DATASHEET

NSFOCUS

Web Application Firewall (WAF)

NEXT GEN TECH TO STOP NEXT GEN ATTACKS

OVERVIEW

Attacks on web applications and servers are more complex and frequent than ever. Organizations continue to suffer costly data breaches using WAFs that still rely on signatures and pattern matching as their primary defenses; technologies that are easily evaded. And moving applications to the cloud does not make them any safer.

The NSFOCUS WAF uses next generation technologies to provide comprehensive application layer security, eliminating these problems and completely protecting your critical web applications. With full out-of-the-box protection against the OWASP Top Ten, the WAF is specifically engineered to protect not just web applications, but their underlying infrastructure, plug-ins, protocols, and more.

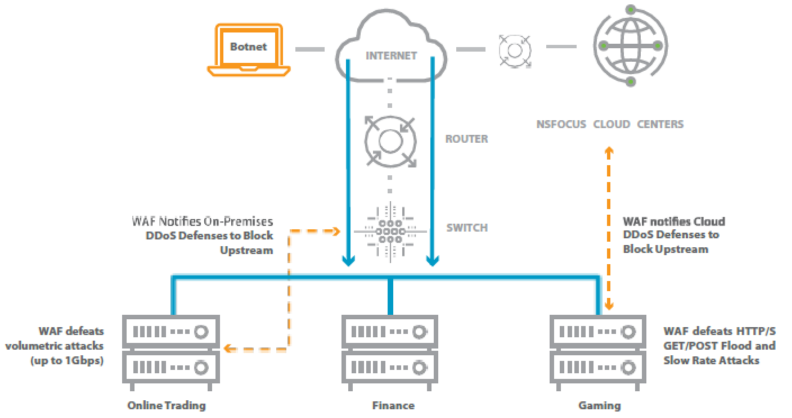
ADVANCED, INNOVATIVE TECHNOLOGY

The NSFOCUS WAF technology is powered by an internationally-recognized research lab and developed with over 20 years of experience protecting the world's largest banks, telecommunications, gaming, and SMBs. The WAF uses Intelligent Detection™ advanced machine learning technology that is far superior for identifying web attacks and minimizing false positives/negatives than traditional positive and negative security models to deliver next-gen real-time web security.

SQLi	False Negative (based on 7442 payloads)	False Positive (based on 1458625 payloads)
Intelligent Detection	0.026874%	0.000745%
Signature-based Detection	0.604676%	0.342720%

COMPREHENSIVE, MULTI-LAYER SECURITY

The WAF serves as an essential part of a multi-layer security strategy by providing advanced inspection and specialized security for the web application layer. It also includes up to 1 Gbps of DDoS protection from volumetric layer 7 attacks, including TCP flood and HTTP/S GET/POST floods. When deployed together with higher capacity NSFOCUS on-premises or cloud Anti-DDoS Defenses, the WAF can direct traffic flows in real time to the ADS to keep your servers running under the most extreme DDoS attacks.


Botnet
INTERNET
NSFOCUS CLOUD CENTERS
ROUTER
SWITCH
WAF Notifies On-Premises DDoS Defenses to Block Upstream
WAF notifies Cloud DDoS Defenses to Block Upstream
WAF defeats volumetric attacks (up to 1Gbps)
WAF defeats HTTP/S GET/POST Flood and Slow Rate Attacks
Online Trading
Finance
Gaming

KEY BENEFITS

Eliminate costly data breaches

Reduce false positives to ensure business continuity

Simplify PCI compliance efforts

KEY FEATURES

Semantic analysis engine

Semantic analysis and contextual logic-based attack detection identify unknown threats and minimize false positive and false negative

API security

API security detection and protection against API abuse

Patches for code vulnerabilities.

Integration with the 3rd-party code audit products and capability of providing patches for source code vulnerabilities

Hybrid management and solution

Open API configuration; on-premises and cloud management through centralized management platform;

Integration with NSFOCUS on-prems & cloud DDoS solutions for ensuring performance during the largest DDoS attacks

Dynamic Bot Attack Protection

Detect and block malicious bots from automatically scanning and attacking websites

Closed-loop vulnerability mitigation

Integration with NSFOCUS web scanner (WVSS) for 0-day vulnerability mitigation by automatically creating virtual patching policies for most found vulnerabilities

WEB SECURITY MADE SMART AND SIMPLE

The NSFOCUS WAF is the ideal solution for safeguarding your critical web infrastructure whether on-prem or in the cloud. With Intelligent Detection, Smart Patch, Threat Intelligence and Anti-DDoS System, the WAF delivers high quality application layer security for organizations of any size.

SOFTWARE SPECIFICATIONS

Security Analysis

- Intelligent Detection™ next-gen advanced machine learning for lower false positive/negative rates identifying web attacks
- Automated False Positive Behavioral Analysis
- Positive behavior-based protection model with enhanced dynamic profile learning and whitelist security
- Negative signature-based model

Application Attack Prevention

- OWASP Top 10
- Cross Site Request Forgery (CSRF)
- Cross-site Scripting (XSS)
- Command & SQL Injection
- Remote File Inclusion Protection
- Malicious Scanning
- Botnet Protection
- XML Attack Protection
- Cookie Signing and Encryption
- URL Access Control
- Web Scraping Protection
- File Upload and Download Control
- LDAP Injection Protection
- Server-Side Includes (SSI) Injection Protection
- xPath Injection Protection
- Path Traversal Protection
- Webshell Protection
- Anti-Leeching/Anti-Phishing
- Response control
- Outbound Data Theft Protection to secure personal privacy information such as credit card, social security number, and ID
- Buffer Overflow Protection
- Data Loss Protection

Web Server and Network Security

- Web server cloaking
- Server extension security
- Network-layer ACLs
- ARP spoofing protection
- Real-time server status monitoring to ensure server availability
- 802.1Q support
- Cookie Poisoning Protection
- VLAN decode
- Protection in Trunk
- Protection in Port-channels

DDoS Protection

- TCP Flood (SYN Flood/ACK Flood)
- HTTP/S GET/POST Flood (Up to 1 Gbps)
- Low-and-Slow Attacks
- Brute Force Protection
- Integration with external Anti-DDoS products
- Integration with cloud based Anti-DDoS products

Security Services

- Content Filtering
- Sensitive Information Filtering
- IP Reputation
- Geo IP location
- Virtual patching
- Customized policies and rules
- Risk level policies
- Client IP-address tracking
- Exception control
- Base64 decode
- False positive analysis and automatic/manual adjustment

Supported Web Protocols

- HTTP/HTTPS
- XML/SOAP
- WebSocket
- HSTS
- IPv4/IPv6 full stack (IPv4, IPv6 or hybrid)

Application Delivery

- HTTPS/SSL Offloading
- HTTP Compression to compress textual content transferred from web servers to browsers.
- Layer 7 Server Load balancing
- Catching
- Web Page Defacement Protection
- Page prefetch
- Offline Server Takeover

High Availability Configuration

- Active/Active
- Active/Passive
- VRRP
- Internal “Software” bypass to pass traffic without inspection (HW appliance)
- Fail-open hardware bypass NIC interfaces
- Emergency Mode based on thresholds of new connections, use of CPU and use of memory

Management and Reporting

- Secure web-based GUI
- SSH-based CLI access network management
- SNMP
- Syslog-based logging
- REST API
- Built-in test tools
- Packet capture
- Real-time dashboard
- PCI-DSS compliance reporting
- Centralized logging and reporting
- Custom templates
- Central management for multiple NSFOCUS devices
- Session tracking and forensics
- Geo IP analytics and blocking

Virtual Machine & Cloud Support

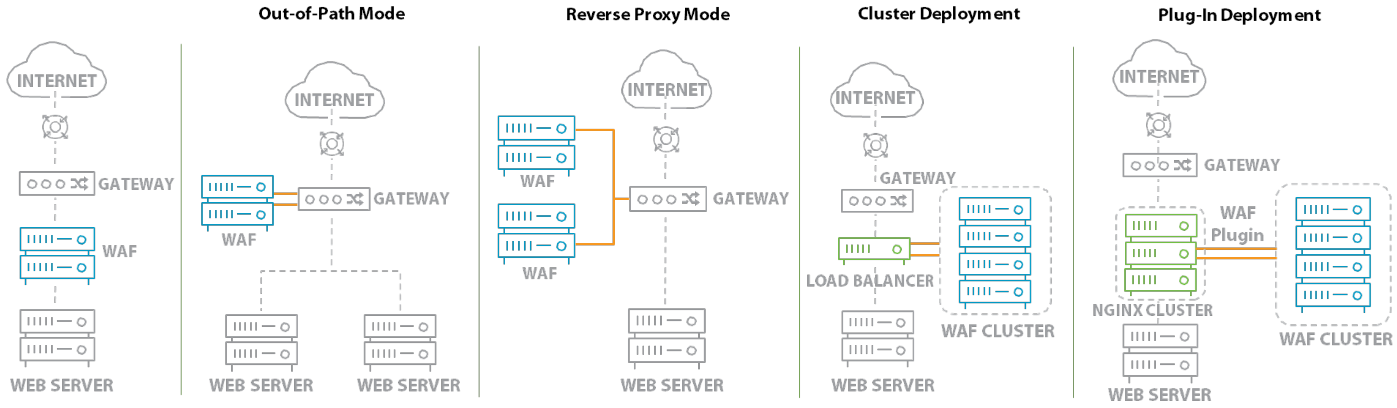
- VMware, KVM
- AWS, Microsoft Azure (China), AliCloud, HUAWEI, ZTE, Wo Cloud, Softbank (Japan), OpenStack

Certification

- Veracode VL4 Certified

DEPLOYMENT OPTIONS

Shown here are the most popular deployment options, with no changes to applications or networks



HARDWARE SPECIFICATIONS

		WAF 300	WAF 600	WAF 800
Ethernet Interface	Gigabit Ethernet Ports	4 * GE RJ45 bypass port	4 * GE RJ45 bypass port	4 * GE RJ45 bypass port
	Expansion Slot	1	1	1
	Optional Network Interface Modules for Extension Slot	4 * GE SFP interface 4 * GE multi-mode SFP interface 4 * GE RJ45 bypass port	4 * GE SFP interface 4 * GE multi-mode SFP interface 4 * GE RJ45 bypass port	4 * GE SFP interface 4 * GE multi-mode SFP interface 4 * GE RJ45 bypass port 2 * 10 GE SFP + interface
Management Interface	Management Port	1 * RJ45	1 * RJ45	1 * RJ45
	Serial Port	1 * RJ45	1 * RJ45	1 * RJ45
	USB Interface	2	2	2
Memory	Memory	8G	8G	8G
Storage	Hard Disk	1T, SATA	1T, SATA	1T, SATA
Performance	Network-layer Throughput (RFC 2544)	2000 Mbps	2400 Mbps	2800 Mbps
	Latency (RFC 2544)	<150 μs	<150 μs	<150 μs
	HTTP Throughput	200 Mbps	400 Mbps	800 Mbps
	HTTP Transactions Per Second	10,000 TPS	15,000 TPS	20,000 TPS
	HTTP Connections Per Second	3,000 CPS	5,000 CPS	8,000 CPS
	Max. Number of Concurrent Connections	80,000	110,000	150,000
	HTTPS Transaction Per Second (1KB)	4,000 TPS	6,000 TPS	8,500 TPS
Physical	Form Factor	1U	1U	1U
	Dimensions (in) (W x H x D)"	17.0x1.7x15.4	17.0x1.7x15.4	17.0x1.7x15.4
	Weight	5.2kg/11lbs	5.2kg/11lbs	5.2kg/11lbs
	Power Supply	Redundant power supplies	Redundant power supplies	Redundant power supplies
	AC Input (Amps)	2A	2A	2A
	Voltage	100-240V 50-60 Hz	100-240V 50-60 Hz	100-240V 50-60 Hz
	Mean Time Between Failure (MTBF)	Over 100,000 hours	Over 100,000 hours	Over 100,000 hours
	Heat Output (BTU/Hr)	222	222	222
	Operating Temperature	0°C-40°C (32°F-104°F)	0°C-40°C (32°F-104°F)	0°C-40°C (32°F-104°F)
	Storage Temperature	-20°C-70°C (-4°F-158°F)	-20°C-70°C (-4°F-158°F)	-20°C-70°C (-4°F-158°F)
	Operational Relative Humidity	5% - 95% (non-condensing)	5% - 95% (non-condensing)	5% - 95% (non-condensing)

		WAF 1000	WAF 1600	WAF 4000	WAF 6000
Ethernet Interface	Gigabit Ethernet Ports	6-port GE RJ45 interface card (bypass); 4-port GE SFP interface card (Transceiver not included)	–	–	–
	Expansion Slot	2	4	4	4
	Optional Network Interface Modules for Extension Slot	8 * 10/100/1000M RJ45 coppers and 4-path built-in bypass 4 * GE multi-mode SFP interface 2 * 10GE SFP+ (bypass/non-bypass)	4 * GE SFP (bypass/non-bypass) 8 * GE SFP (non-bypass) 2 * 10GE SFP+ (bypass/non-bypass) 4 * 10GE SFP+ (bypass/non-bypass) 4 * 10/100/1000M RJ45 copper with bypass. 8 * 10/100/1000M RJ45 copper with bypass.	4 * GE SFP (bypass/non-bypass) 2 * 10GE SFP+ (bypass/non-bypass) 4 * 10GE SFP+ (bypass/non-bypass) 4 * 10/100/1000M RJ45 copper with bypass. 8 * 10/100/1000M RJ45 copper with bypass.	4 * GE SFP (bypass/non-bypass) 2 * 10GE SFP+ (bypass/non-bypass) 4 * 10GE SFP+ (bypass/non-bypass) 4 * 10/100/1000M RJ45 copper with bypass. 8 * 10/100/1000M RJ45 copper with bypass.
Management Interface	Management Port	2 * GE	2 * GE	2 * GE	2 * GE
	Serial Port	1 * RJ45	1 * RJ45	1 * RJ45	1 * RJ45
	USB Interface	2	2	2	2
Memory	Memory	16G	8G	32G	128G
Storage	Hard Disk	1T, SATA	1T, SATA, up to 4T, SATA	1T, SATA, up to 4T, SATA	1T, SATA, up to 4T, SATA
Performance	Network-layer Throughput (RFC 2544)	4 Gbps	6 Gbps	8 Gbps	20 Gbps
	Latency (RFC 2544)	<60 μs	<50 μs	<50 μs	<20 μs
	HTTP Throughput	1 Gbps	3 Gbps	6 Gbps	10 Gbps 18Gbps (Transparent mode only)
	HTTP Transactions Per Second	30,000 TPS	55,000 TPS	110,000 TPS	450,000 TPS 500,000 TPS (Transparent mode only)
	HTTP Connections Per Second	10,000 CPS	20,000 CPS	38,000 CPS	110,000 CPS 250,000 CPS (Transparent mode only)
	Max. Number of Concurrent Connections	150,000	175,000	1,100,000	4,000,000
	HTTPS Transaction Per Second (1KB)	15,500 TPS	15,500 TPS	20,000 TPS	68,000 TPS
Physical	Form Factor	2U	2U	2U	2U
	Dimensions (in) (W x H x D)"	17.0 x 3.5 x 22.6	17.0 x 3.5 x 22.6	17.0 x 3.5 x 22.6	24.6 x 3.5 x 17.4
	Weight	12.7kg/27.9lbs	16kg/35.2lbs	16kg/35.2lbs	16.5kg/36.3lbs
	Power Supply	Redundant power supplies	Redundant power supplies	Redundant power supplies	Redundant power supplies
	AC Input (Amps)	8-5A	4.5-2A	8-5A	7-3A
	Voltage	100-240V 50-60 Hz	100-240V 50-60 Hz	100-240V 50-60 Hz	100-240V 50-60 Hz
	Mean Time Between Failure (MTBF)	Over 100,000 hours	Over 100,000 hours	Over 100,000 hours	Over 100,000 hours
	Heat Output (BTU/Hr)	1194	1365	1365	1706
	Operating Temperature	0°C-40°C (32°F-104°F)	0°C-40°C (32°F-104°F)	0°C-40°C (32°F-104°F)	0°C-40°C (32°F-104°F)

	Storage Temperature	-20°C-70°C (-4°F-158°F)	-20°C-70°C (-4°F-158°F)	-20°C-70°C (-4°F-158°F)	-20°C-70°C (-4°F-158°F)
	Operational Relative Humidity	5%-95% (non-condensing)	5%-95% (non-condensing)	5%-95% (non-condensing)	5%-95% (non-condensing)

VM SPECIFICATIONS

	(C)V1000	(C)V500	(C)V200	(C)V100	(C)V50
HTTP Throughput	1 Gbps	500 Mbps	200 Mbps	100 Mbps	50 Mbps
Hypervisor	QEMU-KVM 1.2.8 VMware vSphere ESXi 5.0/5.5/6.0				
Minimal Environment Requirements					
CPU Cores	8	8	4	4	4
Memory (Min.)	32G	16G	8G	4G	4G
Storage (Min.)	100G	100G	100G	100G	100G
Performance					
HTTP Transactions Per Second (TPS)	75,000 TPS	75,000 TPS	50,000 TPS	50,000 TPS	50,000 TPS
Connections Per Second (CPS)	26,000 CPS	26,000 CPS	20,000 CPS	20,000 CPS	20,000 CPS
Max. Number of Concurrent Connections	1,000,000	500,000	250,000	100,000	100,000
HTTPs Transactions Per Second (TPS)	26,000 TPS	26,000 TPS	18,000 TPS	18,000 TPS	18,000 TPS

**The performance data is obtained when using Intel(R) Xeon(R) CPU E5-2680 v2 @ 2.80GHz.*