

# ARBOR NETWORKS APS

Always on, in-line, Intelligently Automated DDoS Protection

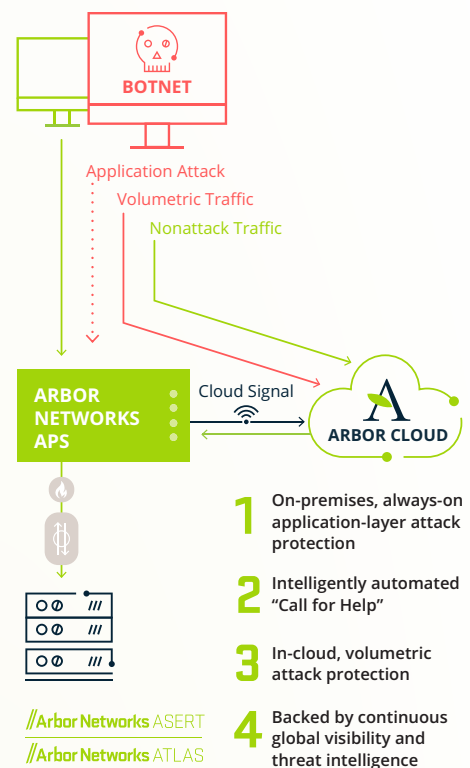
As your dependency for internet access and online applications and services increases, so too does the risk of Distributed Denial of Service (DDoS) attacks. In Arbor Networks' latest *Worldwide Infrastructure Security Report (WISR)*, respondents reported an increase in the size, frequency and complexity of DDoS attacks from previous years.

The Arbor Networks portfolio of DDoS attack protection solutions tackles these advanced threats head-on by providing you a complete view of network activities for fast remediation and expert-level blocking. Arbor Networks® APS helps protect business continuity and availability from the growing constellation of DDoS attacks and other advanced threats. It provides the world's most advanced and sophisticated attack detection and mitigation technology in an easy-to-deploy platform designed to automatically neutralize IPv4 and IPv6 attacks before they impact critical applications and services.

With the ATLAS® Intelligence Feed, real-time updates containing actionable intelligence on DDoS and advanced threats can help prevent an attack from impacting your networks or services. Such capabilities are:

- DDoS protection from active botnets
- DDoS protection from active DDoS campaigns based on IP reputation
- Advanced web crawler service
- GeolIP tracking
- Domain and IP reputation to block threats

Arbor APS enhances your overall protection by using Cloud Signaling™ to intelligently and automatically connect local protection with cloud-based DDoS services. With Cloud Signaling, APS automatically alerts upstream service providers, such as your ISP or Arbor Cloud<sup>SM</sup>, when larger attacks threaten availability. This allows for a faster time to mitigate attacks.



**Figure 1**

The fully integrated combination of 1) APS on premises for always on, in-line protection against application-layer attacks; 2) Intelligent Cloud Signaling to 3) Arbor Cloud to stop the larger attacks — 4) all continuously armed with the global threat intelligence of ATLAS/ASERT — offers the most comprehensive DDoS protection solution in the industry.

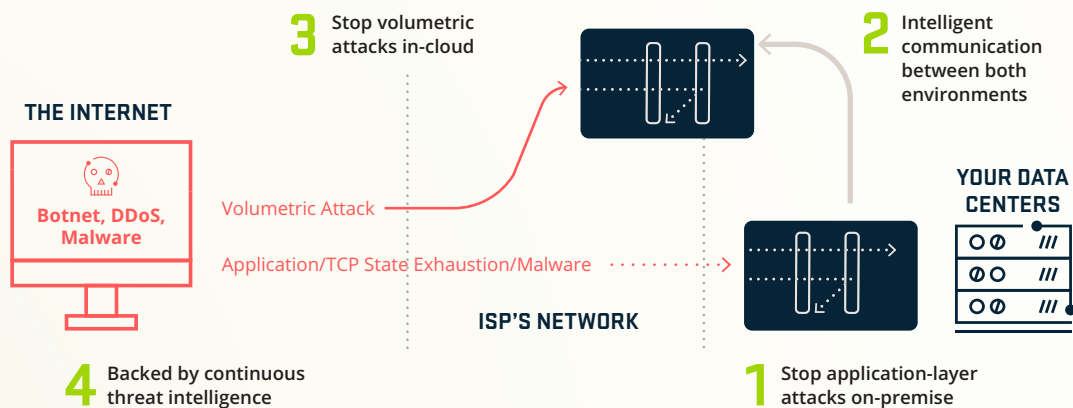


Figure 2 Layered DDoS Attack Protection

## Key Features & Benefits



### Always On, In-Line, DDoS Protection

Out of the box, on-premise protection against volumetric, state-exhaustion and application-layer DDoS attacks.



### Managed APS (mAPS) Service

Rely upon the industry leading expertise of Arbor Networks to manage your on-premise Arbor APS products and optimize your DDoS protection.



### Inbound and Outbound Protection

Stop in-bound DDoS attacks and out-bound malicious activity from compromised internal hosts.



### Support for Virtual & Hybrid-Cloud Environments

vAPS is a virtual version of the APS appliance that can be run in your private virtual environment or in Amazon Web Services (AWS), providing unified protection for your hybrid-cloud environment.



### Intelligently Automated Cloud Signaling

When needed, signal upstream to Arbor Cloud (or your ISP) to stop large attacks that will overwhelm your on-premises protection.



### ATLAS Intelligence Feed

Protection that is continuously updated with the latest global threat intelligence from Arbor's Security Engineering & Response Team (ASERT).



### Embedded SSL Inspection

Stop DDoS attacks hidden in encrypted traffic.



### Support for IPV6

Detect and stop both IPv4 and IPv6 attacks.

## Arbor Networks APS Platforms

Features	2600	2800
<b>Physical Dimensions</b>	<b>Chassis:</b> 2U rack height; <b>Height:</b> 3.45 inches (8.67 cm); <b>Width:</b> 17.4 inches (43.53 cm); <b>Depth:</b> 20 inches (50.8 cm); <b>Weight:</b> 36.95 lbs. (17.76 kg)	
<b>Power Options</b>	<b>DC:</b> 2 x DC redundant, hot swap capable power supplies; <b>DC Power Ratings:</b> -40 to -72 Vdc, 28/14 A max (per DC input); <b>AC:</b> 2 x AC redundant, hot swap capable power supplies; <b>AC Power Ratings:</b> 100 to 240 VAC, 50 to 60 Hz, 12/6 A max; <b>Watts:</b> 315 typical, 375 max	
<b>Hard Drives</b>	2 x 120 GB SSD in RAID 1 Configuration	2 x 240 GB SSD in RAID 1 Configuration
<b>Environmental</b>	<b>Operating:</b> Temperature : 41°F to 104°F (5° to 40°C) Humidity: 5–85%; <b>Non-Operating:</b> Temperature -40° to 158°F (-40° to 70°C); Humidity 95%	
<b>Memory</b>	32 GB	64 GB
<b>Processor</b>	2 x Intel Xeon E5-2608L v3 (6 cores) 2 GHz; <b>Watts:</b> 315 typical, 375 max	Dual Intel Xeon (12-core) E5–2648L v3 –1.80GHz
<b>Operating System</b>	Our proprietary, embedded ArbOS® operating system	
<b>Management Interfaces</b>	2 x 10/100/1000 BaseT Copper; RJ-45 serial console port	2 x 10/100/1000 BaseT Copper; RJ-45 serial console port
<b>Protection Interface</b>	<ul style="list-style-type: none"> <li>• 4, 8 or 12 1G bypass ports (copper, sx fiber, lx fiber)</li> <li>• 4 x 10 G bypass ports plus 0, 4 or 8, 1 G bypass ports</li> </ul>	<ul style="list-style-type: none"> <li>• 4 x 10 GigE (SR or LR mixed fiber)</li> <li>• 8 x 10 GigE (SR or LR or mixed fiber)</li> <li>• 8 x 10 GigE (SR or LR or mixed fiber) + 4 x 1 GigE (SX or LX fiber, or copper)</li> </ul>
<b>Traffic Bypass Options</b>	Integrated hardware bypass; Internal “software” bypass to pass traffic without inspection	
<b>Latency</b>	Less than 80 microseconds	
<b>Availability</b>	Inline bypass, dual power supplies, solid-state hard drive RAID cluster	
<b>MTBF</b>	44,000 hours	
<b>Regulatory Compliance</b>	UL60950-1/CSA 60950-1 (USA/Canada); EN60950-1 (Europe); IEC60950-1 (International), CB Certificate & Report including all international deviations; GS Certificate (Germany); EAC-R Approval (Russia); CE—Low Voltage Directive 73/23/EEE (Europe); BSMI CNS 13436 (Taiwan); KCC (South Korea); RoHS Directive 2002/95/EC (Europe)	
<b>Inspected Throughput</b>	Licenses for 100 Mbs, 500 Mbs, 1 Gbps, 2 Gbps, 5 Gbps, 10 Gbps, 15 Gbps, 20 Gbps	Licenses for 10 Gbps, 20 Gbps, 30 Gbps, 40 Gbps; software upgradeable
<b>Maximum DDoS Flood Prevention Rate</b>	Up to 15 Mpps	Up to 28.80 Mpps
<b>Simultaneous Connections</b>	Not applicable: APS does not track connections	
<b>HTTP(s) Connections/Sec</b>	368K at recommended protection level; 613K filter list only protection	1,351K at recommended protection level; 1,497K filter list only protection
<b>SSL Decryption Options</b>	<b>Inspected Throughput:</b> Options for 750 Mbps and 5 Gbps <b>HTTPS Connections:</b> Up to 7,500 (750M HSM) or 45,000 (5G HSM) <b>Concurrent Sessions:</b> Up to 150,000	<b>Inspected Throughput:</b> Up to 5 Gbps <b>HTTPS Connections:</b> Up to 45,000 <b>Concurrent Sessions:</b> Up to 150,000
	Supported encryption protocols: SSL 3.0, TLS 1.0, 1.1 and 1.2; Supported Cypher Suites: RSA, ECDH, ECDHE; FIPS 140-2 Level 2 and 3 support; Separate “Trusted-Path” Administration for FIPS 140-2 Level 3; Secure tamper-proof enclosure; Keys cleared if enclosure breached	
<b>Maximum number of Keys/Certificate Pairs</b>	1998	
<b>Protected Endpoints</b>	Unlimited	
<b>Authentication</b>	On device, RADIUS; TACACS	
<b>Management</b>	SNMP gets v1, v2c; SNMP traps v1, v2c, v3; CLI; Web UI; HTTPS; SSH customizable, role-based management; Up to 50 APS (appliances and/or virtual APS running KVM hypervisor )can be managed by the APS Console; managed APS must at least be running v5.11; vAPS Console can run on VM hypervisor.	
<b>Protection Groups</b>	50	
<b>Reporting and Forensics</b>	Real-time and historical IPV4 and IPV6 traffic reporting, extensive drill-down by protection group and blocked host including total traffic, passed/blocked,top destination URLs/services/domains, attack types, blocked sources, top sources by IP location. Packet visibility in real-time.	
<b>DDoS Protection</b>	TCP/UDP/HTTP(S) flood attacks, botnet protection, hacktivist protection, host behavioral protection, anti-spoofing, configurable flow expression filtering, payload expression-based filtering, permanent and dynamic blacklists/whitelists, traffic shaping, multiple protections for HTTP, DNS and SIP, TCP connection limiting, fragmentation attacks, connection attacks.	
<b>Modes</b>	Inline active; inline inactive (reporting, no blocking); SPAN port monitor	
<b>Notifications</b>	SNMP trap, syslog, email	
<b>Cloud Signaling</b>	Yes (collaborative DDoS attack mitigation with service provider or Arbor Cloud)	
<b>Web-Based GUI</b>	Supports multi-language translated user interfaces	
<b>Supported Browsers</b>	Internet Explorer v10-11, Firefox ESR v31, Firefox v40, Chrome v44, Safari v6	

## Arbor APS Console

Features	Hypervisor
<b>Supported Platforms</b>	Arbor appliance, virtual machine
<b>Max number APS Managed</b>	50
<b>Virtual APS Console Requirements</b>	VMware vSphere 5.5+; 2 CPUs; 100 GB hard disk space; 4 GB RAM; 1 management interface (a second management interface is optional)
<b>Management Options</b>	Configuration or Views into (individual and/or all APS); Hardware and Software health; System and Security alerts; Blocked Hosts; ATLAS Threat Summary; Server Types, Protection groups (IPV4/6); Blacklist/Whitelist; Executive Management Reports
<b>Supported Browsers</b>	Internet Explorer v10-11, Firefox ESR v31, Firefox v40, Chrome v44, Safari v6

## Arbor APS Console 7000 Appliance

Features	Description
<b>Memory</b>	128G (8x16G DIMMs)
<b>Processor</b>	Intel Xeon (12-Core) – ES-2648Lv3 – 1.8GHz – 20M Cache – 9.60 GT/sec – 75W
<b>Power Requirements</b>	Redundant, load sharing and auto-sensing 850W dual power supplies; <b>AC:</b> 100-240 VAC, 50/60 Hz, 12/6 A; <b>DC:</b> -40 to -72 V, 28/14 A max
<b>Physical Dimensions</b>	<b>Chassis:</b> 2U rack height; <b>Height:</b> 3.45 inches (8.67 cm); <b>Width:</b> 17.4 inches (43.53 cm) <b>Depth:</b> 20 inches (50.8 cm); <b>Weight:</b> 36.95 lbs. (17.76 kg); Standard 19 and 23 inches rack mountable
<b>Hard Drives</b>	Six 480 GB solid state drives configured for RAID 5
<b>Network Interfaces</b>	2 x 1 GigE (SFP for Copper, GigE SX, or GigE LX)
<b>Environmental</b>	<b>Operating:</b> Temperature 41° to 104°F (5° to 40°C); Humidity 95%; <b>Non-Operating:</b> Temperature 73° to 104°F (23° to 40°C)
<b>Operating System</b>	Our proprietary, embedded ArbOS® operating system, based on Linux
<b>Regulatory Compliance</b>	UL60950-1/CSA 60950-1; EN60950-1; IEC60950-1, CB Certificate & Report including all international deviations; SONCAP; EAC Mark; CE—Low Voltage Directive 2014/35/EU; KCC Mark; RoHS 2011/65/EU; Telcordia GR-63; ETSI EN 300 019; NEBS; ETSI EN 300 753; cULus Mark; IC ICES-003 Class A; CE Mark to EMC Directive, 2014/30/EU; EN55022, Class A; EN55024; EN61000-3-2; EN61000-3-3, CISPR22, Class A, CISPR 24 Immunity; FCC 47 CFR Parts 15, Class A

## Virtual APS (vAPS)

Features	Hypervisor
<b>Virtual Network Function (VNF) Orchestration</b>	Cloud-Init v0.7.6, Openstack Kilo and Mitaka series
<b>Supported Hypervisor</b>	VMware vSphere 5.5+; KVM kernel 3.19 QEMU 2.0
<b>Support for Amazon AWS</b>	Yes, Amazon EC2
<b>Minimum Virtual Machine Requirements</b>	vCPUs: 1; NICs: 1 to 10; Memory: 6 GB; Storage: 100 GB
<b>Inspection Throughput/Instance</b>	1 Gbps
<b>Maximum DDoS Flood Rate/Instance</b>	910 Kpps
	600 Kpps



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