NBIs) and inherits the GUI, catering for the usage habits of carriers.

The WS6603 supports Ethernet OAM, meeting the user's requirements for locating a fault quickly.

The WS6603is a WLAN access controller (AC) launched by Huawei Technologies Co., Ltd. Applied in the MAN access and enterprise network access, it is an ideal AC for application environments such as WLAN coverage and hotspot coverage. It provides the large-capacity, high-performance, highly-reliable, easy-to-install, and easy-to-maintain wireless data control service, featuring the advantages such as flexible network and energy conservation.

The WS6603 resides at the service access layer of the entire network, providing the high-speed, secure, and reliable WLAN service. The WS6603 has the following features:

- Provides a powerful access capacity and manages up to 1024 access points (APs), reaching the highest level of the box AC in the industry.

- Provides the quick roaming switching function for the user.

- Features the hardware line rate forwarding function through the Control and Provisioning of Wireless Access Points (CAPWAP) tunnel.

- Supports management through the eSight or CLI.

- Supports Ethernet operation, administration, and maintenance (OAM).

Typical Networking
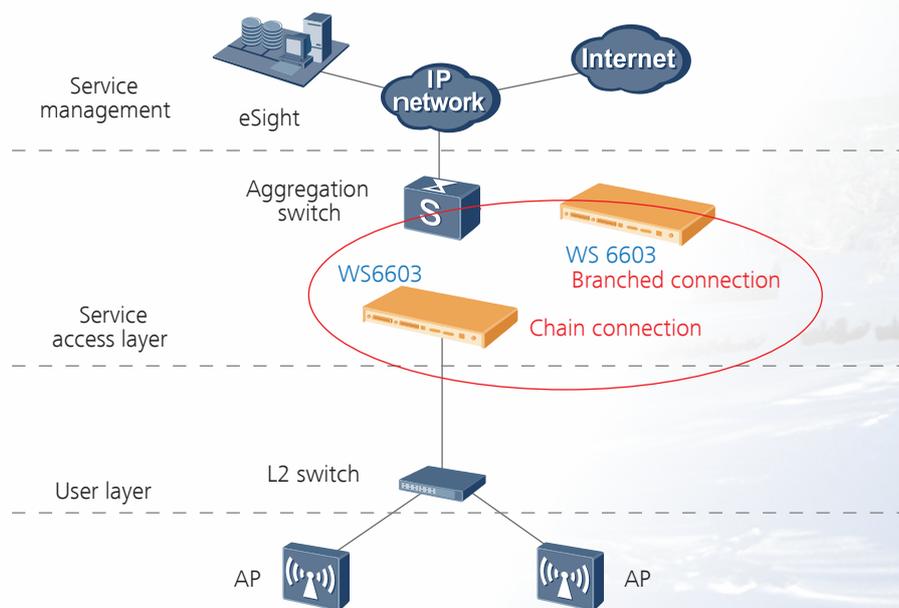
The WS6603 resides at the service access layer to provide the high-speed, secure, and reliable WLAN service.

Technical Specifications

Power Parameters

- Dual DC power supplies: -48V DC

- Dual AC power supplies: 110V～220VAC，50Hz～60Hz

- Whole-system consumption: 65W

Running Environment

- Temperature:

  » Working ambient temperature: -25℃～65℃

  » Storage ambient temperature: -40℃～70℃

- Working ambient humidity: 5%～95%（non-condensing）

Device Parameters

- Dimensions (without mounting brackets): 440mm×250mm×66mm

- Weight: 4.5Kg

Huawei Enterprise
Network Management System-eSight Product

4

Perface

Huawei eSight manages enterprise resources, services, user data and applications. It is designed for enterprises.

Huawei Network Management System-eSight

Product Overview

Huawei eSight is a new-generation network management system designed for enterprises. eSight manages enterprise resources, services, user data and applications in compliance with Information Technology Infrastructure Library (ITIL) standards. eSight is able to manage the IT systems, IP networks, and third-party devices used by enterprises. It provides an open platform that allows enterprises to build their own intelligent management systems.

eSight management object panorama
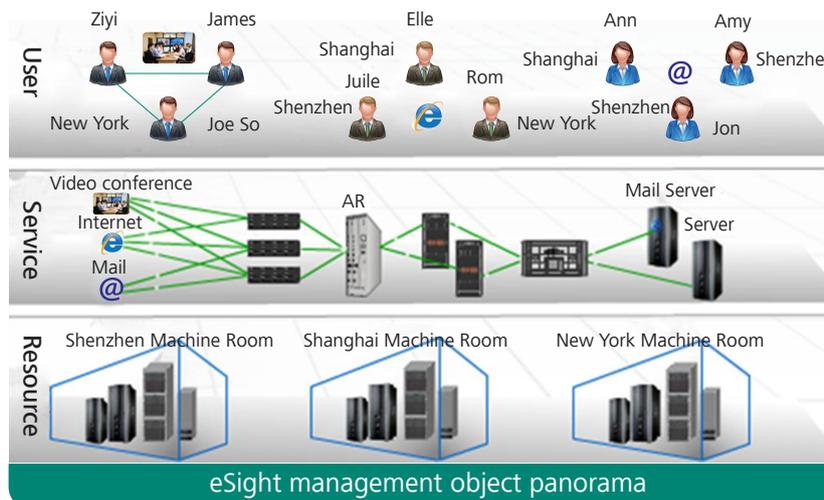
Huawei eSight:

- Any Customer

  - Multi-editions meet specialized customer requirements.

- Any Device

  - The ability to manage the third party device which include Huawei,Cisco, HP,etc.

  - The unified management of third party device and IP&IT, reduce the cost of network management.

  - Provide all of the device's basic management functions: fault, configuration, performance, security management.

- Any Service

  - SLA, MPLS VPN, WLAN, IPSec VPN are visual management and make network visual.

Characteristics

Device Management

- Managed devices: In addition to managing Huawei routers, switches, access routers (ARs), and security devices, eSight is also capable of managing various devices from H3C and Cisco. eSight can also manage wireless devices and IT equipment such as servers and printers.

Equipment	Service	Device
• Router Series Equipment • Switch Series Equipment • Security Series Equipment • Third vendor Equipment • etc.	• VPN Service • WLAN Service • OS Service • DB Service • Web Service • etc.	• Server • Workstation • Storage Device • PC • Printer • Fax • etc.
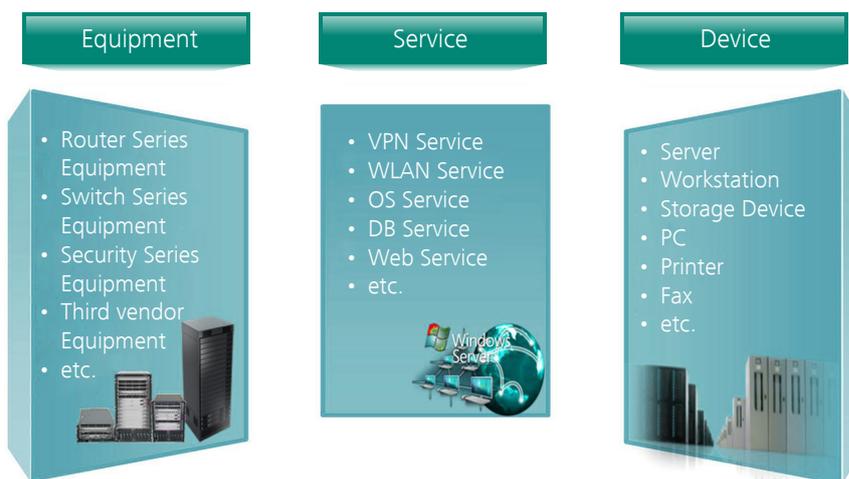
- Third-party device information customization: eSight can customize information about many non-Huawei data communication devices, including information on vendor name, device type, and front panel, as well as performance, topology, and alarm data.

- Unified monitor: eSight supports customized portal creation to satisfy a range of differing maintenance requirements.

- Add devices: eSight allows users to add SNMP-enabled devices by entering IP addresses or address segments, or by importing a device list.

- Topology management: eSight provides a graphical interface to display topology for the entire network or specific network layers. This interface displays sub-topology views, network elements, links, and network element statuses.

- Alarm management: eSight receives immediate notification of alarms reported by network elements. Alarm information is displayed and users can manage current or historical alarms, dump alarms, and use the alarm notification function.

- Performance management: eSight monitors the performance network elements, providing threshold management, specification management, and historical performance management.

- Report management: eSight provides a wide range of report templates. Templates can be customized to suit the needs of a particular business sector or to meet OAM requirements.

- Configuration tool: eSight uses an intelligent configuration tool, which provides common service configuration templates and planning table to facilitate rapid deployment and convenient maintenance.

Layered Network Management

eSight works well with headquarters-branch corporate structures. It helps enterprises build segmented, layered network management areas. Users at higher layers can view alarms, topology, performance results, and reports for lower layers.
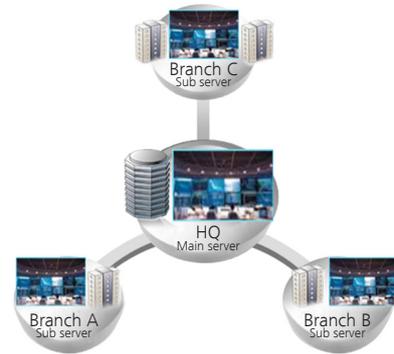

Service Management

- WLAN service management: eSight manages Huawei access controller (AC) devices, which can be configured to manage WLAN functions. It provides these functions: restarting APs, resetting APs to factory settings, and replacing APs. The service topology displays the logical connection relationships between ACs, APs, end users, and Rogue APs, and provides some troubleshooting capabilities. The position topology shows the scope of RF coverage and displays Rouge APs.

- IPSec VPN service management: eSight monitors and manages the IPSec VPN service and provides a feature to view service topology.

- MPLS VPN service management: eSight manages the MPLS VPN service, including service topology management, service data synchronization, service alarm management, and performance management, and provides one-key fault diagnosis. In addition, eSight supports service discovery in Full-mesh, Hub-Spoke, Hub&Spoke, inter-AS VPN-OptionA, VPN-Option B, and HoVPN networking, graphical topology displays, and service monitoring.

- SLA service management: eSight sends diagnostic packages between NEs or links to analyze network performance. SLA Coincidence degree displays service quality. eSight also supports historical data query and alarm sending based on SLA Coincidence degree and special indicators.

Open Platform

- Northbound interface: eSight provides SNMP northbound interfaces to connect to the upper layer OSS.

- Secondary development: eSight uses a mechanism similar to Eclipse to support secondary development. This mechanism lets users deploy new functions and add new network element versions easily.
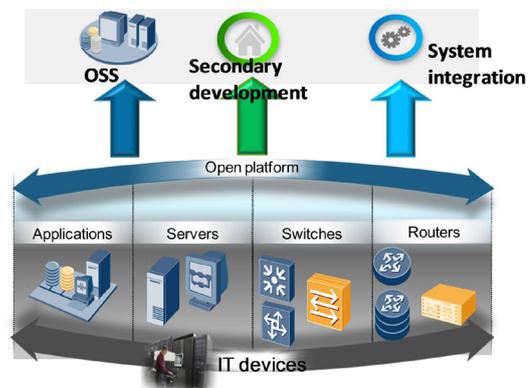
eSight Specifications

Either a Linux server or a PC server can be used as an eSight server. There are three eSight editions.

Edition	Number of NEs	Server configuration	Recommended server	OS	DataBase
Compact	60	CPU: dual-core 2.0 GHz or above Memory: 2 GB Hard disk: 20 GB	Desktop-I3 2100 or above -2G-320G or above	Windows 7 (32 Bits)	MySql 5.5 (Be included in Compact edition)
Standard, Professional	0~200	CPU: dual-core 2.0 GHz or above Memory: 4 GB Hard disk: 40 GB Note: A PC server is recommended.	IBM X3650M3-Xeo quar-core E5506 2.13 GHz or above-4G(1 x 4G)-2 x 300 GB	Windows Server 2008 R2 (64-bit) + MySQL 5.5 Or Windows Server 2008 R2 (64-bit) + Microsoft SQL Server 2008 R2 Standard	
	200~500	CPU: 2 x dual-core 2 GHz or above Memory: 4 GB Hard disk: 60 GB Note: A PC server is recommended.			
	500~2000	CPU: 2 x quar-core 2 GHz or above Memory: 8 GB Hard disk:120 GB Note: A PC server is recommended.	IBM X3650M3-2*Xeon quar-core E5506 2.13 GHz or above -8G(2 x 4G)-3 x 300 GB		
	2000~5000	CPU: 2 x quar-core 2 GHz or above Memory: 16 GB Hard disk: 250 GB Note: A PC server is recommended.	IBM X3650M3-2*Xeon quar-core E5620 2.4 GHz or above -16G(2 x 8 G)-3 x 300 GB		
Professional	5000~20000	CPU: 4 x quar-core 2 GHz or above Memory: 32 GB Hard disk: 320 GB Note: A PC server is recommended.	IBMX3850X5-4*eight core E7-4820 2.0 GHz or above -32G(8 x 4 G)-8 x 300 GB	SUSE Linux 11 SP1 (64Bit)	Oracle 11g Standard Edition Release 11.1.0.6.0

Functions of Each Edition

Edition	Function
Compact	Network element management, topology management, alarm management, performance management, configuration file management, data dumping and backup.
Standard	All basic edition functions plus report management, intelligent configuration tool, device information customization, security managerment, enterprise service management (such as WLAN service、 SLA service、 MPLS VPN), northbound interfaces The standard edition can be used as management system for a lower-layer network (for example, an enterprise branch network).
Professional	All functions of the standard edition The professional edition can be used as the management system for an upper-layer network (for example, an enterprise headquarters network) that oversees lower-layer networks.

Order information

eSight AppBase-Compact
eSight Basic Base-Compact (include 60 devices Lic)

eSight AppBase-Standard   Recommend
eSight AppBase-Compact (include 60 devices Lic)
eSight Standard NMS License-Incremental 25 Devices License
eSight Standard NMS License-Incremental 50 Devices License
eSight Standard NMS License-Incremental 100 Devices License
eSight Standard NMS License-Incremental 200 Devices License
eSight Standard NMS License-Incremental 300 Devices License
eSight Standard NMS License-Incremental 500 Devices License
eSight Standard NMS License-Incremental 1000 Devices License
eSight Standard NMS License-Incremental 2000 Devices License
eSight Standard NMS License-Incremental 5000 Devices License

eSight AppBase-Professional – Hierarchical Network Management Capability
eSight AppBase-Professional (include 60 devices Lic)
eSight Professional NMS License-Incremental 50 Devices License
eSight Professional NMS License-Incremental 100 Devices License
eSight Professional NMS License-Incremental 200 Devices License
eSight Professional NMS License-Incremental 300 Devices License

eSight Professional NMS License-Incremental 500 Devices License
eSight Professional NMS License-Incremental 1000 Devices License
eSight Professional NMS License-Incremental 2000 Devices License
eSight Professional NMS License-Incremental 5000 Devices License
eSight Service Components
eSight Smart Reporter
eSight Smart Reporter-Special Services-customize template development (per template)
eSight SNMP NBI Component
eSight WLAN Manager
eSight WLAN License-Incremental 50 APs License
eSight WLAN License-Incremental 100 APs License
eSight WLAN License-Incremental 200 APs License
eSight WLAN License-Incremental 500 APs License
eSight WLAN License-Incremental 1000 APs License
eSight WLAN License-Incremental 2000 APs License
eSight WLAN License-Incremental 5000 APs License
eSight IPSec VPN Manager (include 60 Devices License)
eSight IPSec VPN License-Incremental 50 Devices License
eSight IPSec VPN License-Incremental 100 Devices License
eSight IPSec VPN License-Incremental 200 Devices License
eSight IPSec VPN License-Incremental 500 Devices License
eSight IPSec VPN License-Incremental 1000 Devices License
eSight MPLS VPN Manager (include 60 Devices License)
eSight MPLS VPN License- Incremental 50 Devices License
eSight MPLS VPN License- Incremental 100 Devices License
eSight MPLS VPN License- Incremental 200 Devices License
eSight MPLS VPN License- Incremental 500 Devices License
eSight MPLS VPN License- Incremental 1000 Devices License
eSight MPLS VPN License-unlimited
eSight SLA Manager

Notes: The number of managed device can be accumulated.

Huawei Enterprise
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