haltdos

HALTDOS CANARY TECHSPECS

Base Models	HD-CAN-550	HD-CAN-1100	HD-CAN-4100	HD-CAN-4600
MITIGATION PERFORMANCE				
L4 Throughput	upto 500 Mbps	upto 1 Gbps	upto 5 Gbps	upto 24 Gbps
L7 Throughput	upto 500 Mbps	upto 1 Gbps	upto 4 Gbps	upto 25 Gbps
SSL Throughput	500 Mbps	1 Gbps	4 Gbps	20 Gbps
Compression Throughput	500 Mbps	1 Gbps	4 Gbps	20 Gbps
Decompression Throughput	500 Mbps	1 Gbps	5 Gbps	20 Gbps
SSL/TLS Connections per Second	10K (RSA 2K) 5K (ECC)	22K (RSA 2K) 15K (ECC)	22K (RSA 2K) 15K (ECC)	40K (RSA 2K) 25K (ECC)
L4 Connection per Second	320 K	400 K	600 K	1.5 M
L7 Request per Second	250 K	500 K	1 M	3 M
Max Concurrent Connections	7 M	12 M	24 M	32 M
Induced Latency	< 1 ms			
HARDWARE SPECS				
Processor	Intel Xeon	Intel Xeon	Intel Xeon	Intel Xeon
CPU Cores	6	8	8	20
Memory	8 GB	16 GB	16 GB	32 GB
Hard Disk	128 GB SSD	128 GB SSD	256 GB SSD	256 GB SSD
	Option available for RAID or dual partition			
Additional Specs	Built-in TPM Chip and Hardware HSM for SSL offloading & compression optimization Option available for FIPS-140-2 (additional charge) or Non-FIPS compliant HSM			
Form Factor	1U/2U Rack Mount Server (19 inch mounting) with panel indicators			
Power Supply	Redundant Power Supply (Hot Swappable) AC 170-240V, 50 Hz			
Operating Temperature	0° – 40° C			
Humidity	8% - 95% (non-condensing)			
Virtual ADC Supported	NA	NA	NA	upto 15
	Hard Disk and Memory can be customized over the base model			
INSPECTION PORTS				
1 GE Ports	4	8	8	8
10 GE Ports	-	-	-	2
25 GE Ports	-	-	-	-
40 GE Ports	-	-	-	-
100 GE Ports	-	-	-	-
	No. of ports can be customized over the base model			
OUT OF BAND PORTS				
1 GE (RJ-45) Ports	1	2	2	2
Console (RS232/RJ45) Ports	-	1	1	1
HA Ports (RJ-45/SFP/SFP+)	1	1	1	1
Input/Output (USB)	2	2	2	2

Base Models	HD-CAN-5100	HD-CAN-5400	HD-CAN-6200	HD-CAN-6700
MITIGATION PERFORMANCE				
L4 Throughput	upto 48 Gbps	upto 72 Gbps	upto 120 Gbps	upto 150 Gbps
L7 Throughput	upto 40 Gbps	upto 60 Gbps	upto 100 Gbps	upto 120 Gbps
SSL Throughput	40 Gbps	50 Gbps	100 Gbps	200 Gbps
Compression Throughput	24 Gbps	37 Gbps	66 Gbps	132 Gbps
Decompression Throughput	30 Gbps	54 Gbps	120 Gbps	240 Gbps
SSL/TLS Connections per Second	40K (RSA 2K) 25K (ECC)	95K (RSA 2K) 48K (ECC)	95K (RSA 2K) 48K (ECC)	190K (RSA 2K) 96K (ECC)
L4 Connection per Second	1.5 M	2 M	4 M	4.2 M
L7 Request per Second	7 M	10 M	15 M	18 M
Max Concurrent Connections	56 M	96 M	160 M	192 M
Induced Latency	< 1 ms			
HARDWARE SPECS				
Processor	Intel Xeon	Intel Xeon	Intel Xeon	Intel Xeon
CPU Cores	32	40	64	64
Memory	64 GB	128 GB	256 GB	512 GB
Hard Disk	512 GB SSD	1 TB SSD	2 TB SSD	2 TB SSD
	Option available for RAID or dual partition			
Additional Specs	Built-in TPM Chip and Hardware HSM for SSL offloading & compression optimization. Option available for FIPS-140-2 (additional charge) or Non-FIPS compliant HSM			
Form Factor	1U/2U/4U Rack Mount Server (19- inch mounting) with panel indicators			
Power Supply	Redundant Power Supply (Hot Swappable) AC 170-240V, 50 Hz			
Operating Temperature	0° – 40° C			
Humidity	8% – 95% (non-condensing)			
Virtual ADC Supported	upto 25	upto 30	upto 50	upto 50
	Hard Disk and Memory can be customized over the base model			
INSPECTION PORTS				
1 GE Ports	-	-	-	-
10 GE Ports	4	8	8	8
25 GE Ports	-	-	-	2
40 GE Ports	2	2	4	-
100 GE Ports	-	-	-	2
	No. of ports can be customized over the base model			
OUT OF BAND PORTS				
1 GE (RJ-45) Ports	2	2	2	2
Console (RS232/RJ45) Ports	1	1	1	1
HA Ports (RJ-45/SFP/SFP+)	1	1	1	1

TECHNOLOGY, CERTIFICATION & SUPPORT	
Platform	Haltdos Platform – hdPlatform (EAL 2+ Certified)
Technology	Signature with Threat Intelligence, Machine Learning
License	Unlimited applications. Bandwidth capping on provided license. Upgrade possible without hardware replacement upto max supported bandwidth on hardware
Additional Licenses	Optional license for LLB & DNS Firewall
Certification	FCC, ROHS, CE compliant, Common Criteria EAL 2+
Support	24x7 Support with dedicated Account Manager
Warranty	1-year software and hardware maintenance. Additional changes for extended warranty
TAC Support	TAC support in India

OPERATION MODE	
Network Operations	Inline Reverse Proxy, Inline Forward Proxy, Inline Bridge, Inline Router Mode, Inline L2 Transparent, Offline
Inline Modes	Proxy or Direct Server Return
Deployment Modes	1-Arm or n-Arm
Binding	Immediate or Delayed binding
IP Stack	Dual IPv4 & IPv6 stack
HTTP Protocols	HTTP 0.9/1.0/1.1/2.0/3.0 (QUIC) with translation
Port Mirroring	Mirror traffic / specific traffic to another NIC port
Web Socket Support	Yes
Virtual Matrix Architecture	Yes
Direct Access Mode	Yes
Mitigation Modes	Bypass, Record (Report Only), Learning, Mitigation (Block and Report)
Dynamic Routing Protocols	BGP, OSPF, RIP v1, RIP v2
Networking	Support for VLAN, Link Aggregation & Trunking (LACP). ARP Table, multiple Routing Tables, etc
Block Actions	Drop Request, Terminate Connection or Session, Blacklist (temporary or permanent), Send Challenge (Captcha, JavaScript), Rate Limiting or Tarpit

HIGH AVAILABILITY	
Multiple Appliances	N + 1 Active - Active or Active – Passive (VRRP) with floating MAC
Management Modes	Standalone / Centralized Management (VM or appliance) with Haltdos Hawk
Secure Communication	Secure communication between centralized management and HA appliances for full state synchronization

INTEGRATION FEATURES	
Custom Threat Intel	Integration with 3rd party Threat Intelligence (TI) feeds
Storage and Export	Local retention of logs, reports and events. Support for export to 3rd party storage
NIMS Integration	Support for SNMP, NTP / SNTP, DNS, Web Proxy integration
3rd Party Integration	Notification & Logging via SNMP, SMTP, SMS Gateway and 3rd party integration via API hooks, CI/CD, Kubernetes
SIEM Integration	Support for integration with SIEM and Syslog services
AAA Integration	Support for integration via RADIUS and TACACS+
Identity Management	Inbuilt with support for integration with AD / SAML / LDAP
Security Tools Integration	Support for integration with SAST/DAST/IAST tools
Export IOCs	Support for exporting attacking IOCs via STIX / TAXII

MANAGEMENT FEATURES	
Graphical User Interface (GUI)	Secure web interface over HTTPs with support for all modern browsers
Command Line Interface (CLI)	Command Line Interface over SSH or console port
API Integration	Yes (XML or JSON)
System Management	IPMI 2.0 Compliant
Audit Trail, Logging & Recovery	Centralized logging of system, services, MIS, incidents. Built-in MIS with policy recovery
Dashboards	Real-Time & historical dashboards with custom duration. Support for custom dashboards
System Status Dashboard	Status dashboard for 1-click health check
Reporting	Periodic daily, weekly or monthly reports in PDF or Excel
RBAC Administration	Configurable user profiles with role-based access control
Backup & Restore	Automatic or manual backup and restore. CLI tool for pushing current snapshot to Haltdos Cloud for diagnostics
Snapshots & Cloud Sync	Automatic and/or manual policy snapshot for diagnosis, policy creation & enforcement using AI/ML via Haltdos cloud
Policy Management	On the fly configuration updates on mitigation appliances
Certificate Management	SSL certificate management with support for Let's Encrypt certificate generation
Events / Alerts	Detailed event and alert reporting on attack, health, etc.
Network Forensic	Network forensic with packet capture and traceroute
Attack Forensic	Built-in utilities for investigating attackers, attack payloads and identifying false positives.
Haltdos Threat Stream	Periodic threat intel updates (Signatures, Geo IP, Bad IP, TOR IP, Anon Proxy, etc.) from Haltdos
Updates	Update and upgrade management on version releases and patch updates from Haltdos. Support for multiple OS Templates

ADC FEATURES	
Enforce RFC Compliance	Protection against invalid HTTP requests
NAT & Routing	Support for client, server or full NAT, static routing for IPv4 & IPv6
SSL/TLS Management	Support for SSL v2/v3, TLS 1.0/1.1/1.2/1.3 offloading (and re-encryption) with custom cipher suites. Client certificate-based authentication also supported, proxy SSL/TLS connections. Conditional SSL offloading by SRC, DST, SNI etc.
Load Balancing	Layer 4 (TCP, UDP, Mail, etc.) and Layer 7 (HTTP, DNS, etc.) supported
Advanced Load Balancing	Content based load balancing with upstream rules
Load Balancing Algorithms	Round robin (RR), weighted round robin, minimum misses, persistent hash, tuneable hash, least connections, least response time, least bandwidth, SNMP metrics such as CPU, RAM, etc.
Network Optimization	Support for TCP buffering, multiplexing & optimization, connection pools, TCP keep alive & timeouts
HTTP Optimization	Support for content compression (gzip or brotili) and caching. Content minification and acceleration for mobile clients
Virtual Contexts	Support for multiple virtual contexts along with resource allocation
Failover Management	Automatic failover & recovery. Support for marking servers up / down / backup
Health Check	Periodic server or server group health check and alerting via TCP, SSL, ICMP, SNMP, HTTP, DNS or custom script
Client Visibility	Embedding Real IP information in X-* headers, client cert information, etc
Redirection Rules	REGEX based redirection rules to rewrite URLs
Variable Rules	Support for embedding and using variables for A/B testing or custom load balancing
Script Rules	Embedding user defined custom code for advanced routing
Error Handling	Error rules for custom error handling
Content Transformation	Transformation rules for data manipulation and Header rules for add / edit or delete headers in request or response
End-User Fingerprinting & Monitoring	Advanced user and device fingerprinting for user profiling and Real User Metrics (RUM) for performance monitoring
DDoS Protection	Protection against volumetric and low & slow DDoS attacks. Support for rate limiting based on connections and requests
Compliance	PCI-DSS 2.0 section 6.6, HIPAA, SOC2, GDPR, enforcement
API Security	Built-in API gateway for authentication, rate limiting, transformation, documentation and discovery
Authentication	Support for Single SignOn with multiple Auth type like Basic Auth, Form Auth, NTLM, LDAP, SAML, etc.
Forwarding Rule	Support traffic chaining, decrypt traffic forwarding to one or more devices

WAF FEATURES	
Comprehensive Security	OWASP Top 10 Web Application Security Risks, OWASP Top 20 Automated Threats and SANS 25 Software Errors
Security Profiles	Multiple security profiles with support for different security status per application based on url, source, country, regex, etc.
Positive Security Model	Support for Form Rules for positive security model
Negative Security Model	Support for user defined Firewall Rules for REGEX based negative security model

Virtual Patching	Support for virtual patching through built-in web security scanner or upload of 3rd party SAST / DAST / IAST scan results
Built-in Signatures	Over 4000+ built-in signatures on various technologies, platforms and frameworks with pre-defined templates.
0-day Protection	Automatic learning and profiling application structure. Threat scoring and baseline creation for AI driven 0-day attack protection
Malicious Source Protection	Protection against TOR IP, Bad Reputation IP, dark IP, known Bots, proxies, spammers provided by Haltdos or user defined threat intel
Bot Management	Anti-bot protection with AI classification and scoring of bots based on advanced browser fingerprinting
Anti-Automation Protection	Protection against known and 0-day bots, account takeover attempts, brute force attempts, scraping, reconnaissance, cloaking, etc
Mobile App Protection	Anti-Bot mobile SDK for Android & iOS for protecting mobile apps and communication between apps and web APIs
AV Scanning	Built-in AV scanner for malicious file upload. Support for ICAP integration for 3rd party scanners
Minimize False Positives	Support for REGEX based whitelist rules and signature staging and deploy policies to minimize signature based false positives
HTTP Validations	Protocol validations, request normalization (encoding & evasion techniques) before inspection, managing security headers and cookies etc.
Policy Inspection	Policy validation such as HTTP methods, file extension, request size, etc
Blacklist / Whitelist	Support for temporary or permanent Blacklisting and Whitelisting based on IP, IP prefix, url, country, etc
Captcha Challenge	Support for JS or captcha challenge on suspicious user activity or known bots or malicious IPs
Rate Limiting	Rate Limit rules for implementing request, bandwidth or connection limits per source, IP prefix or user defined policy
API & WebSocket Protection	Built-in XML firewall, validation of XML / JSON /SOAP/GraphQL/ Ajax /REST API requests and WebSocket requests
Security Breach Prevention	Built-in support for data leak prevention, response filtering for sensitive personal identifiable information
Tamper Proofing	Tamper rules for URL / parameter tamper protection, website defacement, hidden form field protection, cookie signing and encryption, etc.
Correlation Engine	Advanced correlation engine with support for custom correlation rules for detecting attack across user requests and sessions
Variables & Scripting	Support for user defined variables and scripts for building custom application specific security policy
Deception Technology	Implement decoys in web application to protect against advanced bots, profile attacks and trap attackers
Sensitive Data Masking	Support for Log Rules for masking sensitive information such as passwords in logs and events
Enforced Browsing	Protection against forceful browsing, access to predictable resources, unauthorized navigation with additional security enforcement with Two factor authentication (2FA)
Misc. Protection	Support for protection against buffer overflow attacks, man-in-the-middle attacks, blocking malware payload, buffer overflow, SQL, SSI, LDAP injection, etc.

LLB FEATURES (ADDITIONAL LICENSING)

Load Balancing & Path Selection	Round robin (RR), weighted round robin, minimum packet loss, persistent hash, tuneable hash, least connections, least response time, least bandwidth, etc. Path selection based on jitter, packet loss, latency, etc.
NAT Rules	Support for static NAT, dynamic NAT, SNAT, DNAT, PAT, Full NAT
Health Monitoring	Link monitoring with instant failover (<1s). Support for TCP, HTTP, DNS, ICMP or script-based monitoring. Multiple monitors with AND / OR combination
Routing Rules	Custom rules for Static and Policy based routing
Dual Stack Lite	Support for NAT 46 / 64 and DNS 46 / 64 with DNS Proxy
Traffic Shaping	Traffic shaping and QoS on inbound and outbound links

GSLB FEATURES (ADDITIONAL LICENSING)

Global Load Balancing	Routing traffic across multiple data centers based on health checks
WAN Load Balancing	Outbound WAN link selection based on link health
Load Balancing Algorithms	Support for Least connection, Proximity, Round Robin, Weighted RR, Persistent Hash, Geo, etc.
Operation Mode	Option for Authoritative or Recursive operational modes with support for various DNS record types such as A, AAAA, MX, TXT, PTR, etc.
Routing Rules	Custom rules for Static and Policy based routing
Network Mode	Support DNS over HTTP, UDP, TCP & SSL as well as DNSSEC
DNS Firewall	Protecting DNS infrastructure from bot attacks, data exfiltration attacks, RPZ policy
Blacklist / Whitelist	Support for permanent Blacklisting and Whitelisting based on IP, IP prefix, domain, country, etc.
Custom Signatures	Support for user defined custom rules with support for pattern, suffix, domain, etc.

DDOS FEATURES (ADDITIONAL LICENSING)

Comprehensive Protection	Layer 3 to Layer 7 protection covering Network, Protocol, Application, Reflection / Amplification and 0-day DDoS attacks
DDoS Detection & Mitigation	Attack detection & mitigation in less than 18s and 10s respectively
Block Actions	Drop Packet, Terminate Connection (RST), Blacklist (temporary or permanent), Send Challenge (TCP, HTTP, DNS), Rate Limiting
Hybrid DDoS Integration	Support for integration with Haltdos Cloud Scrubbing or ISP clean pipe services
Bi-Directional	Support for both inbound and outbound traffic protection
Deep Packet Inspection	Protection against malformed packets (TCP, UDP, ICMP, Ping of death, DNS, HTTP, SIP, SNMP, IPv4, IPv6, Fragmented packets, etc.)
Enforce RFC Compliance	Protection against misbehaving clients sending invalid or out of state packets
Bot Protection	Automatic detection and blocking of bot traffic with support for manual bot policy
Behaviour Analysis	Network behaviour analysis for anomaly detection and packet scoring technology
Multiple Security Profiles	Support for multiple security profiles for enforcing different policy for different sub-networks (Src, Dst IP Prefix, VLAN). Default Global security profile
Port Mirroring	Mirror traffic / specific traffic to another NIC port
Rate Limit & QoS Management	Rate limit capability for bandwidth and QoS management with option for rate limit of specific traffic (based on proto, src, dst, etc.)
Blacklist / Whitelist	Support for temporary or permanent Blacklisting and Whitelisting based on IP, IP prefix, domain, country, etc.
Malicious Source Protection	Protection against TOR IP, Bad Reputation IP / domain, dark IP, malicious Bots, proxies, resolvers, etc
Custom Signatures	Support for user defined custom rules with support for REGEX and byte matching
SYN Flood Protection	TCP SYN flood protection with SYN Proxy and connection aging
Challenge & Response	Support for TCP, HTTP, DNS challenge and response for validation of traffic from suspicious sources
Connection Based Protection	Protection against TCP connection DDoS attacks such as sockstress, connection / src, zombie flood, SSL renegotiations, etc
DNS Protection	Built-in DNS firewall capability for protecting DNS infrastructure against DNS DDoS attacks (Water Torture, NXDomain, etc.)
L7 DDoS Protection	Protection against low & slow attacks such as Slowloris, R.U.D.Y., slow HTTP GET / POST, etc
Machine Learning Protection	Automatic learning counter measures and dynamic signature creation upon attack detection
Signatures for Known Vulnerabilities	Built-in rules for known vulnerabilities (server, web, mail, FTP, SIP, SQL, DNS, IPS Signatures etc.)

VPN FEATURES (ADDITIONAL LICENSING)

HTTP Protocols	HTTP 0.9/1.0/1.1/2.0 with translation
SSL/TLS Management	Support for SSL v2/v3, TLS 1.0/1.1/1.2/1.3 offloading (and re-encryption) with custom cipher suites. Client certificate-based authentication also supported, proxy SSL/TLS connections
Dynamic Routing Protocols	BGP, OSFP, RIP v1, RIP v2
Networking	Support for VLAN, Link Aggregation & Trunking (LACP)
Client Support	Support for Windows, Linux, Mobile Apps (Android or iOS), Web (Java Applet)
Authentication	Password, SAML / AD / LDAP / SSO, AAA, OAuth, MDM parameters (CPU, HDD, MAC, etc), 3rd Party (via Webhooks)
NAT & Routing	Support for client, server or full NAT, static routing for IPv4 & IPv6
User Grouping	Support for creating multiple users, user groups with fine grained access to different part of network and/or services
Dual Stack Lite	Support for NAT 46 / 64 and DNS 46 / 64 with DNS Proxy

HARDWARE FLEXIBILITY

Haltdos appliances are built on a common hardware platform with flexibility in mind. The appliances can be extended to provide remote, out-of-band management and monitoring, performance acceleration, and more with expansion modules

Expansion Module includes:

- Network Cards (copper or optical)
- Hardware Security Module (HSM) (non-FIPS and FIPS-140-2)
- SSL acceleration card
- Hard Disk & RAM

NIC Cards

Part Code	Description	Copper/Fiber	Hardware Bypass
HD-NIC-1x4C	Quad Port 1 Gbps	Copper	No
HD-NIC-1x4CB	Quad Port 1 Gbps	Copper	Yes
HD-NIC-1x4F	Quad Port 1 Gbps	Fiber (Single / Multi-Mode)	No
HD-NIC-10x2C	Dual Port 10 Gbps	Copper	No
HD-NIC-10x2CB	Dual Port 10 Gbps	Copper	Yes
HD-NIC-10x2F	Dual Port 10 Gbps	Fiber (Single / Multi-Mode)	No
HD-NIC-10x2FB	Dual Port 10 Gbps	Fiber (Single / Multi-Mode)	Yes
HD-NIC-10x4F	Quad Port 10 Gbps	Fiber (Single / Multi-Mode)	No
HD-NIC-10x4FB	Quad Port 10 Gbps	Fiber (Single / Multi-Mode)	Yes
HD-NIC-25x2F	Dual Port 25 Gbps	Fiber (Single / Multi-Mode)	No
HD-NIC-25x2FB	Dual Port 25 Gbps	Fiber (Single / Multi-Mode)	Yes
HD-NIC-25x4F	Quad Port 25 Gbps	Fiber (Single / Multi-Mode)	No
HD-NIC-25x4FB	Quad Port 25 Gbps	Fiber (Single / Multi-Mode)	Yes
HD-NIC-40x2F	Dual Port 40 Gbps	Fiber (Single / Multi-Mode)	No
HD-NIC-40x2FB	Dual Port 40 Gbps	Fiber (Single / Multi-Mode)	Yes
HD-NIC-40x4F	Quad Port 40 Gbps	Fiber (Single / Multi-Mode)	No
HD-NIC-40x4FB	Quad Port 40 Gbps	Fiber (Single / Multi-Mode)	Yes
HD-NIC-100x2F	Dual Port 100 Gbps	Fiber (Single / Multi-Mode)	No
HD-NIC-100x2FB	Dual Port 100 Gbps	Fiber (Single / Multi-Mode)	Yes
HD-NIC-100x4F	Quad Port 100 Gbps	Fiber (Single / Multi-Mode)	No
HD-NIC-100x4FB	Quad Port 100 Gbps	Fiber (Single / Multi-Mode)	Yes

SSL Cards

Part Code	Throughput		SSL TPS	
HD-SSL-25G	SSL	25 Gbps	RSA	40
	Compression	20 Gbps	ECC	25K
HD-SSL-50G	SSL	50 Gbps	RSA	95K
	Compression	37 Gbps	ECC	48K

RAM

HD-RAM-8G	8 GB DDR4 RAM
HD-RAM-16G	16 GB DDR4 RAM
HD-RAM-32G	32 GB DDR4 RAM
HD-RAM-64G	64 GB DDR4 RAM

Hard Disk

HD-DSK-128G-SSD	128 GB SSD Hard Disk
HD-DSK-256G-SSD	256 GB SSD Hard Disk
HD-DSK-512G-SSD	512 GB SSD Hard Disk
HD-DSK-1T-SSD	1 TB SSD Hard Disk
HD-DSK-1T-HDD	1 TB HDD Hard Disk
HD-DSK-2T-HDD	2 TB HDD Hard Disk
HD-DSK-4T-HDD	4 TBHDD Hard Disk