A10 Global Server Load Balancing

The A10 Networks Global Server Load Balancing (GSLB) solution provides network performance, data content delivery, implementing policies and priorities for specific network requests. Distributes web clients to a group of servers across the global locations. Ensures that clients are always serviced. Load balances virtual IPs from global locations as a single entity. Provides geographical site fault tolerance and scalability.

A10 GSLB SOLUTION
- Extends load balancing on a global scale.
- Adds intelligence to authoritative DNS servers.
- GSLB controller evaluates DNS replies and directs traffic to the best site.
- Maximizes network access speed, faster performance, improves the user experience.
- Provides data center failover to minimize downtime and ensure availability.
- Optimizes multi-site deployments.
- Increases data center efficiency with flexible policies to distribute traffic.

IMPLEMENTATION TYPES
DNS-Based GSLB:
- Domain Name System technology is utilized to extend load balance globally.

IP-Based GSLB:
- Route health injection advertises virtual IP availability throughout the network.

A10 DEVICE GSLB MODES
Proxy Mode
- A10 device acts as proxy for an external DNS server. The device can update client requests and forward requests to the external DNS server.

Server Mode
- A10 device directly responds to queries for specific service IP addresses in the GSLB zone, forwarding other query types to the DNS server.

A10 Intelligent GSLB Solution Overview

The A10 Networks Global Server Load Balancing (GSLB) solution provides network performance and data content delivery by implementing policies and priorities for specific
requests from the network. The GSLB functionality distributes client requests to a group
of servers across the global locations and ensures active service; load balances virtual
IPs from different geographical locations as a single entity, provides geographical site
fault tolerance and scalability.

A10’s GSLB functionality is available in all the Thunder and AX Series Application
Delivery Controller and Load Balancer products. Load balancing applications on A10’s
ACOS devices direct the users to multiple data sites. Each site consists of server farms
that provide users with fast response time and redundancy to protect against failure of a
complete data center. GSLB implementations fall under one of these categories:

• **DNS-Based GSLB**: Domain Name System technology is utilized to extend load
  balance globally.
• **IP-Based GSLB**: Route health injection advertises availability of virtual IPs
  throughout the network.

A10’s ACOS GSLB adds a layer of availability and performance to applications with
minimal impact to existing DNS architecture. The following appropriate methods are
available for a network environment:

• **Proxy Mode**: The ACOS device acts as proxy for an external DNS server. The
device can update client requests and forward requests for all other record types to
the external DNS server.
• **Server Mode**: The ACOS device directly responds to queries for specific service IP
  addresses in the GSLB zone while forwarding other query types to the DNS server.
The ACOS device in the **GSLB Server** mode substitutes a DNS server and
communicates with numerous sites attached to host servers serving specific
applications.

The DNS IP addresses are ordered using metrics that include the information collected
from the site devices or based on other metric information. The address that is
considered best is placed at the top of the GSLB access list.

**GSLB Controller and Devices**

A10 devices use the GSLB protocol to manage traffic between a controller and the
accessible sites, virtual IP information, and administer protocol activities.

The GSLB controller collects the following information from the accessible site load
balancers:

• Virtual IP addresses & active servers
• Active-Round Delay Time (aRDT)
• Site session capacity statistics
• Connection load
• Number of active sessions

A GSLB Controller Group consists of multiple controllers, within a GSLB zone, whose
service IP status and GSLB configurations are synchronized.

**The A10 Intelligent GSLB Solution**

GSLB functionality for applications can be leveraged through existing A10 ADC
deployments, combining local server load balancing and GSLB on a single box, or
separately by running GSLB on its own dedicated A10 ADC platforms. Clustering must be configured and turned on to use GSLB. All A10 ADCs participating in GSLB and local server load balancing communicate with one another and share the overall health information of the data center and applications.

By adding intelligence to DNS, application load balancing can be based on many factors. GSLB provides the following advantages:

- **Support data center failover to minimize downtime and ensure application availability**
- **Optimize multi-site deployments**
- **Maximize network access speed**
- **Increase data center efficiency by using flexible policies to distribute traffic to multiple sites**
- **Disaster Recovery**
  - Provide an extra level of High Availability to important applications
  - Direct requests based on availability or health of the application
- **Active Round Delay Time**
  - Send client connections to the fastest responding data center
  - Base response time on ping or DNS response
- **Single Sample Round Delay Time**
  - Take a single sample and use that sample indefinitely
  - Send a single DNS query to the GSLB local DNS
- **Geo-Location**
  - Send client connections to the nearest physical data center
  - Integrate with geo-location services using any CSV format
  - Import third-party geo-location lists
  - Select to city level for additional granularity selection
- **Weighted Values**
  - Send client connections to the data center that has the highest combined score
  - Send client connections to the data center with the most available active servers
- **Bandwidth Cost**
  - Query the bandwidth utilization of each site
  - Select the site(s) whose bandwidth utilization has not exceeded a configured threshold during the most recent query interval
- **Health Check** feature that allows user to set parameters to perform diagnostic observations on the performance of web servers and server farms associated with each appliance to determine if a server or service is functioning.
References
For more information on our latest A10 GSLB Solutions, Implementation and Deployments, please refer:


https://documentation.a10networks.com/ACOS/414x/ACOS_4_1_4/pdf/A10_4.1.4_GSLB.pdf

For our other network solutions, please refer to: