



## HALTDOS CANARY TECHSPECS

Base Models	HD-CAN-550	HD-CAN-1100	HD-CAN-4100	HD-CAN-4600
<b>MITIGATION PERFORMANCE</b>				
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 20 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	480 K	960 K
L7 Request per Second	250 K	500 K	750 K	3 M
Max Concurrent Connections	7 M	12 M	24 M	32 M
Induced Latency	< 1 ms			
<b>HARDWARE SPECS</b>				
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
Additional Specs	Option available for RAID or dual partition 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
<b>Hard Disk and Memory can be customized over the base model</b>				
<b>INSPECTION PORTS</b>				
1 GE Ports	4	8	8	8
10 GE Ports	-	-	-	2
25 GE Ports	-	-	-	-
40 GE Ports	-	-	-	-
100 GE Ports	-	-	-	-
<b>No. of ports can be customized over the base model</b>				
<b>OUT OF BAND PORTS</b>				
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
<b>MITIGATION PERFORMANCE</b>				
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	1.2 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			
<b>HARDWARE SPECS</b>				
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
Additional Specs	Option available for RAID or dual partition 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
<b>Hard Disk and Memory can be customized over the base model</b>				
<b>INSPECTION PORTS</b>				
1 GE Ports	-	-	-	-
10 GE Ports	4	8	8	8
25 GE Ports	-	-	-	2
40 GE Ports	2	2	4	-
100 GE Ports	-	-	-	2
<b>No. of ports can be customized over the base model</b>				
<b>OUT OF BAND PORTS</b>				
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
<b>TECHNOLOGY, CERTIFICATION &amp; SUPPORT</b>				
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			
<b>OPERATION MODE</b>				
Network Operations	Inline Reverse 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			
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, OSFP, RIP v1, RIP v2			
Networking	Support for VLAN, VxLAN, 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			
<b>HIGH AVAILABILITY</b>				
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			
<b>INTEGRATION FEATURES</b>				
Custom Threat Intel	Integration with 3 <sup>rd</sup> party Threat Intelligence (TI) feeds			
Storage and Export	Local retention of logs, reports and events. Support for export to 3 <sup>rd</sup> party storage			
NIMS Integration	Support for SNMP, NTP / SNTP, DNS, Web Proxy integration			
Notification Integration	Notification & Logging via SNMP, SMTP, SMS Gateway and 3 <sup>rd</sup> party integration via API hooks			
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			
Kubernetes Integration	Deployment as Ingress Controller with support for Nodeport & ClusterIP			
Container Plugin (OpenShift / Helm Chart)	Support for CNI, dynamic objects and namespaces. Orchestration through declarative syntax, multiple custom resources (IP, routes, virtual server, service, etc)			
<b>MANAGEMENT FEATURES</b>				
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 & Snapshots	Automatic or manual backup and restore. CLI tool for pushing current snapshot to HaltDOS Cloud for diagnostics			
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			
<b>ADC FEATURES</b>				
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			
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 brotli) 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 enforcement			
API Security	Built-in API gateway for authentication, rate limiting, transformation, documentation and discovery			
<b>WAF FEATURES</b>				
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 3 <sup>rd</sup> 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 Haltedos 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 3 <sup>rd</sup> 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 / Ajax 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
<b>LLB FEATURES (ADDITIONAL LICENSING)</b>	
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
<b>GSLB FEATURES (ADDITIONAL LICENSING)</b>	
Global Load Balancing	Routing traffic across multiple data centres 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
<b>DDoS FEATURES (ADDITIONAL LICENSING)</b>	
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 Haltedos 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, etc.)

Version: v7.0

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