### Creating a Dynamic Inventory using the Nautobot GraphQL Dynamic Inventory Plugin

When adjusting device configurations on a Source of Truth (SoT) platform like Nautobot, managing hundreds or even thousands of devices can quickly become overwhelming. As a result, a static host file is not a practical or scalable solution for integrating a network automation framework, as it must be stored on the control node. Fortunately, Nautobot provides a dynamic inventory plugin that uses GraphQL to query our Nautobot instance for the desired host. This plugin can be found on Ansible Galaxy, a free platform that allows users to discover, download, and share community-generated roles and collections. This simplifies the process of incorporating a dynamic inventory into both your network automation framework and any other playbooks you may require.

1. On the Linux desktop instance in Google Cloud, open the Terminal and run a system update using apt

sudo apt update && sudo apt full-upgrade -y

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1. Install Ansible using Ansible’s apt repository

sudo apt install software-properties-common

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sudo add-apt-repository --yes --update ppa:ansible/ansible

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sudo apt install ansible -y

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1. Install the required packages for Nautobot’s Ansible collection

sudo apt install python3-pip -y

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sudo pip install netutils

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1. Switch to the /etc/ansible directory

cd /etc/ansible/

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1. Use the chmod command to change the file permissions of the ansible.cfg file to allow full access to the file by all users.

sudo chmod 777 ansible.cfg

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1. Create a complete initial Ansible configuration using the ansible-config initcommand. This creates a complete configuration that includes all currently installed plugins.

ansible-config init --disabled -t all > ansible.cfg

1. Install the Nautobot Ansible collection using Ansible Galaxy

ansible-galaxy collection install networktocode.nautobot

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1. Navigate to the internal IP address of the Nautobot instance and login using a web browser.
2. In the Nautobot GUI, navigate to Admin > Profile > API Tokens

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1. Click ”Add a token”

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1. Click Create to accept the default settings. This will create an API token so Ansible can query Nautobot for device information. This token will never expire unless an expiration date is entered. Save this token to a text file as we will use it later.

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1. Right-click on the desktop to create a folder named ansible-gql. We will use this folder to store our dynamic inventory plugin configuration and Ansible playbooks.

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1. Open the **ansible-gql** folder and create a YAML configuration file for the dynamic inventory plugin. We will name it **inventory.yml**.

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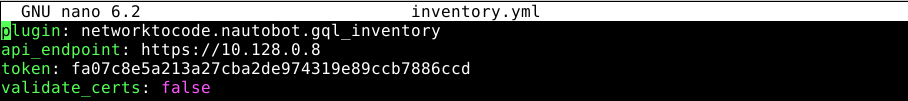
1. Open inventory.yml in a text editor such as nano or Visual Studio Code
2. Enter the following configuration details for the dynamic inventory plugin into the file:

plugin: networktocode.nautobot.gql\_inventory

api\_endpoint: https://<IP\_of\_nautobot>

token: API token created from step 11

validate\_certs: false



This is the minimum required configuration for the dynamic inventory plugin to work. The **validate\_certs** parameter, while optional, is required for our environment because of Nautobot’s use of self-signed SSL/TLS certificates.

1. In the Terminal, use the ansible-inventory command to test the inventory plugin. Ansible will query the Nautobot SoT using the GraphQL dynamic inventory plugin to display information for each device onboarded in Nautobot.

ansible-inventory -v --list -i inventory.yml

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