



## What's Inside:

- 1 Key Benefits
- 2 Globally Available Applications
- 4 Simple Management
- 5 Secure Applications
- 6 Network Integration
- 6 Architecture
- 7 BIG-IP GTM Platforms
- 7 More Information



## Optimize Application Delivery Across Your Globally Distributed Data Centers

Deploying multiple data centers is a big step toward protecting your business from site outages and improving application performance. But to fully achieve these goals, your organization needs an efficient way to monitor infrastructure and application health, and to control this distributed infrastructure according to your business needs.

BIG-IP® Global Traffic Manager™ (GTM) provides a more intelligent way to respond to DNS queries than simple load balancing among multiple data centers. BIG-IP GTM distributes end-user application requests based on business policies, data center conditions, network conditions, and application performance. This gives you holistic control of your global traffic to ensure high availability and maximum performance for applications running across multiple dispersed data centers. The result is better application performance, less downtime, and simplified management.

### Key Benefits

#### Ensure application availability across multiple data centers

By ensuring that users are connected to the best site, BIG-IP GTM can help you create a strong disaster recovery and business continuity plan.

#### Take control of global app delivery

Route users based on business, application, and network requirements, giving you flexibility and control over application delivery.

#### Improve application performance

Send users to the site with the best application performance based on application and network conditions.

#### Manage your complex distributed network simply and efficiently

Multiple management tools, including a streamlined GUI and powerful command line interface, give you complete visibility and a single point of control for all of your resources.

### Advanced global load balancing

BIG-IP GTM includes the industry's most advanced traffic distribution capabilities to match the needs of any organization or globally deployed application.

- Round robin
- Global availability
- LDNS persistence
- Application availability
- Geography
- Virtual server capacity
- Least connections
- Packets per second
- Round trip time
- Hops
- Packet completion rate
- User-defined QoS
- Dynamic ratio
- LDNS
- Ratio
- Kilobytes per second

## Globally Available Applications

Organizations rely on applications to stay competitive, so ensuring application availability is critical. BIG-IP GTM offers complete and sophisticated health monitoring that supports a wide variety of application types, giving your organization the flexibility to adapt quickly and stay competitive.

### Global load balancing

User experience suffers when organizations with distributed data centers are unable to allocate global traffic by routing the user to the best and closest data center based on specific business policies. Changing network and user conditions can overwhelm a data center during peak traffic times. BIG-IP GTM provides comprehensive application management services that support evolving application requirements.

### Dynamic ratio load balancing

BIG-IP GTM routes users to the best global resource based on comprehensive site and network metrics. For example, the QoS load balancing mode includes a hops coefficient, based on the number of hops between the client and the local DNS. Managers can use hop rate to send the user to the data center that requires the fewest hops, ensuring more rapid access. Dynamic Ratio load balancing mode solves the problem of "winner takes all" common to other global traffic management systems. Dynamic Ratio sends a portion of traffic to the best performing site, second best performing site, and so on—in proportion to the health and performance of network and server resources.

### Wide area persistence

User connections can persist across applications and data centers and be automatically routed to the appropriate data center or server, based on application state. BIG-IP GTM synchronizes persistence information across all devices, ensuring that users are directed back to the same site regardless of their entry point. Finally, it propagates the desired persistence information to local DNS servers, reducing the required frequency of synchronizing back-end databases. Session integrity is always maintained, with no more broken sessions or lost or corrupted data. The result is improved application performance and more efficient use of your infrastructure.

### Geographic load balancing

BIG-IP GTM resolves IP addresses down to the country level, increasing topological control for managing global traffic. For sites maintaining content in different languages, this ensures that users around the world get the information they need in their own language.

### Custom topology mapping

BIG-IP GTM offers organizations deploying intranet applications the ability to set up custom topology mappings. By defining and saving custom region groupings, you can configure topology based on traffic distribution policies that match your internal infrastructure.

### Infrastructure monitoring

BIG-IP GTM checks the health of the entire infrastructure, eliminating single points of failure and routing traffic away from poorly performing sites. By collecting performance and availability metrics from data centers, ISP connections, servers, caches, and even user content, BIG-IP GTM ensures high availability and adequate capacity prior to directing traffic to a site.

### Application health monitoring

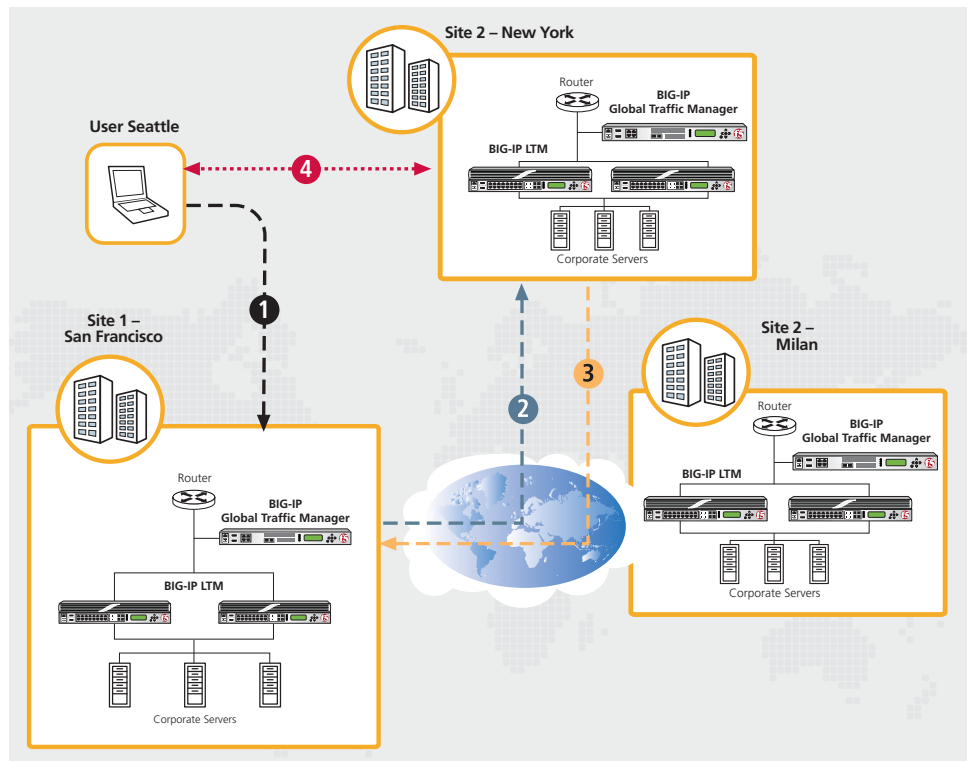
Today's sophisticated applications require intelligent health checking to determine availability. Instead of relying on a single health check, BIG-IP GTM aggregates multiple monitors so you can check the application state at multiple levels. This results in highest availability, improved reliability, and the elimination of false positives to reduce management overhead. BIG-IP GTM provides pre-defined, out-of-the-box health monitoring support for more than 18 different applications, including SAP, Oracle, LDAP, MySQL, and more. BIG-IP GTM performs targeted monitoring of these applications to accurately determine their health, reduce downtime, and improve the user experience. It will also allow you to group related objects so that if one application fails, other apps that depend on it will be marked out of service. This enables you to align and monitor application objects according to business logic and profitability, build scalable traffic distribution policies, and better manage application dependencies.

### Disaster recovery/business continuity planning

In addition to performing comprehensive site availability checks, you can define the conditions for shifting all traffic to a backup data center, failing over an entire site, or controlling only the affected applications.

BIG-IP GTM ensures users are always connected to the best site (See illustration).

- (1) User queries local DNS to resolve domain, and local DNS queries BIG-IP GTM.
- (2) BIG-IP GTM uses metrics collected for each site and identifies the best server.
- (3) BIG-IP GTM responds to local DNS with IP address.
- (4) User is connected to site.



## Simple Management

Managing a distributed, multiple-site network from a single point is an enormous challenge. BIG-IP GTM provides tools that give you a global view of your infrastructure with the means to manage the network and add policies to ensure the highest availability for your business-critical applications.

### Web-based user interface

BIG-IP GTM provides a simple way for your organization to manage its global infrastructure from a centralized location:

- Efficient list and object management for complete visibility of global resources
- Unique naming of global objects to reduce administration and build the infrastructure around business policies
- Sorting and searching for fast access to global objects
- Streamlined setup and object creation to reduce configuration times
- Enhanced management of distributed applications as part of one collective group
- Context-sensitive help for information on objects, commands, and configuration examples

### Powerful command line interface

TMSH, a tree-based command line interface for BIG-IP GTM has integrated search, context-sensitive help, and batch-mode transactions. By providing a shell that is simple to navigate and enabling you to script complex commands, TMSH can significantly reduce management time.

### Automated setup and synchronization

Autosync automates setup and secure synchronization of multiple BIG-IP GTM devices. With Autosync, you can make configuration changes from any BIG-IP GTM device in the network, eliminating difficult hierarchical management common to DNS.

### Configuration retrieval

AutoDiscovery enables BIG-IP GTM retrieve configurations from any number of distributed BIG-IP systems, removing the need to repeat configurations across devices.

### Data center and sync groups

BIG-IP GTM allows for the creation of logical groups of network equipment to ensure the efficient use of monitoring and metrics collection. The result is a highly optimized solution that can support the Internet's busiest sites by intelligently sharing the information with members in the logical group.

### Distributed application management

Organizations often struggle to align their applications and infrastructure with their business goals and policies. BIG-IP GTM gives you the ability to define dependencies between application services and manage them as a group. With distributed application management, you can build scalable traffic distribution policies and improve efficiency with granular control of data center objects.

### iRules

Using F5's event-driven iRules™, you can customize the dynamic distribution of global traffic. BIG-IP GTM looks deep inside DNS messages to distribute application traffic to the desired data center, pool, or virtual server. This capability reduces latency, increases protection against malicious attacks, and improves application performance. Because iRules is based on an easy-to-use, TCL-based scripting language, administrative costs are nominal.

### ZoneRunner

ZoneRunner™ is an integrated zone file management tool that simplifies DNS zone file management and reduces the risk of misconfiguration. It provides a secure environment to manage your DNS infrastructure while validating and error-checking zone files. Built on the latest version of BIND, ZoneRunner provides:

- Auto population of commonly used protocols
- Validation/error checking for zone file entries
- Rollback for the last transaction
- Command line versions of zone management
- Zone importation from an external server or a file
- Automatic reverse lookups
- Easy creation, editing, and searching of all records

### F5 Enterprise Manager (complimentary product)

Significantly reduce the cost and complexity of managing multiple F5 devices. Gain a single-pane view of your entire application delivery infrastructure and the tools you need to reduce deployment times, eliminate redundant tasks, and efficiently scale your infrastructure to meet your business needs.

## Secure Applications

Organizations are increasingly being exploited at the DNS level with DoS attacks that compromise the security of their websites. Difficulty in differentiating between legitimate DNS requests and attacks is also a very real concern. BIG-IP GTM protects against common attacks and allows you to create policies to provide an added layer of protection for your applications and data.

### Hardened device

BIG-IP GTM is designed to resist common attacks by thwarting teardrop attacks, by protecting itself and servers from ICMP attacks, and by not running SMTPd, FTPd, Telnetd, or any other attackable daemons.

### Handles DNS attacks

BIG-IP GTM's unmatched DNS performance can tolerate high levels of DNS attacks, protecting your organization while still maintaining maximum and continuous availability for applications and services.

### Security control

Strengthen site security and diffuse attacks before they can start with BIG-IP GTM. iRules can help you create policies that block DNS requests from rogue sites or known sources of attacks before they can do damage.

### Packet filtering

BIG-IP GTM uses packet filtering to limit or deny access to and from websites based on monitoring the traffic source, destination, or port.

## Network Integration

BIG-IP GTM is designed to fit into your current network and into your plans for the future.

### SNMP management application support

BIG-IP GTM integrates its MIBs and a SNMP agent with DNS. This enables SNMP management applications to read statistical data about the current performance of BIG-IP GTM. SNMP management packages have an exact view of what BIG-IP GTM is doing, while keeping an eye on standard DNS information.

### Third-party integration

BIG-IP GTM communicates and integrates with a broad array of network devices. This includes support for various types of remote hosts, including SNMP agents: UCD, snmpd, Solstice Enterprise, and the NT/4.0 SNMP agent. BIG-IP GTM also talks to third-party caches, servers, routers, and load balancers to accurately diagnose the health of your network endpoints and provide a heterogeneous solution for global traffic management.

### IPv6 support

BIG-IP GTM supports next generation IPv6 networks, resolving AAAA queries without requiring wholesale network and application upgrades.

## Architecture

The advanced architecture of BIG-IP gives you total flexibility to control application delivery without creating traffic bottlenecks.

### TMOS

At the heart of BIG-IP GTM is the F5 architecture, TMOS®, that provides a unified system for optimal application delivery, giving you total visibility, flexibility, and control across all services. TMOS empowers BIG-IP GTM to integrate with other F5 products and intelligently adapt to the diverse and evolving requirements of applications and networks.

### Unmatched DNS performance

BIG-IP GTM delivers DNS performance capable of handling even the busiest sites. This helps your organization provide the best Quality of Service for your users while eliminating poor application performance.

## BIG-IP GTM Platforms

BIG-IP Global Traffic Manager is available as a standalone appliance on the BIG-IP 1600 and BIG-IP 3600 platforms. It is available as an add-on module for BIG-IP LTM on any BIG-IP platform. For detailed specifications, refer to the BIG-IP System Hardware Datasheet.



3600 Series



1600 Series

## More Information

Browse for these and other resources on F5.com to learn more about BIG-IP GTM.

### Datasheets

[BIG-IP System Hardware Datasheet](#)

### White paper

[Disaster Recovery: Not Just Planning for the Worst](#)

### Case studies

[American Imaging Management  
DNSstuff.com](#)

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