

Cisco Nexus Dashboard Insights Sites, Release 6.4.1 - 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 the new features up to this release.

Table 1. New Features and Changed Behavior in the Cisco Nexus Dashboard Insights

Feature	Description	Release	Where Documented
Onboard NX-OS sites without a controller	Support for standalone NX-OS sites.	6.4.1	Add an Online NX-OS Site without a Controller (Standalone NX-OS Site)
Telemetry status	You can now view the telemetry status at the site level.	6.4.1	Individual Site Details
Time selection	You can now select a time range in the Site View.	6.4.1	Individual Site Details

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

## **Sites**

#### **About Sites**

Sites are on-premises network regions that consist of a group of switches and other networking devices that provide connectivity for your applications and endpoints. You can split sites into different availability zones, such as pods, that are analyzed and managed by Nexus Dashboard Insights.

#### Types of on-premises sites

- Online sites: Multiple Nexus switches running ACI or NX-OS that can be represented by a controller such as APIC or NDFC and connected to Nexus Dashboard Insights to continuously stream telemetry. Types of online sites include:
  - ACI: Multiple Nexus switches with Cisco ACI and represented by a Cisco APIC.
  - o NDFC: Multiple Nexus switches with Cisco NX-OS and represented by a Cisco NDFC.
  - o NX-OS: A group of Cisco Nexus 9000 switches running NX-OS without a controller.
- Snapshot sites: Controller-based sites, that are referenced by a snapshot, for use in one-time analysis or demonstrations. They may or may not be connected to Nexus Dashboard Insights over the network.

To learn about how to prepare sites for onboarding, see Add Sites.

A NDFC site is comprised of a fabric running NX-OS that is either fully managed or only monitored by NDFC. All of the switches in the fabric can be analyzed as a part of the site. With a NX-OS based fabric, the fabric could be a NDFC managed fabric or it could be configured using other means such as CLI, Ansible, or any other configuration automation mechanism. For fabrics not using NDFC for configuration management, NDFC must be installed and the fabric must be discovered in read-only or monitor mode. Nexus Dashboard Insights uses NDFC for topology discovery and to identify the role of the switch in the fabric.

A NX-OS site is comprised of Nexus 9000 switches, that run NX-OS without a controller and is connected to Nexus Dashboard.

Once your site is onboarded and fully prepared, Nexus Dashboard Insights will start the site analysis to collect data from your site and display the site information in the **Sites** page. See <u>Site Details</u>. From there, you can view your site's general information, inventory, L2 and L3 connectivity, endpoints, anomalies and advisories and more! To learn more see <u>Site Details</u>.

## **Prerequisites**

- You have configured DNS on the fabric.
- · You have configured NTP on the fabric.
- · You have configured PTP on the fabric
- You have configured in-band management network with loopback interfaces on the switches and the Nexus Dashboard data interface have routed connectivity to those.

- If the switches are controlled by NDFC and they are discovered using out-of-band management interface, then Nexus Dashboard data interface should have routed connectivity to those.
- You have configured Fabric connectivity in Cisco Nexus Dashboard. See Cisco Nexus Dashboard Platform Overview.
- You have the supported software version for your fabric. See Nexus Dashboard and Services Compatibility Matrix.
- For snapshot sites, you have Python3 installed on your system.
- To onboard a NX-OS site without a controller:
  - o You must enable NX-OS Discovery in Nexus Dashboard.
  - o You must enable CDP or LLDP in Nexus switches.
  - Nexus switch management IP address should be reachable to Nexus Dashboard management network.
  - Nexus switch in-band port address should be configured on loopback interface and should be reachable to Nexus Dashboard data network.
- You must enable the NX-API feature on all Cisco NX-OS switches at the CLI prompt before onboarding the site in Nexus Dashboard Insights by using the following command:

switch(config)# feature nxapi

#### **Guidelines and Limitations**

- You cannot onboard a NDFC site with remote authentication using the Manually Add option in Nexus Dashboard Insights. You must first add the NDFC site with remote authentication in Nexus Dashboard. You can then onboard the NDFC site using the Ready to Add option in NDI.
- Switch name or Host name should be unique across all the fabrics discovered in Nexus Dashboard Insights.
- SVI interfaces are not displayed for Cisco NX-OS switches.

# Guidelines and Limitations for NX-OS Sites without a Controller (Standalone NX-OS Sites)

- Interface flow rules in the context of Flow Telemetry are not supported.
- Connectivity Analysis is not supported.
- Onboarding a snapshot site is not supported.
- Onboarding NX-OS sites without a controller is supported on Cisco NX-OS release 9.3(10) and later.
- Onboarding an online NX-OS site without a controller, is only supported on a physical Nexus Dashboard cluster. Onboarding an online NX-OS site without a controller, is not supported on a virtual Nexus Dashboard cluster.
- You cannot onboard standalone NX-OS sites and ACI sites in the same Nexus Dashboard cluster.
- Only Nexus Dashboard Insights deployment mode is supported to onboard NX-OS Standalone sites. The following deployment modes are not supported and option to enable NX-OS Discovery

for onboarding NX-OS Standalone sites would be unavailable.

- NDI and NDFC
- NDI and NDO
- Onboarding NX-OS sites without a controller is supported only on the Cisco Nexus 9000 product family.

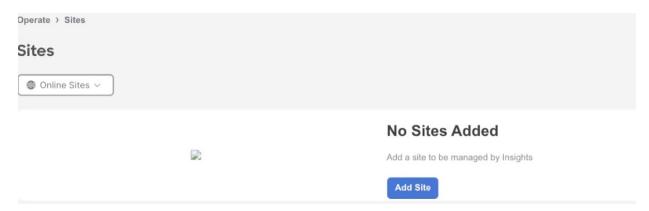
### **Add Sites**

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

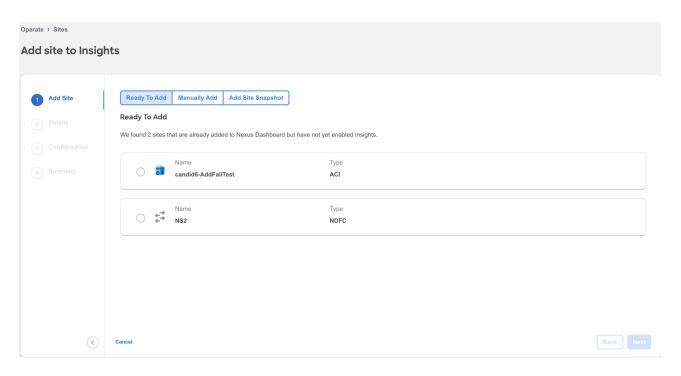
- · Online Sites
  - Enable the site that has already been added to Nexus Dashboard. Sites added to the Nexus Dashboard are not enabled in the services by default, so you will need to explicitly enable them directly from Nexus Dashboard Insights.
  - Add a site to Nexus Dashboard and then enable the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

### Add an Online NDFC Site

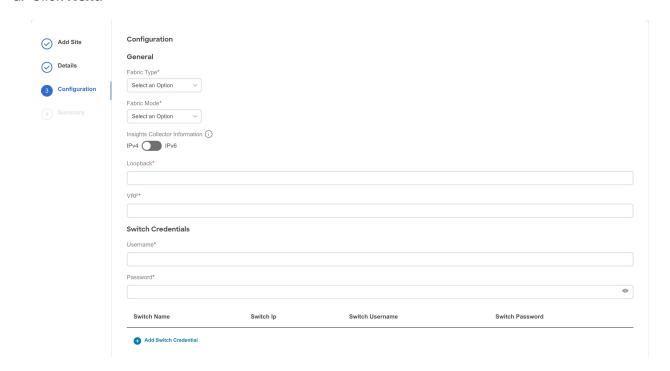
- 1. Navigate to **Manage** > **Sites**.
- 2. Click Add Site.
  - a. If you are adding a site in Nexus Dashboard Insights for the very first time, you will receive the following message. Click **Add Site** to proceed.



To enable a site that has been already added to Nexus Dashboard, select Ready to Add. The sites
added to Nexus Dashboard are displayed. To add a site to Nexus Dashboard, see Cisco Nexus
Dashboard Sites Management.



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



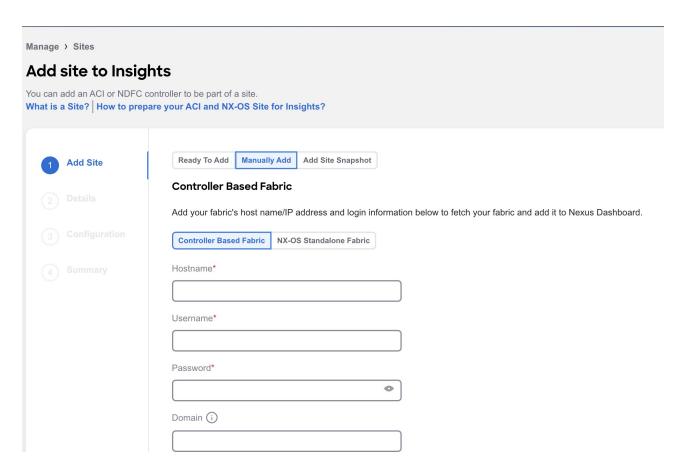
- e. From the Fabric Type drop-down menu, select the fabric type. The options are Classic, VXLAN or SR-MPLS. Choose SR-MPLS option to set up flows for SR-MPLS in a NX-OS fabric. Enhanced Classic LAN is not supported for NDFC sites.
- f. From the Fabric Mode drop-down menu, select the fabric mode. The 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 site. Based on this setting, Nexus Dashboard Insights will configure its collector to receive telemetry from this site. This setting should match your sites 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.
- I. 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 site to Nexus Dashboard and then enable the site using Nexus Dashboard Insights, select **Manually Add**.



- 6. Complete the following fields for **Manually Add**.
  - a. Select Controller Based Fabric.
  - b. In the Hostname field, enter the IP address used to communicate with the site's controller.
  - c. In the **User Name** and **Password** field, provide the login credentials for a user with admin privileges on the site you are adding.
  - d. In the **Domain** field, enter the controller login domain name.
  - e. Click Next.
  - f. Enter the site name to identify the site on Nexus Dashboard.
  - g. Select the site location from the map to identify the site on Nexus Dashboard.
  - h. Click Next.
  - i. 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 sites.
  - j. 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.
  - k. Use toggle to select IPv4 or IPv6 to onboard the site. Based on this setting, Nexus Dashboard Insights will configure its collector to receive telemetry from this site. This setting should match your sites IP address configuration.
  - I. In the **Loopback** field, enter the loopback configured on the switches that provide connectivity to the Nexus Dashboard in-band IP address.
  - m. 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.

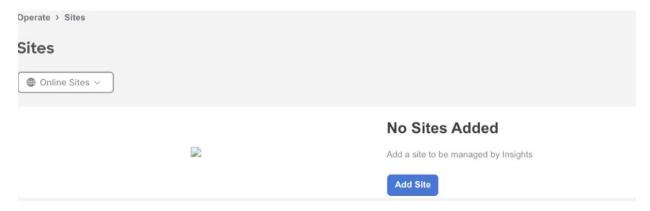


Default and non-default VRFs are supported. In VXLAN/EVPN fabrics they must be part of the underlay.

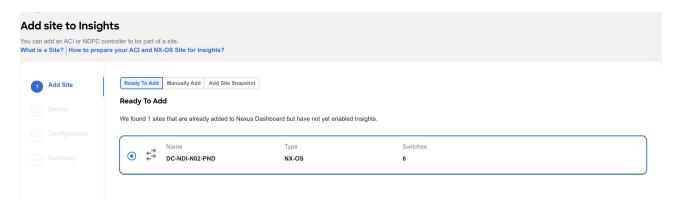
- n. In the **User Name** and **Password** field for Switch Credentials, provide the login credentials for a LAN user with admin privileges on the switch you are adding.
- o. Click **Add Switch Credentials** to add switches to the list and specify their credentials only if the switch credentials do not 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.
- p. Check the check mark to complete to add your entries, and add additional switches as appropriate.
- q. Click Next.
- r. Verify the configuration.
- s. Click Submit.

# Add an Online NX-OS Site without a Controller (Standalone NX-OS Site)

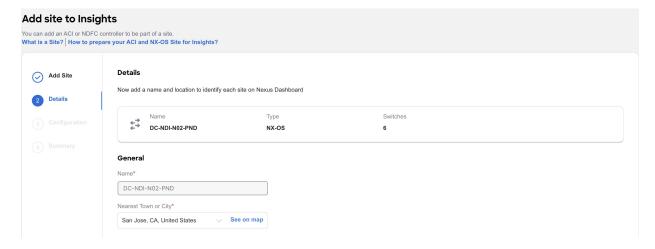
- 1. Navigate to Manage > Sites.
- 2. Click Add Site.
  - a. If you are adding a site in Nexus Dashboard Insights for the very first time, you will receive the following message. Click **Add Site** to proceed.



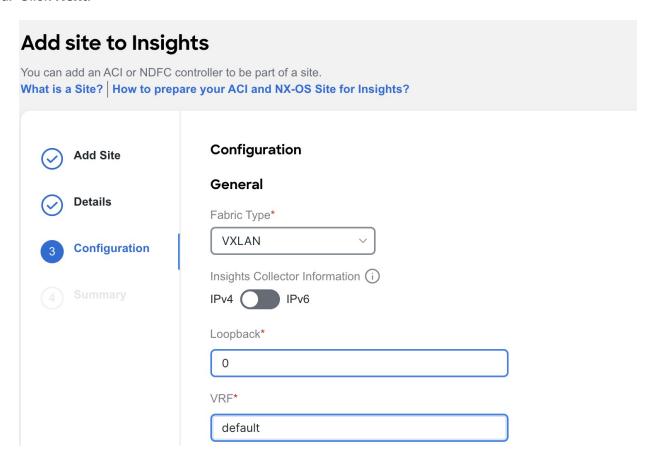
- To enable a site that has been already added to Nexus Dashboard, select Ready to Add. The sites
  added to Nexus Dashboard are displayed. To add a site to Nexus Dashboard, see Cisco Nexus
  Dashboard Sites Management.
- 4. Complete the following fields for **Ready to Add**.



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



d. Click Next.

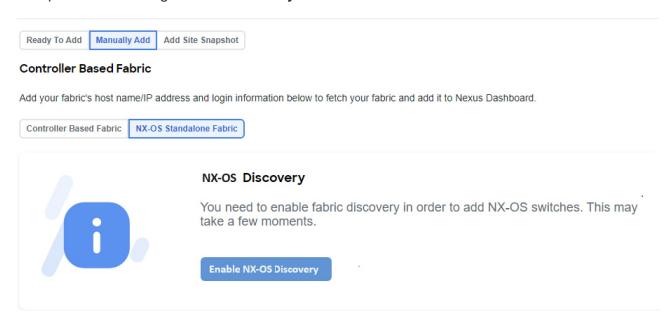


- e. From the Fabric Type drop-down menu, select the fabric type. The options are Classic, VXLAN or SR-MPLS. Choose SR-MPLS option to set up flows for SR-MPLS in a NX-OS fabric.
- f. Use toggle to select IPv4 or IPv6 to onboard the site. Based on this setting, Nexus Dashboard Insights will configure its collector to receive telemetry from this site. This setting should match your sites 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.

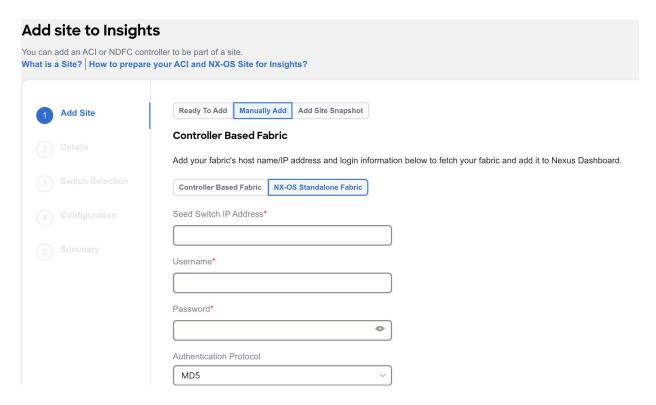


Default and non-default VRFs are supported. In VXLAN/EVPN fabrics they must be part of the underlay.

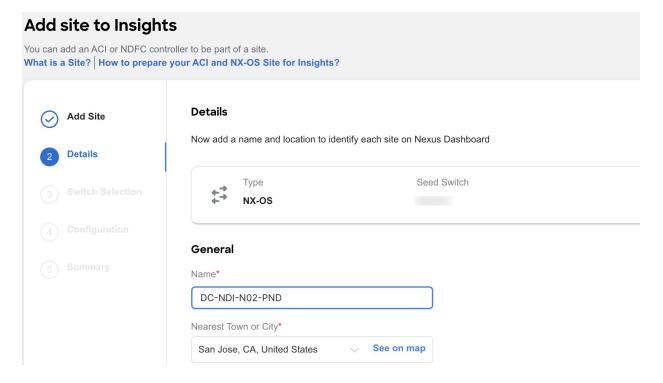
- i. Click Next.
- j. Verify the configuration.
- k. Click Submit.
- 5. To add a site to Nexus Dashboard and then enable the site using Nexus Dashboard Insights, select **Manually Add**.
- 6. Complete the following fields for Manually Add.



- a. Select NX-OS Standalone Fabric.
- b. Click **Enable NX-OS Discovery** to enable NX-OS Discovery in Nexus Dashboard.

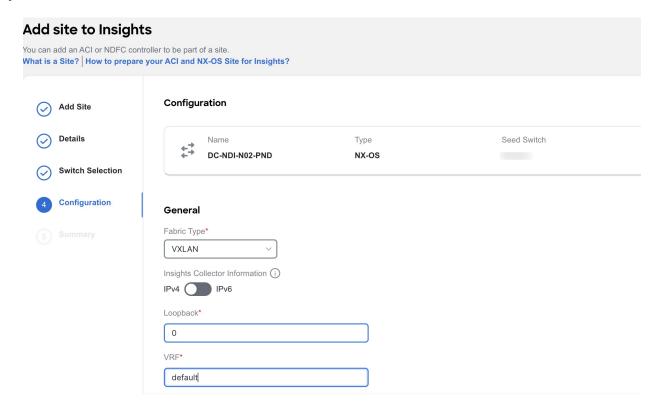


- c. In the Seed Switch IP Address field, enter the IP address of the seed switch management interface.
- d. In the **User Name** and **Password** field, provide the login credentials for a user with admin privileges on the switch you are adding.
- e. From the Authentication Protocol drop-down list, select the protocol.
- f. Click Next.



- g. Enter the NX-OS site name to identify the site on Nexus Dashboard.
- h. Select the NX-OS site location from the map to identify the site on Nexus Dashboard.
- i. Select the switches to be added to the site.

#### 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.
- I. Use toggle to select IPv4 or IPv6 to onboard the site. Based on this setting, Nexus Dashboard Insights will configure its collector to receive telemetry from this site. This setting should match your sites 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.

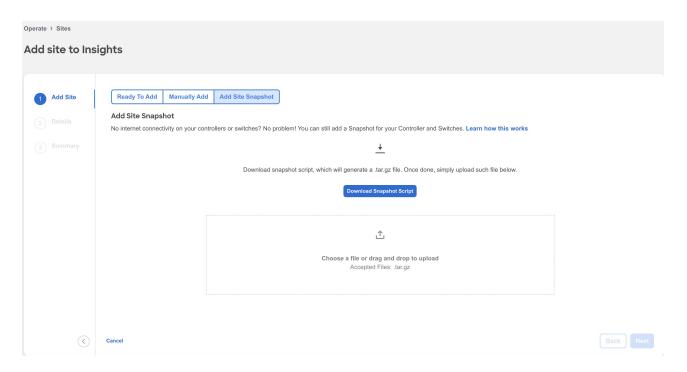


Default and non-default VRFs are supported. In VXLAN/EVPN fabrics they must be part of the underlay.

- o. Click Next.
- p. Verify the configuration.
- q. Click Submit.

## Add a Snapshot Site

- 1. Navigate to Manage > Sites.
- 2. Click Add Site.
- 3. To add a snapshot site, select Add Site Snapshot.

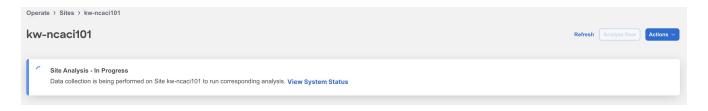


- 4. Click Download Snapshot Script to download the data-collectors.tar.gz to your machine.
- 5. Extract the file you downloaded and run the data collection script. Follow the instructions provided in the readme.md file. After the script is completed successfully, the data is collected in a <filename>.tar.gz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

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 site name to identify the site on Nexus Dashboard.
- 8. Select the site location from the map to identify the site on Nexus Dashboard.
- 9. Click Next.
- 10. Verify the configuration.
- 11. Click Submit.

Once your site is onboarded and fully prepared, Nexus Dashboard Insights will start the analysis to collect data from your site and display the site information in the **Sites** page. See <u>Site Details</u>. The Site Analysis banner displays the progress of the analysis. The time to run the analysis depends on the size of the fabric.



## **Site Details**

In Nexus Dashboard Insights, **Global View** provides bird's eye view of your global network infrastructure for all your sites. The Sites page provides the details for an individual site.

#### Site Details in Global View

After you add the first site, **Global View** gives you a bird's eye view of your global network infrastructure for all your sites, their locations, and the key health metrics.

#### Navigate to **Overview**> **Global View**.

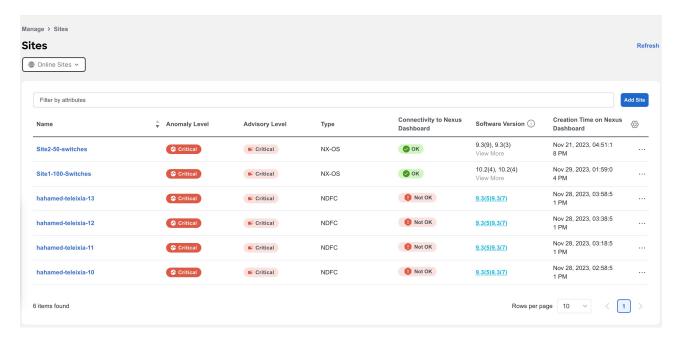
The map visually shows the physical location and total number of your sites in each continent, and their names. Click a site to jump directly to the details for that site, or scroll down to the Sites area to navigate to your site. You can also use the the zoom control icons in the page to change your view of the map.

See an at-a-glance summary for each individual site in the Sites area. It includes their anomaly and advisory health levels, site-external traffic with total data transferred, and connectivity data for endpoints and Layer 3 neighbors. To learn about sites in Global View, see Journey and Global View.

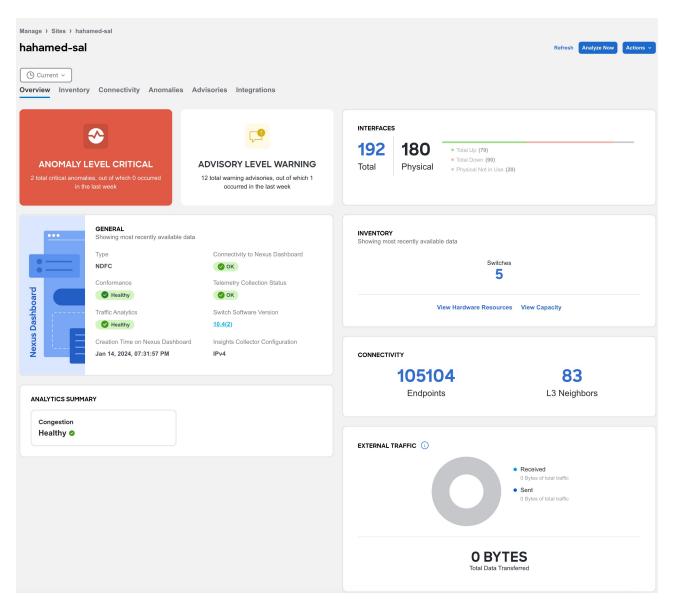
#### Individual Site Details

In the Sites page, you can dive into the details for an individual site, switch, or interface, with a comprehensive dashboard, simple topology, per-device summaries and more. You can also manage anomalies and advisories at a site level.

- 1. Navigate to Manage > Sites.
- 2. Select Online or Snapshot sites from the drop-down list.
- 3. Use the search bar to filter the sites. The Sites table, displays the site type, connectivity status, anomaly and advisory level, onboarding time.



- 4. Click the site name to view details for your site. From the Time Selection drop-down menu select the time. All sections will show data based on time selection and data availability. By default, the current time is selected.
- 5. Click Overview.



- a. In the The **Anomaly** and **Advisory** area you can view the status of your anomaly and advisory levels, and a list of your top anomaly and advisory categories.
  - i. Click **Anomaly** to view the level, category, and count for your anomalies for the site.
  - ii. Click the anomaly name to view additional details.
  - iii. Click Advisory to view the level, category, and count for your advisories for the site.
  - iv. Click the advisory name to view additional details.
- b. The General area shows you the type of site, the software version used, the connectivity status to Nexus Dashboard, conformance status, onboarding time, telemetry status, and Traffic Analytics status. You can see Traffic Analytics status if you have enabled Traffic Analytics in Flow Collection. See Traffic Analytics. In the General area hover on the software version and click View Bugs to view the active and susceptible bugs for that site. See Getting Started.

Telemetry collection status provides insights into the health and performance of the switches and devices in your network. The different telemetry collection statuses at the site level include:

i. **OK** - This status indicates that the telemetry data streaming from all the switches to Nexus Dashboard Insights is functioning correctly. This is the desired state, as it ensures

comprehensive monitoring and visibility into the network's performance.

- ii. **Not OK** This status indicates the telemetry data streaming from all the switches to Nexus Dashboard Insights is not functioning correctly. This could be as a result of various problems such as network outages, misconfigurations, or hardware failures.
- iii. Partial OK This status indicates that telemetry data streaming from all the switches to Nexus Dashboard Insights is not functioning correctly from some of the switches but it is functioning correctly from others. This suggests an inconsistent or partial telemetry data flow within the network which could be caused by various factors, such as switch-specific issues or misconfigurations on some switches.
- c. In the **External Traffic** area, you can see the External Traffic that the site has sent and received in the last 7 days. The donut helps view the how much traffic is sent and received by the site. Click the information icon to view more information about what External Traffic is and how it can be measured for the different types of sites.
- d. In the Interfaces area, you can see the summary of the interfaces for the site. Click Total to view additional details such as Anomaly Level, Admin Status, Operational Status, and Interface Type. Click the interface name to view additional details.
- e. In the **Connectivity** area, you can view details about your endpoints, and L3 neighbors.
- f. In the **Inventory** area, you can view the summary of the controllers and switches for the site.
  - i. Click View Hardware Resources to view the hardware resources for the site. Click and choose a resource from the Top Devices By drop-down list to see a graph for that resource. In the table that follows, see the resource usage by switch. Click the switch name to view additional details.
  - ii. Click **View Capacity** to view the different resources with their maximum capacity and current usage. Site Summary shows you the trends for the week, as well as the capacity by resource for the entire fabric. You see the number of resources used out of the total available capacity for each resource in this site (for example, Bridge Domains 2829 of 15000). The percentage indicates the percentage of resource used. The Switch Summary displays the capacity breakout of resources by switch. The graph shows you the timeline for the parameter that you have selected from the **Top Switches By** drop-down list. In the table, click Operational Resources, Configuration Resources, or Hardware Resources, to see the capacity and usage for each switch in the site.
- g. In the **Analytics Summary** area, you can view the congestion score for the switch. See Inventory.
- 6. Click **Inventory** to view the controllers and switches information for the site. To learn more, see Inventory.
- 7. Click **Connectivity** to view the details of interfaces, endpoints, L3 neighbors, vPC Domains, flows for the site. To learn more, see <u>Inventory</u>. Starting from Nexus Dashboard Insights Release 6.3.1, you can also view Multicast Route details for a site. See <u>Multicast Routes</u>.
- 8. Click **Anomalies** to view all the anomalies for the site. To learn more, see Anomalies and Advisories.
- 9. Click **Advisories** to view all the advisories for the site. To learn more, see Anomalies and Advisories.
- 10. Click **Integrations** to view all the integrations associated with the site. To learn more, see Integrations.
- 11. Click File History to view he history of files that are attached to the snapshot site. It shows the file

name, the file size, when the file was uploaded, upload status, and when the last analysis was run.



File History is displayed only for snapshot sites.

- a. For the currently active snapshot, which is the latest file that you uploaded, you can click **Run** Analysis to run the same snapshot analysis again. This can be useful when additional features are added and you want to re-run an analysis so that the additional features are included in your analysis.
- b. You can also upload a snapshot file for the same site at a different time interval. Click **Upload File** to upload the file and then click **Run Analysis** to run the snapshot analysis.

## **Multicast Routes**

Starting from Nexus Dashboard Insights Release 6.3.1, you can view Multicast Route details for NDFC sites.

In the Multicast Dashboard, you can view the following information for a NDFC fabric:

- Top groups by traffic
- Top groups by receivers

#### **Prerequisites**

Ensure that you have executed the following commands on the Nexus switch.

switch(config)# hardware profile multicast flex-stats-enable

switch(config)# multicast flow-path export

switch(config)# copy running-config startup-config

switch(config)# reload



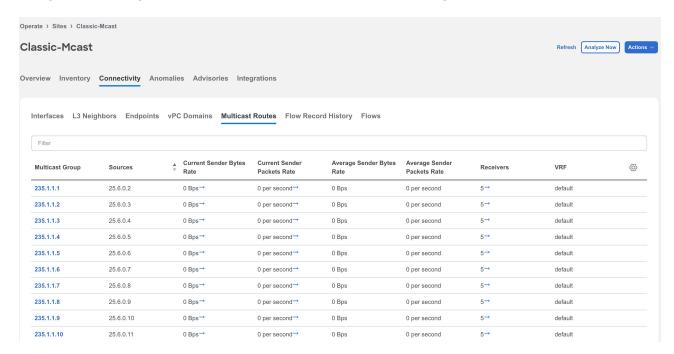
You must also execute the command copy running-config startup-config and reload for the changes to take effect.

#### **Guidelines and Limitations**

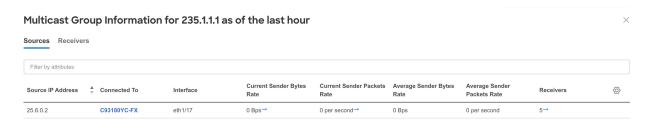
- Multicast route is only supported on Cisco NX-OS Release 10.3(3)F and later.
- Multicast route is only supported for Classic VLAN Fabric.
- Multicast route is only supported for IPv4 addresses.
- Supported scale limits per site: 2000 multicast groups, 16000 S,G entries, 8K routed interfaces.
- When First Hop Router for multicast or the multicast source is configured outside the fabric, Multicast Routes are not displayed in the UI.

#### **View Multicast Routes**

- 1. Navigate to Manage > Sites.
- 2. Select Online or Snapshot sites from the drop-down list.
- 3. Click the site name to view the site details.
- 4. Choose Connectivity > Multicast Routes.
- 5. In the Multicast page, you can view the information such as multicast groups, sources sending to this group, sending rate per source, number of receivers for this group, VRF.



- 6. Click the multicast group to view additional information for sources and receivers.
  - a. Click Sources to view information such as source IP address, switch name, interface



b. Click Receivers to view information such as switch name, receiver count, uptime, L3 interface.



## **Working with Sites**

1. Navigate to Manage > Sites.

- 2. To add a site, click Add Site. See Add Sites.
- 3. Select Online or Snapshot sites from the drop-down list.
- 4. Click the site name to view the Site Details.



- 5. From the Actions drop-down menu, select **Edit Site** to edit the site details. After you update the information, click **Save**.
- 6. From the Actions drop-down menu, select View in Topology to view the topology for the site.
- 7. From the Actions drop-down menu, select **System Status** to view the status of the data analysis for your site. See Getting Started.
- 8. To delete a site from Nexus Dashboard Insights, perform the following steps:
  - a. From the Actions drop-down menu, select **Pause Telemetry Collection** to pause data collection.
  - b. From the Actions drop-down menu, select **Remove from Insights** to remove the site. The site is removed from Nexus Dashboard Insights only and not from Nexus Dashboard.
- 9. From the Actions drop-down menu, select **Resume Telemetry Collection** to resume data collection.
- 10. Click **Analyze Now** to perform an on-demand analysis. Select the service such as Assurance, Bug Scan, or Best Practices and click **Run Now**. See Getting Started.

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