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## **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.



# Juniper Apstra Flow Overview

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## **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. By doing so, it 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

Provides granular information about network traffic flows, congestion, high latency, and packet loss.

#### • Capacity planning and cost control

Enables you to implement strategies to optimize the flow of network traffic, ensuring the most efficient use of available resources.

• Security

Improves security by detecting and responding to threats more effectively while maintaining compliance with regulatory requirements.

WithApstra Flow, you gain a powerful toolset to optimize and fortify your network infrastructure.

**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.



# Get Started with Juniper Apstra Flow

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## **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.
<b>Medium</b> 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
<b>Large</b> 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. If you have an extra-large or custom deployment, we recommend that you create a multinode cluster. See "Create an OpenSearch Multinode Cluster (Optional)" on page 10.

\*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.



# Install and Configure Apstra Flow

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## **Configure Your Network and Flow Collector**

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- Configure the Flow Collector | 9

**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: You can install KVM with Virtual Machine 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.yam1
```

```
#
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 <-</pre>
```

```
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)

**NOTE**: Optionally, you can create a VM with a multinode cluster for scaling and high availablity. See "Create an OpenSearch Multinode Cluster (Optional)" on page 10 for more information.

### **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:
  - Set EF\_JUNIPER\_APSTRA\_API\_HOSTNAME to the Apstra controller IP or hostname (for example: 10.0.0.3)
  - Set EF\_JUNIPER\_APSTRA\_PORT: 443 (this is the default port)
  - Set EF\_JUNIPER\_APSTRA\_API\_USERNAME to the Apstra controller username (for example: admin)
  - Set EF\_JUNIPER\_APSTRA\_API\_PASSWORD to the Apstra controller password (for example: 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 13.

## Create an OpenSearch Multinode Cluster (Optional)

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- Multinode Roles and Configurations | 13

If you have an extra-large or custom deployment that requires more scale than those referenced in "Apstra Flow Scaling Considerations" on page 4, we recommend that you create an OpenSearch multinode cluster. A multinode cluster is a collection of nodes, that work together as a single unit. A multinode cluster can scale to hundreds of nodes, ensures high availability, and prevents downtime.

### Create a Multinode Cluster

To create a multinode OpenSearch cluster, follow these steps:

- **1.** Configure the node type and associated roles.
  - a. From the CLI, run /usr/local/bin/startup.
  - b. Choose the node type from the TUI (text-based UI).

You can choose from Data Node, Cluster Manager Node, or Coordinating Node. For descriptions about the different node types, see "Multinode Roles and Configurations" on page 13.



c. Select Quit.

When the TUI closes, the node name and node type are automatically set.

- d. Repeat steps 1 through 3 for each node in your configuration.
- 2. Configure the cluster.

Edit the opensearch.yaml file to set the IP address on all nodes in the cluster. For example:

# set the node names for the manager nodes

cluster.initial\_cluster\_manager\_nodes: ["node-1", "node-2", "node-3"]
# Set the ip addresses of the other nodes in the cluster
discovery.seed\_hosts: ["node-1-ip", "node-2-ip", "node-3-ip"]

**3.** Restart OpenSearch for the changes to take affect.

```
sudo systemctl restart opensearch
```

4. Run the following command to verify that cluster was successfully created.

curl -X GET "http://node-1-ip:9200/\_cluster/health?pretty"

In the results output, the status has three possible values as described below. In this example, the green signifies that the cluster is healthy.

- green: All primary and replica shards are active.
- yellow: All primary shards are active, but some replica shards are unassigned.
- red: Some primary shards are not active.



### Multinode Roles and Configurations

#### Data node

Stores data and participates in the cluster's indexing and search capabilities. Start with 2+ nodes and add more as data volumes grow.

#### • Cluster manager node

Manages the overall operation of a cluster and keeps track of the cluster state. Use odd numbers (3 or 5) for quorum. Avoid using an even number, which can cause instability.

#### • Coordinating (client) node

Manages search and indexing requests, and helps distribute the load across the cluster. Use 2 to 3 nodes to offload data nodes.

#### **Scaling Considerations**

#### • Extra large or custom sizing options

We recommend that you transition to a multinode cluster if you are processing over 1 TB of data or greater than 15,000 FPS. You might also want to consider a multinode cluster if you require OpenSearch to be highly available.

#### • Odd versus even number of nodes

For cluster manager nodes, always maintain an odd number to ensure a quorum. You can configure data, ingest and client nodes based on workload without this restriction.

#### • Minimum node counts

For a production environment, a minimum of three nodes is recommended to ensure fault tolerance (three cluster manager nodes and at least two data nodes).

## **Apply Your License**

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## Apply Your License in Apstra

#### IN THIS SECTION

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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**.

Juniper Apstra™ 99.0.0-6175	☆ 谷 → Platform → Lice	nses					
чы манди м							
🛱 Resources 🗸 🗸						• Create L	icense
🖬 Analytics 🗸 🗸						L	
没 External Systems ~	Q					1-1 of 1 🔍 c 👘	
Platform ^							
User Management	ID \$	Feature Name \$	Description	License Key	Start Date 🗢	Expiration Date \$	Actions
Users	TRIALJUNOS	Apstra Premium	Premium feature set - more than 3 blueprints, non-Juniper fabrics, policy assurance, flow		2023-10-15, 19:00:00	2023-12-15, 18:00:00	
- Roles							
Security							
Allowed List							
Banned List							
ACL							
Ratelimit Configuration							
Password Complexity							
External Services							
Syslog Configuration							
Streaming							
- Receivers							
Global Statistics							
Event Log							
Licenses							
Apstra Cluster							
Developers							
Technical Support							
<ul> <li>About</li> </ul>							
☆ Favorites ✓							
•• & ⊬							

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

Create License		×
	License Key*	
		Create Another?

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

☆ 🏠 → Platform → I	Licenses					
					Create	License
Q					1-1 of 1	
ID ¢	Feature Name \$	Description	License Key	Start Date \$	Expiration Date \$	Actions
JUNOS161254970	Apstra Premium	Premium feature set - more than 3 blueprints, non-Juniper fabrics, policy assurance, flow	•	2023-09-06, 19:00:00	2028-09-05, 19:00:00	

#### **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 Apstra Flow Configlet" on page 15.

## Import the Junos Apstra Flow Configlet

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- Configure SNMP for Interface Name Enrichment | 18

### Import the Configlet

A standard Junos sFlow confliget 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 Apstra Flow Configlet" on page 17).

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**.

☆ 🎓 → Bluepr	ints > asptra-pod1	Staged ► Cat on alytics	alog ⊦ Config ∎ Stage	lets ed	⇔ Uncommit	<b>2</b> ted ((四))	Active	3 Time Voyager	>_ ≞
Ø Search					_		Q		<b>T</b> Find by tags
Physical	్రి స్రిం Virtual	Policies	DCI	E Catalog	Z Tasks	Connectivity	Templates	ে পঞ্জ Fabric Settings	
Logical Devices	Interface Maps	Property Sets	Configlets	AAA Servers	Tags				

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

### Import Configlet from Global Catalog



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

How Data For Optional How Analytics	
Input Type	
O Editor 🔘 Builder	
Values *	JSON YAML
1 collector_ip: IP_OF_FLOW_VM	
2	

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

#### Import Property Set from Global Catalog

Flow Data For Optional Flow Analytics	-
Flow Data For Optional Flow Analytics	

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 21.

### **Example: Junos Apstra Flow Configlet**

The following example shows the Junos Apstra Flow configlet provided with your product.

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 {
```

### Configure SNMP for Interface Name Enrichment

Optionally, you can display the actual interface names (for example, xe-0/0/1) instead of the interface indexes values. To do this, Apstra Flow needs to query the devices through SNMP 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 > Analytics > Staged**. From the **Catalog** tab, select **Configlets**, then click **Import Configlet**.

☆       ♣ > Blueprints > asptra-pod1 > Staged > Cat         ③       O         ④       △         Analytics	talog > Configlets	uncommitted	(四) Active	3 Time Voyager	>♣
<ul> <li>Search</li> <li>Image: Search → Sear</li></ul>	🔮 🖉 😨 Catalog	I Tasks	Q,	€ ¶⊛ Fabric Settings	<b>T</b> Find by tags
Logical Devices Interface Maps Property Sets	Configlets AAA Server	Tags			Import Configlet

2. From the Global Catalog, select SNMP for Flow Data Interface Enrichment.

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

### Import Configlet from Global Catalog

Configlet *	
Flow Data For Optional Flow Analytics	
Flow Data For Optional Flow Analytics	
NXOS Hardware TCAM Carving - HW	
NXOS L2-Hardware TCAM Carving - HW	
NXOS Software TCAM Carving	
SNMP for Flow Data Interface Enrichment	

3. Edit the property set to add the community string for your SNMP configuration, then click Update.

#### Edit Property Set

Input Type	
Values*	JSON YAMI
1 snmp_community: public	

4. Under Property Set, select SNMP for Flow Data Interface Enrichment, then click Import Property Set.

### Import Property Set from Global Catalog

Flow Data For Option	al Flow Analytics	
Flow Data For Option	al Flow Analytics	

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



# Access the Apstra Flow Dashboards

Launch the Apstra Flow Dashboard | 21

## Launch the Apstra Flow Dashboard

#### IN THIS SECTION

• Access the Apstra Flow Dashboard from the Apstra GUI | 25

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 25 for instructions.

To launch the Apstra Flow dashboard:

- 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.

		$\times$
Se	elect your tenant	
Tena your	ants are useful for safely sharing your work with other OpenSearch Dashboards users. You can switch tenant anytime by clicking the user avatar on top right.	
ס <b>ס</b> ד	Global The global tenant is shared between every OpenSearch Dashboards user.	
⊖ F T €	Private The private tenant is exclusive to each user and can't be shared. You might use the private tenant for exploratory work.	
	Choose from custom	
	Select a custom tenant 🗸	
	Cancel Confirm	

6. Click Visualize and Analyze.



7. Click Dashboard from the OpenSearch Dashboards page.

OpenSearch Dashboards	🗟 Add data
Dashboard Analyze data in dashboards.	Discover Search and find insights.
Ingest your data	Manage your data
Add sample data           Get started with sample data, visualizations, and dashboards.	Skip cURL and use a JSON interface to work with your data in Console.
<ul> <li>Make this my landing page</li> </ul>	III View app directory

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

⊖ over				×
Title	Туре	Description	Last updated	Actions
Flow: Overview	Dashboard		Sep 27, 2023 @ 15:16:55.270	Ø
Flow: Interfaces (overview)	Dashboard		Sep 27, 2023 @	Ø

**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:

Dashboards	low: Overview	•				Full screen Sha	re Clone Reporting	👂 Edit 🔹 💿
😰 🗸 Search					DQL 📋 ~	Last 2 hours	Show	dates C Refresh
+ Add filter								
Complete Tan H Care Services The	ante   Elenna   Granda   Gao IB   AS Tan	fic Interfaces Traffic Datails   Flow Bacon	is Departure					
overview   top-in   core services   third	ead   Hows   Graph   Geo IP   AS The	me   menaces   frame becaus   Pow Record	as exporters					
A Flow Exporter	<u>∧</u> Client		▲Server		<b>≜</b> Service		<b>≜</b> Session Established	
Select	✓ Select	~	Select	~	Select	~	Select	~
Servers and Clients (bytes)		Services (bytes)						
		● prod3		• •	asticsearch (TCP/92			
		• prod2		•	s-transport (TCP/9300)			
		e prodS		• •	ttps (TCP/443)		URG	
		prode			CP/10031	EC	E ACK CWR	
		prod1			mplifymedia (TCP/8	RS	T ACK FIN	
		74.125.250.136		• k	afka (TCP/9092)		PSH SYN	
E		• dev1		• •	allaboration/enterta			
		dev2		🔵 q	uic (UDP/443)			
		ec2-3-20-15-208.u		• 0	ollaboration/enterta			
		nocl						
		A 52 115 163 181						
Autonomous Systems (bytes)		IP Versions (bytes)			Protocols (by	bes)		
		PRIVATE		• 1	Pe4			TCP
		GOOGLE (15169)		• 0	hv6			O UDP
		AMAZON-02 (16509)						ICMP
		MICROSOFI-CORP						IPV6-ICMP     OFREIGE
		Akamai Internatio						e IGMP
		CLOUDFLARENET (						
		Verein zur Foerder…						
		APPLE-AUSTIN (61						
		AS-WHOLESAIL (2						
		Vodafone GmbH (3						

## 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.

te Flow Collector			
	Name *		
	Flow		
	Address *		
	10.28.36.6		
	Username *		
	apstra		
	Password *		
		0	
슈 🏶 + Flow Data + Flow	Dilectors		Create Another? Cr
☆ 🧌 + Flow Data + Flow	Collectors	Created successfully	Greate Another?
순 🏘 + Flow Data + Flow	Collectors	Created successfully	Create Another? Cr
☆ 希 + Flow Data + Flow	Collectors	Created successfully	Create Another? Cr Create Flow Collector 1-1 of 1 ()
☆ ♠ + Row Data + Row Q Name ♥	Collectors Address 0	Created successfully Username ®	Create Another? Cr Create Flow Collector 1-1 of 1 = ( ) Actions

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

Juniper Apstra <sup>w</sup> 99.0.0-6175		☆ W : Blueprints : Dallas : Analytics : Flow Data	-
留 Blueprints		Dashboard 🗠 Analytics 🝙 Staged 🚆 Uncommitted ((D)) Active 🗇 Time Voyager	
E Devices	~		
2 Design	~	@ Dashboards ☆ Anomalies 适 Widgets @ Probes ④ Reports ① Root Causes 설 Flow Data	
🛱 Resources	~		
a Analytics	~	Apstra Flow Data provides complete network visibility into your network performance, availability, and security. The Flow collector and	Configure Flow Data Collectors
经 External Systems	~	visuals are a separate system with a unique dashboard. Verify your Flow collector configuration and then follow the link for your desired Flow collector to launch the dashboard.	
Platform	~		
☆ Favorites	~	-	1-1 of 1 < 🕤
		Flow Collector Name  Flow Dashboard Flow Collector Unix to dashboard Unix to dashboard	

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



# Upgrade Apstra Flow

Upgrade Apstra Flow on the Same VM (In-Place) | 28

#### 28

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

#### SUMMARY

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

## Upgrade Asptra Flow

You can run an automated upgrade script (recommended) to easily upgrade your Asptra Flow configuration with minimal downtime. Follow the steps in this procedure to upgrade Asptra 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 Installation and Upgrade Guide.

To automatically upgrade Asptra Flow:

- **1.** Download the Apstra Flow upgrade file (apstra-flow-5.0.0-ubuntu-22.04-7.2.1-upgrade.tar.gz) from the Juniper Support Downloads page located under Applications.
- 2. Log in to the Asptra 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 a	apstra-flow-5.0.0-ubuntu-22.04-7.2.1-up	pgrade/			
apstra@apstra-flow:~/apstra-flow-5.0.0-ubuntu-22.04-7.2.1-upgrade\$ ls					
advanced_settings.ndjson	<pre>flow-collector_7.2.1_linux_amd64.deb</pre>	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\$					

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**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 opensearchdashboard services:

sudo systemctl status flowcoll.service

[apstra@apstra-flow:-/apstra-upgrade\$ sudo systemctl status flowcoll.servic	e	
flowcoll.service - Flow Collector		
Loaded: loaded (/etc/systemd/system/flowcoll.service; enabled; vendor	preset: enal	bled)
Drop-In: /etc/systemd/system/flowcoll.service.d		
L_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/flowcollconfig /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	<pre>bootstrapper[opensearch].component_template_manager[opensearch]</pre>
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

```
$ 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
      23 19:30:29 apstra-flow systemd-entrypoint[4319]: WARNING: System::setSecurityManager has been called by org.op
     23 19:30:29 apstra-flow systemd-entrypoint[4319]: WARNING: Please consider reporting this to the maintainers of org.o
23 19:30:29 apstra-flow systemd-entrypoint[4319]: WARNING: System::setSecurityManager will be removed in a future rel
23 19:30:30 apstra-flow systemd-entrypoint[4319]: Aug 23, 2024 7:30:30 PM sun.util.locale.provider.LocaleProviderAdap
23 19:30:30 apstra-flow systemd-entrypoint[4319]: WARNING: COMPAT locale provider will be removed in a future release
23 19:30:30 apstra-flow systemd-entrypoint[4319]: WARNING: A terminally deprecated method in java.lang.System has bee
23 19:30:30 apstra-flow systemd-entrypoint[4319]: WARNING: A terminally deprecated method in java.lang.System has bee
      23 19:30:30 apstra-flow systemd-entrypoint[4319]: WARNING: System:setSecurityManager has been called by org.opensea
23 19:30:30 apstra-flow systemd-entrypoint[4319]: WARNING: Please consider reporting this to the maintainers of org.o
Aug
                           apstra-flow systemd-entrypoint[4319]: WARNING: System::setSecurityManager will be removed in a future
           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: 4685 (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":["list
Aug 23 19:31:57 apstra-flow opensearch-dashboards[4605]: [agentkeepalive:deprecated] options.freeSocketKeepAliveTimeout

**9.** Finally, reopen the Asptra Flow dashboards from the Apstra GUI and verify that OpenSearch was updated to v2.16.0.

<b>Juniper</b> Apstra <sup>™</sup>					Help v 2.16.0	
E 🛆 Dashboards Flow: Overview Full screen Share Clone Repo					Documentation	٢
🖾 Search			DQL 🛗 🗠 Last 2 hours	/	Community Give feedback	sh
· ⊕ Add filter			OpenSearch ve	rsion	O Open an issue in GitHub	
Overview   Top-N   Core Services   Threats   Flows   Graph   Geo IP   AS Traffic   Interfaces   Traffic Details   Flow Records   Exporters					Dashboards	
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Congratulations! You have successfully upgraded your Apstra Flow configuration. You can now start using the new features for Apstra 5.0.0.