BIG-IP Advanced Firewall Manager

DATASHEET

What's Inside

Secure the Data Center, Defend the Network, and Protect Applications

Businesses rely on applications for internal productivity and for external customer access. At the same time, applications and the data centers that host them are increasingly under threat from sophisticated, targeted attacks.

F5® BIG-IP® Advanced Firewall Manager™ (AFM) is a high-performance, stateful, full-proxy network security solution designed to guard data centers against incoming threats that enter the network on the most widely deployed protocols. Built on F5's industry-leading Application Delivery Controller (ADC), BIG-IP AFM gives enterprises and service providers the scalability, flexibility, performance, and control needed to mitigate the most aggressive, volumetric distributed denial-of-service (DDoS) attacks before they reach the data center.

BIG-IP AFM's unique application-centric design enables greater effectiveness in guarding against targeted network-level attacks. It tracks the state of network sessions, maintains deep application awareness, and uniquely mitigates attacks based on more granular details than traditional firewalls. With BIG-IP AFM, organizations receive protection from over 100 attack signatures—more hardware-based signatures than any other leading firewall vendor—and unsurpassed programmability, interoperability, and visibility into threat conditions.

Key benefits

Scale to meet network demand

Meet demands for higher bandwidth usage and concurrency rates with F5's proven TMOS® architecture, hardware systems, and virtual editions to ensure performance while under attack.

Ensure application availability

Secure networks from DDoS threats across a variety of protocols, with in-depth rules customization and increased performance and scalability.

Protect with app-centric, full-proxy firewall capabilities

Inspect all incoming client connections and server-to-client responses, and mitigate threats based on security and application parameters before forwarding them on to the server.

Inspect SSL sessions

Fully terminate and decrypt SSL traffic to identify potentially hidden attacks—at high rates and with high throughput.

Streamline firewall deployment

Simplify security configuration with firewall policies oriented around applications and an efficient rules and policy GUI.

Customize reporting for visibility

Easily understand your security status with rich customizable reports, logging, and charts that provide insight to all event types and enable effective forensic analysis.

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Full-Proxy, Application-Centric Security

Full-proxy stateful security

Unlike traditional firewalls, BIG-IP AFM is built on the full-proxy architecture of the F5 TMOS operating system. Incoming client connections are fully terminated, inspected for possible security threats, and only then forwarded to the server—assuming no threats are present.

With the full-proxy capabilities of TMOS, BIG-IP AFM has in-depth understanding of the most commonly used inbound protocols such as HTTP/S, DNS, ICMP, and TCP, and supports a rich set of services that expand traditional stateful firewall capabilities. Additionally, this security enables deeper visibility into connections, allowing data to be manipulated and modified before it's sent to servers or otherwise.

In the reverse direction, server-to-client communication is also proxied. BIG-IP AFM can scrub return data for sensitive information—for instance, protocol response codes that could divulge network information for reconnaissance attacks—and private data, such as credit card or Social Security numbers.

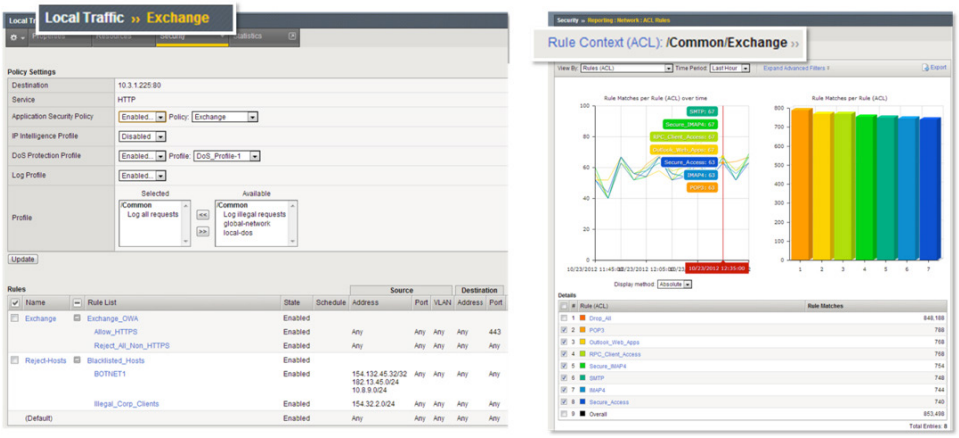
The full-proxy design enables termination of SSL, enforcement of security policies, east-west firewall capabilities, and other performance-related services—helping organizations address challenges in volatility inside and outside of the data center.

Application-centric security policies

Gone are the days of mapping applications to zones, or scouring through spreadsheets of firewall policies to distinguish attacks on specific applications or to identify the IP address for a particular application server.

Unlike most network firewall solutions, BIG-IP AFM security policies are logically aligned with the applications in specific traffic flows—streamlining security operations and heightening security effectiveness. But similar to web application firewall solutions, BIG-AFM attaches network security policies to application objects. Details about the application parameters, including server addressing, SSL offload, and access policies, can be grouped together with security parameters, including policies, SSL inspection, and logging. This includes information on which layer 7 protocols are permitted for specific application port access. F5's app-centric approach provides increased efficiency in addressing app concerns and more accuracy in threat detection and policy effectiveness.

Further, since the configuration for an application is unified with an associated network security policy, deprovisioning of applications is also streamlined. When an application is deprovisioned, the obsolete security rules are simultaneously deprovisioned. BIG-IP AFM helps ensure the effectiveness of application deployment and simplifies policy assurance above rigid zone-based or segment-based constructs.



BIG-IP AFM orients firewall policies around the application itself—streamlining security operations.

Network DDoS protection

The full-proxy architecture of BIG-IP AFM helps to ensure the application infrastructure is protected using advanced capabilities to mitigate denial-of-service (DoS) and DDoS attacks. The out-of-the-box functionality includes a comprehensive set of signatures that enable organizations to defend against, track, and report a breadth of well-known network DDoS attacks and methodologies. Admins can automatically or manually set DDoS threshold values. Furthermore, it allows you to configure packet limits, percentage increases for thresholds, and set absolute rate limits of packets used in attack vectors. Using DoS profiles, BIG-IP AFM performs a variety of checks and mitigates a multitude of attacks, including flood, sweep, teardrop, and smurf attacks, while protecting protocols like SIP and DNS.

BIG-IP AFM also helps to ensure clean pipes for inbound traffic. Using remotely triggered black hole filtering (RTBH), BIG-IP AFM stops attack traffic even before it leaves the ISP network realm. When activated, BIG-IP AFM automatically broadcasts malicious IPs to upstream routers to enforce blacklisting through participating ISP routers, ensuring that only good traffic is routed to the data center network and applications within. RTBH functionality leverages the BIG-IP AFM IP shun category blacklist that uniquely identifies and blocks malicious L3–L7 attack sources in hardware until feed lists are updated. BIG-IP AFM also combines with the F5 Silverline™ DDoS Protection service for a reactive or proactive hybrid DDoS defense—ensuring always-up services by rerouting attacks away from the data center for cloud-based mitigation.

BIG-IP AFM offers more granularity and visibility into traffic and DDoS attacks than most solutions, with detailed logging and reporting of attack detection and mitigation. It also delivers increased SYN cookie protections, per-server granular DDoS policies, IP reputation intelligence, and custom whitelist and blacklist support. BIG-IP AFM uses hardware-based DDoS mitigation that scales to prevent high-volume, targeted, network flood attacks—while allowing legitimate traffic to flow without compromising performance.

SSH channel protection

BIG-IP AFM uniquely controls operations in the SSH channel and helps prevent data breaches, malware distribution, and compliance failures. When deployed in front of SSH servers, BIG-IP AFM acts as a man-in-the-middle SSH proxy—filtering SSH traffic, and controlling access to files, databases, and system information by limiting task users

can perform. Unlike leading firewalls, SSH policies limit permissible actions per user or per virtual server to strengthen security on SSH channels—tracking usage and preventing misuse of SSH channels by employees and contractors, and stopping east-west attacks that move throughout the infrastructure. Additionally, BIG-IP AFM prevents SSH sessions from remaining open indefinitely and ensures effective and continuous SSH key management for tighter security and compliance.

Unsurpassed flexibility and extensibility

Rapid response is vital in minimizing risk imposed by uncommon attacks. Many firewalls fail to secure the perimeter when faced with less common attacks like Heartbleed. As a component of the F5 BIG-IP® platform, BIG-IP AFM benefits from the extensibility of F5 iRules®, allowing administrators to expand functionality and deploy custom rules that protect against complex and multi-level attacks.

F5 iRules is a scripting language with open APIs that can operate directly on payloads in the data plane. With iRules, administrators can create custom rules to mitigate uncommon, highly-sophisticated DDoS attacks that may not be covered by the BIG-IP AFM packaged solution. The scope of iRules commands provides deep visibility into packets, especially IP/TCP header fields, enabling effective L2–L4 DDoS signatures and flow control via iRule signatures. iRules benefits from BIG-IP AFM anti-DDoS support, which distinguishes between good and bad traffic based on signature(s) and takes action to block, drop, log, redirect, or stop traffic for inspection based on signature matching.

With iRules customization, capabilities including IP intelligence, geolocation features, and statistical sub-sampling can also be applied. iRules has been leveraged by the F5 DevCentral™ community of over 195,000 users, collaborating and creating custom rules that mitigate less common threats. These rules are shared to enable other administrators to flexibly expand the functionality of BIG-IP AFM deployments.

Intelligent Control

IP intelligence

Organizations today are exposed to a variety of potentially malicious attacks from rapidly changing IP addresses. A major advantage in your network protection scheme is the ability to anticipate, detect, and respond to threats before they hit the data center. BIG-IP AFM integrates with F5 IP Intelligence Services for stronger context-based security that strategically guards against evolving threats at the earliest point in the traffic flow.

IP Intelligence Services minimizes the threat window and enhances BIG-IP AFM DDoS and network defense with up-to-date network threat intelligence for stronger, context-based security. It maintains information on over one million malicious URL and IP addresses, and can effectively block connections to and from those addresses. To minimize the threat window and keep an organization's data (and its reputation) safe, the IP Intelligence Services database of addresses is refreshed every five minutes from the cloud. Administrators can assign default classes and behaviors to feed lists, allowing more control for each IP intelligence category by specifying response actions and default logging for each policy. IP Intelligence Services reduces risk and increases data center efficiency—eliminating the effort to process bad traffic.

IP shunning (accelerated blacklisting)

BIG-IP AFM also provides IP shunning capabilities, which help organizations to minimize enforcement time of dynamic security controls that guard against known malicious IPs. IP shunning complements existing IP Intelligence Services. It facilitates more immediate filtering of malicious traffic until intelligence feeds containing blacklisted IP addresses are updated. Up to 100,000 entries can be blacklisted almost instantaneously to enable temporary, immediate blocking (or whitelisting) of malicious IPs. IP shunning reduces time-to-enforcement and increases speed of mitigation based on real-time intelligence from BIG-IP AFM, other BIG-IP modules, and third-party monitoring systems.

Centralized Policy Management

Large organizations face a growing challenge in managing a consistent and effective security posture across an ever-expanding number of firewall devices. Too often, security administrators must independently manage each device, reducing operational scalability and increasing overhead costs. F5 BIG-IQ® Centralized Management enables administrators to easily manage and orchestrate F5 devices and the services they deliver , including the security services of BIG-IP AFM.

Deep Visibility and Reporting

IT and security teams struggle with collecting sufficient threat intelligence and analyzing data that allows them to accurately implement security measures. BIG-IP AFM gives organizations deep insight into attacks and mitigation techniques, enabling them to make more informed decisions that increase overall security effectiveness.

With advanced logging and intelligent threat reporting capabilities, BIG-IP AFM logs millions of records in real time, providing granular visibility into DDoS attacks for in-depth analysis of security events. BIG-IP AFM reports provide clear, concise, and actionable information highlighting attacks and trends with drill-down and page-view capabilities. These offer comprehensive details into attacks, threat progression, and firewall BIG-IP AFM health.

With BIG-IP AFM, organizations can also benefit from F5 Analytics, a module of the BIG-IP platform, which combines DDoS reports from BIG-IP ASM and BIG-IP AFM for a single comprehensive view of the entire threat field. F5 Analytics, previously known as the Application Visibility and Reporting module, allows administrators to view and analyze metrics gathered about the network and servers as well as the applications themselves. Additionally, BIG-IP AFM uses SNMP and JSON reporting to easily communicate DDoS attack details and other key events to higher-level monitoring and forensics systems. These systems offer greater analysis that strengthens the organization's overall security posture.

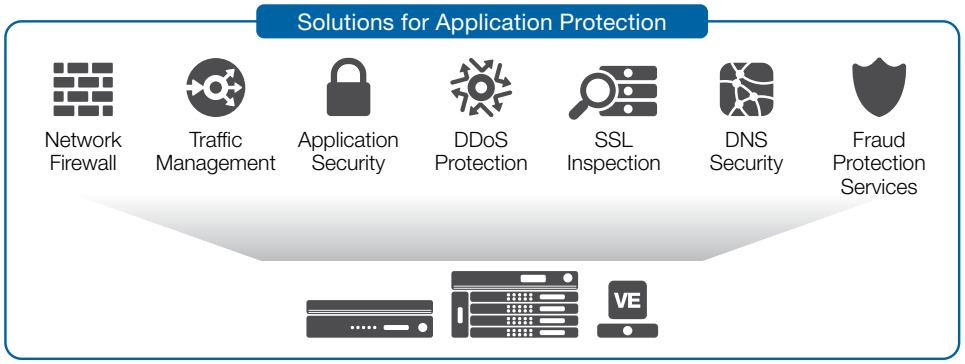
Increased Scalability, Performance, and Reliability

BIG-IP AFM delivers the scalability and performance to tackle the most demanding firewall requirements with outstanding speed and throughput. A single F5 platform scales to handle up to 576 million concurrent connections, 640 Gbps of throughput, and 8 million connections per second to mitigate even the largest volumetric attacks. And when combined with hardware redundancy, synchronization, health monitoring, and automatic failover/failback capabilities, this provides greater assurance in availability and reliability.

BIG-IP AFM uses F5 ScaleN™ with Virtual Clustered Multiprocessing™ (vCMP) enabled systems to give cloud and communications service providers, as well as enterprises, the most cost-effective approach for managing their large-scale firewall deployments. With vCMP, administrators can easily consolidate multiple firewalls onto a single device and allocate BIG-IP AFM resources in a more flexible and isolated manner than with firewalls for different customers, groups, applications, and services. vCMP supports high-density firewall isolation and guest firewall clustering for easier administration and maintenance and to ensure consistency throughout the firewall infrastructure.

Consolidated Application Protection

BIG-IP AFM is a core component of F5's solutions for application protection, which combine network firewall capabilities with traffic management, application security, anti-fraud protections, and DNS security. These solutions can be consolidated onto a single BIG-IP platform, reducing management complexity and overhead, while offering superior performance and scalability. Building upon BIG-IP® Local Traffic Manager™ (LTM), the consolidated protection delivers deep application fluency for the most widely deployed enterprise applications. This makes it ideal for protecting Internet-facing data center applications, wherever they reside.



F5's solutions for application protection bring together key network and security functions on a single platform.

F5's solutions for application protection are made up of the following BIG-IP modules:

- BIG-IP Advanced Firewall Manager (AFM)—This advanced network security solution forms the core of the F5 application protection solution. It provides full SSL visibility at scale, as well as network-layer and session-layer DDoS mitigation.
- BIG-IP Local Traffic Manager (LTM)—Provides advanced traffic management, load balancing, and application delivery.
- BIG-IP Application Security Manager (ASM)—Delivers application security, web scraping and bot prevention, and HTTP DDoS mitigation.
- F5 WebSafe™ and MobileSafe®—Protect against threats targeting online and mobile banking application users.
- BIG-IP® DNS (formerly BIG-IP® Global Traffic Manager™ [GTM])—Hyperscales and secures the DNS infrastructure during DDoS attacks and keeps global applications online.
- IP Intelligence and Geolocation—These additional services provide IP reputation and geolocation information for added context-aware security.

Protection for Service Provider Environments

BIG-IP AFM—with its unmatched scale and performance—is also ideal for cloud and communications service provider deployments. In service provider environments, BIG-IP AFM helps to ensure performance as it protects not only the network itself, but also subscribers, from attacks.

In mobile networks, BIG-IP AFM forms the basis of the F5 S/Gi firewall solution. Deployed at the Gi interface of 3G networks and the SGi interface of 4G/LTE networks, the S/Gi firewall solution enforces network perimeters, protects the mobility infrastructure and mobile subscribers, and gives service providers the scalability and flexibility for advanced service enforcement. The S/Gi firewall solution takes advantage of F5's intelligent services framework, meaning service providers can consolidate additional network and security functions such as carrier-grade NAT and subscriber traffic visibility—all on a single platform.

BIG-IP AFM Features and Specifications

BIG-IP Advanced Firewall Manager is a stateful, full-proxy security solution that provides advanced network protection and capabilities that exceed traditional firewalls.

Security

Protocol anomaly detection	Yes—SYN/ICMP/ACK/UDP/TCP/IP**/DNS/ARP
DoS and DDoS protection	Yes—L3, L4, SSL, DNS, HTTP, Flood, Sweep
DDoS auto-threshold setting	Yes
Remotely triggered black hole filtering (RTBH)	Yes
SSH proxy	Yes
Port-misuse protection	Yes
SSL reverse proxy	Yes
IP reputation* and geolocation	Yes—including identifying Tor proxies, malware, and command-and-control (C&C) servers
Central management w/RBAC	Yes—with BIG-IQ Centralized Management
SNMP reporting	Yes
DDoS traffic sampling	Yes

*Licensed separately
**IPv4 and IPv6 supported

IPsec	
Site-to-site	Yes
Keying methods	Manual, Internet Key Exchange (IKEv1 and IKEv2)
Authentication methods	Preshared key, RSA signature
Diffie-Hellman groups	1, 2, 5, 14, 15, 16, 17, 18
Encryption algorithms	3DES, AES-128, AES-192, AES-256, AES-GCM-128, AES-GCM-256
Hash/HMAC algorithms	SHA-1, AES-GMAC-128, AES-GMAC-192, AES-GMAC-256

Platform Features	
Multi-tenancy	Yes—with vCMP
High availability	Yes—active-passive or active-active

SSL VPN	
Remote access	Yes—with BIG-IP APM

Scale and Performance	VIPRION 4800 (8 x B4300/ B4340)	VIPRION 4480 (4 x B4300/ B4340)	VIPRION 2400 (4 x B2150/ B2250)	VIPRION 2200 (2 x B2150/ B2250)
Maximum firewall throughput	640 Gbps	320 Gbps	160/160/320 Gbps	80/80/160 Gbps
Connections per second	7.5 million	4.8 million	1.5 million/ 3.8 million	750,000/ 1.9 million
Maximum concurrent connections	576 million	144 million	88 million/ 176 million	44 million/ 88 million

Scale and Performance	BIG-IP 10050s/10250v	BIG-IP 7050s/7250v	BIG-IP 5050s/5250v
Maximum firewall throughput	80 Gbps	40 Gbps	30 Gbps
Connections per second	850,000	370,000/ 750,000	670,000/ 330,000
Maximum concurrent connections	36 million	22 million	22 million

Scale and Performance	BIG-IP 4000s/4200v	BIG-IP 2200s/2000s
Maximum firewall throughput	10 Gbps	5 Gbps
Connections per second	130,000/ 250,000	135,000/ 67,000
Maximum concurrent connections	9 million/ 10 million	5 million/ 4.5 Million

BIG-IP AFM Availability

BIG-IP Advanced Firewall Manager is available bundled with other modules to enable specific application delivery firewall use cases, as follows.

Bundle Name	BIG-IP AFM	BIG-IP LTM	BIG-IP ASM	BIG-IP APM	BIG-IP APM Lite (10 users)
Application Delivery Firewall	✓	✓			✓
Application Delivery Firewall with Application Security	✓	✓	✓		✓
Application Delivery Firewall with Access Management	✓	✓		✓	✓
Application Delivery Firewall with Application Security and Access Management	✓	✓	✓	✓	✓
Advanced Firewall Manager Add-On (for systems that already have BIG-IP LTM)	✓				

Note: All BIG-IP AFM licenses include protocol security, routing, and maximum SSL. IP Intelligence and Geolocation are available add-ons for all bundles.

BIG-IP Advanced Firewall Manager is available as an add-on module for integration with BIG-IP Local Traffic Manager on any BIG-IP platform. For detailed physical specifications, please refer to the BIG-IP System Hardware Datasheet.

BIG-IP LTM Virtual Edition

BIG-IP LTM Virtual Edition (VE) is a version of the BIG-IP system that runs as a virtual machine. BIG-IP Advanced Firewall Manager can be deployed on a virtual edition. BIG-IP VEs include all features of BIG-IP devices running on the standard F5 TMOS, except as noted in release notes and product documentation.

VIPRION Platforms

BIG-IP Advanced Firewall Manager is also available as an add-on module to BIG-IP Local Traffic Manager on the modular F5 VIPRION® platform. This chassis and blade architecture enables simple scalability as your Application Delivery Network grows. See the VIPRION Datasheet for details.

BIG-IP Platforms

Only F5's next-generation, cloud-ready ADC platform provides DevOps-like agility with the scale, security depth, and investment protection needed for both established and emerging apps. The new BIG-IP® iSeries appliances deliver quick and easy programmability, ecosystem-friendly orchestration, and record breaking, software-defined hardware performance. As a result, customers can accelerate private clouds and secure critical data at scale while lowering TCO and future-proofing their application infrastructures. F5 solutions can be rapidly deployed via integrations with open source configuration management tools and orchestration systems.

In addition to the BIG-IP iSeries, F5 offers VIPRION modular chassis and blade systems designed specifically for performance and for true on-demand linear scalability without business disruption. VIPRION systems use F5's ScaleN clustering technology to add blades without reconfiguration or rebooting.

BIG-IP iSeries Appliance

VIPRION Chassis

BIG-IP Virtual Editions

Virtual editions of BIG-IP software run on commodity servers and support the range of hypervisors and performance requirements. These virtual editions provide agility, mobility, and fast deployment of app services in software-defined data centers and cloud environments.

See the BIG-IP System Hardware, VIPRION, and Virtual Edition datasheets for more details. For information about specific module support for each platform, see the latest release notes on AskF5. For the full list of supported hypervisors, refer to the VE Supported Hypervisors Matrix.

In addition, F5 offers BIG-IQ Centralized Management for single pane of glass management of all F5 devices and iWorkflow for enabling orchestration of F5 application delivery policies.

Simplified Licensing

Meeting your applications' needs in a dynamic environment has never been easier. F5's Good, Better, Best provides you with the flexibility to provision advanced modules on demand, at the best value.

- Decide what solutions are right for your applications' environment with F5's reference architectures.
- Provision the modules needed to run your applications with F5's Good, Better, Best offerings.
- Implement complete application flexibility with the ability to deploy your modules on a virtual or physical platform.

F5 Global Services

F5 Global Services offers world-class support, training, and consulting to help you get the most from your F5 investment. Whether it's providing fast answers to questions, training internal teams, or handling entire implementations from design to deployment, F5 Global Services can help ensure your applications are always secure, fast, and reliable. For more information about F5 Global Services, contact consulting@f5.com or visit f5.com/support.

More Information

To learn more about BIG-IP Advanced Firewall Manager and complimentary solutions, visit f5.com to find these and other resources:

Datasheets

BIG-IP Application Security Manager

IP Intelligence Services

BIG-IP Access Policy Manger

Web pages

BIG-IP Advanced Firewall Manager

Solution profile

High-Performance Application Delivery Firewall

White papers

A New Firewall for the Data Center

Mitigating DDoS Attacks

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