Infoblox
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WHITE PAPER

Simplifying Private Cloud Deployments through Network Automation

Build and Manage Agile, Scalable, and Reliable Private Clouds—with Minimal Management Overhead

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Use Cases

Cloud self service: Automated and multi-tenant DDI service enablement is critical to offer self-service to internal customers.

Workload scalability: Integration with VMware, OpenStack, Microsoft, and other cloud-management solutions, together with the inherent scalability of the Infoblox Grid, enables your cloud to scale workloads seamlessly.

DevOps: The automation of IP address and DNS allocation in virtual environments allows IT to roll out new applications faster. Infoblox enables simplified IP address management across multiple overlapping IP address spaces. Multiple development, QA, pre-production, and production environments can use similar network configurations for their VMs to roll out applications faster and reduce DevQA churn due to differing network environments.

Resource reclamation: Automated reclamation of IP addresses and the association of DNS records with VMs when they are deleted prevents sprawl of unused resources and maintains good DDI data for VM networks.

Change automation: Automating changes to IP addresses, DNS records, hostnames, and aliases for VMs aids compliance with naming policies and allows faster integration of subsidiaries and acquisitions.

Delegation of cloud network and DNS management: Finely granular controls for delegating administrative authority for tenants in clouds, cloud networks, and DNS zones reduce organizational dependence on high-level administrators.

Build and Manage Agile, Scalable, and Reliable Private Clouds—with Minimal Management Overhead

Private cloud deployments can be risky. If you get it right, you get agile delivery of high-quality services that help your lines of business (LOBs) seize new business opportunities, respond to customer demands, and get ahead of your competition. Recent IT and CIO surveys suggest that customers are deploying private clouds for lower infrastructure cost, increased IT self service, and—due to recent high-profile breaches—better security. It makes perfect sense, then, that large enterprises are investing in highly virtualized, automated data centers and private clouds.

But if you're planning to join the IT professionals who are betting on private cloud, you should know that things might not go smoothly. Automation is a key enabler for private cloud success, but while some elements of private cloud deployments are well understood and highly automated (like servers and storage), other elements are still mostly manual and prevent agile self-service delivery. Networking automation challenges for private clouds in particular include:

- **Lack of visibility** into virtual machine (VM) resources as they are created and destroyed, and difficulty in linking these to automated network setup and configuration tasks
- **Manual network management processes** that might keep you from getting the agility you're after by slowing down the rollout of applications
- **Limits on network scalability** that could prevent you from deploying the additional tenants and virtual machines (VMs) that business growth demands
- **Unreliable DNS, DHCP, and IP address management (DDI) services** that threaten you with costly outages
- **The cost of managing a complex cloud network**, which can wipe out the ROI you hope to get from your private cloud

Critical Networking Elements and Tasks to Consider

Whether you win the private cloud game or not depends on how you play. You have to be prepared to understand the critical elements that you need to focus on:

Gaining visiblity into VM and IP address activity. Trying to comply with security policies and audits is futile without accurate information about which IP addresses and DNS records are assigned to which VMs at any given time. It is also critical to track locations, applications, users, and more for VMs and networks, IP addresses, and DNS zones. While most server admins have access to part of this information, networking teams certainly do not. They are often reacting to VM creation and deletion and still using manual methods, so their response can often be slow.

DNS and DHCP provisioning and IP address allocation for VMs. It can take hours or even days to provision networks, DNS records, and IP addresses in a virtual environment, putting the brakes on rapid delivery of cloud services. Manual IP address reclamation is a clumsy and error-prone process, and it can result in a sprawl of unused IP addresses and DNS records. If IP addresses of VMs are used to bill customers, manual processes can lead to inaccurate charges. And a few small keystroke errors can create potential IP address conflicts that could cause downtime in the private cloud environment.

Scalability and reliability. For private clouds that are running critical workloads, or may span geographical locations, scalability and resiliency become top of mind, and highly available DDI services are required. In multi-data-center clouds, the ability to provide local services while managing from one global platform becomes a core requirement. These are the elements that enable high-fidelity services with lower management overhead.

How You Can Make Private Cloud Deliver for You

If you take an approach based on principles such as automation, visibility, and integration, you can take control of the outcomes of your private cloud deployment and deliver valuable business benefits such as:

- The convenience of self-service for internal customers
- Seamless scalability of workloads
- Support for DevOps initiatives
- Automated reclamation that prevents the sprawl of unused resources
- Automated IP address and DNS record changes for VMs to simplify and accelerate business processes
- Granular delegation of administrative authority for tenants to give organizations control of their own processes

Building Agility, Scalability, Reliability, and Staffing Economy into Your Private Cloud

When private clouds do succeed, it is largely due to automation. In most private cloud environments today, the management of storage and compute is heavily automated, supporting the agile delivery of low-cost services to lines of business. To make your private cloud deployment a sure bet, Infoblox Cloud Network Automation combines extensive, proven automation with:

- New purpose-built Cloud Platform Appliances
- Adaptors for integrating with cloud management platforms from VMware, Microsoft, and Openstack
- An infrastructure built for high availability and disaster recovery
- Simplified, centralized management

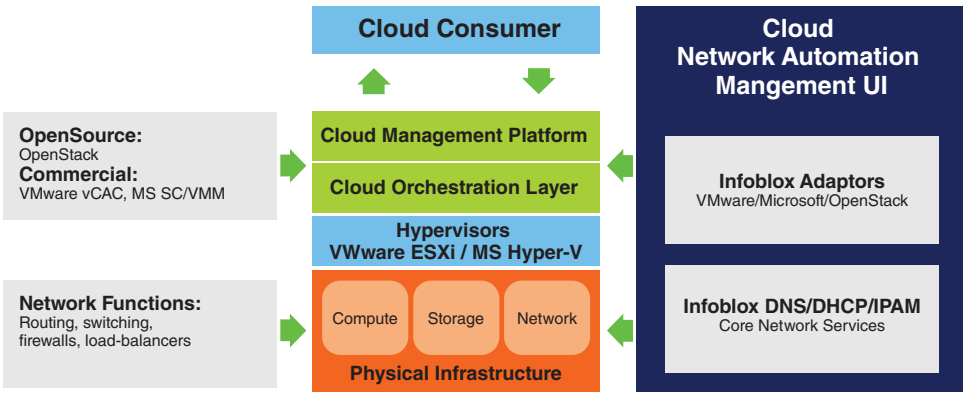

Figure 1. Inblox Cloud Network Automation brings enterprise-grade core network services and cloud automation together in a single management interface.

Solution Components

The Infoblox solution consists of three components: the Cloud Network Automation software, Cloud Platform Appliances, and Infoblox Cloud adapters.

1. **Infoblox Cloud Network Automation** is licensed software that provides the ability to organize and manage IPAM, DNS, and DHCP information for cloud environments by VM and by tenant in the Infoblox Grid™ user interface. By licensing this option, you gain the ability to see cloud conditions such as IP address utilization for multiple VMware, OpenStack, Microsoft, or other cloud platform environments in a cloud-centric manner—all from a single console and in combination with a view of physical network infrastructure across the Grid.

2. **Infoblox Cloud Platform Appliances** are fully virtualized Infoblox Grid members that run on ESXi, Hyper-V, or XenServer hypervisors. They deliver the full suite of Infoblox DNS, DHCP, and IPAM to cloud environments such as VMware, OpenStack, and Microsoft. These appliances, optimized for cloud deployments in the data center, also deliver a range of cloud-enabling functions including:

- Automated IP address provisioning and reclamation when VMs are decommissioned
- Automated DNS naming and reclamation when VMs are decommissioned
- Automated DHCP lease assignment with fixed address support—especially important in OpenStack environments
- Direct API communication between Infoblox Cloud Platform Appliances and cloud-management platforms to provide local survivability for regional data center deployments and to increase system scalability

3. **Infolox Cloud Adapters** are free adapters that integrate with cloud-management and orchestration platforms from VMware, Microsoft, and Openstack, giving you centralized management visibility and automated network provisioning for your cloud operations regardless of the cloud-management platform.

Key Benefits of Infoblox Cloud Network Automation

Infoblox Cloud Network Automation optimizes private cloud deployments in four major ways.

Get the Agility Private Cloud Promises

Infoblox Cloud Network Automation accelerates the provisioning and deprovisioning of IP addresses and DNS and DHCP records for VMs. Functions that take hours or days when performed manually happen in minutes or even seconds. And a single, centralized point of DDI management for all major cloud-management platforms—including OpenStack, VMware, and Microsoft—reduces time-consuming staff effort. The result is more rapid deployment of VMs, applications, and services to meet the demands of LOBs.

Scale Up and Out in Response to Growth and Changing Demands

Our new Infoblox Cloud Platform Appliances and our flexible architecture give you unprecedented flexibility to precisely match your network service delivery capabilities to your demands. Whether you need to add more tenants to a cloud or more clouds at new locations, expansion is a simple matter of deploying a new appliance in your Infoblox Grid™. The fact that multiple Cloud Platform Appliances in a single data center can share API workload also increases scalability.

All your Cloud Appliances are centrally managed and are provisioned per cloud and per data center, making it possible to expand cloud support within segments of your network without hampering performance. And the pay-as-you-go nature of adding new appliances only when and where you need them helps you control your budget expenditures precisely.

Give Your Cloud Business-critical Reliability

At every one of your cloud instances and locations, Infoblox Cloud Platform Appliances fuction as components of the Infoblox Grid and Infoblox enterprise-grade DDI services—both built for redundancy, high availability, and disaster recovery. In addition, each Cloud Platform Appliance can operate independently of the Grid Master for serving protocols and API calls, ensuring local survivability even if the connection with the Grid Master is lost.

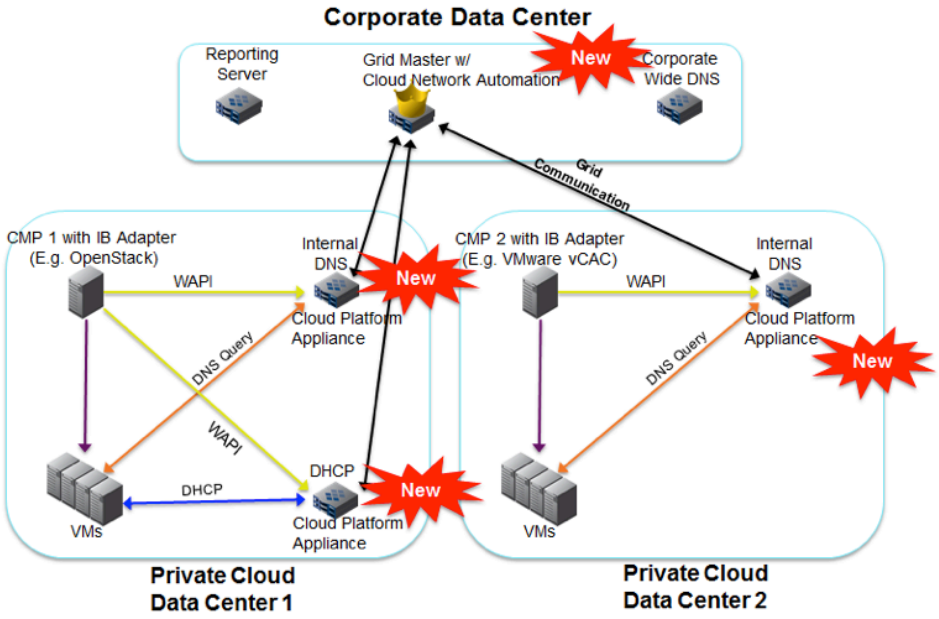

Figure 2. Infoblox Cloud Platform Appliances share the advantages of Infoblox Grid central management, but if the connection with the Grid Master is severed, they can operate independently so that individual clouds continue to deliver services.

Run Your Private Cloud with a Streamlined Staff

Infoblox Cloud Network Automation reduces the administrative overhead of private cloud deployments in several ways. The most obvious is the extensive labor savings that stem from the automation of tasks such as the provisioning of IP addresses and DNS records. In addition, our single central management interface—coupled with a new Cloud Dashboard Widget and new cloud reports that provide real-time, historical, and trend information about cloud elements—reduces overall staffing requirements.

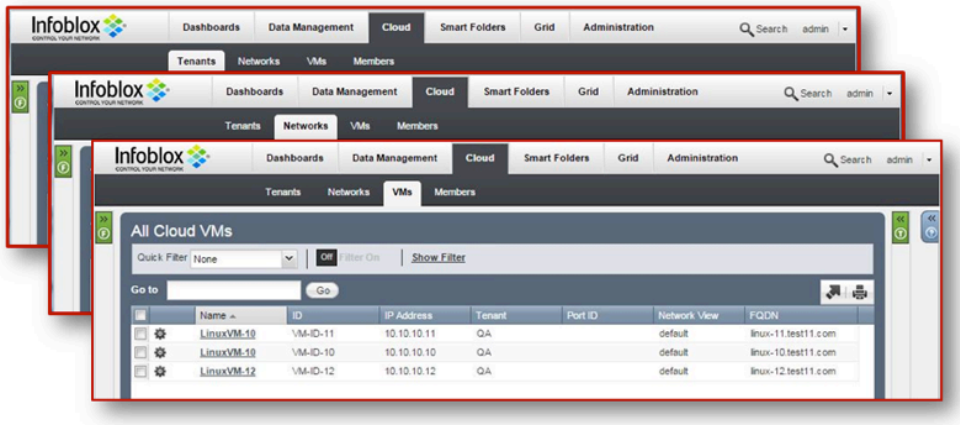

Figure 3. Cloud administrators can view cloud tenants, networks, VMs, IP addresses, and DNS records—along with their accompanying metadata—through a single, consolidated, consistent view.

Optimize Your Private Cloud

If you're ready to implement a private cloud that pays big—or make the one you already have pay more—contact us to learn more about Infoblox Cloud Network Automation. We are the only DDI vendor whose solution is compatible with OpenStack, VMware, and Microsoft cloud platforms—and we're the only one that can deliver highly available, automated DDI services for Openstack. Our flexible architecture gives you unprecedented flexibility to scale your cloud deployments up and out. And our centralized graphical management interface will make your cloud environment orders of magnitude easier to operate and manage.

About Infoblox

Infoblox (NYSE:BLOX) delivers network control solutions, the fundamental technology that connects end users, devices, and networks. These solutions enable approximately 7,500 enterprises and service providers to transform, secure, and scale complex networks. Infoblox helps take the burden of complex network control out of human hands, reduce costs, and increase security, accuracy, and uptime. Infoblox (www.infoblox.com) is headquartered in Santa Clara, California, and has operations in over 25 countries.

CORPORATE HEADQUARTERS:

+1.408.986.4000

+1.866.463.6256

(toll-free, U.S. and Canada)

info@infoblox.com

www.infoblox.com

EMEA HEADQUARTERS:

+32.3.259.04.30

info-emea@infoblox.com

APAC HEADQUARTERS:

+852.3793.3428

sales-apac@infoblox.com