DATASHEET

NSFOCUS

On-Premises DDoS Defenses

COMPREHENSIVE, MULTI-LAYERED DDOS PROTECTION

OVERVIEW

The flourishing development of Internet has brought convenience to people's lives, but at the same time it has also become a hotbed for nourishing DDoS attacks. The direct economic losses caused by DDoS attacks are increasing every year, seriously damaging enterprise revenue and reputation.

Rapidly growth compromised IoT devices promote DDoS attacks to show characteristics of high frequency, sophistication and variation. Meanwhile, DDoS attacks have been industrialized and weaponized. Attackers can easily subscribe to

SaaS services to initiate DDoS attacks at a very low cost.
A comprehensive and multi-layered DDoS protection must in place to ensure the service availability.

NSFOCUS' ON-PREMISES DEFENSES COMPONENTS

NETWORK TRAFFIC ANALYZER (NTA) - DETECTS DDOS ATTACKS

NTA is a DDoS detection appliance that identifies attacks via traffic flow monitoring

ANTI-DDOS SYSTEM (ADS) - MITIGATES DDOS ATTACKS

ADS is a stateless DDoS mitigation appliance that removes unwanted, malicious traffic

ANTI-DDOS SYSTEM MANAGER (ADS-M) - MANAGES COMPLETE SOLUTION

ADS-M is a multi-tenant management system providing centralized management and reporting. A web-based customer portal is also included.

CONCORDANT AND CLOSED LOOP DEFENSES

The NTA monitors network activity by receiving and analyzing xFlow data from border, core and/or edge routers. It uses an innovative, multi-stage DDoS detection engine with more than 30 vectors to accurately identify DDoS traffic from other traffic streams. Users can customize NTA alert plugins with specific signatures, to extend NTA detection capability. Also, the NTA can rely on machine learning to generate dynamic threshold baseline automatically. Multiple response actions are available, including BGP diversion, DDoS traffic diversion, Flowspec BGP, and Remotely Triggered Black Hole (RTBH).

When an ADS is added to the deployment, the ADS then comes under the direction of the NTA. The NTA communicates with the ADS, alerting it to the IP address(es) that are under DDoS attacks. The ADS next announces the border routers to divert traffic via BGP to the ADS where malicious traffic is discarded. It then re-injects legitimate traffic back into your network with extremely low latency and high accuracy.

The ADS-M real-time views are highly optimized for traffic monitoring, reporting, ease of use, and improved user experience. It provides centralized management of the ADS and NTA appliances as well as support for multiple, separate configuration and reporting domains for each customer.

KEY BENEFITS

Quick and easy deployment

Flexible, on-demand licensing model

Automatic hand-off with NSFOCUS Cloud Centers

Low latency from diversion to cloud mitigation

Increased visibility and traffic threshold monitoring

Versatile deployment options

Complete service provider ready solution

Lowest total cost of ownership (TCO)

KEY FEATURES

Automated or manual BGP redirection

GRE, VLAN, MPLS, PBR traffic re-injection

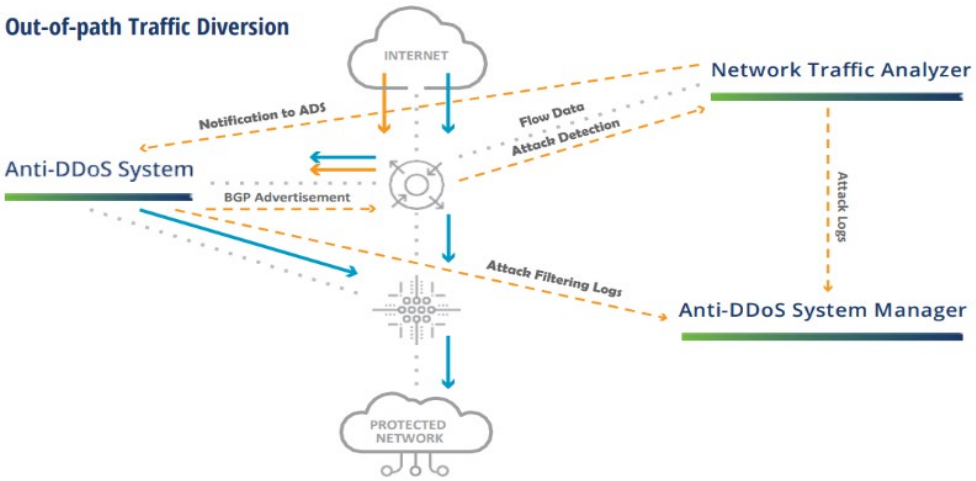
All-in-one solution, multi-tenancy enabled

Low false positives, high performance

Easy to integrate and cohabitate

Automated and reliable DDoS mitigation

Efficient and intelligent protection from the botnet-based attacks with NTI



INDUSTRY-LEADING ACCURACY AND PRECISE MITIGATION

With more than 20 years of internationally-recognized forefront protection research and combat experience, NSFOCUS On-Premises DDoS Defenses are able to protect against volumetric, application and web application attacks in seconds, including DNS, HTTP/S floods, UDP/TCP amplification attacks, low and slow attacks and etc. Unlike products from other vendors, NSFOCUS On-Premises DDoS Defenses don't require place any additional WAF modules to mitigate web-application attacks, making the security simple and reducing the cost and complexity of management. Plus, ADS supports fine-grained protection, such as URL-based protection and differentiated PC and APP traffic protection, ensuring customer service availability macro to micro. Also, both ADS and NTA can integrate with NSFOCUS Threat Intelligence (NTI) to protect from botnet-based attacks.

SCALABILITY PERFORMANCE AND EASY TO DEPLOY

The ADS is typically deployed at the ingress of your network, while the NTA and ADS-M appliances can be installed at any location in your network. The ADS series include models that range from 200Mbps to 400Gbps of DDoS mitigation capacity that support flexible licensing, so customers can subscribe as much mitigation capacity as needed. ADS can also be deployed as a cluster to protect the largest and most demanding network environment against the most extreme volumetric and application-layer DDoS attacks. Virtualization of ADS, NTA and ADS-M is available, which is easy to implement and save CAPAX. The open and documented API further simplifies integration of the system into your network by providing a programmatic interface that can be used to automate labor intensive tasks.

MULTI-TENANT, CENTRALIZED MANAGEMENT WITH HIGH VISIBILITY

The centralized management system ADS-M supports not only central configuration of ADS and NTA, but also provides comprehensive reports and monitoring dashboards. Based on the multi-tenant design concept, administrators can monitor traffic and attack conditions from perspective of each tenant as well as global with multi-dimensional graphical displaying. Extensive reporting options include information on attack types, attack targets, protocols, ports, network status, alert information, device logs, and more. The ADS-M also supports a customizable "customer portal" designed for providers who desire to offer Managed DDoS Services. This portal allows providers to offer web-based access to their customers for traffic analysis, reporting, and analytics.

NSFOCUS HYBRID DDOS DEFENSES

Nearly all industry experts recognize the fact that defeating the broad spectrum of DDoS attacks requires more than just cloud DDoS defenses, and more than just on-premises defenses. It requires both. From volumetric DDoS attacks to low-and-slow DDoS attacks, the best approach to defeat all DDoS attacks requires a combination of on-premises defenses and cloud defenses – called Hybrid DDoS Defenses. NSFOCUS supports fully automatic diversion without any manual intervention.

SOFTWARE SPECIFICATIONS – ADS

DDoS Protection

- Comprehensive, stateless, multi-layered protection against volumetric, application, and web application attacks
- Multi-protocol support and advanced inspection including TCP/UDP/ICMP/ HTTP/ HTTPS/DNS/SIP floods, Amplification attacks (NTP/SSDP/SNMP/CHARGEN/ Memcached), fragments floods, connection exhaustion, header manipulation and more
- Integrated with NSFOCUS Threat Intelligence
- DNS Rate-Limiting, DNS TCP-BIT Check, DNS CNAME Check, DNS Retransmission, DNS Keyword Checking
- HTTP Keyword Checking, HTTP Authentication, HTTP Dynamic Script, HTTP FCS Check, HTTP Pattern Matching Check, HTTP Slow Attack Check
- IP Behavior Analysis, Trusted Source IP Control, Empty Connection Check
- HTTPS SSL Connection Control, HTTPS Authentication
- SIP Authentication

DDoS Mitigation Algorithms

- RFC Checks, Black Filter Lists, NTI Black Filter Lists, White Filter Lists, GEOIP Filter Lists, Access Control Lists
- TCP Regular Expression Filtering, TCP SYN Source IP Rate Limit, TCP SYN Source Bandwidth Limit, TCP SYN Time Sequence Check, TCP Fragment Control, TCP Watermark Check, TCP Pattern Matching
- SYN Check, ACK Check, Port Check, Connection Exhaustion, URL-ACK Filter Lists, Anti- spoofing, Protocol ID Check
- ICMP Fragment Control, ICMP Traffic Control
- UDP Regular Expression Filtering, UDP Payload Check, UDP Fragment Control, UDP Packet Length Check, UDP Traffic Control, UDP Watermark Check, UDP Pattern Matching, Reflection Amplification Rules

SOFTWARE SPECIFICATIONS – NTA

Management

- Protocols: HTTP, SNMP, Email, Syslog
- Authentication: Local database, Radius
- API: web services for reporting and automated configuration

IP Protocols

- Addressing: IPv4/v6
- Routing: BGP, OSPF, RIP, IS-IS, static routing, and PBR
- Data link and network layer: MPLS, GRE, VLAN (802.1q)

Virtual ADS

- Virtual ADS KVM platform available

Flow Monitoring

- sFlow-v4/v5, Netflow-v5/v9, NetStream-v5, Flexible Netflow, IPFIX

DDoS Mitigation Algorithms

- SYN/ACK/UDP/ICMP/IGMP/HTTP/HTTPS/DNS/LAND/SIP/Protocol null/Tcpflag null/Tcpflag misuse/DNS query/DNS response/NTP amplification/SSDP amplification/SNMP amplification /CHARGEN amplification floods, private IP abnormal, traffic abnormal, auto-learning baseline, region/IP group inbound/outbound traffic abnormal
- False source IP detection
- Integrate with NSFOCUS Threat Intelligence

Traffic Diversion

- ADS Diversion
- BGP Diversion
- Null-Route Diversion
- FlowSpec BGP

Management Interfaces and Reporting

- Formatting: XML, PDF, CSV
- SNMP GET/Trap, syslog, Email, Flow data forwarding
- Scheduled Email report
- Traffic Report, DDoS Attack Report, Bogus Source IP Report, Traffic Comparison Report

Virtual NTA

- Virtual NTA on VMware and KVM platform available

SOFTWARE SPECIFICATIONS – ADS-M

Centralized Management and Configuration

- Devices: add, delete and configure
- Monitoring: Overview, DDoS Traffic Monitoring, Net Traffic Monitoring, Attack Events, Countermeasures
- Security Policy Configuration

Role-Based Management Authentication

- System Administrator
- Device Config Administrator
- Region Administrator
- Audit User
- Custom Access User
- Region User

Virtual ADS-M

- Virtual ADS-M on VMware and KVM platform available

Reporting

- Attack events, attack summaries, traffic trends
- Extensive logging: attack summary, traffic alerts, performance, link state, authentication activity
- Real-time and historical reporting
- Scheduled Email report

PERFORMANCE – HARDWARE ADS

Model	ADSNX5-10000/12000	ADSNX5-HD8500	ADSNX5-8000
Mitigation Capacity	240Gbps/400Gbps 149,942,000pps/297,600,000pps	80Gbps 59,520,000pps	40Gbps 29,760,000pps
Interfaces	1*RJ45 Serial, 1*GE Copper, 1*USB Optional Interface Card (choose one): 2*100GE CXP + 20*10GE SFP+ Or 6*100GE QSFP28 + 4*40GE QSFP+ and 16*10GE SFP+ Or 16*10GE SFP+ and 4*GE Copper	1*RJ45 Serial, 2*GE Copper, 2*USB, 4*Extension Slot	1*RJ45 Serial, 2*GE Copper, 2*USB, 4*Extension Slot
Optional Network Interface Modules for Extension Slot	2-ports 100GE CXP and 20-ports 10GE SFP+ (ADSNX5-10000 only) 16-ports 10GE SFP+ and 4-ports GE Copper (ADSNX5-10000 only) 6-ports 100GE QSFP28 and 4-ports 40GE QSFP+ and 16*10GE SFP+	4-ports GE Copper 8-ports GE Copper 4-ports GE SFP 8-ports GE SFP 2-ports 10GE SFP+ 4-ports 10GE SFP+ 2-ports 100GE QSFP28	8-ports GE Copper 8-ports GE SFP 2-ports 10GE SFP+
Dimensions (W*D*H)	19"x27"x10.5" 6 RU	17.4"x24.6"x3.5" 2 RU	17.4"x24.6"x3.5" 2 RU
Weight	121.25 lbs (55 kg)	46.29 lbs (21 kg)	36.38 lbs (16.5 kg)
Environmental	Operating: 32-113° F (0-45° C) Storage: -40-158° F (-40-70° C)	Operating: 32-104° F (0-40° C) Storage: -4-176° F (-20-80° C)	Operating: 41-104° F (5-40° C) Storage: 14-176° F (-10-80° C)
Power	AC/DC Five Power Supply (6000W total)	AC/DC Dual Power Supply (300W total)	AC/DC Dual Power Supply (500W total)
MTBF	52,879 hours	60,000 hours	45,000 hours

Model	ADSNX5-HD6500	ADSNX5-HD4500	ADSNX3-HD2500
Mitigation Capacity	40Gbps 29,760,000pps	20Gbps 14,880,000pps	4Gbps 2,976,000pps
Interfaces	1*RJ45 Serial, 2*GE Copper, 2*USB, 4*Extension Slot	1*RJ45 Serial, 2*GE Copper, 2*USB 4*Extension Slot	1*RJ45 Serial, 2*GE Copper, 2*USB 4*Extension Slot
Optional Network Interface Modules for Extension Slot	4-ports GE Copper 8-ports GE Copper 4-ports GE SFP 8-ports GE SFP 2-ports 10GE SFP+ 4-ports 10GE SFP+	4-ports GE Copper 8-ports GE Copper 4-ports GE SFP 8-ports GE SFP 2-ports 10GE SFP+ 4-ports 10GE SFP+	4-ports GE Copper 8-ports GE Copper 4-ports GE SFP 8-ports GE SFP 2-ports 10GE SFP+ 4-ports 10GE SFP+
Dimensions (W*D*H)	17.4"x20.7"x3.5" 2RU	17.13"x22"x1.7" 1RU	17.13"x22"x1.7" 1RU
Weight	44 lbs (20 kg)	21.2 lbs (9.6 kg)	21.2 lbs (9.6 kg)
Environmental	Operating: 32-104° F (0-40° C) Storage: -4-176° F (-20-80° C)	Operating: 32-104° F (0-40° C) Storage: 14-158° F (-10-70° C)	Operating: 32-104° F (0-40° C) Storage: 14-158° F (-10-70° C)
Power	AC/DC Dual Power Supply (300W total)	AC Dual Power Supply (300W total)	AC Dual Power Supply (300W total)
MTBF	60,000 hours	86,046 hours	86,046 hours

PERFORMANCE –VIRTUAL ADS

Host		Virtual ADS					
Item	**Recommended Configuration**	**Item**	**Recommended Configuration**				
CPU	Intel(R) Xeon(R) CPU E5-2687W v4 @ 3.00GHz	**Hypervisor Support**	QEMU KVM 1.5.3 or above				
Memory	128G (at least 32GB free space)	**Mitigation Capacity**	(@128bytes)	200M-2Gbps	10Gbps	20Gbps	40Gbps
Hard Disk	1TB (at least 10GB free space)	**Minimal Requirement**	**CPU Cores**	4	6	14	32
Operation System	CentOS		**Memory**	16G	16G	16G	32G
1000M NIC Support	I210, I350, 82571, 82576, 82580 (up to 8)		**Storage**	10GB at least			
10Gb NIC Support	82599, X710/XL710 (up to 4)	**License Options**	200M, 500M, 1G, 2G, 10G, 20G, 40G				
Virtual NIC Support	NIC other than those above (cannot guarantee the capacity)						

Virtual ADS for VMware					
Item	**Recommended Configuration**				
Hypervisor Support	VMware ESXi 6.5 or above				
Mitigation Capacity	(@128bytes)	200M-2Gbps	10Gbps	20Gbps	40Gbps
Minimal Requirement	**CPU Cores**	4	6	10	22
	Memory	16G	16G	16G	32G
	Storage	10GB at least			
License Options	200M, 500M, 1G, 2G, 10G, 20G, 40G				

Virtual ADS for KVM					
Item	**Recommended Configuration**				
Hypervisor Support	QEMU KVM 1.5.3 or above				
Mitigation Capacity	(@128bytes)	200M-2Gbps	10Gbps	20Gbps	40Gbps
Minimal Requirement	**CPU Cores**	4	6	10	22
	Memory	16G	16G	16G	32G
	Storage	10GB at least			
License Options	200M, 500M, 1G, 2G, 10G, 20G, 40G				

PERFORMANCE –HARDWARE NTA & ADS-M

NTA **ADS-M**		**ADS-M**	
Hardware	**NTA HX3- HD2200**	**Hardware**	**ADS-M HD2700**
Interfaces	2*GE Copper, 1*RJ45 Serial, 2*USB Up to: 8*10GE SFP+ Or 32*GE port (copper, SFP-GE-SX, SFP-GE-LX)	**Interfaces**	2*GE Copper, 1*RJ45 Serial, 2*USB Up to: 8*10GE SFP+ Or 32*GE port (copper, SFP-GE-SX, SFP-GE-LX)
Dimensions (W*D*H)	17''*22''*3.5''	2RU	**Dimensions (W*D*H)**	17.1''*22''*3.5''	2RU
Weight	44 lbs (20kg)	**Weight**	44 lbs (20kg)
Environmental	Operating: 32-113°F (0-45°C) Storage: -4-149°F(-20-65°C)	**Environmental**	Operating: 32-113°F (0-45°C) Storage: -4-149°F(-20-65°C)
Hard Disk	2T	**Hard Disk**	2T
Power	AC/DC Dual Power Supply (300W total)	**Power**	AC/DC Dual Power Supply (350W total)
		Maximal Managed Devices	10*ADS, 5*NTA
Flow Collection Capacity	240,000 flows/sec		
Maximal Number of Monitored Routers	80	**Maximal Concurrent Users**	50
		Maximal Number of Regions	1024
MTBF	60,000 hours	**MTBF**	60,000 hours

PERFORMANCE –VIRTUAL NTA

Host	
Item	**Recommended Configuration**
CPU	Intel(R) Xeon(R) CPU E5-2670 0 @ 2.60GHz 16 cores and 32 threads
Memory	32G, DDR4
Hard Disk	1.2TB (at least 7200 rpm)

NIC	2

Virtual NTA for VMware					
Item	**Recommended Configuration**				
Hypervisor Support	VMware ESXi 5.5/6.0				
Detection Capacity	**Flow**	60,000/S	120,000/S	240,000/S	300,000/S
Minimal Requirement	**CPU Cores**	10	12	16	24
	Memory	16G			
	Storage	1.2TB			

Virtual NTA for KVM				
Item	**Recommended Configuration**			
Hypervisor Support	QEMU KVM 1.5.3 or above			
Detection Capacity	**Flow**	60,000/S	120,000/S	180,000/S
Minimal Requirement	**CPU Cores**	24	24	24
	Memory	16G		
	Storage	1.2TB		

PERFORMANCE –VIRTUAL ADS-M

Host	
Item	**Recommended Configuration**
CPU	Intel(R) Xeon(R) CPU E5-2680V2@2.8.0GHz
Memory	32G, DDR4 (at least 16GB)
Hard Disk	2TB
NIC	at least 1

Virtual ADS-M for VMware		Virtual ADS-M for KVM	
Item	**Recommended Configuration**	**Item**	**Recommended Configuration**
Hypervisor Support	VMware Workstation V10.0 and above	**Hypervisor Support**	QEMU KVM 1.5.3 and above
CPU Cores	8	**CPU Cores**	8
Memory	16G	**Memory**	16G
Storage	2TB	**Storage**	2TB