

Cisco Nexus Dashboard Insights Getting Started, Release 6.5.x - For Cisco NDFC or Standalone NX-OS

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New and Changed Information

The following table provides an overview of the significant changes up to the current release. The table does not provide an exhaustive list of all changes or of the new features up to this release.

New Features and Changed Behavior in the Cisco Nexus Dashboard Insights

Feature	Description	Release	Where Documented
Nexus Dashboard Insights backup and restore	The Nexus Dashboard Insights 6.5.1 release introduces the unified backup and restore functionality at the Cisco Nexus Dashboard level, which backs up configuration information not only for Nexus Dashboard, but also for any services (such as Nexus Dashboard Insights) running in that Nexus Dashboard.	6.5.1	Nexus Dashboard Insights backup and restore
Terminology change	The term " sites" is renamed to " fabrics" .	6.5.1	Entire document

This document is available from your Nexus Insights GUI as well as online at www.cisco.com. For the latest version of this document, visit Cisco Nexus Dashboard Insights Documentation.

Cisco Nexus Dashboard Insights Setup

Meet Nexus Dashboard Insights

Cisco Nexus Dashboard Insights (Nexus Dashboard Insights) is a single-pane-of-glass console that streamlines data center network operations and management.

Nexus Dashboard Insights consists of the following components:

- **Overview**: Provides basic information about your fabric and Nexus Dashboard Insights.
  - **Global View**: Provides a bird's-eye view of your global network infrastructure.
  - **Journey: Getting Started**: Helps you to set up your fabrics in Nexus Dashboard Insights and provides an overview of some of the key features. The **What's New** tab provides you with information about updates and new features in the platform.
  - **Topology**: Visualizes interconnectivity of the switches in Nexus Dashboard Insights and their connected components, such as devices and endpoints.
  - **Custom Dashboards**: Enables you to create dashboards to which you can pin pages that you use frequently. These pages appear as widgets in the dashboard, which you can click to go to those pages easily.
- Manage: Provides a deeper look into your network infrastructure and its operations.
  - Fabrics: Fabrics are on-premises network regions that consist of a group of switches and other networking devices that provide connectivity for your applications and endpoints.
  - Inventory: Displays information about your switches and controllers.
  - Rules: Enables you to manage your fabric's anomalies and advisories configuration.
  - Software Management: Allows you to easily manage the software running on all your devices from a single place, install updates, and perform pre and post-update analysis.
- Analyze: Allows you to go back in time and let analytics help you understand historical network patterns.
  - Anomalies: Allows you to proactively detect different types of anomalies across the network, analyze the anomalies, and identify remediation methods.
  - Advisories: Provides recommendations to keep your network under support and running in optimal conditions.
- Analysis Hub: Enables you to analyze and troubleshoot your network with advanced analytics tools optimized for you to gain valuable insights into the performance and health of your network.
  - Sustainability: Explore your fabric's energy usage, cost, and emissions.
  - Conformance: Keep track of your hardware and software life cycles.
  - Compliance: Monitor your fabric's compliance with custom anomaly rules.
  - Connectivity Analysis: Analyze flows from one endpoint to another.
  - Delta Analysis: Compare configurations and differences in your fabrics between two points in time.
  - Pre-Change Analysis: View the potential impact of configuration changes.
  - Log Collector: Collect and analyze logs from you devices

    - Policy CAM: Monitor your network's policies.
    - Traffic Analytics: Monitor your network's latency, congestion, and drops.
    - Bug Scan: Learn more about active and potential bugs affecting your network.
- Admin:
    - Integrations: Allows you to add integrations such as AppDynamics, vCenter, DNS, and Nexus Dashboard Orchestrator.
    - Configuration Import/Export: Enables you to import and export the configurations in Nexus Dashboard Insights.

Initial Setup

The following workflow will guide you through the configurations required for the initial setup. After you add a fabric, you can enable or configure the relevant features. You do not have to follow a sequential order to proceed with these tasks. You can perform or enable the tasks in any order.

- Add fabrics. See Add Fabrics. For prerequisites and guidelines see Fabrics.
- Fabric Analysis. See Fabric Analysis.
- Configure Flows. See Configure Flows.
- Export Data. See Export Data.
- System Status. See System Status.
- Bug Scan. See Bug Scan.

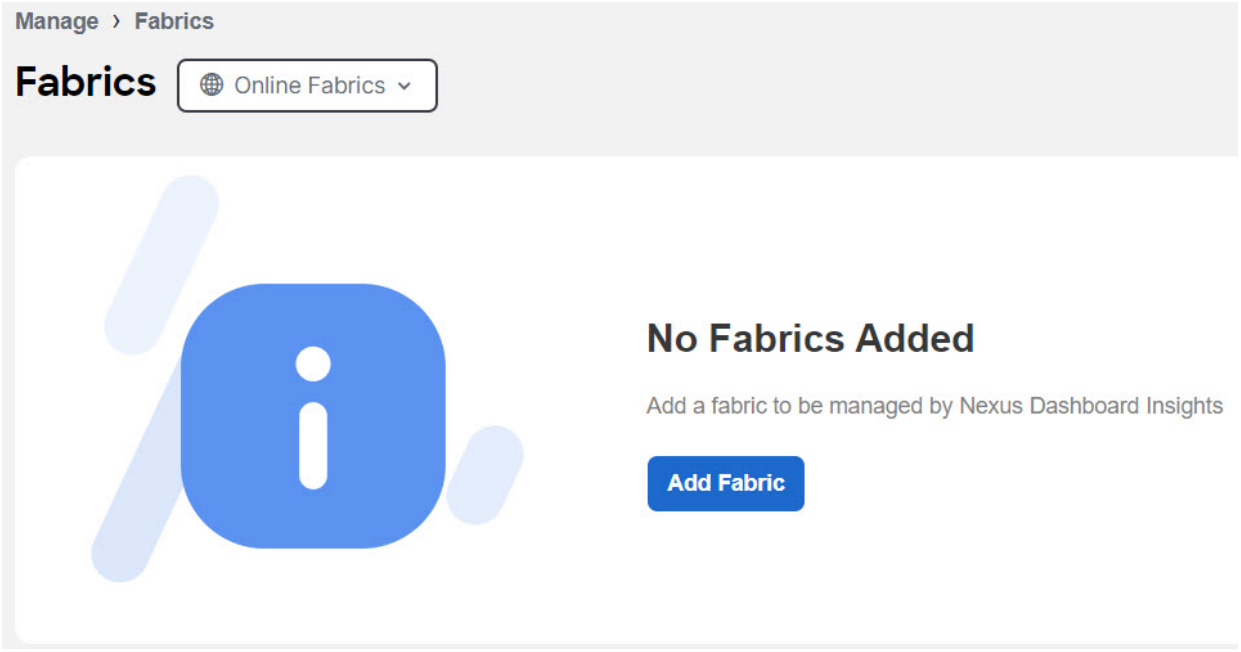
Add Fabrics

You can add a fabric to Nexus Dashboard Insights using the following methods:

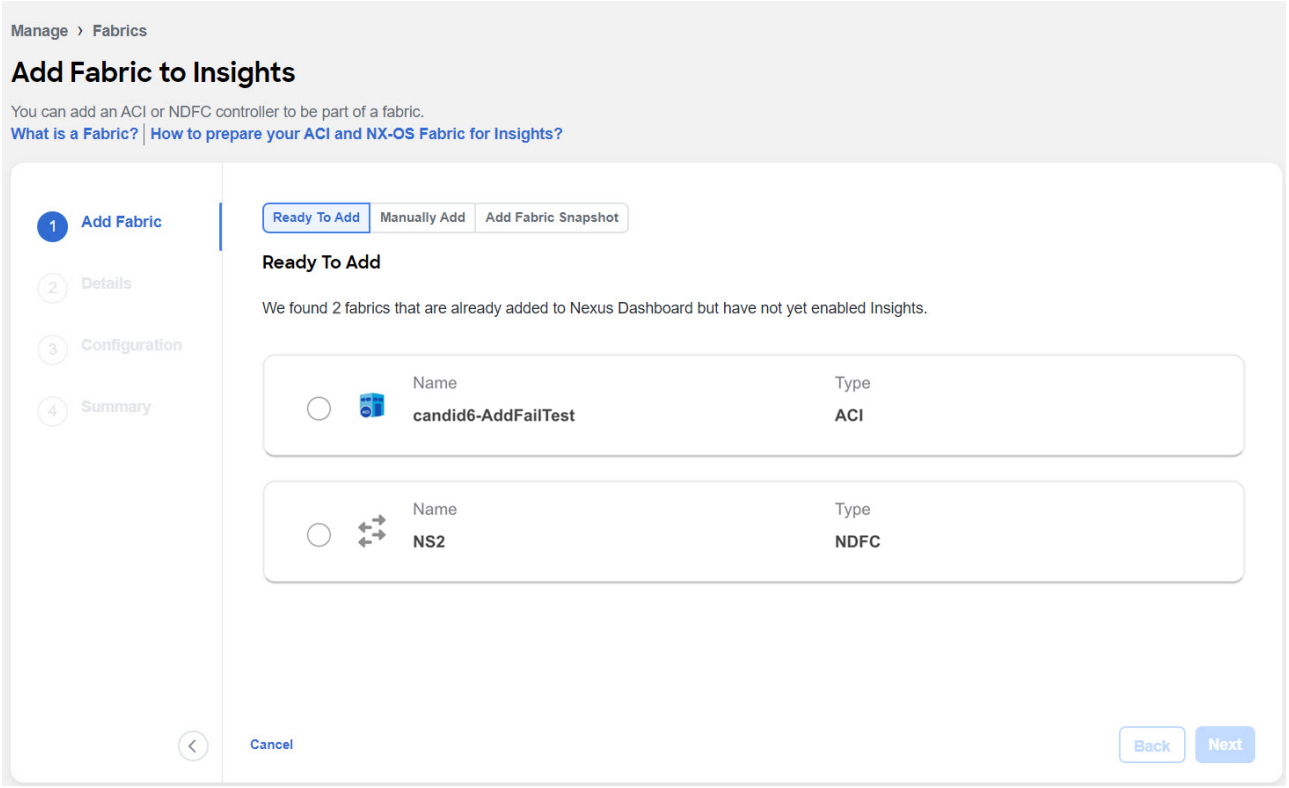
- Online Fabrics
    - Enable the fabric that has already been added to Nexus Dashboard. Fabrics added to the Nexus Dashboard are not enabled in the services by default, so you will need to explicitly enable them directly from Nexus Dashboard Insights.
    - Add a fabric to Nexus Dashboard and then enable the fabric in a single workflow in Nexus Dashboard Insights.
- Snapshot fabrics
    - Add a snapshot fabric.

Add an Online NDFC Fabric

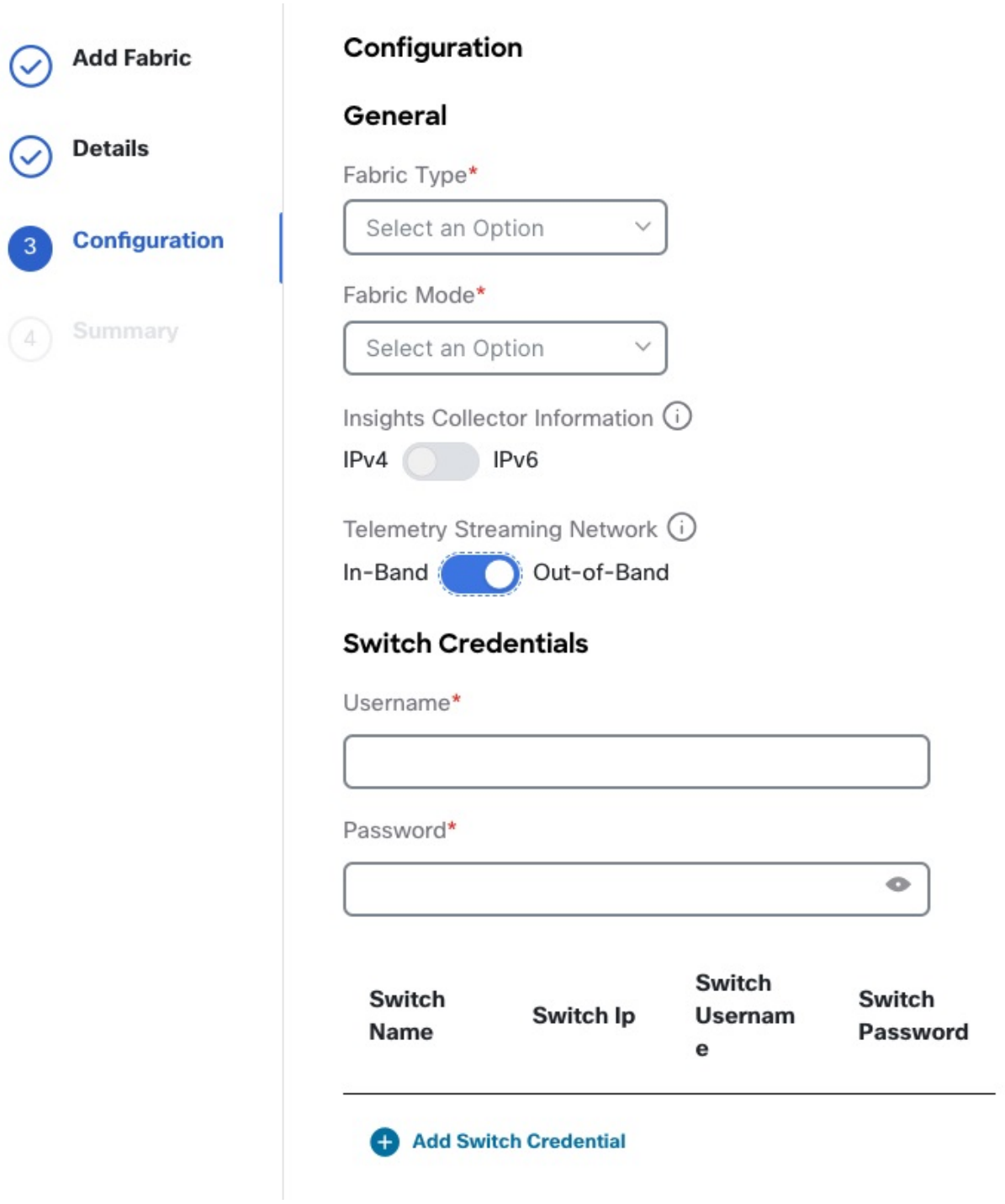
1. Navigate to **Manage** > **Fabrics**.
2. Click **Add Fabric**.
    a. If you are adding a fabric in Nexus Dashboard Insights for the very first time, you will receive the following message. Click **Add Fabric** to proceed.



3. To enable a fabric that has been already added to Nexus Dashboard, select **Ready to Add**. The fabrics added to Nexus Dashboard are displayed. To add a fabric to Nexus Dashboard, see Cisco Nexus Dashboard Fabrics Management.



4. Complete the following fields for **Ready to Add**.
   a. Select the fabric.
   b. Click **Next**.
   c. Select the fabric location from the map to identify the fabric on Nexus Dashboard.
   d. Click **Next**.



e. From the **Fabric Type** drop-down list, select the fabric type. The options are **Classic**, **VXLAN** or **SR-MPLS**. Choose SR-MPLS option to set up flows for SR-MPLS in a NX-OS fabric. Enhanced Classic LAN is not supported for NDFC fabrics.

f. From the **Fabric Mode** drop-down menu, select the fabric mode. The options are **Managed** or **Monitored**. In Managed mode, Nexus Dashboard Insights will deploy telemetry configuration to all switches in the fabric. In monitored mode, Nexus Dashboard Insights will not deploy telemetry configuration to all switches in the fabric.

g. Use toggle to select IPv4 or IPv6 to onboard the fabric. Based on this setting, Nexus Dashboard Insights will configure its collector to receive telemetry from this fabric. This setting should match your fabrics IP address configuration.

h. In the **Loopback** field, enter the loopback configured on the switches that provide connectivity to the Nexus Dashboard in-band IP address.

i. In the **VRF** field, enter the VRF name associated with the loopback interfaces. This is the VRF that provides connectivity to the Nexus Dashboard in-band IP addresses.

> Default and non-default VRFs are supported. In VXLAN/EVPN fabrics they must be part of the underlay.

j. In the **User Name** and **Password** field for Switch Credentials, provide the login credentials for a LAN user with admin privileges on the switch you are adding.

k. Click **Add Switch Credentials** to add switches to the list and specify their credentials only if the switch credentials do not match the default credentials provided above.

   i. In the **Switch Name** field, enter the name for the switch.

   ii. In the **Switch IP** field, enter the IP address for the switch.

   iii. In the **Switch Username** field, enter the username for the switch.

   iv. In the **Switch Password** field, enter the password.

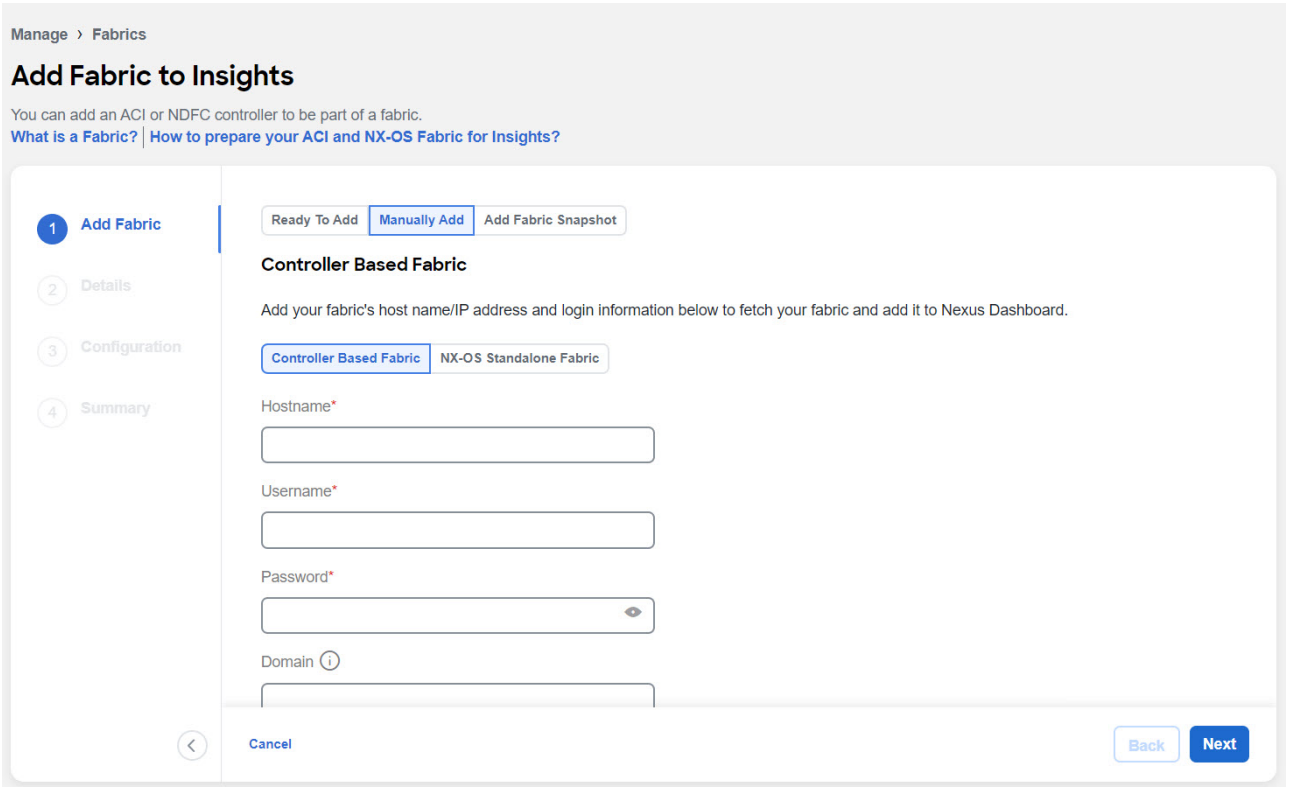
l. Check the check mark to complete to add your entries, and add additional switches as appropriate.

m. Click **Next**.

n. Verify the configuration.

o. Click **Submit**.

5. To add a fabric to Nexus Dashboard and then enable the fabric using Nexus Dashboard Insights, select **Manually Add**.



6. Complete the following fields for **Manually Add**.

   a. In the **Hostname** field, enter the IP address used to communicate with the fabric's controller.

   b. In the **User Name** and **Password** field, provide the login credentials for a user with admin

privileges for the controller you are adding.

c. In the **Domain** field, enter the controller login domain name.

d. Click **Next**.

e. Enter the fabric name to identify the fabric on Nexus Dashboard.

f. Select the fabric location from the map to identify the fabric on Nexus Dashboard.

g. Click **Next**.

h. From the **Fabric Type** drop-down list, select the fabric type. The options are **Classic**, **VXLAN** or **SR-MPLS**. Choose SR-MPLS option to set up flows for SR-MPLS in a NX-OS fabric. Enhanced Classic LAN is not supported for NDFC fabrics.

i. From the **Fabric Mode** drop-down menu, select the fabric mode. The options are **Managed** or **Monitored**. In Managed mode, Nexus Dashboard Insights will deploy telemetry configuration to all switches in the fabric. In monitored mode, Nexus Dashboard Insights will not deploy telemetry configuration to all switches in the fabric.

j. Use toggle to select IPv4 or IPv6 to onboard the fabric. Based on this setting, Nexus Dashboard Insights will configure its collector to receive telemetry from this fabric. This setting should match your fabrics IP address configuration.

k. In the **Loopback** field, enter the loopback configured on the switches that provide connectivity to the Nexus Dashboard in-band IP address.

l. In the **VRF** field, enter the VRF name associated with the loopback interfaces. This is the VRF that provides connectivity to the Nexus Dashboard in-band IP addresses.



Default and non-default VRFs are supported. In VXLAN/EVPN fabrics they must be part of the underlay.

m. In the **User Name** and **Password** field for Switch Credentials, provide the login credentials for a LAN user with admin privileges on the switch you are adding.

n. Click **Add Switch Credentials** to add switches to the list and specify their credentials only if the switch credentials do not match the default credentials provided above.

   i. In the **Switch Name** field, enter the name for the switch.

   ii. In the **Switch IP** field, enter the IP address for the switch.

   iii. In the **Switch Username** field, enter the username for the switch.

   iv. In the **Switch Password** field, enter the password.

o. Check the check mark to complete to add your entries, and add additional switches as appropriate.

p. Click **Next**.

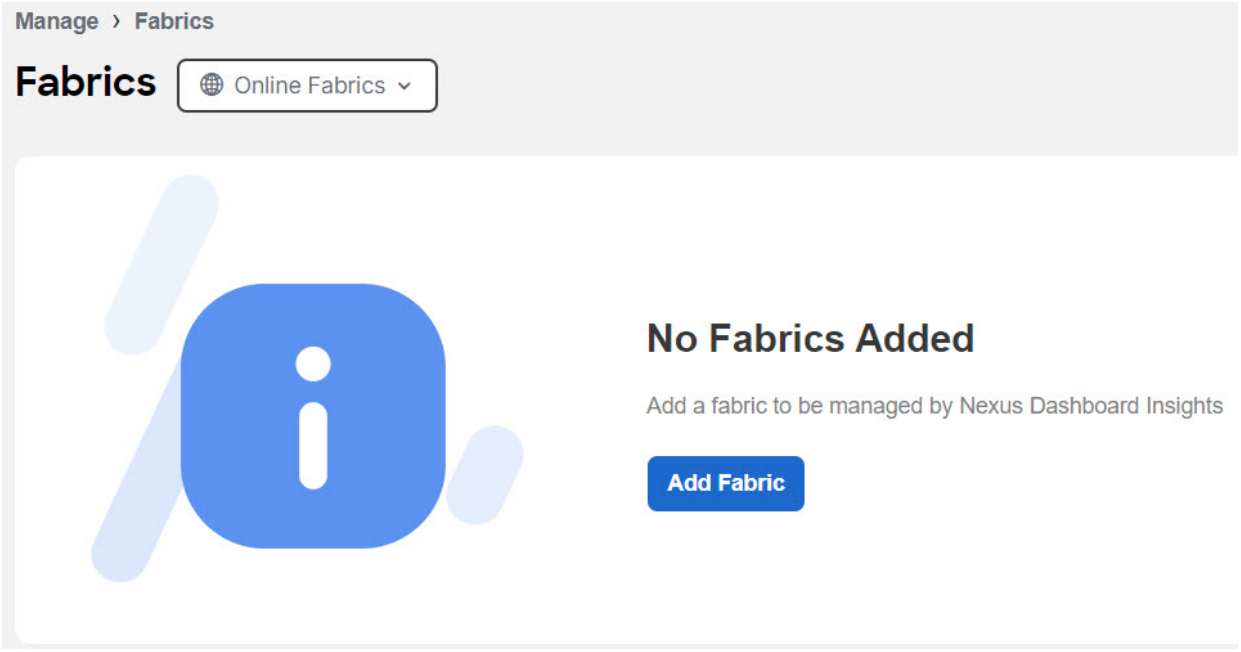
q. Verify the configuration.

r. Click **Submit**.

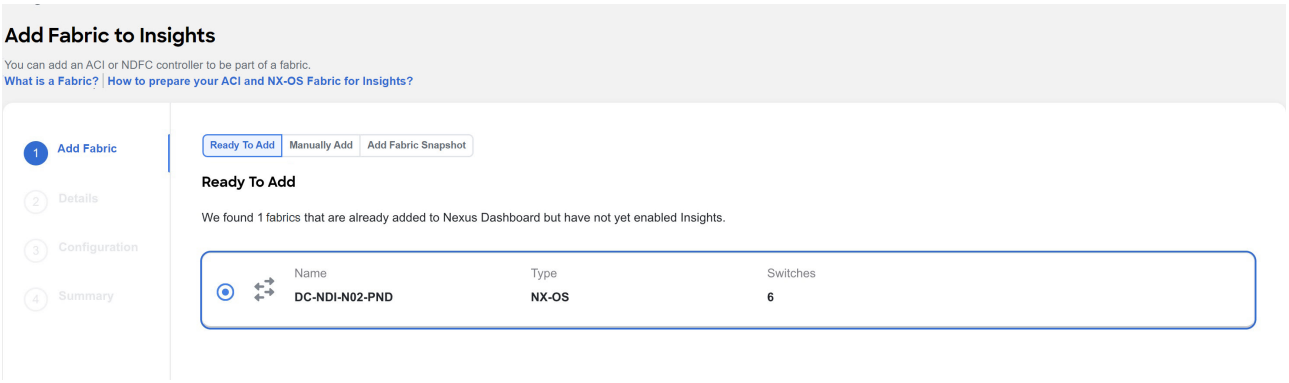
Add an Online NX-OS Fabric without a Controller

1. Navigate to **Manage** > **Fabrics**.
2. Click **Add Fabric**.

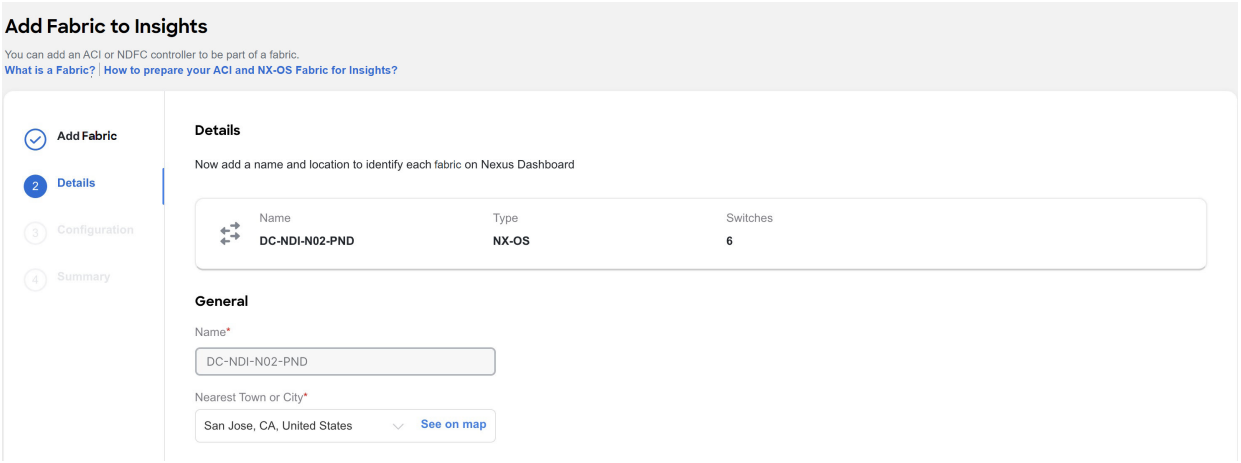
a. If you are adding a fabric in Nexus Dashboard Insights for the very first time, you will receive the following message. Click **Add Fabric** to proceed.



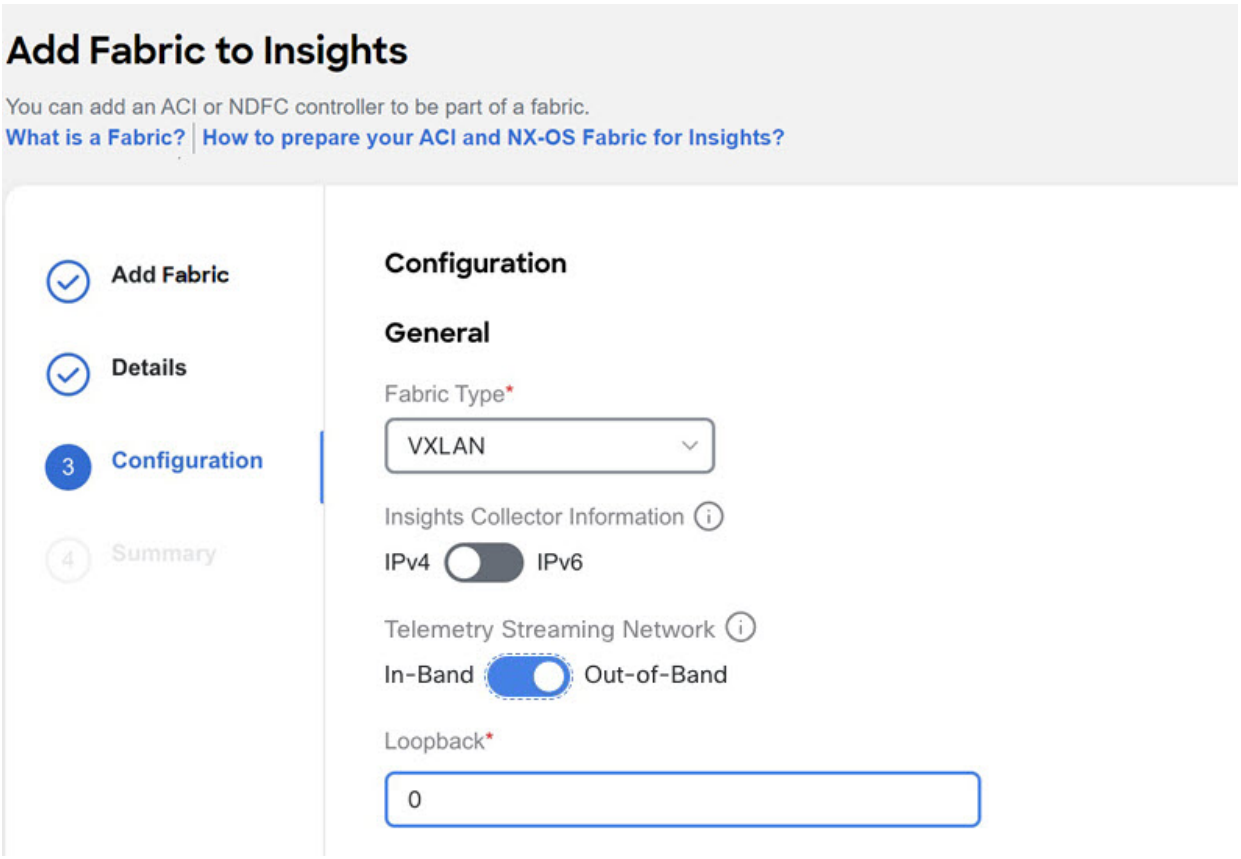
3. To enable a fabric that has been already added to Nexus Dashboard, select **Ready to Add**. The fabrics added to Nexus Dashboard are displayed. To add a fabric to Nexus Dashboard, see Cisco Nexus Dashboard Fabrics Management.
4. Complete the following fields for **Ready to Add**.



a. Select the NX-OS fabric.
b. Click **Next**.
c. Select the fabric location from the map to identify the fabric on Nexus Dashboard.



d. Click **Next**.



e. From the **Fabric Type** drop-down menu, select the fabric type. The options are **Classic**, **VXLAN** or **SR-MPLS**. Choose SR-MPLS option to set up flows for SR-MPLS in a NX-OS fabric.

f. Use toggle to select IPv4 or IPv6 to onboard the fabric. Based on this setting, Nexus Dashboard Insights will configure its collector to receive telemetry from this fabric. This setting should match your fabrics IP address configuration.

g. In the **Loopback** field, enter the loopback configured on the switches that provide connectivity to the Nexus Dashboard in-band IP address.

h. In the **VRF** field, enter the VRF name associated with the loopback interfaces. This is the VRF that provides connectivity to the Nexus Dashboard in-band IP addresses.



Default and non-default VRFs are supported. In VXLAN/EVPN fabrics they must be part of the underlay.

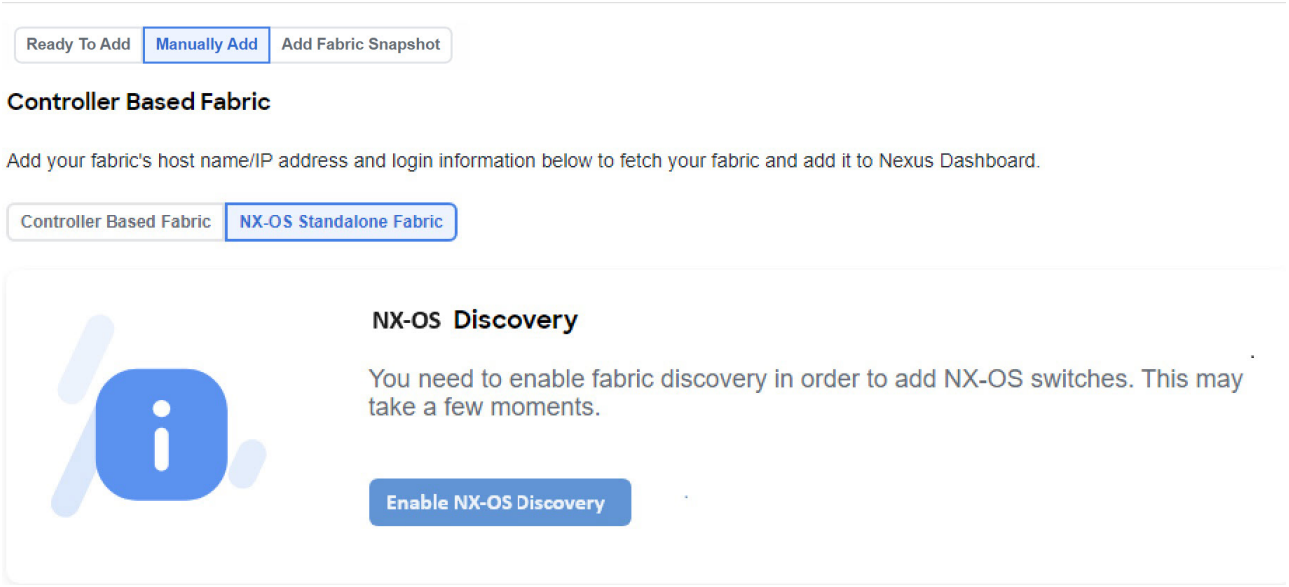
i. Click **Next**.

j. Verify the configuration.

k. Click **Submit**.

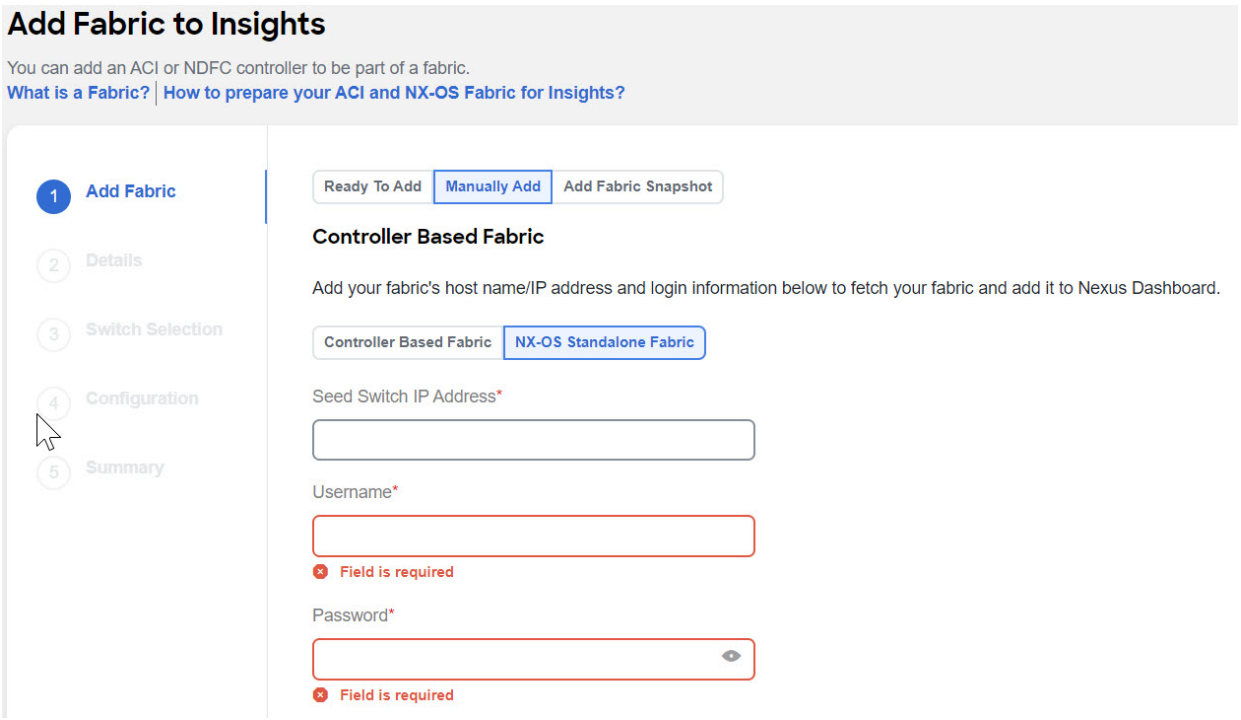
5. To add a fabric to Nexus Dashboard and then enable the fabric using Nexus Dashboard Insights, select **Manually Add**.

6. Complete the following fields for **Manually Add**.



a. Select **NX-OS Standalone Fabric**.

b. Click **Enable NX-OS Discovery** to enable NX-OS Discovery in Nexus Dashboard's Admin Console.



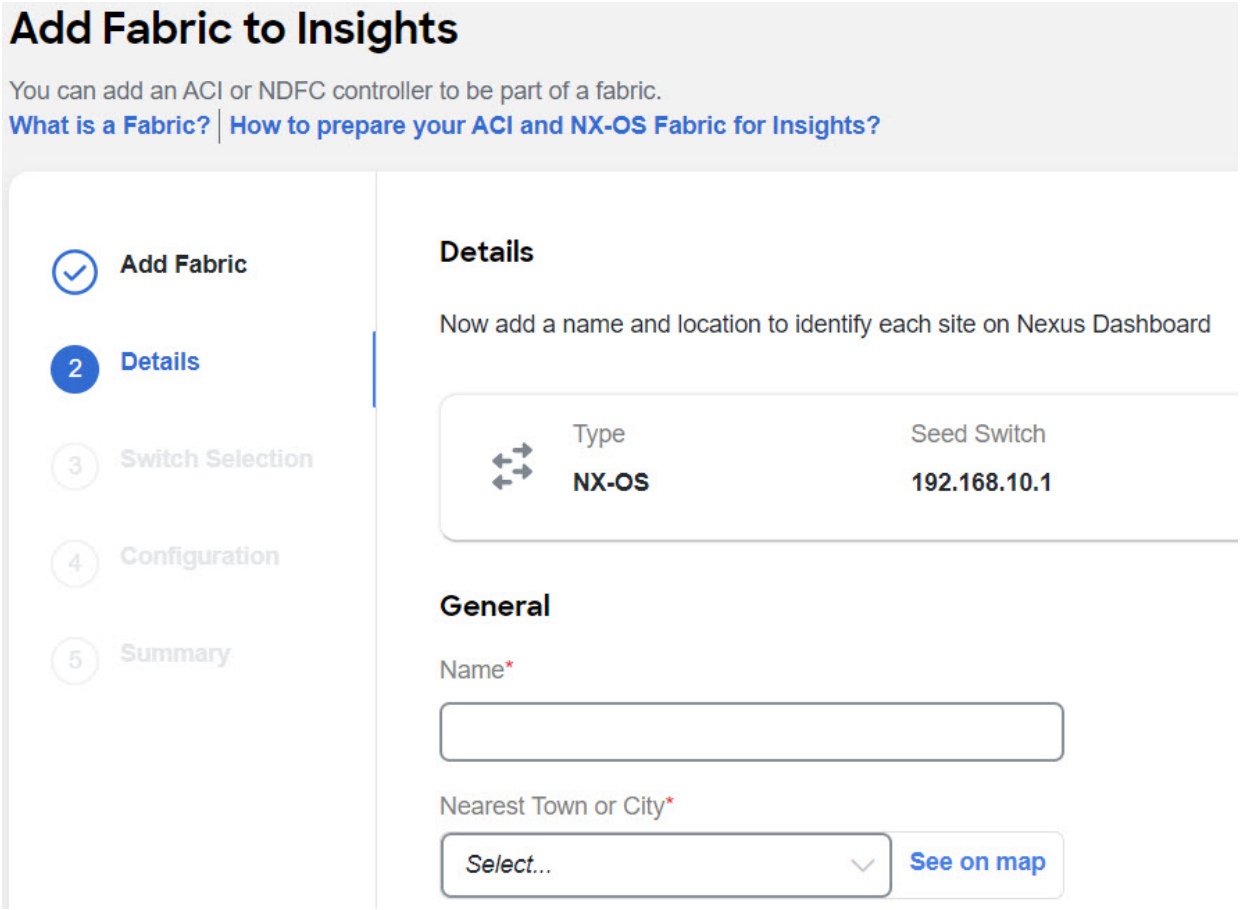
c. In the **Seed Switch IP Address** field, enter the IP address of the seed switch management interface.

d. In the **User Name** and **Password** field, provide the login credentials for a user with admin

privileges on the switch you are adding.

e. From the **Authentication Protocol** drop-down list, select the protocol.

f. Click **Next**.

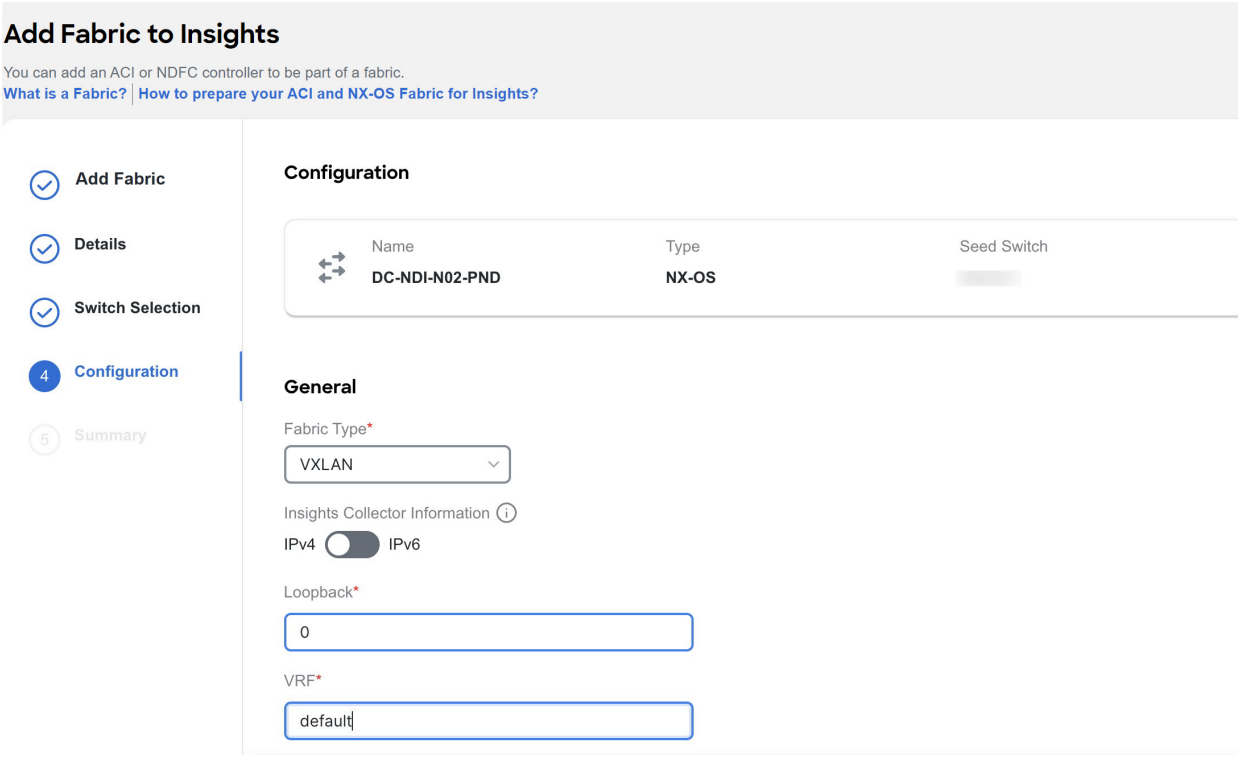


g. Enter the NX-OS fabric name to identify the fabric on Nexus Dashboard.

h. Select the NX-OS fabric location from the map to identify the fabric on Nexus Dashboard.

i. Select the switches to be added to the fabric.

j. Click **Next**.



k. From the **Fabric Type** drop-down menu, select the fabric type. The options are **Classic**, **VXLAN** or **SR-MPLS**. Choose SR-MPLS option to set up flows for SR-MPLS in a NX-OS fabric.

l. Use toggle to select IPv4 or IPv6 to onboard the fabric. Based on this setting, Nexus Dashboard Insights will configure its collector to receive telemetry from this fabric. This setting should match your fabrics IP address configuration.

m. In the **Loopback** field, enter the loopback configured on the switches that provide connectivity to the Nexus Dashboard in-band IP address.

n. In the **VRF** field, enter the VRF name associated with the loopback interfaces. This is the VRF that provides connectivity to the Nexus Dashboard in-band IP addresses.

> Default and non-default VRFs are supported. In VXLAN/EVPN fabrics they must be part of the underlay.

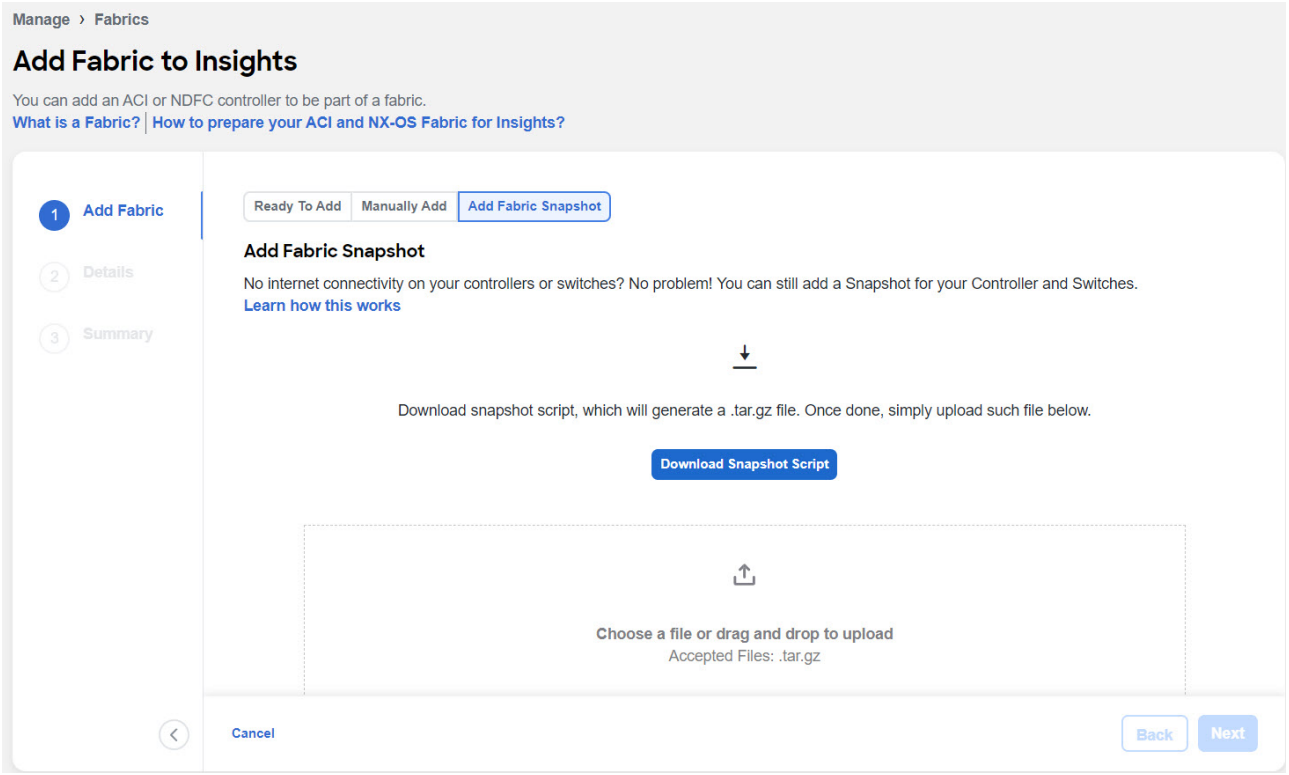
o. Click **Next**.

p. Verify the configuration.

q. Click **Submit**.

Add a Snapshot Fabric

1. Navigate to **Manage** > **Fabrics**.
2. Click **Add Fabric**.
3. To add a snapshot fabric, select **Add Fabric Snapshot**.



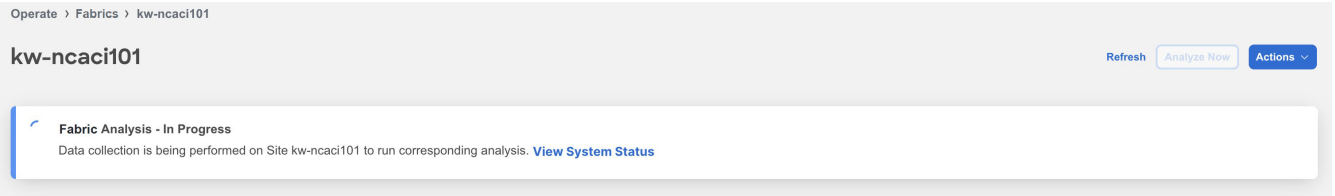
4. Click **Download Snapshot Script** to download the data-collectors.tar.gz to your machine.
5. Extract the file you downloaded and run the data collection script. Follow the instructions provided in the readme.md file. After the script is completed successfully, the data is collected in a <filename>.tar.gz file.

> The collection script requires that you have Python3 installed on your system.

6. Upload the file in Nexus Dashboard Insights and click **Next**
7. Enter the fabric name to identify the fabric on Nexus Dashboard.
8. Select the fabric location from the map to identify the fabric on Nexus Dashboard.
9. Click **Next**.
10. Verify the configuration.
11. Click **Submit**.

Fabric Analysis

Once your fabric is onboarded and fully prepared, Nexus Dashboard Insights will start the analysis to collect data from your fabric and display the fabric information in the **Fabrics** page. To learn more, see Fabrics. The Fabric Analysis banner displays the progress of the analysis. The time to run the analysis depends on the size of the fabric.



Click System Status to view the status. See System Status.

During fabric analysis, Telemetry Collection, Assurance Analysis, Bug Scan, and Best Practices analysis is carried out automatically. See Assurance Analysis and Bug Scan.

Assurance Analysis

Assurance analysis involves collecting data from fabrics, running the analysis to create a model with the collected data, and generating the results.

- Assurance analysis provides assurance in real time. During assurance analysis for online fabrics, the data collection, model generation, and results generation are carried out simultaneously. The collected data is analyzed immediately after collection followed by result generation. This is repeated after a fixed time interval or as specified by the user. For online fabrics, assurance analysis is performed automatically every 2 hours. The schedule is determined by the fabric size and scale. For larger fabrics, assurance analysis is performed automatically every 3-4 hours.
- For snapshot fabrics, a one-time assurance is provided. This assurance analysis allows you to decouple the data collection stage from the analysis stage. The data is collected using a Python script and the collected data is then uploaded to Nexus Dashboard Insights to provide a one-time assurance. The collected data can also be analyzed at a later time. It enables the user to collect the data during change management windows and then perform the analysis.

Assurance analysis guidelines and limitations

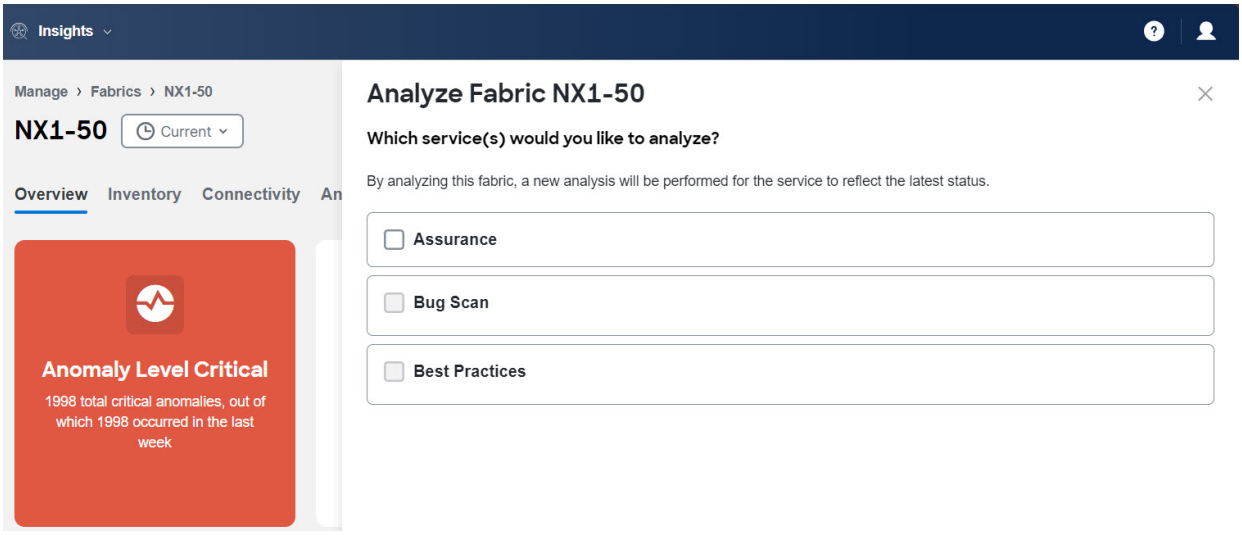
- If you take the assurance analysis from a fabric and export the raw data set to upload a file to a Snapshot fabric, assurance analysis for the snapshot fabric will only generate assurance related anomalies.
- Currently, if you begin an assurance analysis for a snapshot fabric, you can simultaneously continue to run the assurance analysis for online fabrics that are already in progress. They will all run without any disruption to the behavior.
- Anomaly Rules and Compliance Rules are valid in assurance analysis for snapshot fabrics.

On-Demand Analysis

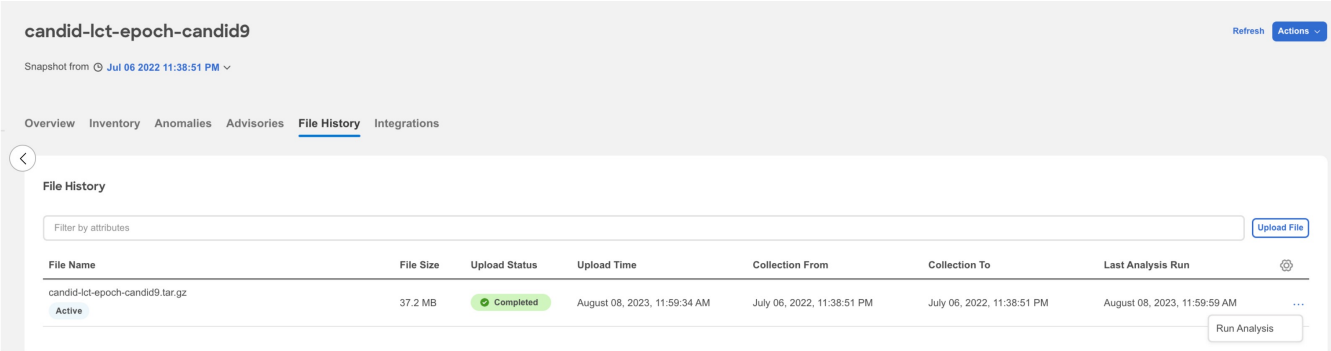
For online fabrics, assurance analysis is performed automatically, but you can also choose to request one at any time. This may be useful in cases where you resolve one or more issues in a fabric and would like Nexus Dashboard Insights to poll the latest Anomalies and Advisories information without waiting for the next automatic run.

Similarly you can also run an on-demand analysis for Bug Scan or Best Practices to reflect the latest status.

1. Navigate to **Manage** > **Fabrics**.
2. Select Online or Snapshot fabrics from the drop-down list.
3. For an online fabric, click the fabric name to view the details.
    a. Click **Analyze Now**.
    b. Select the service. For Bug Scan and Best Practices, select the switches and click **Run Now**.



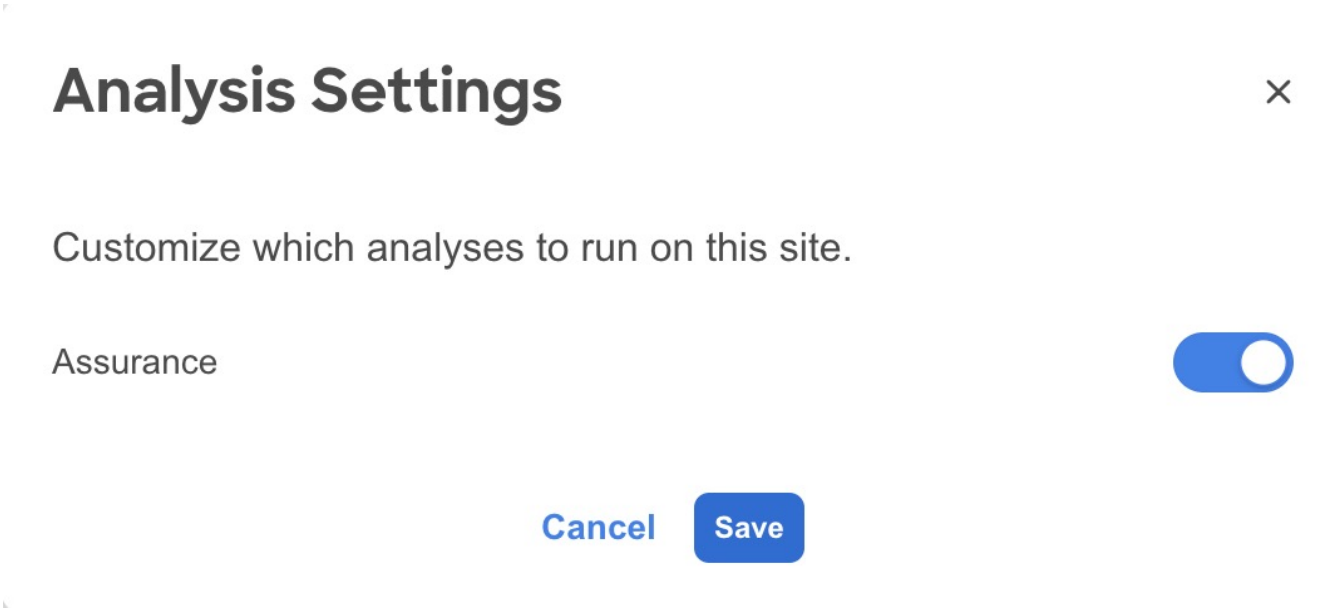
4. For snapshot fabric, click the fabric name to view the details.
5. Click **File History**.
6. In the **File History** table, click the ellipsis icon and select **Run Analysis**.



Enable Assurance Analysis

You can also enable or disable the automatically scheduled assurance analysis job.

1. Navigate to **Manage** > **Fabrics**.
2. Select Online fabric from the drop-down list.
3. Click the fabric name to view the details.
4. From the Actions menu, select **System Status**.
5. From the Actions menu, select **Analyze Settings**.
6. Use toggle to enable or disable scheduled assurance analysis job.
7. Click **Save**.



Best Practices

Nexus Dashboard Insights collects technical support information from the fabric and runs them against known set of signatures and then flags the defects that are not compliant. Nexus Dashboard Insights also generates an anomaly list for you. See Anomalies and Advisories to learn more about Metadata support.

Best Practices is run for all the fabrics onboarded to Nexus Dashboard Insights and is auto-scheduled every 7 days for each device. This schedule is fixed and is not customizable.

Best Practices is run on devices contained in a fabric either based on the last Best Practices or the onboarding time if a Best Practices has not been run before. Priority is given to devices with a longer time elapsed since the last Best Practices. After a Best Practices is run on a device, regardless of whether it succeeds or fails, another Best Practices will not be run for the same device for the next 7 days.

However, on-demand Best Practices is an exception and is prioritized over any auto-scheduled runs. If auto-scheduled Best Practices is in progress and on-demand Best Practices is initiated, based on the available resources in the Nexus Dashboard nodes the on-demand Best Practices will start while the current Best Practices is in progress or after the current Best Practices is completed.

Only one Best Practices at the time can run on a specific device. However, if you have one set of devices where Best Practices is already in progress, a second (auto-scheduled or on-demand) Best Practices can run only if Nexus Dashboard Insights has enough resources available. Otherwise it will be put on hold and started as soon as resources are available.

On-Demand Best Practices

You can also run an on-demand Best Practices for a fabric. See On-Demand Analysis.



You can only run one on-demand Bug Scan or Best Practice job in Nexus Dashboard Insights at any given instance. Once an on-demand job is started, the UI takes up to a minute to grey out. If you trigger another on-demand job while the UI is not greyed out, the job will fail.

About Device Connector

Data center apps and services such as the Cisco Nexus Dashboard Insights service is connected to the Cisco Intersight cloud portal through a Device Connector which is embedded in the management controller of the Cisco Nexus Dashboard platform.

See Cisco Nexus Dashboard Operations for Configuring the Device Connector and Claiming a Device.

For connectivity requirements, see Network Connectivity Requirements.

Nexus Dashboard Insights Switch Configuration Status

1. Navigate to **Admin** > **System Settings** > **System Status Details**.
2. Select a fabric.
3. Click the ellipsis icon and click **Expected Configuration**.
4. You can configure the appropriate switches by using the recommended configuration. From the **Expected Configuration** area, you can view and copy configurations under **Software Telemetry** and **Flow Telemetry**.

Apply Telemetry Configuration to a Switch

For NDFC fabric in Monitored mode, Nexus Dashboard Insights will not deploy telemetry configuration to all switches in the fabric in the following scenarios:

- When you upgrade Nexus Dashboard Insights
- When you upgrade the Nexus switch

In these scenarios, you must re-apply the telemetry configuration to every switch.

Use the following procedure to re-apply the telemetry config to a switch.

1. Navigate to **Admin** > **System Settings** > **System Status Details**.
2. Select a fabric.
3. Click the ellipsis icon and then click **Expected Configuration**.
4. From the **Expected Configuration** area, you can view and copy configurations under **Software Telemetry** and **Flow Telemetry**.
5. Using the command line, log in to the switch.
6. Enter the following commands:

```
switch# configure terminal
switch(config)# no feature telemetry
switch(config)# copy running-config startup-config
```

Metadata Support

Nexus Dashboard Insights uses metadata bundles to detect new bugs, Security Advisories, Field Notices, and End of Life Notices.

Navigate to **Admin > System Settings > Metadata** to view the metadata version.

- In the **General** area, the **Metadata Version** is displayed.
- In the **Update Metadata Version** area, you can upload metadata for air-gapped environments.

Metadata support for air-gapped environment

Nexus Dashboard Insights now supports Metadata support for air-gapped environments. With Metadata support for air-gapped environments, you can periodically upload the latest Metadata to Nexus Dashboard Insights in a secure and trusted way when Nexus Dashboard Insights is not connected to Cisco Secure Cloud.

You can download the metadata file from Intersight PVAPP portal and upload it to Nexus Dashboard Insights to get decrypted updates on exposure to Bugs, Security Advisories, Defects, Field Notices, and End of Life Notices.

Update Metadata version using air-gapped mechanism

Nexus Dashboard Insights also provides an option to upload an encrypted metadata package downloaded from Cisco Intersight for air-gapped deployments. You can use the air-gapped mechanism to manually upload your metadata file when Cisco Intersight is not available.

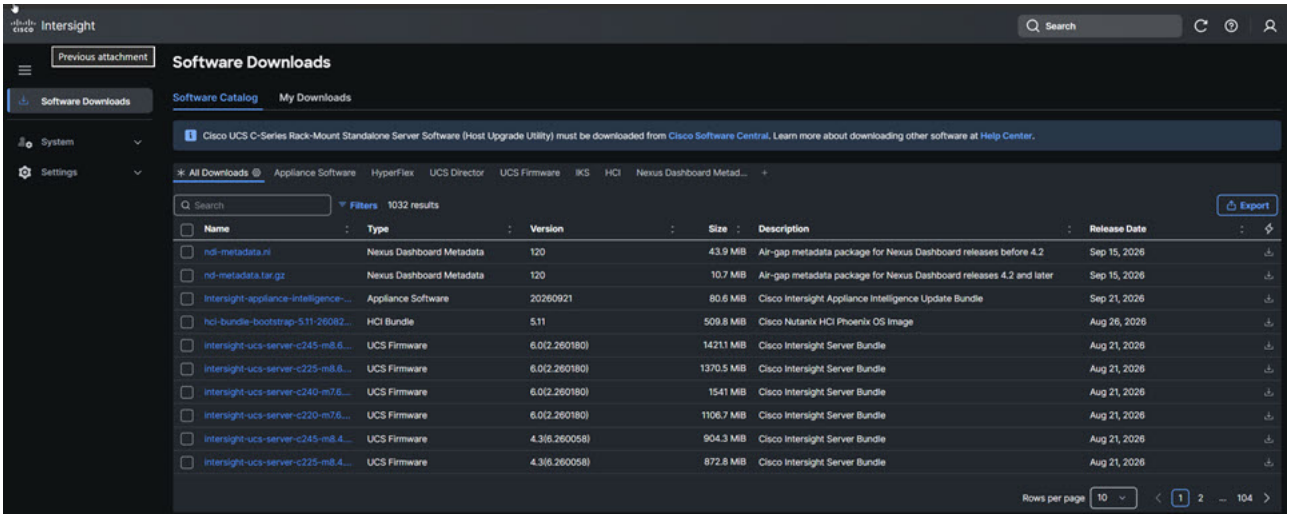
Follow these steps to upload metadata using the air-gapped mechanism.

1. Create an Intersight PVAPP account. You can create your Intersight PVAPP account at https://intersight.com/pvapp. You will be prompted to set up an account name. You can use 'NexusDashboard-Metadata' or a similar name to easily identify it from other Intersight accounts you may already have.

   This step is only required for initial setup of your PVAPP account; you can skip this step for future metadata download access.

2. Login to Cisco Intersight.com account using the 'NexusDashboard-Metadata' account you created in the previous step or use an existing account.
3. Click the **All Downloads** tab on the **Software Download** page. The **Software Download** page displays multiple software versions including entries for versions prior to Nexus Dashboard Insights 4.2.1 release and forNexus Dashboard Insights 4.2.1 and later releases.



4. Choose the version that applies to your cluster version and click the download icon next to the latest metadata file available.
5. Wait for the download to complete.
6. In the Nexus Dashboard Insights user interface, navigate to the **Admin > System Settings > Metadata** page.
7. Upload the downloaded metadata file in the **Update metadata version** field.

Usage guidelines and limitations

These general usage guidelines and limitations apply for Cisco Nexus Dashboard Insights:

- You cannot downgrade Nexus Dashboard Insights.
- After modifying a bridge domain or VRF instance for an EPG, the flow analytics does not work as expected momentarily.
- In a multi-cluster setup, remote cluster system anomalies are not displayed in the local cluster. You must log in to the remote cluster to view that system's anomalies.
- Nexus Dashboard Insights creates a user in the Cisco APIC called cisco_SN_NI. This user is used when Nexus Dashboard Insights needs to make any changes or query any information from the Cisco APIC. In the Cisco APIC GUI, navigate to **System > History > Audit Logs**. The cisco_SN_NI user is displayed in the **User** column.

Configure Flows

Flow Telemetry

Flow telemetry allows users to see the path taken by different flows in detail. It also allows you to identify the VRF instance of the source and destination. You can see the switches in the flow with the help of flow table exports from the nodes. The flow path is generated by stitching together all the exports in order of the flow.

You can configure the Flow Telemetry rule for the following interface types:

- VRF instances
- Physical interfaces
- Port Channel interfaces



Physical or port channel flow rules are supported only on routed interfaces.

Flow telemetry monitors the flow for each fabric separately, as there is no stitching across the fabrics in a fabrics group. Therefore, flow telemetry is for individual flows. For example, if there are two fabrics (fabric A and fabric B) within a fabrics group, and traffic is flowing between the two fabrics, they will be displayed as two separate flows. One flow will originate from Fabric A and display where the flow exits. And the other flow from Fabric B will display where it enters and where it exits.

Flow Telemetry Guidelines and Limitations

- Ensure that you have configured NTP and enabled PTP on NDFC. See Cisco Nexus Dashboard Insights Deployment Guide and Precision Time Protocol (PTP) for Cisco Nexus Dashboard Insights for more information. You are responsible for configuring the switches with external NTP servers for Cisco NDFC fabrics.
- All flows are monitored as a consolidated view in a unified pipeline for fabric types ACI and NDFC, and the flows are aggregated under the same umbrella.
- In the **Edit Flow** page, it is possible to enable all three, you choose the best possible mode for a product. sFlow is most restrictive, Netflow has some more capability, and Flow Telemetry has the most capability. So the recommendation is to enable Flow Telemetry if it is available for your configuration. If Flow Telemetry is not available, then use Netflow. If Netflow is not available, use sFlow.
- Even if a particular node (for example, a third party switch) is not supported for Flow Telemetry, Cisco Nexus Dashboard Insights will use LLDP information from the previous and next nodes in the path to identify the switch name and the ingress and egress interfaces.
- Flow telemetry including Flow Telemetry Events supports the following:
  - 20,000 unique flows/s [physical standard]
  - 10,000 unique flows/s [physical small]
  - 2,500 unique flows/s [vND]
- If there are multiple NDFC clusters onboarded to Cisco Nexus Dashboard Insights, partial paths will be generated for each fabric.

- If you manually configure the fabric to use with Nexus Dashboard Insights and Flow Telemetry support, the Flows Exporter port changes from 30000 to 5640. To prevent a breakage of the Flows Exporter, adjust the automation.
- Nexus Dashboard supports Kafka export for Flow anomalies. However, Kafka export is not currently supported for Flow Event anomalies.
- Flow telemetry is supported in -FX3 platform switches for the following NX-OS versions:
  - 9.3(7) and later
  - 10.1(2) and later
  - Flow telemetry is not supported in -FX3 platform switches for NX-OS version 10.1(1).
- Interface based Flow Telemetry is only supported on modular chassis with -FX land -GX line cards on physical ports and port-channels rules.
- If interface based Flow Telemetry is pushed from Nexus Dashboard Insights for **Classic LAN** and **External Connectivity Network** fabrics, perform the following steps in NDFC:
  - In the NDFC GUI, select the fabric.
  - Choose **Policies** > **Action** > **Add policy** > **Select all** > **Choose template** > host_port_resync and click **Save**.
  - In the Fabric Overview page, choose **Actions** > **Recalculate and deploy**.
- For VXLAN fabrics, interface based Flow Telemetry is not supported on switch links between spine switch and leaf switch.
- NDI generates telemetry configuration using the exact VRF name provided during onboarding. Verizon used the VRF 'Default,' and we have adopted it. It would be helpful to document that if the customer wants to choose the default VRF, it should be spelled as 'default' instead of 'Default.'
- If you want to use the default VRF instance for flow telemetry, you must create the VRF instance with a name of " default" in lowercase. Do not enter the name with any capital letters.
- Flow telemetry is not supported in classic LAN topologies with 2-level VPC access layers.
- If you want to enable Flow Telemetry, ensure that there are no pre-existing Netflow configurations on the switches. If there are any pre-existing configurations, the switch configuration may fail.

  To enable Flow Telemetry without configuration issues, follow these steps:

  - Ensure that there are no pre-existing Netflow configurations on the switches. If such configurations exist, enabling Flow Telemetry might result in a system anomaly with an error message stating invalid command match IP source address.
  - If you encounter the error, disable Flow Telemetry.
  - Remove any existing Netflow configurations from the switches.
  - Re-enable Flow Telemetry.
- For some flows, latency information is not available, which could happen due to latency issues. In these cases, latency information will be reported as 0.

Flow Telemetry Rules guidelines and limitations:

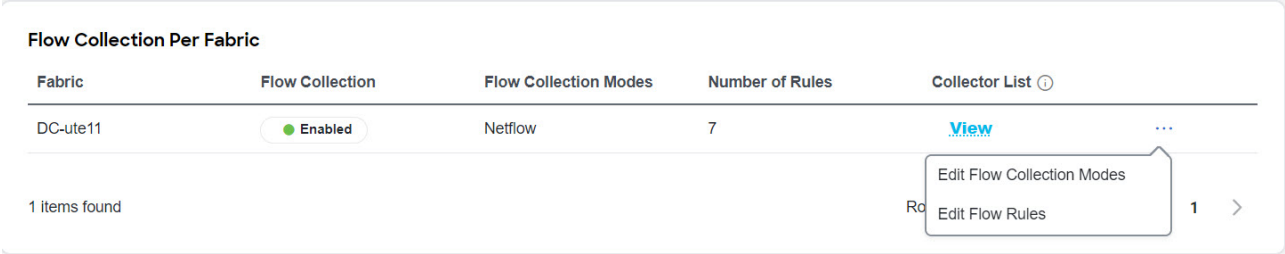
- If you configure an interface rule (physical/port channel)on a subnet, it can monitor only incoming traffic. It can’t monitor outgoing traffic on the configured interface rule.

- If a configured port channel that contains two physical ports, only the port channel rule is applicable. Even if you configure physical interface rules on the port, only port channel rule takes precedence.
- You can configure up to 500 rules on a node.
- For NX-OS release 10.3(2) and earlier, if a flow rule are configured on an interface, then global flow rules are not matched.
- For NX-OS release 10.3(3) and later, a flow rule configured on an interface is matched first and then the global flow rules are matched.

Configure Flows

Configure Flow Collection Modes

1. Navigate to **Admin** > **System Settings** > **Flow Collection**.
2. In the **Flow Collection Mode** area, select **Flow Telemetry**.
3. In the **Flow Collection per Fabric** table, select the fabric and click the ellipsis icon.
4. Click **Edit Flow Collection Modes**.



5. In the **Edit Flow Collection Mode** page, select **Flow Telemetry** to enable Flow Telemetry. All the flows are disabled by default.
6. Click **Save**.

Enabling Flow Telemetry automatically activates Flow Telemetry Events. Whenever a compatible event takes place, an anomaly will be generated, and the What's the impact? section in the **Anomaly** page will display the associated flows. You can manually configure a Flow Telemetry rule to acquire comprehensive end-to-end information about the troublesome flow.

Configure Flow Collection Rules

1. Navigate to **Admin** > **System Settings** > **Flow Collection**.
2. In the **Flow Collection Mode** area, select **Flow Telemetry**.
3. In the **Flow Collection per Fabric** table, select the fabric and click the ellipsis icon.
4. Click **Edit Flow Rules**.
5. To add a VRF rule, click VRF tab and perform the following:
   a. From the **Actions** drop-down menu, select **Create New Rule**.
   b. In the **General** area, complete the following:

i. Enter the name of the rule in the **Rule Name** field.

ii. The VRF filed is disabled. The flow rule applies to all the VRFs.

iii. In the **Flow Properties** area, select the protocol for which you intend to monitor the flow traffic.

iv. Enter the source and destination IP addresses. Enter the source and destination port.

v. Click **Save**.

6. To add a physical interfaces rule, click **Physical Interfaces** tab and perform the following:
   a. From the **Actions** drop-down menu select **Create New Rule**.
   b. In the **General** area, complete the following:
      i. Enter the name of the rule in the **Rule Name** field.
      ii. Check the **Enabled** check box to enable the status. If you enable the status, the rule will take effect. Otherwise, the rule will be removed from the switches.
      iii. In the **Flow Properties** area, select the protocol for which you intend to monitor the flow traffic.
      iv. Enter the source and destination IP addresses. Enter the source and destination port.
      v. In the **Interface List** area, click **Select a Node**. Use the search box to select a node.
      vi. From the drop-down list, select an interface. You can add more than one row (node+interface combination) by clicking **Add Interfaces**. However, within the rule, a node can appear only once. Configuration is rejected if more than one node is added.
      vii. Click **Save**.
7. To add a port channel rule, click **Port Channel** tab and perform the following:
   a. From the **Actions** drop-down menu, select **Create New Rule**.
   b. In the **General** area, enter the name of the rule in the **Rule Name** field.
      i. Select the **Enabled** check box to enable the status. If you enable the status, the rule will take effect. Otherwise, the rule will be removed from the switches.
      ii. In the **Flow Properties** area, select the protocol for which you intend to monitor the flow traffic.
      iii. Enter the source and destination IP addresses. Enter the source and destination port.
      iv. From the drop-down list, select an interface. You can add more than one row (node+interface combination) by clicking **Add Interfaces**. However, within the rule, a node can appear only once. Configuration is rejected if more than one node is added.
      v. Click **Save**.
8. Click **Done**

Monitoring the Subnet for Flow Telemetry

For Flow Telemetry, you monitor the subnet as follows.

In the following example, the configured rule for a flow monitors the specific subnet provided. The rule is pushed to the fabric which pushes it to the switches. So, when the switch sees traffic coming from a source IP or the destination IP, and if it matches the subnet, the information is captured in the

TCAM and exported to the Cisco Nexus Dashboard Insights service. If there are 4 nodes (A, B, C, D), and the traffic moves from A > B > C > D, the rules are enabled on all 4 nodes and the information is captured by all the 4 nodes. Cisco Nexus Dashboard Insights stitches the flows together. Data such as the number of drops and the number of packets, anomalies in the flow, and the flow path are aggregated for the 4 nodes.

1. Navigate to **Manage** > **Fabrics**.
2. Select **Online Fabrics** from the drop-down list.
3. Click a fabric name to view the fabric details.
4. Navigate to **Connectivity** > **Flows**.
5. Select a time range.
6. The Flows page displays all the flows that are being captured based on the snapshot that you selected.

The related anomaly score, record time, the nodes sending the flow telemetry, flow type, ingress and egress nodes, and additional details are displayed in a table format. If you click a specific flow in the table, specific details are displayed in the sidebar for the particular flow telemetry. In the sidebar, if you click the Details icon, the details are displayed in a larger page. In this page, in addition to other details, the **Path Summary** is also displayed with specifics related to source and destination. If there are flows in the reverse direction, that will also be visible in this location.

For a bi-directional flow, there is an option to choose to reverse the flow and see the path summary displayed. If there are any packet drops that generate a flow event, they can be viewed in the Anomaly dashboard.

Netflow

Netflow is an industry standard where Cisco routers monitor and collect network traffic on an interface. Starting with Cisco Nexus Dashboard Insights release 6.0, Netflow version 9 is supported.

Netflow enables the network administrator to determine information such as source, destination, class of service, and causes of congestion. Netflow is configured on the interface to monitor every packet on the interface and provide telemetry data. You cannot filter on Netflow.

Netflow in Nexus switches is based on intercepting the packet processing pipeline to capture summary information of network traffic.

The components of a flow monitoring setup are as follows:

- Exporter: Aggregates packets into flows and exports flow records towards one or more collectors
- Collector: Reception, storage, and pre-processing of flow data received from a flow exporter
- Analysis: Used for traffic profiling or network intrusion
- The following interfaces are supported for Netflow:

Supported Interfaces for Netflow

Interfaces	5 Tuple	Nodes	Ingress	Egress	Path	Comments
Routed Interface/Port Channel NOTE: Port Channel support is available if the user monitors only the host-facing interfaces.	Yes	Yes	Yes	No	Yes	Ingress node is shown in path
Sub Interface/Logical (Switch Virtual Interface)	Yes	Yes	-No	No	No	No

Netflow Types

For Nexus 9000 Series switches with NDFC type, Full Netflow is supported. For Nexus 7000 and Nexus 7700 Series switches, F/M line cards with NDFC type, Sampled Netflow is supported.

Full Netflow

With Full Netflow, all packets on the configured interfaces are captured into flow records in a flow

table. Flows are sent to the supervisor module. Records are aggregated over configurable intervals and exported to the collector. Except in the case of aliasing (multiple flows hashing to the same entry in the flow table), all flows can be monitored regardless of their packet rate.

Sampled Netflow

With Sampled Netflow, packets on configured interfaces are time sampled. Flows are sent to the supervisor or a network processor for aggregation. Aggregated flow records are exported at configured intervals. The probability of a record for a flow being captured depends on the sampling frequency and packet rate of the flow relative to other flows on the same interface.

Netflow Guidelines and Limitations

- In the **Edit Flow** page, you can enable all three modes. Choose the best possible mode for a product. sFlow is the most restrictive, Netflow has more capabilities, and Flow Telemetry has the most capabilities. We recommend that you enable Flow Telemetry if it is available for your configuration. If Flow Telemetry is not available, then use Netflow. If Netflow is not available, use sFlow.
- Netflow, in Cisco Nexus 9000 series switches, supports a small subset of the published export fields in the RFC.
- Netflow is captured only on the ingress port of a flow as only the ingress switch exports the flow. Netflow cannot be captured on fabric ports.
- In Nexus 7000 and Nexus 9000 Series switches, only the ingress host-facing interface configured for Netflow are supported (either in VXLAN or Classic LAN).
- For Netflow, Cisco Nexus Dashboard requires the configuration of persistent IP addresses under cluster configuration, and 7 IP addresses in the same subnet as the data network are required.
- For NDFC type, the Netflow supported fabrics are Classic and VxLAN. VXLAN is not supported on fabric ports.
- Netflow configurations will not be pushed. However, if a fabric is managed, the software sensors will be pushed.
- If you manually configure the fabric to use with Cisco Nexus Dashboard Insights and Netflow support, the Flows Exporter port changes from 30000 to 5640. To prevent a breakage of the Flows Exporter, adjust the automation.
- To configure Netflow on fabric switches, see the **Configuring Netflow** section in the Cisco Nexus 9000 Series NX-OS System Management Configuration Guide.

Configure Netflow

Before you begin

As a user, you must configure the appropriate switches by using the recommended configuration.

Procedure

Configure Netflow as follows.

1. Navigate to **Admin** > **System Settings** > **Flow Collection**.

2. In the **Flow Collection Mode** area, select **Flow Telemetry**.
3. In the **Flow Collection per Fabric** table, select the fabric and click the ellipsis icon.
4. Click **Edit Flow Collection Modes**.
5. In the **Edit Flow Collection Mode** page, select **Netflow**. All the flows are disabled by default.
6. Click **Save**.

sFlow

sFlow is an industry standard technology traffic in data networks containing switches and routers. Cisco Nexus Dashboard Insights supports sFlow version 5 on Cisco Nexus 3000 series switches.

sFlow provides the visibility to enable performance optimization, an accounting and billing for usage, and defense against security threats.

The following interfaces are supported for sFlow:

Supported Interfaces for sFlow

Interfaces	5 Tuple	Nodes	Ingress	Egress	Path	Comments
Routed Interface	Yes	Yes	Yes	Yes	Yes	Ingress node is shown in path

sFlow Guidelines and Limitations

- Cisco Nexus Dashboard Insights supports sFlow with Cisco Nexus 3000 series switches using NDFC.
- It is recommended that enable Flow Telemetry if it is available for your configuration. If that is not available for your configuration, use Netflow. If Netflow, is not available for your configuration, then use sFlow.
- For sFlow, Cisco Nexus Dashboard requires the configuration of persistent IPs under cluster configuration, and 6 IPs in the same subnet as the data network are required.
- sFlow configurations will not be pushed. However, if a fabric is managed, the software sensors will be pushed.
- If you manually configure the fabric to use with Cisco Nexus Dashboard Insights and sFlow support, the Flows Exporter port changes from 30000 to 5640. To prevent a breakage of the Flows Exporter, adjust the automation.
- Cisco Nexus Dashboard Insights does not support sFlow in the following Cisco Nexus 3000 Series switches:
  - Cisco Nexus 3600-R Platform Switch (N3K-C3636C-R)
  - Cisco Nexus 3600-R Platform Switch (N3K-C36180YC-R)
  - Cisco Nexus 3100 Platform Switch (N3K-C3132C-Z)
- Cisco Nexus Dashboard Insights does not support sFlow in the following Cisco Nexus 9000 Series fabric modules:
  - Cisco Nexus 9508-R fabric module (N9K-C9508-FM-R)
  - Cisco Nexus 9504-R fabric module (N9K-C9504-FM-R)
- To configure sFlow on fabric switches, see the **Configuring sFlow** section in the Cisco Nexus 9000 Series NX-OS System Management Configuration Guide.

Configure sFlow

Before you begin

As a user, you must configure the appropriate switches by using the recommended configuration.

Procedure

Configure sFlow Telemetry as follows.

1. Navigate to **Admin** > **System Settings** > **Flow Collection**.
2. In the **Flow Collection Mode** area, select **Flow Telemetry**.
3. In the **Flow Collection per Fabric** table, select the fabric and click the ellipsis icon.
4. Click **Edit Flow Collection Modes**.
5. In the **Edit Flow Collection Mode** page, select select **sFlow**. All the flows are disabled by default.
6. Click **Save**.

Export Data

Export Data

The **Export Data** feature enables you to export the data collected by Nexus Dashboard Insights over Kafka and Email. Nexus Dashboard Insights produces data such as advisories, anomalies, audit logs, faults, statistical data, risk and conformance reports. When you import a Kafka broker, all the data is written as a topic.

Additionally, you can configure an email scheduler to specify the data and the frequency with which you want to receive the information in an email.

Cisco Intersight is used for email notifications. See About Device Connector for more information.

Export Data Guidelines and Limitations

- You can configure up to 5 emails per day for periodic job configurations.
- Intersight connectivity is required to receive the reports via email.
- A maximum of 5 exporters for Kafka Export is supported.
- Before configuring your Kafka Export, you must add the external Kafka IP address as a known route in your Nexus Dashboard cluster configuration.
- Nexus Dashboard supports Kafka export for Flow anomalies. However, Kafka export is not currently supported for Flow Event anomalies.
- Make sure all configuration in the *Message Bus Configuration* and *Email* page are removed before disabling Software Telemetry on any fabric and removing the fabric from NDFC.
- The following categories will be included for Anomalies in the Kafka and Email messages: Resources, Environmental, Statistics, Endpoints, Flows, Bugs.
- The following categories will not be included for Anomalies in the Kafka and Email messages: Security, Forwarding, Change Analysis, Compliance, System.
- Export data is not supported for Snapshot Fabrics.
- You must provide unique names for each export.

Configure the Kafka exporter

Follow these steps to configure the Kafka exporter.

1. Navigate to **Admin** > **System Settings** > **Export Data**.
2. In the **Message Bus Configuration** area, click **Add New** and perform the following tasks.
   a. In the **Fabric Name** field, select the appropriate fabric.
   b. In the IP Address and Port fields, enter the Kafka broker IP address and port.
   c. In the **Mode** field, select the security mode. The supported modes are **Unsecured**, **Secured SSL**, and **SASLPLAIN**. The default value is **Unsecured**.

      For **Secured SSL**, fill out these fields:

- **Server CA Certificate**--The CA certificate used for signing consumer certificate, which will be stored in the trust-store so that Nexus Dashboard Insights can trust the consumer.
- **Client Certificate**--The CA signed certificate for Nexus Dashboard Insights. Normally, the certificate is signed by the same CA, and the same CA certificate will be in the trust-store of the consumer. This will be stored in Nexus Dashboard Insights's Kafka keystore that is used for exporting.
- **Client Key**--A private key for the Kafka producer, which is Nexus Dashboard Insights in this case. This will be stored in Nexus Dashboard Insights's Kafka keystore that is used for exporting.

For **SASLPLAIN**, fill out these fields:

- **Username**--The username for the SASL/PLAIN authentication.
- **Password**--The password for the SASL/PLAIN authentication.

d. In the **General Settings** area, enter the name and topic name, where the data must be sent, and select the Basic or Advanced mode.

The Kafka export details for the anomalies and advisories are displayed.

3. In the **Collection Settings** area for each category, choose the severity level for anomalies and advisories.
4. Click **Save**.

This configuration sends immediate notification when the selected anomalies or advisories occur.

Configure Email

Use the following procedure to configure an email scheduler that sends the summary of the data collected from Nexus Dashboard Insights:

1. Navigate to **Admin** > **System Settings** > **Export Data**.
2. In the **Email** area, click **Add New**, and perform the following actions:
   a. In the **General Settings** area, in the **Fabric Name** field, choose the fabric name.
   b. In the **Name** field, enter the name.
   c. In the **Email** field, enter the email address. For multiple email addresses, use commas as separators.
   d. In the **Format** field, choose Text or HTML format for email.
   e. In the **Start Date** field, enter the start date.
   f. In the **Collect Every** field, specify the frequency in days or weeks.
   g. In the **Mode** field, select Basic or Advanced.

   In the Basic mode, the severity for anomalies, advisories, and faults are displayed in the **Collection Settings** area. In the Advanced mode, the categories and severity for anomalies and advisories, are displayed in the **Collection Settings** area.
3. In the **Collection Settings** area for each category select the severity level for anomalies and

advisories. Select all that apply. For **Active Alerts** select the enable or disable options. For **Conformance Reports**, select **Software** for software release, **Hardware** for hardware platform, and both for combination of software and hardware conformance.

4. Click **Save**. The configured email schedulers are displayed in the **Email** area.

   You will receive an email about the scheduled job on the provided *Start Date* and at the time provided in *Collect Every*. The subsequent emails follow after *Collect Every* frequency expires. If the time provided is in the past, you will receive an email immediately and the next email is triggered after the expiry of the duration from the start time provided.

5. (Optional) In the edit area, perform the following steps:
   a. Click  to edit an email scheduler.
   b. Click the  to delete an email scheduler.

Syslog

Starting from release 6.1.1, Nexus Dashboard Insights supports the export of anomalies and advisories in syslog format. You can use this feature to develop network monitoring and analytics applications on top of Nexus Dashboard Insights, integrate with the syslog server to get alerts, and build customized dashboards and visualizations.

After you choose the fabric where you want to configure the syslog exporter and you set up the configuration for syslog export, Nexus Dashboard Insights will establish a connection with the syslog server and send the data to the syslog server.

Nexus Dashboard Insights will read the anomalies and advisories from the Kafka message bus and then export this data to the syslog server. With syslog support, even if you do not use Kafka, you will be able to export anomalies to your third-party tools.

Guidelines and Limitations for Syslog

If the syslog server is not operational at a certain time, messages generated during that downtime will not be received by a server after the server becomes operational.

Configure Syslog

Use the following procedure to configure syslog to enable exporting anomalies and advisories data to a syslog server:

1. Navigate to **Admin** > **System Settings** > **Export Data**.
2. In the **Syslog** area, click **Add New**.
3. In the **Syslog Configuration** dialog box, in the **Credentials** area, perform the following actions:
   a. In the **Fabric Name** field, click **Select Fabric** and choose the fabric name.
   b. In the **IP Address** and **Port** fields, enter the IP address and port details.
   c. In the **Transport** field, from the drop-down list, choose the appropriate option. The choices are **TCP**, **UDP**, and **SSL**.

d. In the **Facility** field, from the drop-down list, choose the appropriate facility string.

A facility code is used to specify the type of system that is logging the message. For this feature, the **local0-local7** keywords for locally used facility are supported.

4. In the **Mode** field, click the toggle button to choose between **Unsecured** and **Secured SSL**.

   If you choose Secured SSL, you will be required to provide a server CA certificate.

5. In the **Configuration** area, enter a unique name for the syslog configuration for export.
6. In the **Collection Settings** area select the desired severity options.

   The options available are **Critical**, **Error**, **Warning**, and **Info**. **Major** and **Minor** anomalies and advisories in Nexus Dashboard Insights are mapped to **Error**.

7. Click **Save**.

Export Flow Records To Network Attached Storage

Starting from Nexus Dashboard Insights Release 6.3.1, you can export flow records captured by Nexus Dashboard Insights on a remote Network Attached Storage (NAS) with NFS.

Nexus Dashboard Insights defines the directory structure on NAS where the flow records are exported.

You can export the flow records in Base or Full mode. In Base mode, only 5-tuple data for the flow record is exported. In Full mode the entire data for the flow record is exported.

Nexus Dashboard Insights requires read and write permission to NAS in order to export the flow record.A system issue is raised if Nexus Dashboard Insights fails to write to NAS.

Guidelines and Limitations

- In order for Nexus Dashboard Insights to export the flow records to an external storage, the Network Attached Storage added to Nexus Dashboard must be exclusive for Nexus Dashboard Insights.
- Network Attached Storage with Network File System (NFS) version 3 must be added to Nexus Dashboard.
- Flow Telemetry, Netflow, and sflow records can be exported.
- Export of FTE is not supported.
- Average Network Attached Storage requirements for 2 years of data storage at 20k flows per sec:
  - Base Mode: 500 TB data
  - Full Mode: 2.8 PB data
- If there is not enough disk space, new records will not be exported and an anomaly is generated.

Add Network Attached Storage to Export Flow Records

The workflow to add Network Attached Storage (NAS) to export flow records includes the following steps:

1. Add NAS to Nexus Dashboard.
2. Add the onboarded NAS on Nexus Dashboard to Nexus Dashboard Insights to enable export of flow records.

Add NAS to Nexus Dashboard

1. In Nexus Dashboard's Admin Console, navigate to **Admin** > **System Settings** > **Network-Attached Storage**.
2. Click **Edit**.
3. Click **Add Network-Attached Storage**.
4. Complete the following fields for **Add Network-Attached Storage**.
   a. Select **Read Write** Type. Nexus Dashboard Insights requires read and write permission to export the flow record to NAS. A system issue is raised if Nexus Dashboard Insights fails to

write to NAS.



In Nexus Dashboard Insights, navigate to **Admin** > **System Settings** > **System Issues** to view the system issue.

a. Enter the name of the Network Attached Storage.
b. Enter the IP address of the Network Attached Storage.
c. Enter the port number of the Network Attached Storage.
d. Enter the export path. Using the export path, Nexus Dashboard Insights creates the directory structure in NAS for exporting the flow records.
e. Enter the alert threshold time. Alert threshold is used to send an alert when the NAS is used beyond a certain limit.
f. Enter the storage limit in Mi/Gi.
g. Click **Save**.

Add the onboarded NAS to Nexus Dashboard Insights

1. In Nexus Dashboard Insights, navigate to **Admin** > **System Settings** > **Export Data**.
2. In the Network-Attached storage area, click **Add New**.
3. Complete the following fields for **NAS Configuration**.
    a. Enter the name.
    b. Select the NAS server added to Nexus Dashboard from the drop-down list.
    c. Click **Select Fabric** to select a fabric. You can only select one fabric at a time.
    d. Select the Collection Settings for the flow from the drop-down list. In Base mode, only 5-tuple data for the flow record is exported. In Full mode the entire data for the flow record is exported.
    e. Click **Save**.
4. The traffic from the flows displayed in the **Flows** page is exported as a JSON file to the external NAS in the following directory hierarchy.

```
└── NDI-<VERSION>-FLOW-JSON/
    └── fabricName=<fabricName>/
        └── year=2022/
            ├── month=01/
            │   └── date=01/
            │       ├── hour=01/
            │       │   ├── 52170795-0b94-481c-800a-c47f0fa41fac.json
            │       │   └── fa92c70c-96fc-4e32-ac76-324bdd5139d4.json
            │       └── hour=23/
            │           ├── 737f4292-bf29-4630-bdd9-ccb80885ddc1.json
            │           └── 68b434d9-0957-4fe4-be01-e0688cb4336d.json
            └── month=02/
                └── date=20/
                    ├── hour=10/
                    │   ├── e05ce8fb-88af-45db-8c52-4b00e1841b16.json
                    │   └── 6fd2b652-dfe1-430e-905a-020abd399e3e.json
                    └── hour=23/
                        ├── eeb6784a-33a0-4ae3-b13e-db4db93fe48b.json
                        └── b289c75e-a709-4284-a018-b38ab101d90f.json
```

Navigate to **Analyze** > **Flows** to view the flows that will be exported.

5. Each flow record is written as a line delimited JSON.

JSON output file format for a flow record in base mode

{" fabricName" :" myapic" ," terminalTs" :1688537547433," originTs" :1688537530376," srcIp" :" 2000:201:1:1::1" ," dstIp" :" 2000:201:1:1::3" ," srcPort" :1231," dstPort" :1232," ingressVrf" :" vrf1" ," egressVrf" :" vrf1" ," ingressTenant" :" FSV1" ," egressTenant" :" FSV1" ," protocol" :" UDP" }

{" fabricName" :" myapic" ," terminalTs" :1688537547378," originTs" :1688537530377," srcIp" :" 201.1.1.127" ," dstIp" :" 201.1.1.1" ," srcPort" :0," dstPort" :0," ingressVrf" :" vrf1" ," egressVrf" :" " ," ingressTenant" :" FSV2" ," egressTenant" :" " ," protocol" :" ANY-HOST" }

JSON output file format for a flow record in full mode

{" fabricName" :" myapic" ," terminalTs" :1688538023562," originTs" :1688538010527," srcIp" :" 201.1.1.121" ," dstIp" :" 201.1.1.127" ," srcPort" :0," dstPort" :0," ingressVrf" :" vrf1" ," egressVrf" :" vrf1" ," ingressTenant" :" FSV2" ," egressTenant" :" FSV2" ," protocol" :" ANY-HOST" ," srcEpg" :" ext-epg" ," dstEpg" :" ext-epg1" ," latencyMax" :0," ingressVif" :" eth1/15" ," ingressVni" :0," latency" :0," ingressNodes" :" Leaf1-2" ," ingressVlan" :0," ingressByteCount" :104681600," ingressPktCount" :817825," ingressBurst" :0," ingressBurstMax" :34768," egressNodes" :" Leaf1-2" ," egressVif" :" po4" ," egressVni" :0," egressVlan" :0," egressByteCount" :104681600," egressPktCount" :817825,"

egressBurst" :0," egressBurstMax" :34768," dropPktCount" :0," dropByteCount" :0," dropCode " :" " ," dropScore" :0," moveScore" :0," latencyScore" :0," burstScore" :0," anomalyScore" :0," hashCollision" :false," dropNodes" :" []" ," nodeNames" :" [\" Leaf1-2\"]" ," nodeIngressVifs" :" [\" Leaf1-2,eth1/15\"]" ," nodeEgressVifs" :" [\" Leaf1-2,po4\"]“ ," srcMoveCount" :0," dstMoveCount" :0," moveCount" :0," prexmit" :0," rtoOutside" :false," events" :" [[\\\" 1688538010527,Leaf1-2,0,3,1,no,no,eth1/15,,po4,po4,,,,,0,64,0,,,,,,,,\\\"]]" }

JSON output file format for a flow record in base mode (5 tuple)

{" fabricName" :" myapic" ," terminalTs" :1688537547433," originTs" :1688537530376," srcIp" :" 2000:201:1:1::1" ," dstIp" :" 2000:201:1:1::3" ," srcPort" :1231," dstPort" :1232," ingressVrf" :" vrf1" ," egressVrf" :" vrf1" ," ingressTenant" :" FSV1" ," egressTenant" :" FSV1" ," protocol" :" UDP" }

System Settings

System issues

System issues are problems that may affect the Nexus Dashboard Insights directly and they are raised for system related issues such as connectivity issues, status upgrade, onboarding configurations. The categories for system include Connectivity system issue and Collection system issue.

- A Connectivity system issue is raised when there is a failure in fabric connectivity or any connectivity issues related to Nexus Dashboard Insights.
- A Collection system issue is raised when there is a failure in enabling telemetry configuration.

View system issues

1. Navigate to **Admin** > **System Settings** > **System Issues**.
2. Use the search bar to filter the system issues. The **System Issues** table displays the filtered system issues.
3. Click a system issue to view the additional details such as What's wrong?, What's the impact?, and How do I fix it?.

System Status

The System Status page displays the collection status for your fabric for the last hour.

Nexus Dashboard Insights processes your fabrics telemetry and displays the status for the following jobs or services.

- Fabric
- Node
- Assurance
- Capacity
- Hardware Resources
- Statistics
- Endpoints
- Bug Scan
- Best Practices
- Telemetry Configuration Status

View System Status

1. Navigate to **Admin** > **System Settings** > **System Status Details**.

OR

1. Navigate to **Manage** > **Fabrics**
2. Select a fabric.
3. In the Fabrics page, from the Actions drop-down menu, select **System Status**.



In **Endpoints** column of the status table, a value of "No Data" can indicate there were no changes in the endpoint count in the last hour. This value does not necessarily indicate that there is an issue.

Import and Export of Configurations

The import and export of configurations feature enables you import and export the following configurations in Nexus Dashboard Insights:

- Flow Collection Mode
- Flow Telemetry
- Traffic Analytics
- Microburst
- Anomaly Rules
- Compliance
- Export Settings
- Email
- Message Bus Configurations
- Syslog
- Network Attached Storage (NAS)
- Flow Rules
- User Preferences
- Integrations



Only an administrator can manage all operations for configuration import and export.

User Preferences refers to the custom dashboards and bookmarks information. ND User Preference will not be included.

Nexus Dashboard Insights backup and restore

The Nexus Dashboard Insights 6.5.1 release introduced the unified backup and restore functionality at the Cisco Nexus Dashboard level, which backs up configuration information not only for Nexus Dashboard, but also for any services (such as Nexus Dashboard Insights) running in that Nexus Dashboard.

Even though you will use the unified backup and restore feature to back up and restore configurations at the Nexus Dashboard level, the existing import and export of configurations process at the Nexus Dashboard Insights level will continue to be available to back up and restore Nexus Dashboard Insights deployments. This is necessary for situations where you might want to restore Nexus Dashboard Insights backups from releases prior to the Nexus Dashboard Insights 6.5.1 release.

For example:

- If you backed up a configuration from the Nexus Dashboard Insights release 6.5.1 or later and you want to restore from that backup, you would use the new unified backup and restore functionality, as described in Unified Backup and Restore for Nexus Dashboard and Services.
- However, if you backed up a configuration from an Nexus Dashboard Insights release prior to 6.5.1 and you want to restore from that backup, you would use the import and export of configurations process at the Nexus Dashboard Insights level to restore that backup.

Guidelines and Limitations

- You must be an administrator user to import or export a configuration.
- Snapshot fabrics are not supported.
- Running more than one import job simultaneously could yield unpredictable results and is not supported. Perform only one import job at a time.
- Importing a configuration appends the existing configuration in Nexus Dashboard Insights.
- Importing a configuration does not affect existing anomalies, and existing assurance analyses. Existing anomalies continue to exist after importing a configuration.
- The online fabric must be onboarded on Nexus Dashboard Insights first with the same name as that in the exported configuration tar.gz file before importing all the configuration.
- Only the configurations local to Nexus Dashboard cluster is exported, and the configurations of remote Nexus Dashboard cluster is not exported.
- **Export Settings** import will fail if Nexus Dashboard Insights is not connected to Cisco Intersight. Nexus Dashboard Insights must be connected to Cisco Intersight before importing **Export Settings**.
- Import of any secured configuration that have certificates or passwords is not supported.
- The following behaviors are observed when configurations are exported from releases prior to Nexus Dashboard Insights release 6.3.1:
  - Import of Anomaly Rules with categories and severities that are deprecated in Nexus Dashboard Insights release 6.3.1 are not supported.
  - Export of fast kafka in Message Bus configuration is not supported.

Exporting a Configuration

1. Navigate to **Admin** > **Configuration Import/Export**.
2. Click **Create Configuration Import/Export**.
3. In the **Create Configuration Import/Export** page, click **Export**.
4. Click **Start**. All the configurations available in Nexus Dashboard Insights are exported. All the existing configurations on the host, which includes, Fabrics, Alert Rules, Compliance, Export Settings, Flow Rules, Integrations, and User Preferences are exported. The **Configuration Import/Export** table displays information of the exported files such as status, type, start time, last update time, and content.
5. Click the ellipsis icon and choose **Download** after the export job status has moved to **Completed**. The exported configuration is downloaded as a compressed file.
6. Click the ellipsis icon and choose **Delete** to delete the configuration.

Importing a Configuration

1. Navigate to **Admin** > **Configuration Import/Export**.
2. Click **Create Configuration Import/Export**.
3. In the **Create Configuration Import/Export** page, click **Import**.

4. Select the downloaded compressed tar.gz configuration file and click **Start**. The import job details are displayed in the **Configuration Import/Export** table.
5. Click the ellipsis icon and choose **Apply** once the import job status has moved to **Validated**.
6. Select the configurations to import and click **Apply** The **Configuration Import/Export** table displays the details of the imported configuration.



When the status of the import job status is Partially Failed, some of the configurations would be added and some would be skipped due to failures. To view the reasons for the failure hover the mouse over the status column.

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