USG12004

USG12008

HiSecEngine USG12000 Series

Huawei HiSecEngine USG12000 series AI firewalls

Overview

Combining advanced hardware architecture with a wide array of cutting-edge technologies — from energy conservation to reliability mechanisms and security features — HiSecEngine USG12000 offers highly accurate, real-time defense against known and unknown threats at the network edge for large data centers and campus networks.

Product Description

Huawei USG12000 is the industry's first Terabit firewall series. This series includes USG12004 and USG12008. They provide industry-leading security protection performance and service expansion capabilities. These firewalls can provide up to 2.4 Tbit/s throughput.

The USG12000 series uses multi-core processing chips and a distributed hardware platform to provide industry-leading service processing and expansion capabilities. All components are fully redundant to ensure core router-level high reliability and service continuity on high-speed networks.

The USG12000 series provides multiple types of line processing units (LPUs) for external connections and data transmission. LPUs and service processing units (SPUs) can reside on the same port slot. These modules are combined as needed to provide a security solution best suited to customers' requirements on interfaces and network performance. In addition, the USG12000 series supports GE, 10GE, 40GE, 100GE and 400GE interfaces to meet diversified requirements, such as high-capacity or high-density interface requirements.

The SPUs of the USG12000 process all services. SPUs are classified into service boards and extended sub-cards, which can be flexibly combined to provide different board performance. The multi-chip multi-processor hardware is used, and various service features are implemented through software modules.
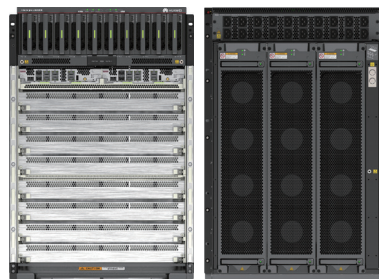
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Hardware

Chassis

USG12004

USG12008

Specifications

Hardware Specifications	USG12004	USG12008
Cabinet installation standard	The device can be installed in a standard 19" cabinet with a depth not less than 1000 mm. It can be equipped with a noise reduction module if being installed in a 1200 mm-deep cabinet.	
Dimensions without packaging (H×W×D) [mm(in.)]	438 mm × 442 mm × 874 mm (17.24 in. × 17.40 in. × 34.41 in.)	703 mm × 442 mm × 874 mm (27.68 in. × 17.40 in. × 34.41 in.)
Chassis height [U]	9.8 U	15.8 U
Maximum power consumption [W]	4696 W	10917 W
Maximum heat dissipation [BTU/hour]	16013 BTU/hour	37226 BTU/hour
MTBF [year]	30.38 year	29.80 year
MTTR [hour]	1 hour	1 hour
Availability	0.999996	0.999996
Power supply mode	AC built-in, HVDC built-in, DC built-in	
Rated input voltage [V]	AC: 220 V, 50 Hz/60 Hz, High-voltage DC: 240 V/380 V, DC: -48 V/-60 V	
Input voltage range [V]	AC: 176 V to 290 V, 45 Hz to 65 Hz, High-voltage DC: 188 V to 288 V/260 V to 400 V, DC: -40 V to -72 V	
Maximum input current [A]	AC: 16 A for the voltage of 200 V or 18.5 A for the voltage of 176 V, High-voltage DC: 18 A for the voltage of 188 V or 13 A for the voltage of 260 V, DC: 58.5 A for the voltage of -40 V	
Types of fans	Pluggable	
Number of fan modules	3	3
Number of MPU slots	2	2

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Hardware Specifications	USG12004	USG12008
Number of SFU slots	-	9
Number of service board slots	4	8
Long-term operating temperature [°C(°F)]	0°C to 40°C (32°F to 104°F)	
Storage temperature [°C(°F)]	-40°C to +70°C (-40°F to +158°F)	
Long-term operating relative humidity [RH]	5% RH to 85% RH, noncondensing	
Long-term operating altitude [m(ft.)]	≤ 5000 m (16404 ft.)	

Performance and Capability	USG12004	USG12008
IPv4 Firewall Throughput (1518/512/64-byte, UDP)	960/800/200 Gbps	2.4/2.4/0.6 Tbps
Firewall Latency	35 μs	35 μs
IPv4 Concurrent Connections (HTTP1.1)	640 Million	1.92 Billion
IPv4 New Connections/Second (HTTP1.1)	19.2 Million	57.6 Million
IPsec VPN Throughput (AES-256 + SHA256, 1420-byte)	540 Gbps	1 Tbps
Number of Concurrent IPSec Tunnels	768,000	1 Million
SSL VPN throughput	40 Gbps	120 Gbps
Concurrent SSL VPN users (default/maximum)	100/60,000	100/100,000
FW+SA Throughput (HTTP 100KB)	460 Gbps	1.2 Tbps
NGFW Throughput (HTTP 100KB)	400 Gbps	960 Gbps
Threat Protection Throughput (Enterprise Mix)	128 Gbps	307 Gbps
Security Policies (Maximum)	200,000	200,000
Virtual Firewalls (Default/Maximum)	10 / 4095	10 / 4095
URL Filtering: Categories	More than 130	
URL Filtering: URLs	Can access a database of over 200 million URLs in the cloud	
Automated Threat Feed and IPS Signature Updates	Yes, an industry-leading security center from Huawei (http://sec.huawei.com/sec/web/index.do)	
Third-Party and Open-Source Ecosystem	Open API for integration with third-party products, providing RESTful and NetConf interface Other third-party management software based on SNMP, SSH, Syslog	
Centralized Management	Centralized configuration, logging, monitoring, and reporting is performed by Huawei SecoManager	
High Availability Configurations	Active/Active, Active/Standby	

Software Features

Feature	Description
Basic firewall functions	Routing, transparent, and hybrid modes Status detection Blacklist and whitelist Access control Application specific packet filter (ASPF) Security zone division Security policy
NAT/CGN	Destination NAT/PAT NAT No-PAT Source NAT-IP address persistency Source IP address pool group NAT server Bidirectional NAT NAT-ALG Unlimited IP address expansion Policy-based destination NAT Port range pre-allocation Hairpin connections Smart NAT NAT64 6RD
IPS	20,000+ IPS signatures Abnormal protocol detection User-defined signatures Automatic update of knowledge base Attack defense against worms, Trojan horses, and malware
SA	Identifies and controls 6000+ protocols: P2P, instant messaging, game, stock, VoIP, video, streaming media, email, mobile phone, web browsing, remote access, network management, news, etc.
AV	Multi-level protection technology can help detect hundreds of millions of viruses and variants.
URL filtering	Provides a URL category database with over 200 million URLs and accelerates access to specific categories of websites, improving access experience of high-priority websites.
Egress load balancing	ISP-based routing Intelligent uplink detection Application-based flow control Link-based flow control Time-based flow control
Ingress load balancing	Application-based QoS
PKI	Online CA certificate obtaining Online CRL check Hierarchical CA certificates Support for public-key cryptography standards (PKCS#10 protocol) CA authentication Support for OCSP and CMPv2 protocols Self-signed certificate

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Feature	Description
Anti-DDoS	Prevention of SYN, ICMP, UDP, DNS, HTTP, HTTPS, and SIP floods Prevention of port scan, Smurf, teardrop, and IP sweep attacks Defense against attacks using IPv6 extension headers Export of attack logs
Networking/Routing	Support for GE, 10GE, 40GE, 100GE and 400GE ports DHCP relay/DHCP server Policy-based routing (PBR) IPv4/IPv6 dynamic routing protocols, such as RIP, OSPF, BGP, and IS-IS Inter-zone/Inter-VLAN routing Link aggregation, such as Eth-Trunk and LACP Traffic management
High reliability	Active/active and active/standby modes Hot standby (Huawei redundancy protocol) Configuration synchronization and backup Device fault detection Link fault detection Dual-MPU switchover
Virtual system	VSYS definition VLAN on VSYS Security zones on VSYS User-configurable resources on VSYS Inter-VFW routing VSYS-specific Committed Access Rate (CAR) Resource isolation for different tenants
Management	CLI (console) CLI (remote login) CLI (SSH) Hierarchical management Software upgrade Configuration rollback STelnet and SFTP
Logging/Monitoring	Structured system logs SNMP (v2) Binary logs

Note: The support of the listed features varies depending on the version. For more information, contact your Huawei representative.

Service Processing Unit (SPU)

Hardware Specifications	SPUB-USG-01/ SPUB-USG-TP-01	SPUB-USG-02/ SPUB-USG-TP-02
Dimensions without packaging (H×W×D) [mm(in.)]	55.4 mm × 433.0 mm × 523.5 mm (2.18 in. × 17.05 in. × 20.61 in.)	
Typical power consumption [W]	305 W	415 W
Typical heat dissipation [BTU/hour]	1041 BTU/hour	1416.3 BTU/hour
Maximum power consumption [W]	470 W	597 W
Maximum heat dissipation [BTU/hour]	1604.1 BTU/hour	2037.6 BTU/hour
CPU	One CPU, 64 cores/CPU, 2.6 GHz	Two CPUs, 64 cores/CPU, 2.6 GHz
Memory	Standard DDR4 36 GB	Standard DDR4 68 GB

Service Processing Card (SPC)

Hardware Specifications	SPCB-USG-01/ SPCB-USG-TP-01	SPCB-USG-02/ SPCB-USG-TP-02
Dimensions without packaging (H×W×D) [mm(in.)]	55.4 mm × 390.6 mm × 204.7 mm (2.18 in. × 15.38 in. × 8.06 in.)	
Typical power consumption [W]	167 W	258 W
Typical heat dissipation [BTU/hour]	569.8 BTU/hour	880 BTU/hour
Maximum power consumption [W]	255 W	405 W
Maximum heat dissipation [BTU/hour]	870.06 BTU/hour	1382 BTU/hour
CPU	One CPU, 64 cores/CPU, 2.6 GHz	Two CPUs, 64 cores/CPU, 2.6 GHz
Memory	Standard DDR4 32GB	Standard DDR4 64 GB

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Performance and Capability	SPUB-USG-01/ SPCB-USG-01	SPUB-USG-02/ SPCB-USG-02	SPUB-USG-TP-01/ SPCB-USG-TP-01	SPUB-USG-TP-02/ SPCB-USG-TP-02
Firewall Throughput (1518/512/64-byte, UDP)	120/100/25 Gbps	240/200/50 Gbps	-	-
Concurrent Sessions (HTTP1.1)	80M	160M	-	-
New Sessions/Second (HTTP1.1)	2.4M/s	4.8M/s	-	-
IPsec VPN Throughput (AES-256 + SHA256, 1420-byte)	60 Gbps	120 Gbps	-	-
Maximum IPSec VPN Tunnels	64,000	128,000	-	-
FW+SA Throughput	77 Gbps	154 Gbps	-	-
FW + SA + IPS Throughput	-	-	51 Gbps	102 Gbps
Full protection Throughput (Real-world)	-	-	12.8 Gbps	25.6 Gbps

Note: By default, each SPU/SPC provides the 20G data processing performance.

Line Processing Unit (LPU)

LPUA-18CQ

LPUA-48XS

LPUA-4CQ-24XS

LPUA-2CQ-24XS

LPUA-4DQ

LPUA-12CQ24XS

	LPUA-18CQ[1]	LPUA-48XS	LPUA-4CQ-24XS	LPUA-2CQ-24XS	LPUA-4DQ[1]	LPUA-12CQ24XS[1]
Dimensions without packaging (H×W×D) [mm(in.)]	55.4 mm × 433.0 mm × 523.2 mm (2.18 in. × 17.05 in. × 20.60 in.)					
Weight without packaging [kg(lb)]	7.64 kg (16.84 lb)	6.7 kg (14.77 lb)	6.5 kg (14.33 lb)	6.5 kg (14.33 lb)	12.67 kg (27.93 lb)	7.9 kg (17.42 lb)
Typical power consumption [W]	251 W	103 W	92 W	90 W	586 W	275 W
Typical heat dissipation [BTU/hour]	857 BTU/hour	325 BTU/hour	314.2 BTU/hour	307.3 BTU/hour	1998.3 BTU/hour	938.3 BTU/hour
Maximum power consumption [W]	388 W	193 W	190 W	182 W	676.5 W	390 W

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	LPUA-18CQ[1]	LPUA-48XS	LPUA-4CQ-24XS	LPUA-2CQ-24XS	LPUA-4DQ[1]	LPUA-12CQ24XS[1]
Maximum heat dissipation [BTU/hour]	1325 BTU/hour	659 BTU/hour	648.8 BTU/hour	621.5 BTU/hour	2306.9 BTU/hour	1330.7 BTU/hour
CPU	Quad-core, 1.4 GHz clock speed	Quad-core, 1.4 GHz clock speed	Quad-core, 1.4 GHz clock speed	Quad-core, 1.4 GHz clock speed	16-core, 2.0 GHz clock speed	Quad-core, 1.4 GHz clock speed
Memory	Standard 4 GB	Standard 4 GB	Standard 4 GB	Standard 4 GB	Standard 16 GB	Standard 4 GB

Note:
1. LPUA-18CQ, LPUA-4DQ, and LPUA-12CQ24XS are not applicable to USG12004.

Order Information

Hardware	
USG12004-AC-B05	USG12004 AC Basic Configuration (include AC Chassis, 2*MPUD, 2*PM, Full Configuration FAN, HTM, overseas)
USG12004-DC-B05	USG12004 DC Basic Configuration (include DC Chassis, 2*MPUD, 2*PM, Full Configuration FAN, HTM, overseas)
USG12008-AC-B05	USG12008 AC Basic Configuration (include AC Chassis, 2*MPUD, 4*SFUA, 2*PM, Full Configuration FAN, HTM, overseas)
USG12008-DC-B05	USG12008 DC Basic Configuration (include DC Chassis, 2*MPUD, 4*SFUA, 2*PM, Full Configuration FAN, HTM, overseas)
SPUB-USG-01	USG12000 Service Processing Unit B-01
SPUB-USG-02	USG12000 Service Processing Unit B-02
SPUB-USG-TP-01	USG12000 Threat protection Service Processing Unit B-01
SPUB-USG-TP-02	USG12000 Threat protection Service Processing Unit B-02
SPCB-USG-01	USG12000 Processing card B-01
SPCB-USG-02	USG12000 Processing card B-02
SPCB-USG-TP-01	USG12000 Threat protection Processing card B-01
SPCB-USG-TP-02	USG12000 Threat protection Processing card B-02
LPUA-18CQ	18 Port 100GBase-QSFP28 Interface Card
LPUA-4DQ	4-Port 400GBase-QSFP-DD Interface Card
LPUA-48XS	48 Port 10GBase -SFP+ Interface Card
LPUA-4CQ-24XS	24 Port 10GBase -SFP+ + 4 Port 100GBase-QSFP28 Interface Card
LPUA-2CQ-24XS	24 Port 10GBase -SFP+ + 2 Port 100GBase-QSFP28 Interface Card
LPUA-12CQ24XS	12-Port 100GBase-QSFP28+24-Port 10GBase-SFP+ Interface Card

Virtual System License	
LIC-USG12000-VSYS-5	Quantity of Virtual Firewall (5 Vsys)
LIC-USG12000-VSYS-10	Quantity of Virtual Firewall (10 Vsys)
LIC-USG12000-VSYS-25	Quantity of Virtual Firewall (25 Vsys)
LIC-USG12000-VSYS-50	Quantity of Virtual Firewall (50 Vsys)
LIC-USG12000-VSYS-200	Quantity of Virtual Firewall (200 Vsys)
LIC-USG12000-VSYS-500	Quantity of Virtual Firewall (500 Vsys)
LIC-USG12000-VSYS-1000	Quantity of Virtual Firewall (1000 Vsys)
LIC-USG12000-VSYS-2000	Quantity of Virtual Firewall (2000 Vsys)
LIC-USG12000-VSYS-4000	Quantity of Virtual Firewall (4000 Vsys)
USG12000 Performance RTU	
LIC-USG12000-PERF-20G	Firewall 20G Performance RTU
LIC-USG12000-LPU-100G	1*Firewall 100G interface capacity expansion RTU (Applies to 18*100GE interface board)
LIC-ADS12000-LPU-100G	1*100GE ADS Interface Card Expansion license (Applies to 12-port 100GE interface board)
LIC-USG12000-LPU-400G	1*400GE Interface Card Expansion license (Applies to 4-port 400GE interface card)

Threat Protection License	
LIC-USG12004-AV-1Y	AV Update Service Subscribe 1 Year (Applies to USG12004)
LIC-USG12008-AV-1Y	AV Update Service Subscribe 1 Year (Applies to USG12008)
LIC-USG12004-IPS-1Y	IPS Update Service Subscribe 1 Year (Applies to USG12004)
LIC-USG12008-IPS-1Y	IPS Update Service Subscribe 1 Year (Applies to USG12008)
LIC-USG12004-URL-1Y	URL Update Service Subscribe 1 Year (Applies to USG12004)
LIC-USG12008-URL-1Y	URL Update Service Subscribe 1 Year (Applies to USG12008)
LIC-USG12004-IAU-1Y	IPS+AV+URL Filtering Feature Database 1 Year Upgrade Service (Applies to USG12004)
LIC-USG12008-IAU-1Y	IPS+AV+URL Filtering Feature Database 1 Year Upgrade Service (Applies to USG12008)
LIC-USG12004-ICS-1Y	Industrial Security Service Per Year (Applies to USG12004)
LIC-USG12008-ICS-1Y	Industrial Security Service Per Year (Applies to USG12008)

For more information, visit http://e.huawei.com/en/products/enterprise-networking/security.