



New Innovations in F5-Cisco Load Balancing



Overview

F5 natively integrates global and local traffic management capabilities into Cisco® Application Centric Infrastructure (Cisco ACI®) Single-Pod, Multi-Site, and Multi-Pod so you can:

- Intelligently load balance application traffic across servers or sites.
- Automatically redirect application traffic to the next available server or site in the event of an outage or failure.

As shown in Figure 1, requests are directed based on business policies, data-center and cloud-service conditions, user location, and application performance.

Optimize global application delivery with local and global load balancing from Cisco and F5

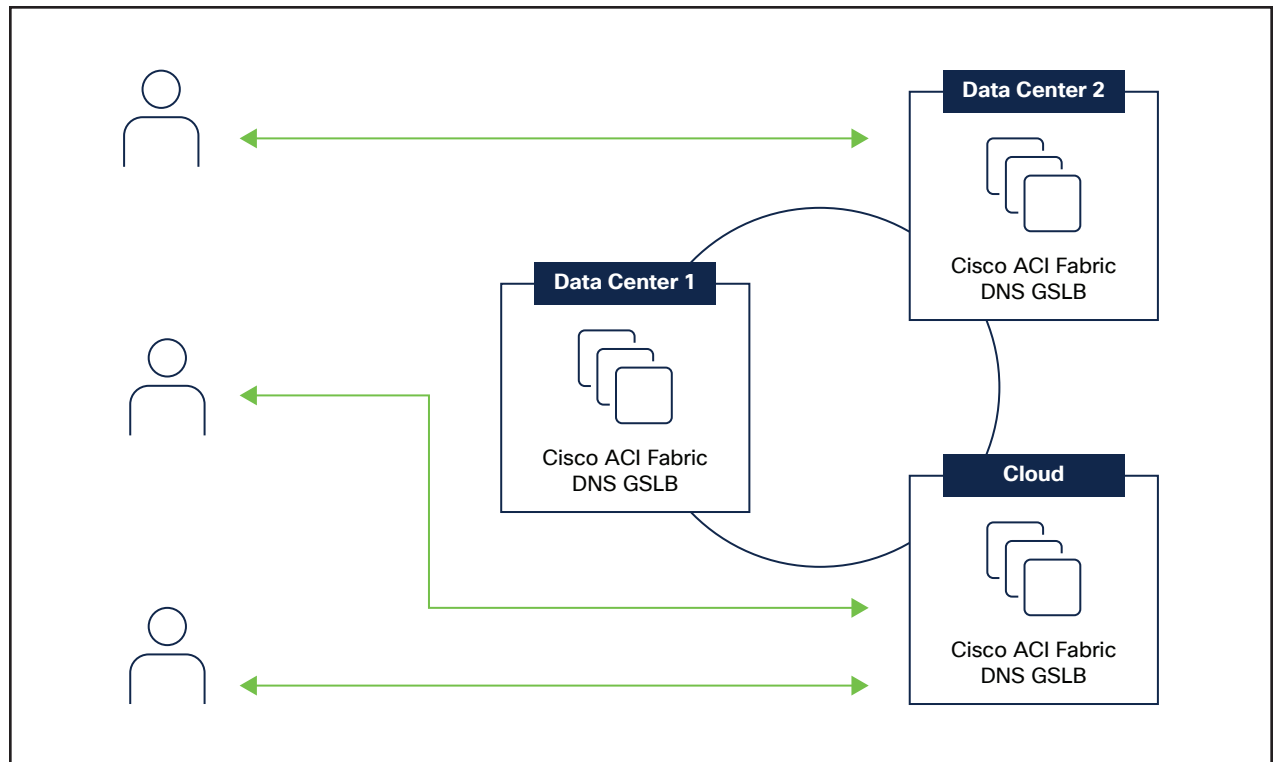


Figure 1. Global Server Load Balancing (GSLB) for Cisco ACI Multi-Site

On your journey to hybrid multi-cloud, you need to connect things in a way that reduces complexity and speeds change. In your expanding IT universe, we can help you manage that. Cisco's partnership with F5 enables customers to build robust applications across servers, data centers, and clouds.

Key benefits

- **Ensure application availability** – automatically distribute application requests across the network of servers to guarantee high availability.
- **Optimize application performance** – efficiently respond to customer queries and ensure greater reliability, performance, availability, and security for mission-critical applications.
- **Achieve consistency and control** – utilize centralized policies for consistency and control with reduced operational overhead.

Complexity and growing demand is compromising user experience

Applications serve as the lifeblood of today's enterprises, making the delivery of high availability critical. Hosting distributed applications allows them to run closer to users, resulting in a faster experience, whether across servers at a single site or spanning multiple data centers and clouds. However, with fluctuating traffic patterns and concentrated user requests during peak hours, ensuring that distributed applications are available can be difficult.

Business velocity and long-term growth will rely on finding ways to connect and protect applications and APIs across locations while easing the management of complex hybrid environments.

Solution components

Cisco Application Centric Infrastructure (Cisco ACI) and F5 BIG-IP are the core building blocks of our joint solutions. Cisco and F5 offer integrations for both single-site ACI fabrics and multi-site/multi-pod environments.

Cisco ACI technology enables customers to integrate virtual and physical workloads in a programmable, multi-hypervisor fabric to build a multi-service or multi-cloud data center. The Cisco ACI fabric consists of discrete components that operate as routers and switches, but it is provisioned and monitored as a single entity.

The ever-increasing adoption of Cisco ACI as pervasive fabric technology makes the need to interconnect separate ACI fabrics very common for enterprise and service providers. This is due to the fact that various business requirements (business continuance, disaster avoidance, etc.) lead to the deployment of separate data-center fabrics that need to be interconnected with each other. Those fabrics can either be multi-pod or multi-site.

F5 BIG-IP is a family of products covering both software and hardware designed around application-availability, access-control, and security solutions. BIG-IP can mean a single software module in BIG-IP's software family, or it can mean a hardware chassis located in the data center. F5 BIG-IP DNS is an important component of our joint multi-pod/multi-site solution. BIG-IP DNS is a system that monitors the availability and performance of global resources and uses that information to manage network traffic patterns. It uses load-balancing algorithms, topology-based routing, and iRules to control and distribute traffic according to specific policies.

Key capabilities

- **Load balancing for a single site** – organizations using Cisco ACI Single-Pod for software-defined networking can benefit from local traffic management provided by F5 to ensure application responsiveness no matter the demand, while realizing operational benefits and increased application security.
- **Load balancing for multiple sites** – applications are kept available for global users by automatically redirecting application traffic when a site goes down in a Cisco ACI Multi-Site/Multi-Pod environment. Tiered GSLB uses load-balancing algorithms, topology-based routing, and iRules to control and distribute traffic to the local traffic manager.
- **Go beyond traffic management with F5 BIG-IP DNS for ACI** – as part of the F5 integration for global server load balancing for Cisco ACI Multi-Site and Multi-Pod, F5 BIG-IP DNS brings many additional high-value capabilities, as outlined in the use cases below.

Use cases

Table 1. Use cases

Capability	Uses cases and descriptions
Local and global traffic management	<ul style="list-style-type: none"> • Intelligent load balancing – support application requirements across servers, data centers, and cloud environments. • Always-on availability – automatically distribute application traffic across servers or sites to efficiently respond to customer queries. • Infrastructure monitoring – monitor infrastructure health to eliminate single points of failure and route traffic away from poorly performing resources. • Robust container applications – monitor and target specific container-cluster applications.
Global traffic management	<ul style="list-style-type: none"> • Location-based routing – route clients to the nearest data center with geolocation-based load balancing for optimal user experience. • Automated failover – shift traffic to a backup data center and failover an entire site, or just control the affected applications. • Wide area persistence – automatically synchronize data, propagate local DNS, and maintain session integrity to ensure user connections persist across applications and data centers. • Custom topology mapping – define and save custom region groupings to configure topology based on intranet application traffic policies that match your internal infrastructure.

Capability	Uses cases and descriptions
F5 BIG-IP DNS	<ul style="list-style-type: none"> • Superior DNS performance – manage query responses with multicore scalability, handling spikes in DNS query volumes. • Reporting and analytics – perform logging, reporting, and analytics, with detailed DNS and GSLB data, statistics, and graphs available for in-depth analysis. • DNS health monitor – obtain out-of-the-box health monitoring support for applications. • 3G, 4G, and 5G 3GPP support – support NAPTR DNS nodes and services to drive faster service instantiation. • IPv6 and DNS64 support – translate traffic for consumption by either IPv4 or IPv6 endpoints.

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Learn more

Follow the links below to learn more about load balancing for single and multiple sites, as well as how to go beyond traffic management with F5 BIG-IP DNS and leverage more generally the partnership between Cisco and F5:

- [F5 BIG-IP Local Traffic Manager.](#)
- [Cisco ACI Single Pod and F5 BIG-IP Design Guide.](#)
- [F5 ACI Service Center.](#)
- [F5 BIG-IP DNS.](#)
- [F5 BIG-IP Local Traffic Manager.](#)
- [Cisco ACI Multi-Site/Multi-Pod and F5 BIG-IP Design Guide.](#)
- [Cisco Ecosystem Partner Collateral.](#)
- [F5 and Cisco Partnership on F5.com.](#)