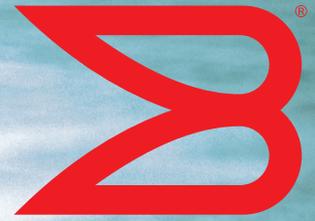


# APPLICATION DELIVERY SOLUTIONS



## APPLICATION DELIVERY

## Brocade ServerIron ADX Provides Reliable, High-Performance and Secure DNS Delivery

### HIGHLIGHTS

- Delivers high-performance DNS delivery supporting up to 18 million DNS queries per second
- Provides maximum uptime for mission-critical DNS infrastructures
- Provides disaster recovery through seamless integration of Global Server Load Balancing (GSLB) with DNS and DNSSEC
- Offers highest protection against distributed denial of service attacks such as DNS amplification attacks
- Optimizes distribution of traffic in mixed DNS and DNSSEC environments

In today's high-demand data center infrastructures, resilient, high-performance, and secure Domain Name Server (DNS) delivery is essential for maximizing application uptime, preventing malicious attacks, and lowering overall operational costs. Brocade® ServerIron® ADX Series application delivery controllers provide a flexible, high-performance solution to meet these challenges and address the scaling requirements of root and Top Level Domain (TLD) providers as well as large enterprises.

### DNS INFRASTRUCTURES PRESENT SCALING AND SECURITY CHALLENGES

DNS service is the foundation of the Internet, and any DNS outage will quickly take the Internet down with it, which makes resiliency and availability essential for competitive organizations that rely on nonstop data delivery.

Because of its central role in providing Internet functionality, DNS has become the second-largest focus of attacks, second only to the massive number of daily HTTP breaches. DNS attacks generate huge traffic loads, as well as malicious exploitation of the DNS protocol such as cache poisoning and "man-in-the-middle" attacks.

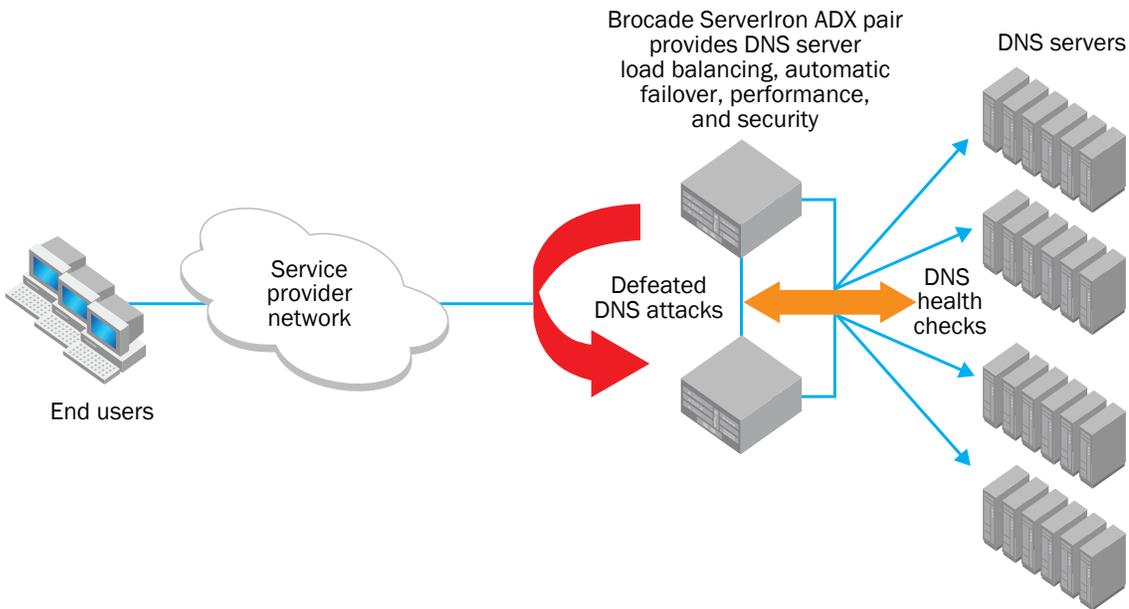
DNS Security Extensions (DNSSEC) validate DNS message authenticity, which is an important component of ensuring DNS security and data integrity. In addition, the right application delivery platform can provide incremental security benefits while also ensuring service availability, especially for application environments where DNS services are integral to operations, and potential degradation or downtime can be both costly and injurious to a company's professional reputation.

### HIGH-PERFORMANCE DNS APPLICATION DELIVERY OFFERS NONSTOP SERVICE AVAILABILITY

The Brocade ServerIron ADX application delivery switch is a powerful, data center-class solution that streamlines the secure delivery of DNS and DNSSEC services. It acts as a high-performance proxy for back-end DNS server farms and delivers up to 18 million DNS queries per second.

The ServerIron ADX provides monitoring of health and responsiveness of DNS servers through continuous tracking for server load, and periodic lookups against DNS servers. The result of such DNS health checking performed by ServerIron ADX is that client DNS requests always get routed to the optimum server.

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**Figure 1.**  
Resilient and  
scalable DNS service  
with Brocade  
ServerIron ADX

### SERVERIRON ADX PROVIDES EFFICIENT DNS ATTACK PREVENTION

ServerIron ADX brings a new level of efficiency of attack prevention to continuously preserve high-performance application delivery. By using specialized embedded intelligence, the switches detect and block many different types of DNS attacks, including Distributed Denial of Service (DDoS) attacks such as DNS amplification attacks. This allows the solution to implement these vital DNS security countermeasures:

- Enforces appropriate control policies, including rate limiting after deep inspection of DNS packets for query name or query type, or recursive DNS flag
- Provides rate limiting of DNS connections based on the source IP address of the requesting client

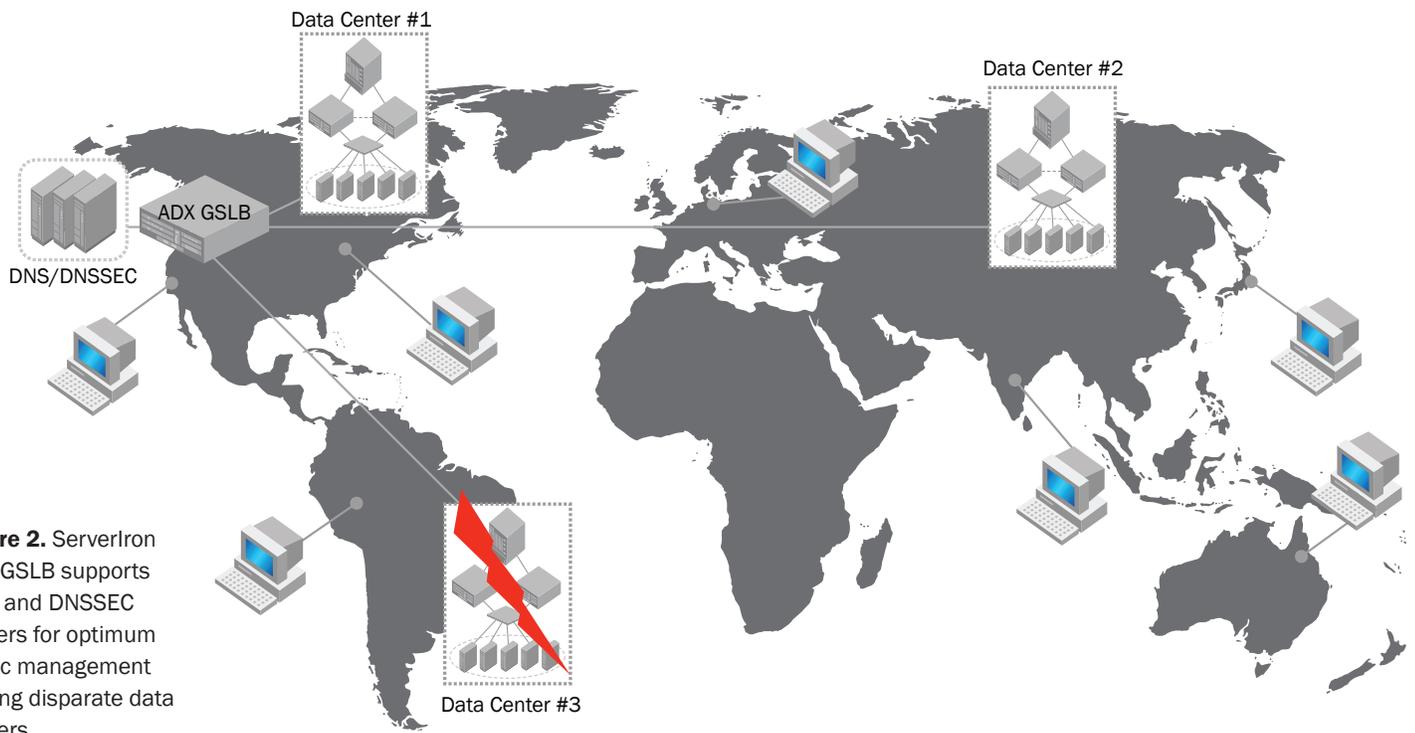
- Enables policy-based server load balancing for directing traffic to specific sets of DNS servers or dropping of packets
- Executes access restriction policy using hardware-assisted, high-speed Access Control Lists (ACLs)

### SEAMLESS INTEGRATION WITH DNS AND DNSSEC SERVERS ENABLES RAPID CONTENT DELIVERY

Tight integration between the application delivery platform and underlying DNS infrastructure is the key to deploying transparent protection against site failures. The ServerIron ADX provides built-in intelligence for seamless interoperability with both DNS and DNSSEC infrastructures, helping to ensure maximum availability of application services, and ensuring that content can be delivered as efficiently as possible—regardless of client geographic location.

ServerIron ADX Global Server Load Balancing (GSLB) automatically directs client traffic to healthy available sites without requiring any configuration changes or service disruptions. GSLB enables nonstop content delivery by allowing ServerIron ADX switches to distribute client traffic among geographically disparate data center sites based on site availability, site load, site proximity to the client, and other key metrics.

While operating in GSLB mode, ServerIron ADX can be positioned in front of domain's authoritative DNS servers to act on DNS responses and reorder domain IP addresses to direct end-user traffic to the closest-possible and least-loaded site. If one of these sites should fail, ServerIron ADX removes the failed IP address or lowers it in the priority list before forwarding a DNS response to the DNS requestor.



**Figure 2.** ServerIron ADX GSLB supports DNS and DNSSEC servers for optimum traffic management among disparate data centers

DNSSEC ensures that entities communicating via DNS can trust each other and any tampering with data exchanged via DNS is detected. DNSSEC uses signatures via public/private key encryption as a means to achieve such security. Brocade ServerIron ADX provides a DNSSEC-aware GSLB that seamlessly interoperates with the cryptographic signing aspect of DNSSEC without requiring any form of key-offload or key-management functions on Brocade ServerIron ADX. Service providers and enterprises can take advantage of these capabilities to greatly reduce the complexity and cost involved in deploying and maintaining DNSSEC for environments involving multiple data centers.

### INTELLIGENT TRAFFIC DISTRIBUTION SERVES MIXED ENVIRONMENTS

Typically, DNS requests use User Datagram Protocol (UDP) as an underlying transport-layer protocol. DNS protocol specifications, however, suggest using Transport Control Protocol (TCP) if the size of a DNS response exceeds 512 bytes, due to the size and reliability limitations of UDP. As the industry starts deploying DNSSEC, which involves large-size packets, the proportion of DNS traffic using TCP transport is expected to increase.

Brocade ServerIron ADX enables administrators to intelligently direct DNS traffic to different sets of servers depending on incoming transport characteristics. This permits optimal support of mixed DNS/DNSSEC environments where UDP-based DNS requests are routed to DNS-only servers, while TCP-based requests are redirected to DNSSEC-enabled DNS servers.

### SUMMARY

The Brocade ServerIron ADX Series enables service providers and enterprises to deliver scalable, highly available, and secure DNS services while simplifying operations. In summary, Brocade ServerIron ADX offers:

- Robust DNS delivery under high load conditions
- Protection against many forms of DNS attacks
- Disaster recovery using GSLB capability in DNS and DNSSEC environments
- Optimum redirection of DNS and DNSSEC traffic

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