SOLUTION NOTE

HYBRID- AND MULTI-CLOUD INTEGRATIONS FOR WORKPLACE MODERNIZATION

NIOS 8.5.2 / 8.5.3 / 8.6.0 / 8.6.1 / 8.6.2 / 8.6.3

Organizations across virtually every market vertical are migrating data platforms and applications from legacy on-premises to hybrid, multi-cloud deployments. The benefits include improved storage, security and data protection with superior performance, scalability and potential IT cost advantages. Organizations are also interested in location-specific requirements, such as data sovereignty, low-latency and network bandwidth. Aligned with the shift from on-premises to cloud, Infoblox continues its ongoing mission to add new hybrid and multi-cloud capabilities to its NIOS DDI platform and to keep pace with templated integrations and APIs that help organizations navigate the journey toward workplace modernization and automation.

BUSINESS CHALLENGES

To keep pace, stay competitive and get ahead of the locally and globally changing business and technology landscape, companies need data visibility and analytics to provide operational, triage, forensic and predictive insights for business and process optimization. Deploying sophisticated cyber security tools and solutions to protect customers, users, data and infrastructure is essential, but it's not enough. Companies need to modernize networks to enable the distributed workplace, support geo-diverse branch offices and ensure agility, automation and high performance at scale from the data center to the network edge. Adopting modern technologies—including virtualization, private, hybrid cloud, public, multi-cloud, SaaS and IPv6—can help reach these goals.

Fortunately, NIOS 8.x adds and refreshes an extensive list of cloud-enabling applications, templated integrations and APIs to make it easier for organizations to serve their customers, support distributed workers and achieve company objectives.

PUBLIC, MULTI-CLOUD SOLUTIONS

Amazon Web Services (AWS): Expands vNIOS Visibility, Capacity and Scalability

If you run AWS deployments, chances are your cloud footprint is spreading. Increasingly complex IP networks, skyrocketing applications and DNS transactions, expanding databases and escalating API calls are raising the need for greater visibility, capacity and scalability in public cloud deployments. Infoblox answers these needs with expanded capabilities for AWS:

Infoblox enables workplace modernization through hybrid, multi-cloud technologies and integrations, including:

PUBLIC, MULTI-CLOUD SOLUTIONS

- Amazon Web Services (AWS) 8.5.2 / 8.6.2 / 8.6.3
- Google Cloud Platform (GCP) 8.6.0 / 8.6.2
- MS Azure & Azure Stack 8.5.3 / 8.6.1 / 8.6.2 / 8.6.3
- Oracle Cloud Infrastructure (OCI) 8.5.2

PRIVATE, HYBRID-CLOUD SOLUTIONS

- Cisco ACI, Meraki & Viptela 8.6.0
- Cisco ISE 8.5.2 / 8.6.2
- Kubernetes ExternalDNS 8.6.2 / 8.6.3
- Nutanix 8.6.2 / 8.6.3
- Nutanix Acropolis Hypervisor 8.5.0
- Python & Go-WAPI 8.6.3
- Red Hat Ansible 8.6.1 / 8.6.2 / 8.6.3
- Red Hat CoreOS (RHCOS) 8.6.0
- Red Hat OpenShift 8.5.3 / 8.6.1
- Red Hat OpenStack 8.5.3 / 8.6.2
- Terraform 8.5.3 / 8.6.2 / 8.6.3
- VMware vRA/vRO 8.5.2 / 8.5.3 / 8.6.1 / 8.6.3

1. **Network Insight in AWS—Delivers Flexibility and User Experience**

   NIOS 8.6.3 enables Network Insight discovery appliances to be deployed in AWS (and Azure) to support cloud-first initiatives, data center to cloud migrations, reduce physical data center resources and extend network discovery deployment options to public, multi-cloud environments.

2. **AWS R6 Instance Support—Increases User Experience and Reduces Cost**

   NIOS 8.6.3 extends vNIOS support from R4 to R6 instance types in AWS, improving performance, saving cost and lowering the total cost of ownership.

3. **AWS EBS Encryption for vNIOS—Enables Cloud Security and Control**

   Infoblox improves cloud security in AWS with vNIOS 8.6.3 by allowing Amazon Elastic Block Store (EBS) encryption for data at rest, data in transit and all volume backups.

4. **AWS Route 53 Sync on Multiple Accounts—Extends User Experience and Reduces Cost**

   For teams needing to manage and sync multiple accounts in AWS R53, NIOS 8.6.3 saves significant time and AWS usage fees by eliminating vNIOS member deployments in each account and synchronizing all R53 hosted zones to the Grid.

5. **AWS Route 53 vDiscovery for GovCloud—Enriches User Experience and Control**

   For federal and other government customers, NIOS 8.6.3 enables Route 53 support to AWS GovCloud for highly available and scalable DNS to connect user requests to AWS Internet applications, customize routing policies and reduce latency.

6. **AWS EC2 Serial Console—Advances User Experience and Control**

   NIOS 8.6.3 improves troubleshooting, user experience and control in AWS by allowing a direct NIOS connection to AWS Nitro Systems and the EC2 Serial Console.

7. **Reporting in AWS—Enhances Visibility and Enables Cloud Migration**

   Network visibility is critical in today's hybrid multi-cloud environments. NIOS 8.6.2 allows the deployment of reporting members in AWS public clouds. This new capability simplifies the migration of physical data centers to the cloud and delivers single and multi-site visibility into DDI metadata for historic audit/compliance, real time alerting, network performance and capacity planning.

8. **vNIOS v40x5 VMs in AWS—Enlarges Capacity, Scalability and User Experience**

   With NIOS 8.6.2, organizations can deploy larger capacity v4015 appliances in AWS to run as virtual machines (VMs) and serve DNS. This expansion builds on the NIOS 8.5.2 release that extended v4025 VM and IPv6 support for AWS Public Cloud and GovCloud. It also covers Infoblox's full v40x5 lineup to empower all Grid Master (GM) and Grid Master Candidate (GMC) features and use cases and provides organizations needing greater queries per second (QPS) and leases per second (LPS) with the capacity and scalability necessary now and in the future.

Google Cloud Platform (GCP): Adds Consistency, Scalability and User Experience

Infoblox continues its ongoing investment in expanding GCP capabilities:

1. **DHCP for GCP—Simplifies Cloud Migration and Delivers Consistency**

   Organizations interested in decommissioning physical data centers and simplifying migration to the cloud can now deploy DHCP for GCP. This NIOS 8.6.2 feature ensures service consistency by allowing DHCP services to be configured on vNIOS instances in GCP and serve DHCP to on-premises clients.

2. **vNIOS v40x5 VMs in GCP—Broadens Capacity, Scalability and Experience**

   With NIOS 8.6.2, organizations can deploy larger capacity v4015 and v4025 appliances in GCP to run as VMs and serve DNS. This extension improves user experience by enabling higher capacity QPS and DHCP LPS for large enterprises supporting high-volume workflows to meet dynamic business needs whenever needed.

3. **vNIOS Image for Single NIC in GCP—Secures and Simplifies Services and Lowers Cost**

   For sharing services in GCP, previous versions of vNIOS required two Network Interface Cards (NICs). NIOS 8.6.0 offers a single-NIC vNIOS image to secure and simplify service sharing and reduce costs. It also allows additional flexibility for designing your cloud network and shared services infrastructure in GCP.

4. **Shared VPCs in GCP—Centralizes Management and Optimizes Security and Performance**

   

   Support for shared Virtual Private Clouds (VPCs) in GCP is another helpful NIOS 8.6.0 development. It allows an organization to set up centralized networking in cloud environments and allocate those networking services to multiple departments and teams. Shared VPCs operate in a host project and distribute access to multiple service projects. Deploying vNIOS into shared VPCs adds flexibility and optimizes security, centralized management, performance and availability.

Microsoft Azure: Improves Flexibility, Scalability and User Experience

For organizations that use Microsoft Azure for cloud application management via Microsoft-managed data centers, Infoblox offers expanded core network service capabilities for faster innovation:

1. **Network Insight in Azure—Delivers Flexibility and User Experience**

   NIOS 8.6.3 enables Network Insight discovery appliances to be deployed in Azure (and AWS) to support cloud-first initiatives and data center to cloud migrations, reduce physical data center resources and extend network discovery deployment options to public, multi-cloud environments.

2. **Reporting in Azure—Enhances Visibility and Simplifies Cloud Migration**

   As noted above, network visibility is essential for hybrid multi-cloud environments. To meet this need, NIOS 8.6.2 enables deployment of reporting members in Azure public clouds. Not only does this capability simplify the migration of physical data centers to the cloud, but it also delivers single and multi-site visibility into DDI metadata for historic audit/compliance, real time alerting, network performance and capacity planning.

3. **vNIOS v40x5 VMs in Azure—Extends Capacity, Scalability and Experience**

   With NIOS 8.6.2, large organizations can deploy higher capacity v4015 and v4025 appliances in Azure to run as VMs and serve DNS. This extension improves user experience by enabling higher-capacity QPS and DHCP LPS to support high-volume workflows to meet growing business requirements today and later.

4. **vNIOS Support for Azure Stack—Expands Discovery, Visibility and Flexibility**

   Organizations can operate virtual appliances both on Azure and Azure Stack with NIOS 8.6.1. Within Azure Stack, teams can run Infoblox DNS, IPAM and DHCP (DDI) services and vDiscovery for detecting resources and cloud endpoints. Azure Stack Government is also supported. This on-premises cloud integration offers the ultimate flexibility and scalability for Azure deployments.

5. **vNIOS Deployment on Managed Disk—Enables Availability, Security and Reliability**

   Azure managed disks are block-level storage volumes used with Azure VMs. They resemble a physical disk in an on- premises server but are virtualized. With managed disks, an administrator specifies the disk size and type and provisions the disk, while Azure handles the rest. NIOS 8.5.3 allows vNIOS VMs to be deployed and managed on Azure platforms to gain a host of benefits, including high durability and availability, simple, scalable VM deployment and integration, block-level storage, backup support, Azure role-based access control (RBAC), granular read/write/retrieve management, server-side and Azure disk encryption for mission-critical security, HA and reliability.

Oracle Cloud Infrastructure (OCI): Increases Performance, Governance and Control

Infoblox delivers its first-ever OCI cloud offering with NIOS 8.5.2 through the vNIOS CP-2205 virtual cloud machine. OCI is an infrastructure cloud service that allows enterprises a high level of control by returning critical performance and governance capabilities to the enterprise for managing virtualization, storage, networking and data centers. It provides local storage and servers with reliable, fast, real-time performance and granular control, yet with the scalability, cost savings and flexibility of the cloud. These capabilities enable customers to combine the full functionality of Infoblox vNIOS with all the control advantages of OCI.

Selective Public Cloud vDiscovery Using CIDR (Private IP): Empowers Cloud Visibility and Control

NIOS 8.6.3 enables endpoint vDiscovery, visibility and efficient distribution of IP addresses in AWS and GCP by detecting, including or excluding network resources using Classless Inter-Domain Routing (CIDR or private IP).

PRIVATE, HYBRID-CLOUD SOLUTIONS

Cisco: Enriches Discovery, Visibility, Access and Control

Network data discovery and contextualized visibility are essential components for modern network access control (NAC), policy compliance, zero trust security and IP address and network management across the distributed enterprise. Infoblox's ongoing integrations with Cisco NAC, SDN and SD-WAN solutions enrich network visibility, management and control for customers with Cisco deployments.

1. **Cisco ISE Plug-in—Raises Visibility and Deepens Network Access Control**

   Cisco's Identity Service Engine (ISE) secures and simplifies NAC and automates zero trust security and policy enforcement. Infoblox publishes critical network and DNS security event and contextual data over Cisco ISE to enrich NAC, automate threat detection notification, provide forensic information for prioritizing threats and policies and speed incident response. NIOS 8.6.2 builds on the NIOS 8.5.2 foundation (ISE 2.6/2.7/3.0) by enhancing ROI on existing ISE investments and upgrading support to ISE 3.x for deeper visibility, identity management and control across applications, routers, switches and other network devices and assets.

2. **Cisco ACI, Meraki and Viptela—Unifies SDN and SD-WAN Discovery and Management**

   NIOS 8.6.0 expands Network Insight's discovery capabilities to include integrations for SDN with Cisco ACI and SD-WAN for Meraki and Viptela. These capabilities unify IPAM visibility while making IP address and network management more comprehensive. NIOS integrations increase deployment flexibility and usability, especially for discovery of assets associated with branch and remote offices.

Kubernetes ExternalDNS: Simplifies Container Automation and Security

Kubernetes (K8s) simplifies container networking by managing and automating container workloads on-premises or in the cloud. It enables traffic routing for high availability and scalability.

1. **Kubernetes ExternalDNS API Endpoint Read/Write Plugin—Raises User Experience, Scalability and Control**

   NIOS 8.6.3 introduces an API plugin feature that allows different Infoblox API endpoints (i.e., Grid members) to configure API server parameters and conduct read and write operations with K8s ExternalDNS Plugin API requests for better user experience, scalability and control.

2. **Kubernetes ExternalDNS—Enables Visibility and Automates Record Creation**

   NIOS 8.6.2 offers a K8s ExternalDNS Plugin that enables discovery and visibility by configuring public DNS servers with exposed K8s services data, continues certificate-based two-factor authentication and allows K8s pods to create automated ExternalDNS records (A, Host, CNAME and TXT) in vNIOS.

Nutanix: Adds Agility and Flexibility for Virtualized Workflows

Organizations are adopting virtualization, cloud and hyper-converged infrastructure but need agility and flexibility to realize promised efficiencies. Infoblox integrates with Nutanix to enable these benefits:

1. **Nutanix 6.x LTS Support—Ensures User Experience**

   Nutanix customers benefit from its latest developments with better user experience and the assurance that NIOS 8.6.3 is current and compatible and delivers high performance with Nutanix 6.x LTS environments.

2. **Nutanix 5.20.x Support—Advances Automation for Virtualized Workflows**

   NIOS 8.6.2 builds on Nutanix AHV capabilities with Nutanix 5.20.x to advance hypervisor server virtualization with rapid IP address provisioning on VMs, automatic deprovisioning of IP addresses from decommissioned VMs and unified management of private and hybrid cloud networks.

3. **vNIOS for Nutanix Acropolis Hypervisor (AHV)—Adds Agility for Private Clouds**

   NIOS 8.5 adds vNIOS for Nutanix Acropolis Hypervisor (AHV) to gain greater agility, flexibility and efficiency while fast-tracking DDI deployment and extending management in private cloud platforms like VMware and OpenStack.

Infoblox Python WAPI and Go-WAPI Client Plugins: Promote User Experience

Infoblox upgrades user experience and usability with NIOS 8.6.3 by extending Infoblox (Python) Client and Go-Client concurrency and synchronization with the latest version of the WAPI Client Generator.

Red Hat: Reduces Complexity, Ensures Stability and Accelerates Time to Value

Red Hat delivers hardened, open-source solutions that make it easier for enterprises to work across platforms and environments, from the core data center to the network edge. Infoblox's integrations with Red Hat make it easier to see, manage and control core network data on applications and clouds anywhere.

1. **Certificate Authentication for Ansible and Python Modules Plugin—Advances Control**

   NIOS 8.6.3 develops access control by enhancing certificate authentication in the Infoblox Client and Ansible and Python SDK Playbook modules.

2. **Red Hat Ansible Collection—Advances User Experience and vNIOS Automation**

   The Ansible Galaxy Collection delivers an improved user experience by combining Infoblox DDI capabilities in Ansible workflows and by enabling automation of VM workloads across multiple platforms. The NIOS 8.6.2 Ansible Plug-in builds on the Ansible Galaxy Collection delivered in NIOS 8.6.1 to maintain concurrency with the Ansible 1.2.1 release. The nios_modules collection provides modules and plugins for managing networks, IP address and DNS records and DTC global server load balancing (GSLB) to ensure critical application and resource availability and uptime.

3. **Red Hat OpenStack Xena IPAM Plug-in—Centralizes Visibility and Automation**

   The NIOS 8.6.2 IPAM Plugin for Red Hat OpenStack Xena is a containerized adapter that delivers secure, single control plane and granular visibility into the entire OpenStack network. It automates IP address provisioning and deprovisioning, DHCP server management with integrated DNS, simplifies troubleshooting to reduce downtime and synchronizes DDI in data center and hybrid cloud environments for seamless, secure multi-network and resource management within the RedHat OpenStack platform.

4. **Red Hat OpenStack Wallaby vNIOS Support—Extends Visibility and User Experience**

   NIOS 8.5.3 combines drivers, API calls and meta-data tagging, enabling vNIOS IPAM for OpenStack Wallaby to provide full visibility into the OpenStack cloud from within Infoblox. Infoblox Grid data is populated into the local OpenStack database to improve visibility when allocating subnets and IP addresses. This process eliminates added WAPI calls and the need to monitor OpenStack events and query objects outside IPAM. The upgrade also helps automate cloud native applications and VMs for greater user experience, orchestration and control.

5. **Red Hat CoreOS (RHCOS) OpenShift vNIOS Support—Adds Security and Efficiency**

   Greater security and operational efficiency for container-based workloads through automation are key benefits for container OS technologies. vNIOS supports Red Hat OpenShift, the leading Kubernetes container automation platform:

- **vNIOS 4015 KVM Appliance—Increases Capability and Capacity and Saves Resources**
  NIOS 8.6.1 adds the larger capacity 4015 KVM appliance to the 2225 machine in the vNIOS lineup to run as a VM and serve DNS on Red Hat OpenShift, the leading Kubernetes container-based automation platform. This addition saves time and money, and it simplifies infrastructure and workflows by delivering DNS through OpenShift to manage services and zones without having to rely on DNS running elsewhere. It also allows large enterprises and service providers to manage numerous servers and migrate to containerized architectures.
- **vNIOS VMs Serving DNS on OpenShift—Simplifies, Saves Resources and Adds Control**
  NIOS 8.5.3 allows vNIOS VMs to serve DNS on OpenShift, a way to save time and money and simplify infrastructure, services and zone workflows without having to rely on DNS running elsewhere. vNIOS on Red Hat OpenShift is available on-premises, for AWS, Azure and IBM Cloud services. It supports use cases including VMs running on OpenShift as DNS servers and Anycast e-BGP use cases. vNIOS on OpenShift delivers improved user experience and automation for service providers and large enterprises that manage many servers and are starting to migrate to containerized architectures.
- **vNIOS VM Support for OpenShift—Streamlines Workflows and Saves Money**
  With NIOS 8.5.2, Infoblox provides VM support for OpenShift and leverages a Kubernetes technology called KubeVirt to run non-containerized VMs inside Docker containers. This approach simplifies orchestration workflows and saves time and money with virtual deployments.

Terraform: Unifies Multi-Cloud Provisioning, Management and Automation with IaC

Terraform by HashiCorp is an open-source infrastructure-as-code (IaC) data center automation tool for building, changing and versioning infrastructure across multiple clouds and platforms. Infoblox's ongoing integrations with Terraform enable organizations to view, manage and automate DDI workflows simply and easily across hybrid, multi-cloud environments.

1. **Terraform IPAM Plugin—Simplifies User Experience and Automation**

   Infoblox continues its integration with Terraform, an open-source IaC data center automation tool for building, changing and versioning infrastructure across multiple clouds and platforms. NIOS 8.6.3 simplifies user experience and improves efficiency and control by enabling NIOS object import functionality and extended data source support for enhanced automation.

2. **Terraform Plugin—Heightens User Experience, Control and Automation**

   Initially launched with DNS and IPAM support in NIOS 8.5, NIOS 8.6.2 improves user experience, control and efficiency by enabling Terraform 2.1 to manage and automate DNS and IPAM services in VMware and Azure environments throughout the deployment, operations/management and retirement lifecycle. It simplifies access administration and heightens efficiency through orchestration for the next available network container, import objects, .txt resource and data sources support.

3. **Terraform Plugin—Enables IPAM Management and Automation in the Cloud**

   NIOS 8.5.3 introduces four new vNIOS enhancements for Terraform:

- **vNIOS IPAM Support for AWS—Upgrades Cloud User Experience and Efficiency**
  Infoblox enhances the user experience and efficiency by extending the vNIOS IPAM Plugin for Terraform to run and automate IPAM deployment and management on AWS platforms.
- **IPAM Next Available Network Query—Streamlines and Controls IPAM Workflows**
  The vNIOS IPAM Plugin improves user experience, automation and control for Terraform by enabling automatic query for the next available Infoblox network to discover, use and manage IP addresses.
- **Record Support—Improves Record Visibility, Experience and Control**
  Infoblox enriches the functionality and user experience via the vNIOS Terraform Plugin to discover, create, use and manage IPv6 addresses and records (e.g., DNS A, AAAA, PTR and CNAME) for better network discovery, visibility, user experience and control.
- **Update Functionality—Increases User Experience with Full IPAM Control**
  Enhanced vNIOS IPAM support extends prior create, delete and read functionality by allowing a full update of NIOS objects through Terraform.

VMware: Enables Multi-Cloud Innovation

VMware is a leading provider of multi-cloud services for software applications that enable digital innovation with enterprise control from the data center to the network edge. VMware specializes in app modernization, simplifying cross-cloud complexity and secure services for the distributed environment. Infoblox continues its long-standing commitment to VMware integration:

1. **VMware 7.0.x Support—Improves User Experience**

   For customers with VMware integrations, NIOS 8.6.3 enhances user experience and confidence by providing Infoblox validation for NIOS compatibility with VMware 7.0.x environments.

2. **vNIOS IPAM Plugin for vRO v8.0—Provides Consistent Workflow Management**

   NIOS 8.6.1 introduces an updated vNIOS IPAM Plugin to support the latest VMware vRO v8.0 functionality for DDI VM provisioning, deprovisioning and workflows.

3. **vNIOS IPAM Plugin for vRA/vRO v7.6 with NSX—Extends Provisioning and SDN Experience**

   NIOS 8.5.3 updates the IPAM Plugin for VMware IPAM v4.5.0 on vRA/vRO v7.6 with NSX (SDN) 6.4.6 to enhance user experience and support VMware's latest functionality for DDI VM provisioning.

4. **vNIOS IPAM Plugin for vRA v7.6—Simplifies Operations and Automation**

   NIOS 8.5.2 validates the Infoblox IPAM Plugin for vRealize Automation (vRA) 7.6 to enable VM provisioning, deprovisioning and automation for greater accuracy, workload simplification, automation and cost savings.

CONTACT US

For additional technical information, please see the NIOS 8.6.3 Release Notes located in the Infoblox Support Portal at https://support.infoblox.com.

To get specific answers on Infoblox's extensive lineup of hybrid, multi-cloud integrations for workplace modernization, connect with your Infoblox account team, see our core network integrations or contact us at Infoblox.com.

Infoblox unites networking and security to deliver unmatched performance and protection. Trusted by Fortune 100 companies and emerging innovators, we provide real-time visibility and control over who and what connects to your network, so your organization runs faster and stops threats earlier.

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