

**SOLUTION NOTE**

# AUTOMATING IPAM AND DNS THROUGH TERRAFORM INFRASTRUCTURE AS CODE (IAC)

## SUMMARY

As more organizations adopt DevOps processes, innovative IT approaches such as Infrastructure as Code (IaC) have become prevalent.

IT Infrastructure is becoming increasingly fluid; networks and servers in hybrid cloud environments are provisioned and de-provisioned rapidly. This shift presents challenges in providing critical network services such as IPAM and DNS using traditional, manual processes. The Infoblox Plug-In for Terraform integrates our industry leading DDI solution with Terraform IaC for maximum visibility, agility and control of network services across hybrid cloud environments.

## CHALLENGES OF HYBRID CLOUD INFRASTRUCTURE

Public and private cloud platforms have changed the way organizations manage IT infrastructure across the entire lifecycle. Cloud platforms allow for rapid deployment of resources and Infrastructure as Code software, such as Terraform, helps ensure speed, simplicity and consistency in these deployments. Legacy approaches toward manual allocation of IP address space, endpoint addresses and DNS records for these resources can no longer suffice.

Many of the major cloud platforms do not provide any native process for IP Address Management (IPAM), a critical networking service. Manual management of IP space and addresses is a time-consuming process with frequent errors caused by lack of visibility, overlapping address space and IP conflicts. In addition, maintaining accurate, up-to-date DNS records for resources that may change frequently is an increasingly challenging task.

## INDUSTRY-LEADING IP ADDRESS MANAGEMENT AND DNS FOR HYBRID CLOUD

Terraform by HashiCorp is a leading open-source IaC data center automation tool for building, changing and versioning infrastructure across multiple clouds and platforms. As a Terraform-approved provider, Infoblox extends IPAM and DNS services into cloud platforms, including Azure and VMware. The Infoblox Plug-In integrates seamlessly into the provisioning and de-provisioning of infrastructures such as virtual private clouds (VPCs) and virtual machines (VMs) across cloud platforms. The Infoblox Provider Plug-In enables object import functionality, extended data source support, next available network container service and .txt resources to simplify access, administration, user experience and improve efficiency and control through enhanced orchestration and automation:

- Make cloud networks visible across IT teams
- Migrate legacy DNS platforms to NIOS
- Avoid manual steps using the Web API (WAPI) to retrieve object IDs
- Use block import to gather objects with seamless efficiency via a simple command
- Avoid IP conflicts and associated issues
- Automate DNS provisioning for cloud endpoints
- Create DNS authoritative and conditional forwarder zones
- Maintain NIOS concurrency with Terraform upgrades

## FEATURED USE CASES

### Automate IP Address Allocation

Many cloud platforms do not provide any method for tracking IP address usage and availability. IP allocation is hidden from users, making it difficult to identify available address space and available addresses for static assignment. Using manual processes such as spreadsheets to track this data is both time-consuming and error-prone and does not fit into a DevOps IaC process. In addition, when resources are de-provisioned, IP addresses should be documented and released, but IT teams are rarely focused on this clean-up aspect.

The Infoblox Provider Plug-In for Terraform delivers the built-in capability to allocate IP addresses as part of IaC deployments. An allocated IP can be assigned to new endpoints created during the deployment and documented within Infoblox Grid™ for enhanced visibility. Resource options allow IP addresses to be stored as Reservations, Fixed Addresses or Hosts in the Infoblox Grid. When an endpoint is no longer needed and de-provisioned from the cloud platform, the Infoblox provider will automatically remove records from the Infoblox Grid and release the IP address for later reuse.

### Find Tagged Network and IP Data Faster

Rapidly finding the data you need saves time and improves your productivity. With the Infoblox Provider Plug-In for Terraform, you can quickly locate tagged network and IP data using Infoblox's Extensible Attribute meta-tag inheritance and search capability. Quickly find new resources, view DNS, authoritative zones and inherited attributes to accelerate your visibility and search experience.

### Add DNS Records in Real Time

DNS is a critical service on your network. Without it, users and endpoints cannot find the services and resources they need. Manually provisioning DNS records for services can be a long and complex process. In a rapidly changing hybrid cloud environment, this process can lag behind the creation and destruction of resources, leaving stale records or no records for the services your users need now.

The Infoblox Provider Plug-In for Terraform simplifies the migration of legacy DNS platform to NIOS. It allows you to create and assign DNS records for your new services as they are deployed. CNAME records, A records and PTR records are added to the Infoblox Grid and configured for new virtual machines during the IaC provisioning process. These records make new services immediately visible to those who need them. The Plug-In also creates DNS authoritative and conditional forwarder zones. The block import feature saves time by gathering objects seamlessly through a simple command or the Go module. The Plug-In further enhances automation by adding an immutable ID Extensible Attribute to reference and sync objects simultaneously in NIOS and Terraform user interfaces. This new ID ensures workflow continuity, improved search efficiency and a more consistent user experience. Once these resources are no longer needed, DNS records are removed as the resources are destroyed, ensuring accurate, up-to-date DNS resolution.

## CONCLUSION

The Infoblox Provider Plug-In for Terraform extends Infoblox's industry-leading IPAM and DNS services as Infrastructure as Code throughout your on-premises, private and public cloud environments. The Infoblox Provider enables visibility, automation and control of your hybrid cloud resources deployed via Terraform.

Find out more about the Infoblox Plug-In for Terraform at [Infoblox IPAM Driver for Terraform](#) or [Terraform Infoblox Provider](#).

For more information or to get answers on extending IPAM and DNS services into Terraform IaC for cloud platforms, connect with your Infoblox account team, see our [third party 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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