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H3C SR6602-I

Series Router

AI-Powered

ICT Converged Gateway

Release Date: July, 2024

New H3C Technologies Co., Limited

Product overview

Integrating network, compute, and storage capabilities into a single device, H3C SR6602-I AI-powered ICT converged gateways (hereinafter referred to as SR6602-I) enable rapid service delivery and drive business innovations. Compared with traditional gateway products, the SR6602-I has the following benefits:

- **IT and CT converged**—Combines computing and storage capabilities with Comware 9, a cutting-edge containerized network operating system for the cloud era, simplifying network deployment and lowering the total cost of ownership (TCO).
- **Powerful computing resources**—Provides an Intel Xeon CPU and two drive slots that support RAID setup, allows large memory expansion, and supports using a GPU to deliver AI computing power.
- **Open architecture**—Provides an open operating system platform on which you can deploy services as VMs and containers and interact with OpenStack cloud computing management platforms and Kubernetes management platforms seamlessly.

The SR6602-I can operate in aggregation or convergence mode. In aggregation mode, it operates as an aggregation router to provide tailored services for carriers, governments, power, finance, education, and enterprise customers. The industry-leading containerized network operating system, brand-new hardware platform, and open and programmable designs define the trend for future IT construction and make it a future-oriented data communication solution that can keep up with diversified business expansions in the future.

The SR6602-I AI-powered ICT converged gateways include two models: SR6602-I and SR6602-IE.

SR6602-I/SR6602-IE front and rear panels

Features and benefits

Powerful networking capability integrated with robust computing power

With the cutting-edge containerized network operating system and powerful computing capability, the router can provide cloud computing and edge computing services in high performance.

- Runs Comware 9, a containerized network operating system for the cloud era, which is a truly open, highly efficient network platform capable of building a multiservice all-scenario ecosystem.

- Provides professional computing resources, including an Intel Xeon CPU, two external drive slots, and a standard PCIe slot in which you can install a GPU to deliver AI computing power.
- Uses an advanced hardware virtualization solution that groups hardware resources including CPU, memory, storage, and interfaces into resources pools to enable flexible and dynamic resource allocation and adjustment based on the actual requirements.

Innovative mechanical and electrical design, easy to use, high reliability

The mechanical and electrical design of the SR6602-I combines high availability of CT devices and easy maintenance of IT devices.

- Innovative electromechanical designs allow quick chassis disassembly without using tools, facilitating memory expansion and standard PCIe device installation.
- Modular, redundant, and hot swappable designs for components such as power supplies and fan trays and the front-to-rear air aisle make the device highly available and easy to maintain.
- Two-drive RAID configuration enhances data availability.

Unified cloud management platform and open architecture

- Provide an OpenStack Nova compute component that can interact with OpenStack control nodes for lifecycle management of virtual machines.
- Offer Docker and Kubelet functions and support using Docker or Kubernetes technologies to deploy third-party applications on the device as containers.
- Support using the AD-WAN solution to achieve rapid WAN deployment, security tunnel establishment, optimal link selection, and traffic visibility.

Higher interface density and convergence capability

The SR6602-I provides high-density Ethernet interfaces, OC3/STM-1 channelized POS interfaces, and E1 narrow band access capability in a 2RU footprint.

- The SR6602-I comes with twenty 10-GE ports and twelve GE ports and allows you to increase the port quantity to 32 and 28, respectively, to meet the requirements in high-density Ethernet convergence scenarios.
- The SR6602-I can provide OC3/STM-1 POS interfaces that can be channelized into E1 interfaces to deliver E1 line rate convergence with the narrowband access capacity, density, and performance all reaching the industry-leading level.

Outstanding encryption performance and rich VPN features

The SR6602-I has a built-in hardware encryption engine that offers industry-leading encryption performance, and allows further enhancement of the encryption capability by installation of standard PCIe devices.

- When deployed with the ADVPN solution, the SR6602-I supports dynamic and agile establishment of

IPsec tunnels between branch and headquarters (hub-spoke), and between branch and branch (full mesh) across the WAN.

- The SR6602-I can be used as an LNS device at the 4G/5G VPDN user side to aggregation data from massive L2TP and GRE tunnels, and use IPsec to encrypt and decrypt tunnel data in high speed.

All-round network security protection

The SR6602-I delivers rich access control and attack prevention features to provide all-round network security protection for an internal network.

- Provides access control based on combinations of username, password, IP address, and MAC address. With the H3C EAD solution, it can provide all-round access control for endpoints, including security check on virus library update, system patch installation, software allowlist and denylist, use of external USB drives, and software and hardware asset information.
- Provides firewall features including packet filtering and DoS attack prevention to protect the device from malformed message attacks, flooding attacks, and scanning attacks.

Carrier-grade high availability

The SR6602-I is designed to provide carrier-grade high availability in hardware and software.

- Uses removable power supplies and fan trays, and supports power supply redundancy and hot swapping of power supplies, fan trays, and interface modules.
- Provides a lot of high availability software features for rapid service recovery, including:

  Hot patch—Enables smooth upgrade of software and ensure service continuity during software upgrade.

  Link detection protocols such as BFD and NQA—Allow the upper layer protocol to converge in time when the WAN link fails, shortening the service interruption time.

  Fast reroute (FRR)—Collaborates with static routing, policy-based routing, or dynamic routing to achieve fast route switchover upon a link failure.

  Virtual Router Redundancy Protocol (VRRP)—Collaborates with BFD to provide fast VRRP switching.

  Embedded Automation Architecture (EAA).

Product specifications

Hardware specifications

Item	SR6602-I	SR6602-IE
IP Forwarding Performance (IMIX)	50Gbps	70Gbps
Forwarding Performance	35Gbps	42Gbps

with ACL+NAT+QOS (IMIX)		
IPSec Forwarding Performance (1400byte)	18Gbps	34Gbps
CPU	8 cores, 2.5 GHz	12 cores, 2.3 GHz
Built-in WAN port	6 × 10GE SFP+ ports	6 × 10GE SFP+ ports
Built-in LAN port (supports LAN/WAN switching)	14 × 10GE SFP+ ports and 12 × GE RJ-45 ports	14 × 10GE SFP+ ports and 12 × GE RJ-45 ports
FIP slot	1 × FIP slot (supports the FIP-30)	1 × FIP slot (supports the FIP-30)
PCIe slot	1	1
Memory slot	4CH DDR4 RDIMM slots	4CH DDR4 RDIMM slots
Memory size (default/maximum)	8 G/128 G	32 G/128 G
Built-in storage	4 GB	64 GB
External SATA drive slot	2 × 2.5-inch slots	2 × 2.5-inch slots
Internal M.2 SSD slot	1	1
USB 3.0 port	1	1
Console port	1	1
Open-source application management platforms supported	KVM, Docker	KVM, Docker
Maximum power consumption (aggregation mode/converged mode)	224 W/558 W	239 W/567 W
Power supply redundancy	Supported	Supported
Removable fan trays	2	2
Power input voltage	AC: 100 V to 240 V DC: –48 V to –60 V HVDC: 240 V to 380 V	AC: 100 V to 240 V DC: –48 V to –60 V HVDC: 240 V to 380 V
Height	2 RU	2 RU
Dimensions (H × W × D)	88 × 440 × 480 mm (3.46 × 17.32 × 18.90 in)	88 × 440 × 480 mm (3.46 × 17.32 × 18.90 in)
Operating temperature	Without drives or GPUs: 0°C to 45°C (32°F to 113°F) With drives or GPUs: 0°C to 40°C (32°F to 104°F)	
Ambient humidity	5 % RH to 95% RH, noncondensing	

Storage temperature	–40°C to +70°C (–40°F to +158°F)
EMC compliance	FCC Part 15 (CFR 47) CLASS A ICES-003 CLASS A VCCI-3 CLASS A VCCI-4 CLASS A CISPR 22 CLASS A EN 55022 CLASS A AS/NZS CISPR22 CLASS A CISPR 24 EN 55024 EN 61000-3-2 EN 61000-3-3 EN 61000-6-1 ETSI EN 300 386 EN 301 489-1 EN 301 489-17
Safety compliance	UL 60950-1 CAN/CSA C22.2 No 60950-1 IEC 60950-1 EN 60950-1/A11 AS/NZS 60950 EN 60825-1 EN 60825-2 FDA 21 CFR Subchapter J GB 4943

Software specifications

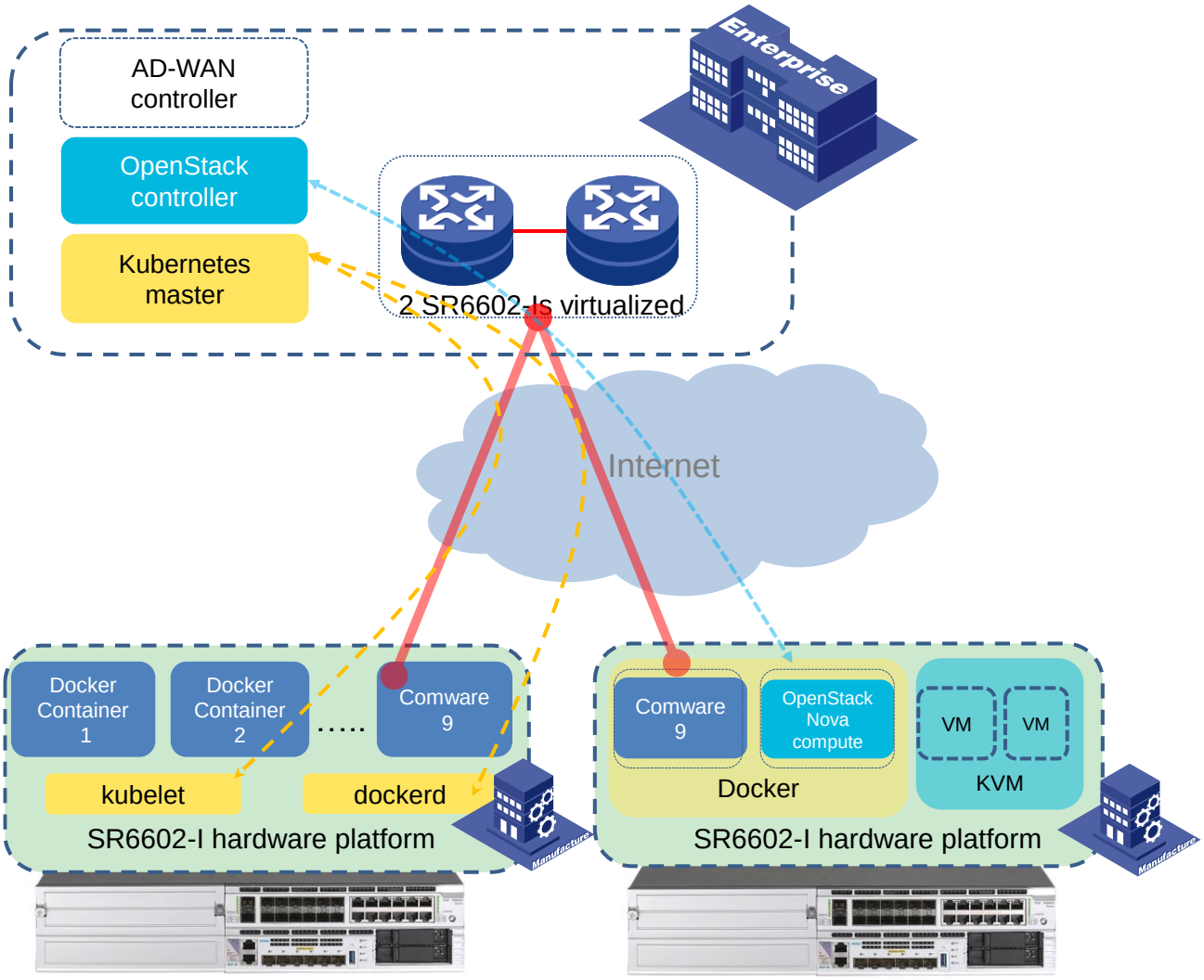
Item	Specification
Layer 2 protocol	Ethernet, Ethernet II, VLAN, 802.1p, 802.1Q, 802.1X, STP (802.1D), RSTP (802.1w), MSTP (802.1s), PPP, PPPoE client, PPPoE server
IP services	Unicast/multicast, TCP, UDP, IP option, IP unnumbered, policy-based routing, NetStream ECMP

	UCMP
IP application	Ping, Tracert, ICMP, DHCP server, DHCP relay, DHCP client, DNS client, DNS proxy, DDNS, NTP, SNTP
IPv4 routing	Static routing Dynamic routing: RIPv1/v2, OSPFv2, BGP, IS-IS Routing policy Multicast routing: IGMPv1/v2/v3, PIM-DM, PIM-SM, MBGP, MSDP
IPv6	IPv6 ND, IPv6 PMTU, IPv6 FIB, IPv6 ACL, NAT-PT, IPv6 tunnel, 6PE IPv6 tunneling technologies: manual tunneling, automatic tunneling, GRE tunnel, 6to4, ISATAP Static routing Dynamic routing: RIPng, OSPFv3, IS-ISv6, BGP4+ IPv6 multicast: MLDv1/v2, PIM-DM, PIM-SM
QoS	LR Committed access rate (CAR) FIFO, WFQ, CBQ Generic Traffic Shaping (GTS) Traffic classification
Security	Portal, 802.1X, IP source guard Local authentication, RBAC, RADIUS, TACACS ACL, filter, connection limit IKE/IKEv2, IPsec ADVPN L2TP, NATPKI, RSA, SSHv1.5/2.0, URPF, and GRE ARP attack prevention Endpoint Admission Defense (EAD)
MPLS	LDP, Static LSP L3VPN: MCE/multirole host L2VPN: Martini, Kompella, CCC, SVC
High availability	VRRP, VRRPv3 Bandwidth-based load balancing and backup IP address-based load balancing and backup NQA collaboration with routing, VRRP or interface backup
Management and maintenance	SNMPv1/v2c/v3, MIB, Syslog, RMON

	Branch Intelligent Management System (BIMS), deployment from a USB drive
	CLI, file system, and dual image
	DHCP, FTP, HTTP, ICMP, UDP public, UDP private, TCP public, TCP private, and SNMP NQA tests
	Console port login, Telnet (VTY) login, SSH login, FTP login
	EAA
Virtualization	Integration of a highly available and high-performance open virtualization platform that supports third-party operating systems, such as Windows, CentOS, Ubuntu, and RedHat
	Complete lifecycle management of virtual machines, including VM creation, modification, startup, suspend, recovery, hibernation, reboot, shutdown, and power-off
	Monitoring of critical VM resources, such as vCPU, memory, disk I/O, and network I/O
	Support of high-performance virtualization Ethernet adapter and SR-IOV
	Support of fast app deployment, app deployment to VMs through a USB drive, and unified app deployment across the network
	Complete troubleshooting and recovery mechanism
	Scheduled backup and manual backup
	Real-time monitoring of VM state
	VM anomaly detection and auto reboot
	Integration of Docker and Kubelet functions, allowing deployment of third-party applications on the device as containers through Docker or Kubernetes

Application scenarios

Edge computing solution



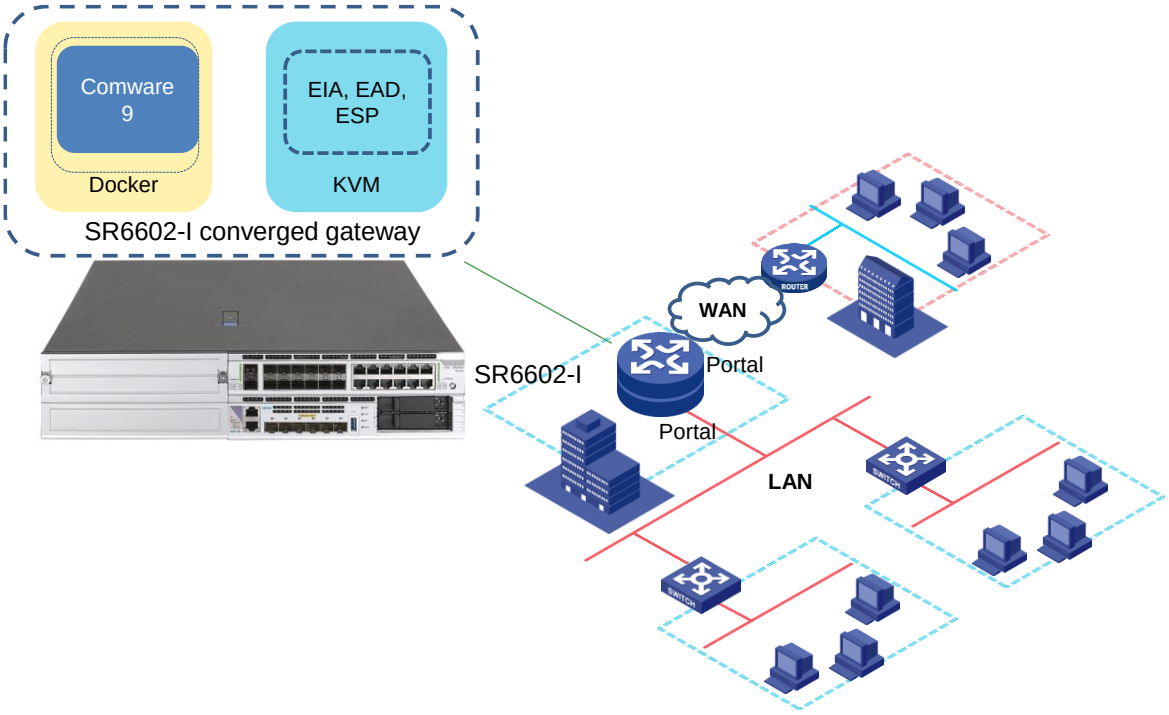
Edge computing solution

As shown in the figure, deploy the SR6602-I routers at the network edge. Use the AD-WAN solution to configure WAN connections for the routers and establish IPsec tunnels between the routers and the headquarters. Enable the routers to interact with OpenStack and Kubernetes control platforms at the headquarters over the IPsec tunnels to receive tasks from the headquarters and perform time-sensitive services locally.

This solution has the following benefits:

- Reduces TCO by integrating CT and IT hardware resources into a single device.
- Enables fast WAN deployment, optimal link selection, and traffic visibility with the AD-WAN solution.
- Integrates cloud computing capability on the networking device, allowing the devices to perform tasks deployed from the cloud platforms locally.

Converged gateway solution



Converged gateway scenario

As shown in the figure, deploy the SR6602-I as the gateway of a campus network to provide the following functions:

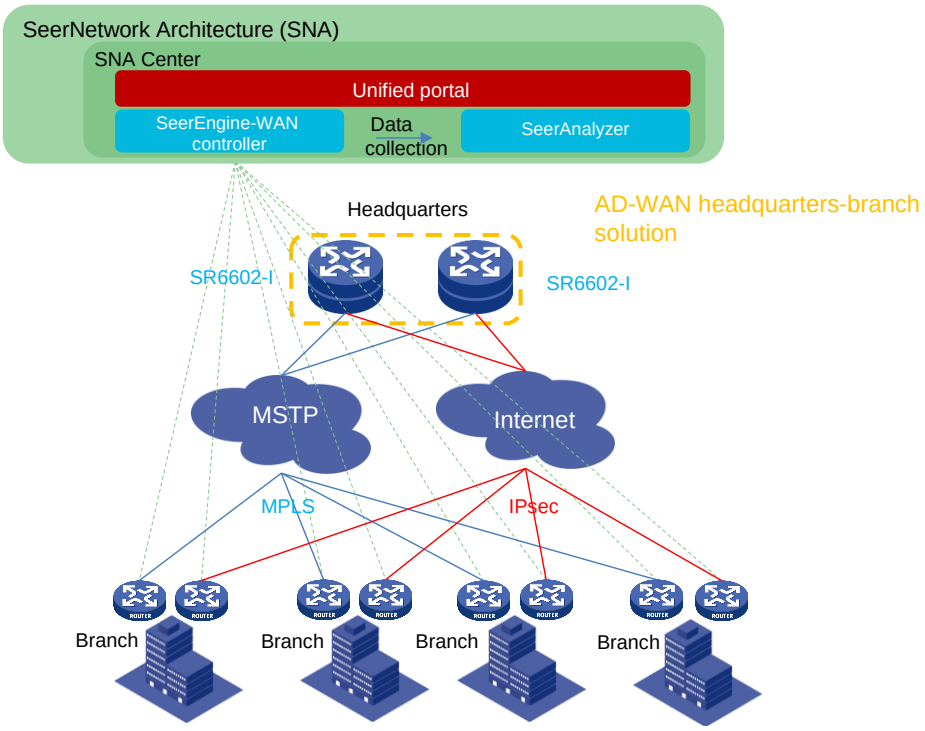
- Basic network functions such as IPsec VPN connection over the WAN, WAN acceleration, network address translation (NAT), and attack prevention.
- Unified authentication and access control services for the network by installing portal, EAD, and EPS as VMs using the computing resources divided from the hardware resources.

This solution has the following benefits:

- Reduces TCO by integrating CT and IT hardware resources into a single device.
- An Intel Xeon CPU and scalable memories allow large number of access control entries.

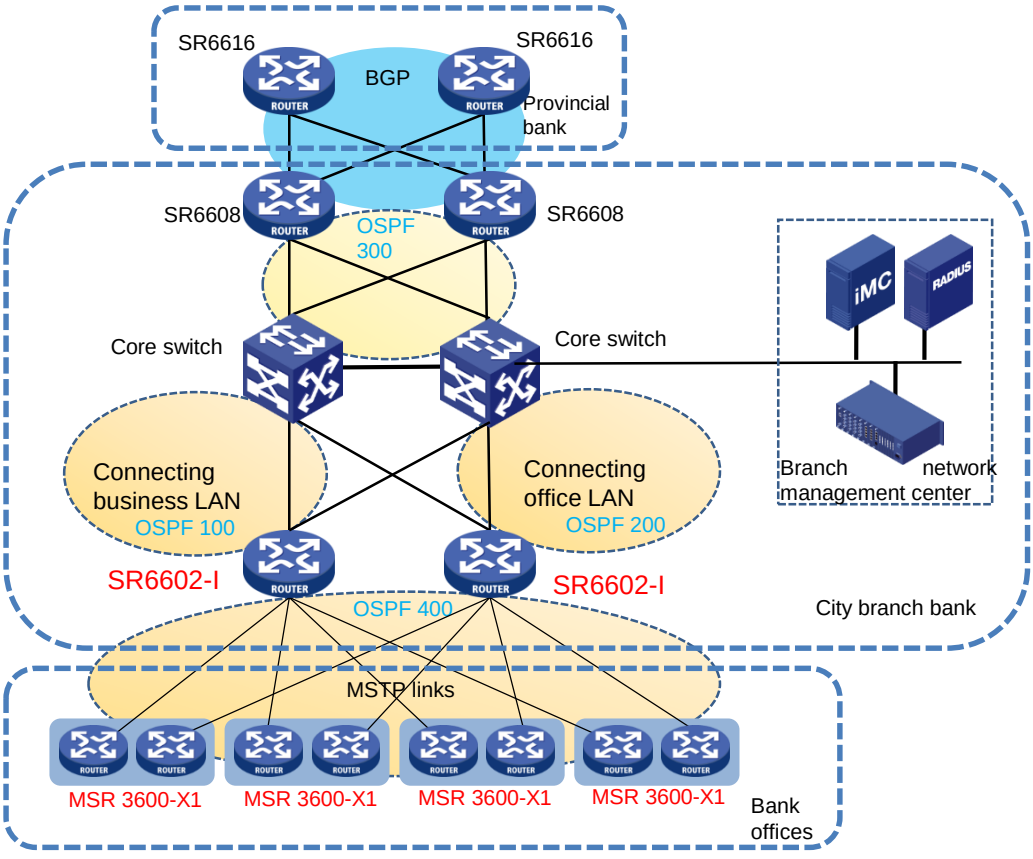
AD-WAN headquarter-branch scenario

As shown in the figure, deploy SR6602-I routers as core nodes at the headquarters in the AD-WAN headquarter-branch scenario. Each SR6602-I provides a high-performance IPsec encryption engine and allows traffic from massive branch nodes to converge at the headquarters over the IPsec tunnels. With the AD-WAN solution, the SR6602-Is support intelligent routing and can select optimal links for applications based on link quality, significantly improving user experience on the WAN.



AD-WAN headquarter-branch scenario

MSTP aggregation scenario



MSTP aggregation scenario

This topology shows a typical application of SR6602-I routers that use MSTP link networking at a city branch

bank. As shown in the figure, deploy two SR6602-I routers at a city branch bank to connect the downstream MSR3600 routers at bank offices. Run OSPF between the SR6602-Is and the bank office devices, and use OSPF for business distribution. Use the SR6602-I on the left as the main link for business services, and the SR6602-I on the right as the main link for office services, and configure the two SR6602-I routers to back up each other.

To quickly detect faults on MSTP links, deploy BFD between the SR6602-I routers and the bank office routers and enable BFD association with OSPF, so that routers at both ends can quickly detect and trigger OSPF convergence upon an MSTP link failure, enabling fast service switching.

Ordering Information

• Product ID	• Description
RT-SR6602-I	H3C SR6602-I ICT converged gateway
RT-SR6602-IE	H3C SR6602-I Enhanced ICT converged gateway
HDD-500G-SATA-3G-5.4K-SFF	500GB 2.5-inch SATA HDD
HDD-2T-SATA-6G-5.4K-SFF	2TB 2.5-inch SATA HDD
NS-HDD-1T-SATA-SFF	1TB 2.5-inch SATA HDD
SSD-480G-SATA-M.2	480GB SATA M.2 SSD
UN-DDR4-2666-32G-2Rx4-R	32GB 2Rx4 DDR4-2666P-R memory
UN-DDR4-2933P-64G-2Rx4-R	64GB 2Rx4 DDR4-2933P-R memory
RT-FIP-30	Flexible interface platform module 30
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-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)
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-ET16	16-port E1/T1 copper interface card (HM96 male connector) (MIC-X)
RT-RISER-FHFL-X16	SR6602-I PCIe Riser Module(FHFL, 1 PCIe X16 Slot)
UN-HBA-H460-B1	12Gb 2 ports SAS HBA card (8 SAS ports)

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