Infoblox
NEXT LEVEL NETWORKING

Deployment Guide

Integration with Tufin

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Introduction

Infoblox and Tufin together help empower actionable insight into the entire infrastructure, discovering security risks quicker and accurately, investigating and ranking security policies while improving on the organizations security and compliance.

Infoblox provides Tufin with resources such as networks and potential threats, and in exchange, Tufin gets improved management on networks and security risks, including the ability to create policies and keep companies within compliance with the data received through Infoblox. The integration with Infoblox and Tufin allows faster policy management and more insight into the entire network.

Tufin can offer Infoblox networks to improve management on the Infoblox DDI and keep Infoblox within the compliance with policies set by the organization through Tufin. Tufin can add networks to any network view inside Infoblox, allowing further control of the network structure and policies from a single hub on Tufin.

Note that all Images in this document were taken in NIOS 8.4

Prerequisites

The following are prerequisites for the integration using Outbound API notifications:

Infoblox:

- Infoblox:
    - NIOS 8.3 or higher.
    - Security Ecosystem License.
    - Outbound API integration templates.
    - Prerequisites for the templates (e.g. configured and set extensible attributes).
    - Pre-configured services: RPZ, ADP and Threat Analytics.
    - NIOS API user with the following permissions (access via API only):
        - All Network Views – RW.
        - All IPv4 Networks – RW.
        - All IPv6 Networks – RW.
- Tufin
    - Tufin SecureChange and SecureTrack
    - Add zones to add networks.
    - Add User with correct permissions.
    - Tufin version 19.1 or higher

Known Limitations

The current templates support DNS Firewall (RPZ), Threat Insight (DNS Tunneling), Advanced DNS Protection, Network IPv4, Network IPv6 events only. The asset management template does not support delete or modify events on IPv6 Network events to delete or modify IPv6 networks from Tufin due to limitations with Tufin API. If additional templates become available, they will be found on the Infoblox community site.

Best practices

Outbound API templates can be found on the Infoblox community site on the partners integration page. After registering an account, you can subscribe to the relevant groups and forums. If additional templates come out, they will be found on the Infoblox community site.

For production systems, it is highly recommended to set the log level for an endpoint to **“Info”** or higher (**“Warning”**, **“Error”**).

Please refer to the Infoblox NIOS Administrator’s Guide about other best practices, limitations and any detailed information on how to develop notification templates. The NIOS Administrator’s Guide can be found through the Help panel in your Infoblox GUI, or on the Infoblox Support portal.

Configuration

Workflow

Tufin:

1. Configure Permissions
2. Create a Network Zone

Infoblox:

1. Install the Security Ecosystem license if it was not installed.
2. Check that the necessary services and features are properly configured and enabled, including RPZ, ADP and Threat Analytics.
3. Create the required Extensible Attributes.
4. Download (or create your own) notification templates (Tufin_Assets.txt, Tufin_Security.txt, Tufin_Sync.txt, Tufin_Management.txt) from the Infoblox community website.
5. Add the templates.
6. Add a REST API Endpoint.
7. Add Notifications.
8. Emulate an event, check Rest API Endpoint debug log and/or verify changes on the grid.

Before you get Started

Download Templates from the Infoblox Community Web-Site

Outbound API templates are an essential part of the configuration. Templates fully control the integration and steps required to execute the outbound notifications. Detailed information on how to develop templates can be found in the NIOS Administrator’s guide.

Infoblox does not distribute any templates (out-of-the-box) with the NIOS releases. Templates are available on the Infoblox community web-site. Templates for the Tufin integration will be located in the **“Partners Integrations”**. You can find other templates posted in the **“API & Integration”** forum.

Templates may require additional extensible attributes, parameters or WAPI credentials to be created or defined. The required configuration should be provided with a template. Don’t forget to apply any changes required by the template before testing a notification.

Extensible Attributes

For this integration, the following Extensible Attributes need to be created on the grid.

Table 1. Extensible Attributes

Extensible Attributes	**Description**	**Type**
Tufin_Last_Incident	Contains the last date and time when an asset had an incident sent from Infoblox	String
Tufin_Send_Incident	Defines if an asset should send an incident if RPZ, ADP or DNS Tunneling events occur	List (true, false)
Tufin_Sync	Defines if a network should be synced with Tufin.	List (true, false)
Tufin_SyncTime	Contains date/time when the network was synchronized.	String
Tufin_Zone	Defines a List of possible Tufin zones to push networks from Infoblox.	List (Tufin Zone)
Tufin_Sync_Zones	Defines a List of possible Tufin zones to be synced to an Infoblox Network View.	List (Tufin Zones)

Editing Instance Variables

Tufin templates use instance variables to adjust the templates' behavior. Instance variables can be entered through the grid GUI at **"Grid"** → **"Ecosystem"** → **"Notification"** and then selecting the notification you created at **"Edit"** → **"Templates"**.

Table 2. Instance Variables

Instance Variable	**Description**
Network_View_Sync	Defines a Network View on Infoblox that Tufin Zones should be synced to. (used for schedule events only)

Editing Session Variables

The Tufin templates don't use session variables to login to the Tufin instance however, session variables can be entered through the grid GUI at **"Grid"** → **"Ecosystem"** → **"Outbound Endpoint"** and then selecting the endpoint you created at **"Edit"** → **"Session Management"**.

Supported Notification

A notification can be considered as a **"link"** between a template, an endpoint and an event. In the notification properties, you define which event triggers the notification, which template is executed and with which API endpoint NIOS will establish the connection to. The Tufin templates support a subset of available notifications (refer to the limitations chapter in this guide for more details). In order to simplify the deployment, only create required notifications and use the relevant filters. It is highly recommended to configure deduplication for RPZ events and exclude a feed that is automatically populated by Threat Analytics.

Table 3. Supported Notifications

Notification	**Description**
DNS RPZ	DNS queries that are malicious or unwanted
DNS Tunneling	Data exfiltration that occurs on the network
ADP	DNS queries that are malicious or unwanted
Object Change Network IPv4	Added/Deleted/Modify IPv4 network objects.
Object Change Network IPv6	Added network IPv6 objects.
Schedule Events	Scheduled time to trigger templates.

Infoblox Permissions

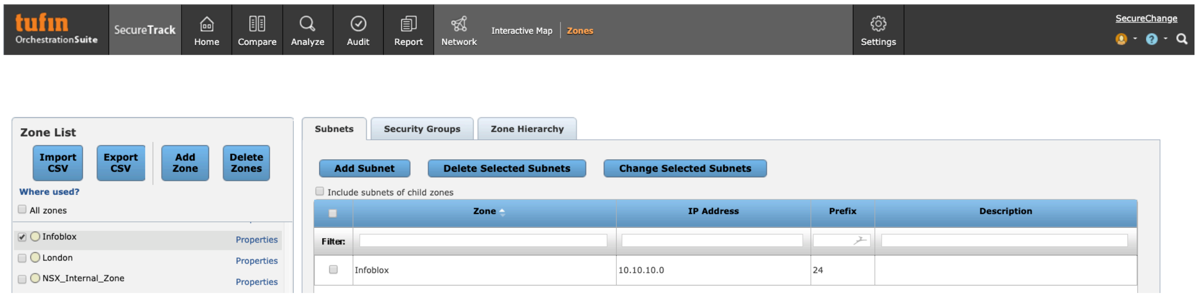
The Infoblox and Tufin integration requires a few permissions for the integration to work. Navigate to **"Administration"** → **"Administrators"** and add a **"Roles"**, **"Permissions"**, **"Groups"** and **"Admins"** to include permissions that are required for the integrations. When creating a new group, under the **"Groups"** tab, select the **"API"** interface under the **"Allowed Interfaces"** category.

Tufin Configuration

Create a Network Zone

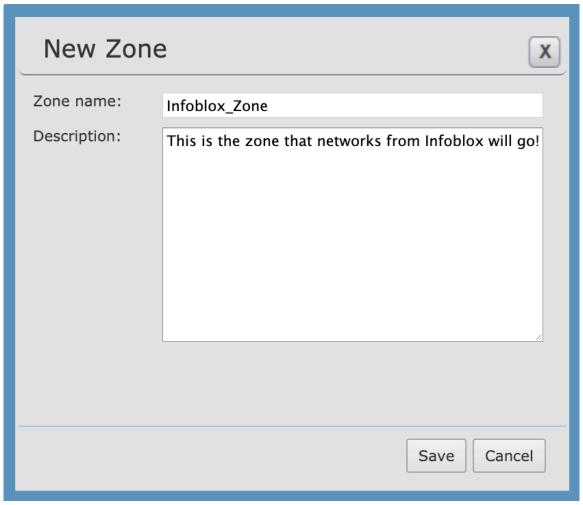
In order to create a Network zone in Tufin:

1. In SecureTrack, navigate to **"Network"** → **"Zones"** and click the **"Add Zone"** button.



Zone	IP Address	Prefix	Description
Infoblox	10.10.10.0	24	

2. On the **“New Zone”** tab enter the any name and then click **“Save”**.



Zone name: Infoblox_Zone

Description: This is the zone that networks from Infoblox will go!

Configure Permissions

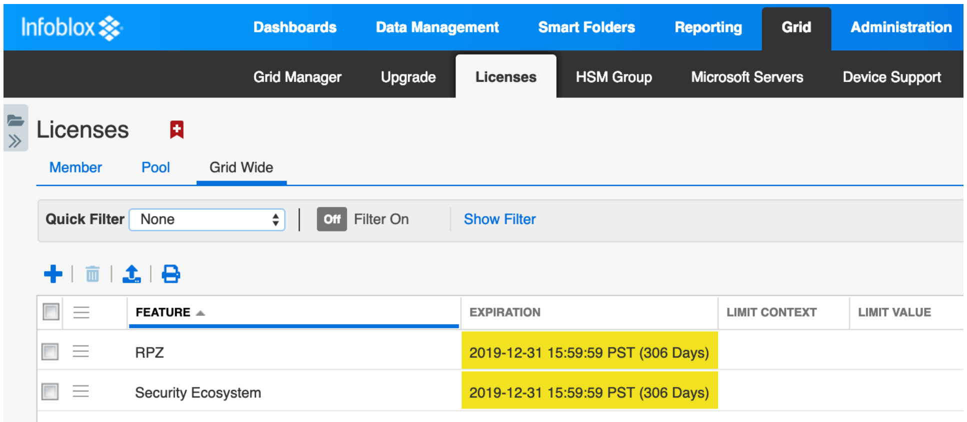
In order to configure permissions on the Tufin Appliance you will need to reference the Tufin admin guide.

Infoblox NIOS Configuration

Check if the Security Ecosystem License is Installed

Security Ecosystem License is a **“Grid Wide”** License. Grid wide licenses activate services on all appliances in the same Grid.

In order to check if the license was installed navigate to **“Grid”** → **“Licenses”** → **“Grid Wide”**.

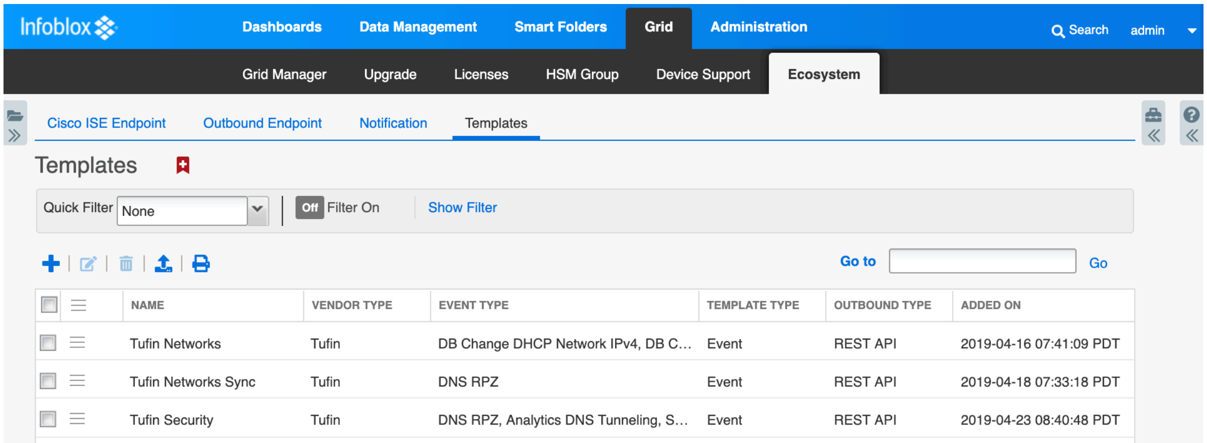


FEATURE	EXPIRATION	LIMIT CONTEXT	LIMIT VALUE
RPZ	2019-12-31 15:59:59 PST (306 Days)		
Security Ecosystem	2019-12-31 15:59:59 PST (306 Days)		

Add/Upload Templates

In order to upload/add templates:

1. Navigate to **“Grid”** → **“Ecosystem”** → **“Templates”** and click **“+”** or **“+ Add Template”**.

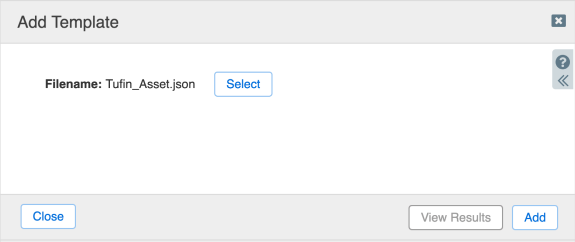


Templates

Quick Filter: None

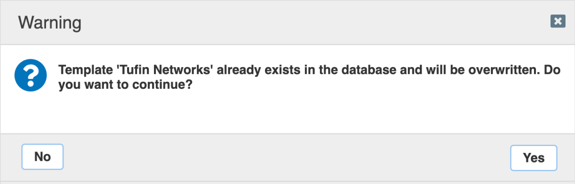
NAME	VENDOR TYPE	EVENT TYPE	TEMPLATE TYPE	OUTBOUND TYPE	ADDED ON
Tufin Networks	Tufin	DB Change DHCP Network IPv4, DB C…	Event	REST API	2019-04-16 07:41:09 PDT
Tufin Networks Sync	Tufin	DNS RPZ	Event	REST API	2019-04-18 07:33:18 PDT
Tufin Security	Tufin	DNS RPZ, Analytics DNS Tunneling, S…	Event	REST API	2019-04-23 08:40:48 PDT

2. Click the **“Select”** button on the **“Add template”** window.
3. Click the **“Select”** button on the **“Upload”** window. The standard file selection dialog will open.
4. Select the file and Click the **“Upload”** button on the **“Upload”** window.
5. Click the **“Add”** button and the template will be added/uploaded.



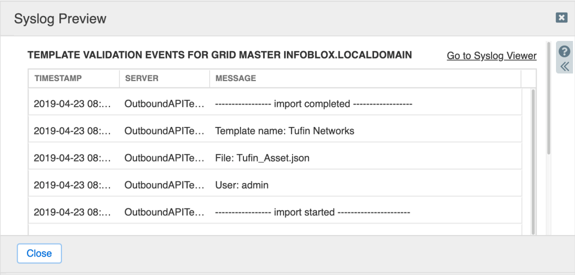
Filename: Tufin_Asset.json

6. If a template was previously uploaded, click **“Yes”** to overwrite the template.



Template 'Tufin Networks' already exists in the database and will be overwritten. Do you want to continue?

7. You can review the uploaded results in the syslog or by clicking the **“View Results”** button.



TEMPLATE VALIDATION EVENTS FOR GRID MASTER INFOBLOX.LOCALDOMAIN

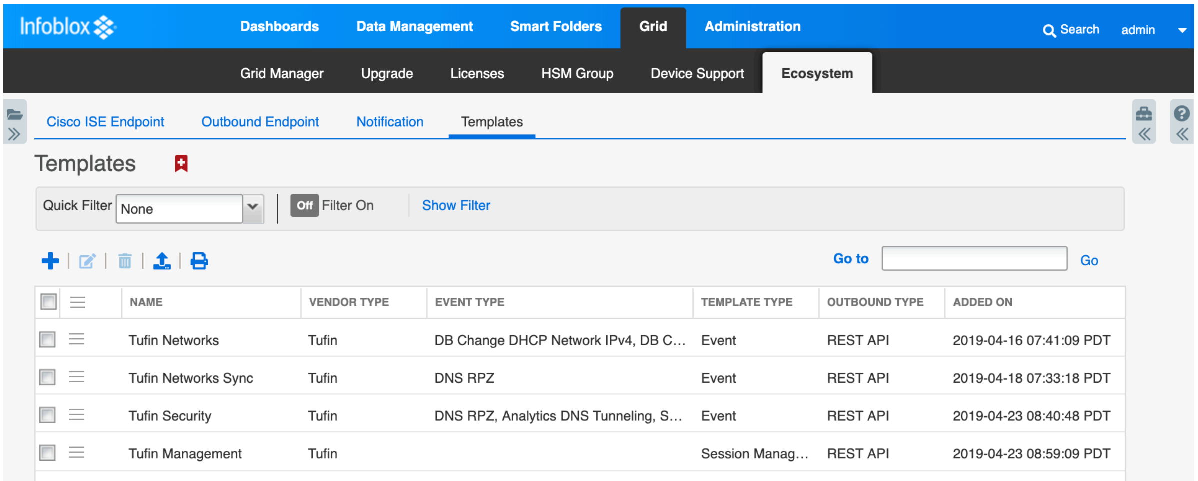
TIMESTAMP	SERVER	MESSAGE
2019-04-23 08:…	OutboundAPITe…	---------------- import completed -----------------
2019-04-23 08:…	OutboundAPITe…	Template name: Tufin Networks
2019-04-23 08:…	OutboundAPITe…	File: Tufin_Asset.json
2019-04-23 08:…	OutboundAPITe…	User: admin
2019-04-23 08:…	OutboundAPITe…	---------------- import started ---------------------

Note: There is no difference between uploading session management and action templates.

Modifying Templates

NIOS provides the facility to modify the templates via the web-interface.

1. Navigate to **“Grid” → “Ecosystem” → “Templates”**, and then click the triple bar icon next to the template you want to modify.

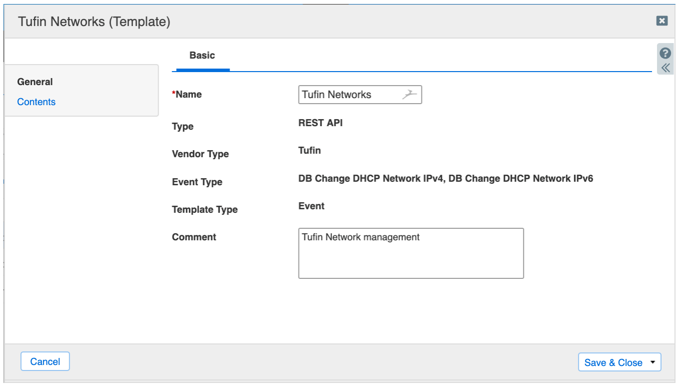


Templates

Quick Filter None

		NAME	VENDOR TYPE	EVENT TYPE	TEMPLATE TYPE	OUTBOUND TYPE	ADDED ON
□	≡	Tufin Networks	Tufin	DB Change DHCP Network IPv4, DB C…	Event	REST API	2019-04-16 07:41:09 PDT
□	≡	Tufin Networks Sync	Tufin	DNS RPZ	Event	REST API	2019-04-18 07:33:18 PDT
□	≡	Tufin Security	Tufin	DNS RPZ, Analytics DNS Tunneling, S…	Event	REST API	2019-04-23 08:40:48 PDT
□	≡	Tufin Management	Tufin		Session Manag…	REST API	2019-04-23 08:59:09 PDT

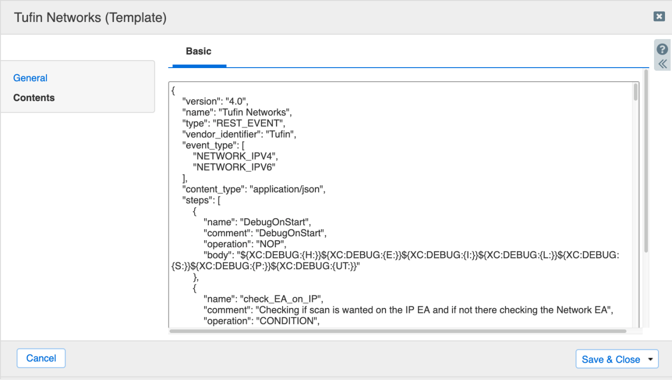
2. Click the **“Edit”** button to open up the **“Template”** window.



Tufin Networks (Template)

*Name	Tufin Networks
Type	REST API
Vendor Type	Tufin
Event Type	DB Change DHCP Network IPv4, DB Change DHCP Network IPv6
Template Type	Event
Comment	Tufin Network management

3. Click on the **Contents** tab to view/edit the template.



Tufin Networks (Template)

```
{
    "version": "4.0",
    "name": "Tufin Networks",
    "type": "REST_EVENT",
    "vendor_identifier": "Tufin",
    "event_type": [
        "NETWORK_IPV4",
        "NETWORK_IPV6"
    ],
    "content_type": "application/json",
    "steps": [
        {
            "name": "DebugOnStart",
            "comment": "DebugOnStart",
            "operation": "NOP",
            "body": "${XC:DEBUG:{H:}}${XC:DEBUG:{E:}}${XC:DEBUG:{I:}}${XC:DEBUG:{L:}}${XC:DEBUG:
{S:}}${XC:DEBUG:{P:}}${XC:DEBUG:{UT:}}"
        },
        {
            "name": "check_EA_on_IP",
            "comment": "Checking if scan is wanted on the IP EA and if not there checking the Network EA",
            "operation": "CONDITION",
```

The template editor is a simple interface for making changes to templates. It is recommended to only use the template editor to make minor changes. You can also edit, cut and paste template snippets from a text editor of your choice.

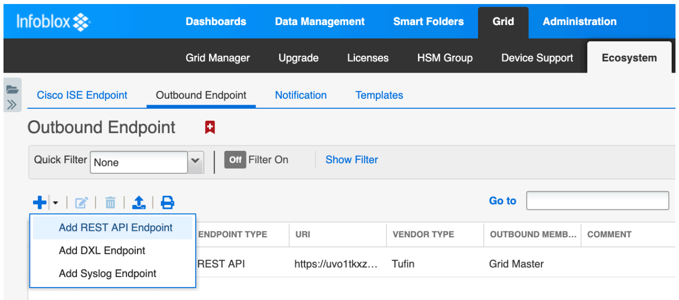
Note: You cannot delete a template if it is used by an endpoint or by a notification.

Add a Rest API Endpoint

A **"REST API Endpoint"** is basically a remote system which should receive changes based on a notification and a configured template. A Grid, for example, can not only send notifications, it can also receive the notifications from itself (e.g. for testing purposes).

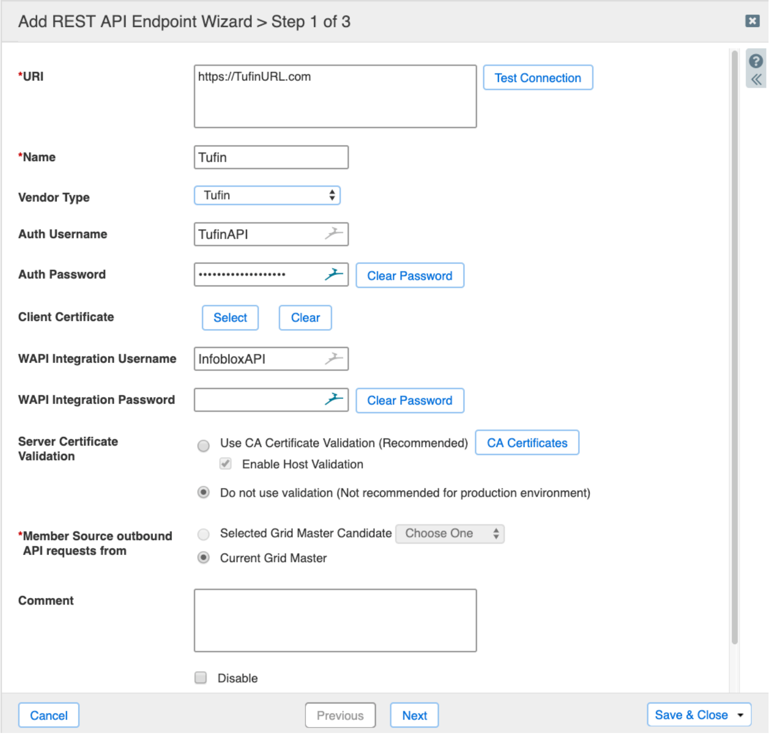
In order to add REST API Endpoints:

1. Navigate to **"Grid" → "Ecosystem" → "Outbound Endpoints"** and click **"+"** or **"+ Add REST API Endpoint"** buttons. The **"Add REST API Endpoint Wizard"** window will open.



ENDPOINT TYPE	URI	VENDOR TYPE	OUTBOUND MEMB...	COMMENT
REST API	https://uvo1tkxz...	Tufin	Grid Master	

2. The URI and Name for the appliance you are integrating with are required.
3. The URI should be the IP/FQDN of the appliance you are integrating with, with the correct URI scheme.
4. Specify **"WAPI Integration Username"** and **"WAPI Integration Password"** (NIOS credentials).



Add REST API Endpoint Wizard > Step 1 of 3

*URI: https://TufinURL.com [Test Connection]

*Name: Tufin

Vendor Type: Tufin

Auth Username: TufinAPI

Auth Password: •••••••••••••••••••• [Clear Password]

Client Certificate: [Select] [Clear]

WAPI Integration Username: InfobloxAPI

WAPI Integration Password: [Clear Password]

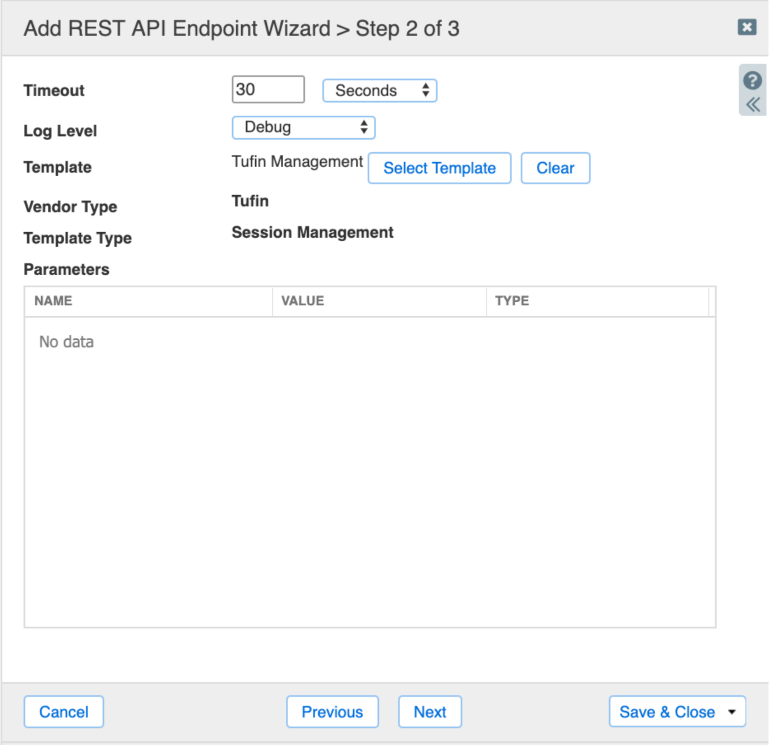
Server Certificate Validation:
○ Use CA Certificate Validation (Recommended) [CA Certificates]
☑ Enable Host Validation
● Do not use validation (Not recommended for production environment)

*Member Source outbound API requests from:
○ Selected Grid Master Candidate [Choose One]
● Current Grid Master

Comment:

□ Disable

5. (Optional) For debug purposes only: Under **“Session Management”**, set **“Log Level”** to **“Debug”**.
6. Select the session template from the templates that where uploaded.



Add REST API Endpoint Wizard > Step 2 of 3

Timeout: 30 Seconds

Log Level: Debug

Template: Tufin Management

Vendor Type: Tufin

Template Type: Session Management

Parameters

NAME	VALUE	TYPE
No data		

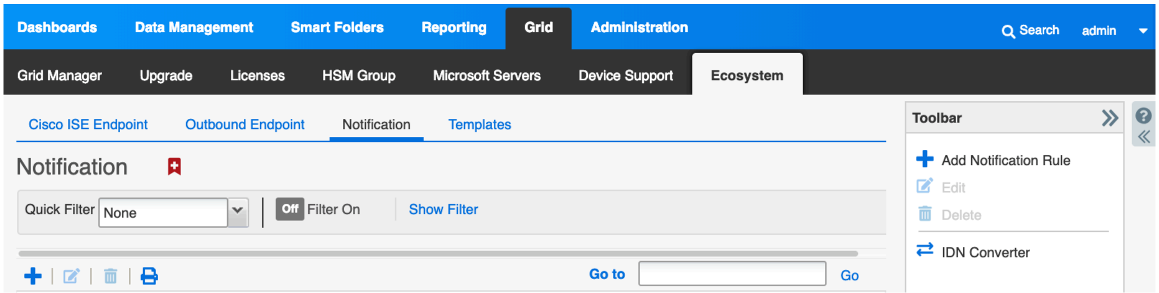
Note: When possible, it is recommended to send notifications from a Grid Master Candidate instead of from the Grid Master.

Add a Notification

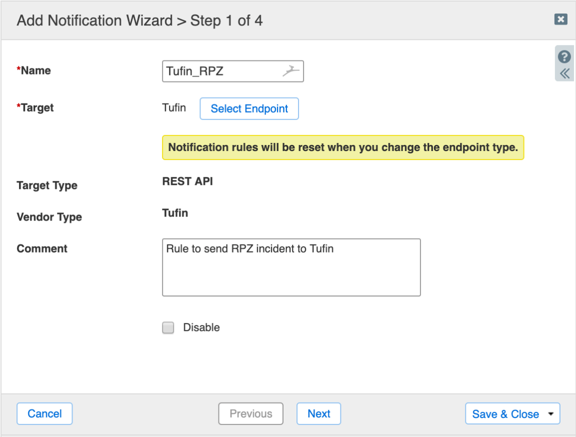
An endpoint and a template must be added before you can add a notification.

In order to add notifications:

1. Navigate to **“Grid”** → **“Ecosystem”** → **“Notification”** and click **“+”** or **“+ Add Notification Rule”** then the **“Add Notification Wizard”** window will open.



2. Specify the notification’s name and select an endpoint (Target), click **“Next”**.



Add Notification Wizard > Step 1 of 4

*Name: Tufin_RPZ

*Target: Tufin

Notification rules will be reset when you change the endpoint type.

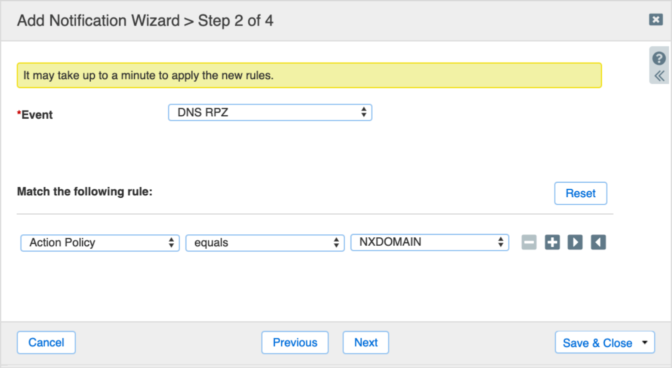
Target Type: REST API

Vendor Type: Tufin

Comment: Rule to send RPZ incident to Tufin

□ Disable

3. Select an event type and define a filter. Note: For optimal performance, it is best practice to make the filter as narrow as possible. Click **“Next”**.



Add Notification Wizard > Step 2 of 4

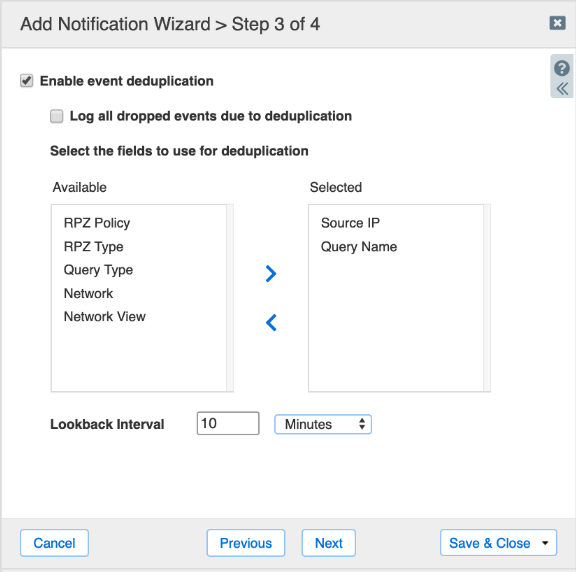
It may take up to a minute to apply the new rules.

*Event: DNS RPZ

Match the following rule:

Action Policy | equals | NXDOMAIN

4. (For Security related notifications only) Check **“Enable event deduplication”** and specify relevant parameters. Click **“Next”**.



Add Notification Wizard > Step 3 of 4

☑ Enable event deduplication

□ Log all dropped events due to deduplication

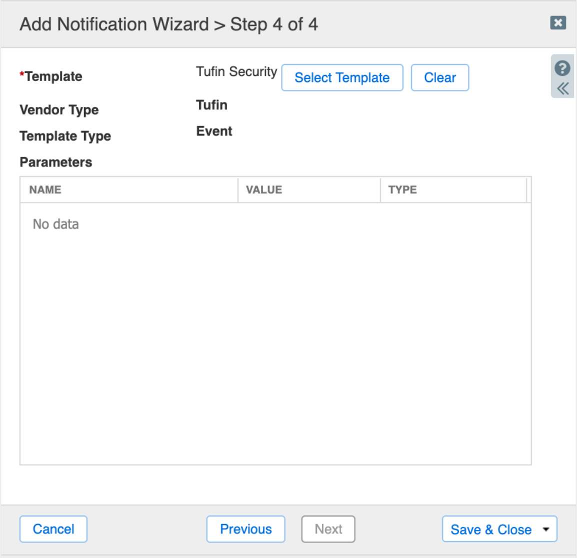
Select the fields to use for deduplication

Available: RPZ Policy, RPZ Type, Query Type, Network, Network View

Selected: Source IP, Query Name

Lookback Interval: 10 Minutes

5. Select a relevant template and specify the template's parameters if any are required. Click **“Save & Close”**.



Add Notification Wizard > Step 4 of 4

*Template: Tufin Security

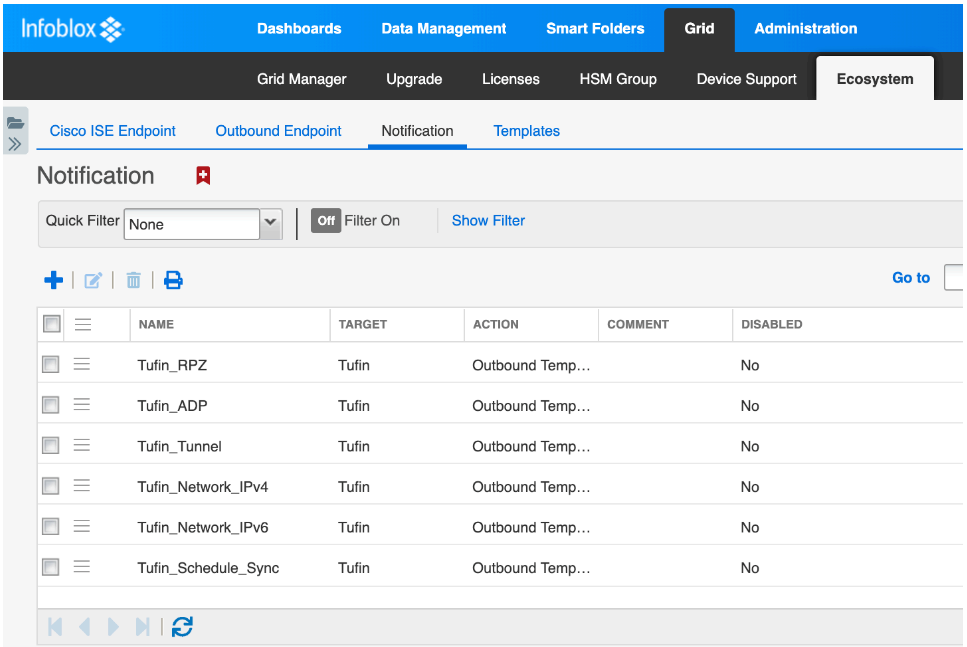
Vendor Type: Tufin

Template Type: Event

Parameters

NAME	VALUE	TYPE
No data		

6. Similarly add rules for other events as well.



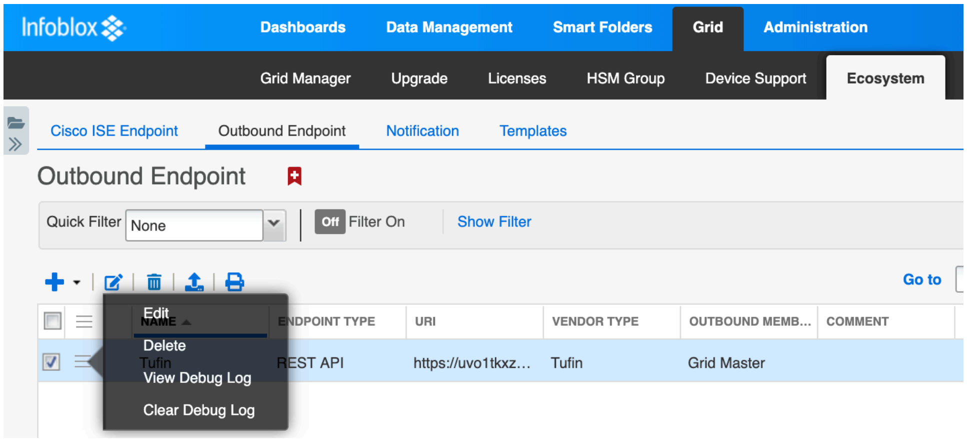
Notification

Quick Filter: None

NAME	TARGET	ACTION	COMMENT	DISABLED
Tufin_RPZ	Tufin	Outbound Temp…		No
Tufin_ADP	Tufin	Outbound Temp…		No
Tufin_Tunnel	Tufin	Outbound Temp…		No
Tufin_Network_IPv4	Tufin	Outbound Temp…		No
Tufin_Network_IPv6	Tufin	Outbound Temp…		No
Tufin_Schedule_Sync	Tufin	Outbound Temp…		No

Check the Configuration

(Optional) On the Infoblox grid, navigate to **“Grid”** → **“Ecosystem”** → **“Outbound Endpoint”**, select Tufin endpoint, click on the triple bar icon and select **“Clear Debug Log”**.

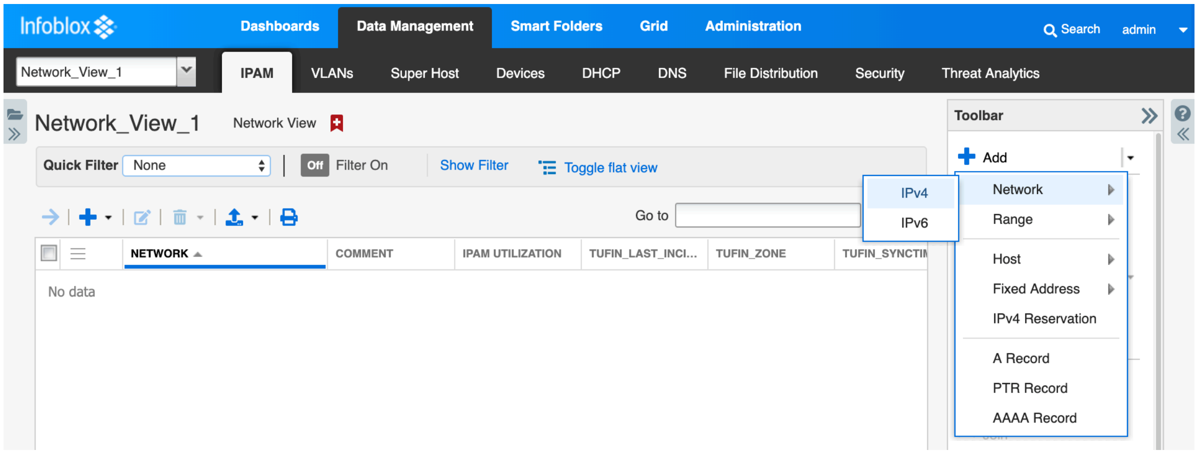


NAME	ENDPOINT TYPE	URI	VENDOR TYPE	OUTBOUND MEMB...	COMMENT
Tufin	REST API	https://uvo1tkxz…	Tufin	Grid Master	

Network Object Management Test

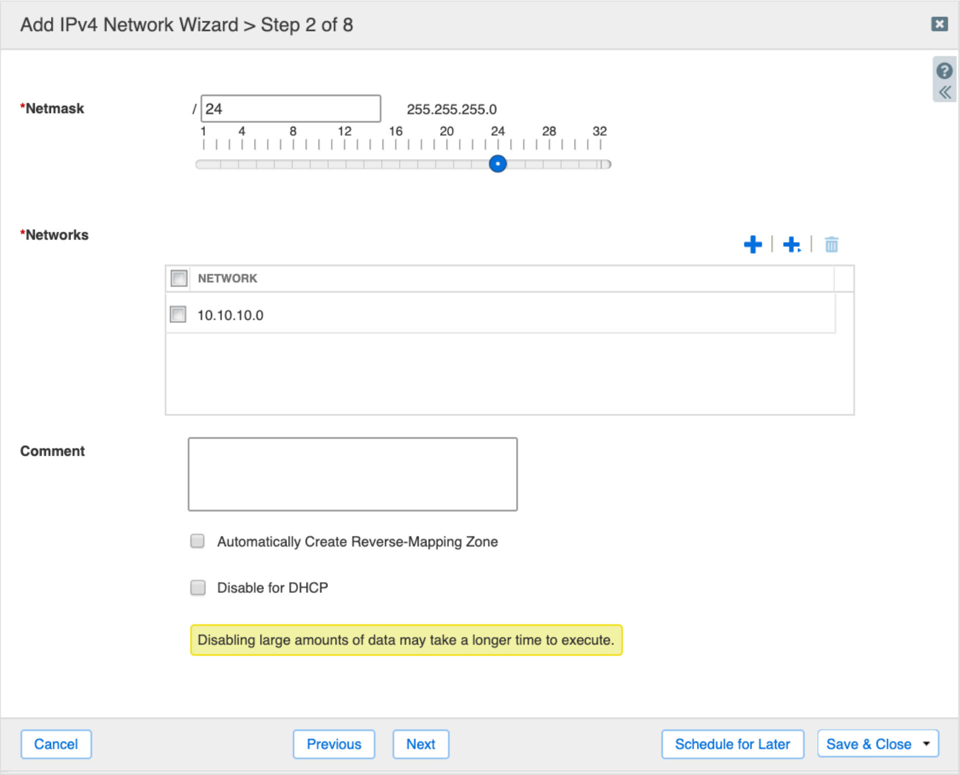
The templates support IPv4/IPv6 Network events. This use case demonstrates how to manage networks on the Tufin.

1. To create an IPv4 Network, navigate to **“Data Management”** → **“IPAM”** → **“Add”** → **“Network”** → **“IPv4”**.



NETWORK	COMMENT	IPAM UTILIZATION	TUFIN_LAST_INCI...	TUFIN_ZONE	TUFIN_SYNCTIM
No data					

2. Click **“Next”**, then insert the network of your choice in this case **“10.10.10.0”** into the **“Networks”** field.



Add IPv4 Network Wizard > Step 2 of 8

*Netmask / 24 255.255.255.0

*Networks

□ NETWORK
□ 10.10.10.0

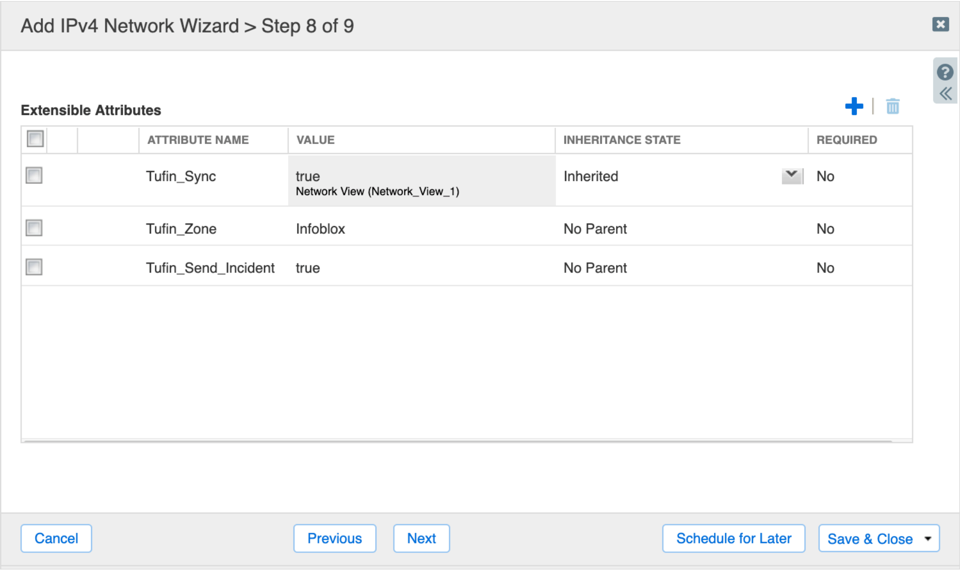
Comment

□ Automatically Create Reverse-Mapping Zone

□ Disable for DHCP

Disabling large amounts of data may take a longer time to execute.

3. Click on **“Next”** till you reach the Extensible Attributes window. If the Extensible Attributes have not already been inherited from the network view, set them.



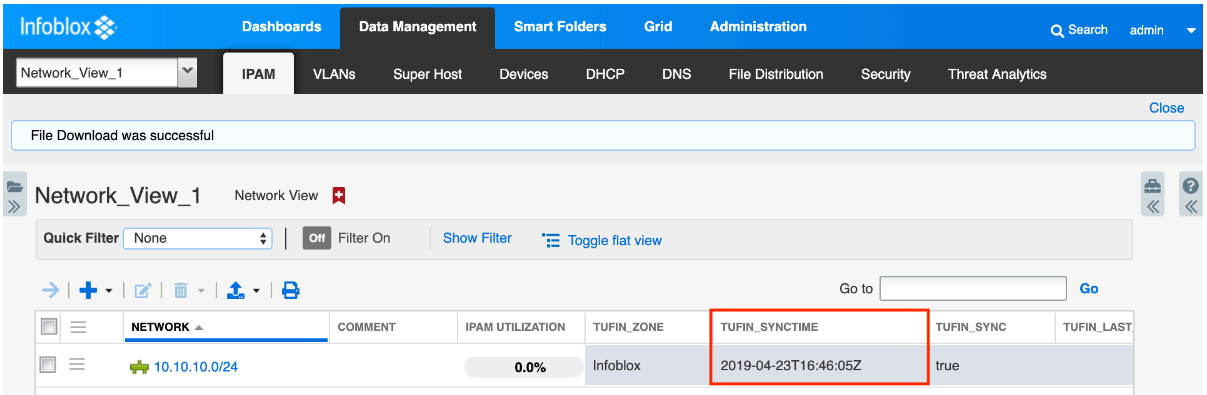
Add IPv4 Network Wizard > Step 8 of 9

Extensible Attributes

□	ATTRIBUTE NAME	VALUE	INHERITANCE STATE	REQUIRED
□	Tufin_Sync	true Network View (Network_View_1)	Inherited	No
□	Tufin_Zone	Infoblox	No Parent	No
□	Tufin_Send_Incident	true	No Parent	No

4. Click **“Save & Close”**.

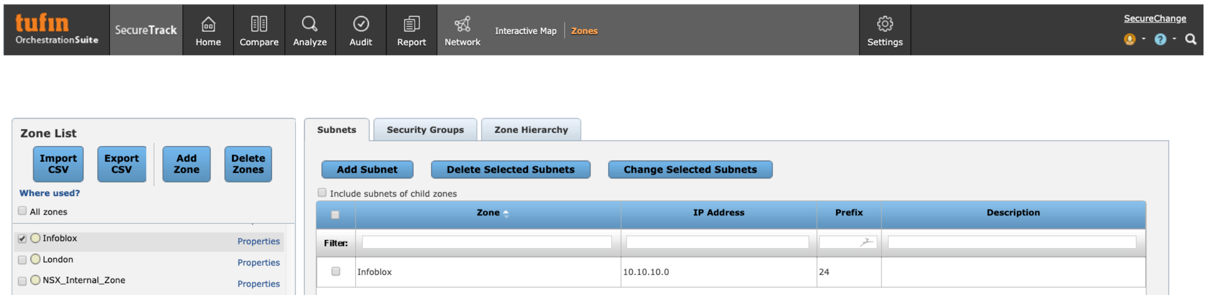
5. Refresh. The **“Tufin_SyncTime”** EA is now updated.



File Download was successful

NETWORK ▲	COMMENT	IPAM UTILIZATION	TUFIN_ZONE	TUFIN_SYNCTIME	TUFIN_SYNC	TUFIN_LAST
10.10.10.0/24		0.0%	Infoblox	2019-04-23T16:46:05Z	true	

6. In Tufin SecureTrack, navigate to **“Network”** → **“Zones”** then select the zone you sent the asset to. The **“10.10.10.0”** network has been added to the **“Targets”** list. Refresh the page if necessary.



□ All zones

☑ Infoblox Properties
□ London Properties
□ NSX_Internal_Zone Properties

□ Include subnets of child zones

□	Zone ▲	IP Address	Prefix	Description
Filter:				
□	Infoblox	10.10.10.0	24	

Summary

Infoblox and Tufin together help empower actionable insight into the entire infrastructure, discovering security risks quicker and accurately, investigating and ranking security policies while improving on the organizations security and compliance.

Additional Information

Modifying Security Template for Tufin Workflows

Currently the Tufin Security template is only set up for a very basic workflow and modification of the template is required in order to use it in customized workflows.

In order to modify the security template to fit your customized workflows you will need to grab the **“body_list”** contents on the Step called **“Post_Ticket”** inside the **“Tufin_Security”** template and changing the JSON body list to match the specific workflow you would like.

You can check Tufin documentation for how the **“securechange/tickets”** API call works.

Currently body used in the Security Template:

```
{
  "ticket": {
    "subject": "API WebApp",
    "requester": "api",
    "priority": "Normal",
    "domain_name": "Default",
    "workflow": {
      "name": "Close Policy"
    },
    "steps": {
            "step": [
                {
                    "name": "Create request",
                    "tasks": {
                        "task": {
                            "fields": {
                                "field": [
                                    {
                                        "@xsi.type": "multi_access_request",
                                        "name": "Flows",
                                        "access_request": {
                                            "targets": {
                                                "target": {
                                                    "@type": "ANY"
                                                }
                                            },
                                            "sources": {
                                                "source": [
                                                    {
                                                        "@type": "IP",
                                                        "ip_address":${E::source_ip},
                                                        "netmask": "32"
                                                    }
                                                ]
                                            },
                                            "destinations": {
                                                "destination": [
                                                    {
                                                        "@type": "ANY"
                                                    }
                                                ]
                                            },
                                            "services": {
                                                "service": [
                                                    {
                                                        "@type": "ANY"
                                                    }
                                                ]
                                            },
                                            "action": "Drop",
                                            "comment": "Infoblox ${L:A:Event_Type} Event",
                                            "labels": ""
                                        }
                                    },
                                    {
                                        "@xsi.type": "text_area",
                                        "name": "Reason",
                                        "text": "Infoblox ${L:A:Event_Type} event from ${L:A:Source} to ${L:A:Target} at ${E:A:timestamp}"
                                    }
                                ]
                            }
                        }
                    }
                }
            ]
        }
    }
}
```

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