

Hillstone AX-Series:

Application Delivery Controller (ADC)



Hillstone AX Series Application Delivery Controllers (ADCs) are the next generation of enterprise-class application delivery optimization products. The Hillstone ADC supports a full range of load balancing functions, including link load balancing (LLB), server load balancing (SLB) and global server load balancing (GSLB). In addition, the AX Series supports health checks for applications, servers and links, first-level network attack protection, SSL offload, application and data acceleration via caching, and more. The Hillstone ADC can greatly improve the availability and scalability of core applications and business platforms, and effectively improve the operational efficiency of enterprise data centers. Together with Hillstone security products such as next-generation firewalls, the Hillstone ADC can provide end-to-end application delivery and security capabilities for your applications and business operations.

Hillstone's ADC fully supports IPv6, high-performance clustering and carrier-grade high availability. It is widely used in server load balancing; traffic distribution and business continuity across multiple data centers; link optimization across multiple ISPs; CDN traffic management; and other application optimization and acceleration scenarios. The Hillstone ADC provides industry-leading solutions for government, finance, network operators, education, healthcare and other sectors.

Product Highlights

High-performance Server Load Balancing

Hillstone's AX Series provides server load balancing with high-capacity concurrent and new session processing capabilities. It intelligently adjusts traffic distribution based upon the health status of server nodes, and automatically completes switching to ensure the best user experience as well as application high availability. Hillstone's ADC utilizes Layer 4 to Layer 7 load balancing algorithms and load balancing based on domain names. Intelligent application identification based on characteristics, behavior and other information allows fine-tuning of performance and throughput to support employee productivity. It also supports application-layer content switching and rewrite to improve the availability of both servers and applications.

Intelligent, Efficient and Dynamic Link Load Balancing

Hillstone's AX Series ADC offers enterprise-class link load balancing technology. It features an innovative adaptive link selection control algorithm that can detect link connectivity, bandwidth utilization, delay, packet loss and jitter in real time, and adjust the traffic forwarding rules based upon the actual link quality and performance. Using an intelligent closed loop, the best route can be selected in real time so that problems such as unbalanced link utilization, single point of failure, poor cross-ISP access, wastage of link resources, and other performance problems are eliminated. The Hillstone ADC supports multiple link load balancing modes such as ECMP, ISP routing, dynamic link switching, and application routing to ensure optimal link access and support employee productivity.

High-performance SSL Offload for Secured Applications

Finance, healthcare, e-commerce and other applications are commonly secured via SSL encryption, which adds workload to servers that can impact performance and limit scalability. Hillstone's ADC supports SSL hardware acceleration technology that provides industry-leading 2048-bit SSL processing performance. By offloading SSL traffic to the Hillstone ADC's dedicated SSL processing resources, the server workload is significantly reduced resulting in improved server performance and scalability.

Full-featured IPv6

In addition to IPv6 support, the Hillstone ADC supports IPv6 application layer transformation technology to help IPv4 websites and networks seamlessly upgrade to or interoperate with IPv6. Through intelligent link processing technology, the addressing problem can be solved efficiently. The Hillstone ADC standard configuration comes with a 1T hard drive and supports log storage for the IPv6 application layer transformation.

End-to-end Security Protection

Together with Hillstone Networks' next-generation firewalls, CloudEdge, CloudHive and other security products, the Hillstone ADC can provide end-to-end security protection capabilities from network access to data centers.

Features

Server Load Balancing

- L4 and L7 server load balancing
- HTTP content switching based on URL, HTTP header, cookie
- HTTP content rewriting
- Redirection for HTTP requests
- Supports IPv6
- Supports HTTP2.0
- Supports WebSocket protocol
- Supports fastHTTP mode
- Support ISO 8353 compatible message based load balancing
- Support clustering up to 32 devices
- Supports SMTP/POP3/IMAP mail server, perform mail load balancing in three different modes: Plaintext, SSL, STARTTLS

Server Health Checks

- Predefined and custom health checks for ICMP, TCP, UDP, HTTP, HTTPS, SMTP, POP3, IMAP, DNS, FTP protocols and third-party objects
- Supports email exchange protocol / RADIUS protocol health checks
- Support server resource health check
- Supports passive health check

Server Session Persistence

- Source IP based session persistence
- Session persistence for encrypted cookie
- Supports sharing session persistence table across VMs

Application Acceleration

- HTTP caching (jpg, doc, ppt, xls, html, css, js, pdf, swf, mp3, avi, flv, mp4)
- TCP connection multiplexing
- HTTP compression (doc, ppt, xls, html, css, js)

SSL Inspection

- Software SSL offload; supported versions include SSLv2, SSLv3, TLS 1.0, TLS1.1, TLS1.2
- Hardware SSL offload
- Predefined or customized encryption algorithms with priorities
- SSL connection multiplexing
- Supports SSL proxy
- Works in conjunction with sBDS, NIPS and WAF to

identify encrypted traffic

Link Load Balancing

- Supports IP address library and ISP address library with automatic update
- Policy routing supports domain name and geographic location routing
- Supports configuration of link priority and minimum active links

Global Server Load Balancing

- Supports DNS proxy
- DNS proxy blacklist and whitelist
- Inbound SmartDNS
- SmartDNS supports IP address library and ISP address library with automatic updates
- Support clustering multiple devices
- Supports monitoring of virtual server health status

System Management

- System management via WebUI, Console, Telnet and SSH
- Role-based authorization of administrators, auditors and operators
- Access control on the administrator address for remote management
- Supports WebUI administrators to bind to trust domain, and certificate authentication for administrators
- Configuration for password complexity and minimum length restrictions
- Supports SNMP, and synchronization of system time from multiple NTP servers
- Supports multiple configuration files and configuration file backup and recovery
- Supports hping, tcpdump and curl operation and maintenance tools

Application Identification

- Application identification based on application characteristics, behavior and related information
- Multi-dimensional application definitions
- Thousands of application signatures
- Application signature database updated in real-time

Log and Monitoring

- Supports a variety of log types, including event logs, network logs, configuration logs, NAT logs, SLB logs, health check logs, etc.
- Log storage in both local device and server
- Email alarms and log alarms
- Real-time WebUI display of system resource utilization and hardware status
- Monitoring and graphical display of the SLB status
- Device status monitoring on mobile devices via CloudView
- Supports forwarding SLB log, health check binary log to HSA

Deployment and Network Configuration

- Deployment via one-arm reverse proxy, routing, transparent, or DSR
- Supports static routing, ISP routing, policy routing, and RIP dynamic routing protocol, and supports import of ISP information
- HA / AP mode
- Supports configuration, session, health checks, PKI synchronization
- Policy control
- VSYS
- Supports AWS, Azure and Alibaba Cloud (manual deployment only)
- Support LMS centralized authorization
- Supports VMware / KVM / Xen / Hyper-V virtualization deployment
- QoS
- Session limiting
- Supports anti-DDoS
- Supports centralized management
- Supports programmable script aRules

DNS Server

- Supports A, AAAA, NS, CNAME, PTR, MX, TXT, SRV
- Recursive forwarding
- DNS transparent proxy

Specifications

SG-6000-AX1000



SG-6000-AX1000S



SG-6000-AX2000







SG-6000-AX2000S



L4 Throughput	30 Gbps	30 Gbps	50 Gbps	50 Gbps
L4 Connections/s	750,000	750,000	950,000	950,000
L7 HTTP Throughput	20 Gbps	20 Gbps	40 Gbps	40 Gbps
L7 HTTP Requests/s (RPS)	1.5 Million	1.5 Million	1.9 Million	1.9 Million
Concurrent Connections	20 Million	20 Million	40 Million	40 Million
RSA 2K SSL (TPS) ⁽¹⁾	70,000	75,000	120,000	140,000
RSA 2K SSL Throughput ⁽²⁾	4.5 Gbps	4.5 Gbps	5.5 Gbps	6 Gbps
SSL Acceleration Technology	Software	ASIC	Software	ASIC
DNS (QPS)	230,000	230,000	350,000	350,000
HDD	1 TB	1 TB	1 TB	1 TB
Memory	32 GB	32 GB	64 GB	64 GB
Management Ports	2 × USB Port, 1 × MGT, 1 × HA, 1 × Serial Port (RJ45)	2 × USB Port, 1 × MGT, 1 × HA, 1 × Serial Port (RJ45)	2 × USB Port, 1 × MGT, 1 × HA, 1 × Serial Port (RJ45)	2 × USB Port, 1 × MGT, 1 × HA, 1 × Serial Port (RJ45)
GE Ports	8 (includes 2 MGT ports), up to 24	8 (includes 2 MGT ports), up to 24	2 (includes 2 MGT ports), up to 34 ports with expansion modules	2 (includes 2 MGT ports), up to 34 ports with expansion modules
GE Ports(SFP)	0, up to 16 with expansion module	0, up to 16 with expansion module	0, up to 32 with expansion module	0, up to 32 with expansion module
10GE(SFP+)	0, up to 8 with expansion module	0, up to 8 with expansion module	0, up to 16 with expansion module	0, up to 16 with expansion module
40GE Ports(QSFP+)	0	0	0, up to 8 with expansion module	0, up to 8 with expansion module
Available Slots for Expansion Modules	2	2	4	4
Expansion Module Option	IOC-AX-4GE-B, IOC-AX-4SFP, IOC-AX-8GE-B, IOC-AX-8SFP, IOC-AX-4GE4SFP, IOC-AX-2SFP+, IOC-AX-4SFP+	IOC-AX-4GE-B, IOC-AX-4SFP, IOC-AX-8GE-B, IOC-AX-8SFP, IOC-AX-4GE4SFP, IOC-AX-2SFP+, IOC-AX-4SFP+	IOC-AX-4GE-B-H, IOC-AX-4SFP-H, IOC-AX-8GE-B-H, IOC-AX-8SFP-H, IOC-AX-4GE4SFP-H, IOC-AX-2SFP++H, IOC-AX-4SFP++H, IOC-AX-2QSFP++H	IOC-AX-4GE-B-H, IOC-AX-4SFP-H, IOC-AX-8GE-B-H, IOC-AX-8SFP-H, IOC-AX-4GE4SFP-H, IOC-AX-2SFP++H, IOC-AX-4SFP++H, IOC-AX-2QSFP++H
Power Supply	Dual AC, 100-240V, redundant hot-swappable	Dual AC, 100-240V, redundant hot-swappable	Dual AC, 100-240V, redundant hot-swappable	Dual AC, 100-240V, redundant hot-swappable
Frequency	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz
Average Power	350W	350W	550W	550W
Height	2U	2U	2U	2U
Dimension (W×D×H)	16.9 x 19.7 x 3.5 in (430 x 500 x 88 mm)	16.9 x 19.7 x 3.5 in (430 x 500 x 88 mm)	21.7 x 17.3 x 3.5 in (550 x 440 x 88mm)	21.7 x 17.3 x 3.5 in (550 x 440 x 88mm)
Net Weight	26.5 lb (12 kg)	28.7 lb (13 kg)	50.7 lb (23 kg)	52.9 lb (24 kg)
Gross Weight	35.3 lb (16 kg)	37.5 lb (17 kg)	61.7 lb (28 kg)	63.9 lb (29 kg)
Operating Temperature	32 ~ 104 °F (0 ~ 40 °C)	32 ~ 104 °F (0 ~ 40 °C)	32 ~ 104 °F (0 ~ 40 °C)	32 ~ 104 °F (0 ~ 40 °C)
Storage Temperature	-40 ~ 158 °F (-40 ~ 70 °C)	-40 ~ 158 °F (-40 ~ 70 °C)	-40 ~ 158 °F (-40 ~ 70 °C)	-40 ~ 158 °F (-40 ~ 70 °C)
Allowed Relative Humidity	5 ~ 85%, non-condensing	5 ~ 85%, non-condensing	5 ~ 90%, non-condensing	5 ~ 90%, non-condensing

Specifications

	SG-6000-AX4060	SG-6000-AX4060S	SG-6000-AX6060	SG-6000-AX6060S
				
L4 Throughput	80 Gbps	80 Gbps	120 Gbps	120 Gbps
L4 Connections/s	1.4 Million	1.4 Million	1.9 Million	1.9 Million
L7 HTTP Throughput	60 Gbps	60 Gbps	90 Gbps	90 Gbps
L7 HTTP Requests/s (RPS)	2.95 Million	2.95 Million	4 Million	4 Million
Concurrent Connections	40 Million	40 Million	60 Million	60 Million
RSA 2K SSL (TPS) ⁽¹⁾	170,000	190,000	260,000	260,000
RSA 2K SSL Throughput ⁽²⁾	9.5 Gbps	12 Gbps	13 Gbps	15 Gbps
SSL Acceleration Technology	Software	ASIC	Software	ASIC
DNS (QPS)	400,000	400,000	450,000	450,000
HDD	1 TB	1 TB	1 TB	1 TB
Memory	64 GB	64 GB	96 GB	96 GB
Management Ports	2 × USB Port, 1 × MGT, 1 × HA, 1 × Serial Port (RJ45)	2 × USB Port, 1 × MGT, 1 × HA, 1 × Serial Port (RJ45)	2 × USB Port, 1 × MGT, 1 × HA, 1 × Serial Port (RJ45)	2 × USB Port, 1 × MGT, 1 × HA, 1 × Serial Port (RJ45)
GE Ports	2 (includes 2 MGT ports), up to 34 ports with expansion modules	2 (includes 2 MGT ports), up to 34 ports with expansion modules	2 (includes 2 MGT ports), up to 34 ports with expansion modules	2 (includes 2 MGT ports), up to 34 ports with expansion modules
GE Ports(SFP)	0, up to 32 with expansion module	0, up to 32 with expansion module	0, up to 32 with expansion module	0, up to 32 with expansion module
10GE(SFP+)	0, up to 16 with expansion module	0, up to 16 with expansion module	0, up to 16 with expansion module	0, up to 16 with expansion module
40GE Ports(QSFP+)	0, up to 8 with expansion module	0, up to 8 with expansion module	0, up to 8 with expansion module	0, up to 8 with expansion module
Available Slots for Expansion Modules	4	4	4	4
Expansion Module Option	IOC-AX-4GE-B-H, IOC-AX-4SFP-H, IOC-AX-8GE-B-H, IOC-AX-8SFP-H, IOC-AX-4GE4SFP-H, IOC-AX-2SFP+H, IOC-AX-4SFP+H, IOC-AX-2QSFP+H	IOC-AX-4GE-B-H, IOC-AX-4SFP-H, IOC-AX-8GE-B-H, IOC-AX-8SFP-H, IOC-AX-4GE4SFP-H, IOC-AX-2SFP+H, IOC-AX-4SFP+H, IOC-AX-2QSFP+H	IOC-AX-4GE-B-H, IOC-AX-4SFP-H, IOC-AX-8GE-B-H, IOC-AX-8SFP-H, IOC-AX-4GE4SFP-H, IOC-AX-2SFP+H, IOC-AX-4SFP+H, IOC-AX-2QSFP+H	IOC-AX-4GE-B-H, IOC-AX-4SFP-H, IOC-AX-8GE-B-H, IOC-AX-8SFP-H, IOC-AX-4GE4SFP-H, IOC-AX-2SFP+H, IOC-AX-4SFP+H, IOC-AX-2QSFP+H
Power Supply	Dual AC, 100-240V, redundant hot-swappable	Dual AC, 100-240V, redundant hot-swappable	Dual AC, 100-240V, redundant hot-swappable	Dual AC, 100-240V, redundant hot-swappable
Frequency	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz
Average Power	550W	550W	550W	550W
Height	2U	2U	2U	2U
Dimension (W×D×H)	21.7 x 17.3 x 3.5 in (550 x 440 x 88mm)	21.7 x 17.3 x 3.5 in (550 x 440 x 88mm)	21.7 x 17.3 x 3.5 in (550 x 440 x 88mm)	21.7 x 17.3 x 3.5 in (550 x 440 x 88mm)
Net Weight	50.7 lb (23 kg)	52.9 lb (24 kg)	50.7 lb (23 kg)	52.9 lb (24 kg)
Gross Weight	61.7 lb (28 kg)	63.9 lb (29 kg)	61.7 lb (28 kg)	63.9 lb (29 kg)
Operating Temperature	32 ~ 104 °F (0 ~ 40 °C)	32 ~ 104 °F (0 ~ 40 °C)	32 ~ 104 °F (0 ~ 40 °C)	32 ~ 104 °F (0 ~ 40 °C)
Storage Temperature	-40 ~ 158 °F (-40 ~ 70 °C)	-40 ~ 158 °F (-40 ~ 70 °C)	-40 ~ 158 °F (-40 ~ 70 °C)	-40 ~ 158 °F (-40 ~ 70 °C)
Allowed Relative Humidity	5 ~ 90%, non-condensing	5 ~ 90%, non-condensing	5 ~ 90%, non-condensing	5 ~ 90%, non-condensing

Specifications (Continued)

	SG-6000-AX02	SG-6000-AX04	SG-6000-AX08	SG-6000-AX12
CPU	2 Core	4 Core	8 Core	12 Core
HDD (min., max.)	20 GB, 1 TB	20 GB, 1 TB	20 GB, 1 TB	20 GB, 1 TB
Memory	4 GB	8 GB	16 GB	24 GB
Maximum Interfaces	10	10	10	10
L4 Throughput (SRIOV)	5 Gbps	10 Gbps	20 Gbps	30 Gbps
L4 Throughput (VMXNet3)	2 Gbps	2 Gbps	2 Gbps	2 Gbps
L7 HTTP Throughput (SRIOV)	4 Gbps	7.5 Gbps	15 Gbps	22 Gbps
L7 HTTP Throughput (VMXNet3)	2 Gbps	2 Gbps	2 Gbps	2 Gbps
L4 Connections/s	120,000	160,000	400,000	550,000
L7 HTTP Connections/s	60,000	150,000	300,000	450,000
Concurrent Connections	1 Million	3 Million	6 Million	9 Million
ECDHE RSA 2K SSL (TPS) ⁽¹⁾	3,000	4,000	5,000	14,000
ECDHE RSA 2K SSL Throughput ⁽²⁾	300 Mbps	800 Mbps	1.5 Gbps	3 Gbps

Module Options

Module	IOC-AX-4GE-B	IOC-AX-4SFP	IOC-AX-8GE-B	IOC-AX-8SFP	IOC-AX-4GE4SFP
I/O Ports	4 × GE Bypass Ports	4 × SFP Ports	8 × GE Bypass Ports	8 × SFP Ports	4 × GE and 4 × SFP Ports
Dimension	1U (Occupies 1 generic slot)	1U (Occupies 1 generic slot)	1U (Occupies 1 generic slot)	1U (Occupies 1 generic slot)	1U (Occupies 1 generic slot)
Weight	0.33 lb (0.15 kg)	0.33 lb (0.15 kg)	0.55 lb (0.25 kg)	0.55 lb (0.25 kg)	0.55 lb (0.25 kg)

Module	IOC-AX-2SFP+	IOC-AX-4SFP+	IOC-AX-4GE-B-H	IOC-AX-4SFP-H	IOC-AX-8GE-B-H
I/O Ports	2 × SFP+ Ports	4 × SFP+ Ports	4 × GE Bypass Ports	4 × SFP Ports	8 × GE Bypass Ports
Dimension	1U (Occupies 1 generic slot)	1U (Occupies 1 generic slot)	1U (Occupies 1 generic slot)	1U (Occupies 1 generic slot)	1U (Occupies 1 generic slot)
Weight	0.33 lb (0.15 kg)	0.44 lb (0.2 kg)	0.33 lb (0.15 kg)	0.33 lb (0.15 kg)	0.55 lb (0.25 kg)

Module	IOC-AX-8SFP-H	IOC-AX-4GE4SFP-H	IOC-AX-2SFP+-H	IOC-AX-4SFP+-H	IOC-AX-2QSFP+-H
I/O Ports	8 × SFP Ports	4 × GE and 4 × SFP Ports	2 × SFP+ Ports	4 × SFP+ Ports	2 × QSFP+ Ports
Dimension	1U (Occupies 1 generic slot)	1U (Occupies 1 generic slot)	1U (Occupies 1 generic slot)	1U (Occupies 1 generic slot)	1U (Occupies 1 generic slot)
Weight	0.55 lb (0.25 kg)	0.55 lb (0.25 kg)	0.33 lb (0.15 kg)	0.44 lb (0.2 kg)	N/A

NOTES:

(1) In the test, Transaction Per TCP Connection uses Maximum Possible;

(2) The RSA key length is 2048Bit, and the encryption suite is AES256-SHA256.