

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

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

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 and NIPS 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

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

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 SNTP, 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 | SG-6000-AX4060 | SG-6000-AX4060S |
|---|--|--|--|--|--|--|
| L4 Throughput | 20 Gbps | 20 Gbps | 40 Gbps | 40 Gbps | 80 Gbps | 80 Gbps |
| L4 Connections/s | 450,000 | 450,000 | 900,000 | 900,000 | 1.35 Million | 1.35 Million |
| L7 HTTP Throughput | 15 Gbps | 15 Gbps | 30 Gbps | 30 Gbps | 60 Gbps | 60 Gbps |
| L7 HTTP Connections/s | 320,000 | 320,000 | 650,000 | 650,000 | 1 Million | 1 Million |
| Concurrent Connections | 15 Million | 15 Million | 30 Million | 30 Million | 30 Million | 30 Million |
| ECDHE RSA 2K SSL (TPS) ⁽¹⁾ | 30,000 | 50,000 | 40,000 | 90,000 | 60,000 | 90,000 |
| ECDHE RSA 2K SSL Throughput ⁽²⁾ | 2 Gbps | 2.5 Gbps | 3 Gbps | 4.5 Gbps | 5 Gbps | 8 Gbps |
| SSL Acceleration Technology | Software | ASIC | Software | ASIC | Software | ASIC |
| DNS (QPS) | 230,000 | 230,000 | 320,000 | 320,000 | 360,000 | 360,000 |
| HDD | 1 TB | 1 TB | 1 TB | 1 TB | 1 TB | 1 TB |
| Memory | 32 GB | 32 GB | 64 GB | 64 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) | 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 | 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 | 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 | 0, up to 16 with expansion module | 0, up to 16 with expansion module |
| Available Slots for Expansion Modules | 2 | 2 | 4 | 4 | 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 | 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 | 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 | 50/60 Hz | 50/60 Hz |
| Average Power | 350W | 350W | 550W | 550W | 550W | 550W |
| Height | 2U | 2U | 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) | 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) | 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) | 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) | 32-104 °F (0-40 °C) | 32-104 °F (0-40 °C) |
| Allowed Relative Humidity | 5 ~ 85%, non-condensing | 5 ~ 85%, non-condensing | 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 | 80,000 | 200,000 | 400,000 | 600,000 |
| L7 HTTP Connections/s | 60,000 | 150,000 | 300,000 | 450,000 |
| Concurrent Connections | 1 Million | 3 Million | 6 Million | 8 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.