Infoblox

Automated DNS, DHCP and IPAM (DDI) Infrastructure

SOLUTION NOTE

A Foundation for Virtualization

Data center virtualization has become a leading enterprise IT initiative, and for good reason. Cost, availability, flexibility and environmental advantages are driving adoption. While technologies to deploy and manage virtual servers have advanced to the level that skilled engineers can deploy a new virtual server within a matter of seconds, configuring related networking infrastructure still requires manual labor and scripting. Specifically, assigning IP addresses, adding and updating DNS records and keeping track of virtual assets (virtual machines etc.) in the context of networking are still manual processes. Highly automated and resilient DNS, DHCP and IP address management (DDI) infrastructure is critical to the successful deployment of virtualized infrastructure.

DDI Activity is Significantly Higher in a Virtualized Environment

Since the deployment of new machines is not bound by the number of hardware servers at hand, the number of servers deployed in a virtualized environment can grow significantly and quickly. This requires assignment and management of more IP addresses, creation and updating of more DNS records and maintaining information about the location and purpose of the servers. Manual configuration and management will slow down this process considerably and make it error prone, eroding the business benefits of a virtualized environment. Studies performed by VMware indicate that manual and labor intensive DDI activity can add up to an extra week of lead time to the virtual server provisioning process.

Virtualized Environments are Dynamic Whereas Traditional DNS and IPAM are Static

In a virtual environment, virtual machines get deployed, moved and shut down frequently. In addition, advanced virtualization technologies, such as Dynamic Resource Scheduler (DRS) and VMotion can automatically migrate virtual machines to different physical servers or even different physical locations. In such a dynamic environment, keeping track of the binding of IP addresses, DNS records and virtual machine identifiers (virtual MAC etc.) is important, and so is the reclaiming of unused IP addresses. Manual processes, spreadsheets and scripting cannot scale to meet the requirements of such a dynamic environment. Automation and tracking of IP, MAC and DNS binding and reclaiming of unused IP addresses is a must for virtualized environments.

In a Virtual Environment, Everyone is a Network Engineer

Networks exist not only outside the physical servers but also inside the virtual environment thanks to the software switches built into hypervisors. This typically divides the responsibility of managing IP addresses and DNS across the teams; the virtualization team manages IP assignment, reclaiming, DNS management etc. for the virtual resources, and the networking team manages it for the physical networks. Even if departmental boundaries are not divided this way, many more engineers with varied skill sets are required to interact with and manage DDI for various resources. A DDI environment that supports strict role-based delegation and administration of DNS, DHCP and IPAM is essential to accommodate this. For example IPAM for a specific set of subnets could be delegated to the engineer responsible for the VMs in a particular data center. In addition, strong audit logging and rollback of DDI changes will help ensure error-free configuration of DDI.

Network Visibility is Lost in a Virtual Environment

In a physical network, devices can be discovered and their location can be ascertained by determining their subnets, switch ports and IP addresses. Leading IP address management solutions provide this information via advanced network discovery functions. This information is key in troubleshooting network problems, keeping network inventory and investigating security incidents. However, this visibility is diminished once networks cross into the virtual realm. Network engineers see the block

of IP addresses they have delegated to the virtualization team as a "black box". A good IP address management system that combines the physical and virtual networks in a single space and provides rich IPAM information about virtual assets e.g. location, type, MAC address etc. is a must have for a robust virtualized environment.

Virtual Environments Require Virtual Solutions

Real estate, power, cooling and management automation are the drivers behind most virtualization projects. The benefits of virtualizing hardware fall into 4 categories:

- **Partitioning**—run multiple operating systems on one physical machine and divide system resources between virtual machines;
- **Isolation**—fault, performance and security isolation at the hardware level;
- **Encapsulation**—the entire state of a virtual machine can be saved to a software file for easy moving and copying; and
- **Hardware independence**—provision or migrate any virtual machine to a similar or different physical server.

A DDI solution that requires deployment of physical servers or appliances defeats these benefits. *A DDI solution must provide deployment choices for virtual and physical appliances*.

About the Infoblox Solution

Infoblox appliances provide a platform for delivering reliable, scalable, and secure core network services including DNS, DNSSEC, DHCP, IPAM and more. Patented Infoblox Grid™ technology turns a collection of appliances into the most reliable, easily managed core network services infrastructure ever devised. Infoblox provides physical appliances as well as virtual appliances for VMware, Cisco AXP and Riverbed RSP appliances. Infoblox is a VMware "Technology Alliance Partner" and our DDI solution helps enterprises realize their virtualization goals by closing the gap between new dynamic infrastructures and static legacy DDI.

VMware, responsible for 89% of all virtualized applications in the world, has selected Infoblox as their Technology Alliance Partner to close the gap between the automated virtual server management and the slow labor-intensive core network services like DDI (DNS/DHCP/IP Address Management). The first step in most virtualization projects is to automate core network services like DDI and even have a link to the Virtual Server Management Center. This way the weakest link is neutralized. The automation of core network services will make it possible to find and assign an IP address for the virtual machines "on the fly" and update core services like DNS and DHCP in real time. Hence, you can fully use the benefits in terms of flexibility and speed of a virtualized server environment. Infoblox will even further automate the coordination between the virtual server management, the core network service management and the network management (switch and router management), through our IF-MAP initiative and technology embraced by major vendors like VMware, Microsoft, Juniper and Cisco.

Infoblox Product Warranty and Services

The standard hardware warranty is for a period of one year. The system software has a 90-day warranty that will meet published specifications. Optional service products are also available that extend the hardware and software warranty. These products are recommended to ensure the appliance is kept updated with the latest software enhancements and to ensure the security and availability of the system. Professional services and training courses are also available from Infoblox. Information in this document is subject to change without notice. Infoblox Inc. assumes no responsibility for errors that appear in this document.