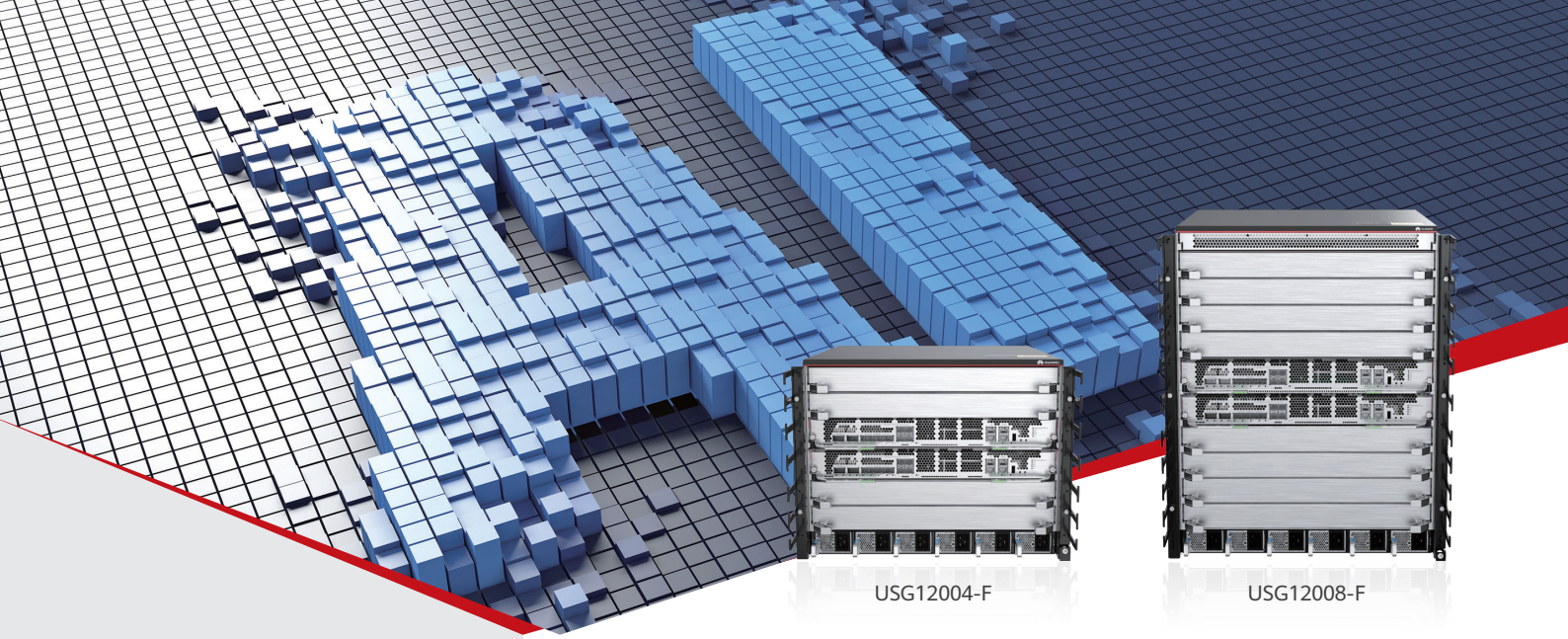


## Overview

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 USG12000 Series

## Huawei HiSecEngine USG12000 series AI firewalls

## Product Description

Huawei USG12000 series includes USG12004-F and USG12008-F. They provide industry-leading security protection performance and service expansion capabilities.

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 carrier-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, and 100GE interfaces to meet diversified requirements, such as high-capacity or high-density interface requirements.

The SPUs of the 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.

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# HiSecEngine USG12000 Series

Huawei HiSecEngine USG12000 series AI firewalls

## Hardware

### Chassis

USG12004-F

USG12008-F

### Specifications

| Hardware Specifications | USG12004-F | USG12008-F |
|---|---|---|
| Cabinet installation standard | A66E | |
| Dimensions without packaging (H×W×D) [mm(in.)] | Without cable management frames: 352.8 mm × 442 mm × 515.5 mm<br>With cable management frames: 352.8 mm × 442 mm × 585.5 mm | Without cable management frames: 575 mm × 442 mm × 515.5 mm<br>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,<br>High-voltage DC: 240 V,<br>DC: -48 V DC/-60 V DC/48 V DC | |
| Input voltage range [V] | AC: 90-290 V AC; 45-65 Hz,<br>High-voltage DC: 190 V DC to 290 V,<br>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 | |

# HiSecEngine USG12000 Series

## Huawei HiSecEngine USG12000 series AI firewalls

| Hardware Specifications | USG12004-F | USG12008-F |
|---|---|---|
| Storage temperature [°C(°F)] | -40°C to +70°C | |
| Long-term operating relative humidity [RH] | 5% RH to 95% RH, noncondensing | |
| Long-term operating altitude [m(ft.)] | ≤ 5000 m (16404 ft.) | |

| Performance and Capability | USG12004-F | USG12008-F |
|---|---|---|
| Firewall Throughput[1] (1518/512, UDP) | 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)[1] | 90 Million | 180 Million |
| IPv6 New Sessions/Second (HTTP1.1)[1] | 4.5 Million/s | 9 Million/s |
| IPsec VPN Throughput[1] (AES-256 + SHA256, 1420-byte) | 189 Gbps | 378 Gbps |
| IPsec VPN Throughput[1] (AES-256 + SHA256, 512-byte) | 93 Gbps | 186 Gbps |
| IPsec VPN New Sessions/Second (PSK) | 4500 | 9000 |
| 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 Throughput[2] | 225 Gbps | 450 Gbps |
| FW + SA + IPS Throughput[2] | 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.

# HiSecEngine USG12000 Series

Huawei HiSecEngine USG12000 series AI firewalls

| Performance and Capability | SPUF-USG-01 | SPUF-USG-02 | SPUF-USG-03 | SPUF-USG-TP-01 | SPUF-USG-TP-02 | SPUF-USG-TP-03 |
|---|---|---|---|---|---|---|
| Firewall Throughput (1518/512, UDP) | 80/80 Gbps | 160/160 Gbps | 240/240 Gbps | - | - | - |
| Firewall Throughput (IMIX: (64*7+594*4+1518)/12=362bytes) | 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=373bytes) | 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/s | 2,250,000/s | - | - | - |
| IPsec VPN Throughput[1] (AES-256 + SHA256, 1420-byte) | 30 Gbps | 42 Gbps | 63 Gbps | - | - | - |
| IPsec VPN Throughput[1] (AES-256 + SHA256, 512-byte) | 15 Gbps | 21 Gbps | 31.5 Gbps | - | - | - |
| IPsec VPN New Sessions/Second (PSK) | 500 | 1000 | 1500 | - | - | - |
| 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 Throughput[2] | 25 Gbps | 50 Gbps | 75 Gbps | - | - | - |
| FW + SA + IPS Throughput[2] | - | - | - | 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 | Routing, transparent, and hybrid modes<br>Status detection<br>Blacklist and whitelist<br>Access control<br>Application specific packet filter (ASPF)<br>Security zone division<br>Security policy |
| NAT/CGN | Destination NAT/PAT<br>NAT No-PAT<br>Source NAT-IP address persistency<br>Source IP address pool group<br>NAT server<br>Bidirectional NAT<br>NAT-ALG<br>Unlimited IP address expansion<br>Policy-based destination NAT<br>Port range pre-allocation<br>Hairpin connections<br>Smart NAT<br>NAT64<br>6RD |
| IPS | 20,000+ IPS signatures<br>Abnormal protocol detection<br>User-defined signatures<br>Automatic update of knowledge base<br>Attack defense against worms, Trojan horses, and malware |
| SA | Identifies and controls 6000+ protocols:<br>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<br>Intelligent uplink detection<br>Application-based flow control<br>Link-based flow control<br>Time-based flow control |
| Ingress load balancing | Application-based QoS |
| PKI | Online CA certificate obtaining<br>Online CRL check<br>Hierarchical CA certificates<br>Support for public-key cryptography standards (PKCS#10 protocol)<br>CA authentication<br>Support for OCSP and CMPv2 protocols<br>Self-signed certificate |

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

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

# HiSecEngine USG12000 Series

Huawei HiSecEngine USG12000 series AI firewalls

## 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 dissipation [BTU/hour] | 497.86 BTU/hour | 965.59 BTU/hour | 1249.2 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

| | 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

| Hardware | |
|---|---|
| USG12004-F-AC-B01 | USG12004-F AC Basic Configuration<br>(including assembly chassis, 2*SRUA HTM, 2*3000W AC Power, overseas) |
| USG12004-F-DC-B01 | USG12004-F DC Basic Configuration<br>(including assembly chassis, 2*SRUA HTM, 2*2200W DC Power, overseas) |
| USG12008-F-AC-B01 | USG12008-F AC Basic Configuration<br>(including assembly chassis, 2*SRUB HTM, 2*3000W AC Power, overseas) |
| USG12008-F-DC-B01 | USG12008-F DC Basic Configuration<br>(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-F-PERF-20G | Firewall Service Expansion 20G license |

| 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) |

| 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 |



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

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