

# H3C SR6600

# Router Series

## Aggregation Router

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## Product overview

H3C SR6600 multi-core router series is a set of core routers provided by H3C for carrier, governments, power, finance, education, and enterprise customers. It is the first router series that uses the multi-core multi-threading architecture. Its brand-new hardware platform and service-oriented design meet the diversified requirements of users for future expansion, suiting the IT construction status quo and development trend.

The series uses a distributed architecture for processing all services. All services are provided by the FIP modules. No extra service modules are required. The H3C Apollo core chipset integrates routing and service processing to ensure high performance service forwarding. The SR6600 uses Comware V7 network operating system that allows for multiple CPUs, distributed computing, modular design, high available architecture, virtualization, and openness.

The SR6600 series has two models: SR6604 and SR6608.



SR6604



SR6608

## Features and benefits

### First multi-core high-end router in the industry

The series is the first router series that uses the multi-core multi-threading architecture. This architecture greatly improves performance, agility, and programmability and brings ease of use, enabling the series to provide flexible L4 to L7 features. Hardware acceleration speeds up processing of security services and services at the link layer, allowing processors to focus on critical L4 to L7 services.

With all the features, the series can respond well to new services in the future and perfectly adapt itself to network development.

### New generation network operating system

- Multiple cores, symmetrical multi-processing (SMP), Comware V7 platform, and independent processing allow for dynamic loading and independent upgrade. Sophisticated management ensures system availability and performance.
- Comware V7 platform ensures the performance for key services in real time by reserving dedicated CPU sets for

key services. Priority scheduling ensures that the key services that require real-time processing are processed even when the CPU is highly loaded.

- Comware V7 supports distributed computing. Global protocols such as MPLS and BGP can be distributed to CPUs on different MPUs. Distributed computing ensures high system performance.

### Fully distributed processing architecture

Separation of routing engine, service engine, and forwarding engine, and separation of the control plane and service plane ensure that services are not interrupted during active and standby MPU switchover. NAT, IPSec, and NetStream services are processed independently by the separate engines, which improves system processing performance and ensures high availability.

### WAN IRF2

Intelligent Resilient Framework 2 (IRF2) virtualizes two SR6600 routers into one device. IRF2 virtualization reduces network maintenance costs, simplifies network configuration, and improves link bandwidth and device utilization.

Link aggregation on distributed devices provides load balancing and backup for multiple uplinks. Aggregation links support various services, such as QoS, NetStream analysis, NAT, and data encryption.

Patented stateful failover technology enables real-time backup and uninterrupted Layer 3 forwarding on the control plane and data plane. Stateful failover increases reliability and performance of the virtual architecture, reduces single point of failure, and prevents service interruption.

### High port density and enhanced aggregation capability

With the RPE-X3 architecture and four-slot service modules, the series can support a maximum of 16 high-speed MIC-X interface modules and provide the best WAN port aggregation capability among routers of the same kind.

### Industry-leading encryption performance

All the service modules of the series are encrypted by the built-in hardware to achieve high-performance IPSec encryption. This ensures secure transmission of traffic in WANs and the internal network without increasing the cost.

### Outstanding routing capability

The series provides large capacity for routing entries, various routing policies, and advanced policy routing. Outstanding routing performance ensures flexible control and scheduling, meeting various service requirements for carriers and enterprises. The SR6600 supports IPv4 and IPv6 static and dynamic routing protocols, such as RIP/RIPng, OSPF/OSPFv3, IS-IS/IS-ISv6, and BGP/BGP4+.

### Abundant VPN features

The series supports L2TP, IPsec, GRE, and independent encryption core to enhance encryption performance and increase tunnel capacity to meet encryption gateway requirements. These features enhance transmission security without increasing costs.

Traditional VPN is less flexible because an access device cannot obtain the public IP address of the peer end during the registration. Traditional VPN is hard to maintain because it requires N2 connections for a full meshed network. The series provides the Auto Discovery Virtual Private Network (ADVPN) solution. ADVPN allows the access routers that use dynamic IP addresses to build VPNs between branches. ADVPN increases network flexibility and simplifies maintenance operation. ADVPN also supports features such as NAT traversal, security authentication, IPsec encryption, and multi-VPN domains.

To remove complexities caused by the exponential increase of IKE SAs and IPSec SAs, the series uses the GDVPN solution that offers a group-based IPSec model. GDVPN encapsulates a new IP header that is the same as the original IP header for packets without changing the original IP header, retaining the original routing structure and enhancing QoS performance. GDVPN uses tunnel-less connections and performs one-time encryption on each multicast packet instead of sending an encryption packet to each peer, which improves multicast efficiency.

The SR6600 supports MPLS features such as L2VPN, L3VPN, and MPLS TE, and can cooperate with other router models to provide various high-performance and secure MPLS VPN solutions.

## All-around network security protection

The series ensures service security by using FIP modules. FIP modules cooperate with the RSE-X3 MPU and Comware V7 software to take over all the services on traditional service modules, which reduces costs and simplifies management.

The routers provide the following built-in security features:

- Firewall features—Packet filtering firewall, status firewall, attack packet filtering, and log filtering. ACL accelerating algorithm minimizes the ACL filtering impact on firewall performance.
- Built-in anti-attack features:
  - Anti-single packet attacks—Protects the networks against single packet attacks, such as the Fraggle, ICMP redirect, ICMP unreachable, LAND, large ICMP, route record, smurf, source route, TCP flag, Tracert, and WinNuke.
  - Anti-scanning attacks—Prevents attackers from scanning the host IP addresses and ports to avoid topology and service detecting.
  - Anti-flooding attacks—Prevents SYN flood, ICMP flood, and UDP flood.
  - Blacklist features—Filters attacking packets based on source IP addresses. Filters out the attacking packets sent from specific source IP addresses.
- User tracking—Monitors user behaviors based on the logs and the IMC UBAS solution.

## Smart bandwidth management

In primary/backup networks, smart bandwidth management routes traffic to the backup network based on the policies when traffic load on the primary network is heavy.

Smart bandwidth management provides the following features:

- Unequal cost multiple path (UCMP)—Manages bandwidth usage based on weight. Traffic is directed to paths based on the bandwidth of the path.
- Bandwidth reservation and resource sharing—Bandwidth is reserved for services. Remaining bandwidth is used for traffic burst after the reserved bandwidth is used up.
- Hierarchical CAR—Allows for bandwidth reallocation, improving bandwidth utilization.

## Carrier-class availability

The series uses distributed architecture and provides redundancy for MPUs, switching fabric modules, power modules and hot-swapping for MPUs, services cards, and power modules. The control plane and service plane are separated. Faulty hardware is automatically isolated.

The series provides various high availability software features listed in the following table.

## Specifications

### Hardware specifications

Item	SR6604	SR6608
Chassis	Integrated chassis, which can be installed in a 19-inch rack. Distributed service architecture.	Integrated chassis, which can be installed in a 19-inch rack. Distributed service architecture.
MPU slots	2 (1+1 redundancy)	2 (1+1 redundancy)
Maximum FIP modules	2	4
Forwarding Performance In Service (IMIX)	FIP-260: 15Gbps	
	FIP-380: 20Gbps	
	FIP-660: 60Gbps	
	SAP-XP4GE32: 38Gbps	
IPSec throughput	FIP-260: 10Gbps	
	FIP-380: 14Gbps	
	FIP-660: 35Gbps	



Item	SR6604	SR6608
	SAP-XP4GE32: 12Gbps	
	RPE-X5E: 50,000	
IPSec tunnel	RPE-X5: 50,000	
	RPE-X3: 10,000	
Power module	1+1 redundancy 650W/1200W	1+1 redundancy 650W/1200W
Rated AC power	100 to 240 VAC @ 50 Hz/60 Hz	100 to 240 VAC @ 50 Hz/60 Hz
Rated DC power	-48 to -60 VDC	-48 to -60 VDC
Operating temperature	0°C to 45°C (32°F to 113°F)	0°C to 45°C (32°F to 113°F)
Operating humidity	5% RH to 95% RH, non-condensing	5% RH to 95% RH, non-condensing
Operating altitude	-60 to +5000 m (-196.85 to +16404.20 ft)	-60 to +5000 m (-196.85 to +16404.20 ft)
Size	436mm×480mm×220mm ( 5U )	436mm×480mm×308mm ( 7U )
MTBF	31.19 years	26.8 years
MTTR	1 hour	1 hour
	FCC Part 15 (CFR 47) CLASS A	FCC Part 15 (CFR 47) CLASS A
	ICES-003 CLASS A	ICES-003 CLASS A
	VCCI CISPR32 CLASS A	VCCI CISPR32 CLASS A
	CISPR 32 CLASS A	CISPR 32 CLASS A
	EN 55032 CLASS A	EN 55032 CLASS A
	AS/NZS CISPR32 CLASS A	AS/NZS CISPR32 CLASS A
EMC	CISPR 24	CISPR 24
	EN 55024	EN 55024
	EN 61000-3-2	EN 61000-3-2
	EN 61000-3-3	EN 61000-3-3
	EN 61000-6-1	EN 61000-6-1
	ETSI EN 300 386	ETSI EN 300 386
	EN 301 489-1	EN 301 489-1
	EN 301 489-17	EN 301 489-17



Item	SR6604	SR6608
Security	UL 60950-1	UL 60950-1
	CAN/CSA C22.2 No 60950-1	CAN/CSA C22.2 No 60950-1
	IEC 60950-1	IEC 60950-1
	EN 60950-1/A11	EN 60950-1/A11
	AS/NZS 60950	AS/NZS 60950
	EN 60825-1	EN 60825-1
	EN 60825-2	EN 60825-2
	FDA 21 CFR Subchapter J	FDA 21 CFR Subchapter J
	GB 4943	GB 4943

## Software specifications

Item	SR6608
Layer 2 Protocol	ARP: Dynamic ARP, static ARP, proxy ARP, gratuitous ARP, ARP Snooping, ARP Detection.
	Ethernet and sub interface VLAN
	PPPoE server
	QinQ termination
	VLAN/Super VLAN/VLAN Mapping
	Port mirroring
	LLDP, DLDP.
	STP/RSTP/MSTP
	LACP
	Broadcast suppressing
IP service	PPP, MP, HDLC
	PPPoE Server, PPPoE Client
	L2TP
IP routing	TCP, UDP, IP option, and IP unnumber
	Policy routing
	Layer 3 Ethernet interface binding
	Static routing
	RIPv1, RIPv2, OSPFv2, BGP, IS-IS, EIGRP
	Recursive route
	ECMP
	UCMP



Item	SR6608
IPv4 multicast	BGP GTSM
	ISIS MTR
	IGMPv1/v2/v3
	PIM-DM, PIM-SM, PIM-SSM
	MSDP
	MBGP
	Static multicast routing
	Multicast host tracking
	DHCP server, DHCP relay, and DHCP client
	DNS client
IP application	NTP server and client
	Telnet server and client
	TFTP server and client
	FTP server and client
	UDP helper
IPv6	Basic functions: IPv6 ND, IPv6 PMTU, dual stack forwarding, IPv6 ACL, and DHCPv6 server/proxy
	IPv6 tunnel technologies, IPv6 manual tunnels, IPv6-over-IPv4, GRE tunnels, automatic IPv4-compatible IPv6 tunnels, 6to4 tunnels, ISATAP tunnels, and 6PE
	6VPE (IPv6 MPLS L3VPN)
	NATPT
	Static routing
	Dynamic routing protocols: RIPng, OSPFv3, IS-ISv6, and BGP4+
	IPv6 multicast protocols: MLDv1/v2, PIM6-DM, PIM6-SM, and PIM6-SSM
	Flow classification based on port, MAC address, IP address, IP priority, DSCP priority, TCP/UDP, and protocol type
	Traffic management: CAR rate limiting and configurable granularity
	Rate limiting based on the source and destination addresses (supporting network segment limiting)
QoS	GTS traffic shaping
	Priority marking/remarking
	Queue scheduling mechanisms: FIFO, PQ, CQ, WFQ and RTPQ, and CBWFQ
	Congestion avoidance: Tail-Drop and WRED
	LR rate limiting





Item	SR6608
Security	MPLS QoS
	IPv6 QoS
	QoS policy propagation on BGP (QPPB)
	Time-based access control
	Packet filtering firewall
	ASPF state firewall
	Local TCP anti-attack
	Control plane rate limiting
	URPF
	Web filtering
	Hierarchical user management and password protection
	AAA
	RADIUS
	TACACS+
	Portal authentication (EAD association and portal fail-permit)
	PKI certificate
	SSH 1.5/2.0
	RSA
	IPsec, IPsec multi-instance, and IKE
	BGP/BGP4+ (supporting GTSM)
	Password control
	Attack detection and defense
	NAT, NAT multi-instance, VPN NAT, and NAT logs
	Session limiting
	GRE tunnel (one-to-many application)
IPsec tunnel	
IP service features	L2TP tunnel
	NetStreamv5/v8/v9 format and IPv4/IPv6/MPLS packet statistics
	ADVPN、GDVPN
	EVI
	SDN



Item	SR6608
MPLS	<p>L3VPN: Multi-AS MPLS (Option1/Option2/Option3), hierarchical MPLS VPN, hierarchical PE (HoPE), dual-homing CE, MCE, and multi-role host</p> <p>L2VPN: VPLS, Martini, Kompella, CCC, and SVC</p> <p>VPLS/H-VPLS</p> <p>MPLS TE and RSVP TE</p> <p>Multicast VPNs, NG-MVPN</p>
SDN	<p>BGP-LS</p> <p>Segment-routing</p> <p>VXLAN, EVPN</p> <p>WAN optimization</p>
Availability	<p>Redundancy backup for critical components including MPUs and power modules</p> <p>VRRP/VRRPv3</p> <p>FRR</p> <p>IGP fast convergence</p> <p>BFD</p> <p>ISSU</p> <p>IRF2</p> <p>GR</p> <p>NSR</p> <p>NSF</p> <p>EAA</p> <p>Ethernet OAM</p> <p>Software hot fixes</p> <p>Hot swapping for MPUs, line cards, interface modules, power modules, and fan trays</p>
Management and maintenance	<p>Command line configuration</p> <p>Configuration through the console port</p> <p>Remote configuration and maintenance through Telnet</p> <p>SNMPv1/v2/v3</p> <p>Web-based configuration and management</p> <p>RMON, supporting 1, 2, 3, or 9 MIB groups</p> <p>System logs</p> <p>Alarm classification</p> <p>Ping and Tracert</p>

Item	SR6608
	NQA (supporting association with VRRP, policy routing, and static routing)
	Fan status detection, maintenance, and notifications
	Power module status detection, maintenance, and notification
	CF card status detection and maintenance
	Ambient temperature detection and notification
	sFlow
	FAT format
File system	CF card
	USB (connecting external storage device)
Loading and upgrading	Xmodem
	FTP and TFTP

## Ordering information

Product ID	Description
RT-SR6604-Chassis-H3	H3C SR6604 Router Chassis
RT-SR6608-Chassis-H3	H3C SR6608 Router Chassis
RT-RPE-X5	Main Processing Unit RPE-X5(4G DDR4/1CON&AUX/1GE Mgt/1USB)
RT-RPE-X5E	Main Processing Unit RPE-X5E(32G DDR4/1CON&AUX/1GE Mgt/1USB/2SFP+)
RT-BKED	SR6604&SR6608 Chassis Accessories(Carrier Card for RPE-X5/RPE-X5E)
RT-FIP-260	Flexible Interface Platform Module 260,4 MIC-X Slots
RT-FIP-380	Flexible Interface Platform Module 380,2 MIC-X Slots,2*10GBASE-R SFP+ Ports and 14*1000BASE-X SFP Ports and 8*1000BASE-T RJ-45 Ports
RT-FIP-660	Flexible Interface Platform Module 660,4 MIC-X Slots
RT-SAP-XP4GE32	Service Aggregation Platform Module,4*10GBASE-R SFP+ Ports and 8*1000BASE-X SFP Ports and 12*1000BASE-T RJ45 Ports and 12*1000BASE-T/1000BASE-X COMBO Ports
RT-MIC-X-GP4GT4	4-Port 1000BASE-X Ethernet Optical Interface and 4-Port 1000BASE-T Ethernet Copper Interface Card(SFP,LC,RJ45)(MIC-X)
RT-MIC-X-GP8	8-Port 1000BASE-X Ethernet Optical Interface Card(SFP,LC)(MIC-X)
RT-MIC-X-GT8	8-Port 1000BASE-T Ethernet Copper Interface Card(RJ45)(MIC-X)
RT-MIC-X-GP10	10-Port 1000BASE-X Ethernet Optical Interface Card(SFP,LC)(MIC-X)
RT-MIC-X-XP4	4-Port 10GBASE-R Ethernet Optical Interface Card(SFP+,LC)(MIC-X)
RT-MIC-X-XP2	2-Port 10GBASE-R Ethernet Optical Interface Card(SFP+,LC)(MIC-X)
RT-MIC-X-XP4W	4-Port 10GBASE-R/W Ethernet Optical Interface Card(SFP+,LC)(LAN/WAN Mode)(MIC-X)
RT-MIC-X-SP4	4-Port OC-3c/STM-1c POS or 1-Port OC-12c/STM-4c POS Optical Interface Card(SFP,LC)(MIC-X)
RT-MIC-X-SP8	8-Port OC-3c/STM-1c POS Optical Interface Card(SFP,LC)(MIC-X)
RT-MIC-X-CLP2	2-Port OC-3/STM-1 Channelized POS Optical Interface Card(SFP,LC)(MIC-X)
RT-MIC-X-CLP4	4-Port OC-3/STM-1 Channelized POS Optical Interface Card(SFP,LC)(MIC-X)



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RT-MIC-X-ET16	16-Port E1/T1 Copper Interface Card(HM96 Male Connector)(MIC-X)
AC-PSR650-A-H3	H3C PSR650A,AC Power Supply Module,650W
DC-PSR650-D-H3	H3C PSR650D,DC Power Supply Module,650W
AC-PSR1200-A	H3C PSR1200A,AC Power Supply Module,1200W
DC-PSR1200-D	H3C PSR1200D,DC Power Supply Module,1200W
SSD-512G-SATA-6G-MSATA	512GB mSATA SSD HardDisk Module
LIS-SR6600-Standard-V7	Standard License of H3C SR6600 Comware V7 Router Software
LIS-SR6600-WEBCACHE	H3C SR6600 Web Cache Software License

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