NetEngine 8000 M8

Universal Service Router

Overview

HUAWEI NetEngine 8000 M8 all-scenario intelligent router is a high-end intelligent router launched by Huawei for the industry. It is mainly used in access and aggregation scenarios to form an intelligent and simplified IP bearer network solution with simplified architecture, intelligent connection, and committed high availability. The details are as follows:

(1) The NetEngine 8000 M8 breaks through multiple technical difficulties, such as ultra-high-speed signal transmission, super heat dissipation, and efficient power supply. It achieves a compact and large capacity of 3 U/2.4 Tbit/s and 220 mm which is the most compact router in the industry. Supports a full series of interfaces to meet the traffic growth and diversified service access requirements in the cloud era. Currently, Ethernet, SDH and PDH interfaces are supported, and PCM interfaces are supported in the roadmap. NetEngine 8000 M8 is a full-scenario converged platform that supports home broadband, private line, mobile bearer, and cloud bearer scenarios, simplifying network layers and complexity. The network slicing (FlexE) function implements multi-purpose and comprehensive bearer on one network.

(2) NetEngine 8000 M8 supports SRv6 and enables intelligent connections. Based on IPv6, SRv6 provides a large number of continuous addresses and rich scalability capabilities, implements automatic cross-domain connection and minute- level service provisioning, and implements cloud scheduling network and one-hop to the cloud. SRv6 can identify applications and tenants and implement intelligent traffic steering such as latency and bandwidth based on customer requirements to ensure service SLA. The number of network protocols is reduced from 10+ to 2, simplifying network O&M.

(3) The NetEngine 8000 M8 supports intelligent O&M. Automation and intelligent technologies are introduced to implement intelligent O&M. Based on iMaster NCE, the In-situ Flow Information Telemetry (IFIT) technology accurately detects network SLAs in real time, visualizes service quality in real time, and supports minute-level fault locating. Unique ROAM algorithm, intelligent traffic steering and optimization; The intelligent algorithm reduces the number of displayed alarms by 99%.

The product fully supports the future-oriented next-generation unified network SRv6 technology and can be used to build IP backbone, metro, mobile backhaul, and data center networks. It can be used for individual/enterprise cloud migration, inter- cloud interconnection, IoT, government and enterprise private lines, home broadband applications, and CDN. As a basic bearer protocol of the entire network, SRv6 implements end-to-end full-service bearer capabilities. SRv6 enables simplified protocols, large-scale networking, seamless integration, high reliability, integrated service chains, network and service programmability, and a full ecosystem.

- Support for the Deterministic IP (DIP) technology. The periodic scheduling mechanism prevents cross-period packet collisions and ensures deterministic delay when nodes are processing data.
- Support for data redundancy elimination (DRE) to compress and decompress data between WAN border routers, reducing bandwidth consumption of WAN links, reducing line costs, and accelerating the deployment of distributed data centers.

The NetEngine 8000 series router integrates multiple functions, simplifies the network structure, provides rich service types, reliable service quality, and intelligent O&M. It leads the IP WAN to an intelligent network with self-driving driving, and continuously drives the business success of enterprise customers.

Product Highlights

NetEngine 8000 M8 (DC)

NetEngine 8000 M8 (AC)

Compact and Large-Capacity

- Size: 3U, 220 mm deep, flexible deployment
- Capacity: 8 slots, 2.4 Tbps

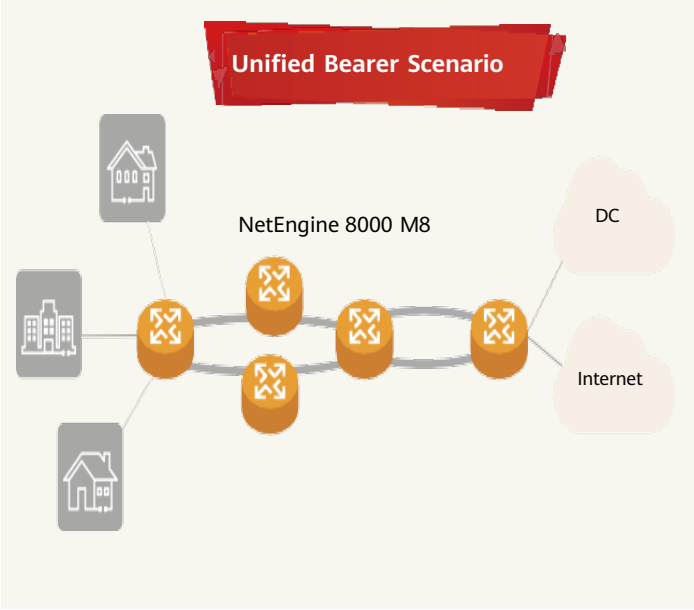
All-Scenario Platform

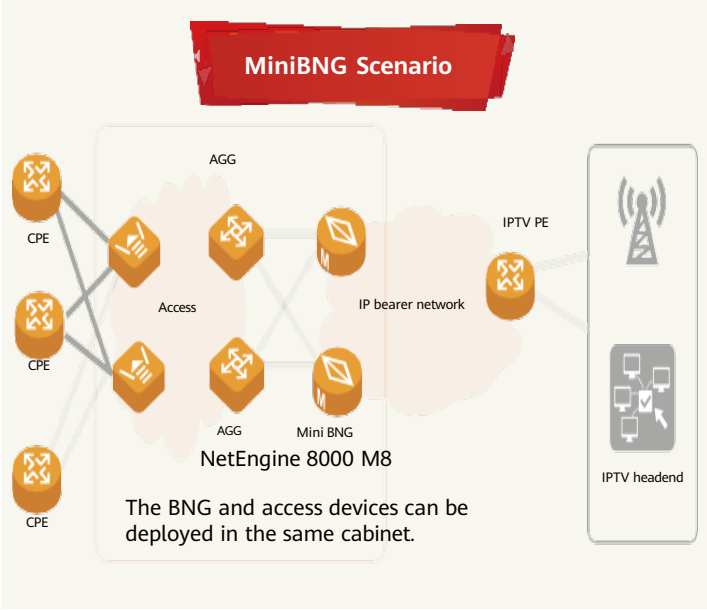
- 4-in-1 platform: Private line/IGW/ DC GW/BNG
- Abundant ports: 64K~400GE full-rate interfaces

Leading Capabilities

- SRv6/EVPN: Simplified protocols
- NP Architecture, to meet future evolution
- Industry-leading network slicing

Application Scenario





Product Specifications

Property	IPU-480	IPU-1T2	IPU-2T4
Switching Capacity	960 Gbps	2.4 Tbps	4.8 Tbps
Forwarding Performance	908 Mpps (bi-dir)	2040 Mpps (bi-dir)	2040 Mpps (bi-dir)
Maximum Board Capability	100 GE	100 GE	400 GE
Interface types	Not support 400GE		400GE/100GE/50GE/40GE/25GE/10GE/GE/FE/E1/cPOS/POS/V.35/X.21/V.24/C37.94&CoDir64K/FXS/FXO/E&M/RS232/RS485
Main Control Board	2, 1:1		
Service Slots	8 (DC) 6 (4AC)		
Dimensions (W x D x H)	442 mm × 220 mm × 132.6 mm (3U)		
Typical Power Consumption	428W	485W	774W
Voltage	DC: -40V to -72V, AC: 200V to 240V/100V to 127V dual live wires, support 240V HVDC		
Clock	ITU-T G.8275.1,G8265.1,G.8275.2, SyncE，ITU-T G.8273.2 Class C		
Temperature	DC: -40℃～65℃，AC:-5℃～55℃		

NOTE For details, see the corresponding product manual.

Product Features

Features of Huawei NetEngine 8000 M8 Series Routers

Feature	Description
L2	IEEE 802.1q, IEEE 802.1p, IEEE 802.3ad, IEEE 802.1ab, STP/RSTP/MSTP, G.8032, STP/RSTP, MSTP, L2 protocol transparent transmission, BPDU, LACP, VLAN, Bridge domain, L2TPv3, QinQ, MTU per port 9600 bytes
L3	OSPF/OSPF3, RIP/RIPng, IS-IS/IS-ISv6, BGP/BGP+, ACL, IPv4/IPv6, 6VPE, ARP, VLANIF, VXLAN
MEF	• E-LINE: EPL, EVPL • E-LAN: EP-LAN, EVP-LAN
IPv4	TCP/IP, for example, ICMP, IP, TCP, UDP, Socket (TCP/UDP/RAW IP), ARP Static DNS, DNS Client FTP Server, FTP Client TFTP Client DHCP Relay, DHCP Server Ping, Tracert, NQA IP policy-based routing Forwarding next hop based on traffic IP policy-based route load balancing The QinQ interface (QinQ termination and dot1q termination) supports IPv4 load balancing. Enabling and disabling the rapid ping reply function based on interface boards Forcible fragmentation for packets with length greater than MTU and DF enabled MPLS-in- UDP tunnel egress
IPv6	IPv6 (ND) Path MTU (PMTU) TCP6 Ping IPv6 Tracert IPv6 Socket IPv6 DHCPv6 Relay Static IPv6 DNS TFTP IPv6 Client IP policy-based routing IPv6 ND fast reply

Feature	Description
MPLS	LDP, RSVP-TE, seamless MPLS, Segment Routing MPLS, MPLS-TP
Multicast	IGMP, Static Multicast Routing, PIM-SM, PIM-SM/SSM, MBGP, MG MVPN, IPv4 Multicast, IPv6 multicast, BIERv6
SRv6	IS-IS for SRv6, OSPFv3 for SRv6, SRv6 TE Policy, SRv6 TE Policy Shortcut, SRv6 Flex- Algo, SRv6 SRH compression, SRv6 network slicing BGP for SRv6, SRv6 BE, SBFD for SRv6 BE, SRv6 TI-LFA FRR, SRv6 middle-node protection, SRv6 micro-loop avoidance, SRv6 OAM, SRv6 SFC, G-SRv6
EVPN	EVPN E-LAN/E-Line/E-Tree, EVPN L3VPN, EVPN VXLAN, PBB EVPN
L2VPN	PWE3/VLL, VPLS, VXLAN, VPWS, L2TPv3, BGP/MPLS IPv4/IPv6 VPN, PBB-EVPN, PBB VPLS, GRE
L3VPN	CE routers can access the L3VPN through L3 interfaces. Support static routes between CE and PE, BGP, RIPv1/v2, OSPF and IS-IS Inter-AS VPN, including RFC2547bis option A Inter-AS VPN, including RFC2547bis option B Inter-AS VPN, including RFC2547bis option C NG MVPN IPv6 VPN HoVPN Seamless MPLS BGP LSP entropy label Redirect to VPN L3VPN PIPE/Uniform mode L3VPN statistics
Value added service	BNG/BRAS (IPoE/PPPoE), NAT/CGN, IPsec, MACsec, service awareness (SA)
Clock	NTP, Physical layer synchronization (SynE), 1588v2 ACR/ATR, G.8275.1, SMPTE-2059-2, CES ACR, Atom GPS 3.0
QoS	QPPB, DiffServ, 5-level HQoS, redirection, traffic classification & re-marking & scheduling
Reliability	IP FRR, LDP FRR, TE FRR, VPN FRR, BGP FRR, mLDP FRR, Bit-error-triggered protection switching
Maintainability	• A network management system (NMS) with a graphical user interface, which simplifies NE management, improves O&M capabilities, and facilitates network- wide or end-to-end performance monitoring and fault diagnosis. • Plug-and-play based on DHCP or DCN. The NMS can automatically detect and configure the newly connected devices, which helps to implement remote batch commissioning. • Directional Forwarding Detection (BFD), Ethernet OAM, MPLS OAM, and MPLS- TP OAM

Feature	Description
	• Bandwidth association with microwave devices is supported. Bandwidth association simplifies QoS configurations and requirements on the microwave device, and the complex QoS logic is implemented on the NetEngine 8000 device. • Seamless MPLS • SNMP (v1/v2c/v3) • CLI • NETCONF • RMON • YANG • Telnet • AAA RADIUS and TACACS • IFIT, IP FPM, NQA, TWAMP, telemetry • BFD, VRRP • Ethernet OAM, IEEE 802.3ah, IEEE 802.1ag, Y.1731, ITU-T Y.1564 • Ethernet LPT • Syslog

Regulatory Compliance

Item	Description
Regulatory compliance	**EMC** · ANSI C63.4 · AS/NZS CISPR 32 · CISPR 24 · CISPR 32 · EN 55024 · EN 55032 · ETSI EN 300 386 · ETSI ES 201 468 · FCC CFR47 Part 15 Subpart B · ICES-003 Issue 6 · ICES-GEN Issue 1 • IEC 61000-3-2 • IEC 61000-3-3 • IEC 61000-4-11

Item	Description
	• IEC 61000-4-2 • IEC 61000-4-29 • IEC 61000-4-3 • IEC 61000-4-4 • IEC 61000-4-5 • IEC 61000-4-6 • IEC 61000-6-2 • IEC 61000-6-4 • VCCI-CISPR 32 **Environment** • IEC 60068-2-30 • IEC 60068-2-78 • IEC 60068-2-14 • IEC 60068-2-1 • IEC 60068-2-2 **Safety** • IEC/EN/UL/CSA 60950-1 • IEC/EN 62368-1 **Environmental protection** • 2011/65/EU & (EU)2015/863 (EU RoHS) • Regulation (EC) No.1907/2006 (REACH) • 2012/19/EU (WEEE) • 2006/66/EC & 2013/56/EU on batteries and accumulators

NOTE

- In the physical dimensions shown in the table, the width (W) does not include the rack-mounting ears.
- Temperature and humidity are measured at 1.5 m (4.92 ft.) above the ground and 0.4 m (1.31 ft.) in front of the cabinet. There should be no protection board on the front or back of the cabinet.
- "Short-term" refers to continuous working time that does not exceed 96 hours and accumulated working time per year that does not exceed 15 days. If the working time exceeds either of these values, it is considered "long-term".

Product Specifications

NetEngine 8000 M8 AC

Item	Specification
Cabinet installation standards	ETSI 21-inch; IEC 19-inch
Dimensions without packaging (H x W x D) [mm(in.)]	132.6 mm x 442 mm x 220 mm (5.22 in. x 17.4 in. x 8.66 in.)
Dimensions with packaging (H x W x D) [mm(in.)]	360 mm x 585 mm x 390 mm (14.17 in. x 23.03 in. x 15.35 in.)
Chassis height [U]	3U
Weight without packaging [kg(lb)]	7.8 kg (17.2 lb)
Weight with packaging [kg(lb)]	11.3 kg (24.91 lb)
Weight without packaging (full configuration) [kg(lb)]	[IPU-2T4-A/IPU-2T4-E-B]AC:19 kg (41.89 lb) [IPU-1T2-AU/IPU-1T2-E-BU]AC:19 kg (41.89 lb) **NOTE:**The weight of a device can be estimated based on the board configuration using Info-Finder Hardware Configuration.
Weight with packaging (full configuration) [kg(lb)]	[IPU-2T4-A/IPU-2T4-E-B]AC:22.5 kg (49.60 lb) [IPU-1T2-AU/IPU-1T2-E-BU]AC:22.5 kg (49.60 lb)
Typical power consumption (with configuration) [W]	[IPU-2T4-A/IPU-2T4-E-B]2*CR8DE1KB00M1(1*400GE)+1*CR8DE4NB00M1(4*100GE)+1*CR8DE8YF0025(8*25GE)+2*CR5D00LAXF91(10*10GE)=774.3 W [IPU-1T2-AU/IPU-1T2-E-BU]2*CR8DE2NB00M0(2*100GE)+1*CR5D00E4XM25(4*25GE)+2*CR5D00LAXF91(10*10GE)+1*CR5D00EAGF95(10*GE)=656.1 W **NOTE:**The power consumption of a device can be estimated based on the board configuration using Info-Finder Hardware Configuration.
Typical heat dissipation (with configuration) [BTU/hour]	[IPU-2T4-A/IPU-2T4-E-B]2*CR8DE1KB00M1(1*400GE)+1*CR8DE4NB00M1(4*100GE)+1*CR8DE8YF0025(8*25GE)+2*CR5D00LAXF91(10*10GE)=2527.89 BTU/hour [IPU-1T2-AU/IPU-1T2-E-BU]2*CR8DE2NB00M0(2*100GE)+1*CR5D00E4XM25(4*25GE)+2*CR5D00LAXF91(10*10GE)+1*CR5D00EAGF95(10*GE)=2136.13 BTU/hour
MTBF [year]	112.71 year
MTTR [hour]	0.5 hour
Availability	0.999999494
Power supply mode	AC
Rated input voltage [V]	200V to 240V/100V to 127V dual live wires, support 240V HVDC
Input voltage range [V]	90 V to 290 V
Maximum input current [A]	10 A
Rated output power [W]	1500 W
Maximum input cable size [mm^2]	Standard C13 cable
Front-end circuit breaker/fuse [A]	≥10 A

Item	Specification
Heat dissipation mode	Air cooling
Airflow direction	From left to right
Noise at normal temperature (acoustic power) [dB(A)]	< 72 dB (meeting the ETSI 72 dBA standard)
Number of slots	11
Number of service board slots	6
Switching capacity	IPU-2T4-A/IPU-2T4-E-B: 4.8 Tbit/s IPU-1T2-AU/IPU-1T2-E-BU: 2.4 Tbit/s
Maximum number of physical ports on the entire device	120
Maximum number of 400GE ports	IPU-2T4-A/IPU-2T4-E-B:3 IPU-1T2-AU/IPU-1T2-E-BU:3
Maximum number of 100GE ports	IPU-2T4-A/IPU-2T4-E-B:18 IPU-1T2-AU/IPU-1T2-E-BU:12
Maximum number of 50GE ports	IPU-2T4-A/IPU-2T4-E-B:18 IPU-1T2-AU/IPU-1T2-E-BU:16
Maximum number of 40GE ports	IPU-2T4-A/IPU-2T4-E-B:18 IPU-1T2-AU/IPU-1T2-E-BU:12
Maximum number of 25GE ports	IPU-2T4-A/IPU-2T4-E-B:48 IPU-1T2-AU/IPU-1T2-E-BU:48
Maximum number of 10GE ports	IPU-2T4-A/IPU-2T4-E-B:60 IPU-1T2-AU/IPU-1T2-E-BU:60
Maximum number of GE ports	IPU-2T4-A/IPU-2T4-E-B:60 IPU-1T2-AU/IPU-1T2-E-BU:60
Maximum number of FE ports	IPU-2T4-A/IPU-2T4-E-B:60 IPU-1T2-AU/IPU-1T2-E-BU:60
Redundant IPUs	1:1
Redundant power supply	1+1
Redundant fans	1+1. Short-term running when a single fan becomes invalid at the ambient temperature of 40°C(104°F) (one fan module contains two fans)
Long-term operating temperature [°C(°F)]	–20°C to +55°C (–4°F to +131°F)
Restriction on the operating temperature variation rate [°C(°F)]	≤ 0.5°C/min (32.9°F/min), non-condensing
Storage temperature [°C(°F)]	–40°C to +70°C (–40°F to +158 °F)
Operating relative humidity [RH]	5% RH to 95% RH, non-condensing
Storage relative humidity [RH]	5% RH to 95% RH, non-condensing
Long-term operating altitude [m(ft.)]	≤ 4000 m (13123.2 ft.) (For the altitude in the range of 1800 m to 4000 m [5905.44 ft. to 13123.2 ft.], the operating temperature of the device must decrease by 1°C [1.8°F] for every 220 m [721.78 ft.].)
Storage altitude [m(ft.)]	< 5000 m (< 16404.2 ft.)

NetEngine 8000 M8 DC

Item	Specification
Cabinet installation standards	ETSI 21-inch; IEC 19-inch
Dimensions without packaging (H x W x D) [mm(in.)]	132.6 mm x 442 mm x 220 mm (5.22 in. x 17.4 in. x 8.66 in.)
Dimensions with packaging (H x W x D) [mm(in.)]	360 mm x 585 mm x 390 mm (14.17 in. x 23.03 in. x 15.35 in.)
Chassis height [U]	3U
Weight without packaging [kg(lb)]	5.7 kg (12.57 lb)
Weight with packaging [kg(lb)]	9.2 kg (20.28 lb)
Weight without packaging (full configuration) [kg(lb)]	[IPU-2T4-A/IPU-2T4-E-B]DC: 18.5 kg (40.79 lb) [IPU-1T2-AU/IPU-1T2-E-BU]DC: 18.5 kg (40.79 lb) **NOTE:**The weight of a device can be estimated based on the board configuration using Info-Finder Hardware Configuration.
Weight with packaging (full configuration) [kg(lb)]	[IPU-2T4-A/IPU-2T4-E-B]DC: 22 kg (48.50 lb) [IPU-1T2-AU/IPU-1T2-E-BU]DC: 22 kg (48.50 lb)
Typical power consumption (with configuration) [W]	[IPU-2T4-A/IPU-2T4-E-B]2*CR8DE1KB00M1(1*400GE)+1*CR8DE4NB00M1(4*100GE)+1*CR8DE8YF0025(8*25GE)+2*CR5D00LAXF91(10*10GE)+1*CR5D00EAGF95(10*GE)=739.1 W [IPU-1T2-AU/IPU-1T2-E-BU]2*CR8DE2NB00M0(2*100GE)+1*CR5D00E4XM25(4*25GE)+2*CR5D00LAXF91(10*10GE)+2*CR5D00EAGF95(10*GE)=629.2 W **NOTE:**The power consumption of a device can be estimated based on the board configuration using Info-Finder Hardware Configuration.
Typical heat dissipation (with configuration) [BTU/hour]	[IPU-2T4-A/IPU-2T4-E-B]2*CR8DE1KB00M1(1*400GE)+1*CR8DE4NB00M1(4*100GE)+1*CR8DE8YF0025(8*25GE)+2*CR5D00LAXF91(10*10GE)+1*CR5D00EAGF95(10*GE)=2413.73 BTU/hour [IPU-1T2-AU/IPU-1T2-E-BU]2*CR8DE2NB00M0(2*100GE)+1*CR5D00E4XM25(4*25GE)+2*CR5D00LAXF91(10*10GE)+2*CR5D00EAGF95(10*GE)=2049.67 BTU/hour
MTBF [year]	155.06 year
MTTR [hour]	0.5 hour
Availability	0.999999632
Power supply mode	DC
Rated input voltage [V]	–48 V/–60 V
Input voltage range [V]	–40 V to –72 V
Maximum input current [A]	40 A
Rated output power [W]	1600 W
Maximum input cable size [mm²]	10 mm² (0–20 m)
Front-end circuit breaker/fuse [A]	≥40A

Item	Specification
Heat dissipation mode	Air cooling
Airflow direction	From left to right
Noise at normal temperature (acoustic power) [dB(A)]	< 72 dB (meeting the ETSI 72 dBA standard)
Number of slots	13
Number of service board slots	8
Switching capacity	IPU-2T4-A/IPU-2T4-E-B: 4.8 Tbit/s IPU-1T2-AU/IPU-1T2-E-BU: 2.4 Tbit/s
Maximum number of physical ports on the entire device	160
Maximum number of 400GE ports	IPU-2T4-A/IPU-2T4-E-B:4 IPU-1T2-AU/IPU-1T2-E-BU:3
Maximum number of 100GE ports	IPU-2T4-A/IPU-2T4-E-B:24 IPU-1T2-AU/IPU-1T2-E-BU:12
Maximum number of 50GE ports	IPU-2T4-A/IPU-2T4-E-B:24 IPU-1T2-AU/IPU-1T2-E-BU:18
Maximum number of 40GE ports	IPU-2T4-A/IPU-2T4-E-B:24 IPU-1T2-AU/IPU-1T2-E-BU:12
Maximum number of 25GE ports	IPU-2T4-A/IPU-2T4-E-B:64 IPU-1T2-AU/IPU-1T2-E-BU:48
Maximum number of 10GE ports	IPU-2T4-A/IPU-2T4-E-B:80 IPU-1T2-AU/IPU-1T2-E-BU:80
Maximum number of GE ports	IPU-2T4-A/IPU-2T4-E-B:80 IPU-1T2-AU/IPU-1T2-E-BU:80
Maximum number of FE ports	IPU-2T4-A/IPU-2T4-E-B:80 IPU-1T2-AU/IPU-1T2-E-BU:80
Redundant IPUs	1:1
Redundant power supply	1+1
Redundant fans	1+1. Short-term running when a single fan becomes invalid at the ambient temperature of 40°C(104°F) (one fan module contains two fans)
Long-term operating temperature [°C(°F)]	–40°C to +65°C (–40°F to +149°F), startup: ≥ –20°C (–4°F)
Restriction on the operating temperature variation rate [°C(°F)]	≤ 0.5°C/min (32.9°F/min), non-condensing
Storage temperature [°C(°F)]	–40°C to +70°C (–40°F to +158 °F)
Operating relative humidity [RH]	5% RH to 95% RH, non-condensing
Storage relative humidity [RH]	5% RH to 95% RH, non-condensing
Long-term operating altitude [m(ft.)]	≤ 4000 m (13123.2 ft.) (For the altitude in the range of 1800 m to 4000 m [5905.44 ft. to 13123.2 ft.], the operating temperature of the device must decrease by 1°C [1.8°F] for every 220 m [721.78 ft.].)
Storage altitude [m(ft.)]	< 5000 m (< 16404.2 ft.)

Software Upgrade Paths

Visit Software Upgrade Paths to get VRP software release version or patches.

For More Information

For more information about the NetEngine 8000 M8 series router, visit https://e.huawei.com or contact us in the following ways:

Global service hotline: https://e.huawei.com/en/service-hotline

Logging in to the Huawei Enterprise technical support web: https://support.huawei.com/enterprise/

Sending an email to the customer service mailbox: support_e@huawei.com

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