Peakflow® SP Threat Management System

Threat analysis, surgical mitigation and service protection

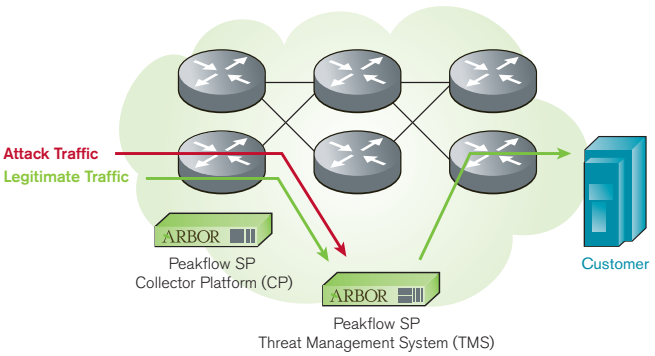
Internet service providers (ISPs), cloud providers and enterprises face a common problem. Distributed denial of service (DDoS) attacks are a major risk to service availability. The power, sophistication and frequency of DDoS attacks are rising. Data center operators and network providers need a defense that is effective, cost-efficient and easily managed. Arbor's Peakflow SP Threat Management System ("Peakflow SP TMS") is the acknowledged leader in DDoS protection. More service providers, cloud providers and large enterprises use Peakflow SP TMS for DDoS mitigation than any other solution.

Peakflow SP Solution for DDoS Protection

The Peakflow SP ("Peakflow SP") solution integrates network-wide intelligence and anomaly detection with carrier-class threat management to identify and stop network and application-layer DDoS attacks.

Peakflow SP TMS network appliances provide the vital, traffic-scrubbing component of the Peakflow SP solution. Peakflow SP TMS can be deployed inline to provide "always on" protection. Unlike other products, it also supports a mitigation architecture called "diversion/reinjection." In this mode, only the traffic stream carrying the DDoS attack is redirected to Peakflow SP TMS through routing updates issued by the Peakflow SP solution. Peakflow SP TMS removes only the malicious traffic from that stream and forwards the legitimate traffic to its intended destination.

This is highly advantageous for service providers, large enterprises and large hosting/cloud providers. It enables a single, centrally located Peakflow SP TMS to protect multiple links and multiple data centers. It results in much more efficient use of mitigation and fully non-intrusive security. Inline devices must inspect all traffic all the time on the links they monitor. Peakflow SP TMS only needs to inspect traffic that is redirected to it in response to an attack on a specific target.



Comprehensive threat detection and surgical mitigation

Key Features and Benefits

Surgical Mitigation
Automatically remove only the attack traffic without interrupting the flow of legitimate business traffic.

Unified Command and Control of Two Tb of Global Mitigation
Scale DDoS defenses to an unprecedented level. Deploy up to two terabits of aggregate, centrally managed mitigation capacity.

Managed Services Enabler
Meet rapidly growing demand for DDoS protection services. Use Peakflow SP TMS to deliver profitable managed security services.

Service Protection and Application Intelligence
Maintain service levels of your most important applications. Monitor performance and protect applications from targeted attacks.

Flexible Deployment
Deploy application-layer intelligence, threat detection and surgical mitigation in different portions of your network for infrastructure protection and profitable managed services.

ARBOR® NETWORKS

Multiple Methods of Threat Detection and Mitigation

Block known malicious hosts by using white and black lists. The white list contains authorized hosts, while the black list contains zombies or compromised hosts whose traffic will be blocked.

Block application-layer exploits by using complex filters. Peakflow SP TMS provides payload visibility and filtering to ensure cloaked attacks cannot bring down critical services.

Defend against Web-based threats by detecting and mitigating HTTP-specific attacks. These mechanisms also help with managing flash-crowd scenarios.

Protect critical DNS services from cache poisoning, resource exhaustion and amplification attacks. Add greater visibility into DNS services.

Protect VoIP services from automated scripts or botnets that exploit packet-per-second and malformed request floods by employing VoIP/SIP-specific attack detection and mitigation capabilities.

Control the zombie army by using specialized, always-on and learning zombie detection mechanisms that ensure compromised hosts are not attacking mission-critical infrastructure.

Protect SSL-based services (Web, email, file transfer) from attacks on SSL protocols and infrastructure

ATLAS® Intelligence Feed (AIF)

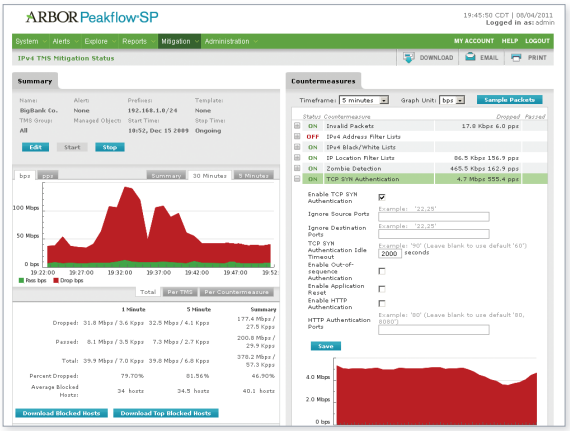
Leveraging a global network of traffic monitoring and sensors, Arbor researchers have developed AIF, a library of targeted defenses providing automatic protection from the vast majority of botnet-based attacks. AIF automatically updates Peakflow SP TMS with new protections as Arbor researchers find and neutralize emerging threats.

Comprehensive Threat Detection

Data centers and public networks present multiple targets for DDoS attacks. These targets include infrastructure devices (e.g., routers, switches and load balancers), domain name systems (DNS), bandwidth capacity and key applications such as Web, ecommerce, voice and video. Even security devices such as firewalls are targets of attack. The Peakflow SP solution provides the most comprehensive and adaptive suite of threat detection capabilities in the industry, designed to protect diverse resources from complex, blended attacks. These capabilities include statistical anomaly detection, protocol anomaly detection, fingerprint matching and profiled anomaly detection. Peakflow SP continually learns and adapts in real time, alerting operators to attacks as well as to unusual changes in demand and service levels.

Surgical Mitigation

Key to effective mitigation is the ability to identify and screen attack traffic while allowing legitimate traffic to flow through to its intended destination. Large-scale DDoS attacks affect not only the intended victim, but also other unfortunate customers who may be using the same shared network service. To reduce this collateral damage, service providers and hosting providers often shut down all traffic destined for the victim's site, thus completing the DDoS attack. Whether it's a high-volume flood attack designed to exhaust bandwidth capacity or a targeted attack looking to bring down a Web site, Peakflow SP TMS can isolate and remove the attack traffic without affecting legitimate users. Methods include identifying and black-listing malicious hosts, IP location-based mitigation, protocol anomaly-based filtering, malformed packet removal and rate limiting (to gracefully manage non-malicious demand spikes). Mitigations can be automated or operator-initiated and countermeasures can be combined to address blended attacks.



Real-time alerting and mitigation dashboard

Real-Time Mitigation Dashboard

The Peakflow SP TMS real-time mitigation dashboard is a single screen that shows operators exactly what is generating a DDoS alert and what effect the countermeasures are having on the attack. It provides the ability to modify countermeasures and delivers full packet capture and decode to get a detailed view of both legitimate and attack packet streams. This information is stored for future reference and management reporting—giving operators and managers full visibility and reporting into attacks on their business operations.

Flexible Deployment, Rapid Enablement

Configuration templates and out-of-the-box mitigation enable operators to implement effective DDoS defense from day one. Peakflow SP TMS automatically learns normal traffic patterns and adjusts over time, eliminating the need to manually configure and update alert thresholds. Operators also have the option to set thresholds and manually initiate mitigations. In short, Peakflow SP TMS allows operators to choose how much they wish to automate and how much they wish to control manually.

Comprehensive Management and Reporting

Peakflow SP TMS simplifies and streamlines operations by providing the ability to view and manage up to two terabits of mitigation capacity from a single point of control. This provides the ability to thwart multiple, large-scale attacks and produce comprehensive reports that summarize the mitigation process for customers and/or management.

A Platform for Managed DDoS Services

Arbor's Peakflow SP solution enables service providers and hosting/cloud providers to deliver DDoS protection services. Customized portal access, APIs and delegated management give managed services providers the flexibility and control to tailor services to fit their customers' needs. Peakflow SP is the undisputed leader for managed DDoS protection. It is the solution of choice for the vast majority of leading DDoS managed services.

Peakflow SP TMS 1200, 2500, 3050 and 3110 Specifications

Power Requirements	**1200**	Redundant Dual Power Supplies; **AC:** 100-127V/200-240V, 50 to 60Hz, 4/2A; **DC:** -48 to -60V, 7A max
	2500	Redundant Dual Power Supplies; **AC:** 100-127V/200-240V, 50 to 60Hz, 6/3A; **DC:** -48 to -60V, 10A max
	3050, 3110	Redundant Dual Power Supplies; **AC:** 100-240V, 50 to 60Hz; **DC:** -40 to -72V
Dimensions	**1200**	**Chassis:** 1U rack height; **Weight:** 25.41 lbs (11.52 kg); **Height:** 1.7 inches (4.32 cm); **Width:** 16.93 inches (43 cm); **Depth:** 20 inches (51 cm)
	2500	**Chassis:** 2U rack height; **Weight:** 39 lbs (17.7 kg); **Height:** 3.45 inches (8.76 cm); **Width:** 17.14 inches (43.54 cm); **Depth:** 20 inches (51 cm)
	3050, 3110	**Chassis:** 3U rack height; **Weight:** 33.5 lbs (15.2 kg); **Height:** 5.25 inches (13.34 cm); **Width:** 17.63 inches (44.8 cm); **Depth:** 16.28 inches (41.33 cm)
Network Interfaces, Hard Drive	**1200**	4 x 10/100/1000 (fiber GigE SX and LX available) Dual Hard Drive RAID 1
	2500	6 x 10/100/1000 (fiber GigE SX and LX available) Dual Hard Drive RAID 1
	3050, 3110	2 x 10 GigE (SFP+) 10 x 1 GigE (SFP) Dual Hard Drive RAID 1
Environmental	**1200, 2500**	**Operating temperature:** 41° to 104°F (5° to 40°C); **Relative humidity (operating):** 5 to 85%, (non-operating) 93% at 73° to 104°F (23° to 40°C)
	3050, 3110	**Operating temperature:** 23° to 131°F (-5° to 55°C); **Relative humidity (operating):** 5 to 95% non-condensing
Regulatory	**1200**	RoHS, IEC 60950-1 2nd ed., FCC Part 2, FCC Part 15 Subpart B Class A, EN 55022 Class A, EN 55024, EN 61000-3-2, EN 61000-3-3, ETSI EN 300 386, CISPR 22 Class A, CISPR 24, CCC, Gost, BSMI, VCCI Class A, KCC RLL, C-Tick, MIC, CD, UL Mark, CE Mark
	2500	RoHS, IEC 60950-1 1st ed., FCC Part 2, FCC Part 15 Subpart B Class A, EN 55022 Class A, EN 55024, EN 61000-3-2, EN 61000-3-3, ETSI EN 300 386, CISPR 22 Class A, CISPR 24, CCC, Gost, BSMI, VCCI Class A, KCC RLL, C-Tick, UL Mark, CE Mark, ETSI, NEBS-3
	3050, 3110	RoHS 6/6, IEC/EN/UL 60950-1, FCC Part 15 Subpart B Class A, ETSI EN 300 386, UL Mark, CE Mark
Hardware Bypass	**1200, 2500**	Yes
	3050, 3110	External
Throughput	**1200**	1.5 Gbps, 500K pps
	2500	2.5 Gbps, 1M pps
	3050	5 Gbps, 2M pps
	3110	10 Gbps, 4M pps

Seventh Annual Worldwide Infrastructure Security Report

Arbor's seventh annual *Worldwide Infrastructure Security Report* reviews the results of a survey of 114 service providers, hosting/ASPs, mobile operators and enterprises across North America, South America, Europe and Asia. This report contains information useful to network and data center operators, allowing them to make informed decisions regarding network security.

Highlights from the latest report:

- High-volume attacks that exceed bandwidth to the data center are the new normal.
- Application-layer and complex multivector attacks are on the rise.
- "Hacktivism" and vandalism are primary attack motivations.
- Stateful devices including firewalls, IPS and load balancers frequently fail under DDoS attacks.

To download the latest report, go to: **www.arbornetworks.com/report**

"All service providers are vulnerable to a variety of potentially damaging security threats. Some can be extremely difficult to detect and deal with. Arbor Networks' Peakflow SP TMS solution has earned an enviable reputation in the industry as an important part of an efficacious network defense strategy. That's why we chose them."

Dirk Bhagat, Chief Technology Officer, Hostopia

Peakflow SP TMS 1200
1.5 Gbps, 500K pps

Peakflow SP TMS 2500
2.5 Gbps, 1M pps

Peakflow SP TMS 3050
5 Gbps, 2M pps

Peakflow SP TMS 3110
10 Gbps, 4M pps

Peakflow SP TMS 4000
10 Gbps, 10M pps – 40 Gbps, 40M pps

Peakflow SP TMS 4000 Specifications

Peakflow SP TMS 4000 (1 APM-E, 2 APM-E, 3 APM-E, 4 APM-E)

Power Requirements	Redundant Power Supplies: 3 AC, 2 DC; **AC:** 100-240V, 50 to 60Hz; **DC:** -48 to -72V	
Dimensions	**Chassis:** 6U rack height; **Weight:** 78lbs (35.4kg), plus 6lbs (2.7kg) per APM-E; **Height:** 10.5 inches (26.7 cm); **Width:** 17.63 inches (44.8 cm); **Depth:** 16.3 inches (41.4 cm)	
Network Interfaces, Hard Drive	8 x 10 GigE (SFP+) Dual Hard Drive RAID 1	
Environmental	**Operating temperature:** 23° to 104°F (-5° to 40°C), applies to all 4000 configs. **Relative humidity (operating):** 5 to 95%	
Regulatory	RoHS 6/6, CSA, FCC Part 15 Subpart B Class A, ETSI EN 300 386, CE	
Hardware Bypass	External	
Throughput	**4000 (1 APM-E)**	10 Gbps, 10M pps
	4000 (2 APM-E)	20 Gbps, 20M pps
	4000 (3 APM-E)	30 Gbps, 30M pps
	4000 (4 APM-E)	40 Gbps, 40M pps

Peakflow SP TMS DDoS Defense Specifications (All Models)

Simultaneous Sessions	Not session limited
Deployment Modes	Inline Active, Inline Monitoring, SPAN port, Diversion/Reinjection
Block Actions	Source blocking/source suspend, per packet blocking, combination of source, header and rate based blocking
Attack Protections	Flood Attacks (TCP, UDP, ICMP, DNS Amplification), Fragmentation Attacks (Teardrop, Targa3, Jolt2, Nestea), TCP Stack Attacks (SYN, FIN, RST, SYN ACK, URG-PSH, TCP Flags), Application Attacks (HTTP GET floods, SIP Invite floods, DNS attacks, HTTPS protocol attacks), DNS Cache Poisoning, Vulnerability attacks, Resource exhaustion attacks (Slowloris, Pyloris, LOIC, etc.). Flash crowd protection. IPv4 and IPv6 attack protections
DDoS Countermeasures	Blacklist/Whitelist, Geo Location reporting and blocking, Zombie blocking, packet content filtering, packet header filtering, Botnet removal (AIF feed), Malformed packet removal (TCP, UDP, DNS, DNSSEC, HTTP, HTTPS, SIP), multiple anti-spoofing countermeasures, blended attack protection, CDN/proxy aware countermeasures, rate limiting

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Arbor Networks, Inc. is a leading provider of network security and management solutions for enterprise and service provider networks, including the vast majority of the world's Internet service providers and many of the largest enterprise networks in use today. Arbor's proven network security and management solutions help grow and protect customer networks, businesses and brands. Through its unparalleled, privileged relationships with worldwide service providers and global network operators, Arbor provides unequalled insight into and perspective on Internet security and traffic trends via the ATLAS® Active Threat Level Analysis System. Representing a unique collaborative effort with 230+ network operators across the globe, ATLAS enables the sharing of real-time security, traffic and routing information that informs numerous business decisions.