



Communication Service Provider Carrier-Grade DNS Services with BIG-IP Devices

F5® BIG-IP devices for domain name services (DNS) are more than large-scale distributed global DNS products; they provide a complete, end-to-end and secure DNS delivery solution. BIG-IP® Global Traffic Manager™ and Local Traffic Manager™ provide a more intelligent way to respond to DNS queries in light of network conditions and situations, distributing subscriber application requests and application services based on business policies, data center conditions, network status, and application performance. F5 products and solutions enable communication service providers (CSPs) to build a strong foundation that maximizes resources and increases dynamic service management while ensuring the agility and scalability to support future network architectures and devices.

Scaling DNS

DNS is arguably the core technology enabling the Internet. One of the most important components in networking infrastructure, it enables subscribers and services to access applications and content. If DNS goes down, subscribers will not be able to access applications or services, thus degrading the overall quality of experience (QoE).

Communication service delivery and access are dependent on DNS services for ease and fault tolerance. With the move to IPv6, using IP addresses instead of names as service destinations becomes a more complicated issue. Service providers can dynamically associate a service with a name instead of an IP address. In this setting, global load balancing and IP anycast routing create a dynamic, scalable architecture, which provides for a highly available DNS solution.

Creating a dynamic service-delivery infrastructure based on DNS requires a tremendous amount of real-time management, stability, and room to grow. DNS scale becomes a critical issue when dealing with millions of service names and IP addresses, as is the case with large scale NAT and IPv6 deployments. BIG-IP Global Traffic Manager (GTM) is a global DNS solution that uses F5 DNS Express™ to manage hosted domains with high volumes of DNS queries. By providing name services at the very edge of the service-delivery network and employing geographic location services, BIG-IP GTM can direct subscribers to the best service-delivery data center based on their physical locations. Within the data center, BIG-IP Local Traffic Manager (LTM) can load balance local and recursive DNS services, creating a fault-tolerant architecture from the mobile edge to the service. BIG-IP LTM also supports provider-specific applications such as load balancing ENUM requests for SIP transactions.

F5 DNS Services scale for high-availability and high-volume applications while simultaneously supporting millions of subscriber requests per second. F5 DNS Services with other BIG-IP service-delivery features, such as iRules®, transparent application monitoring, application modules such as BIG-IP® WAN Optimization Manager™ (WOM), and other IP-related services

Key features

- **Global DNS**—Provides global distributed DNS for subscribers and hosted managed services
- **Managing Name Services**—Offers local and recursive DNS load balancing for millions of requests
- **CSP Functionality**—Supports load balancing ENUM requests and SIP
- **IP Anycast Routing**—Delivers efficient, dynamic response to DNS queries
- **Carrier-Grade Support**—Enables professional, 24x7 service and support worldwide

Key benefits

- **Support for Multiple Levels of High Availability**—Creates a fault-tolerant architecture for local and recursive DNS
- **Advanced DNS Management Solutions**—Secures and distributes DNS management for pin-point subscriber geolocation services
- **Flexibility**—Translates traffic for consumption by either IPv4 or IPv6 endpoints
- **Service Provider Scalability**—Handles millions of transactions from multiple network device types
- **Service Reliability Assurance**—Provides support options designed to keep service operations online 24x7

to create a complete and unified service-delivery infrastructure, the F5 Service Delivery Network (SDN). By leveraging the intelligent service-delivery platform common to all BIG-IP devices, CSPs can seamlessly deliver services, including naming services, from a flexible, scalable foundation.

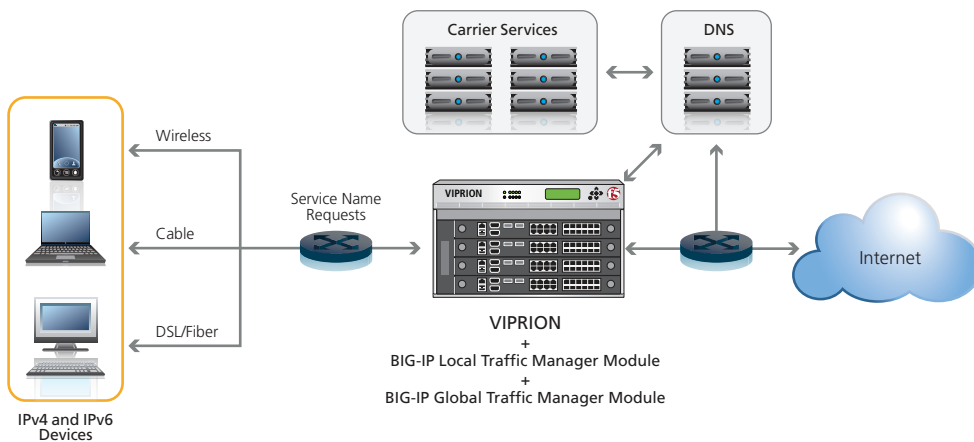
Although they provide different functions in the network, BIG-IP GTM and LTM work in concert to manage DNS and to guarantee service availability.

BIG-IP GTM provides name services and supports global managed services through:

- DNS services at the edge of the network for all internal and external services.
- Geolocation for pin-point service delivery accuracy based on locations of mobile subscribers.
- IP anycast addressing and routing for scalability and defense against DOS/DDOS attacks.
- Scalability, handling millions of global name requests per second.
- Integration with other BIG-IP solutions such as BIG-IP LTM, health monitors, and iRules, which enables granular DNS decisions and name service delivery.
- A single point of control for management of all global and local name services.

BIG-IP LTM solutions for naming services include:

- Integration with BIG-IP GTM to extend rich naming services into the local data center and services network.
- Load balancing support for local DNS as well as recursive DNS.
- Support for provider-specific protocols such as ENUM requests for SIP transactions.
- Transparent health monitors to evaluate service health before sending subscribers to the service. BIG-IP LTM can relay health information to BIG-IP GTM to bring application awareness to the edge of the SDN.



BIG-IP DNS products offer global and local service delivery to users and devices over service provider networks.

Learn more

For more information about BIG-IP DNS solutions, please see the following resources or search f5.com.

Product pages

[BIG-IP Global Traffic Manager](#)

[BIG-IP Local Traffic Manager](#)

White papers

[Cloud Balancing: The Evolution of Global Server Load Balancing](#)

[DNSSEC: The Antidote to DNS Cache Poisoning and Other DNS Attacks](#)

Technical brief

[F5 and Infoblox DNS Integrated Architecture](#)

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