



# WEB SERVERS

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## Description of the Application

Web servers remain an integral part of enterprise network and e-commerce strategies. Web servers run critical applications and provide valuable content, revolutionizing the way that organizations provide information, services and products today. Employees, partners, clients and customers rely on the constant availability of the services and information provided by web servers. As the scope of the Internet and the integration of business alliances increase, so does the demand on web servers and the role they play in the success of the organization.

## Challenges to the Application Type

Both large and small organizations face the challenge of deploying web sites and web applications while ensuring secure and optimized delivery of those applications. Choosing a cost effective solution that meets these challenges while allowing for growth is extremely important. Key challenges include:

**Increasing Security** - Web site and network security have recently become both more complex and more crucial to web server deployments. New attacks such as cross-site scripting, parameter tampering, and SQL injection exploit holes in network security and application design, highlighting an organization's need to increase application level security to assure resource availability.

**Improving ROI** - A pattern of repeatedly acquiring the latest technology or frequently buying excess server capacity can ruin an organization's operating margins - with little or no improvement in web applications performance and delivery. Organizations need scalable tools that monitor capacity and hardware that manages and redistributes access to server resources instantaneously and intelligently.

**Ensuring High Availability** - Constant availability is a major concern for any enterprise deploying web servers, whether an e-commerce company relying on web applications for revenue, or a Services organization relying on information delivery over the Internet. Traditionally, clustering technology was implemented to ensure the availability of web servers. However, as usage increased and larger deployments became common, added network traffic and limited health checking capabilities left organizations searching for more comprehensive solutions.

**Providing Scalability** - Web servers are high-traffic systems that need to provide consistent peak performance. Organizations seek technology that allows them to scale wisely, adding new servers as performance demands increase. Most web servers offer limited scalability through the use of clustering technology. However, in large deployments, the CPU-intensive processing that clustering places on the servers makes this solution impractical.

## F5 Solution Overview

F5's proven and widely deployed solutions allow organizations to increase the return on current investments and decrease the need for additional expenditure by providing flexible, intelligent distribution mechanisms to improve the performance and security of web servers and web applications. F5's application traffic management products increase the existing benefits of deploying web servers by providing an easy-to-use solution for optimizing, managing and securing global and local area traffic. For the remote workforce, the FirePass controller, F5's award-winning SSL VPN device, ensures that employees and trusted partners can securely access web servers on the corporate network from any device in any location. The TrafficShield web Application Firewall enhances deployments by protecting web servers at the application layer from general and targeted attacks, while allowing only valid and authorized application transactions on the network.

With its comprehensive feature set, including Intelligent Compression, TCP Express, and Fast Cache, version 9 of the BIG-IP system can offload a number of different services from web servers, improving performance for the end user more than 70% and freeing the servers to perform their primary role: serving content. The BIG-IP system provides the industry's most intelligent HTTP compression capabilities. Using the Universal Inspection Engine for deep packet inspection and the iRules policy-based engine, the BIG-IP device is able to selectively compress traffic based on an organization's needs. These compression features help the enterprise realize large performance gains and bandwidth reduction, maximizing return on investment.

The BIG-IP system further enhances web server deployments with TCP Express optimization features. Utilizing separate client and server side TCP stacks, TMOS independently optimizes the connection on both sides, improving end user performance for both broadband and dial-up clients while optimizing server-side data transmission.

Organizations integrating the BIG-IP solution with web server deployments can achieve significant server connection offload with the memory-based caching module called Fast Cache. Fast Cache provides the flexibility and control needed to extend caching on a per application basis, adapting to an organization's specialized caching needs and increasing end user performance for frequently accessed pages.



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## F5 Solution Overview - continued

F5's BIG-IP traffic management solution provides the foundation for the secure delivery of enterprise web services. The BIG-IP device's SSL offloading functionality gives organizations the ability to deploy SSL decryption and encryption on more of their sites and applications while decreasing web server load. Meanwhile, advanced health checking capabilities enable the BIG-IP product to test applications to ensure their availability and to validate functionality. The BIG-IP product's comprehensive feature set provides protection from well-known security threats such as DDOS and adds proactive capabilities to thwart future attack types.

F5's FirePass controller provides secure access to web server deployments for the remote workforce. Once authenticated by the FirePass device, users pass through the corporate firewall and are able to access web-enabled applications and content from any platform on any device in any location without having to re-authenticate for multiple resources. The FirePass controller not only delivers and secures access to web servers, but also allows for granular control of access to resources on a group bases. And for users accessing web servers remotely, the FirePass controller's caching and compression capabilities provide additional performance enhancement and server offload while securely delivering content.

F5's solution further enhances web application security with the TrafficShield Application Firewall. Using a positive security model ("deny all unless allowed"), the TrafficShield product provides comprehensive protection for web servers and web applications. By generating an extremely accurate model of all legitimate user interaction with an application, the TrafficShield device is able to filter all application requests and deny anything that is not legitimate user activity, including Buffer Overflow, cross-site scripting, and cookie poisoning.

## Benefits

**Fast Cache, TCP Express and Intelligent Compression features optimize performance and maximize ROI** - Integrating the BIG-IP solution with web servers provides a specialized Layer 4-7 architecture with superior processing power, optimizing application speed and Quality of Service levels. The BIG-IP version 9 Fast Cache enhances performance gains for end users while offloading up to 98% of server connections. Compressing a variety of file types, including HTML, XML, JavaScript, and J2EE applications, Intelligent Compression features provide bandwidth savings for web server deployment, dramatically improving ROI for the enterprise. Utilizing independent client and server side TCP stacks, BIG-IP TCP Express features optimize client side delivery while maintaining server-optimized connections on the inside of the network. This optimization takes place up and down the entire stack, from the transport layer to the protocol and application layers, taking the workload off of the servers for increased server efficiency. The BIG-IP product's OneConnect feature intelligently manages HTTP sessions to reduce bandwidth cost by up to 20% and increase the capacity of your back-end server farm.

**F5 solutions enhance end-to-end security at every level of web server deployment** - The BIG-IP product comes standard with numerous security features that provide an extremely scalable, highly available and secure solution for both internal and external applications. BIG-IP can be used to balance both inbound and outbound traffic for devices like firewalls, caches, or routers. It enables stringent access control, secure administration, and helps resist common attacks. The FirePass SSL VPN extends this level of secure access to the remote workforce - on any device in any location - without the administrative and cost burden of client side software. The TrafficShield web Application Firewall provides comprehensive, proactive application layer protection that shields back end systems from application level security threats aimed at web server deployments.

**Centralized SSL acceleration and FIPS improve web server performance and reduce management costs** - For encrypted traffic, the BIG-IP solution provides integrated SSL encryption and decryption capabilities. Offloading processor-intensive SSL transactions from the front-end servers greatly improves the performance of the server cluster, freeing it to fill more user requests. This solution maximizes application availability, allows for trouble-free maintenance and reduces administration overhead. By offloading SSL and persistence functions (processor and server intensive operations) customers do not have to buy expensive hardware to support their applications. The result is up to 30% savings on hardware costs, with increased application performance. The BIG-IP product is also the first application traffic management solution with a FIPS (Federal Information Processing Standard) 140-2 Level 2 certified cryptographic/SSL accelerator. F5's FIPS products meet higher levels of security standards, required by Government agencies, financial services, and healthcare organizations, by integrating a tamper-resistant, key protection module and sophisticated key management capabilities. The management cost savings of centralizing this function on the BIG-IP product, instead of every server, is estimated to be 20 - 25%.

**Advanced health checking ensures high availability, improves scalability** - The BIG-IP product detects a variety of device failures to ensure that mission-critical resources are responding properly. Advanced content and application checks such as Extended Content Verification (ECV) and Extended Application Verification (EAV) simulate an end user request and monitor the true availability of content. With these advanced health checking capabilities, the BIG-IP product can recognize when a resource is unavailable or underperforming and direct traffic to another resource. With the BIG-IP product, all of your applications can achieve mission-critical availability (99.999% uptime),

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## Benefits - Continued

while reducing operational complexity and costs. If one service is nearing capacity, scaling it is as simple as adding another instance of the service to your network and then to the BIG-IP load balancing pool. Thus the BIG-IP product provides a highly scalable solution that allows enterprises to meet growing organizational demands on web and application resources.

***Universal Inspection Engine, iRules and cookie persistence enhance traffic control*** - Unlike other networking products on the market, the BIG-IP product can read any value(s) of an IP-based packet header or payload and direct it to the appropriate resource. Based on precise business criteria and requirements, the Universal Inspection Engine (UIE) and iRules™ allow an organization to easily incorporate application specific logic into the BIG-IP product, resulting in significant operational efficiencies. The BIG-IP system's patented cookie persistence method can insert a cookie on the client, ensuring that users always return to the same web server. Cookie persistence provides consistent results without constant authentication disruptions, thus increasing end user satisfaction.