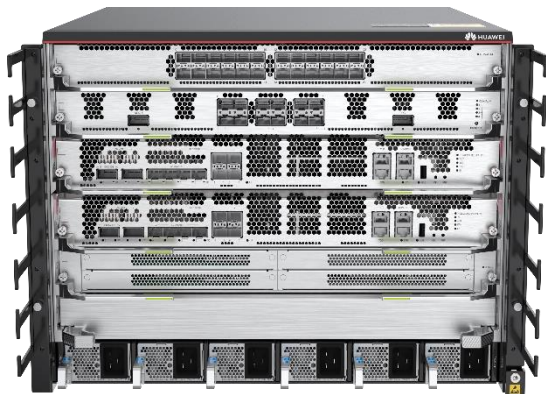


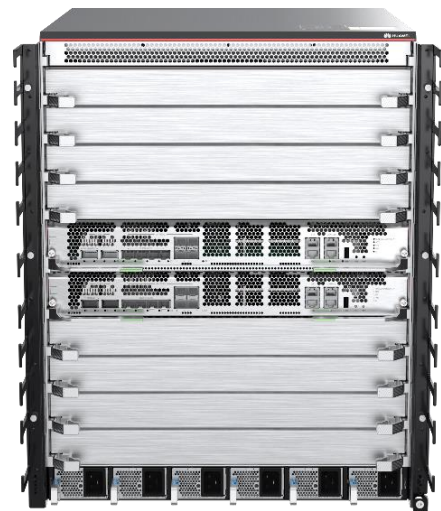
HUAWEI HiSecEngine USG12000 Series AI Firewalls

Digital wave is sweeping the world. Unprecedented connectivity, explosive data growth, and burgeoning intelligent applications will profoundly change the way people live and work. The interaction between individuals, between individuals and enterprises, and between enterprises will be more frequent than ever.

With the wide application of cloud computing and big data technologies, enterprises' digital transformation is becoming more rapid. Intelligent service upgrades drive enterprise network transformation and pose greater challenges to network security. The increasing number of unknown threats and their variants make it difficult for traditional firewalls to detect threats based on signatures. With the development of 5G and IoT, attacks become more three-dimensional, intranet attacks increase, and the attack surface becomes wider. Therefore, new-generation firewalls are urgently required at the border of cloud service providers, large data centers, and large enterprise campus networks to cope with changing threats.



HiSecEngine USG12004-F



HiSecEngine USG12008-F



Product Description

Huawei HiSecEngine USG12000 series includes HiSecEngine USG12004-F and HiSecEngine USG12008-F. They provide industry-leading security protection performance and service expansion capabilities. The HiSecEngine 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 carrier-level high reliability and service continuity on high-speed networks.

The HiSecEngine 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 HiSecEngine USG12000 series supports GE, 10GE, 40GE, and 100GE interfaces to meet diversified requirements, such as high-capacity or high-density interface requirements.

The SPUs of the HiSecEngine USG12000 process all services, 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.

Hardware

Chassis



HiSecEngine USG12004-F



HiSecEngine USG12008-F

Specifications

Hardware Specifications	HiSecEngine USG12004-F	HiSecEngine USG12008-F
Cabinet installation standard	A66E	
Dimensions without packaging (H×W×D)	Without cable management frames:	Without cable management frames:

[mm(in.)]	352.8 mm × 442 mm × 515.5 mm With cable management frames: 352.8 mm × 442 mm × 585.5 mm	575 mm × 442 mm × 515.5 mm With cable management frames: 575 mm × 442 mm × 585.5 mm
Chassis height [U]	8 U	13 U
Maximum power consumption [W]	1560 W	2914 W
Maximum heat dissipation [BTU/hour]	5322.94 BTU/hour	9942.98 BTU/hour
MTBF [year]	30.65 year	27.18 year
MTTR [hour]	1 hour	1 hour
Availability	0.999996	0.9999958
Power supply mode	AC built-in, HVDC built-in, DC built-in	
Rated input voltage [V]	AC: 110 V AC/220 V, 50 Hz/60 Hz, High-voltage DC: 240 V, DC: -48 V DC/-60 V DC/48 V DC	
Input voltage range [V]	AC: 90-290 V AC; 45-65 Hz, High-voltage DC: 190 V DC to 290 V, DC: -38.4 V DC to -72 V DC	
Types of fans	Pluggable	
Number of fan modules	2	2
Number of MPU slots	2	2
Number of SFU slots	-	-
Number of service board slots	4	8
Long-term operating temperature [°C(°F)]	-5°C to 45°C	
Storage temperature [°C(°F)]	-40°C to +70°C	
Long-term operating relative	5% RH to 95% RH, noncondensing	

humidity [RH]	
Long-term operating altitude [m(ft.)]	≤ 5000 m (16404 ft.)

Performance and Capability	HiSecEngine USG12004-F	HiSecEngine USG12008-F
Firewall Throughput (1518/512, UDP) ¹	400/400 Gbps	800/800 Gbps
Firewall Throughput (IMIX: (64*7+594*4+1518)/12=362bytes)	400 Gbps	800 Gbps
Concurrent Sessions (HTTP1.1) ¹	180 Million	360 Million
New Sessions/Second (HTTP1.1) ¹	4.5 Million/s	9 Million/s
Firewall IPv6 Throughput (1518 byte, UDP)	400 Gbps	800 Gbps
Firewall IPv6 Throughput (IMIX: (84*7+594*4+1518)/12=373bytes)	400 Gbps	800 Gbps
IPv6 Concurrent Sessions (HTTP1.1)	90 Million	180 Million
IPv6 New Sessions/Second (HTTP1.1) ¹	4.5 Million/s	9 Million/s
IPsec VPN Throughput (AES-256 + SHA256, 1420-byte) ¹	220.5 Gbps	441 Gbps
IPsec VPN Throughput (AES-256 + SHA256, 512-byte) ¹	93 Gbps	186 Gbps
IPsec VPN New Sessions/Second (PSK)	7200	14400
Maximum IPsec VPN Tunnels	576,000	1 Million
SSL VPN Throughput	45 Gbps	105 Gbps

SSL VPN New Sessions/Second	500	500
Concurrent SSL VPN users (default/maximum)	100/45,000	100/100,000
FW+SA Throughput²	225 Gbps	450 Gbps
FW + SA + IPS Throughput²	108 Gbps	216 Gbps
Full protection Throughput (Real-world)³	42 Gbps	84 Gbps
Security Policies (Maximum)	100,000	100,000
Virtual Firewalls (Default/Maximum)	10 / 2047	10 / 2047
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)	
Centralized Management	Centralized configuration, logging, monitoring, and reporting is performed by Huawei SecoManager	
High Availability Configurations	Active/Active, Active/Standby	

Note:

1. Performance is tested under ideal conditions based on RFC2544, 3511. The actual result may vary with deployment environments.
2. Antivirus, IPS, and SA performances are measured using 100 KB HTTP files
3. Full protection throughput is measured with Firewall, SA, IPS and Antivirus enabled, Enterprise Mix Traffic Model.

Performance and Capability	SPUF-USG-01	SPUF-USG-02	SPUF-USG-03	SPUF-USGTP-01	SPUF-USGTP-02	SPUF-USGTP-03
Firewall Throughput (1518/512, UDP)	80/80 Gbps	160/160 Gbps	240/240 Gbps	-	-	-

Firewall Throughput (IMIX: (64*7+594*4+1518)/12=362byte s)	80 Gbps	160 Gbps	240 Gbps	-	-	-
Concurrent Sessions (HTTP1.1)¹	30M	60M	90M	-	-	-
New Sessions/Second (HTTP1.1)¹	15M/s	30M/s	45M/s	-	-	-
Firewall IPv6 Throughput (1518 byte, UDP)	80/80 Gbps	160/160 Gbps	240/240 Gbps	-	-	-
Firewall IPv6 Throughput (IMIX: (84*7+594*4+1518)/12=373byte s)	80 Gbps	160 Gbps	240 Gbps	-	-	-
IPv6 Concurrent Sessions (HTTP1.1)¹	15M	30M	45M	-	-	-
IPv6 New Sessions/Second (HTTP1.1)¹	750,000/ s	1,500,000 /	2,250,000/ s	-	-	-
IPsec VPN Throughput¹ (AES-256 + SHA256, 1420-byte)	35 Gbps	49 Gbps	73.5 Gbps	-	-	-
IPsec VPN Throughput¹ (AES-256 + SHA256, 512-byte)	15 Gbps	21 Gbps	31.5 Gbps	-	-	-
IPsec VPN New Sessions/Second (PSK)	800	1600	2400	-	-	-
Maximum IPsec VPN Tunnels	64,000	128,000	192,000	-	-	-
SSL VPN Throughput	5 Gbps	10 Gbps	15 Gbps	-	-	-
SSL VPN New Sessions/Second	250	500	500	-	-	-
Maximum SSL VPN Tunnels	5,000	10,000	15,000	-	-	-
FW+SA Throughput²	25 Gbps	50 Gbps	75 Gbps	-	-	-

FW + SA + IPS Throughput²	-	-	-	18 Gbps	36 Gbps	54 Gbps
Full protection Throughput (Real-world)³	-	-	-	7 Gbps	14 Gbps	21 Gbps

Note:

1. Performance is tested under ideal conditions based on RFC2544, 3511. The actual result may vary with deployment environments.
2. Antivirus, IPS, and SA performances are measured using 100 KB HTTP files
3. Full protection throughput is measured with Firewall, SA, IPS and Antivirus enabled, Enterprise Mix Traffic Model.

Software Features

Feature	Description
Basic firewall functions	<ul style="list-style-type: none"> Routing, transparent, and hybrid modes Status detection Blacklist and whitelist Access control Application specific packet filter (ASPF) Security zone division Security policy
NAT/CGN	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 25,000+ 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
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 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	SPUF-USG-01/ SPUF-USG-TP-01	SPUF-USG-02/ SPUF-USG-TP-02	SPUF-USG-03/ SPUF-USG-TP-03
Dimensions without packaging (H×W×D) [mm(in.)]	45.2 mm × 433.0 mm × 292.9 mm		
Typical power consumption [W]	110 W	185 W	260 W
Typical heat dissipation [BTU/hour]	375.1 BTU/hour	631.22 BTU/hour	887.38 BTU/hour
Maximum power consumption [W]	146 W	283 W	366 W
Maximum heat	497.86 BTU/hour	965.59 BTU/hour	1249.2 BTU/hour

dissipation [BTU/hour]			
CPU	One CPU, 16 cores/CPU, 2.0 GHz	Two CPUs, 16 cores/CPU, 2.0 GHz	Three CPUs, 16 cores/CPU, 2.0 GHz

Line Processing Unit (LPU)



LPUF-USG-24XS



LPUF-U-2CQ-12XS

Hardware Specifications	LPUF-USG-24XS	LPUF-U-2CQ-12XS
Dimensions without packaging (H×W×D) [mm(in.)]	45.2 mm × 433.0 mm × 292.9 mm	
Weight without packaging [kg(lb)]	2.56 kg	2.96 kg
Typical power consumption [W]	64 W	70 W
Typical heat dissipation [BTU/hour]	218.38 BTU/hour	238.7 BTU/hour
Maximum power consumption [W]	100 W	92 W
Maximum heat dissipation [BTU/hour]	313.9 BTU/hour	341.21 BTU/hour

Order Information

Description: (To facilitate display, the following uses the device abbreviation.)

Hardware

USG12004-F-AC-B01	USG12004-F AC Basic Configuration (including assembly chassis, 2*SRUA HTM, 2*3000W AC Power, overseas)
USG12004-F-DC-B01	USG12004-F DC Basic Configuration (including assembly chassis, 2*SRUA HTM, 2*2200W DC Power, overseas)
USG12008-F-AC-B01	USG12008-F AC Basic Configuration (including assembly chassis, 2*SRUB HTM, 2*3000W AC Power, overseas)
USG12008-F-DC-B01	USG12008-F DC Basic Configuration (including assembly chassis, 2*SRUB HTM, 2*2200W DC Power, overseas)
SPUF-USG-03	USG12000-F Service Processing Unit-03
SPUF-USG-02	USG12000-F Service Processing Unit-02
SPUF-USG-01	USG12000-F Service Processing Unit-01
SPUF-USG-TP-03	USG12000-F Threat Protection Disposal Board-03
SPUF-USG-TP-02	USG12000-F Threat Protection Disposal Board-02
SPUF-USG-TP-01	USG12000-F Threat Protection Disposal Board-01
LPUF-USG-24XS	24-Port 100M/1G/10G Ethernet Optical Interface Card (SFP+)
LPUF-U-2CQ-12XS	2-port 100G QSFP28 and 12-port 100M/1G/10GBASE-X interface card (SFP+)

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-VSYS-4000	Quantity of Virtual Firewall (4000 Vsys)

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

SSL VPN License	
LIC-USG12000-SSLVPN-100	Quantity of SSL VPN Concurrent Users (100 Users)


LIC-USG12000-SSLVPN-200	Quantity of SSL VPN Concurrent Users (200 Users)
LIC-USG12000-SSLVPN-500	Quantity of SSL VPN Concurrent Users (500 Users)
LIC-USG12000-SSLVPN-1000	Quantity of SSL VPN Concurrent Users (1000 Users)
LIC-USG12000-SSLVPN-2000	Quantity of SSL VPN Concurrent Users (2000 Users)
LIC-USG12000-SSLVPN-5000	Quantity of SSL VPN Concurrent Users (5000 Users)

N1 License	
N1-USG12004-F-F-Lic	N1-USG12004-F Foundation, Per Device
N1-USG12004-F-F-SnS1Y	N1-USG12004-F Foundation, SnS, Per Device, Per Year
N1-USG12008-F-F-Lic	N1-USG12008-F Foundation, Per Device
N1-USG12008-F-F-SnS1Y	N1-USG12008-F Foundation, SnS, Per Device, Per Year
N1-USG12004-F-A-Lic	N1-USG12004-F Advanced, Per Device
N1-USG12004-F-A-SnS1Y	N1-USG12004-F Advanced, SnS, Per Device, Per Year
N1-USG12008-F-A-Lic	N1-USG12008-F Advanced, Per Device
N1-USG12008-F-A-SnS1Y	N1-USG12008-F Advanced, SnS, Per Device, Per Year

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