

Hillstone Multi-Core Security Appliance SG-6000 Series

The Hillstone Multi-Core Security Appliance SG-6000 Series offers state-of-the-art network security solutions for the needs of cloud computing in the 100G era. This latest generation of network security appliances leverages the innovative Hillstone Multi-Core Plus™ G2 parallel architecture with Role-Based Network Security (RBNS) and Deep Application Inspection to deliver new levels of network security, performance, scalability and control. With this powerful new paradigm, the Hillstone SG-6000 Series Multi-Core Security Appliances surpass the limitations of traditional firewall platforms which operate based on IP addresses and ports.

The SG-6000 Series is based on a modular hardware design that enables superior security processing performance and scalability. Its full Anti-Virus and Intrusion Prevention System (AV/IPS) provides robust, real-time security and protection without negative performance impacts. The SG-6000 Series is a complete line of products and solutions designed to meet the network security needs of diverse businesses and entities—Internet Service Providers (ISPs), large enterprises, small office and home office (SoHo) enterprises, and government agencies etc. The feature-rich software environment empowers network administrators with a cutting-edge suite of security services such as RBAC with fine grain control, IPSec/SSL VPN, application QoS, anti-virus, IPS and so on.

Product Characteristics

Security Visibility

Network Visibility

Using the StoneOS® network flow analysis module, the SG-6000 administrator can monitor and understand the status of the hardware, network usage and traffic trends anytime and anywhere via a visual graphic interface. This enables IT personnel to manage the network and optimize resources and bandwidth.

Access Visibility

The StoneOS® Role-Based Network Security (RBNS) module provides sophisticated and user friendly access to network administrators by allowing the definition of custom security profiles based on user identity as well as login location at the time of network access. Using RBNS on the SG-6000 platform, network administrators can monitor and manage in real-time all user activities including access status, bandwidth and resource usage. The SG-6000 provides new levels of sophistication in the definition and management of user security profiles.

Application Visibility

The unique StoneOS® application identification module achieves identification and control based on application behaviors and signatures rather than relying on port or protocol, even in cases of encrypted data streams. The application and signature database is periodically and automatically updated to ensure the best support for new and existing applications. Typical supported applications include P2P, IM, streaming video, games, office applications, and other network applications.

Total VPN Solution

The SG-6000 Multi-Core Plus™ G2 supports IPSec and SSL VPN hardware acceleration. Each CPU core has an embedded crypto processing engine. This ensures that the encryption/decryption performance scales with the number of CPU cores to provide high performance and exceptional capability. Hillstone IPSec VPN implementation is fully compatible with industry standard.

Hillstone's patented plug-and-play VPN feature allows branch office VPN to be easily set up with just a username and password. Parameters and local configuration are downloaded when the VPN is established. This greatly streamlines the maintenance of branch office connections within the enterprise. Plug-and-play VPN makes IPSec VPN easy and cost effective to deploy.

The SG-6000 Multi-Core Security Appliance is integrated to support 3rd generation SSL VPN access control and its plug-and-play features provide users with convenient, fast and secure remote access services.

Content Security (UTM Plus®)

UTM Plus® is an optional Unified Threat Management package that provides anti-virus, intrusion prevention, content filtering, and application traffic control. These features enable the SG-6000 to protect networks against viruses, spywares, worms, and Trojan attacks. Key word filtering and URL database with over 20 million domain names help security administrators easily set up network website visiting policies. Up-to-date virus, attack and URL databases can be downloaded in real time for the latest network protection against new security outbreaks.

Modular Parallel Security Architecture (Multi-Core Plus™ G2)

StoneOS® is a next generation 64-bit real time security operating system with a powerful state-of-the-art parallel processing engine developed by Hillstone Networks.

StoneOS® proprietary fully parallel architecture and multi-processor infrastructure sets it apart from other multi-processor platforms or NP/ASIC platforms. StoneOS® provides full parallel processing with an underlying Multi-Core infrastructure from the network layer all the way up to the application layer, while competitors only process traffic in serial mode or only transfer layer-3 packages.

With its next generation parallel stream based engine the SG-6000 provides an up to five times greater performance over existing Multi-Core or NP/ASIC systems. IPSec acceleration through hardware scalability where each core has an embedded IPSec processing engine ensures that there are no bottlenecks in performance. This fundamental difference allows the SG-6000 to perform without compromise even with all its security features enabled.

SG-6000 supports four types of extension modules:

- IO Extension Module: Increases device connectivity and saves on initial investment.
- Application Extension Module: Increases the processing power of devices and applications to eliminate performance bottlenecks.
- Storage Extension Module: Enables large amounts of log and security audit log recording, while providing interface to external log server.
- Performance Upgrade License: Maximizes the number of concurrent sessions and ramps up rate and overall processing capabilities.

Note: The extended capabilities vary among different models.

Features

Deployment

- Transparent mode
- Routing/NAT mode
- L2/L3 Mixed mode

Firewall

- NAT (Network Address Translation)
- PAT (Port Address Translation)
- MIP/VIP/DIP
- Network layer attack protection
- DoS and DDoS protection
- SYN flood attack protection
- Malformed packet protection
- IP fragment attack protection
- IP option anomalies
- TCP anomalies
- IP spoofing
- IP address scan protection
- Port scan
- Static and dynamic blacklist
- Session limit (source/destination IP)
- Zone-based protection
- Profile-based protection
- Port-based ACL

Application Identification and Behavior Control

- New generation behavior control based on application signature and behavior
- Hundreds of application signature database
- Instant Messaging
- IP phone
- P2P applications
- Network tools
- File sharing
- Social network
- Stock trading software
- P2P streaming
- Email
- Database
- Large scale multiplayer online game
- Routing protocol
- Application signature database can be updated online in real time
- Over 20 millions domain names in URL database
- Website visiting control based on keywords in website context
- Outgoing email control based on sender, receiver, subject, context and attachment
- Instance Messaging control
- Sensitive documentation filtering
- Java Applet/ActiveX blocking

Flow Management

- Flow policy
- Bandwidth insurance
- Maximum bandwidth
- Priority
- DiffServ tag
- Rate limit based on the physical interface
- QoS tagging
- Load balancing

Networks

- 802.1Q VLAN relay
- 802.3ad line aggregation
- PPPoE client
- DHCP relay, server and client
- DNS proxy
- DDNS
- NTP
- Static routing
- RIP v1/v2
- OSPF
- Policy routing (based on source, destination and service)
- ECMP

PKI Support

- PKI certificate request (PKCS 7 and PKCS 10)
- Certificate organization support: VeriSign and Entrust
- Microsoft

Anti-Virus

- Stream based, low latency, high capacity anti-virus scanning
- Large file virus scan
- Real time virus blocking and logging
- Virus scanning on HTTP, FTP and various email protocols
- Real time virus database with over 400K signatures

VPN

- Site-to-site IPSec VPN
- Remote VPN
- DES, 3DES and AES
- MD-5 and SHA-1
- Manual key , IKE, PKI (X.509)
- IPSec NAT traversal
- Policy based VPN
- Routing based VPN
- Easy VPN deployment (PnPVPN)
- L2TP

Intrusion Prevention System (IPS)

- Stateful, accurate and high performance intrusion detection and prevention
- Real time intrusion blocking, IP blocking and logging
- Supports HTTP, FTP, SMTP, IMAP, POP3, TELNET, TCP, UDP, DNS, RPC, FINGER MSSQL, ORACLE, NNTP, DHCP, LDAP, VoIP, NETBIOS, TFTP
- Detects and prevents over 3,000 intrusions

Application Layer Gateway (ALG)

- H.323
- SIP
- FTP
- TFTP
- RSH
- RTSP
- SQL Net
- MS-RPC

User Authentication

- Local user authentication
- RADIUS
- Active directory

Security

- Trusted hosts
- Read-Write and Read-Only users
- Access Control List
- SSH
- SSL
- Centralized authentication
- Radius client, TACACS+client
- S/Key

Centralized Monitoring and Auditing

- Centralized device monitoring
- Bulk device firmware upgrade
- Device CPU/Memory/Session real time monitoring
- Application visibility and monitoring
- User visibility and monitoring
- Real-time monitoring of various attacks (virus, intrusion)
- Periodic reporting

Note: the extended capability can be different among different model.

SG-6000 Series



SG-6000 Quick Reference

M-Series

Specifications	SG-6000-M2105	SG-6000-M3100	SG-6000-M3108
FW Performance	600Mbps	1Gbps	1Gbps / 2Gbps*
IPSec Performance ⁽¹⁾	200Mbps	500Mbps	500Mbps
Maximum Concurrent Sessions	100K / 200K*	400K / 1M*	400K / 1M*
AV Performance ⁽²⁾	50Mbps	100Mbps	70Mbps
IPS Performance ⁽³⁾	100Mbps	200Mbps	200Mbps
New Connections/s ⁽⁴⁾	4k/s	10k/s	12k/s
Maximum IPSec Tunnels	512	1,000	1,000
Maximum SSL VPN Users	128	500	500
Management Ports	1x Console Port, 1 x USB 2.0 Port		
Fixed I/O Ports	5 x GE	8 x GE	8 x GE, 2 x Combo
Available Slot for Extensible Modules	/	/	1 x SD slot ⁽⁶⁾
Modules ⁽⁵⁾	/	/	SDHC ⁽⁶⁾
Maximum Power Draw	1 x 15W	1 x 45W	1 x 45W
Power Supply	AC 100-240V 50/60Hz	AC 100-240V 50/60Hz	AC 100-240V 50/60Hz
Dimension (WxDxH)	Desktop (300x165x44 mm)	1U (442x241x44 mm)	1U (436x366x44 mm)
Weight	1.9kg	5kg	5kg
Temperature	0-40°C (32- 104°F)	0-40°C (32- 104°F)	0-40°C (32- 104°F)
Relative Humidity	10-95%	10-95%	10-95%

Specifications	SG-6000-M6110	SG-6000-M6115
FW Performance	2Gbps / 4Gbps*	4Gbps
IPSec Performance ⁽¹⁾	1Gbps	1.5Gbps
Maximum Concurrent Sessions	1M / 2M*	1M / 2M*
AV Performance ⁽²⁾	250Mbps	350Mbps
IPS Performance ⁽³⁾	500Mbps	800Mbps
New Connections/s ⁽⁴⁾	30k/s	45k/s
Maximum IPSec Tunnels	4,000	4,000
Maximum SSL VPN Users	1,000	1,000
Management Ports	1 x Console Port, 1 x AUX Port, 1 x USB 2.0 Port	
Fixed I/O Ports	8 x GE, 4 x SFP	4 x GE, 8 x SFP
Available Slot for Extensible Modules	1 x Generic Slot	1 x Generic Slot
Modules ⁽⁵⁾	Storage Card Only	Storage Card Only
Maximum Power Draw	1 x 75W, dual power supply available	1 x 75W, dual power supply available
Power Supply	AC 100-240V 50/60Hz	AC 100-240V 50/60Hz
Dimension (WxDxH)	1U (442x241x44 mm)	1U (436 x 366 x 44 mm)
Weight	9kg	9kg
Temperature	0-40°C (32- 104°F)	0-40°C (32- 104°F)
Relative Humidity	10-95%	10-95%

G-Series

Specifications	SG-6000-G2110	SG-6000-G2120	SG-6000-G3150
FW Performance	2Gbps	4Gbps	6Gbps / 8Gbps*
IPSec Performance ⁽¹⁾	1Gbps	1.5Gbps	2.5Gbps
Maximum Concurrent Sessions	1M / 2M*	1M / 2M*	2.5M / 4M*
AV Performance ⁽²⁾	250Mbps	350Mbps / 900Mbps**	500Mbps / 900Mbps**
IPS Performance ⁽³⁾	500Mbps	800Mbps	1.2Gbps
New Connections/s ⁽⁴⁾	30k/s	45k/s	60k/s
Maximum IPSec Tunnels	2,000	4,000	6,000
Maximum SSL VPN Users	1,000	2,000	4,000
Management Ports	1 x Console Port, 1 x USB 2.0 Port	1 x Console Port, 1 x AUX Port, 1 x USB 2.0 Port	
Fixed I/O Ports	16 x GE	4 x GE, 4 x SFP	4 x GE, 8 x SFP
Available Slot for Extensible Modules	1 x Generic Slot 1 x Storage Only	2 x Generic Slot	4 x Generic Slot
Modules ⁽⁵⁾	IO Extension Module, Application Extension Module, Storage Extension Module		
Maximum Power Draw	1 x 75W	150W with Dual Power	1x 450W Redundancy 1+1
Power Supply	AC 100-240V 50/60Hz	AC 100-240V 50/60Hz	AC 100-240V 50/60Hz DC -40 ~ -60V
Dimension (W×D×H)	1U (436 x 366 x 44 mm)	1U (436 x 366 x 44 mm)	2U (440 x 520 x 88 mm)
Weight	8kg	9kg	16kg
Temperature	0-40°C (32- 104°F)	0-40°C (32- 104°F)	0-40°C (32- 104°F)
Relative Humidity	10-95%	10-95%	10-95%

Specifications	SG-6000-G5150	SG-6000-G6100
FW Performance	8Gbps / 10Gbps*	10Gbps
IPSec Performance ⁽¹⁾	4Gbps	8Gbps
Maximum Concurrent Sessions	3M / 4M*	4M / 8M*
AV Performance ⁽²⁾	800Mbps / 1.8Gbps**	1.2Gbps
IPS Performance ⁽³⁾	2.5Gbps	3Gbps
New Connections/s ⁽⁴⁾	120k/s	200k/s
Maximum IPSec Tunnels	10,000	30,000
Maximum SSL VPN Users	6,000	10,000
Management Ports	1 x Console Port, 1 x AUX Port, 1 x USB 2.0 Port	1 x Console, 1 x AUX, 2 x USB 2.0
Fixed I/O Ports	4 x GE, 8 x SFP	1 x GE, 12 x SFP
Available Slot for Extensible Modules	4 x Generic Slot	/
Modules ⁽⁵⁾	IO Extension Module, Application Extension Module, Storage Extension Module	/
Maximum Power Draw	1 x 450W, Redundancy 1+1	1 x 200W, Redundancy 1+1
Power Supply	AC 100-240V 50/60Hz / DC -40 ~ -60V	AC 100-240V 50/60Hz / DC -40 ~ -60V
Dimension (W×D×H)	2U (440 x 520 x 88 mm)	2U (440 x 520 x 88 mm)
Weight	17kg	15kg
Temperature	0-40°C (32- 104°F)	0-40°C (32- 104°F)
Relative Humidity	10-95%	10-95%

X-Series

Specifications	SG-6000-X5100
FW Performance	20Gbps
IPSec Performance ⁽¹⁾	8Gbps
Maximum Concurrent Sessions	5M / 10M*
AV Performance ⁽²⁾	1.5Gbps
IPS Performance ⁽³⁾	3Gbps
New Connections/s ⁽⁴⁾	200k/s
Maximum IPSec Tunnels	30,000
Maximum SSL VPN Users	10,000
Management Ports	1 x Console, 1 x AUX, 2 x USB 2.0
Fixed I/O Ports	1 x GE, 12 x SFP, 2 x XFP
Maximum Power Draw	1 x 200W, Redundancy 1 + 1
Power Supply	AC 100-240V 50/60Hz / DC -40 ~ -60V
Dimension (WxDxH)	2U (440 x 520 x 88 mm)
Weight	15kg
Temperature	0-40°C (32- 104°F)
Relative Humidity	10-95%

Unless specified otherwise, all performance, capacity and functionalities are based on StoneOS® 4.0. Results may vary based on StoneOS® version and deployment scenarios.

Notes:

(1) IPSec performance data is obtained under Preshare Key AES256+SHA-1 configuration and 1400-byte packet size packet.

(2) AV performance data is obtained under HTTP traffic with file attachment.

(3) IPS performance data is obtained under bi-direction HTTP traffic detection with all IPS rules being turned on.

(4) Session ramp-up rate is obtained with TCP no close testing method.

(5) SG-6000-M2105/M3100/G6100/X5100 do not support any kind of extension module. SG-6000-G2110 do not support application extension module.

IOC-2XFG module is only available on SG-6000-G5150.





(6) SanDisk is recommended when customers buy SD cards independently.

* Performance license required.



** FEC-AV-30 card required.

Extension Module


IO Extension Module

Specifications	IOC-2XFP	IOC-8SFP	IOC-8GE	IOC-4GE-B
				
I/O Ports	2 x XFP, XFP module not included	8 x SFP, SFP module not included	8 x GE	4 x GE (2 pair bypass ports)
Dimensions	1U (Occupy 2 generic slots)	½U (Occupy 1 generic slot)	½U (Occupy 1 generic slot)	½ U (Occupy 1 generic slot)
Weight	1kg	0.9kg	0.8kg	0.8kg
Temperature	0-40°C (32- 104°F)	0-40°C (32- 104°F)	0-40°C (32- 104°F)	0-40°C (32- 104°F)
Relative Humidity	10-95%	10-95%	10-95%	10-95%
Platform Supported	SG-6000-G5150	SG-6000-G5150 / G3150 / G2120 / G2110		

Application Extension Module

Specifications	FEC-AV-60	FEC-AV-30
		
AV Performance	1.8Gbps	900Mbps
Dimensions	1U (Occupy 2 generic slots)	1U (Occupy 2 generic slots)
Weight	1kg	1kg
Temperature	0-40°C (32- 104°F)	0-40°C (32- 104°F)
Relative Humidity	10-95%	10-95%
Platform Supported	SG-6000-G5150	SG-6000-G3150 / G2120
Maximum Module Supported per Unit	1	1

Storage Extension Module

Specifications	FEC-HD-160
	
Storage Size	160GB
Dimensions	½ U (Occupy 1 generic slot)
Weight	1kg
Temperature	0-40°C (32- 104°F)
Relative Humidity	10-95%
Product Models Supported	SG-6000-G5150 / G3150 / G2120 / G2110 / M6115 / M6110
Maximum Module Supported per Unit	1

Performance Upgrade License

Specifications	SG-6000-M2105	SG-6000-M3100	SG-6000-M3108	SG-6000-M6110	SG-6000-M6115
FW Performance	600Mbps	1Gbps	1Gbps / 2Gbps*	2Gbps / 4Gbps*	4Gbps
Maximum Concurrent Sessions	100K / 200K*	400K / 1M*	400K / 1M*	1M / 2M*	1M / 2M*

Specifications	SG-6000-G2110	SG-6000-G2120	SG-6000-G3150	SG-6000-G5150	SG-6000-G6110	SG-6000-X5100
FW Performance	2Gbps	4Gbps	6Gbps/8Gbps*	8Gbps/10Gbps*	10Gbps	20Gbps
Maximum Concurrent Sessions	1M/2M*	1M/2M*	2.5M/4M*	3M/4M*	4M/8M*	5M/10M*

Performance data listed above are all based on StoneOS® 4.0R3. Results may vary based on StoneOS® version and deployment scenarios.

(1) Performance licenses are only available for StoneOS® 4.0R3 and later.

* Performance license required.

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