



# Improve the Performance of Web Applications

Whether for work, play, or commerce, web-based applications have become the new norm for how people worldwide interact. Increasingly, users not only expect fast application response, every time—their definition of speed is a moving target. Delays demonstrably affect reputations, revenues, productivity, and the bottom line. At the same time, traffic volumes are growing exponentially, mobile devices are proliferating, and content keeps getting richer, which all increase application delivery challenges.

A suite of integrated web performance solutions from F5 provides a strategic combination of server, network, and front-end optimizations to overcome WAN latency, maximize server capacity, speed application response, and improve load times for mobile devices. F5 Application Delivery Optimization (ADO) solutions deliver dynamic, highly interactive web applications at the speed of business.

## Milliseconds count

Research shows that web application delivery delays as small as 100 milliseconds measurably impact sales revenues, drop-off rates, and competitive advantage. Yet many existing IT infrastructures are overburdened, and most organizations struggle with resource constraints; neither capital nor operational funds are infinite. Adding servers, recoding applications, or engaging costly content delivery networks only solve the problem of slow application delivery to the extent the organization can afford those options.

Playing whack-a-mole with individual bottlenecks or niche solutions is similarly inefficient, since a large variety of factors across the architecture and beyond can introduce bottlenecks and impact performance. A more cost-effective approach is to implement a single solution that encompasses the entire application delivery chain.

The F5 ADO approach spans environments, networks, client devices, and application infrastructures to deliver secure, all-the-time access and speed application response.

The integrated solution is based on the F5® BIG-IP® platform, which occupies a strategic point of control in the data center and cloud to enable optimization and acceleration within the data center, across the network, and out to mobile users. The BIG-IP platform enables deployment of a variety of services and optimization technologies from a shared context to remove bottlenecks throughout the delivery chain, speed end-to-end application response, and deliver a comprehensive ADO solution.

As a context-aware traffic management device capable of unmatched throughput and scalability, BIG-IP® application delivery controllers (ADCs) ensure availability and direct authorized users to the most appropriate data center or server based on geographic information or other criteria. BIG-IP products accelerate application response through compression, caching, encryption offloading, and advanced TCP optimizations. F5® TCP

## Key features

- **Intelligent browser referencing**—Reduces the number of requests and speeds load times by managing object expiration dates and storing static objects in the browser cache
- **Image optimization**—Reduces image file size to speed mobile access
- **Symmetric adaptive compression**—Dynamically selects the appropriate compression codec to reduce the volume of data traversing the WAN
- **Symmetric data deduplication**—Uses pattern matching and byte caching to minimize data repetition
- **SPDY gateway**—Takes advantage of new SPDY protocol without costly server upgrades

## Key benefits

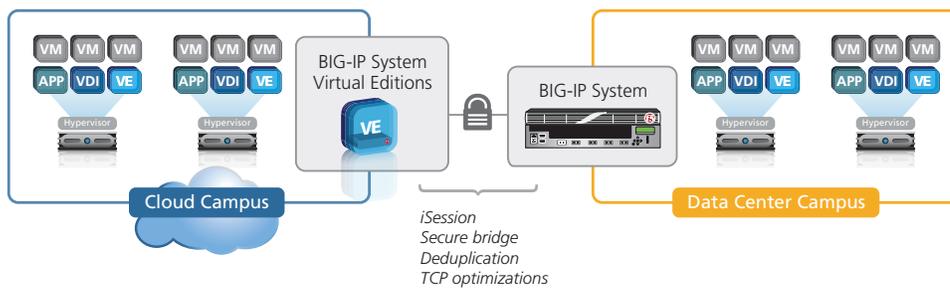
- **Speed application response**—Improve the user experience for increased revenues and employee productivity.
- **Increase server capacity**—Absorb volume growth while improving performance.
- **Optimize the WAN**—Improve bandwidth utilization and data replication while reducing bottlenecks and capital expenditures.
- **Streamline security**—Encrypt traffic between sites via SSL or IPsec to protect sensitive information and applications.
- **Enhance visibility**—Obtain insight into application performance for troubleshooting and capacity planning.

Express™ delivers up to four times greater bandwidth efficiency and halves the response time for users with no change in servers, applications, or clients. F5® OneConnect™, an additional TCP connection offloading technology, aggregates millions of TCP requests into hundreds of server-side connections which increases server capacity and ensure requests are handled efficiently. As a full proxy solution, BIG-IP ADCs also translate between SPDY and HTTP when necessary to capitalize on SPDY advantages without the cost of server upgrades.

F5 network optimization technologies, including symmetric adaptive compression and data deduplication, minimize network latency and increase bandwidth efficiency. F5 front-end optimizations speed access via mobile devices, taking advantage of the caching supported by browsers and reducing image size to cut page load times.

These capabilities can be deployed as part of an integrated BIG-IP ADO system or as standalone solutions. F5 solutions are application-fluent, with built-in analytics that provide visibility into application performance and supply the insight needed for smart performance management and future provisioning. Both hardware and virtual deployment models offer the flexibility to create a dynamic and scalable ADO solution that ensures optimal application performance, even as customer demands and organizational needs evolve.

	Client	Network	Server
Challenges	Multiple device form factors and browsers Roaming location Limited capabilities	Multiple networks Variable performance Constrained bandwidth Latency	Capacity constraints Security Replication performance
F5 Solutions	Cache optimization Domain sharding Minification Image optimization Content re-ordering SoftWOC client SaaS optimization	Data deduplication Adaptive compression Caching TCP optimizations Fast DNS	SSL and compression offload Dynamic caching SPDY gateway OneConnect Intelligent routing



The F5 ADO approach is a holistic, dynamic, and operationally consistent set of services focusing on eliminating application performance bottlenecks.

## Learn more

For more information about F5 ADO solutions, use the search function on [f5.com](http://f5.com) to find these resources.

### Solution pages

[Application Performance](#)

[Web Performance Optimization](#)

[WAN Optimization](#)

[Mobile Acceleration](#)

[Infrastructure Offload](#)

### White papers

[Application Delivery Optimization](#)

[Building a CDN with F5](#)

### Technical brief

[Accelerating Mobile Access](#)

### Video

[Delivering Apps at the Speed of Success](#)

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