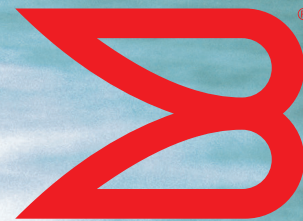


APPLICATION DELIVERY PARTNER SOLUTIONS



APPLICATION DELIVERY

Building High-Performance Carrier-Class DNS Services

TECHNOLOGY CHALLENGES

- Provide on-demand and unlimited Domain Name System (DNS) service scalability, superior performance, fast end-user response time even under the most severe load, and robust security from emerging threats
- Meet stringent SP requirements for availability, performance, scalability, and security for the DNS infrastructure underpinning all URL-based application services
- Prevent prolonged service outages and slowdowns to ensure business viability and sustainability

SOLUTION BENEFITS

- Carrier-class DNS service availability and scalability to millions of subscribers
- Simplified management and automated provisioning
- Future-proof, high-performance, and scalable DNS, not present in open-source DNS and PC-based load balancers
- Highly available operations with improved performance
- Maximized Return on Investment (ROI), and minimized Total Cost of Ownership (TCO)

Brocade® ServerIron® intelligent application delivery and traffic management has led the application delivery industry for over a decade, helping to mitigate costs and prevent losses. The result is optimized business-critical enterprise and service provider applications with high availability, security, multisite redundancy, acceleration, and scalability—in more than 3000 of the world's most demanding organizations.

The combination of Brocade ServerIron Application Delivery Controllers (ADC) and Nominum Caching/Authoritative Name Servers (CNS/ANS) provides the solution of choice for highly resilient and scalable DNS service infrastructures used by the largest service providers

CHALLENGES

Today, due to accelerating broadband adoption, increasing mobile and wireless subscription, voice/data convergence, and the emergence of triple-play services, Internet service providers and carriers face unprecedented growth in the demand for IP-based services, opening the door for a new wave of services and business models. New protocols and applications surrounding Session Initiation Protocol (SIP) and Voice over IP (VoIP) promise to revolutionize communications.

As IP-based service models permeate the service provider business, the network, server, and application infrastructures used to deliver these services become life support systems. The infrastructure must deliver “five nines” (99.99%) uptime, on-demand and unlimited service scalability, superior performance, fast end-user response time even under the most severe load, and robust protection from many emerging threats.

The requirements for availability, performance, scalability, and security are of highest concern for DNS services underpinning all URL-based application services. Application access begins when DNS servers map URLs or service names directly to network node IP addresses, letting end users send e-mail, access Web pages, place VoIP calls—and use a wealth of network services—transparently and easily.

DNS downtime results in downtime for IP access and the application services to which they are connected. Slow performance and poor response time have an immediate and noticeable impact on all customers. After experiencing prolonged service outages and slowdowns, service providers now realize the need for resilient and scalable DNS infrastructures.

To ensure business viability and sustainability, leading service providers are upgrading their DNS infrastructure by combining best-in-class DNS servers with load balancing application delivery controllers.

BUILDING A SCALABLE, ALWAYS-ON DNS SOLUTION

Using sophisticated network and server health checks to detect availability and response time, Brocade ServerIron ADCs efficiently distribute client requests to provide the best end-user experience by connecting to the most available DNS server in the pool. By dynamically adjusting capacity without impacting application availability ServerIron can bring a new server into the pool in real time without bringing down the service.

Nominum Foundation Caching Name Server

Nominum Foundation Caching Name Server (CNS) provides industry-leading performance for query throughput (name resolutions per second) and latency (response time for an answer to a query). Designed from the ground up as a highly scalable name service, CNS is optimized for DNS caching. Unlike an authoritative name server, the role of a caching name server is to deliver fast response to client

DNS requests from its local cache, which consists of name resolution information gathered from authoritative servers on the network.

Nominum has created a purpose-built Cache Name Server (CNS) optimized to deliver unprecedented throughput and response time compared to traditional dual-purpose name servers. CNS implements highly sophisticated adaptive query algorithms and other patent-pending techniques to identify and direct queries to the fastest responding servers. Using ServerIron ADCs to balance DNS load to multiple CNS servers further enhances throughput and availability.

Nominum Foundation Authoritative Name Server

Where CNS retrieves information from authoritative servers for a given domain and caches that information to optimize performance, Nominum Foundation Authoritative Name Server (ANS) provides definitive DNS information for specific Internet domains/hosts. Deployed in complex and demanding network environments, including large ISPs and top-level and country-code domain servers, Nominum ANS simplifies delivery of reliable authoritative DNS, responding to greater numbers of queries per second and capable of handling hundreds of millions of even the longest records required by ENUM services and IPv6 implementations.

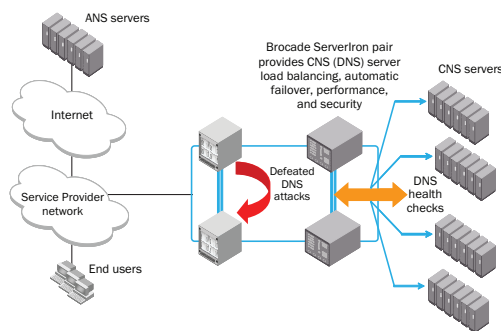


Figure 1.
Resilient and scalable
DNS service with Brocade
ServerIron and CNS/ANS.

DNS Service Resilience and Security

As critical underpinning for IP services, DNS servers are frequent targets of malicious attacks that overload them with traffic from virus and worm propagation. Together, Brocade ServerIron and Nominum CNS add multiple layers of protection and resiliency against attacks. ServerIron provides DNS rate limiting, filtering, and access policy enforcement to block many attacks, and dedicated silicon enables the highest-speed Denial of Service (DoS) attack protection without impacting throughput. Nominum supports response validation, selective cache flushing, domain filtering, and on-the-fly server reconfiguration to protect against attacks impacting the DNS. Additionally, Nominum servers do not share the weaknesses of open source DNS software, such as Berkeley Internet Name Domain (BIND), making them even less vulnerable.

The performance headroom and inherent scalability offered by the combined solution results in a DNS infrastructure capable of withstanding dramatic traffic peaks due to attacks, without sacrificing response time and uptime for legitimate users.

BEST ROI AND REDUCED TCO

The joint solution provided by Brocade and Nominum forms the foundation for robust and scalable non-stop DNS services, achieving significant reductions in capital and operational cost while increasing DNS capacity in an easy-to-manage infrastructure. This has been proven to maximize the ROI, and minimize the TCO for real-world service provider networks such as Comcast, BellSouth, America Online, NTT DoCoMo, British Telecom, and Yahoo.

ABOUT NOMINUM

Nominum's network naming and addressing solutions power the world's largest always-on networks. Nominum is a global provider of ENUM-based IP-application routing directory, DNS, and DHCP solutions.

ABOUT BROCADE

Brocade connects the world's most important information—delivering proven networking solutions for today's most data-intensive organizations.

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