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Juniper Apstra Flow 5.0.1 / 5.0.0 Installation and Upgrade Guide

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Juniper Networks, Inc.
1133 Innovation Way
Sunnyvale, California 94089
USA
408-745-2000
www.juniper.net

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Juniper Apstra Flow 5.0.1 / 5.0.0 Installation and Upgrade Guide
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Table of Contents

About This Guide

This guide describes how to install and configure Juniper Apstra Flow on your network.

We'll walk you through how to configure your network and flow collector, and how to apply your license in Apstra. Then, we'll show you how to launch the Apstra Flow dashboards to analyze and visualize your data.

CHAPTER 1

Juniper Apstra Flow Overview

IN THIS CHAPTER

Apstra Flow Overview

Juniper's Apstra Flow feature is a robust solution for collecting and analyzing data center network flow traffic. This feature streamlines the gathering of network traffic flows and telemetry by offering a seamless integration with your organization-specific information. This integration delivers unmatched visibility and insight into your network traffic.

The Apstra Flow dashboards, with enriched data and analytics, provide you with a holistic understanding of the network for various critical use cases, including:

- **Performance and Availability**

  Tracks network performance metrics to ensure peak data center efficiency and minimize downtime. It provides detailed information on network traffic flows, congestion, high latency, and packet loss.

- **Capacity Planning and Cost Control**

  Analyzes traffic flows and resource utilization so you can make informed decisions on network investments and adjustments, optimizing costs.

- **Security Monitoring**

  Uses enhanced flow analytics to improve threat detection and compliance management. This action simplifies maintaining a secure network environment.

Overall, Apstra Flow equips organizations with the tools they need for effective network management, ensuring reliability, efficiency, and security in data center operations.

NOTE: Apstra Flow is a feature in the Apstra Premium tier licensing plan. This feature is available only if you are an Apstra premium customer. For more information, see the Juniper Licensing User Guide.

2

CHAPTER

Get Started with Juniper Apstra Flow

IN THIS CHAPTER

Supported Hypervisors and Versions

Apstra Flow Data supports the following hypervisors and versions:

Table 1: Supported Hypervisors and Versions

Hypervisor	Supported Versions
VMware vSphere	7.0, 6.7, 6.5, 6.0
Microsoft Hyper-V	Windows Server 2016 Datacenter Edition
Linux KVM	Ubuntu 22.04, 18.04 LTS

Apstra Flow Scaling Considerations

The Apstra Flow virtual images are available in three sizing options, plus an additional option for creating custom extra-large deployments. Table 1 on page 4 describes the available sizing options and memory requirements.

Table 2: Apstra Flow Scaling Considerations

*Image Size	Required Memory Size	Number of Supported Devices
Small Up to 5,000 FPS	8 vCPU, 32 GB memory, 4 TB disk	Typically, up to 25 devices at an average of 200 FPS per device.
Medium Up to 10,000 FPS	16 vCPU, 64 GB memory, 4 TB disk	Typically, up to 50 devices at an average of 200 FPS per device
Large Up to 15,000 FPS	24 vCPU, 64 GB memory, 4 TB disk	Typically, up to 75 devices at an average of 200 FPS per device

Table 2: Apstra Flow Scaling Considerations *(Continued)*

*Image Size	Required Memory Size	Number of Supported Devices
X-Large (custom)	N/A	Greater than 15,000 FPS.

*Image size is calculated at an average number of flows per second (FPS) that the collector receives.

Supported Protocols and Devices

Apstra Flow Data supports the following protocols and devices:

- sFlow, NetFlow v1, v5, v6, v7, v9, IPFIX, and IFA protocols
- Juniper Junos OS devices
- Juniper Junos Evolved OS devices

  Note: Sending sFlow through the management interface on Junos OS Evolved devices is not supported.

- Arista EOS, Cisco NXOS, and Enterprise SONIC devices

  See the appropriate vendor documentation for device-specific details.

CHAPTER 3

Install and Configure Apstra Flow

IN THIS CHAPTER

Configure Your Network and Flow Collector

IN THIS SECTION

NOTE: Before you begin the configuration, make sure that you download the image file for your virtualization platform. See your platform documentation for details.

NOTE: We recommend that you run Apstra and Apstra Flow on the same version. This ensures compatibility and prevents potential issues that can arise between the different versions.

NOTE: You can install KVM with VM Manager or with the CLI.

Let's get started!

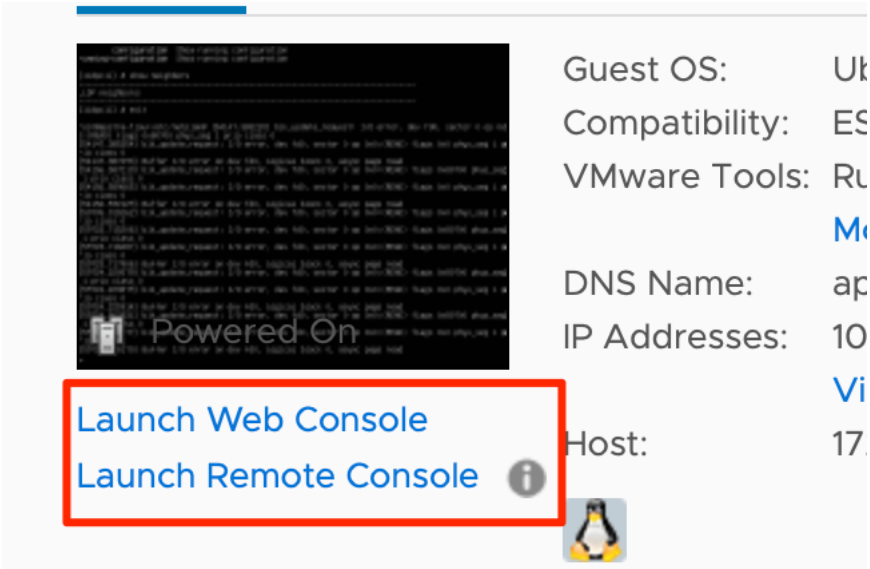
Configure Your Network

NOTE: If you have a DHCP server, by default, the Apstra Flow VM automatically obtains an IP address. To assign a static IP address instead, SSH to the VM and skip to Step 2 in this procedure. Otherwise, start at Step 1.

1. If the console is already started, click the play button

   at the top of the VM summary.



2. Login to the CLI. The default credentials for the Apstra Flow console are: user=apstra and password=apstra. You'll want to change this password after the VM is deployed.
3. Change the directory to `/etc/netplan`.

```
apstra@apstra-flow:~$ cd /etc/netplan/
apstra@apstra-flow:/etc/netplan$ ls
00-installer-config.yaml  01-netcfg.yaml
```

4. Add an IP address to your network interface. Edit the `01-netcfg.yaml` file as follows:

```
apstra@apstra-flow:/etc/netplan$ sudo vi 01-netcfg.yaml
```

```
#
 network:
  version: 2
  ethernets:
    eth0:
      dhcp4: false
      addresses:
      - 10.19.10.100/24 <replace with static IP, if desired>
      #  - 192.0.2.1
      #  search: []
      routes:
      - to: 10.11.0.0/16 <add your DNS settings>
        via: 10.19.10.1  <-
```

```
      routes:
      - to: 0.0.0.0/0
        via: 172.25.90.1 <configure the default route>
```

5. Enter `sudo netplan apply` to power up your network.

```
apstra@apstra-flow:/etc/netplan$ sudo netplan apply
```

```
** (generate:16454): WARNING **: 14:16:45.231: Permissions for /etc/netplan/00-installer-
config.yaml are too open.
Netplan configuration should NOT be accessible by others.

** (generate:16454): WARNING **: 14:16:45.231: Permissions for /etc/netplan/01-netcfg.yaml
are too open.
Netplan configuration should NOT be accessible by others.

(you can ignore permissions errors, or fix if desired)
```

You can now SSH to the VM with your configured IP address and Apstra credentials, as shown in the following example:

```
username@username-mbp ~ % ssh apstra@172.25.90.2
apstra@172.25.90.2's password:
Welcome to Ubuntu 22.04.3 LTS (GNU/Linux 5.15.0-86-generic x86_64)
```

Configure the Flow Collector

You can configure the collector to specify a hostname or IP address, the port the collector is listening on, and username and password for the Apstra controller.

To configure the flow collector:

1. SSH to the Flow VM with the default VM username and password (apstra/apstra).
2. Modify the `/etc/juniper/flowcoll.yml` file as follows:
   - EF_JUNIPER_APSTRA_API_ADDRESS: "10.28.111.3" (replace this value with your IP)
   - EF_JUNIPER_APSTRA_API_PASSWORD: "admin"
   - EF_JUNIPER_APSTRA_PORT: "443" (default port)

- EF_JUNIPER_APSTRA_API_TLS_ENABLE: "true"
- EF_JUNIPER_APSTRA_API_USERNAME: "admin"

> **NOTE:** By default, Apstra Flow reports the interface index values, like `index:14`. To enrich the reporting with actual interface names, like `xe-0/0/1`, configure Apstra Flow to query devices through SNMP using the following settings:

- EF_PROCESSOR_ENRICH_NETIF_**SNMP**_COMMUNITIES: public
- EF_PROCESSOR_ENRICH_NETIF_**SNMP**_ENABLE: “true”

You completed configuring your network and flow collector. Next, continue to "Apply Your License" on page 10.

Apply Your License

IN THIS SECTION

Apply Your License in Apstra

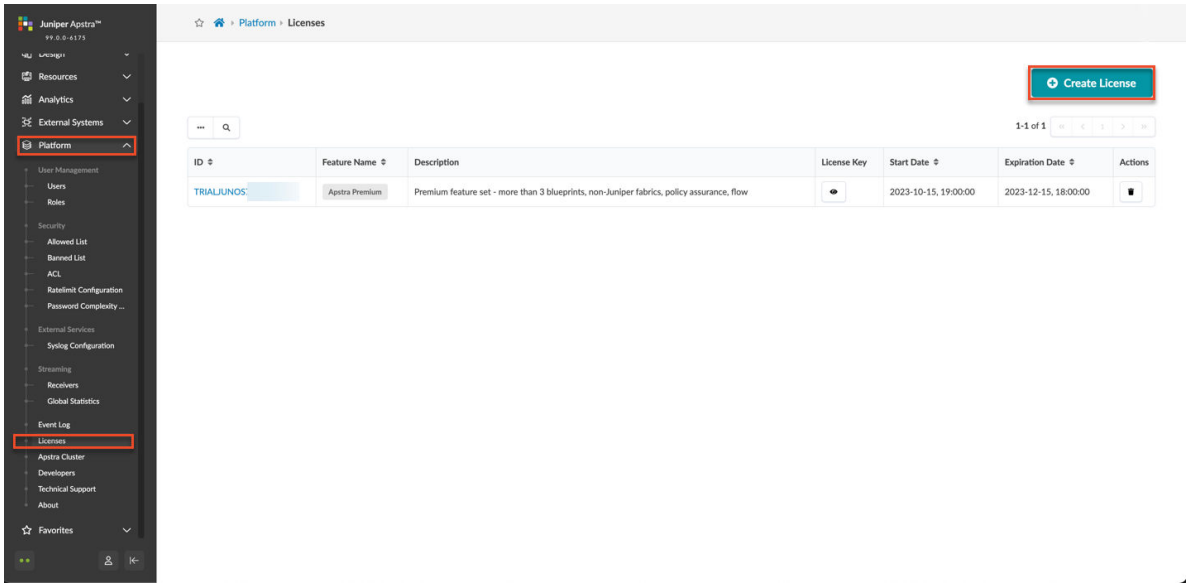
IN THIS SECTION

By now, you should have received your activation code and activated your license from the Juniper Agile Licensing Portal (see the Juniper Licensing User Guide for activation instructions). You now need to apply your license in the Apstra GUI.

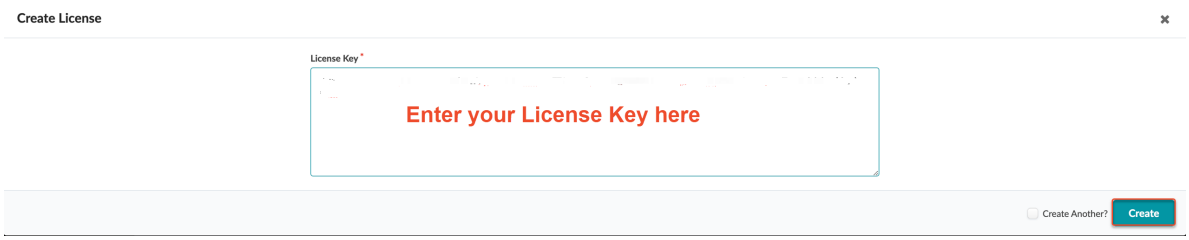
To apply your license:

1. Login to the Apstra GUI using the credentials you set when you first configured the Apstra server.

2. From the left navigation menu, select **Platform > Licenses**, then click **Create License**.



3. Copy your license key into the **License Key** text box, then click **Create**.



4. Verify your license. If the license was successfully applied, the **Feature Name** should indicate **Apstra Premium**.

Restart the Flow Services

After you apply your license in Apstra, restart your flow services so that the services can pick up the license.

To restart the services:

1. SSH to the Flow VM. The default login credentials are: apstra/apstra.
2. Restart the collector service.

   ```
   sudo systemctl restart flowcoll
   ```

3. Restart the OpenSearch service.

```
sudo systemctl restart opensearch
```

4. Restart the OpenSearch dashboard service.

   ```
   sudo systemctl restart opensearch-dashboards
   ```

5. Verify your license.

   Enter the IP address of your VM.

   http://<flow-vm-ip>:8080/metrics

   If your license was successfully applied, the `license_units` value will be `16`.

Continue to "Import the Junos OS Apstra Flow Configlet" on page 12.

Import the Junos OS Apstra Flow Configlet

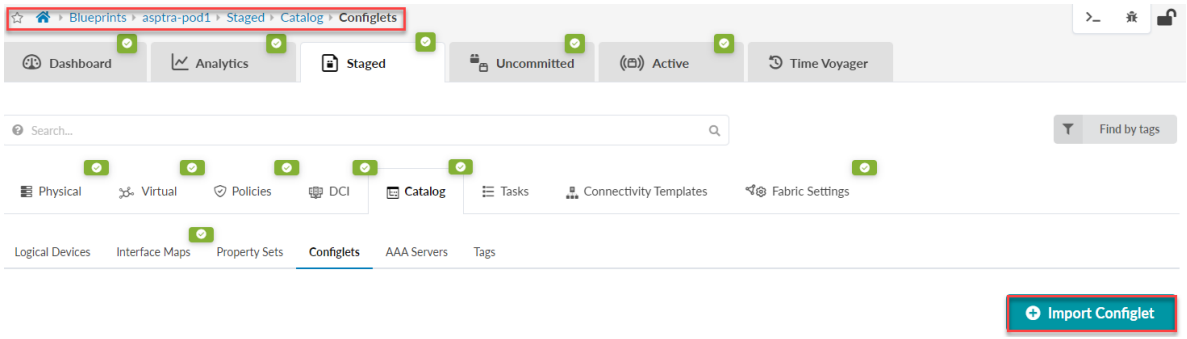
IN THIS SECTION

Import the Configlet

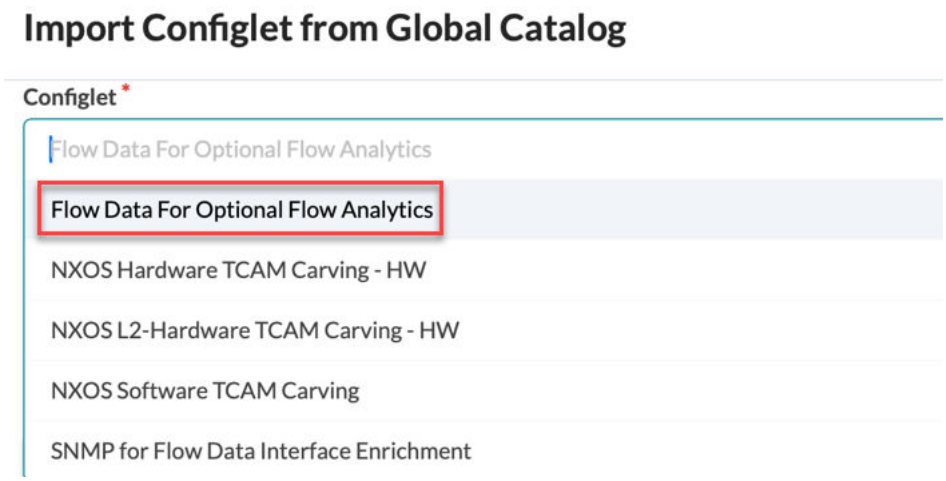
A standard Junos OS sFlow configlet is provided with your product. You'll want to clone this default configlet, modify it to your needs, and then import it into your blueprint from the Apstra GUI (see "Example: Junos OS Apstra Flow Configlet" on page 14).

To import the flow data configlet into Apstra:

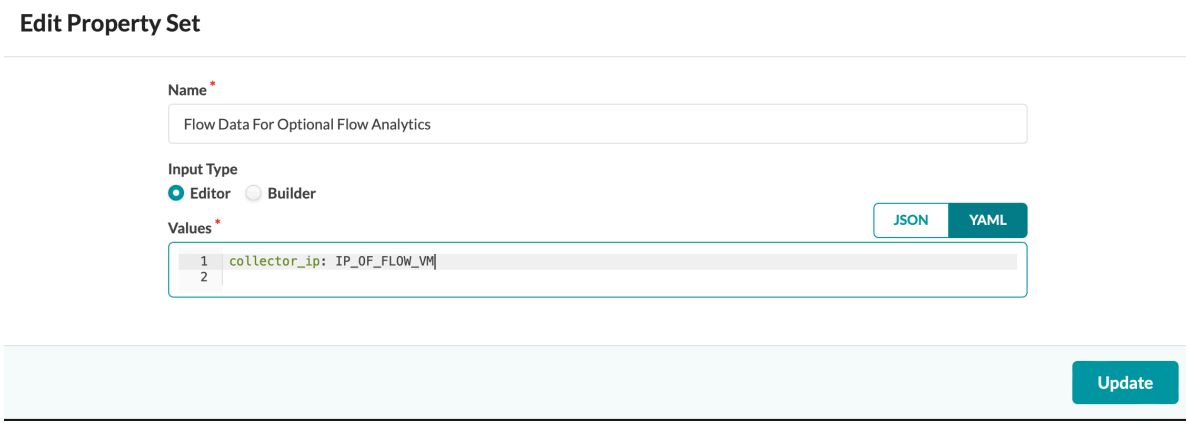
1. From the left navigation menu in the Apstra GUI, navigate to **Blueprints > Analytics > Staged**. From the **Catalog** tab, select **Configlets**, then click **Import Configlet**.



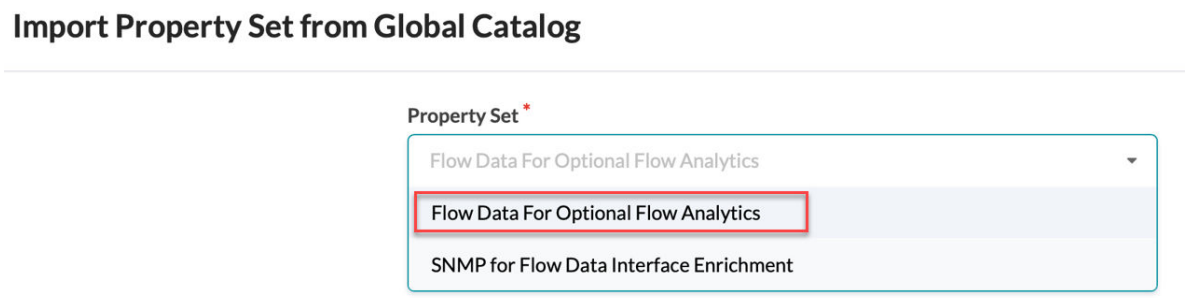
2. From the **Configlet** drop-down menu, select **Flow Data for Optional Flow Analytics**. Select the devices you want to apply the configlet to, then click **Import Configlet**.



3. Edit the property set to add the collector IP address of your Flow Data VM, then click **Update**.



4. Under **Property Set**, select **Flow Data For Optional Flow Analytics**, then click **Import Property Set**.



5. Finally, commit your configuration to import the configlet to your Junos devices.

Good job! You completed the completed the Apstra Flow Data installation. Next, continue to "Launch the Apstra Flow Dashboard" on page 18.

Example: Junos OS Apstra Flow Configlet

The following example shows the Junos OS Apstra Flow configlet that is provided with Apstra Flow.

This configlet contains a static routing option to route the flow traffic over the management Junos RPF interface. You can also specify the sFlow polling and sampling intervals, collector IP address, UDP port and interfaces you want to collect data on.

```
routing-options {
             static {
                 route 10.28.36.6/32 next-table mgmt_junos.inet.0;
             }
}
protocols {
  sflow {
      polling-interval 10;
      sample-rate {
          ingress 1024;
          egress 1024;
      }
      source-ip 10.28.36.12;
      collector 10.28.36.6 {
          udp-port 6343;
      }
      interfaces ge-0/0/0;
      interfaces ge-0/0/1;
      interfaces ge-0/0/2;
```

```
    }
}
}
```

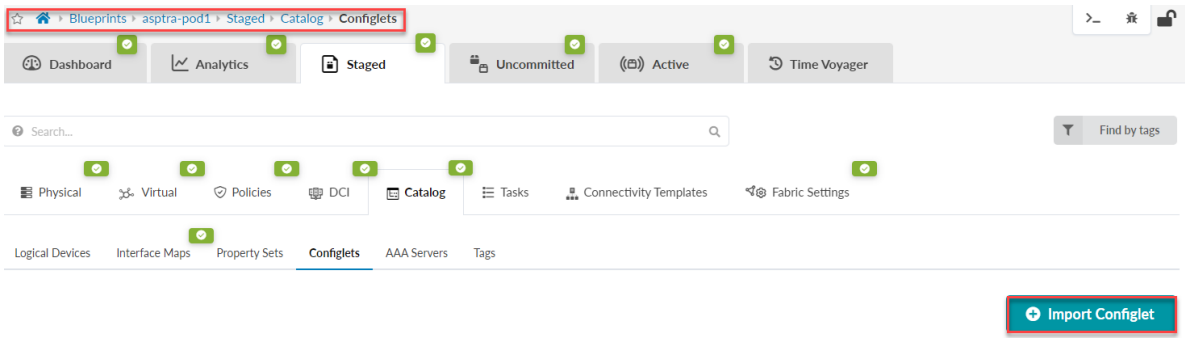
Configure SNMP for Interface Name Enrichment

If you prefer to see actual interface names such as xe-0/0/1 over interface indexes, Apstra Flow must query the devices using SNMP. This process is necessary for this type of enrichment.

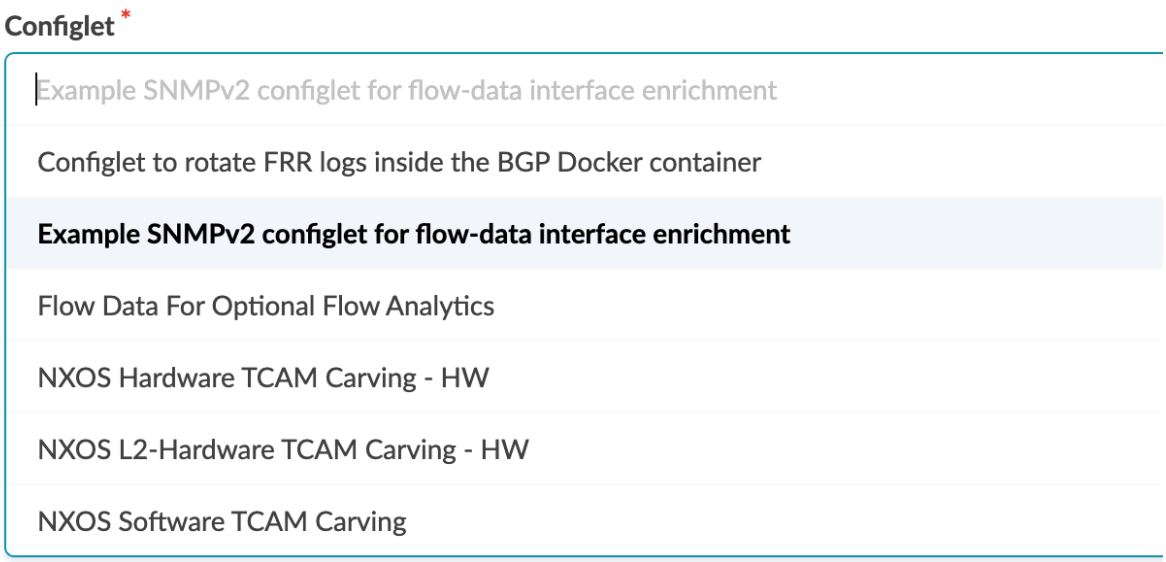
Perform the following steps to configure SNMP:

1. From the left navigation menu in the Apstra GUI, navigate to **Blueprints** and select the blueprint you want to update.

   Navigate to the **Staged >Catalog** tab, select **Configlets**, then click **Import Configlet**.



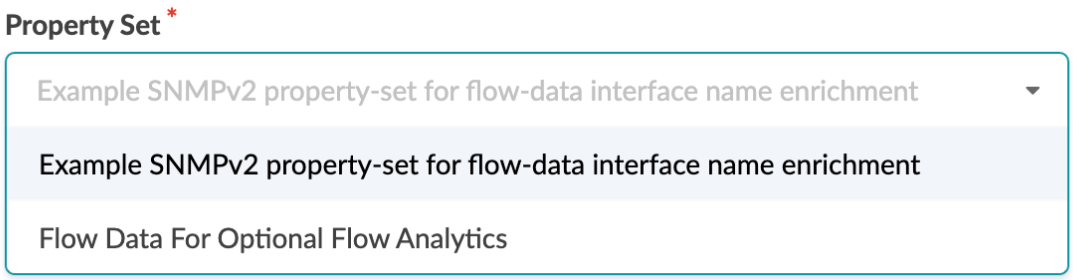
2. From the **Global Catalog**, select **Example SNMPv2 configlet for flow-data interface enrichment**.



   Select the devices you want to apply the configlet to, then click **Import Configlet**.

3. Select the property set to import.

   Under **Property Set**, select **Example SNMPv2 property-set for flow-data interface name enrichment**, then click **Import Property Set**.



4. Edit the property set.

   Add the community string for your SNMP configuration, then click **Update**.

5. Finally, import the property set.

   Commit your configuration to import the configlet to your Junos devices.

4

CHAPTER

Access the Apstra Flow Dashboards

IN THIS CHAPTER

Launch the Apstra Flow Dashboard

IN THIS SECTION

Congratulations! You successfully installed and configured Apstra Flow on your network. Now you're ready to login to the Apstra Flow dashboard to begin analyzing and visualizing your data.

NOTE: You can also access the Apstra Flow dashboard directly from your blueprint in the Apstra GUI. See "Access the Apstra Flow Dashboard from the Apstra GUI" on page 22 for instructions.

To launch the Apstra Flow dashboard:

1. From your browser, enter the IP address or hostname of your Apstra Flow VM.

   https://<ip-or-hostname-of-flow-data-vm>:5601/

2. Login to the Apstra Flow dashboard.

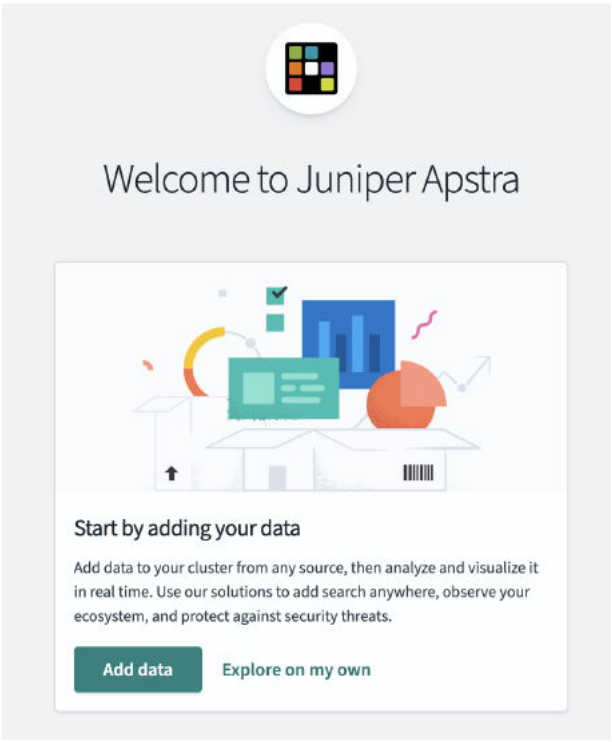
   The default credentials are:

   - Username: `admin`
   - Password: `Apstra-Flow5`

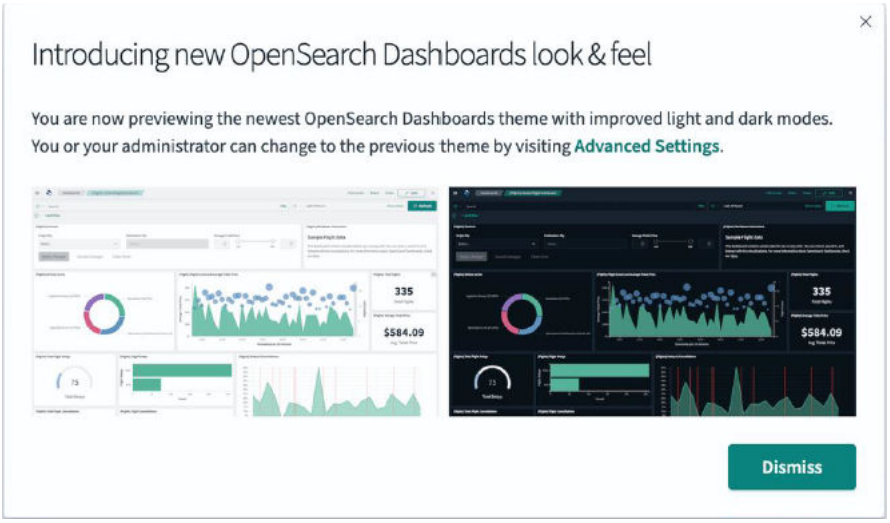
   

   NOTE: We recommend that you change your password after you log in.

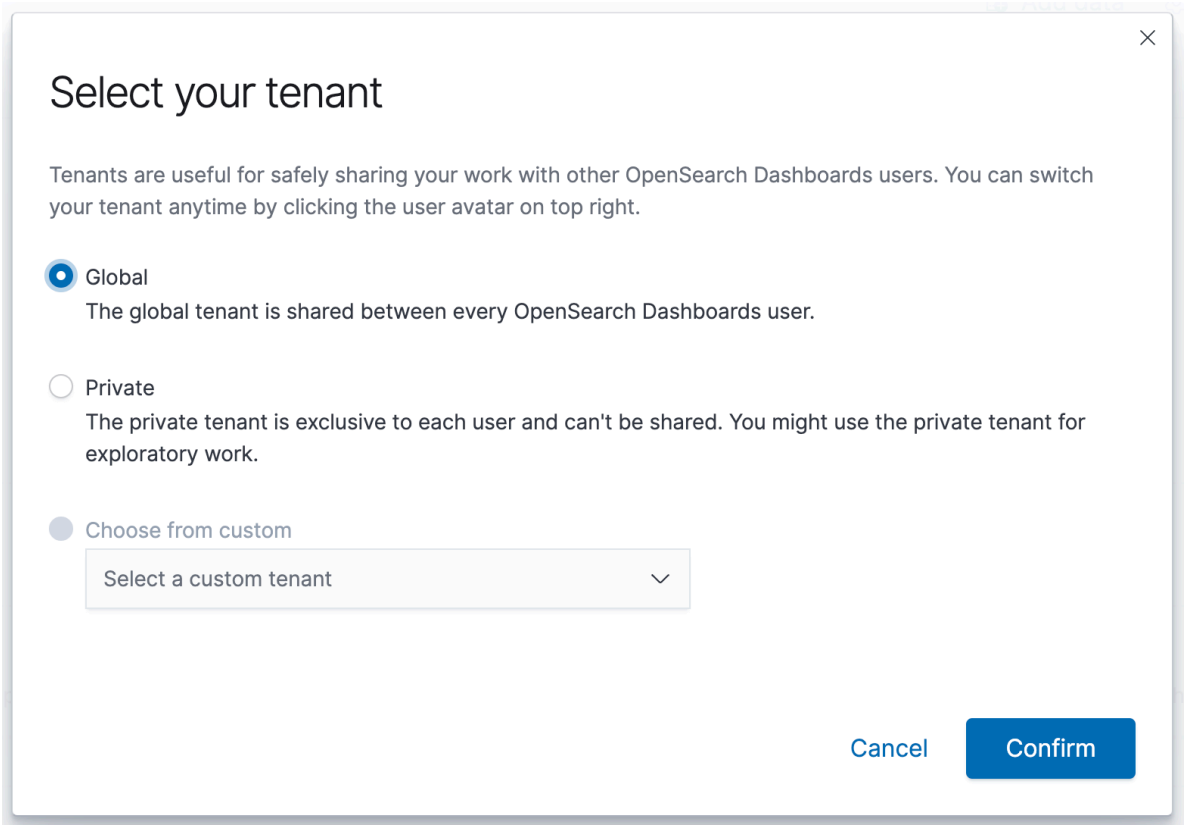
3. From the Welcome page, select **Explore on my own**.



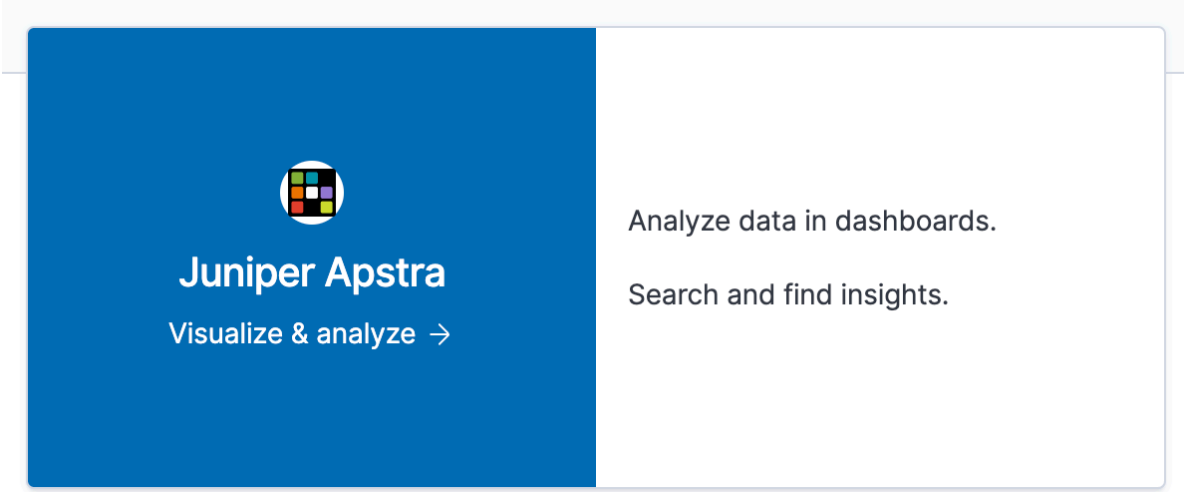
4. From the OpenSearch Dashboards page, click **Dismiss**.



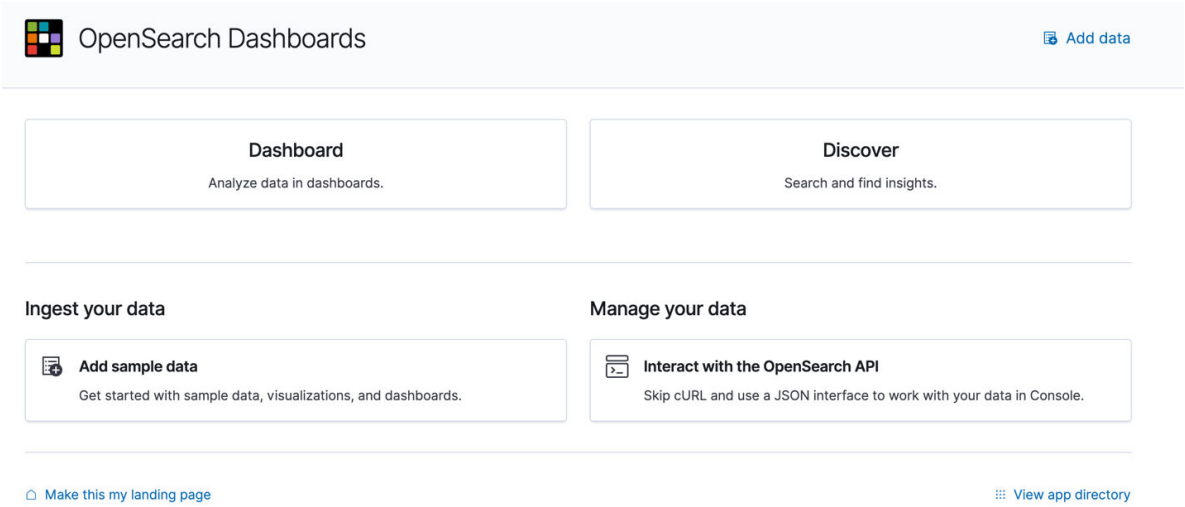
5. Select **Global** as your tenant, then click **Confirm**.



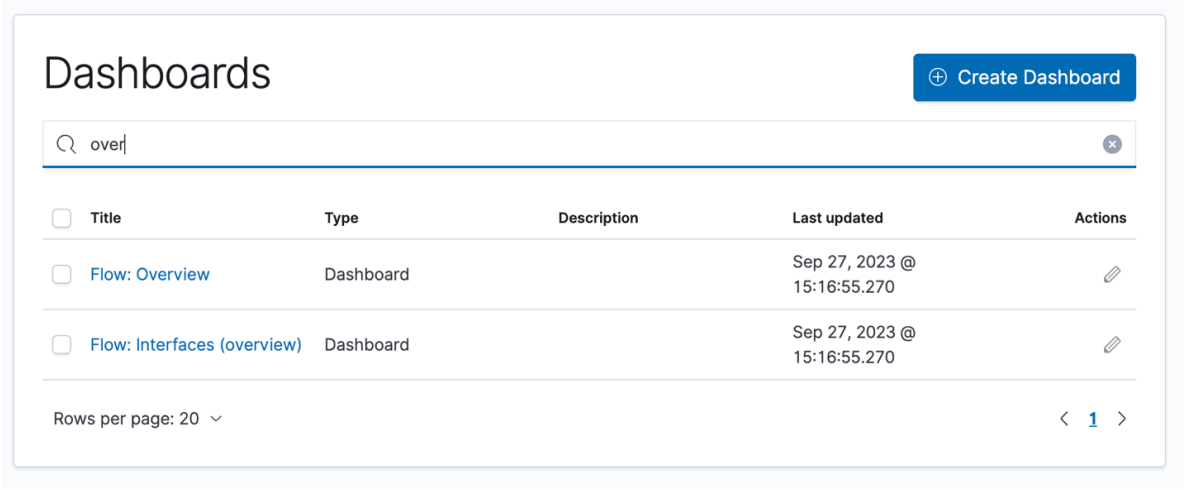
6. Click **Visualize and Analyze**.



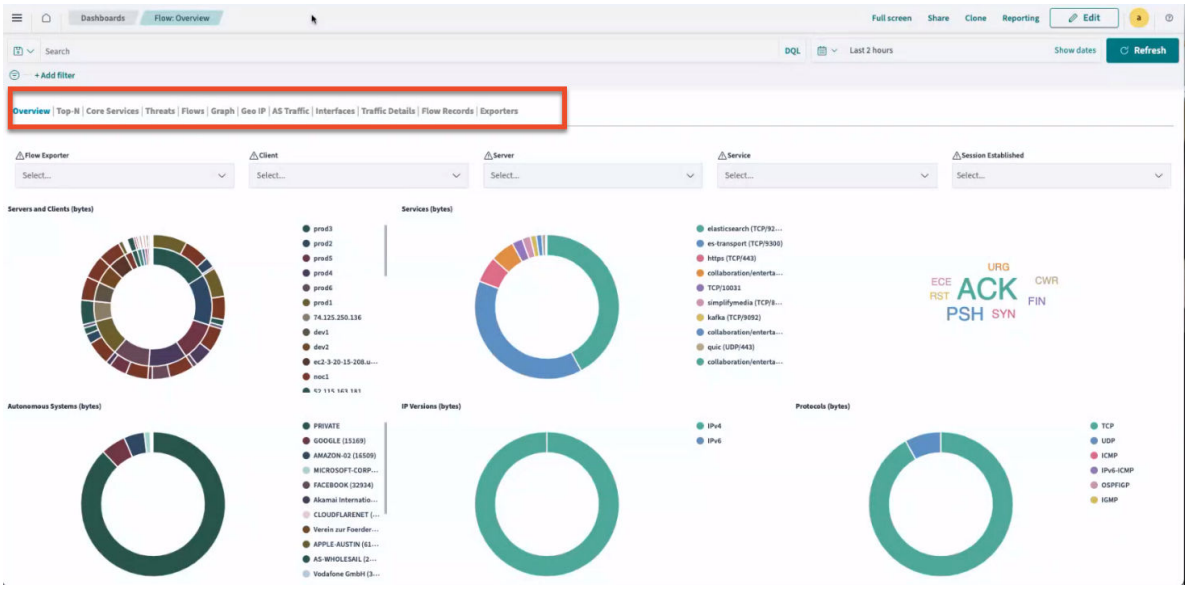
7. Click **Dashboard** from the **OpenSearch Dashboards** page.



8. Search for **Overview** in the Dashboards search bar.



9. Select **Flow: Overview** to see the main dashboard. From here, you can view the various dashboards to analyze and visualize your data. Each dashboard shows a different perspective of your network traffic. For example:



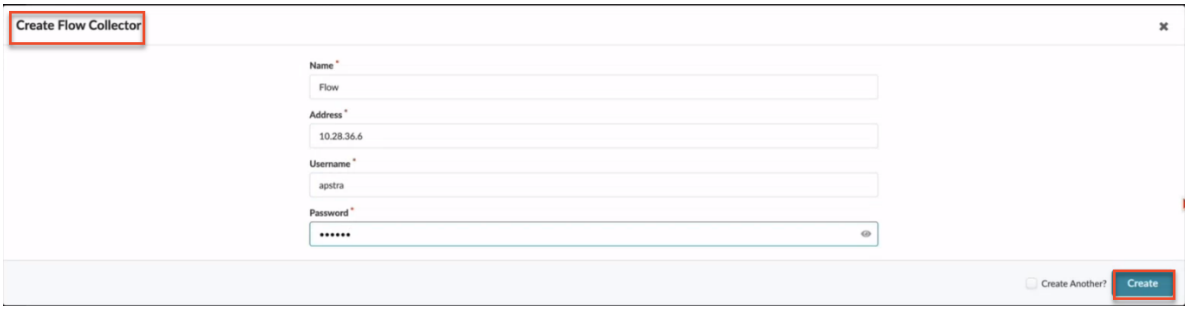
Access the Apstra Flow Dashboard from the Apstra GUI

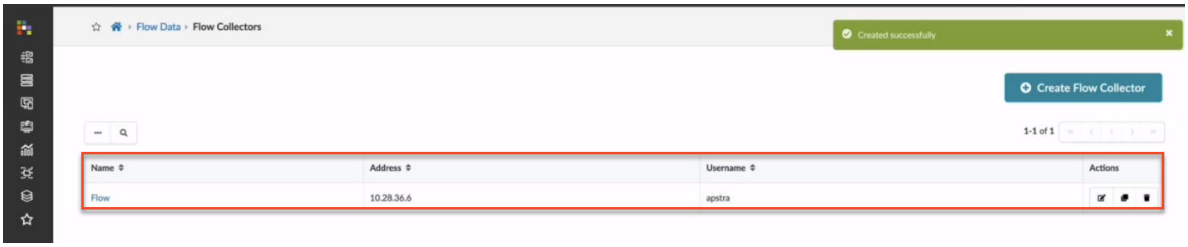
Although Apstra Flow has its own dashboard, you can also link directly to the dashboard from the Apstra GUI.

To access the Apstra Flow dashboard:

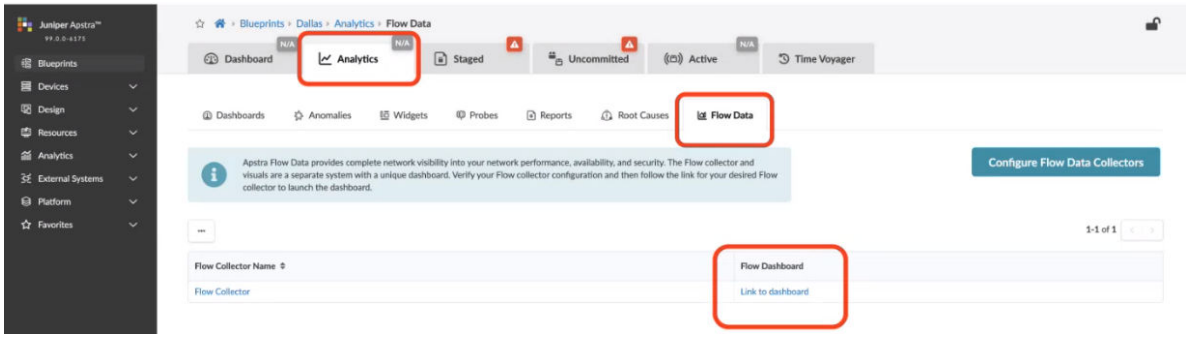
1. From the left navigation menu in the Apstra GUI, select **Analytics > Flow Data > Flow Collector**.
2. Enter the collector name, address, and username, then click **Create**.

   This information tells Apstra where your VM is located so you can access the flow collector and visualization dashboards.





3. From your blueprint, navigate to **Analytics > Flow Data**. Click **Link to dashboard** to link directly to the Flow dashboard.



For more details about Apstra Flow, see the Analytics chapter in the Juniper Apstra 5.0 User Guide.

5
CHAPTER

Upgrade Apstra Flow

IN THIS CHAPTER

Upgrade Apstra Flow on the Same VM (In-Place)

SUMMARY

This topic provides instructions on how to upgrade your Apstra Flow configuration on the same VM. This process is referred to as an "in-place" upgrade.

IN THIS SECTION

Upgrade Apstra Flow

You can run an automated upgrade script (recommended) to easily upgrade your Apstra Flow configuration with minimal downtime. Follow the steps in this procedure to upgrade Apstra Flow from version 4.2.1 to 5.0.0.

NOTE: Make sure that you upgrade to the latest Apstra version before running the upgrade file. You can find the current version by navigating to **Platform > About** in the Apstra GUI. The Apstra version is also shown in the left navigation menu of the GUI under the Juniper Apstra logo. For step-by-step upgrade instructions, see the Juniper Apstra Installation and Upgrade Guide.

To automatically upgrade Apstra Flow:

1. Download the Apstra Flow Upgrade Installer file (apstra-flow-5.0.0-ubuntu-22.04-7.2.1-upgrade.tar.gz) from the Juniper Support Downloads page located under Applications Tools.
2. Log in to the Apstra Flow console. The default credentials are: user=apstra and password=apstra.
3. Verify the flow collector version that is currently installed (in this case, 6.4.2).

```
apstra@apstra-flow:~$ /usr/share/juniper/bin/flowcoll -v
6.4.2.
```

4. Extract the upgrade (tar.gz) file you just downloaded in Step 1. For example:

```
apstra@apstra-flow:~$ tar -xvzf apstra-flow-5.0.0-ubuntu-22.04-7.2.1-upgrade.tar.gz
```

5. When the files have finished downloading, cd to the `/apstra-flow-5.0.0-ubuntu-22.04-7.2.1-upgrade` directory.

```
apstra@apstra-flow:~$ cd apstra-flow-5.0.0-ubuntu-22.04-7.2.1-upgrade/
apstra@apstra-flow:~/apstra-flow-5.0.0-ubuntu-22.04-7.2.1-upgrade$ ls
advanced_settings.ndjson  flow-collector_7.2.1_linux_amd64.deb  opensearch-dashboards_2.16.0_amd64.deb  upgrade.sh
app.log                   opensearch_2.16.0_amd64.deb           README.md
dashboards.ndjson         opensearch-dashboards                 startup
apstra@apstra-flow:~/apstra-flow-5.0.0-ubuntu-22.04-7.2.1-upgrade$
```

> **NOTE**: This folder contains a README.md file that includes steps on how to run a manual installation, if desired.

6. Run the automated upgrade script. Accept the default settings when prompted during the installation. The upgrade will take around 3 to 5 minutes.

```
sudo ./upgrade.sh
```

7. When the installation is complete, verify that the flow collector was upgraded to version 7.2.1.

```
apstra@apstra-flow:~/apstra-flow-5.0.0-ubuntu-22.04-7.2.1-upgrade$ /usr/share/juniper/bin/
flowcoll -v
7.2.1
```

8. Check that your services are active and running.

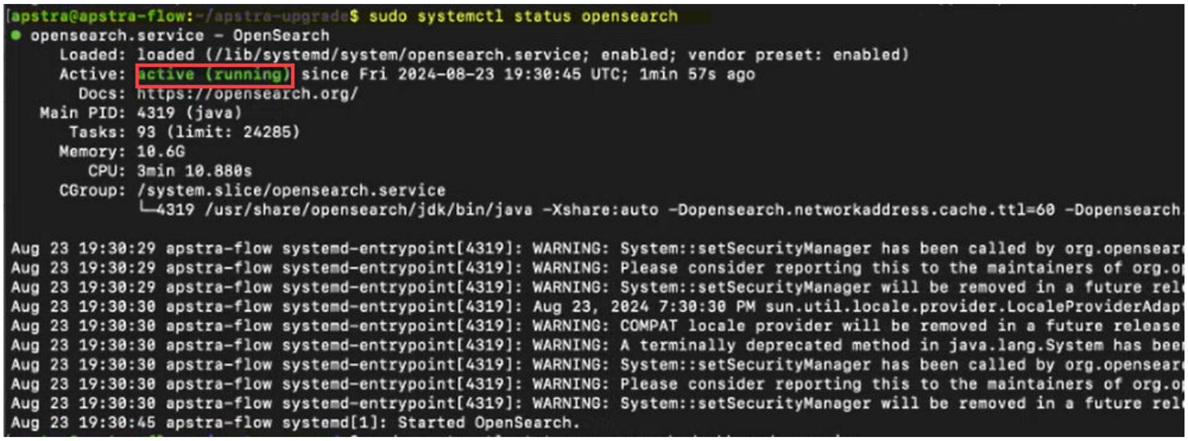
Run the following commands to see the status of the flowcollector, opensearch, and opensearch-dashboard services:

```
sudo systemctl status flowcoll.service
```

```
apstra@apstra-flow:~/apstra-upgrade$ sudo systemctl status flowcoll.service
● flowcoll.service - Flow Collector
     Loaded: loaded (/etc/systemd/system/flowcoll.service; enabled; vendor preset: enabled)
    Drop-In: /etc/systemd/system/flowcoll.service.d
             └─flowcoll.conf
     Active: active (running) since Fri 2024-08-23 19:30:57 UTC; 1min 37s ago
   Main PID: 4715 (flowcoll)
      Tasks: 10 (limit: 24285)
     Memory: 350.6M
        CPU: 5.850s
     CGroup: /system.slice/flowcoll.service
             └─4715 /usr/share/juniper/bin/flowcoll --config /etc/juniper/flowcoll.yml

Aug 23 19:32:21 apstra-flow flowcoll[4715]: 2024-08-23T19:32:21.804Z       info       bootstrapper[opensearch].component_template_manager[opensearch]
Aug 23 19:32:29 apstra-flow flowcoll[4715]: 2024-08-23T19:32:29.920Z       info       bootstrapper[opensearch].component_template_manager[opensearch]
Aug 23 19:32:30 apstra-flow flowcoll[4715]: 2024-08-23T19:32:30.421Z       info       bootstrapper[opensearch].component_template_manager[opensearch]
Aug 23 19:32:30 apstra-flow flowcoll[4715]: 2024-08-23T19:32:30.421Z       info       bootstrapper[opensearch].component_template_manager[opensearch]
Aug 23 19:32:30 apstra-flow flowcoll[4715]: 2024-08-23T19:32:30.421Z       info       bootstrapper[opensearch].component_template_manager[opensearch]
Aug 23 19:32:30 apstra-flow flowcoll[4715]: 2024-08-23T19:32:30.421Z       info       bootstrapper[opensearch].component_template_manager[opensearch]
Aug 23 19:32:30 apstra-flow flowcoll[4715]: 2024-08-23T19:32:30.421Z       info       bootstrapper[opensearch].component_template_manager[opensearch]
Aug 23 19:32:30 apstra-flow flowcoll[4715]: 2024-08-23T19:32:30.421Z       info       bootstrapper[opensearch].component_template_manager[opensearch]
Aug 23 19:32:30 apstra-flow flowcoll[4715]: 2024-08-23T19:32:30.421Z       info       bootstrapper[opensearch].component_template_manager[opensearch]
Aug 23 19:32:30 apstra-flow flowcoll[4715]: 2024-08-23T19:32:30.421Z       info       bootstrapper[opensearch].component_template_manager[opensearch]
```

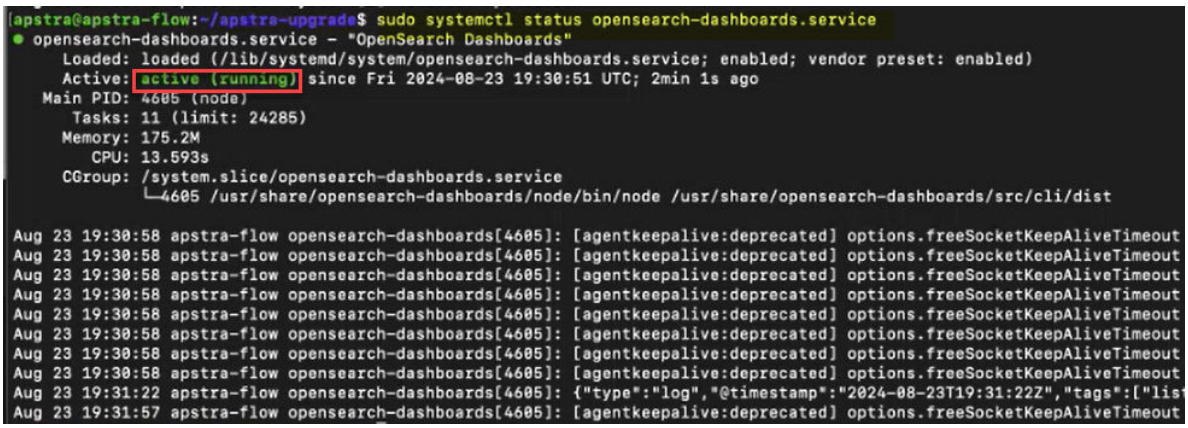
`sudo systemctl status opensearch`



```
[apstra@apstra-flow:~/apstra-upgrade$ sudo systemctl status opensearch
● opensearch.service - OpenSearch
     Loaded: loaded (/lib/systemd/system/opensearch.service; enabled; vendor preset: enabled)
     Active: active (running) since Fri 2024-08-23 19:30:45 UTC; 1min 57s ago
       Docs: https://opensearch.org/
   Main PID: 4319 (java)
      Tasks: 93 (limit: 24285)
     Memory: 10.6G
        CPU: 3min 10.880s
     CGroup: /system.slice/opensearch.service
             └─4319 /usr/share/opensearch/jdk/bin/java -Xshare:auto -Dopensearch.networkaddress.cache.ttl=60 -Dopensearch

Aug 23 19:30:29 apstra-flow systemd-entrypoint[4319]: WARNING: System::setSecurityManager has been called by org.opensear
Aug 23 19:30:29 apstra-flow systemd-entrypoint[4319]: WARNING: Please consider reporting this to the maintainers of org.o
Aug 23 19:30:29 apstra-flow systemd-entrypoint[4319]: WARNING: System::setSecurityManager will be removed in a future rel
Aug 23 19:30:30 apstra-flow systemd-entrypoint[4319]: Aug 23, 2024 7:30:30 PM sun.util.locale.provider.LocaleProviderAdap
Aug 23 19:30:30 apstra-flow systemd-entrypoint[4319]: WARNING: COMPAT locale provider will be removed in a future release
Aug 23 19:30:30 apstra-flow systemd-entrypoint[4319]: WARNING: A terminally deprecated method in java.lang.System has bee
Aug 23 19:30:30 apstra-flow systemd-entrypoint[4319]: WARNING: System::setSecurityManager has been called by org.opensear
Aug 23 19:30:30 apstra-flow systemd-entrypoint[4319]: WARNING: Please consider reporting this to the maintainers of org.o
Aug 23 19:30:30 apstra-flow systemd-entrypoint[4319]: WARNING: System::setSecurityManager will be removed in a future rel
Aug 23 19:30:45 apstra-flow systemd[1]: Started OpenSearch.
```

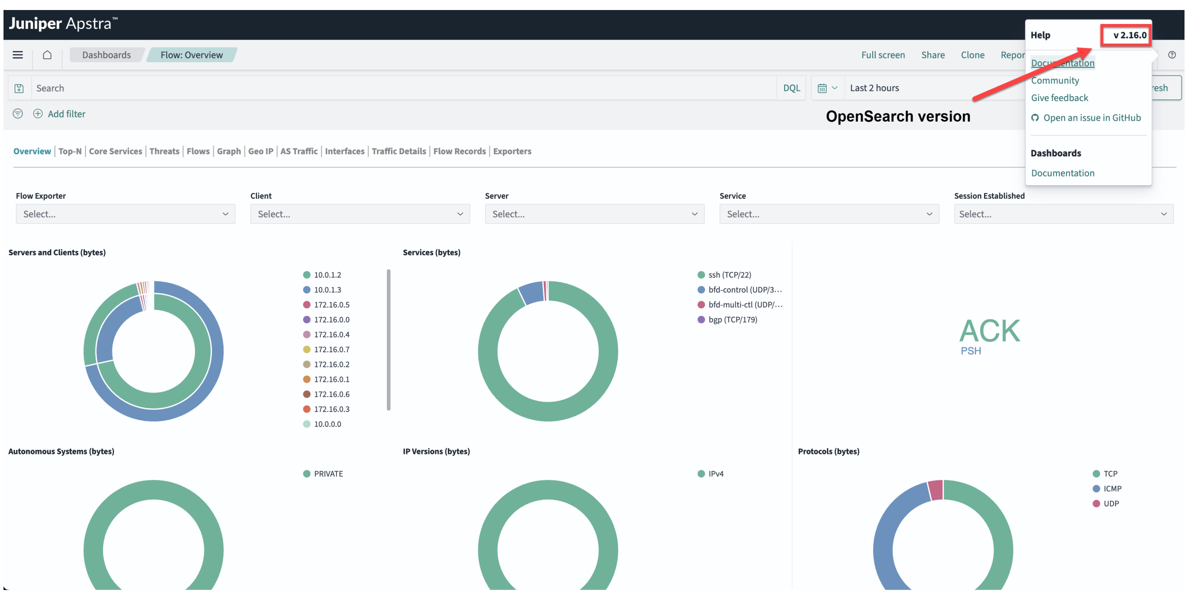
`sudo systemctl status opensearch-dashboards.service`



```
[apstra@apstra-flow:~/apstra-upgrade$ sudo systemctl status opensearch-dashboards.service
● opensearch-dashboards.service - "OpenSearch Dashboards"
     Loaded: loaded (/lib/systemd/system/opensearch-dashboards.service; enabled; vendor preset: enabled)
     Active: active (running) since Fri 2024-08-23 19:30:51 UTC; 2min 1s ago
   Main PID: 4605 (node)
      Tasks: 11 (limit: 24285)
     Memory: 175.2M
        CPU: 13.593s
     CGroup: /system.slice/opensearch-dashboards.service
             └─4605 /usr/share/opensearch-dashboards/node/bin/node /usr/share/opensearch-dashboards/src/cli/dist

Aug 23 19:30:58 apstra-flow opensearch-dashboards[4605]: [agentkeepalive:deprecated] options.freeSocketKeepAliveTimeout
Aug 23 19:30:58 apstra-flow opensearch-dashboards[4605]: [agentkeepalive:deprecated] options.freeSocketKeepAliveTimeout
Aug 23 19:30:58 apstra-flow opensearch-dashboards[4605]: [agentkeepalive:deprecated] options.freeSocketKeepAliveTimeout
Aug 23 19:30:58 apstra-flow opensearch-dashboards[4605]: [agentkeepalive:deprecated] options.freeSocketKeepAliveTimeout
Aug 23 19:30:58 apstra-flow opensearch-dashboards[4605]: [agentkeepalive:deprecated] options.freeSocketKeepAliveTimeout
Aug 23 19:30:58 apstra-flow opensearch-dashboards[4605]: [agentkeepalive:deprecated] options.freeSocketKeepAliveTimeout
Aug 23 19:30:58 apstra-flow opensearch-dashboards[4605]: [agentkeepalive:deprecated] options.freeSocketKeepAliveTimeout
Aug 23 19:30:58 apstra-flow opensearch-dashboards[4605]: [agentkeepalive:deprecated] options.freeSocketKeepAliveTimeout
Aug 23 19:31:22 apstra-flow opensearch-dashboards[4605]: {"type":"log","@timestamp":"2024-08-23T19:31:22Z","tags":["lis
Aug 23 19:31:57 apstra-flow opensearch-dashboards[4605]: [agentkeepalive:deprecated] options.freeSocketKeepAliveTimeout
```

9. Finally, reopen the "Flow: Overview" on page 18 dashboard from the Apstra GUI. Then, from the Help option "?" icon, verify that OpenSearch was updated to v2.16.0.



Congratulations! You have successfully upgraded your Apstra Flow configuration. You can now start using the new features for Apstra 5.0.0.