Infoblox
CONTROL YOUR NETWORK

DEPLOYMENT GUIDE

Integration with ServiceNow

Outbound API

Contents

Introduction

Infoblox and ServiceNow: Modernizing the IT service management outlook

Consolidating your on-premise IT tools to a modern, easy-to-use service management solution in the cloud by:

- **Resolving Network Issues at light speed:**
  Eliminate calls before they occur with self-service, proactively prevent issues by assessing product or service health in real time, and engage the right resources to fix issues fast.
- **Consumerize the Employee Network Experience:**
  Provide a single place for network and security teams to quickly and easily get the services they need.
- **Build Business network and security decisions at light speed:**
  Automate processes and orchestrate actions across the network enterprise, reuse components and integrations, and delegate application development with easy-to-use resources and drag-and-drop tools.
- **Eliminate network Service Outages:**
  Proactively identify network and security issues and pinpoint disruptions with automated remediation.

Prerequisites

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

- Infoblox:
  - NIOS 8.3 or higher.
  - Security Ecosystem License.
  - Outbound API integration templates.
  - Prerequisites for the templates (e.g. configured and set extensible attributes. For more details, refer to the Before you get started section.).
  - Pre-configured required services: DNS, DHCP, RPZ, Threat Analytics, Network Insight, Threat Protection, Network Discovery.
  - NIOS API user with the following permissions (access via API only):
    - All Host – RW.
    - All IPv4 DHCP Fixed Addresses/Reservations – RW.
    - All IPv6 DHCP Fixed Addresses/Reservations – RW.
    - All IPv4 Networks – RW.
    - All IPv6 Networks – RW.
- ServiceNow:
  - Kingston Version or later.
  - Incident Management (For the SNOW_Assets.json template).
  - CMDB (Configuration Management Database) (For the SNOW_SIR.json template).
  - Security Operations (For the SNOW_SIR.json template).

Known Limitations

The current templates support DNS Firewall(RPZ), Advanced DNS Protection (ADP), Network Discovery, Threat Insight (DNS Tunneling), Host IPv4, Host IPv6, Fixed address IPv4, Fixed address IPv6, Network IPv4, Network IPv6 and Discovery events only. If additional templates come out they will be found on the 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.

For production systems, it is highly recommended to set the log level for an end-point 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

- ServiceNow:
    1. Create an API user.
    2. Add categories and subcategories.
    3. Add Fields for assets and incidents.
- Infoblox:
    1. Install the Security Ecosystem license if it was not previously installed.
    2. Check that the necessary services and features, that include DNS, DHCP, RPZ ,Threat Analytics, Threat Protection, Discovery are properly configured and enabled.
    3. Create the required Extensible Attributes.
    4. Download (or create your own) notification templates (SNOW_Security.json, SNOW_Assets.json, SNOW_ADP.json, SNOW_Discovery.json and SNOW_SIR.json) from the Infoblox community web-site.
    5. Add the templates.
    6. Add a REST API Endpoint:
    7. Add Notifications.
    8. Emulate an event, check Rest API 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 ServiceNow 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.

Create Extensible Attributes

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

Extensible Attributes	Description
ServiceNow_LastIncidentSentAt	Provides the last time an asset sent an incident to ServiceNow.
ServiceNow_Add_Incident	True or False. Defines if an object should create an incident on ServiceNow.
ServiceNow_Event_ID	Provides the Incident number of the last Incident sent to ServiceNow.
ServiceNow_SYS_ID	Provides the unique ID of the asset on ServiceNow.

ServiceNow_Sync	True or False. Defines if and asset should be added to ServiceNow when created.
ServiceNow_SyncedAt	Internal attribute. Provides the time that an asset was created on ServiceNow.
ServiceNow_Table	Internal attribute. Provides the ServiceNow table that an asset was added to.
ServiceNow_Location	Custom field. Determines the location field for the ServiceNow table upon creation.
ServiceNow_Discov_AddSecurInc	True or False. Defines if a Security incident should be created for a Discovery event.
ServiceNow_Discov_AllNew	True or False. Process and create incidents for discovery events of all devices or only unmanaged.

Editing Instance Variables

ServiceNow templates use an instance variable 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"**.

Instance Variable	Description
Severity	1, 2, or 3: Defines the severity of created incidents.

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 ServiceNow 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.

Notification	Description
DNS RPZ	DNS queries that are Malicious or unwanted.
DNS Tunneling	Data exfiltration that occurs on the network.
Object Change Fixed Address IPv4	Added/Deleted fixed/reserved IPv4 objects.
Object Change Fixed Address IPv6	Added/Deleted fixed/reserved IPv6 objects.
Object Change Host Address IPv4	Added/Deleted Host IPv4 object.
Object Change Host Address IPv6	Added/Deleted Host IPv6 object.

Object Change Network IPv4	Added/Deleted IPv4 networks.
Object Change Network IPv6	Added/Deleted IPv6 networks.
Security ADP	Advanced DNS Protection events
Network Discovery	Object Change Discovery Data

Adding Permissions

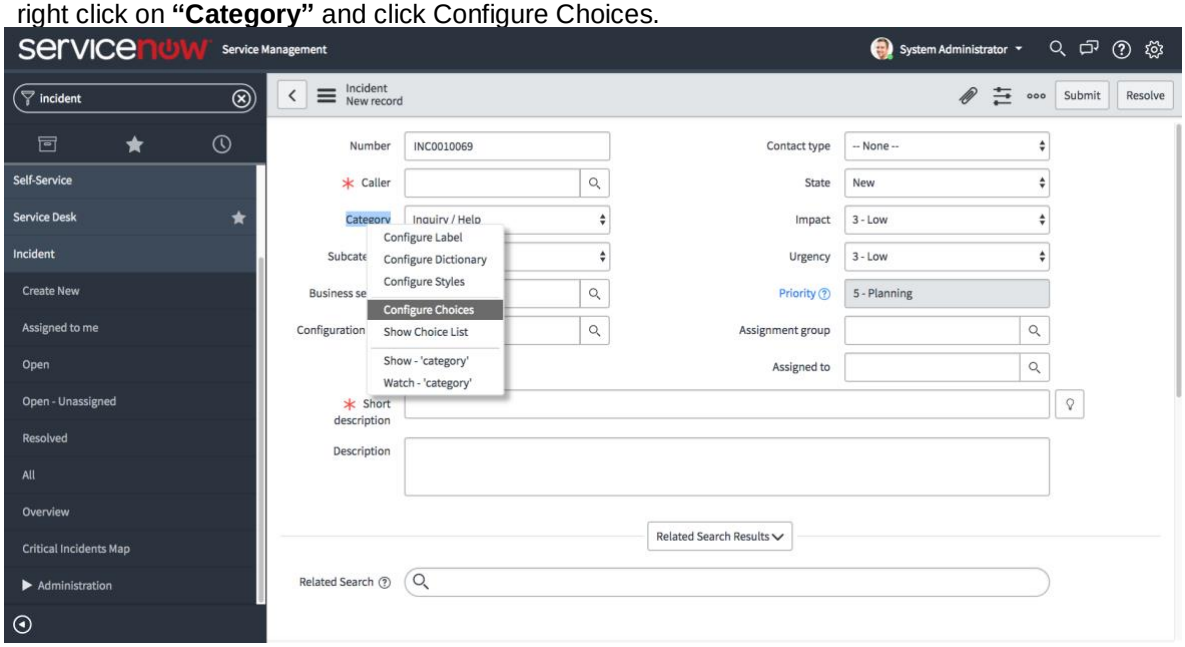
The Infoblox and ServiceNow integration requires a few permissions for the integration to work. Navigate to **"Administration" → "Administrators"** and add a **"Roles"**, **"Permissions"**, **"Groups"** and **"Admins"** to include permissions that are required for the integrations which can be found in the prerequisites. When creating a new group, under the **"Groups"** tab, select the **"API"** interface under the **"Allowed Interfaces"** category. The NIOS API user is required to have the following permissions (access via API only):

- All Host – RW.
- All IPv4 DHCP Fixed Addresses/Reservations – RW.
- All IPv6 DHCP Fixed Addresses/Reservations – RW.
- All IPv4 Networks – RW.
- All IPv6 Networks – RW.

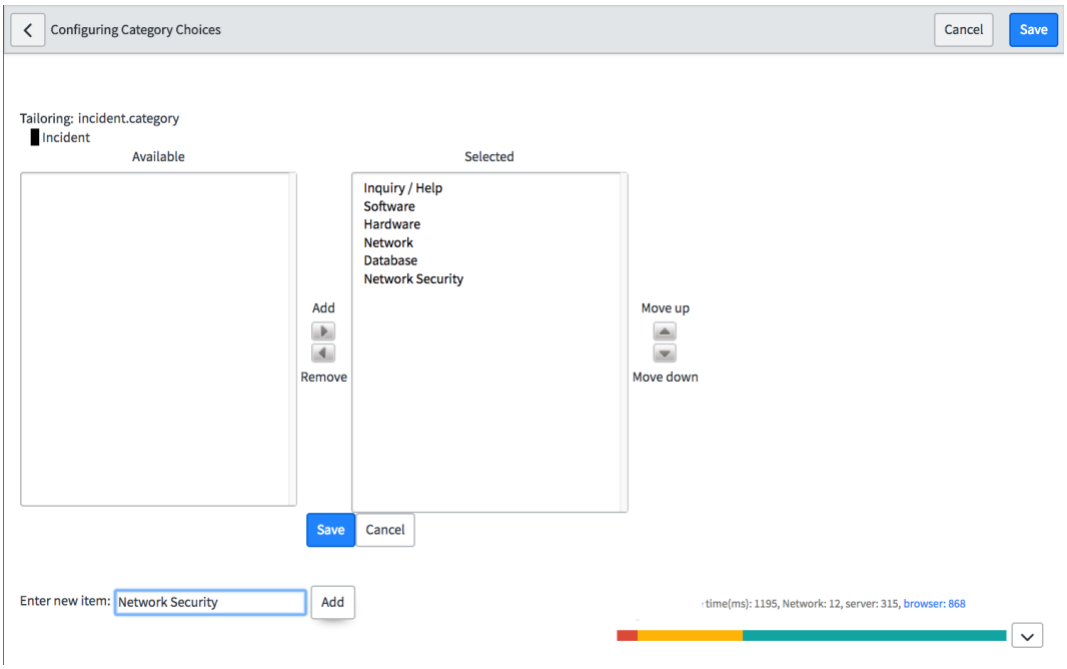
ServiceNow Configuration

Adding Categories and Subcategories

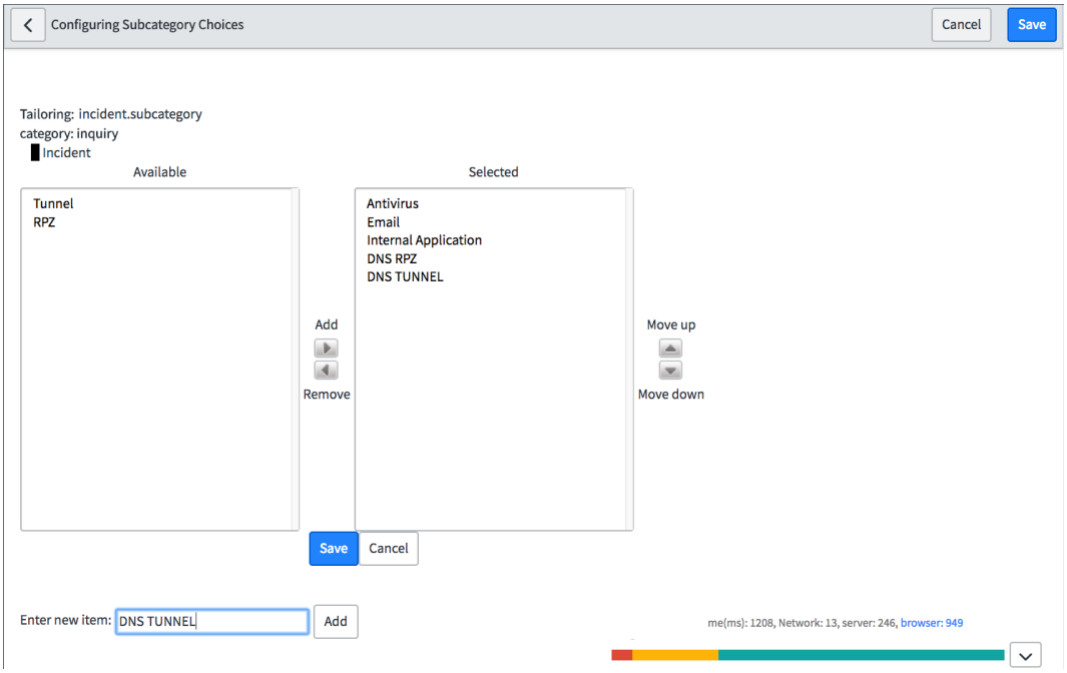
1. The ServiceNow endpoint configuration requires categories and subcategories that may not already be created. In order to add a category and subcategories: Navigate to **"Incidents" → "Create New",** then right click on **"Category"** and click Configure Choices.



2. At the bottom enter **"Network Security"** and click the **"Add"** button.
3. Click save to return to the **"Incident New record"** page.

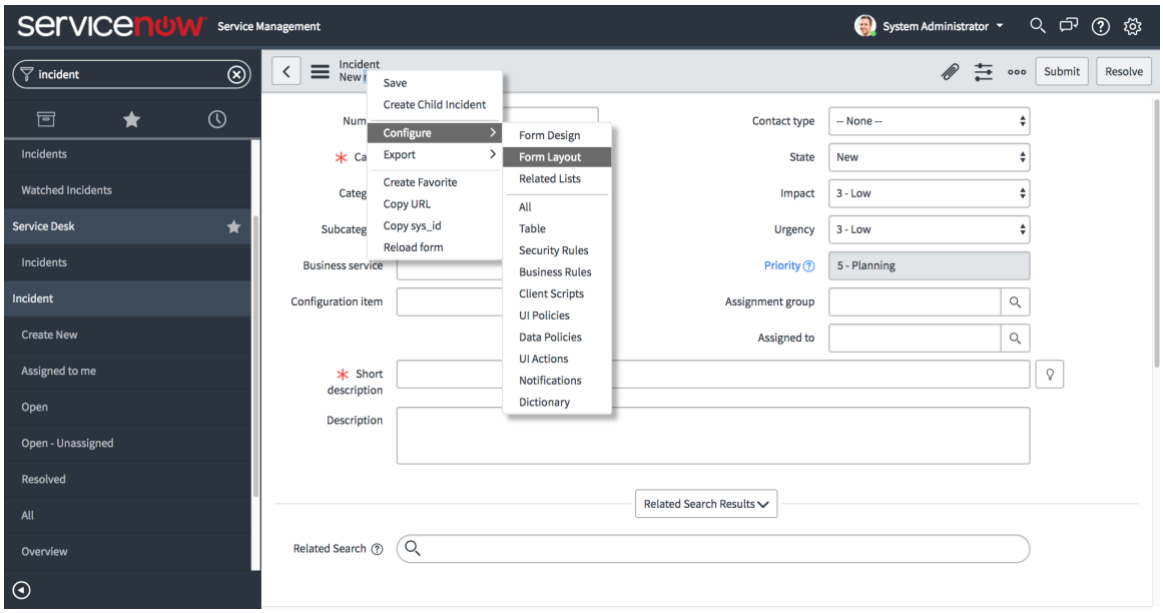


4. Right click on Subcategory and click Configure Choices.
5. At the bottom enter **"DNS RPZ"** then click the **"Add"** button, then enter **"DNS TUNNEL"** and click the **"Add"** button again.
6. Click save to return to the save the results.

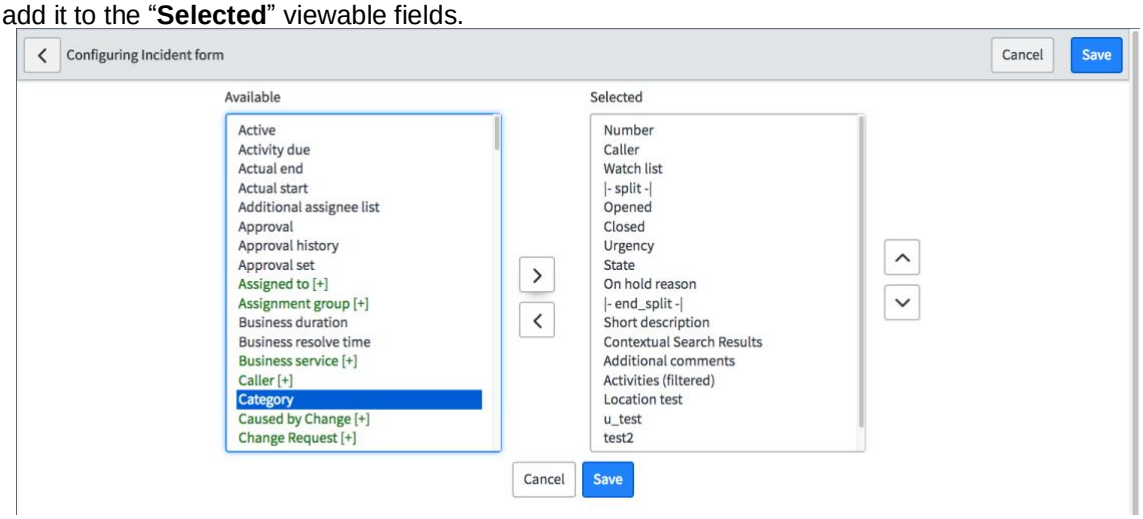


Adding and Removing Fields for Incidents

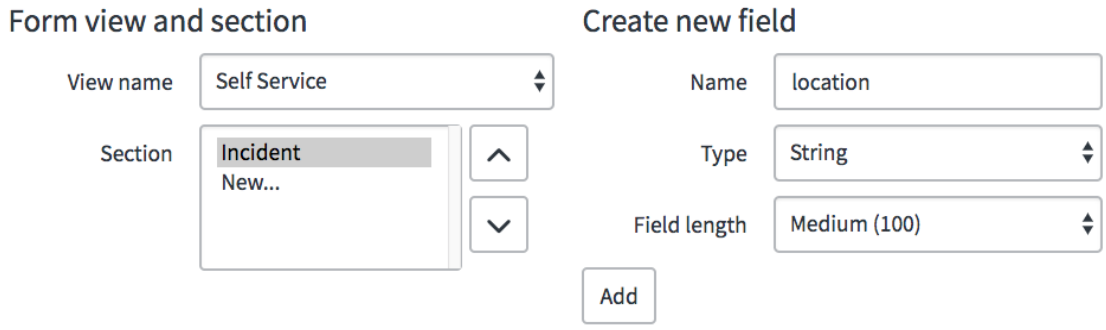
1. Navigate to "**Incident**" → "**Create New**" then right click on "**Incident New record**" and choose "**Configure**" → "**Form Layout**".



2. Select the fields listed in the ServiceNow Incident Table under the **"Annex"**, then click the **">"** button to add it to the "**Selected**" viewable fields.



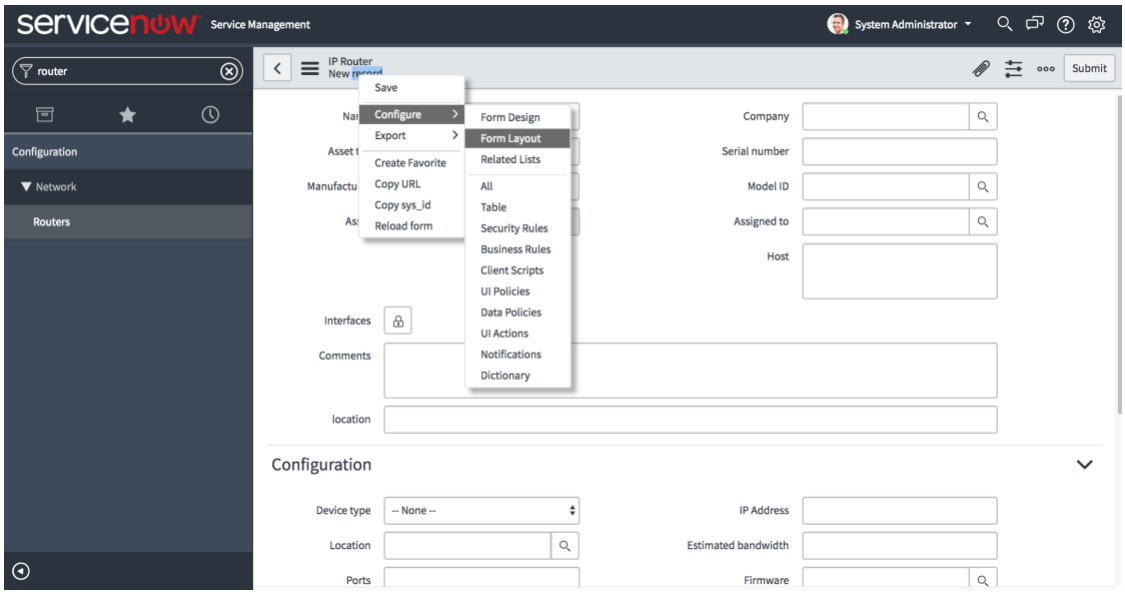
3. In the same window type **"Location"** in the **Create new field** form under name, then click the **"Add"** button.



4. Once you have added the fields you would like to view, click **"Save"**.

Adding and Removing Fields for Assets

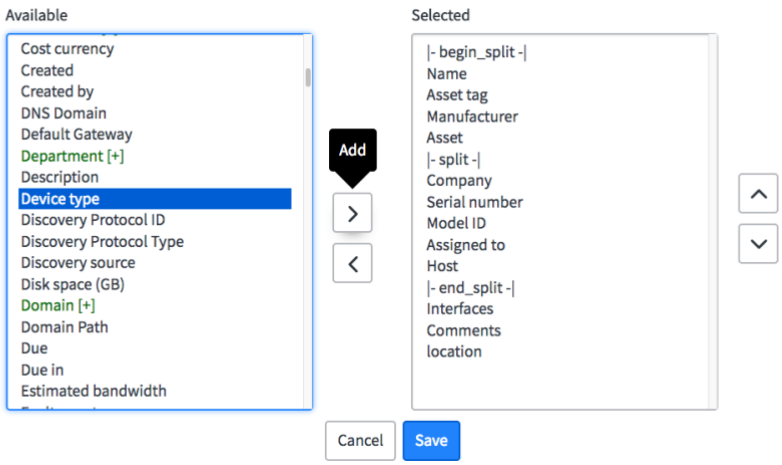
1. Navigate to **"Network"** → **"Routers"**→**"New"** then right click on **"IP Router New record"**, then choose **"Configure"** → **"Form Layout"**.



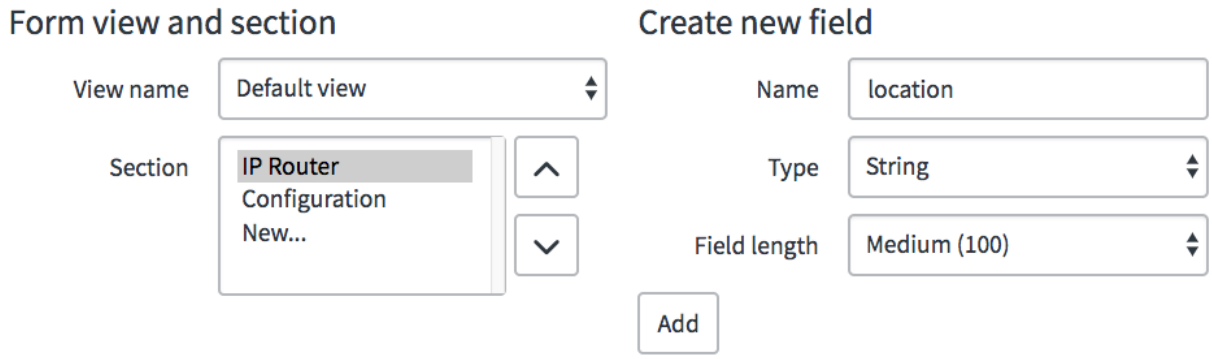
2. Select the fields listed in the ServiceNow Incident Table Data Allocation

Field Name	Purpose
category	The category to which the incident belongs.
severity	1, 2 or 3. Defines the severity of the created incident.
sys_id	ID automatically given to the incident.
description	Representation of the incident.
short_description	A short Representation of the incident.
subcategory	The subcategory to which the incident belongs.
opened_at	Time that the incident was opened.
sys_created_by	The person who created the incident. Automatically decided by credentials.
sys_created_on	Time that the incident was created.
sys_updated_by	Last person to update the incident. Automatically decided by credentials.
number	The Incident's number/ID.
sys_updated_on	Last time the incident was updated.
u_location	The location of the device that caused the incident.

3. under the **"Annex"**, then click the **">"** button to add it to the "**Selected**" viewable fields.



4. In the same widow type **"Location"** in the Create new field form under name, then click the **"Add"** button.



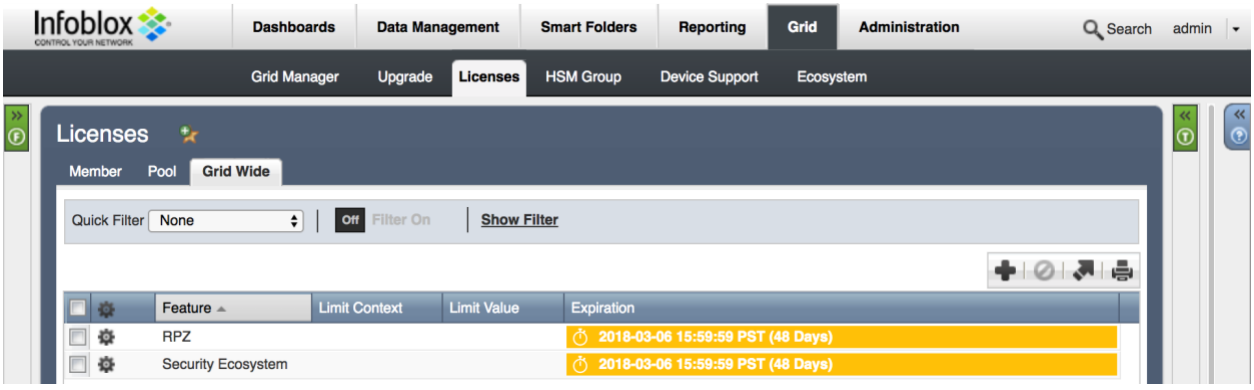
5. Once you have added the fields you would like to view, click **"Save"**.

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.

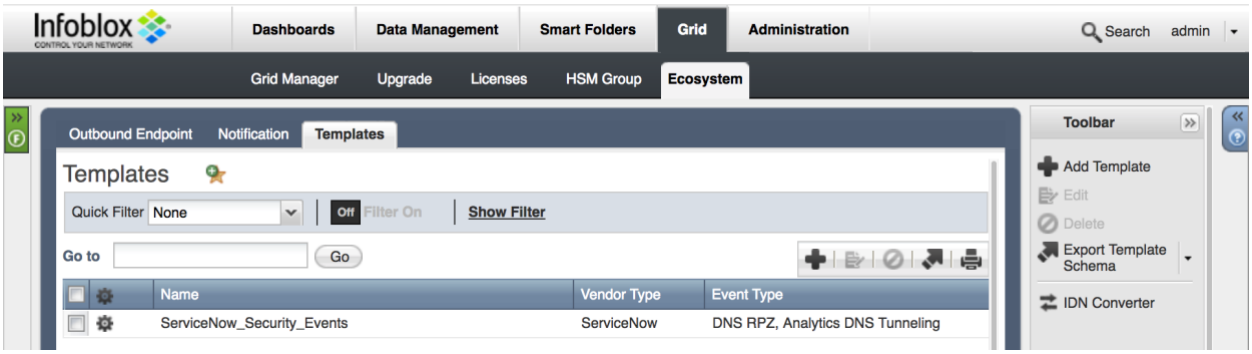
In order to check if the license was installed navigate to **"Grid"** → **"Licenses"** → **"Grid Wide"**.



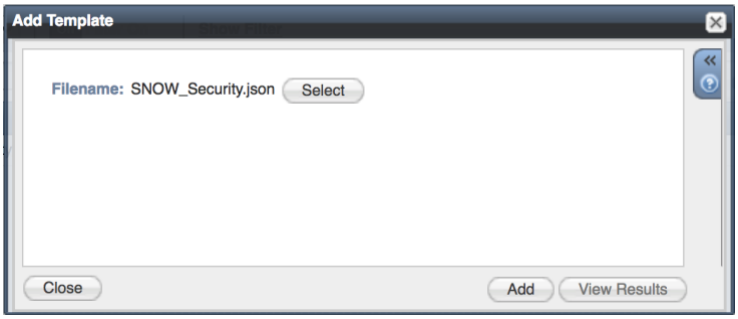
Add/Upload Templates

In order to upload/add templates:

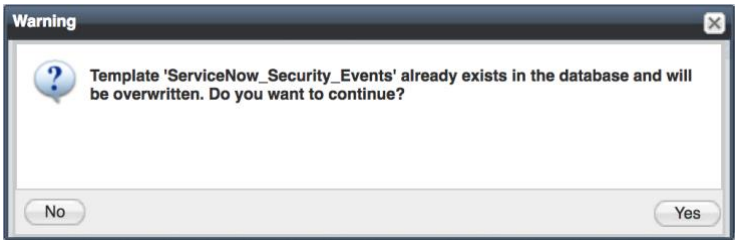
1. Navigate to “**Grid**” → “**Ecosystem**” → “**Templates**” and click on “**+**” or “**+ Add Template**” then the “**Add template**” window will open.



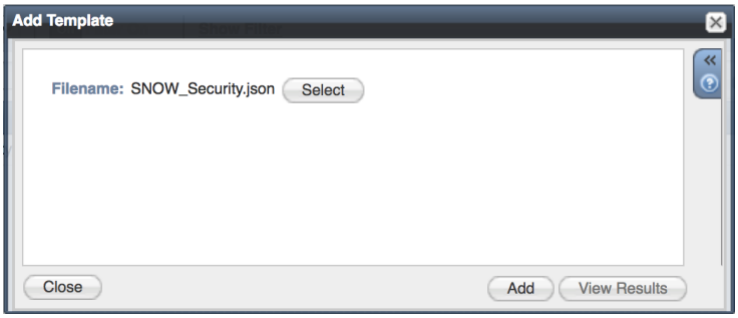
2. Press the **“select”** button on the **“Add template”** window.



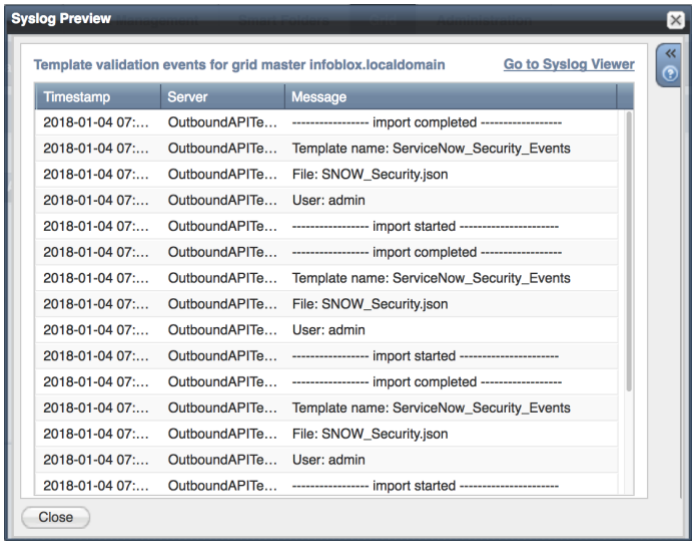
3. If a template was previously uploaded, press **“Yes”** to overwrite the template.



4. Pres the **“Select”** button on the **“Upload”** window. The standard file selection dialog will open.
5. Select the file and press the **“Upload”** button on the **“Upload”** window.
6. Press the “Add” button and the template will be added/uploaded.



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

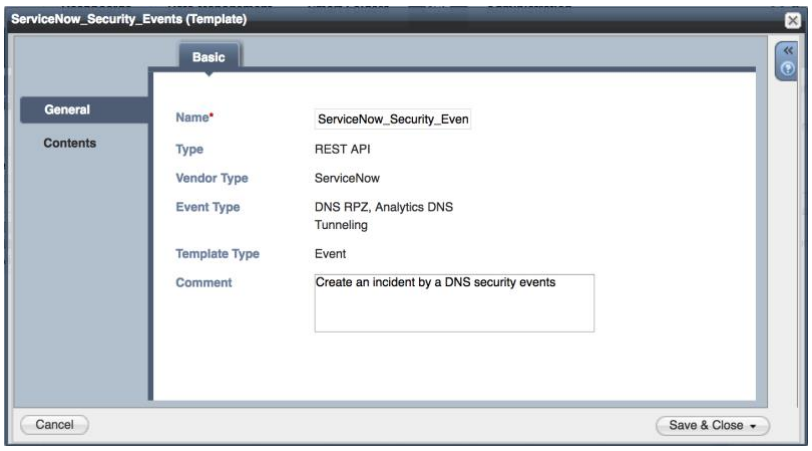


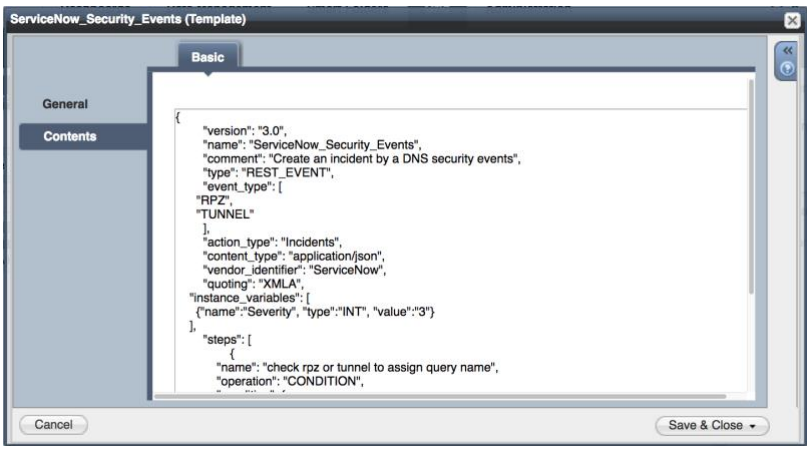
8. There is no difference between uploading session management and action templates.

Modifying Templates

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

1. Navigate to **"Grid" → "Ecosystem" → "Templates"**, and then press the gear icon next to the template you want to modify.
2. Press the **"Edit"** button to open up the **"Template"** window.





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.

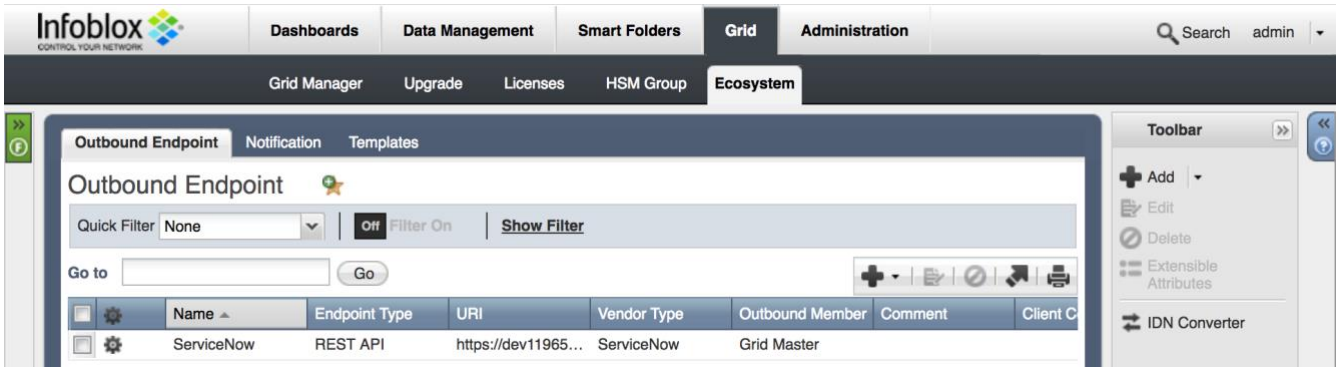
Note: You cannot delete a template if it is used by an endpoint or by a notification.

Add a Rest API Endpoint

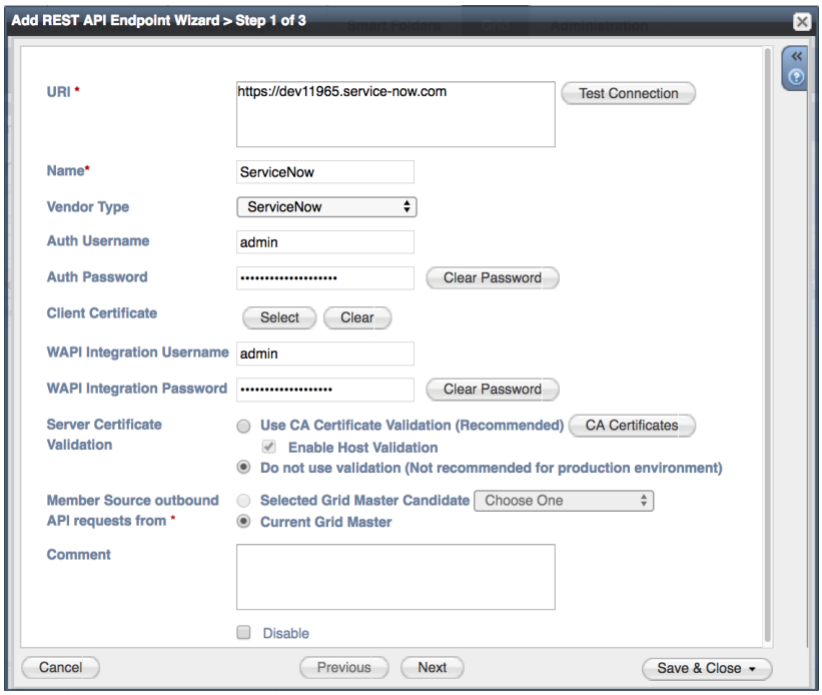
A **"REST API Endpoint"** is basically a remote system which should receive changes based on a notification and a configured template. A Grid, for example, can not only send notifications, it can also receive the notifications from itself (e.g. for testing purposes).

In order to add REST API Endpoints:

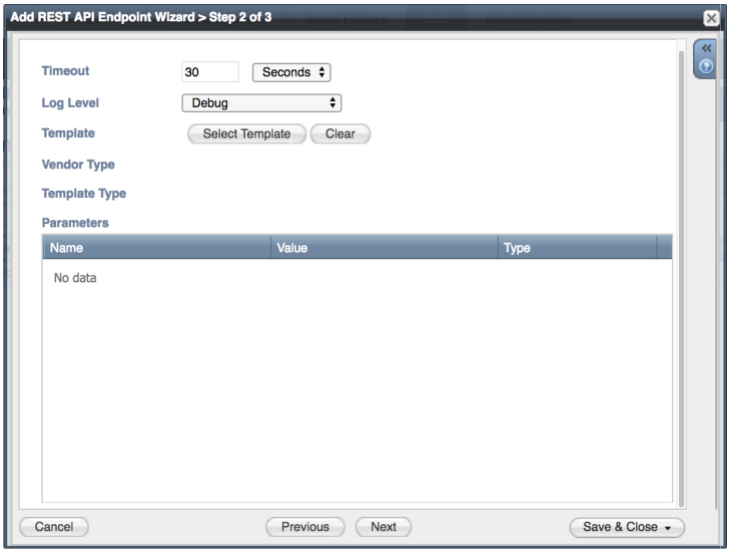
1. Navigate to "**Grid**" → "**Ecosystem**" → "**Outbound Endpoints**" and press "**+**" or "**+ Add REST API Endpoint**" buttons. The "**Add REST API Endpoint Wizard**" window will open.



2. The URI and Name fields are required.
3. Specify **"Auth Username"**, **"Auth Password"** (ServiceNow Web Service account credentials), **"WAPI Integration Username"** and **"WAPI Integration Password"** (NIOS credentials).



4. (Optional) For debug purposes only: Under **"Session Management"**, set **"Log Level"** to **"Debug"**.



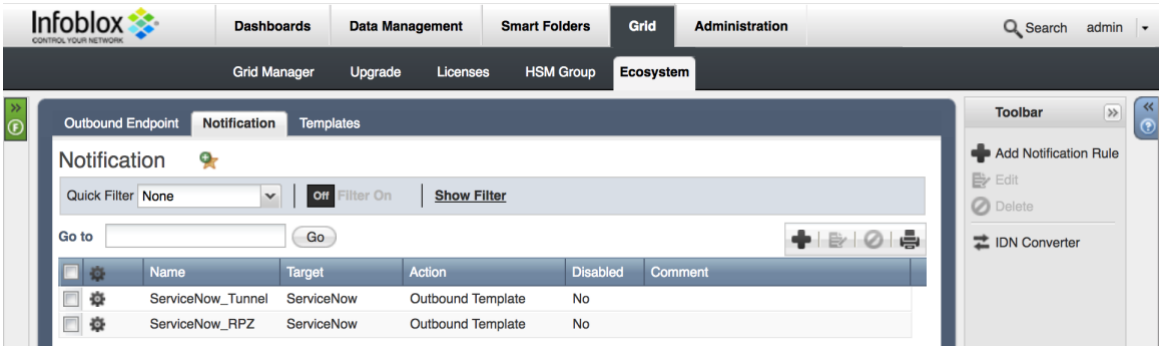
When possible, it is recommended to send notifications from a Grid Master Candidate instead of from the Grid Master.

Add a Notification

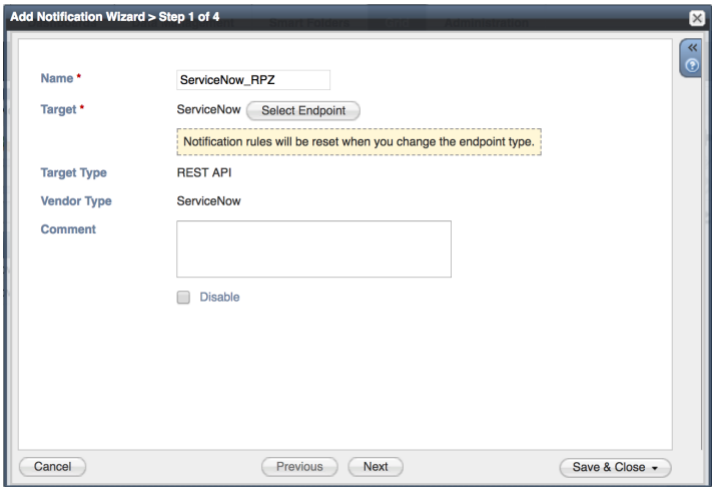
An endpoint and a template must be added before you can add a notification.

In order to add notifications:

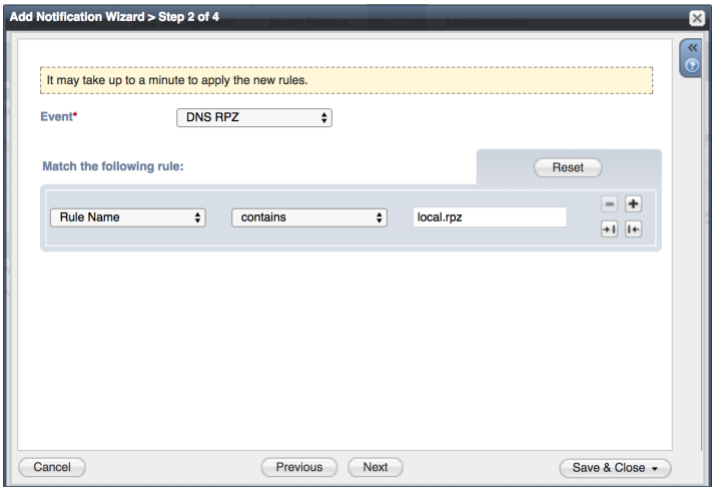
1. Navigate to **"Grid" → "Ecosystem" → "Notification"** and press **"+"** or **"+ Add Notification Rule"** then the **"Add Notification Wizard"** window will open.



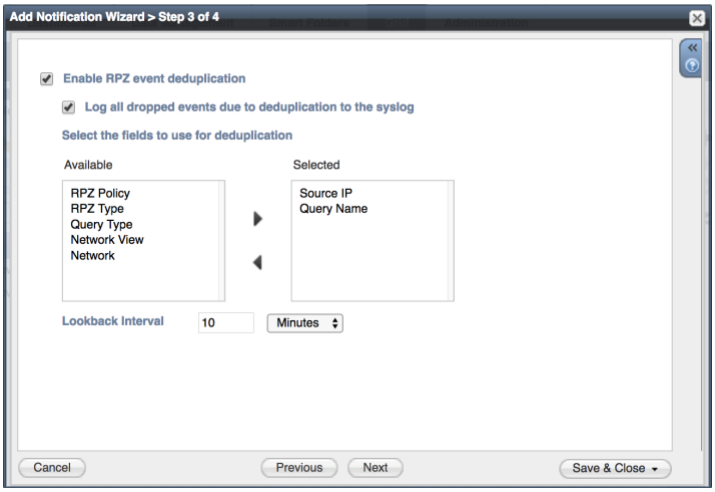
2. Specify the notification's name and select an endpoint (Target), click **"Next"**.



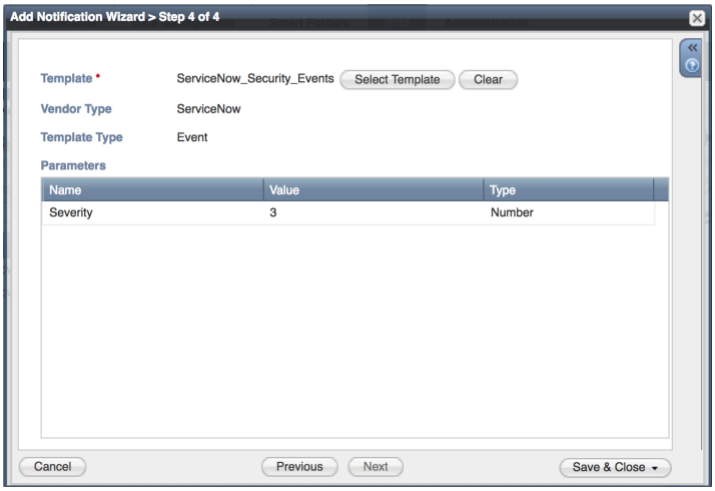
3. Select an event type and define a filter. Note: For optimal performance, it is best practice to make the filter as narrow as possible. Click **"Next"**.



4. (For RPZ notifications only) Check **"Enable RPZ event deduplication"** and specify relevant parameters. Click **"Next"**.

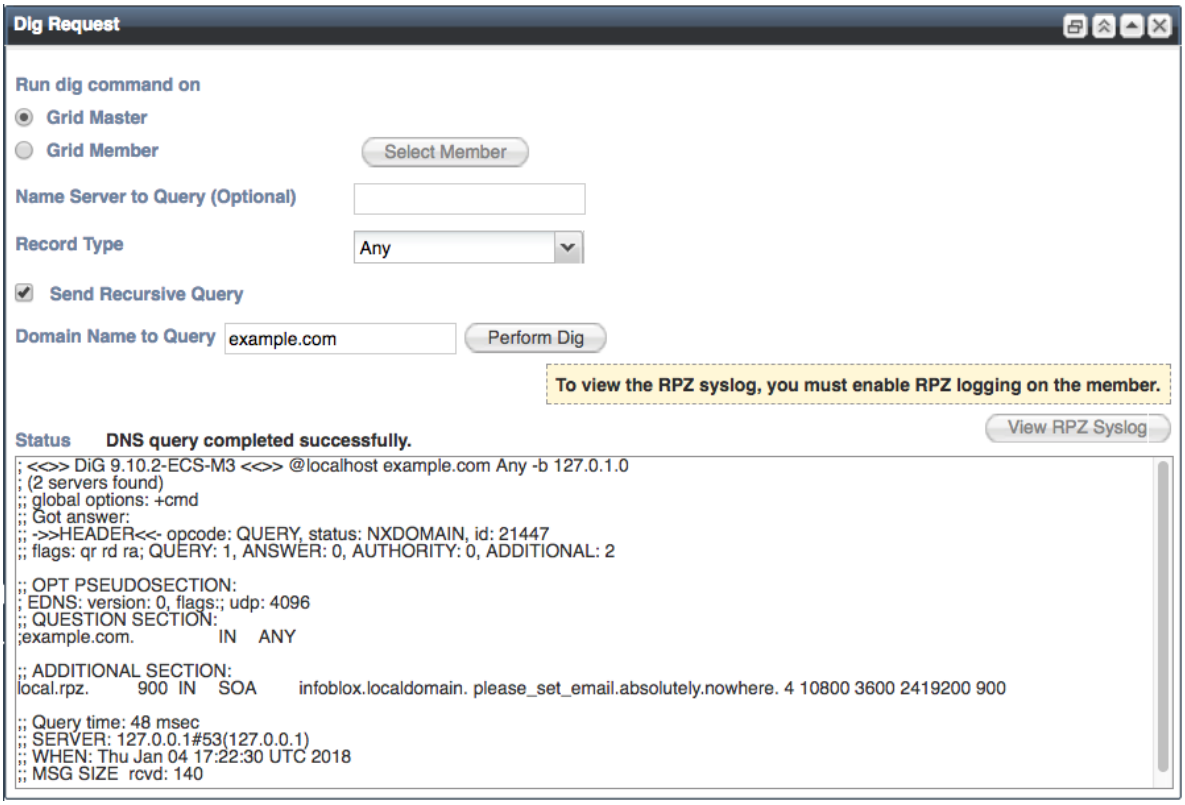


5. Select a relevant template and specify the template's parameters if any are required. Click **"Save & Close"**.

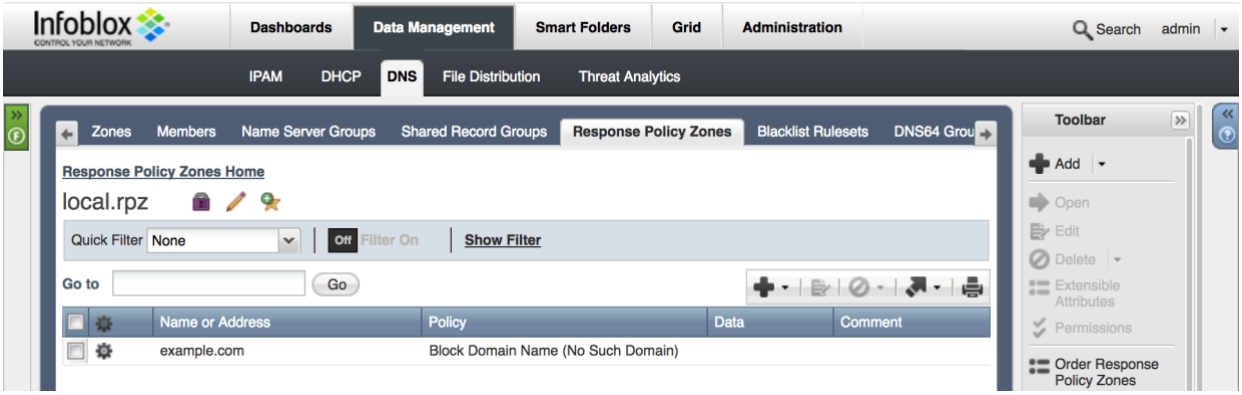


Check the Configuration

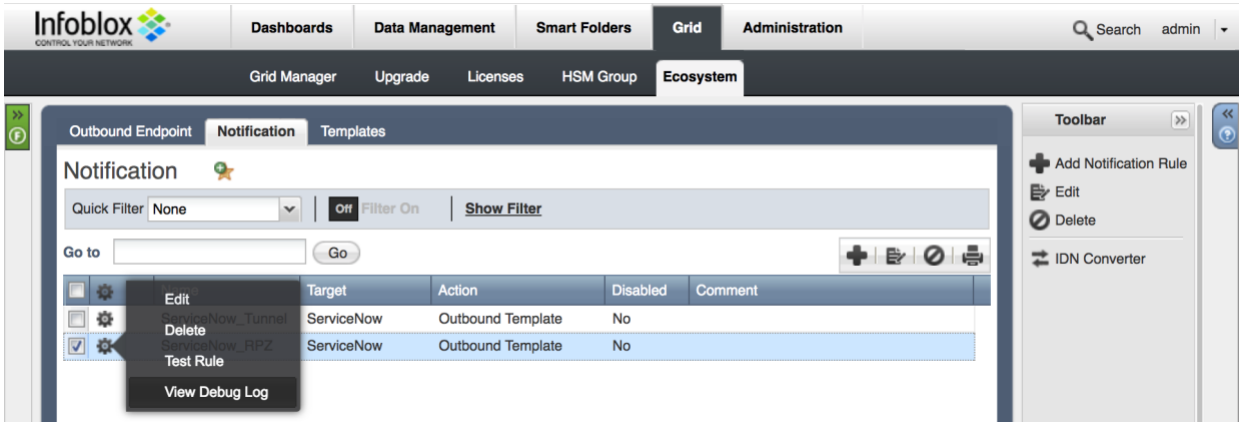
You can emulate an event for which a notification was added by going to **"Dashboards"** → **"Status"** → **"Security"** then on the **"Dig Request"** panel, fill in the **"Domain Name to Query"** text box and click the **"Perform Dig"** button.



When performing the dig request above, make sure that the **"Domain Name to Query"** is blocked by your RPZ. To check this, navigate to **"Data Management"** → **"DNS"** → **"Response Policy Zone"**. You can export a RPZ feed or check the content of a local RPZ.



To check a debug log for an endpoint, go to **"Grid"** → **"Ecosystem"** → **"Notification"**, click on the gear wheel and select **"View Debug Log"**.



Depending on a browser, the debug log will be downloaded or opened in a new tab. You may need to check your popup blocker or download settings.

Summary

The integration solution from Infoblox and ServiceNow Modernizes your IT service management by providing a single place to manage and organize your security events and assets that are on the Infoblox devices.

Additional References

The Infoblox DDI activity pack manages the IP addresses used in a network by integrating DNS and DHCP. Custom Orchestration activities use Infoblox Web API (WAPI) REST web services to access the Infoblox GRID server.

https://docs.servicenow.com/bundle/jakarta-servicenow-platform/page/administer/orchestration-activities/concept/c_InfobloxDDIActivityPack.html

Annex

ServiceNow Incident Table Data Allocation

Field Name	Purpose
category	The category to which the incident belongs.
severity	1, 2 or 3. Defines the severity of the created incident.
sys_id	ID automatically given to the incident.
description	Representation of the incident.
short_description	A short Representation of the incident.
subcategory	The subcategory to which the incident belongs.
opened_at	Time that the incident was opened.
sys_created_by	The person who created the incident. Automatically decided by credentials.
sys_created_on	Time that the incident was created.
sys_updated_by	Last person to update the incident. Automatically decided by credentials.
number	The Incident's number/ID.
sys_updated_on	Last time the incident was updated.
u_location	The location of the device that caused the incident.

ServiceNow Asset Table Data Allocation

Field Name	Purpose
sys_updated_on	Last time the incident was updated.
first_discovered	Time that an asset was created on Infoblox appliance.
sys_updated_by	Last person to update the asset. Automatically decided by credentials.
sys_created_on	Time that the asset was created.
sys_created_by	The person who created the incident. Automatically decided by credentials.
name	Name of the asset that's discovered.
short_description	Description of the asset that was discovered.
manufacturer	Vendor of the asset that is discovered.
vendor	Vendor of the asset that is discovered.
comments	Name of the operation system, model, and chassis serial number of the discovered asset.
Ip_address	The IP of the Asset.
u_location	The location of the device that caused the incident.

Infoblox Objects to ServiceNow Tables Association

ServiceNow Table Name	Infoblox Objects
cmdb_ci_ip_router	Router devices.
cmdb_ci_ip_switch	Switch devices that are not routers.
cmdb_ci_ip_firewall	Firewall devices.
cmdb_ci_ip_server	Server device.
cmdb_ci_ip_lb	Load-balancer devices.
cmdb_ci_ip_phone	IP phone devices.
cmdb_ci_ip_device	Devices that are not supported.
cmdb_ci_ip_network	Networks created by Infoblox.
cmdb_ci_ip_address	Interfaces of devices.
incident	Security events.