

# Hillstone E-5000 Series

## Next-Generation Firewall



The Hillstone E-5000 Series Next Generation Firewall (NGFW) is designed for the specific function of security and provides comprehensive and granular visibility and control of applications. It can identify and prevent potential threats associated with high-risk applications while providing policy-based control over applications, users, and user-groups. Policies can be defined that guarantee bandwidth to mission-critical applications while restricting or blocking unauthorized or malicious applications. The Hillstone E-5000 Series NGFW incorporates comprehensive network security and advanced firewall features, provides superior price performance, excellent energy efficiency, and comprehensive threat prevention capability.

## Product Highlights

### Granular Application Identification and Control

The Hillstone E-5000 Series NGFW is optimized for content analysis of Layer 7 applications, providing fine-grained control of web applications regardless of port, protocol, or evasive action. It can identify and prevent potential threats associated with high-risk applications while providing policy-based control over applications, users, and user-groups. Security policies can be defined that guarantee bandwidth to mission-critical applications while restricting or blocking unauthorized or malicious applications.

### Comprehensive Threat Detection and Prevention

The Hillstone E-5000 Series NGFW provides real-time protection for applications from network attacks including viruses, spyware, worms, botnets, ARP spoofing, DoS/DDoS, Trojans, buffer overflows, and SQL injections. It incorporates a unified threat detection engine that shares packet details with multiple security engines (AD, IPS, URL filtering, Antivirus, Sandbox etc.), which significantly enhances the protection efficiency and reduces network latency.

# Features

## Network Services

- Dynamic routing (OSPF, BGP, RIPv2)
- Static and policy routing
- Route controlled by application
- Built-in DHCP, NTP, DNS Server and DNS proxy
- Tap mode – connects to SPAN port
- Interface modes: sniffer, port aggregated, loopback, VLANs (802.1Q and Trunking)
- L2/L3 switching & routing
- Multicast (PIM-SSM)
- Virtual wire (Layer 1) transparent inline deployment

## Firewall

- Operating modes: NAT/route, transparent (bridge), and mixed mode
- Policy objects: predefined, custom, aggregate policy, object grouping
- Security policy based on application, role and geo-location
- Application Level Gateways and session support: MSRPC, PPTP, RAS, RSH, SIP, FTP, TFTP, HTTP, dcerpc, dns-tcp, dns-udp, H.245 0, H.245 1, H.323
- NAT and ALG support: NAT46, NAT64, NAT444, SNAT, DNAT, PAT, Full Cone NAT, STUN
- NAT configuration: per policy and central NAT table
- VoIP: SIP/H.323/SCCP NAT traversal, RTP pin holing
- Global policy management view
- Security policy redundancy inspection, policy group, policy configuration rollback
- Policy assistant for easy detailed policy deployment
- Policy analyzing and invalid policy cleanup
- Comprehensive DNS policy
- Schedules: one-time and recurring

## Intrusion Prevention

- Protocol anomaly detection, rate-based detection, custom signatures, manual, automatic push or pull signature updates, integrated threat encyclopedia
- IPS Actions: default, monitor, block, reset (attackers IP or victim IP, incoming interface) with expiry time
- Packet logging option
- Filter Based Selection: severity, target, OS, application or protocol
- IP exemption from specific IPS signatures
- IDS sniffer mode
- IPv4 and IPv6 rate based DoS protection with threshold settings against TCP Syn flood, TCP/UDP/SCTP port scan, ICMP sweep, TCP/UDP/SCIP/ICMP session flooding (source/destination)
- Active bypass with bypass interfaces
- Predefined prevention configuration

## Antivirus

- Manual, automatic push or pull signature updates
- Manually add or delete MD5 signature to the AV database
- MD5 signature support uploading to cloud sandbox, and manually add or delete on local database
- Flow-based antivirus: protocols include HTTP, SMTP, POP3, IMAP, FTP/SFTP, SMB
- Compressed file virus scanning

## Attack Defense

- Abnormal protocol attack defense
- Anti-DDoS/DDoS, including SYN flood, UDP flood, DNS reply flood, DNS query flood defense, TCP fragment, ICMP fragment, etc.
- ARP attack defense
- Allow list for destination IP address

## URL Filtering

- Flow-based web filtering inspection
- Manually defined web filtering based on URL, web content and MIME header
- Dynamic web filtering with cloud-based real-time categorization database: over 140 million URLs with 64 categories (8 of which are security related)
- Additional web filtering features:
  - Filter Java Applet, ActiveX or cookie
  - Block HTTP Post
  - Log search keywords
  - Exempt scanning encrypted connections on certain categories for privacy
- Web filtering profile override: allows administrator to temporarily assign different profiles to user/group/IP
- Web filter local categories and category rating override
- Support multi-language
- URL allow / block list configuration

## Cloud-Sandbox

- Upload malicious files to cloud sandbox for analysis
- Support protocols including HTTP/HTTPS, POP3, IMAP, SMTP, FTP and SMB
- Support file types including PE, ZIP, RAR, Office, PDF, APK, JAR, SWF and Script
- File transfer direction and file size control
- Provide complete behavior analysis report for malicious files
- Global threat intelligence sharing, real-time threat blocking
- Support detection only mode without uploading files

## Botnet C&C Prevention

- Discover intranet botnet host by monitoring C&C connections and block further advanced threats such as botnet and ransomware
- Regularly update the botnet server addresses
- Prevention for C&C IP and domain
- Support TCP, HTTP, and DNS traffic detection
- Allow and block list based on IP address or domain name
- Support DNS sinkhole and DNS tunneling detection

## IP Reputation

- Identify and filter traffic from risky IPs such as botnet hosts, spammers, Tor nodes, breached hosts, and brute force attacks
- Logging, dropping packets, or blocking for different types of risky IP traffic
- Periodical IP reputation signature database upgrade

## SSL Decryption

- Application identification for SSL encrypted traffic
- IPS enablement for SSL encrypted traffic

- AV enablement for SSL encrypted traffic
- URL filter for SSL encrypted traffic
- SSL encrypted traffic whitelist
- SSL proxy offload mode
- Support application identification, DLP, IPS sandbox, AV for SSL proxy decrypted traffic of SMTPS/POP3S/IMAPS

## Endpoint Identification and Control

- Support to identify endpoint IP, endpoint quantity, on-line time, off-line time, and on-line duration
- Support 10 operating systems including Windows, iOS, Android, etc.
- Support query based on IP, endpoint quantity, control policy and status etc.
- Support the identification of accessed endpoints quantity across layer 3, logging and interference on overrun IP
- Redirect page display after custom interference operation
- Supports blocking operations on overrun IP
- User identification and traffic control for remote desktop services of Windows Server

## Data Security

- File transfer control based on file type, size and name
- File protocol identification, including HTTP, FTP, SMTP, POP3 and SMB
- File signature and suffix identification for over 100 file types
- Content filtering for HTTP-GET, HTTP-POST, FTP and SMTP protocols
- IM identification and network behavior audit
- Filter files transmitted by HTTPS using SSL Proxy and SMB

## Application Control

- Over 4,000 applications that can be filtered by name, category, subcategory, technology and risk
- Each application contains a description, risk factors, dependencies, typical ports used, and URLs for additional reference
- Actions: block, reset session, monitor, traffic shaping
- Identify and control cloud applications in the cloud
- Provide multi-dimensional monitoring and statistics for cloud applications, including risk category and characteristics

## Quality of Service (QoS)

- Max/guaranteed bandwidth tunnels or IP/user basis
- Tunnel allocation based on security domain, interface, address, user/user group, server/server group, application/app group, TOS, VLAN
- Bandwidth allocated by time, priority, or equal bandwidth sharing
- Type of Service (TOS) and Differentiated Services (DiffServ) support
- Prioritized allocation of remaining bandwidth
- Maximum concurrent connections per IP
- Bandwidth allocation based on URL category
- Bandwidth limit by delaying access for user or IP
- Automatic expiration cleanup and manual cleanup of user used traffic

## Features (Continued)

### Server Load Balancing

- Weighted hashing, weighted least-connection, and weighted round-robin
- Session protection, session persistence and session status monitoring
- Server health check, session monitoring and session protection

### Link Load Balancing

- Bi-directional link load balancing
- Outbound link load balancing: policy based routing including ECMP, time, weighted, and embedded ISP routing; Active and passive real-time link quality detection and best path selection
- Inbound link load balancing supports SmartDNS and dynamic detection
- Automatic link switching based on bandwidth, latency, jitter, connectivity, application etc.
- Link health inspection with ARP, PING, and DNS

### VPN

- IPsec VPN
  - IPsec Phase 1 mode: aggressive and main ID protection mode
  - Peer acceptance options: any ID, specific ID, ID in dialup user group
  - Supports IKEv1 and IKEv2 (RFC 4306)
  - Authentication method: certificate and pre-shared key
  - IKE mode configuration support (as server or client)
  - DHCP over IPsec
  - Configurable IKE encryption key expiry, NAT traversal keep alive frequency
  - Phase 1/Phase 2 Proposal encryption: DES, 3DES, AES128, AES192, AES256
  - Phase 1/Phase 2 Proposal authentication: MD5, SHA1, SHA256, SHA384, SHA512
  - IKEv1 support DH group 1,2,5,19,20,21,24
  - IKEv2 support DH group 1,2,5,14,15,16,19,20,21,24
  - XAuth as server mode and for dialup users
  - Dead peer detection
  - Replay detection
  - Autokey keep-alive for Phase 2 SA
- IPsec VPN realm support: allows multiple custom SSL VPN logins associated with user groups (URL paths, design)
- IPsec VPN configuration options: route-based or policy based
- IPsec VPN deployment modes: gateway-to-gateway, full mesh, hub-and-spoke, redundant tunnel, VPN termination in transparent mode
- One time login prevents concurrent logins with the same username
- SSL portal concurrent users limiting
- SSL VPN port forwarding module encrypts client data and sends the data to the application server
- Supports clients that run iOS, Android, and Windows XP/Vista including 64-bit Windows OS
- Host integrity checking and OS checking prior to SSL tunnel connections
- MAC host check per portal
- Cache cleaning option prior to ending SSL VPN session
- L2TP client and server mode, L2TP over IPsec,

and GRE over IPsec

- View and manage IPsec and SSL VPN connections
- PnPVPN
- VTEP for VxLAN static unicast tunnel

### IPv6

- Management over IPv6, IPv6 logging and HA
- IPv6 tunneling: DNS64/NAT64, IPv6 ISATAP, IPv6 GRE, IPv6 over IPv4 GRE
- IPv6 routing including static routing, policy routing, ISIS, RIPng, OSPFv3 and BGP4+
- IPS, Application identification, URL filtering, Antivirus, Access control, ND attack defense, iQoS
- Track address detection
- IPv6 jumbo frame support
- IPv6 Radius support
- IPv6 support on the following ALGs: TFTP, FTP, RSH, HTTP, SIP
- IPv6 support on distributed iQoS

### VSYS

- System resource allocation to each VSYS
- CPU virtualization
- Non-root VSYS support firewall, IPsec VPN, SSL VPN, IPS, URL filtering, app monitoring, IP reputation, QoS
- VSYS monitoring and statistic

### High Availability

- Redundant heartbeat interfaces
- Active/Active and Active/Passive mode
- Standalone session synchronization
- HA reserved management interface
- Failover:
  - Port, local & remote link monitoring
  - Stateful failover
  - Sub-second failover
  - Failure notification
- Deployment options:
  - HA with link aggregation
  - Full mesh HA
  - Geographically dispersed HA

### Twin-mode HA

- High availability mode among multiple devices
- Multiple HA deployment modes
- Configuration and session synchronization among multiple devices
- Dual HA data link ports

### User and Device Identity

- Local user database
- Remote user authentication: TACACS+, LDAP, Radius, Active Directory
- Single-sign-on: Windows AD
- 2-factor authentication: 3rd party support, integrated token server with physical and SMS
- User and device-based policies
- User group synchronization based on AD and LDAP
- Support for 802.1X, SSO Proxy
- WebAuth: page customization, force crack prevention, IPv6 support
- Interface based authentication
- Agentless ADSSO (AD Polling)

- Use authentication synchronization based on SSO-monitor
- Support IP-based and MAC-based user authentication

### Administration

- Management access: HTTP/HTTPS, SSH, telnet, console
- Central Management: Hillstone Security Manager (HSM), web service APIs
- System Integration: SNMP, syslog, alliance partnerships
- Rapid deployment: USB auto-install, local and remote script execution
- Dynamic real-time dashboard status and drill-in monitoring widgets
- Language support: English

### Logs & Reporting

- Logging facilities: local log storage with storage models for up to 6 months, multiple syslog servers and multiple Hillstone Security Audit (HSA) platforms
- Encrypted logging and log integrity with HSA scheduled batch log uploading
- Reliable logging using TCP option (RFC 3195)
- Detailed traffic logs: forwarded, violated sessions, local traffic, invalid packets, URL etc.
- Comprehensive event logs: system and administrative activity audits, routing & networking, VPN, user authentications, WiFi related events
- IP and service port name resolution option
- Brief traffic log format option
- Three predefined reports: Security, Flow and Network reports
- User defined reporting
- Reports can be exported in PDF, Word and HTML via Email and FTP

### Statistics and Monitoring

- Application, URL, threat events statistic and monitoring
- Real-time traffic statistic and analytics
- System information such as concurrent session, CPU, Memory and temperature
- iQoS traffic statistic and monitoring, link status monitoring
- Support traffic information collection and forwarding via Netflow (v9.0)








### CloudView

- Cloud-based security monitoring
- 24/7 access from web or mobile application
- Device status, traffic and threat monitoring
- Cloud-based log retention and reporting







### IoT Security

- Identify IoT devices such as IP Cameras and Network Video Recorders
- Support query of monitoring results based on filtering conditions, including device type, IP address, status, etc.
- Support customized whitelists

# Specifications

	SG-6000-E5168	SG-6000-E5260	SG-6000-E5268	SG-6000-E5568	SG-6000-E5660	SG-6000-E5760	SG-6000-E5960
							
<b>FW Throughput <sup>(1)</sup></b>	10 Gbps	16 Gbps	16 Gbps	20 Gbps	25 Gbps	32 Gbps	40 Gbps
<b>IPSec Throughput <sup>(2)</sup></b>	6 Gbps	8 Gbps	8 Gbps	12 Gbps	15 Gbps	18 Gbps	25 Gbps
<b>AV Throughput <sup>(3)</sup></b>	3 Gbps	3.5 Gbps	3.5 Gbps	5 Gbps	7 Gbps	8 Gbps	10 Gbps
<b>IPS Throughput <sup>(4)</sup></b>	4 Gbps	5 Gbps	5 Gbps	7 Gbps	12 Gbps	15 Gbps	18 Gbps
<b>IMIX Throughput <sup>(5)</sup></b>	4 Gbps	6 Gbps	6 Gbps	8 Gbps	12 Gbps	16 Gbps	16 Gbps
<b>NGFW Throughput <sup>(6)</sup></b>	3 Gbps	3.5 Gbps	3.5 Gbps	5 Gbps	7 Gbps	8 Gbps	9.5 Gbps
<b>Threat Protection Throughput <sup>(7)</sup></b>	2 Gbps	2.2 Gbps	2.2 Gbps	3 Gbps	4.5 Gbps	5 Gbps	6 Gbps
<b>New Sessions/s <sup>(8)</sup></b>	170,000	200,000	200,000	300,000	400,000	500,000	600,000
<b>Maximum Concurrent Sessions</b>	6 Million	6 Million	6 Million	10 Million	10 Million	12 Million	15 Million
<b>IPSec Tunnel Number</b>	10,000	20,000	20,000	20,000	20,000	20,000	20,000
<b>SSL VPN Users (Default/Max)</b>	8 / 8,000	8 / 10,000	8 / 10,000	8 / 10,000	8 / 10,000	8 / 10,000	8 / 10,000
<b>Virtual Systems (Default/Max)</b>	1 / 100	1 / 250	1 / 250	1 / 250	1 / 250	1 / 250	1 / 250
<b>Storage Options</b>	256G / 512G SSD (E5168 / E5168A)	N/A	256G / 512G SSD (E5268 / E5268A)	256G / 512G SSD (E5568 / E5568A)	N/A	N/A	N/A
<b>Management Ports</b>	1 x Console Port, 1 x AUX Port, 1 x USB Port, 1 x HA, 1 x MGT	1 x Console Port, 1 x AUX Port, 1 x USB Port, 1 x HA, 1 x MGT	1 x Console Port, 1 x AUX Port, 1 x USB Port, 1 x HA, 1 x MGT	1 x Console Port, 1 x AUX Port, 1 x USB Port, 1 x HA, 1 x MGT	1 x Console Port, 1 x AUX Port, 1 x USB Port, 1 x HA, 1 x MGT	1 x Console Port, 1 x AUX Port, 1 x USB Port, 1 x HA, 1 x MGT	1 x Console Port, 1 x AUX Port, 1 x USB Port, 1 x HA, 1 x MGT
<b>Fixed I/O Ports</b>	4 x GE (one pair bypass), 4 x SFP, 2 X SFP+	4 x GE (one pair bypass), 4 x SFP, 2 X SFP+	4 x GE (one pair bypass), 4 x SFP, 2 X SFP+	4 x GE (one pair bypass), 4 x SFP, 2 X SFP+	4 x GE, 4x SFP	4 x GE, 4x SFP	4 x GE, 4x SFP
<b>Available Slots for Expansion Modules</b>	4 x Generic Slot	4 x Generic Slot	4 x Generic Slot	4 x Generic Slot	4 x Generic Slot	4 x Generic Slot	4 x Generic Slot
<b>Expansion Module Option</b>	IOC-4GE-B-M, IOC-8GE-M, IOC-8SFP-M, IOC-4SFP+, IOC-8SFP+, IOC-2SF-P+-Lite	IOC-4GE-B-M, IOC-8GE-M, IOC-8SFP-M, IOC-4SFP+, IOC-8SFP+, IOC-2SF-P+-Lite	IOC-4GE-B-M, IOC-8GE-M, IOC-8SFP-M, IOC-4SFP+, IOC-8SFP+, IOC-2SF-P+-Lite	IOC-8GE-M, IOC-8SFP-M, IOC-4GE-B-M, IOC-8SFP+, IOC-4SFP+, IOC-2SF-P+-Lite	IOC-8GE-M, IOC-8SFP-M, IOC-4GE-B-M, IOC-8SFP+, IOC-4SFP+, IOC-2SF-P+-Lite	IOC-8GE-M, IOC-8SFP-M, IOC-4GE-B-M, IOC-8SFP+, IOC-4SFP+, IOC-2SF-P+-Lite	IOC-8GE-M, IOC-8SFP-M, IOC-4GE-B-M, IOC-8SFP+, IOC-4SFP+, IOC-2SF-P+-Lite
<b>Twin-mode HA</b>	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<b>Power Specification</b>	450W, Dual AC or Dual DC Redundant	450W, Dual AC or Dual DC Redundant	450W, Dual AC or Dual DC Redundant	450W, Dual AC or Dual DC Redundant	450W, Dual AC or Dual DC Redundant	450W, Dual AC or Dual DC Redundant	450W, Dual AC or Dual DC Redundant
<b>Power Supply</b>	AC 100-240 V 50/60 Hz DC -40 ~ -60 V	AC 100-240 V 50/60 Hz DC -40 ~ -60 V	AC 100-240 V 50/60 Hz DC -40 ~ -60 V	AC 100-240 V 50/60 Hz DC -40 ~ -60 V	AC 100-240 V 50/60 Hz DC -40 ~ -60 V	AC 100-240 V 50/60 Hz DC -40 ~ -60 V	AC 100-240 V 50/60 Hz DC -40 ~ -60 V
<b>Dimension (W×D×H, mm)</b>	2U 17.3 x 20.9 x 3.5 in (440 x 530 x 88 mm)	2U 17.3 x 20.9 x 3.5 in (440 x 530 x 88 mm)	2U 17.3 x 20.9 x 3.5 in (440 x 530 x 88 mm)	2U 17.3 x 20.5 x 3.5 in (440x520x88 mm)	2U 17.3 x 20.5 x 3.5 in (440x520x88 mm)	2U 17.3 x 20.5 x 3.5 in (440x520x88 mm)	2U 17.3 x 20.5 x 3.5 in (440x520x88 mm)
<b>Weight</b>	26.0 lb (11.8 kg)	26.0 lb (11.8 kg)	26.0 lb (11.8 kg)	27.1 lb (12.3 kg)	27.1 lb (12.3 kg)	27.1 lb (12.3 kg)	27.1 lb (12.3 kg)
<b>Temperature</b>	32-104°F (0-40°C)	32-104°F (0-40°C)	32-104°F (0-40°C)	32-104°F (0-40°C)	32-104°F (0-40°C)	32-104°F (0-40°C)	32-104°F (0-40°C)
<b>Relative Humidity</b>	10-95% (no dew)	10-95% (no dew)	10-95% (no dew)	10-95% (no dew)	10-95% (no dew)	10-95% (no dew)	10-95% (no dew)
<b>Compliance and Certificate</b>	CE, CB, FCC, UL/cUL, ROHS, IEC/EN61000-4-5 Power Surge Protection, ISO 9001:2015, ISO 14001:2015, CVE Compatibility, IPv6 Ready, ICSA Firewalls						

## Module Options

	IOC-8GE-M	IOC-8SFP-M	IOC-4GE-B-M	IOC-2SFP+-Lite	IOC-8SFP+	IOC-4SFP+
						
<b>Names</b>	8GE Expansion Module	8SFP Expansion Module	4GE Bypass Expansion Module	2SFP+ Expansion Module	8SFP+ Expansion Module	4SFP+ Expansion Module
<b>I/O Ports</b>	8 x GE	8 x SFP, SFP module not included	4 x GE Bypass (2 pair bypass ports)	2 x SFP+, SFP+ module not included	8 x SFP+, SFP+ module not included	4 x SFP+, SFP+ module not included
<b>Dimension</b>	½U (Occupies 1 generic slot)	½U (Occupies 1 generic slot)	½U (Occupies 1 generic slot)	½U (Occupies 1 generic slot)	1U (Occupies 2 generic slots)	1U (Occupies 2 generic slots)
<b>Weight</b>	1.8 lb (0.8 kg)	2.0 lb (0.9 kg)	1.8 lb (0.8 kg)	0.7 lb (0.3 kg)	1.5 lb (0.7 kg)	1.5 lb (0.7 kg)

### NOTES:

- (1) FW throughput data is obtained under single-stack UDP traffic with 1518-byte packet size;
- (2) IPSec throughput data is obtained under Preshare Key AES256+SHA-1 configuration and 1400-byte packet size;
- (3) AV throughput data is obtained under HTTP traffic with file attachment;
- (4) IPS throughput data is obtained under bi-direction HTTP traffic detection with all IPS rules being turned on;
- (5) IMIX throughput data is obtained under UDP traffic mix (64 byte : 512 byte : 1518 byte =5:7:1);
- (6) NGFW throughput data is obtained under 64 Kbytes HTTP traffic with application control and IPS enabled;
- (7) Threat protection throughput data is obtained under 64 Kbytes HTTP traffic with application control, IPS, AV and URL filtering enabled;
- (8) New sessions/s is obtained under TCP traffic.

Unless specified otherwise, all performance, capacity and functionality are based on StoneOS5.5R8. Results may vary based on StoneOS® version and deployment.