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COMBINING GSLB WITH ENTERPRISE-GRADE DDI

SUMMARY

Infoblox DNS Traffic Control adds global server load balancing (GSLB) functionality to Infoblox's leading enterprise-grade DNS platform.

This natural combination enables most organizations to eliminate the need for a separate GSLB box—helping reduce the cost of purchasing and maintaining a standalone load balancer. DNS Traffic Control runs on the unique patented Infoblox Grid™ technology—so administrators can manage all DNS, DHCP, IPAM, and GSLB functionality from one centralized management GUI, saving significant time and effort.

BOOST PERFORMANCE AND AVAILABILITY BY STEERING APPLICATION USERS TO THE BEST AVAILABLE SERVER

Application delivery infrastructures are changing rapidly. It was once the case that only large enterprises could afford multiple data centers for disaster recovery, continuity, and geolocation-based application services. With the advent of the public cloud, especially infrastructure as a service (IaaS), anyone can have geographically dispersed application services without the cost of long-term data center leases and infrastructure build-outs.

The user community in many organizations is also changing. Mobile computing has been fully enabled by smartphones and tablets, which along with BYOD policies has enabled an always-on workforce.

Telework, telepresence, and geographically dispersed workforces are also moving the user base farther from home office locations.

These changes to the way organizations provide and consume IT services have the ability to increase agility and reduce time-to-provision as well as reduce costs for the enterprise. But they also present the problem of connecting the dispersed user base with the applications while maintaining maximum availability and performance. Infoblox DNS Traffic Control provides GSLB to make that happen.

DNS Traffic Control monitors application availability and uses DNS responses to direct application users to the most appropriate available application server based on the user's location. This ensures that users always get a timely response from applications based on their location—even in the event of a data center failure.

GLOBAL SERVER LOAD BALANCING ON EXISTING INFRASTRUCTURE

Infoblox DNS Traffic Control changes the traditional GSLB architecture. Traditional solutions were dependent on a separate set of appliances specifically for the GSLB functionality. These appliances were responsible for monitoring the health of the load-balanced applications and responding to DNS requests for those applications with responses that direct client traffic to the most optimal available server. These appliances operate outside the primary DNS infrastructure for the enterprise, with only a subset of the DNS data delegated to the GSLB appliances. A separate DNS system is required for all static DNS requests.

Infoblox DNS Traffic Control integrates the GSLB functionality into an organization's primary DNS infrastructure without the need for separate appliances. This allows the introduction of GSLB functionality on equipment you already have with all management integrated into one interface and all DNS data in one place, simplifying administration. It also saves the costs associated with procuring and supporting a separate set of appliances. The only requirement is the addition of the Infoblox DNS Traffic Control license on Infoblox DNS appliances that will be accepting the GSLB requests.

USING INFOBLOX DNS TRAFFIC CONTROL FOR GLOBAL SERVER LOAD BALANCING

Infoblox DNS Traffic Control introduces the concept of load- balanced domain names (LBDNs). LBDNs are DNS records within a zone on the existing Infoblox DNS infrastructure that provide GSLB for a set of target application servers. LBDNs appear in zones within the Infoblox Grid Manager interface just like any other type of DNS record.

LBDNs are configured to direct traffic to pools based on topology decisions. A pool is a group of application servers within a specific geographic area. Clients are directed to a pool based on topology rulesets. The rules within a topology ruleset can assign clients to a pool based on geographical location (geography rule) or based on the specific network subnet from which the client is originating (subnet rule). Geography rules are ideal for Internet-based clients, as the geolocation database provided with DTC can automatically determine the location of a client and assign it to a pool based on that information. Subnet rules are ideal for clients on an enterprise WAN (such as an MPLS network) where the client IP addresses are assigned specifically by the organization and will not be in a public geolocation database. LBDNs are also capable of persistence, where all connections from a specific client are always sent to the same server determined through the DTC process so that any connection-specific requirements are met.

Pools consist of geographically close servers, either within one data center or across multiple data centers. A server is the specific object within DTC that is monitored for health and load-balanced within a pool. The load balancing decision is made by DTC across all available servers within the pool. The load balancing decision can be based on global availability where the first available server in the pool is used, round robin where each available server in the pool is used in order, or ratio where each available server receives a portion of the incoming requests based on its configured ratio value.

Health Monitors are the final piece of the DTC solution. Health Monitors are associated with pools and are responsible for determining the availability of each server within the pool. A number of pre-defined Health Monitors are included with the system and these can be customized to suit your environment. Any server that is determined to be unavailable based on the health monitor configured for a pool is not used when making the load balancing decision for an incoming request to that pool.

INFOBLOX DNS TRAFFIC CONTROL ENABLES ENHANCED VISIBILITY

Infoblox DNS Traffic Control integrates global server load balancing into the existing Infoblox DNS infrastructure. This allows the enhanced tools provided by Infoblox for management and monitoring to be extended into your GSLB environment—including the management of all GSLB-related configuration through the same Grid Manager interface as all IPAM, DNS, and DHCP configuration.

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Infoblox Reporting includes a number of pre-built reports around DTC infrastructure. These reports provide both historical and trending analysis of the health and availability of your load-balanced resources. With them you can see how your environment is faring over time, track down specifically problematic resources based on historical reports, and predict future availability. Trinzic Reporting also enables visibility into response distribution, which allows you to tune the load-balancing algorithms and ratios to enable the most optimal load distribution to your servers based on their capabilities.

As with other objects in the Infoblox environment, DTC objects can have associated Extensible Attributes. These attributes allow the customized management of information with respect to the DTC objects (but more powerfully), enabling the use of Smart Folders for the organization of DTC-related data. Smart Folders allow the organization, search, and viewing of all DTC objects within the system in whatever totally customizable way is most relevant to your environment.

THE DNS TRAFFIC CONTROL PROCESS

Infoblox DNS Traffic Control leverages the existing Infoblox DNS processing capabilities of the Trinzic appliances. When an Infoblox DNS server with DTC enabled receives a DNS request, that request is first checked to determine if the requested name is an LBDN. If not, the usual DNS request process continues. If the requested name is an LBDN, DTC takes over the processing of the request. Next, DTC immediately checks the DTC cache for a persistence entry for the requesting client. If there is an entry in the cache for the requesting client, that client is given the cached response in order to maintain the persistent connection state between client and server. The length of time the persistence entry remains in the cache is configurable.

If the request is new, DTC then determines the specific pool and server that will be assigned to the request. First, the pool is determined based on any configured topology ruleset. This process looks at the source IP address of the client and either through a geography rule or subnet rule assigns the client to its nearest or otherwise most optimal pool. Once the pool has been determined, DTC selects an available server from the pool based on the configured load-balancing algorithms. DTC synthesizes a DNS response based on the requested LBDN with the IP address of the DTC selected server, which is then returned to the client. The client can then contact the DTC selected server by IP address.

SUMMARY

Infoblox DNS Traffic Control provides a powerful enhancement to the Infoblox DNS service. It enhances the DNS service with the intelligence to provide GSLB services to clients based on application availability and optimal geolocation. Along with existing Infoblox functionality such as Smart Folders and Trinzic Reporting, it provides extensive management functionality and visibility into GSLB functionality in the same interface as all other DNS configurations. And it eliminates the need for separate GSLB appliances and their associated costs and management overhead.