# Huawei NetEngine AR6000 Series Enterprise Routers

Huawei NetEngine AR6000 series enterprise routers are designed for headquarters of enterprises as well as branches of enterprises, providing the industry's most diversified service slot types. The NetEngine AR6000 integrates various service features such as SD-WAN, routing, switching, voice, and security, providing diversified services and high performance.

Product Overview

Huawei's next-generation NetEngine AR6000 series enterprise routers use high-performance multi-core processors and a non-blocking switching structure, helping to deliver higher forwarding performance than the industry average. The NetEngine AR6000 also integrates functions such as SD-WAN, 5G, routing, switching, VPN, voice, security, and MPLS, ensuring diversified and cloud-based services are fully supported.

Huawei NetEngine AR6000 series enterprise routers can be deployed at enterprise headquarters or branches as required to provide enterprise network egress capabilities. The NetEngine AR6000 series consists of models such as NetEngine AR6120, NetEngine AR6120-VW, NetEngine AR6121, NetEngine AR6121E, NetEngine AR6140-9G-2AC, NetEngine AR6140E-9G-2AC, NetEngine AR6140-16G4XG, NetEngine AR6280, and NetEngine AR6300, which can meet networking requirements of enterprises of different scales.

 NetEngine AR6120/AR6120-VW	• Forwarding Performance: 2 Gbps • Fixed WAN ports: 1*GE Combo, 1*GE RJ45, 1*10GE SFP+ (compatible with GE SFP) • Fixed LAN ports: 8*GE RJ45 (can be configured as WAN) • DSP: 64 channels supported (AR6120-VW support) • WiFi: compliance with 802.11b/g/n/ac (AR6120-VW support) • Dimensions (H x W x D): 44.5mm × 390mm × 232.5mm
 NetEngine AR6121/ AR6121E	• Forwarding Performance: 2 Gbps • Fixed WAN ports: 2*GE Combo, 1*10GE SFP+ (compatible with GE SFP) • Fixed LAN ports: 1*GE Combo, 8*GE RJ45 (can be configured as WAN) • Dimensions (H x W x D): 43.6mm × 442mm × 220mm
	• Forwarding Performance: 2 Gbps • Fixed WAN ports: 2*GE RJ45, 2*GE SFP • Fixed LAN ports: 2*GE SFP, 3*GE RJ45 (can be configured as WAN) • Dimensions (H x W x D): 44.5 mm x 442 mm x 420 mm
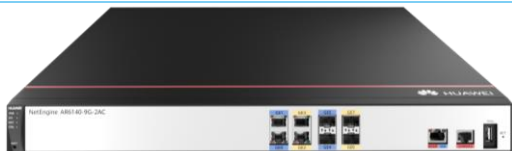
NetEngine AR6140-9G-2AC NetEngine AR6140E-9G-2AC	
NetEngine AR6140-16G4XG	• Forwarding Performance: 6 Gbps • Fixed WAN ports: 4*GE RJ45, 4*10GE SFP+ (compatible with GE optical ports) • Fixed LAN ports: 12*GE RJ45 (can be configured as WAN) • Dimensions (H x W x D): 44.5 mm x 442 mm x 420 mm
NetEngine AR6280	• Forwarding Performance: 10 Gbps (with SRU-400H), 12 Gbps (with SRU-600H) • Fixed WAN ports: 14*10GE SFP+(compatible with GE SFP), 10*GE RJ45 (All WAN ports can be configured as LAN) • Dimensions (H x W x D): 88.1 mm x 442 mm x 470 mm
NetEngine AR6300	• Forwarding Performance: 10 Gbps (with SRU-400H), 12 Gbps (with SRU-600H) • Fixed WAN ports: 14*10GE SFP+(compatible with GE SFP), 10*GE RJ45 (All WAN ports can be configured as LAN) • Dimensions (H x W x D): 130.5 mm x 442 mm x 470 mm

Features and Benefits

Service Requirement	Features and Benefits
High performance	• Multi-core processors and a non-blocking switching structure. • Higher forwarding performance than the industry average, providing the low latency for key services • NetEngine AR6280/6300: CPU + NP heterogeneous forwarding, eliminating service processing bottlenecks
High reliability	• Hot-swappable cards, ensuring service reliability and stability • Link backup for enterprise services, improving reliability • Fault detection and determination in milliseconds, minimizing service interruption time • NetEngine AR6280/6300: Redundant components such as service routing units (SRUs), power supplies and fan modules, ensuring service reliability and stability
5G Wireless access	• AR6000 series support 5G SIC card and RU-5G-101, provide high wireless bandwidth experience • Support dual architecture, NSA/SA • Support dual SIM card For more information about RU-5G-101, see the RU-5G-101 Datasheet. For more information about 5G SIC card, see the Huawei NetEngine AR Enterprise Router 5G SIC Card Datasheet.
Easy O&M	Multiple management modes, including SD-WAN management, SNMP-based network management, and web-based network management, simplifying network deployment and reducing OPEX
Service convergence	Integration of functions such as routing, switching, VPN, security, WLAN, meeting diversified enterprise service requirements, saving space, and reducing TCO
Security	Built-in firewall, IPS, URL filtering, and multiple VPN technologies, providing comprehensive security protection capabilities
SD-WAN Ready	• Built-in SD-WAN solution, building cost-effective and business-friendly connections over the Internet • ZTP (email-, USB-, and DHCP-based deployment), minimizing skill requirements and provisioning devices in minutes • First packet identification (FPI) for SaaS applications and service awareness for complex applications, identifying over 90% of applications • Traffic steering based on bandwidth and link quality, ensuring experience of key applications and improving bandwidth utilization to up to 90%

Architecture Highlights

Architecture Feature	Benefits
Multi-core processor	• High-performance multi-core processors, supporting high-speed WAN connections, powerful route calculation capabilities, and enhanced L4-L7 service processing
High-density service routing unit (SRU): SRU-400H/SRU-600H	WAN: 14*10GE SFP+(compatible with GE SFP) +10*GE RJ45 (All WAN ports can be configured as LAN)
Extensive network interfaces	• Hot swapping • Extensive flexible interface cards such as LAN, WAN and 3G/LTE.

Product Specifications

Item	NetEngine AR6120/AR6120-VW	NetEngine AR6121/ AR6121E	NetEngine AR6140-9G-2AC/ AR6140E-9G-2AC	NetEngine AR6140-16G4XG	NetEngine AR6280	NetEngine AR6300
System Parameters						
Forwarding Performance (NAT + ACL + QoS, IMIX)	2 Gbps	2 Gbps	2 Gbps	6 Gbps	SRU-400H: 12 Gbps SRU-600H: 12 Gbps	
IPsec performance (IMIX)	2 Gbps	2 Gbps	2 Gbps	5 Gbps	SRU-400H: 7.5 Gbps SRU-600H: 7.5 Gbps	
IPsec performance (1400 bytes)	4 Gbps	4 Gbps	4 Gbps	8 Gbps	SRU-400H: 10 Gbps SRU-600H: 10 Gbps	
SD-WAN performance (1400byte)*	-	1.8Gbps	1.8Gbps	-	SRU-400H: 20 Gbps SRU-600H: 20 Gbps	
SD-WAN performance (IMIX)*	800Mbps	1.2Gbps	1.2Gbps	1.4Gbps	SRU-400H: 4 Gbps SRU-600H: 6 Gbps	
Fixed WAN ports	1 x GE combo, 1 x GE RJ45, 1 x 10GE SFP+ (compatible with GE SFP)	2 x GE combo, 1 x 10GE SFP+ (compatible with GE SFP)	2 x GE RJ45, 2 x GE SFP	4 x GE, 4 x 10GE SFP+ (compatible with GE optical ports)	SRU-400H/SRU-600H: WAN: 14*10GE SFP+(compatible with GE SFP), 10*GE RJ45 (All WAN ports can be configured as LAN)	
Fixed LAN ports	8 x GE RJ45 (can be configured as WAN)	1 x GE combo, 8 x GE RJ45 (can be configured as WAN)	2 x GE SFP, 3 x GE RJ45 (can be configured as WAN)	12 x GE (can be configured as WAN)	-	-
WiFi	AR6120: Don't support AR6120-VW: Dual-band (2.4 GHz and 5 GHz), 2x2 MIMO, 802.11b/g/n/ac	-	-	-	-	-
DSP (Voice)	AR6120: Don't support AR6120-VW: 64-channel voice (built-in)	-	-	-	-	-
PoE	AR6120: Don't support	-	-	-	-	

Item	NetEngine AR6120/AR6120-VW	NetEngine AR6121/ AR6121E	NetEngine AR6140-9G-2AC/ AR6140E-9G-2AC	NetEngine AR6140-16G4XG	NetEngine AR6280	NetEngine AR6300
	AR6120-VW: 8 * GE LAN ports support PoE+					
5G uplink	Support 5G SIC	Support 5G SIC	Support 5G SIC	Support 5G SIC	Support 5G SIC	Support 5G SIC
SIC slots	2	2	4	4	4	4
WSIC slots	0 (default)/1 (maximum)	0 (default)/1 (maximum)	0 (default)/2 (maximum)	0 (default)/2 (maximum)	2 (default)/6 (maximum)	2 (default)/8 (maximum)
XSIC slots	-	-	0 (default)/1 (maximum)	-	2 (default)/4 (maximum)	4 (default)/6 (maximum)
USB port	2 x USB		1 x USB	1 x USB	1 x USB	1 x USB
Auxiliary or console port	1 x RJ45 console port	1 x RJ45 console port	1 x RJ45 console port	1 x RJ45 console port	1 x RJ45 console port	1 x RJ45 console port
Memory	2 GB	NetEngine AR6121: 2 GB AR6121E: 4 GB	NetEngine AR6140-9G-2AC: 2 GB NetEngine AR6140E-9G-2AC: 4 GB	4 GB	SRU-400H: 8 GB SRU-600H: 16 GB	
Flash memory	1 GB/ 512MB **	1 GB	1 GB	1 GB	SRU-400H: 2 GB SRU-600H: 4 GB	
Hot swapping	Supported	Supported	Supported	Supported	Supported	Supported
Dimensions and Weight						
Router dimensions, With no mounting bracket installed (H x W x D)	44.5mm × 390mm × 232.5mm	43.6mm × 442mm × 220mm	44.5 mm x 442 mm x 420 mm	44.5 mm x 442 mm x 420 mm	88.1 mm x 442 mm x 470 mm	130.5 mm x 442 mm x 470 mm
Router dimensions, With mounting bracket installed (H x W x D)	44.5mm × 482.6mm × 232.5mm	43.6mm × 482.6mm × 220mm	44.5 mm x 482.6 mm x 572.5 mm	44.5 mm x 482.6 mm x 572.5 mm	88.1 mm x 482.6 mm x 470 mm	130.5 mm x 482.6 mm x 470 mm
Weight	2.9kg	3.2kg	5.0 kg	7.9 kg	8.85 kg	11.00 kg
Rack	IEC	IEC	IEC	IEC	IEC	IEC
Occupied rack space	1U	1U	1U	1U	2U	3U
Power Specifications, Power Consumption, and Heat Dissipation						
Rated input voltage range	100 V to 240 V					

Item	NetEngine AR6120/AR6120-VW	NetEngine AR6121/ AR6121E	NetEngine AR6140-9G-2AC/ AR6140E-9G-2AC	NetEngine AR6140-16G4XG	NetEngine AR6280	NetEngine AR6300
(AC)						
Rated input frequency (AC)	50 Hz/60 Hz					
Maximum input voltage range (AC)	90 V to 264 V					
Maximum input current (AC)	2A	2A	3A	3A	5A	5A
Maximum output power (AC)	60 W	60 W	AR6140E-9G-2AC:70W AR6140-9G-2AC:60W/70W	150W	350W	350W
Rated input voltage range (DC)	-	-	-	-	–48 V DC to –60 V DC	
Maximum input voltage range (DC)	-	-	-	-	–38.4 V DC to –72 V DC	
Maximum input current (DC)	-	-	-	-	9.6 A	
Maximum output power (DC)	-	-	-	-	350 W	
Typical power consumption	18w	18W	18W	65W	80 W	130 W
Maximum power consumption	20w	AR6121E:33W AR6121:31W	AR6140E-9G-2AC:34W AR6140-9G-2AC:32W	97W	160W	275W
Power supply redundancy	-	-	Supported	Supported	Hot-swappable dual power supplies	
Fan module	Built-in unpluggable fan modules				Independent pluggable fan modules	
Airflow	Left to right					
Noise level	49.6 dB	49.6 dB	54 dB	55.8 dB	54.2 dB	66.1 dB
Environment Parameters						
Operating temperature	0 º C to 45 º C					
Operating humidity	5% to 95% (non-condensing)					
Operating	< 5000 m (16404.2 ft.)					

Item	NetEngine AR6120/AR6120-VW	NetEngine AR6121/ AR6121E	NetEngine AR6140-9G-2AC/ AR6140E-9G-2AC	NetEngine AR6140-16G4XG	NetEngine AR6280	NetEngine AR6300
altitude						
Storage temperature	–40 º C to +70 º C					
Storage altitude	< 5000 m (16404.2 ft.)					

* The SD-WAN performance model is EVPN+IPsec+QoS, with the performance data being the sum of bidirectional flows.

**Note: For AR6120, the chipset of flash is 1GB, and 512MB is used for the users.

Software Features and Protocols

Item	NetEngine AR6000
Basic function	DHCP server/client/relay, PPPoE server/client, NAT, and sub-interface management
Voice (AR6120-VW support)	RTP, SIP, SIP AG, IP PBX/TDM PBX, VoIP, SBC
LAN	IEEE 802.1P, IEEE 802.1Q, IEEE 802.3, VLAN management, VLAN aggregation, MAC management, STP/RSTP
WLAN (AC)	AP management (AC discovery, AP access, and AP management), CAPWAP, WLAN user management, WLAN radio management (802.11a/b/g/n/ac), WLAN QoS (WMM), WLAN security (WEP, WPA, WPA2, key management)
IPv4 unicast routing	Routing policies, static routes, RIP, OSPF, IS-IS, BGP
IPv6 unicast routing	Static routes, routing policies, RIPng, OSPFv3, IS-ISv6, BGP4+
Basic IPv6 function	IPv6 ND, IPv6 PMTU, IPv6 FIB, IPv6 ACL, ICMPv6, DNSv6, DHCPv6
IPv6 tunneling	Manual tunnel, automatic tunnel, GRE tunnel, IPv6 over IPv4 tunnel, 6 to 4 tunnel, ISATAP
Multicast	IGMP v1/v2/v3, PIM-SM, PIM-DM, MSDP, MBGP, IPv6 PIM, MLD
MPLS	LDP, MPLS L3 VPN, VLL, PWE3, static LSP, dynamic LSP, MPLS TE, IP FRR, LDP FRR, TE FRR
VPN	IPsec VPN, GRE VPN, DSVPN, A2A VPN, L2TP VPN, L2TPv3 VPN
QoS	DiffServ mode, MPLS QoS, priority mapping, traffic policing (CAR), traffic shaping, congestion avoidance, congestion management, MQC (traffic classifier, traffic behavior, and traffic policy), hierarchical QoS, Smart Application Control (SAC)
WAN Optimization	Multi-fed and Selective receiving, per-packet load balancing
Security	ACL (v4/v6), domain-based stateful firewall, 802.1X authentication, MAC address authentication, portal authentication, AAA authentication, RADIUS authentication, HWTACACS authentication, PKI, broadcast storm suppression, ARP security, ICMP attack defense, URPF, CPCAR, blacklist, attack source tracing, online behavior management, IPS, URL filtering
Management and maintenance	Upgrade management, device management, web-based network management, GTL, SNMP (v1/v2c/v3), RMON, NTP, CWMP, Auto-Config, URL-based/USB-based/DHCP deployment, NETCONF/YANG, CLI, NetStream, IP FPM, TCP FPM, TWAMP Light, IP accounting, NQA

Safety and Regulatory Standards

Item	NetEngine AR6000

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EMC standards compliance	- CISPR32 Class A - EN 55032 Class A - CISPR24 - EN 55024 - ETSI EN 300 386 - AS/NZS CISPR32 Class A - FCC Part 15 Subpart B Class A - ICES 003 Class A - IEC 61000-3-2 - EN 61000-3-2 - IEC 61000-3-3 - EN 61000-3-3 - GB 9254 - VCCI-CISPR32 Class A
Environmental standards compliance	- RoHS - REACH - WEEE
Safety standards compliance	- IEC 60950-1 - EN 60950-1 - UL 60950-1 - CSA C22.2 No 60950-1 - GB 4943.1

Networking and Application

- **SD-WAN Using Hybrid Links**

  In the SD-WAN Solution, the NetEngine AR6000 functions as the hub of medium- to large-sized enterprises or gateway of large branches and supports hybrid access using multiple physical links, such as MPLS private lines and Internet links. The solution also leverages Huawei's next-generation controller, the Agile Controller, which implements centralized and visualized management. The NetEngine AR6000 provides extensive SD-WAN features and delivers optimal service experience for enterprises through intelligent application identification, intelligent traffic steering, and intelligent acceleration. For details about Huawei SD-WAN Solution, visit https://e.huawei.com/en/solutions/business-needs/enterprise-network/sd-wan.
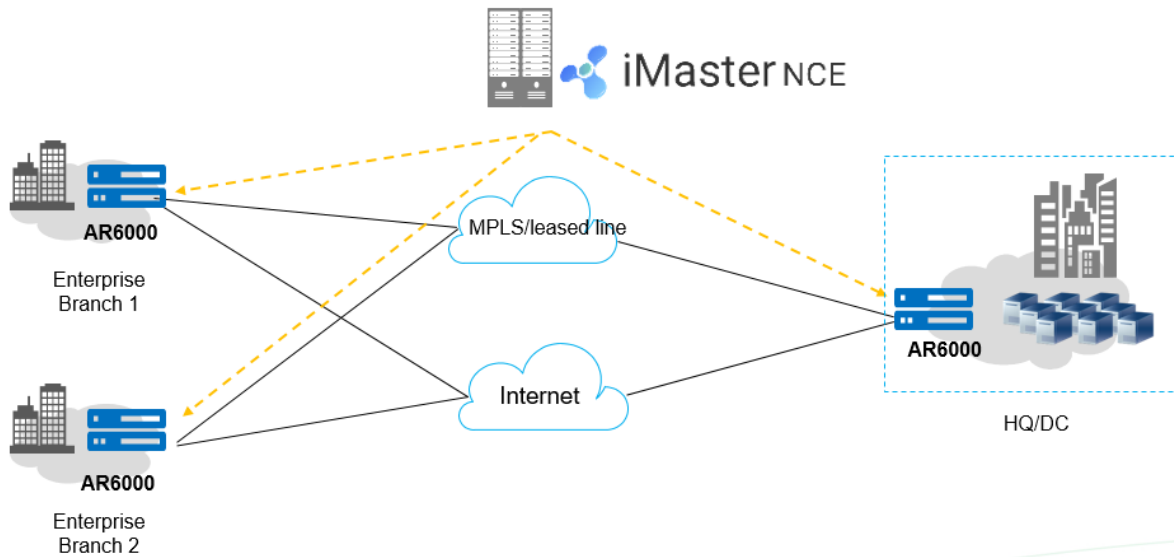
- **Building Different Types of VPNs by Leveraging Internet Resources**

  The NetEngine AR6000 provides various secure access functions for communication between enterprise branches and between branches and headquarters. These functions also allow an enterprise's partners to access its resources. Secure tunnels such as GRE VPN, IPSec VPN, DSVPN, L2TP VPN, and EVPN tunnels can be set up between the headquarters and branches for secure data access and transmission. The NetEngine AR6000 supports quick tunnel deployment and authentication for branches. Furthermore, partners authenticated and authorized by the NetEngine AR6000 can remotely access the enterprise resources over these tunnels.

  The NetEngine AR6000 supports a wide selection of cards and meets the extended service security requirements. Data encryption and decryption is hardware-based, greatly improving data encryption and decryption performance and providing E2E security assurance for customers.
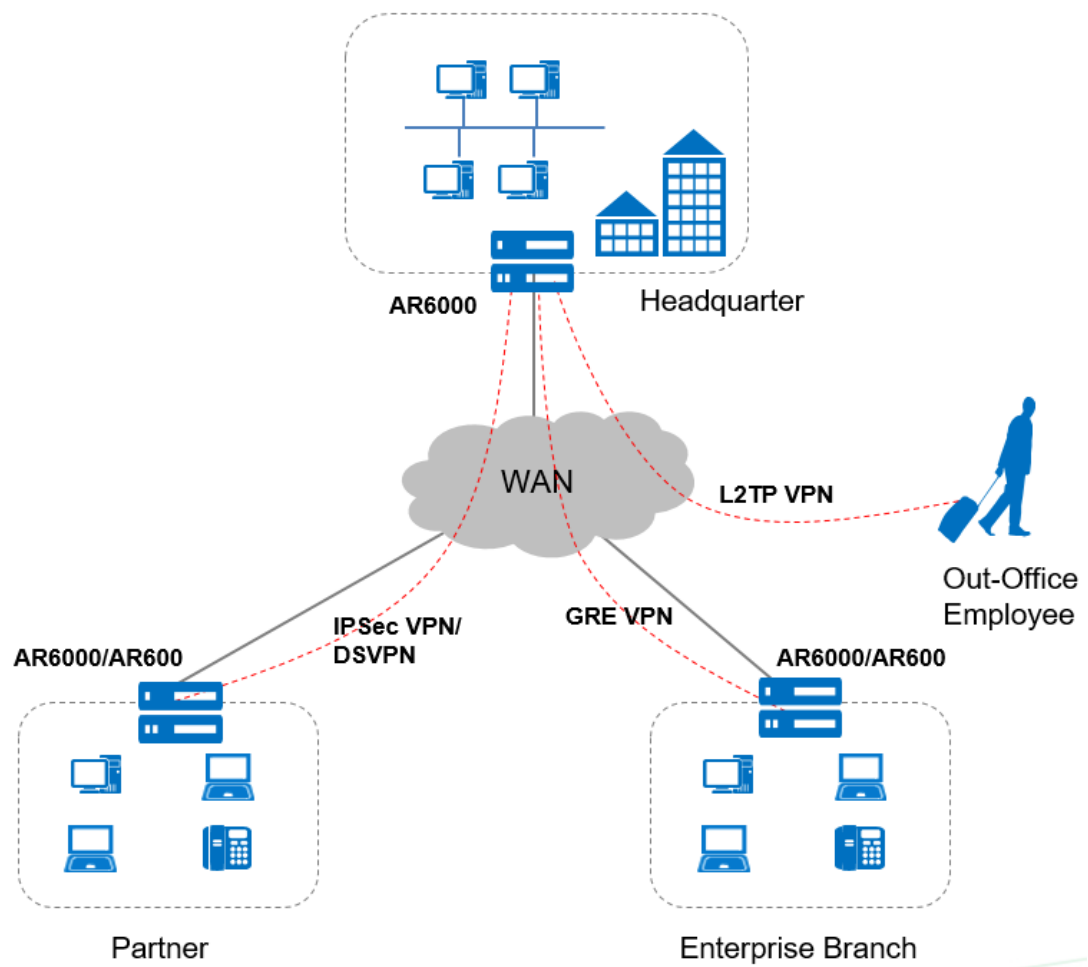
Ordering Information

Begin by ordering the chassis. Then select interface modules, any special licenses, and any desired accessories (SD card or USB disk).

- **Chassis Options**

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

- **Interface modules**

  The interface modules, 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 used as one XSIC slot by removing the panel.

- **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 AC.

Ordering components

Chassis Configuration	Description
NetEngine AR6120	AR6120, 1*GE WAN, 1*GE combo WAN, 1*10GE SFP+, 8*GE LAN, 2*USB, 2*SIC
NetEngine AR6120-VW	AR6120-VW, 1*GE WAN, 1*GE combo WAN, WLAN, 1*10GE SFP+, 8*GE LAN, 2*USB, 2*SIC
NetEngine AR6121	AR6121, 2*GE combo WAN, 1*10GE(SFP+) WAN,8*GE LAN, 1*GE combo LAN, 2*USB,2*SIC
NetEngine AR6121E	AR6121E, 2*GE combo WAN, 1*10GE(SFP+) WAN, 8*GE LAN, 1*GE combo LAN, 2*USB, 2*SIC
NetEngine AR6140-9G-2AC	AR6140-9G-2AC AC host, 5*GE RJ45, 4*GE SFP, 1*USB 3.0, 4*SIC
NetEngine AR6140E-9G-2AC	AR6140E-9G-2AC AC host, 5*GE RJ45, 4*GE SFP, 1*USB 3.0, 4*SIC
NetEngine AR6140-16G4XG	AR6140-16G4XG, 4*GE WAN, 4*SFP+, 12*GE LAN, 1*USB2.0, 4*SIC
NetEngine AR6280	AR6280 integrated chassis, 1*SRU slot, 4*SIC slot, 2*WSIC slot, 2*XSIC slot, 2*power slot
NetEngine AR6300	AR6300 integrated chassis, 2*SRU slot, 4*SIC slot, 2*WSIC slot, 4*XSIC slot, 2*power slot
Main Control Board	**Description**
SRU-400H	Service and Router unit 400H,14 10GE(SFP+),10 GE Copper,1 USB2.0
SRU-600H	Service and Router unit 600H,14 10GE(SFP+),10 GE Copper,1 USB2.0
License	**Description**
LAR0DATAE12	AR6300 Value-Added Data Package
LAR0AC12	AR6300 AC Express License
LAR0SECE12	AR6300 Value-Added Security Package
LAR0TP11	AR6200/AR6300 Threat Protection Service Subscribe 1 Year
LAR0IPS12	AR6300 IPS Service Subscribe 1 Year
LAR0DATAE11	AR6200 Value-Added Data Package
LAR0AC11	AR6200 AC Express License
LAR0SECE11	AR6200 Value-Added Security Package

LAR0TP11	AR6200/AR6300 Threat Protection Service Subscribe 1 Year
LAR0IPS11	AR6200 IPS Service Subscribe 1 Year
LAR0DATAE10	AR6100 Value-Added Data Package
LAR0AC10	AR6100 AC Express License
LAR0SECE10	AR6100 Value-Added Security Package
LAR0TP10	AR600/AR700/AR6100 Threat Protection Service Subscribe 1 Year
LAR0IPS10	AR6100 IPS Service Subscribe 1 Year

More Information

For more information about Huawei next-generation AR enterprise routers, visit http://e.huawei.com or contact us in the following ways:

- Global service hotline: http://e.huawei.com/en/service-hotline
- Logging in to the Huawei Enterprise technical support website: http://support.huawei.com/enterprise/
- Sending an email to the customer service mailbox: support_e@huawei.com

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