

HUAWEI USG6650/6660/6670/6680

Next-Generation Firewalls

---High-Performance Security for Small Data Centers and Large or Medium-sized Enterprises



Huawei USG6650/6660/6670/6680 next-generation firewalls are designed for small data centers and large or medium-sized enterprises. The firewalls provide full-fledged application identification and application-layer threat and attack defense capabilities, and deliver high performance even when multiple security functions are enabled. The firewalls also offer multiple interface card slots that support various interface cards, such as GE electrical/optical and 10 GE interface cards. These cards allow users to flexibly expand services and enable the firewalls to evolve with enterprise networks, making USG6650/6660/6670/6680 firewalls highly cost-effective and protecting customer investment.

Highlights

Comprehensive protection, third-party proven security capability

- Integrate firewall, VPN, intrusion prevention, antivirus, data leak prevention, bandwidth management, and online behavior management functions all in one device
- Obtained Firewall, IPS, IPsec, and SSL VPN certifications from the ICSA Labs
- Obtained the highest-level CC certificate (EAL4+), ranking among the highest security levels in the world
- The USG6650 earned the "Recommended" rating with 98.1 percent comprehensive security effectiveness and 99.95 percent CAWS (Live) Exploit Block Rate, leading the industry in terms of security capabilities

Visualized and fine-grained management and control

- Deliver diversified reports to provide all-around visibility into service status, network environment, security posture, and user behavior
- Identify application-layer threats from application, content, time, user, attack, and location dimensions
- Accurately identify more than 6000 applications to deliver fine-grained access control and improve the quality of key services

High port density

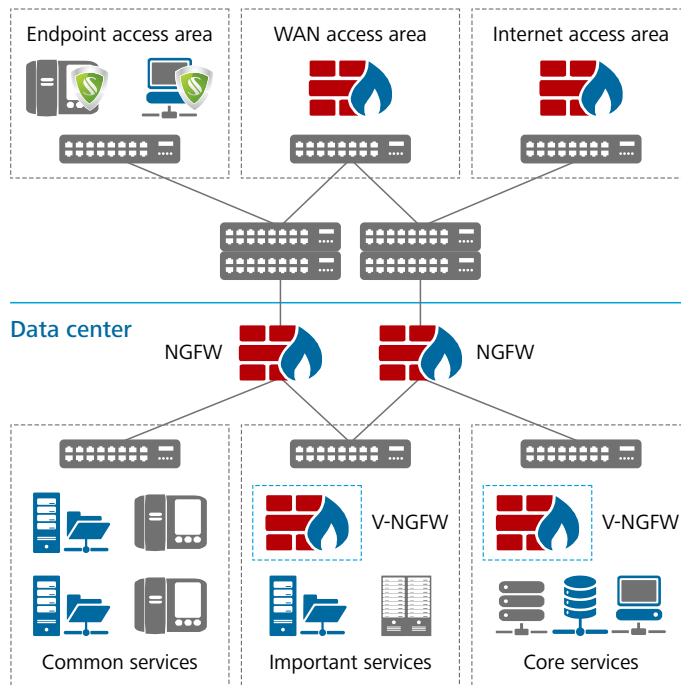
- Support various types of interface cards, such as GE electrical/optical and 10 GE interface cards, providing up to 78 interfaces, including 56 GE electrical, 8 SFP optical, and 14 10GE optical interfaces
- Provide multiple high-density interface card slots, enabling users to flexibly expand the hardware and performance to suit service requirements
- Support dual AC or DC hot-swappable power supplies



Deployment

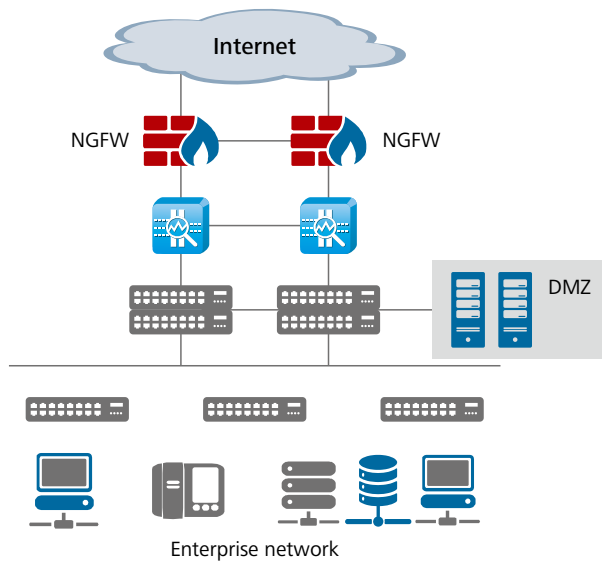
Data center border protection

- Firewalls are deployed at egresses of data centers, and functions and system resources can be virtualized.
- The 10-Gigabit intrusion prevention capability effectively blocks a variety of malicious attacks and delivers differentiated defense based on virtual environment requirements to guarantee data security.
- VPN tunnels can be set up between firewalls and mobile workers and between firewalls and branch offices for secure and low-cost remote access and mobile working.



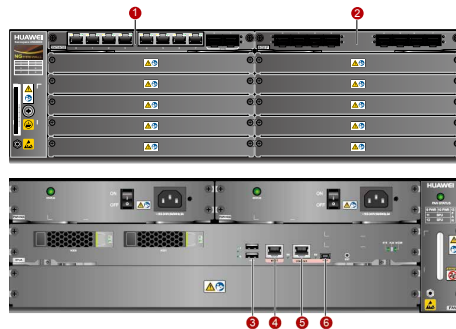
Enterprise border protection

- Block all unauthorized access attempts at enterprise network egresses.
- Provide real-time 10-Gigabit-level application-layer threat prevention, even when IPS is enabled.
- Perform data filtering and auditing on files transmitted through sources such as email and IM to monitor social network applications and prevent data leaks.
- Deliver user- and application-specific bandwidth management to guarantee service quality for core users and of mission-critical services.
- Support online behavior management based on URL categories and applications to block access to malicious websites and websites irrelevant to work.



Hardware

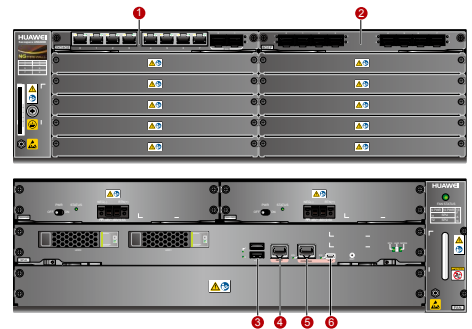
USG6650/6660-AC



Interfaces

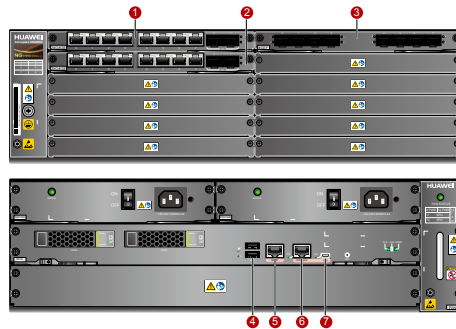
1. 8 x GE (RJ45) and 2 x 10 GE (SFP+) Ports
2. 8 x GE (SFP) Ports
3. 2 x USB Ports

USG6660-DC



4. 1 x GE (RJ45) Management Port
5. Console Port (RJ45)
6. Console Port (Mini-USB)

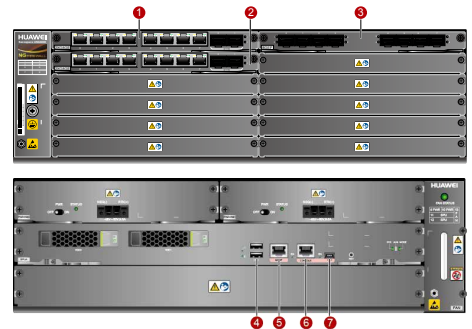
USG6670-AC



Interfaces

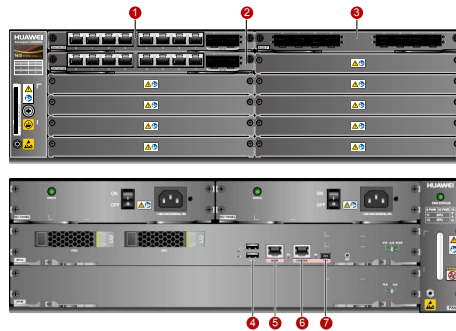
1. 8 x GE (RJ45) and 2 x 10 GE (SFP+) Ports
2. 8 x GE (RJ45) and 2 x 10 GE (SFP+) Ports
3. 8 x GE (SFP) Ports
4. 2 x USB Ports

USG6670-DC



5. 1 x GE (RJ45) Management Port
6. Console Port (RJ45)
7. Console Port (Mini-USB)

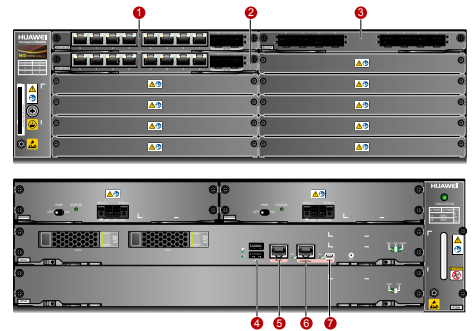
USG6680-AC



Interfaces



1. 8 x GE (RJ45) and 2 x 10GE (SFP+) Ports
2. 8 x GE (RJ45) and 2 x 10GE (SFP+) Ports
3. 8 x GE (SFP) Ports
4. 2 x USB Ports



USG6680-DC



5. 1 x GE (RJ45) Management Port
6. Console Port (RJ45)
7. Console Port (Mini-USB)

Table 1. Wide Service Interface Cards (WSICs) for USG6600 Series

Feature	2XG8GE	8GE
		
Technical Specification		
Integrated Ports	2 x 10GE (SFP+), 8 x GE (RJ45)	8 x GE (RJ45)

Feature	8GEF	4GE-BYPASS
		
Technical Specification		
Integrated Ports	8 x GE (SFP)	4 x GE (RJ45) BYPASS

Software Features

Function	Description
Integrated Protection	Provides firewall, VPN, intrusion prevention, antivirus, data leak prevention, bandwidth management, Anti-DDoS, URL filtering, and anti-spam functions.
Application Identification and Control	Identifies common applications, supports application-specific access control, and combines application identification with intrusion prevention, antivirus, and data filtering to improve detection performance and accuracy.
Intrusion Prevention and Web Protection	Obtains the latest threat information in a timely manner for accurate detection and prevention of vulnerability exploits and web attacks, such as cross-site scripting and SQL injection attacks.

Function	Description
Antivirus	Rapidly detects over five million types of viruses through the daily-updated signature database.
Anti-APT*	Interworks with the sandbox to detect and block malicious files.
Data Leak Prevention	Inspects files to identify the file type, such as WORD, EXCEL, POWERPOINT, and PDF, based on file contents, and filters sensitive content.
Bandwidth Management	Manages per-user and per-IP bandwidth in addition to identifying service applications to prioritize mission-critical services and users through methods such as peak bandwidth and committed bandwidth, policy-based routing (PBR), and application forwarding priority adjustment.
URL Filtering	Can access a URL category database of over 120 million URLs to manage access by URL category, such as blocking malicious URLs and accelerating access to specified categories.
Behavior and Content Audit	Audits and traces the sources of URL access based on the user IP address and requested content.
Load Balancing	Supports server load balancing and link load balancing, fully utilizing existing network resources.
Intelligent Uplink Selection	Supports service-specific PBR and intelligent uplink selection based on multiple load balancing algorithms (for example, based on bandwidth ratio and link health status) in multi-homing scenarios.
VPN Encryption	Supports multiple highly reliable VPN features, such as IPsec VPN, SSL VPN, L2TP VPN, and GRE. Supports IPsec intelligent link selection and dynamic IPsec tunnel switchover to improve link availability.
SSL Encrypted Traffic Detection	Serves as a proxy to detect and defend against threats in SSL-encrypted traffic using application-layer protection methods such as intrusion prevention, antivirus, data filtering, and URL filtering.
Anti-DDoS	Defends against more than 10 types of common DDoS attacks, including SYN flood and UDP flood attacks.
User Authentication	Supports multiple user authentication methods, including local, RADIUS, HWTACACS, SecurID, AD, CA, LDAP, and Endpoint Security.
CPU attack defense	Supports different upload rates for different protocol packets to avoid the impact of the CPU by a large number of protocol packets and to protect the CPU.
Security Virtualization	Allows users to create and manage virtual security services, including firewall, intrusion prevention, and antivirus services, on the same physical device.
Policy Management	Provides predefined common-scenario defense templates to facilitate security policy deployment. Automatically evaluates risks in security policies and provides tuning suggestions. Detects redundant and conflicting policies to remove unnecessary and incorrect policies.
	Provides the firewall policy management solution in partnership with FireMon to reduce O&M costs and potential faults.*
Diversified Reports	Provides visualized and multi-dimensional reports by user, application, content, time, traffic, threat, and URL. ¹
	Generates network security analysis reports on the Huawei security center platform to evaluate the current network security status and provide optimization suggestions.*
Routing	Supports IPv4 static routes, policy-based routing, routing policies, multicast, RIP, OSPF, BGP, and IS-IS. Supports IPv6 static routes, policy-based routing, routing policies, RIPng, OSPFv3, BGP4+, and IPv6 IS-IS.

Function	Description
Working Mode and High Availability	Supports multiple working modes (transparent, routing, and hybrid), high availability modes (active/active and active/standby), and link high-availability technologies (IP-Link, BFD, and Link-group).
Device Management Capability	Built-in Web UI: Provides abundant device management and maintenance functions, including log report, configuration, and troubleshooting.
	eSight network management: Manages the performance, alarms, resources, configurations, and topology of the entire network.
	Agile Controller: Implements application- and user-specific security policy control in the Huawei SDN Agile Network Solution.*
	LogCenter security event management system: Provides functions such as security posture awareness, report management, log audit, and centralized alarm management.
	API: Supports both NETCONF* and RESTCONF northbound APIs to enable users to centrally configure and maintain firewalls via an upper-level controller to simplify the O&M.

1: If no hard disk is inserted, you can view and export system and service logs. By inserting a hard disk, you can also view, export, customize, and subscribe to reports.

Functions marked with * are supported only in USG V500R001 and later versions.

Specifications

System Performance and Capacity

Model	USG6650	USG6660	USG6670	USG6680
IPv4 Firewall Throughput ¹ (1518/512/64-byte, UDP)	20/20/8 Gbit/s	25/25/8 Gbit/s	35/35/8 Gbit/s	40/35/8 Gbit/s
IPv6 Firewall Throughput ¹ (1518/512/84-byte, UDP)	20/20/8 Gbit/s	25/25/8 Gbit/s	35/35/8 Gbit/s	40/35/8 Gbit/s
Firewall Throughput (Packets Per Second)	12 Mpps	12 Mpps	12 Mpps	12 Mpps
Firewall Latency (64-byte, UDP)	16 μs	16 μs	16 μs	16 μs
FW + SA* Throughput ²	15 Gbit/s	18 Gbit/s	19 Gbit/s	20 Gbit/s
FW + SA* Throughput (Realworld) ³	11 Gbit/s	12 Gbit/s	13 Gbit/s	18 Gbit/s
FW + SA + IPS Throughput ²	8.8 Gbit/s	8.8 Gbit/s	8.8 Gbit/s	15 Gbit/s
FW + SA + Antivirus Throughput ²	8 Gbit/s	8 Gbit/s	8 Gbit/s	13 Gbit/s
FW + SA + IPS + Antivirus + URL Throughput ²	6 Gbit/s	7 Gbit/s	8 Gbit/s	13 Gbit/s
FW + SA + IPS + Antivirus Throughput (Realworld) ³	5 Gbit/s	5.5 Gbit/s	6 Gbit/s	11 Gbit/s
Concurrent Sessions (HTTP1.1) ¹	8,000,000	10,000,000	10,000,000	12,000,000
New Sessions/Second (HTTP1.1) ¹	300,000	350,000	400,000	400,000
IPsec VPN Throughput ¹ (AES-128 + SHA1, 1420-byte)	15 Gbit/s	18 Gbit/s	18 Gbit/s	18 Gbit/s

Model	USG6650	USG6660	USG6670	USG6680
Maximum IPsec VPN Tunnels (GW to GW)	15,000	15,000	15,000	15,000
Maximum IPsec VPN Tunnels (Client to GW)	15,000	15,000	15,000	15,000
SSL Inspection Throughput ⁴	320 Mbps	360 Mbps	360 Mbps	400 Mbps
SSL VPN Throughput ⁵	1.5 Gbit/s	1.5 Gbit/s	1.6 Gbit/s	1.6 Gbit/s
Concurrent SSL VPN Users (Default/Maximum)	100/5,000	100/5,000	100/5,000	100/5,000
Security Policies (Maximum)	40,000	40,000	40,000	40,000
Virtual Firewalls (Default/Maximum)	10/500	10/500	10/500	10/1,000
URL Filtering: Categories	More than 130			
URL Filtering: URLs	Can access a database of over 120 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 ⁶	Open APIs for integration with third-party products through RESTCONF and NETCONF interfaces Other third-party management software based on SNMP, SSH, and syslog Collaboration with third-party tools, such as FireMon Collaboration with Anti-APT solution			
Centralized Management	Centralized configuration, logging, monitoring, and reporting is performed by Huawei eSight and LogCenter			
VLANs (maximum)	4,094			
Virtual Interfaces (maximum)	1,024			
High Availability Configurations	Active/Active, Active/Standby			

1. Performance is tested under ideal conditions based on RFC 2544 and RFC 3511. The actual result may vary with deployment environments.

2. Antivirus, IPS, and SA performances are measured using 100 KB of HTTP files.

3. Throughput is measured with the Enterprise Traffic Model.

4. SSL inspection throughput is measured with IPS-enabled and HTTPS traffic using TLS v1.2 with AES256-SHA.

5. SSL VPN throughput is measured using TLS v1.2 with AES128-SHA.

6. USG6000 V100R001 supports only the RESTCONF interface and cannot interwork with sandbox or third-party tools.

*SA indicates Service Awareness.

Hardware Specifications

Model	USG6650	USG6660	USG6670	USG6680
Dimensions (H x W x D) mm	130.5 x 442 x 470		130.5 x 442 x 470	
Form Factor/Height	3U		3U	
Fixed Interfaces	2 x 10 GE (SFP+) + 8 x GE (RJ45) + 8 x GE (SFP)		4 x 10 GE (SFP+) + 16 x GE (RJ45) + 8 x GE (SFP)	
USB2.0 Port	2 x USB Ports		2 x USB Ports	

Model	USG6650	USG6660	USG6670	USG6680
Expansion Slot	6 WSIC*		5 WSIC	AC: 5 WSIC DC: 3 WSIC ¹
Expansion I/O	WSIC: 2 x 10 GE (SFP+) + 8 x GE (RJ45), 8 x GE (RJ45), 8 x GE (SFP), 4 x GE (RJ45) BYPASS			
Maximum Number of Interfaces	56 x GE (RJ45) + 14 x 10GE (SFP+) + 8 x GE (SFP) or 56 x GE (SFP) + 2 x 10GE (SFP+) + 8 x GE (RJ45)		56 x GE (RJ45) + 14 x 10GE (SFP+) + 8 x GE (SFP) or 48 x GE (SFP) + 4 x 10GE (SFP+) + 16 x GE (RJ45) ²	
MTBF	27.07 years		23.67 years	19.18 years
Weight (Full Configuration)	24 kg		24 kg	26 kg
Local Storage	Optional. Supports 300 GB or 600GB ³ hard disks (RAID1 and hot-swappable).			
AC Power Supply	100V to 240V, 50/60Hz			
DC Power Supply	NA	-48V to -60V		
Power Supplies	Dual AC Power Supply	Dual AC or dual DC power supplies		
Maximum Power	350W		350W	AC: 700W DC: 350W
Power Consumption (Average/Maximum)	132W/350W		152W/350W	190W/419W
Heat Dissipation	1194 BTU/h		1194 BTU/h	1429 BTU/h
Operating Environment (Temperature/Humidity)	Temperature: 0°C to 45°C (without optional HDD); 5°C to 40°C (with optional HDD) Humidity: 5% to 95% (without optional HDD), non-condensing; 5% to 90% (with optional HDD), non-condensing			
Non-operating Environment	Temperature: -40°C to +70°C Humidity: 5% to 95% (without optional HDD), non-condensing; 5% to 90% (with optional HDD), non-condensing			
Operating Altitude (maximum)	5,000 meters (without optional HDD); 3,000 meters (with optional HDD)			
Non-operating Altitude (maximum)	5,000 meters (without optional HDD); 3,000 meters (with optional HDD)			
Noise	64.2 dBA			

1. With DC power input, the USG6680 supports up to three WSICs without 2XG8GE or two WSICs with 2XG8GE.
 2. USG6680 (DC): 40 x GE (RJ45) + 4 x 10 GE (SFP+) + 8 x GE (SFP) or 32 x GE (SFP) + 4 x 10 GE (SFP+) + 16 x GE (RJ45).
 3. The 600 GB hard disk is supported only in USG V500R001 and later versions and is not supported in USG6680 DC model.
- *WSIC is not hot-swappable.

Certifications

Certifications	
Software	ICSA Labs: Firewall, IPS, IPsec, SSL VPN CC: EAL4+ NSS Labs: Recommended (USG6650)
Hardware	CB, CE-SDOC, ROHS, REACH&WEEE(EU), RCM, ETL, FCC&IC, VCCI, BSMI

Regulatory, Safety, and EMC Compliance

Certifications	
Regulatory Compliance	Products comply with CE markings per directives 2014/30/EU and 2014/35/EU.
Safety	<ul style="list-style-type: none"> • UL 60950-1 • CSA-C22.2 No. 60950-1 • EN 60950-1 • IEC 60950-1
EMC: Emissions	<ul style="list-style-type: none"> • CNS 13438 Class A • EN 55022 Class A • CISPR 22 Class A • ETSI EN 300 386 • AS/NZS CISPR 22 • CAN/CSA-CISPR 22-10 • IEC 61000-6-4/EN 61000-6-4 • IEC 61000-3-2/EN 61000-3-2 • IEC 61000-3-3/EN 61000-3-3 • FCC CFR47 Part 15 Subpart B Class A • ICES-003 Class A • VCCI V-3 Class A
EMC: Immunity	<ul style="list-style-type: none"> • CNS 13438 Class A • EN 55024 • CISPR 24 • ETSI EN 300 386 • IEC 61000-6-2/EN 61000-6-2

Ordering Guide

Product	Model	Description
USG6650	USG6650-AC	USG6650 AC Host(8GE(RJ45)+8GE (SFP)+2*10GE(SFP+), 16G Memory, 2 AC Power)
USG6650-BDL	USG6650-BDL-AC	USG6650 AC Host(8GE(RJ45)+8GE (SFP)+2*10GE(SFP+), 16G Memory, 2 AC Power, with IPS-AV-URL Function Group Update Service Subscribe 12 Months)
USG6660	USG6660-AC	USG6660 AC Host(8GE(RJ45)+8GE(SFP)+2*10GE(SFP+), 16G Memory, 2 AC Power)
USG6660-BDL	USG6660-BDL-AC	USG6660 AC Host(8GE(RJ45)+8GE(SFP)+2*10GE(SFP+), 16G Memory, 2 AC Power, with IPS-AV-URL Function Group Update Service Subscribe 12 Months)
USG6660	USG6660-DC	USG6660 DC Host(8GE(RJ45)+8GE(SFP)+2*10GE(SFP+), 16G Memory, 2 DC Power)
USG6670	USG6670-AC	USG6670 AC Host(16GE(RJ45)+8GE(SFP)+4*10GE(SFP), 16G Memory, 2 AC Power)
USG6670-BDL	USG6670-BDL-AC	USG6670 AC Host(16GE(RJ45)+8GE(SFP)+4*10GE(SFP), 16G Memory, 2 AC Power, with IPS-AV-URL Function Group Update Service Subscribe 12 Months)

Product	Model	Description
USG6670	USG6670-DC	USG6670 DC Host(16GE(RJ45)+8GE(SFP)+4*10GE(SFP), 16G Memory, 2 DC Power)
USG6680	USG6680-AC	USG6680 AC Host(16GE(RJ45)+8GE(SFP)+4*10GE(SFP+), 16G Memory, 2 AC Power)
USG6680-BDL	USG6680-BDL-AC	USG6680 AC Host(16GE(RJ45)+8GE(SFP)+4*10GE(SFP+), 16G Memory, 2 AC Power, with IPS-AV-URL Function Group Update Service Subscribe 12 Months)
USG6680	USG6680-DC	USG6680 DC Host(16GE(RJ45)+8GE(SFP)+4*10GE(SFP+), 16G Memory, 2 DC Power)

Business Module Group

WSIC	WSIC-8GE	8GE Electric Ports Interface Card
	WSIC-4GEBYPASS	4GE Electric Ports Bypass Card
	WSIC-8GEF	8GE Optical Ports Interface Card
	WSIC-2XG8GE	2*10GE Optical Ports+8GE Electric Ports Interface Card

Hard Disk Group

HDD	SM-HDD-SAS300G-A	300GB 10K RPM SAS Hard Disk Unit
	SM-HDD-SAS600G-A	600GB 10K RPM SAS Hard Disk Unit(only for USG6650-AC/DC, USG6660-AC/DC, USG6670-AC/DC, USG6680-AC)

Function License

Virtual Firewall	LIC-VSYS-10-USG6000	Quantity of Virtual Firewall (10 Vsys)
	LIC-VSYS-20-USG6000	Quantity of Virtual Firewall (20 Vsys)
	LIC-VSYS-50-USG6000	Quantity of Virtual Firewall (50 Vsys)
	LIC-VSYS-100-USG6000	Quantity of Virtual Firewall (100 Vsys)
	LIC-VSYS-200-USG6000	Quantity of Virtual Firewall (200 Vsys)
	LIC-VSYS-500-USG6000	Quantity of Virtual Firewall (500 Vsys)
	LIC-VSYS-1000-USG6000	Quantity of Virtual Firewall (1000 Vsys)
SSL VPN Concurrent Users	LIC-SSL-100-USG6000	Quantity of SSL VPN Concurrent Users(100 Users)
	LIC-SSL-200-USG6000	Quantity of SSL VPN Concurrent Users(200 Users)
	LIC-SSL-500-USG6000	Quantity of SSL VPN Concurrent Users(500 Users)
	LIC-SSL-1000-USG6000	Quantity of SSL VPN Concurrent Users(1000 Users)
	LIC-SSL-2000-USG6000	Quantity of SSL VPN Concurrent Users(2000 Users)
	LIC-SSL-5000-USG6000	Quantity of SSL VPN Concurrent Users(5000 Users)

NGFW License

IPS Update Service	LIC-IPS-12-USG6600	IPS Update Service Subscribe 12 Months
	LIC-IPS-36-USG6600	IPS Update Service Subscribe 36 Months



Product	Model	Description
URL Filtering Update Service	LIC-URL-12-USG6600	URL Filtering Update Service Subscribe 12 Months
	LIC-URL-36-USG6600	URL Filtering Update Service Subscribe 36 Months
Anti-Virus Update Service	LIC-AV-12-USG6600	Anti-Virus Update Service Subscribe 12 Months
	LIC-AV-36-USG6600	Anti-Virus Update Service Subscribe 36 Months
IPS-AV-URL Function Group	LIC-IPSAVURL-12-USG6600	IPS-AV-URL Function Group Subscribe 12 Months
	LIC-IPSAVURL-36-USG6600	IPS-AV-URL Function Group Subscribe 36 Months
Basic License		
Content Filtering	LIC-CONTENT	Content Filtering Function

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