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## Accelerate Web Applications, Improve User Experience, and Increase Revenue

Organizations depend on web applications to support business operations and drive revenue. All users of your web applications need fast access—whether they are employees or consumers, mobile or remote. Slow page loading times or unresponsive applications frustrate users. Employee productivity can plummet, and consumers researching or shopping online might abandon the website.

BIG-IP® WebAccelerator™ automates web performance optimization, instantly improving performance for end users and helping you to reduce costs. By offloading your network and servers, BIG-IP WebAccelerator decreases your spending on additional bandwidth and hardware. Users get fast access to applications, and you gain greater revenue and free up IT resources for other strategic projects.

### Key benefits

#### Improve user experience and revenue

Reduce frustration for employees and consumers using your site with fast apps, and pave the way for higher productivity and sales.

#### Deploy according to your business needs

Improve asymmetric deployment performance by 2x to 5x, and symmetric deployment by up to 10x.

#### Reduce costs

Reduce the number of application servers required with SSL offload, compression offload, and caching—and save both CapEx and OpEx.

#### Optimize server and bandwidth usage

Extend server capacity and reduce bandwidth usage to improve performance and reduce costs.

#### Simplify deployment and management

Use pre-defined policies for apps such as SharePoint, SAP Portal, Oracle Portal, E-business Suite 11/12, Siebel CRM, and more to simplify configuration.

#### Boost performance of mobile apps

Apply front-end optimization techniques to overcome the unique app delivery challenges of mobile devices.

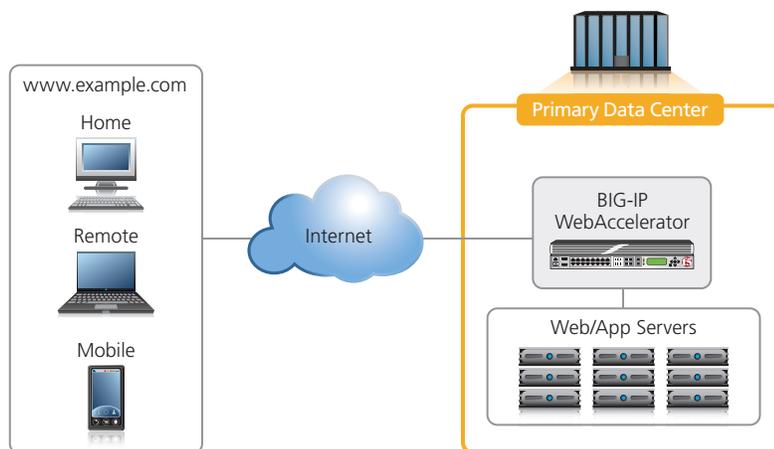
## Web Performance Optimization

BIG-IP WebAccelerator solves web content delivery issues by ensuring the best use of bandwidth and preventing repetitive or duplicate data from being served to users. This speeds up the first and repeat visits to portal, CRM, e-learning, and e-commerce sites. The result is significantly decreased download times, reduced bandwidth usage, and lower costs for using enterprise web applications in remote office and mobile deployments.

Mobile users face additional challenges due to the proliferation of different types of mobile devices, from smartphones to tablets, which have different operating systems and browsers. The additional latencies due to the extra hop from cell towers and WiFi hotspots make matters worse. Users end up with a range of page download times, all which are typically worse than what users get at the office or home.

To resolve these performance issues, BIG-IP WebAccelerator uses three layers of web performance optimizations: server and network optimization, Dynamic Content Control, and Dynamic Data Reduction. These optimizations do not require any server side installations, client side software, or changes to users' browsers.

BIG-IP WebAccelerator improves web application performance by up to 10x through front-end optimizations, dynamic caching, compression, and offload.



## Server and Network Optimization

BIG-IP WebAccelerator improves the capacity of application servers and the efficiency of network protocols by offloading intensive processing tasks such as SSL encryption, optimizing application and network protocols, and supporting new emerging protocols. Optimization features include:

- **SSL Acceleration**—Offloads computationally intensive SSL encryption and decryption, reducing server processor utilization by up to 50 percent. Consolidates private key creation and storage, SSL certificate management, and FIPS SSL support. BIG-IP WebAccelerator standalone devices run on the F5 TMOS® operating system and include the maximum available TPS for that specific hardware platform.
- **HTTP Protocol Optimizations**—Maintains high user performance levels by optimally tuning each HTTP and TCP session for each user's connection conditions. Optimizations for Microsoft NTLM authentication protocol enhance access to protected resources.
- **SPDY Gateway\***—SPDY is an emerging new application layer protocol developed by Google that augments HTTP by improving the inefficiencies related to connection

management and data transfer, with the goal of improved performance. It supports multiple streams within a single TCP connection, compresses the HTTP headers, and allows for prioritization of requests.

Because requests are interleaved on a single channel, the efficiency of TCP is much higher: fewer network connections need to be made, and fewer, but more densely packed, packets are issued. These benefits would specifically help in the mobile use case, given the typical slower mobile connection. F5 provides a SPDY gateway in TMOS to convert SPDY requests to HTTP to backend web servers. This takes advantage of the optimizations without requiring disruptive and potentially costly upgrades to application infrastructure.

\*Note: This early access feature requires separate license.

## Dynamic Content Control

Dynamic Content Control (DCC) is a group of capabilities that control users' browser behavior to improve end user experience, ensure the best use of bandwidth, and prevent repetitive or duplicate data from being downloaded. By reducing the amount of conditional requests and data transmitted between the browser and the web application, DCC reduces the effects of WAN latency and errors.

DCC includes these main features:

- **Intelligent Browser Referencing™**— Reduces the number of requests and speeds page rendering times by managing object expiration dates and storing frequently requested objects in the browser cache. Ensures that the browser only downloads truly dynamic and unique content by eliminating the download of repetitive data and browser conditional requests for static data that is incorrectly considered dynamic.
- **Content Reordering**—Optimizes the order of when JavaScripts and Cascading Style Sheets (CSS) are loaded to speed up the appearance of page rendering.
- **MultiConnect**—A form of domain sharing that enables browsers to open more simultaneous connections between the browser and web application for increased parallel data transfers. MultiConnect is extremely effective on high latency/high bandwidth networks such as satellite and mobile networks.
- **Dynamic Linearization**—Enables users to display PDF pages or jump to specific pages and view them without having to wait for the entire document to download first.

## Dynamic Data Reduction

Dynamic Data Reduction (DDR) reduces bandwidth utilization and improves page load times by reducing the amount of data that needs to traverse the WAN or Internet. F5 BIG-IP WebAccelerator offers the following DDR functions:

- **Image Optimization**—Reduces size of images by lowering the quality, stripping out unnecessary metadata, and converting the image format. For mobile devices, this optimization can be more beneficial given the smaller screen sizes and slower mobile connections.
- **Dynamic Caching**—Caches data that may seem dynamic (contains query parameters, cookies, or session IDs) but is actually static data or changes in an identifiable pattern. By fully inspecting every aspect of HTTP requests, controlling caching behavior, and invalidating cached data, BIG-IP WebAccelerator caches a high percentage of data from dynamic web applications while maintaining proper application behavior. BIG-IP WebAccelerator cache can scale up to 1 TB, depending on the hardware platform.

- **Dynamic Compression**—Compresses dynamic data from web applications and ensures that compression is used only when it will improve performance. Dynamic Compression is different from standard compression implementations because of its high efficiency and its ability to avoid widespread browser compression bugs. Even dynamic content requiring unique session IDs within every link on the page can be delivered and compressed, often with zero compression overhead.

## F5 Application Ready Solution

F5 works with some of the world's largest software vendors to bring you F5 Application Ready Solutions, a complete set of resources that simplifies the design, deployment, and management of your applications across the network. F5 Application Ready Solutions are designed, engineered, tested, and documented with BIG-IP WebAccelerator—along with F5's integrated product line—in a variety of real-world environments.

F5 Application Ready Solutions reduce the time, money, and errors associated with deploying and managing mission-critical, enterprise applications. Only F5 offers this comprehensive set of essential, application-specific tools.

### Application acceleration policies

Pre-defined, validated web acceleration policies enable you to quickly configure and deploy BIG-IP WebAccelerator to optimize your application acceleration right from the start. These policies can be used as built-in templates to enable you to customize BIG-IP WebAccelerator for your specific web applications.

An example of BIG-IP WebAccelerator validated web application acceleration policies.

Pre-defined Acceleration Policies	
Policy	Tools
BEA Aqualogic (Plumtree with Collaboration)	Copy   Export
BEA Aqualogic (Plumtree without Collaboration)	Copy   Export
Generic Policy - Complete	Copy   Export
Generic Policy - Enhanced	Copy   Export
Generic Policy - Extension Based	Copy   Export
Generic Policy - Fundamental	Copy   Export
Lotus Domino	Copy   Export
MatrixOne eMatrix	Copy   Export
Microsoft Office SharePoint Portal Server 2003	Copy   Export
Microsoft Office SharePoint Portal Server 2007	Copy   Export
Microsoft Outlook Web Access (OWA) 2003	Copy   Export
Microsoft Outlook Web Access (OWA) 2007	Copy   Export
Microsoft SharePoint 2010	Copy   Export
Oracle - Peoplesoft 9	Copy   Export
Oracle AS 10g Portal	Copy   Export
Oracle E-business Suite 11 & 12	Copy   Export
Oracle Hyperion	Copy   Export
Oracle JD Edwards ERP	Copy   Export
Oracle Peoplesoft	Copy   Export
Oracle Siebel CRM	Copy   Export
SAP Portal	Copy   Export
Symmetric Deployment	Copy   Export

Validated web application acceleration policies that ship with BIG-IP WebAccelerator include Microsoft SharePoint, Oracle Portal, SAP Portal, Microsoft Office Outlook Web Access, Oracle E-business Suite 11 and 12, Oracle Siebel CRM, and many more.

Generic policies are also available for custom and less common applications that do not have a pre-defined policy.

BIG-IP WebAccelerator configurations and policies can also be managed and updated using iApps™ templates.

### Application Ready Solution guides

A comprehensive overview of each specific Application Ready Solution guide details how it can ease your application deployment and shows you the specific results you can achieve with your BIG-IP WebAccelerator implementation.

### Deployment guides

Detailed, step-by-step procedures walk you through deployment from day one. Every procedure has been thoroughly tested and optimized in real-world environments to achieve top performance. Each deployment guide contains a comprehensive set of configuration scenarios to cover your specific needs.

### Active user community

An active, collaborative community on F5 DevCentral offers feedback, documents, and tips for a successful deployment. Dedicated Application Ready Solution pages provide application-specific content, including downloads, help and forum discussions, links to related podcasts, and more.

## Deployment Options

BIG-IP WebAccelerator can be deployed in a range of different configurations to address your organization's business needs as they evolve.

### Cost-effective asymmetric deployment

BIG-IP WebAccelerator can be placed in the data center in an asymmetric deployment to achieve performance improvements of 2x to 5x. In addition, deploying in a remote site for caching offload can speed up local requests for specific recurring high volume data and applications. Unique to BIG-IP WebAccelerator, asymmetric web acceleration offers immediate, significant ROI for a moderate investment.

Additionally, if you have contracted with a subscription-based content delivery network (CDN) provider, simply implementing BIG-IP WebAccelerator in the data center can dramatically reduce CDN usage.

### Symmetric deployment for maximum acceleration

Symmetric deployments can provide acceleration of up to 10x over unaccelerated applications. In a symmetric implementation, BIG-IP WebAccelerator is deployed at the data center and at one or more key remote locations. By serving unchanged content directly from the remote device, symmetric acceleration further eliminates the effects of high latency connections. The result is maximum performance acceleration and additional decreases in bandwidth usage.

### Clustering to scale

BIG-IP WebAccelerator devices can be clustered to create very large arrays to scale capacity as your web application acceleration needs grow.

### Creating a private content delivery network (CDN)

Many organizations may choose not to use commercial CDN providers because their content is internal, dynamic, and confidential or they do not want to pay the recurring costs. Deployed symmetrically in conjunction with other F5 solutions, BIG-IP WebAccelerator

enables your organization to create its own private enterprise CDN. This provides your enterprise websites with high availability and performance, content control, and DoS protection. It can also help you reduce OpEx costs and meet regulatory compliance.

### E-commerce stand-in capability

When e-commerce web servers go down, BIG-IP WebAccelerator can ensure high availability by “standing in” and continuing to serve static content that is already cached. BIG-IP WebAccelerator can prevent lost or abandoned shopping carts and hand off to financial transaction servers for processing.

### Product module or standalone solution

BIG-IP WebAccelerator is available as a product module on BIG-IP® Local Traffic Manager™ or as a standalone solution on any of the hardware appliance platforms.

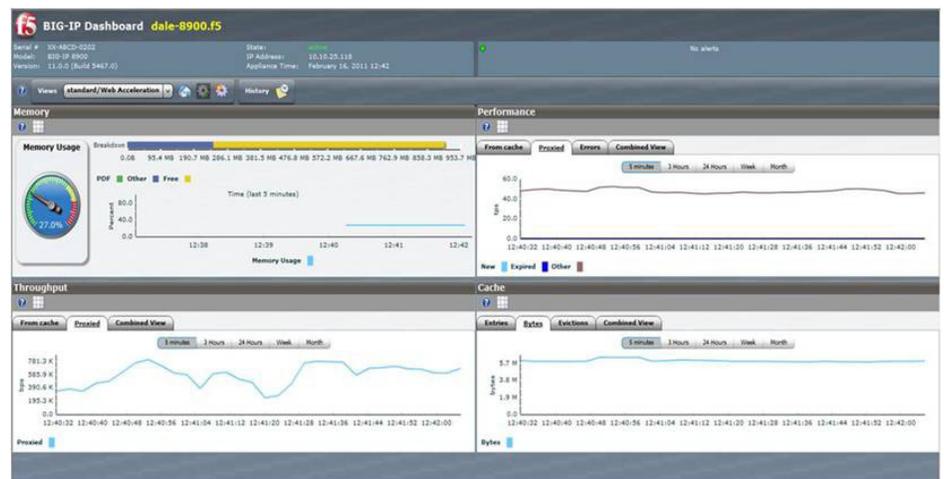
### Acceleration and security in one

You can accelerate and secure web applications by running the BIG-IP WebAccelerator module and BIG-IP® Application Security Manager™ concurrently on the same BIG-IP device. This saves the cost of extra hardware, rack space, and energy consumption, while simplifying deployment through consolidated and centralized access to the management interface.

## The Power of the BIG-IP System

### Dashboard

BIG-IP WebAccelerator provides a comprehensive dashboard that includes reports, graphs, and logs that enable both network administrators and web application managers to monitor web application performance.



### F5 TMOS plug-ins

Native integration with TMOS plug-ins gives BIG-IP WebAccelerator faster performance and better stability under high load. This full compatibility with BIG-IP Clustered Multiprocessing (CMP) enables it to run on multi-core systems.

### iRules flexibility

F5 iRules®, a TCL-based scripting language to control the behavior of BIG-IP devices, can be used with BIG-IP WebAccelerator. An example is using an iRule to eliminate round trips due to URL redirection. The iRule would detect URL redirects and serve the “final” URL content, reducing the additional round trips from browser to web server.

### NTLM authentication support

The NTLM authentication protocol requires frequent re-authentication with the application server and can significantly affect web application performance. Native NTLM authentication optimization is now part of the TMOS OneConnect™ feature, which enables greater performance scalability when accelerating NTLM-enabled web applications.

### Resource provisioning

BIG-IP WebAccelerator resource provisioning automatically allocates CPU, memory, and disk space for the modules licensed on the BIG-IP system, based on the provisioning options chosen. This makes optimal system resource allocation easier, and an enhanced UI provides graphical representation of the allocations. Often BIG-IP modules can be enabled without requiring a system reboot.

### Evaluation licensing

For existing BIG-IP customers, this feature enables customers to evaluate BIG-IP WebAccelerator and other BIG-IP product modules without needing to re-license the BIG-IP device.

### Logical Volume Manager (LVM)

Unlike normal disk storage, LVM virtualizes physical disks into logical volumes that allow disk partitions to be resized as needed without having to reinstall TMOS or requiring system down time in order to migrate data to a larger disk partition. The result is increased flexibility and improved performance for BIG-IP WebAccelerator's disk-based caching.

## The BIG-IP WebAccelerator Architecture

Running as a module on BIG-IP Local Traffic Manager or as a standalone appliance, BIG-IP WebAccelerator uses F5's unique, purpose-built TMOS operating system. TMOS is an intelligent, modular, and high-performing full proxy operating system that optimizes, secures, and accelerates your web applications.

### TMOS delivers:

- SSL offload
- Caching
- Compression
- TCP/IP optimization (OneConnect)
- SPDY gateway\*
- IPv6 support
- iRules scripting language
- VLAN support through a built-in switch
- Resource provisioning
- NTLM authentication support
- Full proxy
- Clustered Multiprocessing
- Key management and failover handling
- SSL termination and re-encryption to web servers
- VLAN segmentation
- System-level security protections

### BIG-IP WebAccelerator features include:

- Intelligent Browser Referencing (IBR)
- Image optimization
- Content reordering
- Dynamic compression
- Dynamic caching
- HTTP protocol optimizations
- MultiConnect
- PDF Dynamic Linearization
- Pre-defined and generic acceleration policies for ease of configuration
- Performance dashboard
- Flexible deployment (symmetric and asymmetric)
- Scalable clustering
- E-commerce stand-in capability
- BIG-IP APM, ASM, or WOM and WebAccelerator layering
- iApps support

\*Note: This early access feature requires separate license.

## BIG-IP WebAccelerator Platforms

BIG-IP WebAccelerator is available as a standalone solution or an add-on module for integration with BIG-IP Local Traffic Manager on the 11000, 8900, 6900, 3900, 3600, and 1600 platforms. For detailed physical specifications, please refer to the BIG-IP System Hardware Datasheet.



11000 Series



8900 Series



6900 Series



3900 Series



3600 Series



1600 Series

## Virtual Platform

BIG-IP WebAccelerator Virtual Edition (VE) offers the flexibility of a virtual software solution for web performance optimization. Running on your choice of hardware, BIG-IP WebAccelerator VE can help you meet the needs of your virtualized environment in the data center or at remote sites.

### Recommended Host System Requirements

It is highly recommended that the host system contain CPUs based on AMD-V or Intel VT technology.

Hypervisors:	VMware vSphere Hypervisor 4.0, 4.1, and 5.0 <i>Note: Thick provisioning required</i> Citrix XenServer 5.6 Microsoft Hyper-V for Windows Server 2008 R2 (Lab only)
Processor:	2 virtual CPUs
Memory:	4 GB RAM
Network Adapters:	3 virtual network adapters
Disk Space:	One 100 GB hard drive



BIG-IP WebAccelerator VE

## F5 Services

F5 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 Services can help you achieve IT agility. For more information about F5 Services, contact [consulting@f5.com](mailto:consulting@f5.com) or visit [f5.com/services](http://f5.com/services).

## More Information

To learn more about BIG-IP WebAccelerator, use the search function on [f5.com](http://f5.com) to find these and other resources.

### White papers

[Application Delivery Optimization](#)

[Identifying and Caching Dynamic Web Applications: A Flexible Approach to Solving Performance Issues](#)

### Technical brief

[Accelerating Mobile Access](#)

### Case studies

[Consulting Firm Avoids Costs, Improves Application Availability](#)

[Boscov's Department Stores Keep Pace with Fast-Growing Online Sales While Avoiding Millions in Capacity Upgrade Costs](#)

[F5 Makes IPv6 Connectivity a Reality for Interop 2011 Las Vegas Attendees](#)

### Podcast

[Web App Acceleration 101](#)

### Blogs

[The "All of the Above" Approach to Improving App Performance](#)

[The HTTP 2.0 War Has Just Begun](#)

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