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**Bezpieczeństwo,  
Efektywność,  
Optymalizacja**





# H3C RA5000

# Router Series

**Radio Access Router**

Release Date: August 2024



## Product overview

As the fifth generation mobile communication network, 5G network is the extension and development of 4G mobile communication network. It has the following characteristics:

- High-speed: The maximum downlink bandwidth of the network can reach 10 Gbps, which is 50-100 times as much as that of the 4G network. It can fully meet the needs of high-resolution media transmission such as 4K and VR, making it possible for more immersive live VR broadcasting.
- Large capacity: Due to the introduction of high-frequency spectrum resources and the support of large-scale MIMO technology, the capacity of 5G network will increase times compared with the present cases, which means that base stations can provide services for more terminals at the same time to meet the requirements of future high-density Internet of Things terminal access scenarios.
- Low latency: 5G network has a delay as low as 1 millisecond. Lower latency means more timely response, which is significant for unmanned driving, emergency accident handling, industrial production control and other scenarios.

In order to meet the needs of 5G network with high speed, large capacity and low latency, H3C customizes IPRAN RA5000 series of high performance integrated access routers for 5G network backhaul scenario to meet the sustainable development needs of operators and dedicated network of large enterprise, to help operators improve network bandwidth and deployment efficiency, and to reduce operation and maintenance costs.

H3C RA5000 series integrated access routers include RA5100-G, RA5100-G-HI, and RA5300 products, which have the following characteristics:

- Dual master control, fan redundancy, power redundancy (RA5300) , support for AC and DC power, and other reliability design, professional integrated business processing engine, providing line speed business processing capabilities;;
- Support GE, 10GE, 25GE, 50GE, 100GE and other interface types, can provide 10GE, 25GE, 50GE and 100GE bandwidth ring network processing capacity;
- Support MPLS L2/L3 VPN, MPLS TE, Segment Routing, EVPN, FlexE and other features, meet the requirements of various traffic forwarding models, provide flexible business adaptation capabilities;
- Supports ToD+1PPS and BITS clock interface, 1588v2 and SyncE (synchronous Ethernet) protocol, and uses hardware coprocessor to ensure ns level clock accuracy.
- Comprehensive and efficient OAM functions, such as: BFD, Y. 1731, RFC2544, TWAMP Light, Y. 1564 and other network quality detection functions, using hardware coprocessors to ensure high detection accuracy
- Support advanced features such as SR/SRv6, iFIT, EVPN, and Telemetry, providing a foundation for intelligent management and detailed analysis solutions for the network.

- Support AD-WAN backbone solution, cooperate with H3C AD-WAN controller and analyzer, realize network intelligent scheduling and visualized management
- Support MPLS L2VPN FRR, MPLS L3VPN FRR, PW redundancy, LFA and other reliability technologies, cooperate with hardware BFD detection, realize millisecond level switching after network failure, without affecting the upper business;
- Support multiple network slicing technologies; Support FlexE slicing technology at 10Mbps level, Support sub-interface slicing at Mbps level, support network slicing technology with SliceID at Mbps level, meet the requirements of network critical business isolation and bandwidth guarantee.
- RA5000 series adopts 220 mm depth design to support the deployment of existing cabinets of base stations, and supports the maximum operating environment from -40°C to 60°C to meet the deployment requirements of different physical environments.
- Continuous IPv6 evolution capability, support rich IPv6 features, meet the subsequent IPv6 expansion networking requirements;



H3C RA5100-G



H3C RA5100-G-HI



H3C RA5300

## Features and benefits

### ● Advanced Hardware Architecture Design

- RA5300 adopts dual master control design, the main and standby switching business is not interrupted, business card supports hot plug-in, improve the reliability of the whole machine operation.
- RA5300 adopts non-blocking switching bus architecture, professional integrated service processing engine, and supports up to 100G ring network and line speed service processing capability.

- Supports GE, 10GE, 25GE, 50GE and 100GE business boards, provide flexible configuration model;
- Uses hardware coprocessor to accelerate the processing of protocol messages such as clock synchronization, BFD and OAM, providing ns-level clock accuracy and millisecond level link fault detection.
- Supports 100G FlexE interface, guarantees service isolation load and flexible bandwidth adjustment.

## ● Mature Network Platform

- The H3C mature Comware V7 modular cloud network operating system is adopted to improve the operation performance, make the routing convergence faster and improve the system availability.
- Business modularization design concept supports loose coupling of business modularization, and can realize dynamic loading and upgrading of modules and patches.
- Support Telemetry, Netconf, YANG, SNMP, provide SDN software define network to expanding;

## ● Carrier-level reliability

Support abundant reliability characteristics to ensure the uninterrupted operation of network equipment, including:

- Support BFD for ISIS, OSPF, BGP, PW, LDP to achieve fast convergence of network faults;
- Reliability networking solution: Support BFD fast detection, and cooperate with FRR (fast reroute), NSR, and GR routing protocols for 50ms-level fast switchover of faulty links.
- Support MPLS L2VPN FRR (Fast Rerouting), MPLS L3VPN FRR, OSPF/ISIS FRR to achieve fast handover of fault links;
- Support a variety of service protection technologies: LFA, LSP (1:1) tunnel protection, PW Redundancy service protection, which can meet the millisecond level reliability requirements;
- Support high-precision error detection function based on message verification, automatically triggers interface status, PW, routing, L3VPN for fast switching, to ensure high availability of services;

## ● Overall and Efficient OAM

- Supports BFD OAM, it can realize fast detection and detection of link faults.
- Supports network quality detection functions such as Y. 1731, RFC2544, TWAMP Light, Y. 1564, etc.
- Supports hardware coprocessor to process detection protocol messages, and achieves millisecond level detection accuracy.
- Supporting hardware coprocessor to send and receive detection traffic, guaranteeing the detection capability of 10GE, 25GE, 50GE, 100GE links;

## ● High Precision Clock Synchronization

- Supports G. 8275.1, realizes high precision time synchronization through SyncE + PTP, provides ns

level time synchronization guarantee;

- SyncE is supported to achieve frequency synchronization, and its performance meets G. 8262.1 requirement.
- Support PTP (Precision Time Protocol) IEEE 1588v2 protocol to achieve synchronization of time
- Supports BMC (Best Master Clock) algorithm, avoids generating clock loops, and supports the selection and switching of high quality clock sources.
- Support OC/BC multiple clock types;

## ● Rich routing and IPv6 features

- Support OSPF、ISIS、BGP、OSPFv3、BGP4+、ISISv6 and other rich dynamic routing characteristics;
- Support comprehensive MPLS network characteristics, flexibly deploy MPLS L3VPN, MPLS L2VPN, TE (Traffic Engineering), IPv6 MPLS L3VPN, EVPN, Segment Routing and other applications to meet the needs of integrated services access;
- Supports rich network slicing technology, including FlexE network slicing, sub-interface slicing, and SliceID network slicing;
- Support IPv4 and IPv6 multicast, including: IGMPV1/V2/V3, IPv4 and IPv6 PIM-DM/SM.

## ● Plug and Play, Efficient Operation and Maintenance

- Standardized network management interface, support SNMP, NETCONF and other standard protocols , easy to adapt to the third party network management platform;
- Support ISP DCN, meet the demand of plug- and play automatic deployment of equipment;
- Supports network monitoring features such as Telemetry, flow classification statistics, Dying Gasp, etc.
- The built-in EAA function monitors the internal events and states of the software and hardware components of the system, and provides automatic collection and troubleshooting mechanism of fault information.

## Product specification

### ● Hardware specifications

Item	RA5100-G (DC/AC)	RA5100-G-HI (DC/AC)	RA5300 (DC/AC)
Switching Capacity	144Gbps	1.24Tbps	1.6Tbps
Forwarding	214Mpps	590Mpps	590Mpps

Item	RA5100-G (DC/AC)	RA5100-G-HI (DC/AC)	RA5300 (DC/AC)
Performance			
Master Control	Centralized	Centralized	1:1 redundancy
Fixed Interface	6*10GE/GE+8*GEF/FEF+4*GE	2*100GE/50GE+16*25GE/10GE/GE+8*GEF/FEF+4*GE+8*GEF (CSFP)	N/A
FIB v4/v6	512K/256K	512K/256K	512K/256K
MAC	250K	250K	250K
Reset key	1	1	1
HRIC Slot	N/A	N/A	AC: 7/DC: 8
Network			
Management Interface	1GE/FE	1GE/FE	1FE
ALMI/ALMO	1(RJ45, 3 in 1 out)	1(RJ45, 3 in 1 out)	1(RJ45, 3 in 1 out)
TOD	1(RJ45)	1(RJ45)	1(RJ45)
CLK	1(RJ45)	1(RJ45)	1(RJ45)
Redundant Power Supply	1+1 redundancy	1+1 redundancy	1+1 redundancy (pluggable)
DC Power Supply	-48 ~ -60V	-48 ~ -60V	-48 ~ -60V
AC Power Supply	100-240Vac, 50/60Hz, 3A or DC 240V/2A	100-240Vac, 50/60Hz, 3A or DC 240V/2A	200~240V/100-127VAC dual live wire, 50/60Hz, 10-6A or DC 240V/5A
Fan Frame	1(2*Fans)	1(3*Fans)	1 (pluggable)
Frame Height (U Height)	1RU	1RU	3.5RU
Outward Size (W × D × H, mm)	440*205*44	440*205*44	440*220*163.5
Aseismic Grade	level-8	level-8	level-8
Ambient Temperature	-40-60°C	-40-60°C	-20-60°C
Operational Altitude	5000m	5000m	5000m
Operating Humidity	5~95% (non-condensing)	5~95% (non-condensing)	5~95% (non-condensing)



Item	RA5100-G (DC/AC)	RA5100-G-HI (DC/AC)	RA5300 (DC/AC)
EMC	CISPR 32	CISPR 32	CISPR 32
	EN 55032	EN 55032	EN 55032
	AS/NZS CISPR 32	AS/NZS CISPR 32	AS/NZS CISPR 32
	CISPR 24	CISPR 24	CISPR 24
	EN 55024	EN 55024	EN 55024
	EN 300 386	EN 300 386	EN 300 386
	FCC Part 15 Subpart B	FCC Part 15 Subpart B	FCC Part 15 Subpart B
	ICES-003 Issue 6	ICES-003 Issue 6	ICES-003 Issue 6
	VCCI-CISPR 32	VCCI-CISPR 32	VCCI-CISPR 32
	GB/T 9254	GB/T 9254	GB/T 9254
	UL 60950-1	UL 60950-1	UL 60950-1
	CAN/CSA C22.2 No 60950-1	CAN/CSA C22.2 No 60950-1	CAN/CSA C22.2 No 60950-1
	IEC 60950-1	IEC 60950-1	IEC 60950-1
Security	EN 60950-1	EN 60950-1	EN 60950-1
	AS/NZS 60950	AS/NZS 60950	AS/NZS 60950
	EN 60825-1	EN 60825-1	EN 60825-1
	EN 60825-2	EN 60825-2	EN 60825-2
	FDA 21 CFR Subchapter J	FDA 21 CFR Subchapter J	FDA 21 CFR Subchapter J

## • Software specifications

Item	Specification
Layer 2 Protocol	Support Ethernet, Ethernet II, 802.1p, 802.1Q, LLDP Support Eth-Trunk Support FlexE Network Slicing
Application of IP	Support Ping, Trace Support DHCP Server, DHCP Relay, DHCP Client Support DNS client, DNS Proxy Support NTP, SNTP
IPv4 Routing and Multicast	Static routing Routing Policy

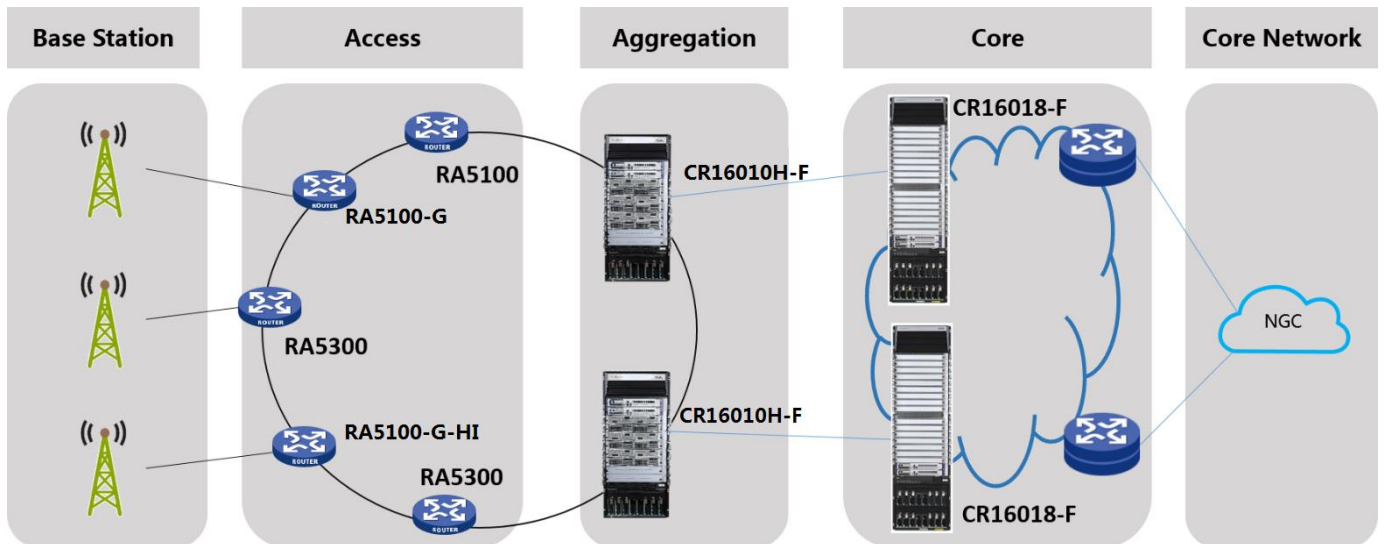


Item	Specification
IPv6 Routing and Multicast	Dynamic routing protocols: OSPFv2, BGP, IS-IS
	ECMP (Equivalent Multipath)
	Multicast routing protocols: IGMPV1/V2/V3, PIM-DM, PIM-SM
	Static routing
	Routing Policy
	Support IPv4 and IPv6 dual stack
	Dynamic routing protocols: OSPFv3, IS-ISv6, BGP4+
QoS	Support Ipv6 ND, Ipv6 PMTU, Ipv6 FIB, Ipv6 ACL, 6PE
	IPv6 Multicast Protocol: MLD V1/V2, PIM-DM, PIM-SM
	Support LR
	Support CAR (Committed Access Rate)
Security	Support FIFO, SP, WFQ
	Support GTS (Generic Traffic Shaping)
	Support HQoS
	Local Authentication, RBAC, Radius, Tacacs
	ACL, FILTER
	PKI, SSH, URPF
	Support ARP Attack Prevention
MPLS	Control Plane Anti-Attack Characteristic
	Support LDP
	Support MPLS L2/L3 VPN, MPLS TE, MPLS RSVP-TE, MPLS TE Hot-standby backup (50ms)
	Support Segment Routing
SDN Technology	Support EVPN
	Support EVPN
	Support IPv6 MPLS L3VPN
	Support network information collection protocols such as BGP-LS
	Support Netconf and YANG protocols
Network slicing	Support MPLS SR and SRv6
	Support Telemetry protocol
	Support SRv6 Policy function for SRv6 BE failover
	Support SRv6 Policy optimization based on delay/bandwidth/packet loss rate
Network slicing	Support FlexE network slicing



Item	Specification
Reliability	Support sub-interface slicing
	Support network slicing by SlicelD
	Support MPLS L2VPN FRR, MPLS L3VPN FRR, OSPF/ISIS FRR, PW redundancy, LFA
	Support BFD for ISIS, OSPF, BGP, PW, LDP
	Support LFA, LSP (1:1) tunnel protection, PW Redundancy service protection
	Support VRRP, VRRPv3
	Supporting load balance and backup
OAM	Support GR
	Support NSR
	Supports iFIT (in-situ Flow Information Telemetry) for real-time network quality detection and visualized management
Clock Synchronization	Support BFD OA
	Support Y.1731, RFC2544, TWAMP Light, Y.1564
Management and Maintenance	Support SyncE
	Support 1588V2
	Support BMC (Best Master Clock) algorithm
	Support DCN Operator Network Management Automation
	Support SNMP V1/V2c/V3, NETCONF, MIB, SYSLOG, RMON
	Support Telemetry
Support for Dying Gasp	
Support command line management, file system management	
Support Console/Telnet/SSH and other management methods	
Support EAA (Embedded Automation Architecture)	

## Typical networking



This network is a typical application of IPRAN 5G backhaul network of H3C RA5000 series routers. H3C RA series routers provide MPLS TE, L3VPN, L2VPN and other functions to maximize the business needs of operators IPRAN.

The advantages of IPRAN networking schemes for H3C RA series routers:

- Supports MPLS L3VPN/L2VPN, Segment Routing, EVPN and other standard protocols, which are highly standardized and compatible, and can be compatible with all IP/MPLS networks.
- Support rich interfaces such as GE, 10GE, 25GE, 50GE and 100GE, support FlexE features to meet the flexible bandwidth allocation and rapid growth requirements of operators.
- Through the refined QoS technology, the service quality of the business is improved and the customer satisfaction is improved.
- The hardware coprocessor supports BFD, Y. 1731, RFC2544 and other link quality detection and detection technologies, which improves network reliability and reduces operation and maintenance costs.
- SyncE and 1588 V2 time synchronization schemes are supported to meet the ns-level time synchronization requirements of operators for high-precision time synchronization.

## Ordering information

Product ID	Description
RT-RA5100-G-HI	H3C RA5100-G-HI Radio Access Network Router (DC-Input)
RT-RA5100-G-EI	H3C RA5100-G-EI Radio Access Network Router (DC-Input)
RT-RA5100-G-HI-AC	H3C RA5100-G-HI Radio Access Network Router (AC-Input)
RT-RA5100-G-EI-AC	H3C RA5100-G-EI Radio Access Network Router (AC-Input)

RT-RA5300	H3C RA5300 Radio Access Network Router Chassis
RT-RA5300-AC	H3C RA5300-AC Radio Access Network Router Chassis
RT-RSU-400	H3C RA5300 Series RSU-400 Routing and Switching Unit Module
RT-RSU-400-G	H3C RA5300 Series RSU-400-G Routing and Switching Unit Module
RT-PWR-RA5300-D	H3C RA5300 DC Power Supply Module
PSR1000-54A	1000W AC & 240V HVDC Power Supply Module
RT-HRIC-CQ1F	1-Port 100GE(QSFP28) FlexE HRIC Module
RT-HRIC-LGQ2F	2-Port 50GE(QSFP28) FlexE HRIC Module
RT-HRIC-YGS2	2-Port 25GBASE-R(SFP28) HRIC Module
RT-HRIC-YGS4	4-Port 25GBASE-R(SFP28) HRIC Module
RT-HRIC-XP8-H	8-Port 10GBASE-R (SFP+) HRIC Module
RT-HRIC-XP4	4-Port 10GBASE-R(SFP+) HRIC Module
RT-HRIC-GP8	8-Port 100BASE-FX/1000BASE-X HRIC Module
RT-HRIC-XP10-G	10-Port 10GBASE-R (SFP+) HRIC Module
RT-HRIC-GT8-G	8-Port 100/1000BASE-T HRIC Module
RT-HRIC-GP10-G	10-Port 100BASE-FX/1000BASE-X HRIC Module
CAB-DC-PWR-5m-TB2-5.08	External DC Power Cable,5m,Terminal Blocks-2PIN-5.08mm,18UL10455B+18UL10455BL,2*(T1.0mm <sup>2</sup> -6Y)+2*OT(1-6-0)!
CAB-DC-PWR30A-B-5m	DC Power Cable,5m,PWC30B,10UL10455B+10UL10455BL,2*T6 <sup>2</sup> G+2*OT(6-6)!



The Leader in Digital Solutions

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