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 AR6121E and NetEngine AR6140E-9G-2AC, which can meet networking requirements of enterprises of different scales.

 NetEngine AR6121E	• Fixed WAN ports: 2 x GE Combo, 1 x 10GE SFP+ (compatible with GE SFP) • Fixed LAN ports: 1 x GE Combo, 8 x GE electrical(can be configured as WAN) • Dimensions (H x W x D): 44.4 mm x 442.0 mm x 220.4 mm
 NetEngine AR6140E-9G-2AC	• Fixed WAN ports: 2 x GE RJ45, 2 x GE SFP • Fixed LAN ports: 2 x GE SFP, 3 x GE electrical(can be configured as WAN) • Dimensions (H x W x D): 44.4 mm x 442.0 mm x 428.2 mm

Features and Benefits

Features and Benefits

Service Requirement	Features and Benefits
High performance	• Integrates the ARM multi-core processor, LSW switching chip, and hardware encryption/decryption engine, based on the self-developed SOC chip architecture • Higher forwarding performance than the industry average, providing the low latency for key services

Service Requirement	Features and Benefits
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
5G wireless access	• Supports 5G SIC cards and RU-201 modules, provide high wireless bandwidth experience • Supports 2.5GE LAN ports to ensure high-performance packet forwarding in 5G high-bandwidth backhaul scenarios; accommodates both SA and NSA architectures, offering flexible network access • Works in conjunction with traditional wired links for mutual backup, guaranteeing uninterrupted services For more information about RU-201, see the RU-201 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
Extensive network interfaces	• Hot swapping • Extensive flexible interface cards such as LAN, WAN and 3G/LTE.

Product Specifications

Item	NetEngine AR6121E	NetEngine AR6140E-9G-2AC
System Parameters		
Forwarding performance (NAT + ACL + QoS, IMIX)	2 Gbps	
IPsec performance (IMIX)	2 Gbps	
IPsec performance (1400 bytes)	4 Gbps	
SD-WAN IPsec performance* (IMIX)	1.5 Gbps	
SD-WAN IPsec performance*(1400 bytes)	4.5 Gbps	
SD-WAN performance** (IMIX)	1.2 Gbps	
SD-WAN performance** (1400 bytes)	1.85 Gbps	
SD-WAN typical performance*** (IMIX)	800 Mbps	
SD-WAN typical performance*** (1400 bytes)	1.8 Gbps	
Fixed WAN ports	2 x GE combo, 1 x 10GE SFP+ (compatible with GE SFP)	2 x GE SFP, 2 x GE electrical
Fixed LAN ports	1 x GE combo, 8 x GE electrical (All LAN ports can be switched to WAN ports)	2 x GE SFP, 3 x GE electrical (All LAN ports can be switched to WAN ports)
5G uplink	Support 5G SIC/RU-201	
SIC slot	2 x SIC	4 x SIC
WSIC slot (default/maximum****)	0/1	0/2
USB port	2 x USB 2.0	1 x USB 2.0
Console port	1 x RJ45 console port	
Memory	4 GB	
Hot swapping	Supported	
Dimensions and Weight		
Dimensions without packaging (H x W x D)	44.4 mm x 442.0 mm x 220.4 mm	44.4 mm x 442.0 mm x 428.2 mm
Dimensions with packaging (H x W x D)	90 mm x 390 mm x 570 mm	175 mm x 550 mm x 710 mm
Weight without packaging	3.2 kg	5.35 kg

Item	NetEngine AR6121E	NetEngine AR6140E-9G-2AC
Installation type	Rack, work bench, against the wall	Rack
Chassis height [U]	1 U	
Power Specifications, Power Consumption, and Heat Dissipation		
Rated input voltage (V)	100 V to 240 V, 50 Hz/60 Hz	
Input voltage range (AC)	90 V to 264 V	
Maximum input current (A)	2 A	
Maximum output power (W)	70 W	
Typical power consumption (W)	28 W	22 W
Maximum power consumption (W)	33 W	28 W
Power supply redundancy	-	Dual power modules
Fan module	Built-in unpluggable fan modules	
Airflow	Left to right	
Noise	49.9 dB(A)	
Environment Parameters		
Operating temperature	0 ºC to 45 ºC	
Operating humidity	5% to 95% (non-condensing)	
Operating altitude	< 5000 m (16404.2 ft.)	
Storage temperature	–40 ºC to +70 ºC	

*: Scenario where the SD-WAN IPsec performance specification applies: IPsec. This specification applies to the combined total of traffic in inbound and outbound directions.

**: Scenario where the SD-WAN performance specification applies: IPsec + QoS. This specification applies to the combined total of traffic in inbound and outbound directions.

***: Scenario where the typical SD-WAN typical performance specification applies: IPsec + QoS + SA + AppFlow. This specification applies to the combined total of traffic in inbound and outbound directions.

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

Software Features and Protocols

Item	NetEngine AR6000
Basic function	DHCPv4 server/client/relay, DHCPv6 server/client/relay, PPPoE server/client, NAT, interface management, and DNS
LAN	IEEE 802.1P, IEEE 802.1Q, IEEE 802.3, VLAN management, VLAN aggregation, MAC management, STP/RSTP/MSTP, and QinQ
IPv4 unicast routing	Routing policies, static routes, RIP, OSPF, IS-IS, BGP, and IP FRR
IPv6 unicast routing	Static routes, routing policies, RIPng, OSPFv3, IS-ISv6, and BGP4+
Basic IPv6 function	IPv6 ND, IPv6 PMTU, IPv6 FIB, IPv6 ACL, ICMPv6, DNSv6, DHCPv6, and PPPoE client IPv6

Huawei NetEngine AR6000 Series Enterprise Routers

Item	NetEngine AR6000
IPv6 tunneling	IPv6 over IPv4 manual tunnel, automatic tunnel, GRE tunnel, IPv6 over IPv4 tunnel, 6to4, and ISATAP
Multicast	IGMP v1/v2/v3, PIM-SM, PIM-DM, MSDP, MBGP, IPv6 PIM, and MLD
MPLS	LDP, MPLS L3 VPN, VLL, PWE3, static LSP, dynamic LSP, MPLS TE, IP FRR, LDP FRR, and TE FRR
VPN	IPsec VPN, GRE, Ethernet over GRE, DSVPN, A2A VPN, L2TP VPN, L2TPv3 VPN, VXLAN, and SD-WAN EVPN
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, and Smart Application Control (SAC)
WAN Optimization*	FEC, multi-fed and selective receiving, and 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, and antivirus
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, and NQA

* Note: In V300R019C13 and later versions, the AR6000 series support WAN optimization features.

Safety and Regulatory Standards

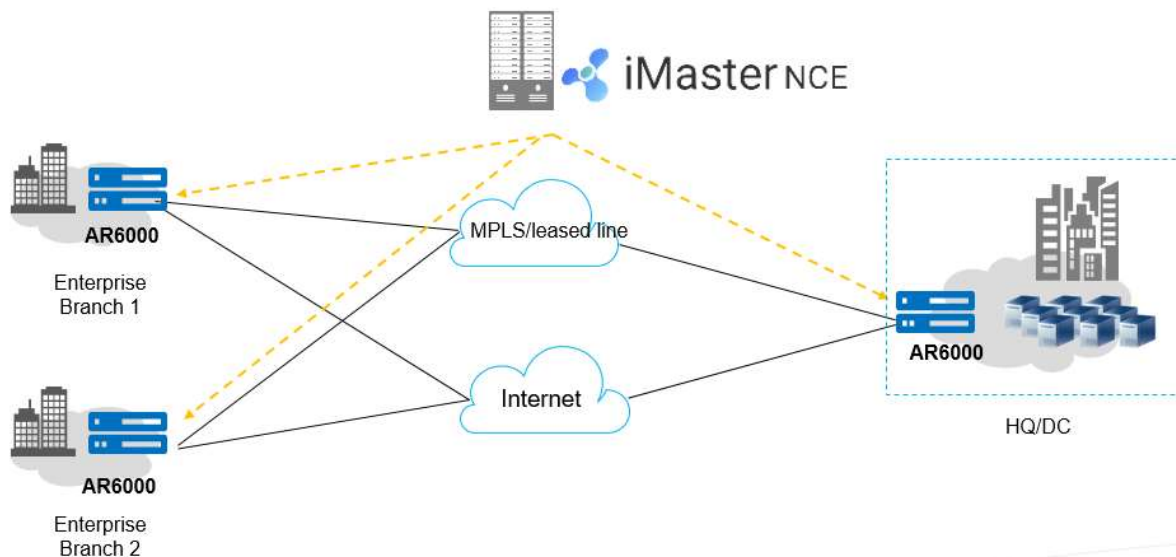| Item	NetEngine AR6000
EMC standards compliance	•EN 55032 •EN 55035 •CISPR 32 •CISPR 35 •IEC/EN 61000-3-2 •EN 61000-3-3 •ETSI EN 300 386 •ETSI EN 301 489-1 •ETSI EN 301 489-3 •ETSI EN 301 489-17 •ETSI EN 301 489-52 •FCC CFR Part 15, Subpart B •ANSI C63.4 •ICES-003 Issue 7 •EN 50121-1 •EN 50121-4 •GB 9254
Environmental standards compliance	•RoHS •REACH •WEEE
Safety standards compliance	•IEC 60950-1 •IEC 62368-1

Item	NetEngine AR6000
	•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 iMaster NCE, 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/enterprise-network/campus-network/sd-wan.

SD-WAN networking

- **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.
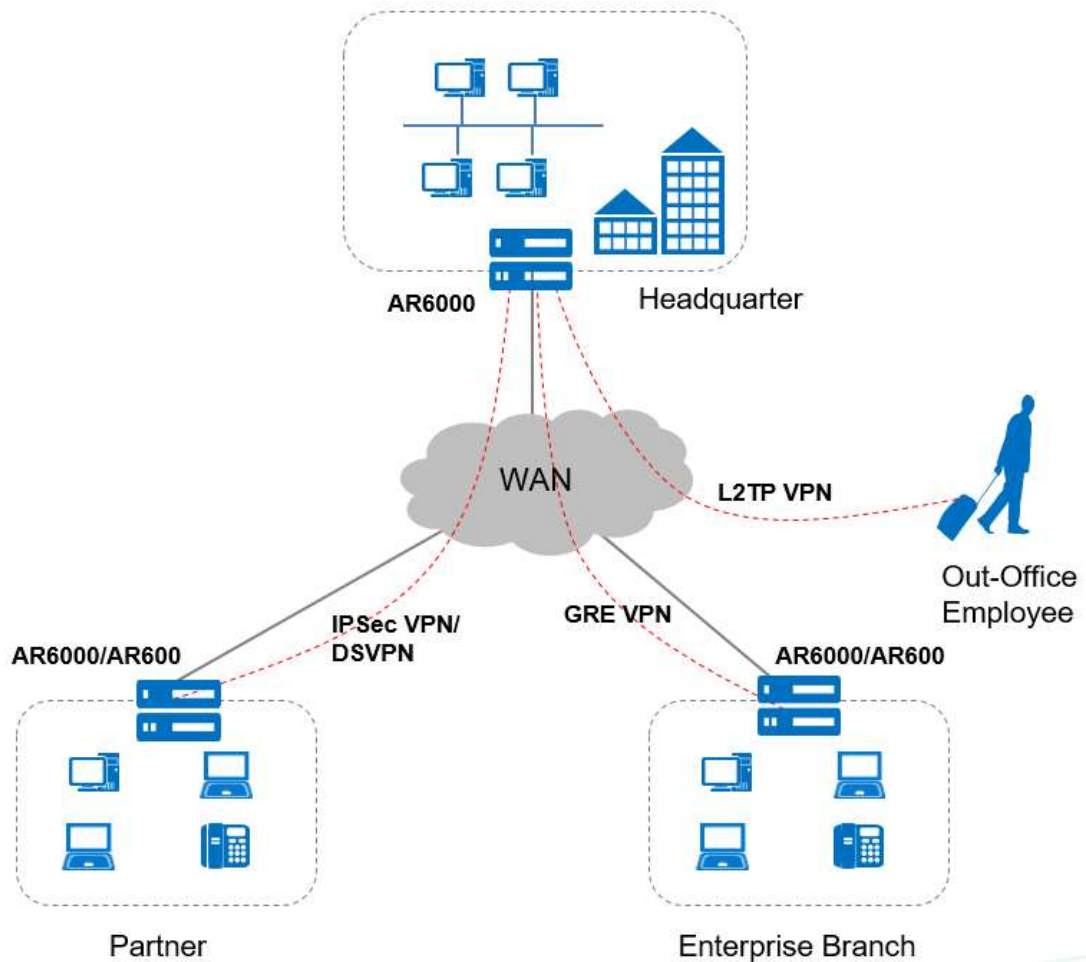
Ordering Information

The configuration of the NetEngine AR6000 series includes device model selection and software configuration.

- Device model

Select the device model according to the uplink interface type and service requirements.

- Software

The NetEngine AR6000 series software consists of the basic software and licensed software.

Ordering components

Host	Description
NetEngine AR6121E	AR6121E, 2*GE combo WAN, 1*10GE(SFP+) WAN, 8*GE LAN, 1*GE combo LAN, 2*USB 2.0, 2*SIC
NetEngine AR6140E-9G-2AC	AR6140E-9G-2AC AC host, 5*GE RJ45, 4*GE SFP, 1*USB 2.0, 4*SIC

Software Sales Model	License	Ordering Information
Threat protection service	LAR0TP1003 (1 year) LAR0TP1006 (2 years) LAR0TP1009 (3 years) LAR0TP1012 (4 years) LAR0TP1015 (5 years)	Threat Protection Service Subscribe x Year (applicable to the AR6100), including: • IPS signature database update • URL remote query for URL filtering • Antivirus signature database update
Independent Sale Model	LAR0DATAE10	AR6100 Value-Added Data Package, including: • L2TPv3 • L2VPN • IP FPM • SPR
	LAR0AC10	AR6100 AC Express License, including: • WLAN AC
	LAR0VOICEE10	AR6100 Value-Added Voice Package, including: • PBX trunk tandem • SIP AG • H.248 AG
	LAR0CMBEST01	AR CM&BEST License-5 telephones
	LAR0CMBEST02	AR CM&BEST License-25 telephones
	LAR0CMBEST03	AR CM&BEST License-100 telephones
	LAR0SECE10	AR6100 Value-Added Security Package, including: • SAC • DSVPN • Efficient VPN • A2A VPN • IPS • Antivirus • URL filtering
	LAR0IPS10	AR6100 IPS Service Subscribe 1 Year, including: • IPS signature database update
	LAR0PONE01	AR600&6100&6200&6300 Passive Optical Network Value-added Package, including: • Passive optical modules S600E and S800E are supported
N1 Model	N1-Campus-F-AR6100	N1-CloudCampus(exclude SD-WAN),Foundation,AR6100 Series,Per Device
	N1-LANWAN-F-AR6100	N1-CloudCampus SD-WAN(include SD-WAN),Foundation,AR6100,Per Device
	N1-LANWAN-A-AR6100	N1-CloudCampus SD-WAN(include SD-WAN),Advanced,AR6100 Series,Per Device

Other Information

SIC Port Model	Ordering Information
SIC-1V35B-AM	Port VDSL2 WAN Interface Card A very-high-speed digital subscriber line (VDSL) 35B interface transmits service data from a LAN to an upstream device at a high speed over a twisted pair. Standards compliance: •T1.413 ANSI ADSL DMT issue 2 compliance •ADSL Annex A ITU G. 992.1 (ADSL), G.992.3 (ADSL2), and G.992.5 (ADSL2+) •ADSL Annex M G.992.3 (ADSL2) and G.992.5 (ADSL2+) •ADSL Annex B ITU G.992.1 (ADSL), G.992.3 (ADSL2), and G.992.5 (ADSL2+) •ADSL Annex J ITU G.992.3 (ADSL2), and G.992.5 (ADSL2+) •ITU G.993.2 (VDSL2) and supported profiles: 8a, 8b, 8c, 8d, 12a, 12b, 17a, and 35b •VDSL2 Vectoring (G993.5). Only over POTS vectoring is supported.

SIC-4FXS	4-Port FXS Voice Interface Card An FXS interface is a simulated subscriber line interface and provides access to analog phones and fax machines. •Standards compliance: ITU Q.512 for the FXS interface •Dialing mode: Dual-tone multifrequency system (DTMF) in accordance with GB3378 •Bandwidth: 300 Hz to 3400 Hz
WSIC Port Model	**Ordering Information**
WSIC-8GE-T	8-Port GE Ethernet Interface Card
WSIC-4GE-C	4-Port GE COMBO Ethernet Interface Card
Support 5G RU Model	**Supported Standards and Frequency Bands**

RU-201	•5G: NR Band 1/3/5/7/8/20/28/38/40/41/75/77/78/79/80/81/82/83/84
	•LTE: Band 1/3/5/7/8/18/19/20/26/28/32/34/38/39/40/41/42/43
	•DL MIMO:
	    5G 4x4: NR Band 1/3/7/38/40/41/77/78/79
	    5G 2x2: NR Band 5/8/20/28/75
	    LTE 4x4: Band 1/3/7/38/39/40/41/42/43
	    LTE 2x2: Band 5/8/18/19/20/26/28/32/34
	•UL MIMO:
	    5G 2x2: NR Band1/38/40/41/77/78/79

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

Huawei Technologies Co., Ltd.
Address: Huawei Industrial Base
Bantian, Longgang Shenzhen 518129
People's Republic of China
Website: e.huawei.com