Cisco Nexus Dashboard Insights
Deployment Guide, Release 6.2.2

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The Cisco Nexus Dashboard Insights Deployment Guide

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.

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

Feature	Description	Release
Supported upgrade path	Supported upgrade paths is documented.	6.2.2

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 Insights Documentation.

Cisco Nexus Dashboard Insights Installation

About Nexus Dashboard Insights

Cisco Nexus Dashboard Insights (Nexus Dashboard Insights) is a real-time monitoring and analytics service.

The user content describes the deployment for the Nexus Dashboard Insights service on the Cisco Nexus Dashboard platform for ACI and NDFC fabrics.

Nexus Dashboard Fabric Controller was formerly known as Data Center Network Manager.

Cisco Data Center Network Manager (DCNM) is renamed as Cisco Nexus Dashboard Fabric Controller (NDFC) starting with Release 12.0.1a.

Prerequisites for ACI

- You have configured NTP settings on Cisco APIC. See Configure NTP in ACI Fabric Solution.

- To use the flow telemetry functions in Nexus Dashboard Insights, Telemetry Priority must be selected in the ACI fabric node control policy. In Cisco APIC, choose **Fabric** > **Fabric Policies**> ***Policies**> ***Monitoring** > **Fabric Node Controls** > *your policy name* > **Feature Selection** to select Telemetry Priority.

- To use the flow telemetry functions in Nexus Dashboard Insights, Precision Time Protocol (PTP) must be enabled on Cisco APIC so that Nexus Dashboard Insights can correlate flows from multiple switches accordingly. . In Cisco APIC, choose **System** > **System Settings** > **PTP and Latency Measurement** > **Admin State** to enable PTP.

  The quality of the time synchronization via PTP depends on the accuracy of the PTP Grandmaster (GM) clock which is the source of the clock, and the accuracy and the number of PTP devices such as ACI switches and IPN devices in between.

  Although a PTP GM device is generally equipped with a GNSS/GPS source to achieve the nanosecond accuracy which is the standard requirement of PTP, microsecond accuracy is sufficient for Nexus Dashboard Insights and its flow telemetry, hence a GNSS/GPS source is typically not required.

  For a single-pod ACI fabric, you can connect your PTP GM via leaf switches. Otherwise, one of the spine switches will be elected as a GM. For a multi-pod ACI fabric, you can connect your PTP GM via leaf switches or via IPN devices. Your IPN devices should be PTP boundary clocks or PTP transparent clocks so that ACI switch nodes can synchronize their clock across pods. To maintain the same degree of accuracy across pods, it is recommended to connect your PTP GM via IPN devices.

  See section "Precision Time Protocol" in *Cisco APIC System Management Configuration Guide* for details about PTP connectivity options.

- You have configured in-band management. See Cisco APIC and Static Management Access.

- You have configured Fabric connectivity in Cisco Nexus Dashboard. See Cisco Nexus Dashboard User Guide.

- If one or more DNS Domains are set under DNS Profiles, it is mandatory to set one DNS Domain as default. In Cisco APIC, choose **Fabric** > **Fabric Policies** > **Policies** > **Global** > **DNS Profile** > **default** > **DNS Domains** > set one as default. Failure to do will result in the same switch appearing multiple times in the Nexus Dashboard Insights Flow map.

- Deploy ACI in-band network by configuring EPG using the following:

  - Tenant = mgmt

  - VRF = inb

  - BD = inb

  - Node Management EPG = default/<any_epg_name>

- Nexus Dashboard's data-network IP address and ACI fabric's in-band IP address must be in different subnets.

Prerequisites for NDFC

- Cisco Nexus Dashboard Prerequisites

  - You have configured fabric connectivity in Cisco Nexus Dashboard. See Cisco Nexus Dashboard User Guide for more information.

  - The data network must have IP reachability to the fabrics' in-band IP addresses.

  - You have configured 7 persistent IP addresses from the data network to be used in Nexus Dashboard Insights collector services. For IPv6 management you must have configured 7 IPv6 addresses. See section *Cluster Configuration* in the Cisco Nexus Dashboard User Guide for more information.

  - For a NDFC site installation, the collectors will use persistent IP addresses. You must configure the persistent IP addresses before enabling Nexus Dashboard Insights.

  - If Cisco Nexus Dashboard is deployed in VMware ESX, you must enable promiscuous mode for both management and data network interface portgroups. See Configuring promiscuous mode on a virtual switch or portgroup for more information.

  - Starting with this release you can use IPv6 addresses to configure persistent IP addresses. You must use either IPv4 or IPv6 to configure persistent IP addresses for Nexus Dashboard Insights. See section *Cluster Configuration* in the Cisco Nexus Dashboard User Guide for more information.

  - IPv6 is supported for in-band management interface for leaf and spine switches. IPv6 is not supported for out-of-band management interface for leaf and spine switches.

  - Assurance Analysis, Firmware Update Analysis, and Connectivity analysis are not supported for IPv6 underlay EVPN Fabric.

  - For IPv6 address support, the site must be running NDFC Release 11.5(3) or later.

  - If adding a NDFC site, the Cisco Nexus Dashboard computes must be L2 adjacent (all of the computes should be in the same subnet).

- Precision Time Protocol (PTP) must be configured on all nodes you want to support with Nexus Dashboard Insights. In both managed and monitor site mode, you must ensure PTP is correctly configured on all nodes in the site.

  ◦ For details about Precision Time Protocol see, *Cisco DCNM/NDFC LAN Fabric Configuration Guide*.

    Ensure PTP is enabled in Cisco NDFC easy site setup. In the **Advanced** tab on Cisco NDFC site setup, check the box for *Enable Precision Time Protocol (PTP)*.

  ◦ The PTP Grandmaster Clock should be provided by a device that is external to the network site. Using Cisco Nexus 9000 series switches as PTP Grandmaster is not supported.

    > 🛈 N9k-C93180YC-FX3 switch in the fabric can be used as a PTP GM.

    The quality of the time synchronization via PTP depends on the accuracy of the PTP Grandmaster (GM) clock which is the source of the clock, and the accuracy and the number of PTP devices along the network path. Although a PTP GM device is generally equipped with a GNSS/GPS source to achieve the nanosecond accuracy which is the standard requirement of PTP, microsecond accuracy is sufficient for Nexus Dashboard Insights and its flow telemetry, hence a GNSS/GPS source is typically not required.

Guidelines and Limitations for ACI

- See Cisco Nexus Dashboard User Guide for information regarding the ports required by the Cisco Nexus Dashboard cluster and its services.

- You must use In-band VRF while configuring in-band management. Do not use unique VRF in tenant management for in-band configuration.

- After performing a a restore the Nexus Dashboard cluster configuration in Nexus Dashboard, you must uninstall Nexus Dashboard Insights and install Nexus Dashboard Insights again.

- If there is a firewall between the Nexus Dashboard nodes and the network site, the firewall should not be doing NAT for the Nexus Dashboard nodes' IP addresses or the in-band management IP addresses of the network devices on the site, including the switches and the APIC or the NDFC controllers.

- The following Cisco Nexus 9000 ACI-Mode Switches versions are not supported with Nexus Dashboard Insights Flow Telemetry:

  ◦ 14.2(4i)

  ◦ 14.2(4k)

  ◦ 15.0(1k)

    If you enable Flow Collection for a Site Group that contains 1 or more unsupported switches, the status of Flow is displayed as **Disabled**. After you upgrade the switches to a supported version, the the status of Flow is displayed as **Enabled**.

Guidelines and Limitations for NDFC

- See Cisco Nexus Dashboard User Guide for information regarding the ports required by the Cisco Nexus Dashboard cluster and its services.

- After performing a a restore the Nexus Dashboard cluster configuration in Nexus Dashboard, you must uninstall Nexus Dashboard Insights and install Nexus Dashboard Insights again.

- If there is a firewall between the Nexus Dashboard nodes and the network site, the firewall should not be doing NAT for the Nexus Dashboard nodes' IP addresses or the in-band management IP addresses of the network devices on the site, including the switches and the APIC or the NDFC controllers.

- After you upgrade from NDFC 11.5.x to NDFC 12.x, you must export the configuration from Nexus Dashboard Insights for site group with NDFC 12.x IP address and credentials. Importing NDFC configuration file would cause certain services like Assurance Analysis to fail due to NDFC credentials.

Downloading Nexus Dashboard Insights

Use this procedure to download Nexus Dashboard Insights from the Cisco DC App Center.

Before you begin

You must have administrative credentials to download applications from Cisco DC App Center.

Procedure

1. Log in to the Cisco DC App Center with admin privileges.

2. Click the **Download Applications** icon ⬇ on the far-right side of the work pane. A new browser tab or window opens to the Cisco App Center.

3. Search for Nexus Dashboard Insights using the search bar.

4. Select the Nexus Dashboard Insights version you want to download and click **Download**

5. Review the license agreement and, if OK, click **Agree and download**. The Cisco Nexus Dashboard Insights is downloaded to your local machine.

   > ℹ️ Prior releases used .aci extension for Nexus Dashboard Insights images. Starting with release 6.0.1, Nexus Dashboard Insights will be available as .nap file instead.

6. Note the download location of the Nexus Dashboard Insights file on your local machine.

7. Move the downloaded Nexus Dashboard Insights file to a http server, which can then be uploaded to Nexus Dashboard.

Installing Nexus Dashboard Insights

Use this procedure to install Nexus Dashboard Insights on Nexus Dashboard.

Before you begin

- You have installed and configured the Nexus Dashboard. See the Cisco Nexus Dashboard Deployment Guide.
- Ensure that Nexus Dashboard cluster has at least three healthy master nodes.
- You must have administrator credentials to install Nexus Dashboard Insights.
- You have downloaded Nexus Dashboard Insights from Cisco DC App Center.
- You have configured network scale in Nexus Dashboard. See *Cluster Configuration* in the Cisco Nexus Dashboard User Guide.

Procedure

1. Log in to the Nexus Dashboard GUI with admin privileges.

2. From the drop-down menu, select Admin Console.

3. Choose **Admin Console** > **Services**. You can either download and install the service from the AppStore or manually install the service. To download and install the service from the AppStore, see step 3. To manually install the service, see step 4.

4. You can download and install the service from the AppStore. In the **Service Catalog** pane, choose **Services** > **AppStore**.
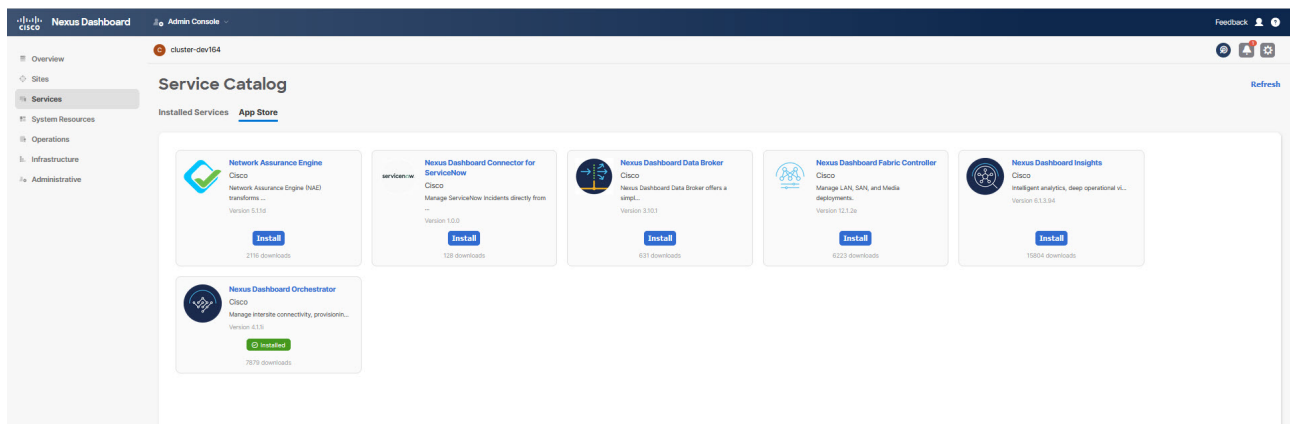
   a. In the Nexus Dashboard Insights tile, click **Install**. Nexus Dashboard Insights will download the service directly from the Cisco DC App Center and install it. After the process completes, the service will be available in your Service Catalog. You can view the installed services in the **Installed Services** tab.

   b. Once the installation is completed, click **Start**.

5. You can also manually install the service.

   a. Click **Actions** > **Upload Service**.

   b. Choose the image file you downloaded the Cisco DC App Center. You can choose to upload the application from an http service or from your local machine.

   c. To upload a local image, select **Local** and click **Choose File** to select the file you downloaded to your local system.

   d. To use a remote server, select **Remote** and provide the URL to the image file.

> **ℹ** If you are providing an http URL to the image, your web server must be configured to not interpret `.nap` files and serve them as-is. Typically, this means including the extension in the following line in the web server's `httpd.conf` configuration file: `AddType application/x-gzip .gz .tgz .nap`

    e. Click **Upload**.

    f. Once the installation is completed, click **Start**. See *Start Services* in the Cisco Nexus Dashboard User Guide.

> **ℹ** Starting with Nexus Dashboard Release 2.2(1), you can define the intended scale for the service running on Nexus Dashboard in the **Network Scale** area of Cluster Configuration. See *Cluster Configuration* in the Cisco Nexus Dashboard User Guide.

6. Once the service is enabled, click **Open**. The **No Sites Enabled** page is displayed.

7. Click **Configure Site Group** to set up Nexus Dashboard Insights. See the *Cisco Nexus Dashboard Insights User Guide* for more information.

Important Notes

- Starting with Nexus Dashboard Release 2.1(2), if you are ordering the physical Nexus Dashboard servers, you have the option to choose Nexus Dashboard Insights and Nexus Dashboard Orchestrator services to be pre-installed on the hardware before it is shipped to you. For more information, see the Nexus Dashboard Ordering Guide. If you choose the option of pre-installing the services, you must enable the Nexus Dashboard Insights service after deploying Cisco Nexus Dashboard as a physical appliance. If you are deploying the virtual form factor of the Nexus Dashboard, there are no changes to service installation and you will need to deploy the Nexus Dashboard Insights service separately after the cluster is ready.

- Starting with Nexus Dashboard Release 2.2(1), you can define the intended scale for the service running on Nexus Dashboard in the **Network Scale** area of Cluster Configuration. During the Nexus Dashboard Insights installation process, Nexus Dashboard sends the network scale data and information about the nodes in the cluster to Nexus Dashboard Insights. Based on the information, Nexus Dashboard Insights determines the correct deployment profile to be used and installs the service with the right deployment profile. See *Cluster Configuration* in the Cisco Nexus Dashboard User Guide.

  ◦ If the intended scale is not defined in the **Network Scale** area for Greenfield or Brownfield scenarios, the service will choose the correct profile for the cluster based on the number of Nexus Dashboard nodes. Depending on the number of Nexus Dashboard nodes, the service will either install the profile that matches the intent or a lower profile than the requested intent but matching the number of Nexus Dashboard nodes.

  ◦ If the number of Nexus Dashboard nodes is less than number of expected Nexus Dashboard nodes, you will receive an error and will not be able to start the service.

  ◦ If an incorrect deployment profile is retained after Nexus Dashboard Insights upgrade, you must delete Nexus Dashboard Insights and re-install the service with the correct deployment profile.

- For cluster sizing information and recommended number of nodes based on specific use cases, see the Cisco Nexus Dashboard Capacity Planning Tool.

- For virtual deployment profile, you must have 3 data nodes and 3 app nodes. The data nodes must be deployed as master nodes and app nodes must be deployed as worker nodes.

- For virtual large deployment profile, you must have 3 data nodes and 6 app nodes. Three data nodes must be deployed as master nodes and rest of the workers can be configured as app or data nodes. See Cisco Nexus Dashboard User Guide.

  - The data node must include the following system resources:

    - 32 vCPU

    - 128 GB of RAM

    - 3 x 1 TB SSD or NVMe disks

  - The app node must include the following system resources:

    - 16 vCPU

    - 64 GB of RAM

    - 550 GB SSD or HDD or NVMe disks

- Deploying Nexus Dashboard Insights on a virtual Nexus Dashboard cluster is only supported on 4th Generation Intel Core Processor or later.

- Starting with Nexus Dashboard Insights 6.0.2 patch release, deploying Nexus Dashboard Insights on a virtual Nexus Dashboard cluster is supported on AMD Milan or Rome processors.

- After reloading one the app nodes in a virtual Nexus Dashboard cluster, it takes about 5-10 minutes for the the services to move to any other available data or app node in the virtual Nexus Dashboard cluster. During this time period, the service UI may not be accessible.

Deployment Profile

The deployment profile defines the resources that the Nexus Dashboard will allocate to the Nexus Dashboard Insights service. See Important Notes. The deployment profiles for Nexus Dashboard Insights includes:

- Deployment profile *physical-standard* : Standard scale profile suitable for more than 50 nodes and 10,000 to 20,000 flows on physical Nexus Dashboard.

- Deployment profile *physical-small* : Small scale profile suitable for less than 50 nodes and 10,000 flows on physical Nexus Dashboard.

- Deployment profile *virtual* : Small scale profile for 50 nodes and 2500 flows on virtual Nexus Dashboard Deployment.

- Deployment profile *virtual-large* : Standard Scale profile suitable for 200 nodes and 5000 flows on virtual Nexus Dashboard. For virtual deployment profile, you must have 3 data nodes and 3 app nodes. See Important Notes. For virtual-large deployment profile, you must have 3 data nodes and 6 app nodes.

Table 2. Resource Requirements for Deployment Profile physical-standard

Type	Minimum Usage (Request)	Maximum Usage (Limit)
CPU	13 cores	64 cores
Memory	131.84 GB	312.91 GB
Storage	1.25 TB	-

Table 3. Resource Requirements for Deployment Profile physical-small

Type	Minimum Usage (Request)	Maximum Usage (Limit)
CPU	12 cores	52 cores
Memory	123.73 GB	297.01 GB
Storage	1.2 TB	-

Table 4. Resource Requirements for Deployment Profile virtual

Type	Minimum Usage (Request)	Maximum Usage (Limit)
CPU	11 cores	40 cores
Memory	48.65 GB	132.4 GB
Storage	240.52 GB	-

Table 5. Resource Requirements for Deployment Profile virtual-large

Type	Minimum Usage (Request)	Maximum Usage (Limit)
CPU	11 cores	40 cores
Memory	48.65 GB	132.4 GB
Storage	240.52 GB	-

When you upgrade to Nexus Dashboard Insights release 6.1.1, the deployment profiles are retained during an upgrade if the intended scale is not defined in the **Network Scale** area in Nexus Dashboard.

Table 6. Infra Services Profiles for Nexus Dashboard Insights

Deployment Scenario	`elasticsearch` **profile**	`elasticsearch-nir` **profile**	`kafka` **profile**	**NDI Profile**
<50 switches and <10,000 flows	`small`	`small`	`standard`	`physical-small`
51-100 switches and 10,000 flows	`small`	`small`	`standard`	`physical-small`
>100 switches and/or >10,000 flows	`standard`	`default`	`large`	`physical-standard`

Disabling and Deleting Cisco Nexus Dashboard Insights on Cisco Nexus Dashboard

Before you begin

You need administrator credentials for Cisco Nexus Dashboard.

Procedure

1. Log in to Cisco Nexus Dashboard as an admin.

2. From the drop-down menu, select Admin Console.

3. In the **Navigation** pane, choose **Services** > **Service Catalog** to view the services hosted on Cisco Nexus Dashboard.

4. Select the Cisco Nexus Dashboard Insights service.

5. Click the ellipses icon and then click **Disable** to disable the service.

6. Click the ellipses icon and then click **Restart** to restart the service.

7. Click the ellipses icon and then click **Available Versions**. The popup window displays the available Nexus Dashboard Insights versions. Click the delete icon to delete the service.

Cisco Nexus Dashboard Insights Upgrade

Supported Upgrade Paths for Nexus Dashboard Insights

From	To
Cisco Nexus Insights 6.1.3.94/98 on Nexus Dashboard 2.2.2	Nexus Dashboard Insights 6.2.2.380 on Nexus Dashboard 2.3.2d
Cisco Nexus Insights 6.2.1.329 on Nexus Dashboard 2.3.2d	Nexus Dashboard Insights 6.2.2.380 on Nexus Dashboard 2.3.2d
Cisco Nexus Insights 6.2.2.368 on Nexus Dashboard 2.3.2d	Nexus Dashboard Insights 6.2.2.380 on Nexus Dashboard 2.3.2d
Nexus Dashboard Insights 6.2.1 (6.2.1.329) on Nexus Dashboard 2.3.2	Nexus Dashboard Insights 6.2.2 (6.2.2.368) on Nexus Dashboard 2.3.2
Nexus Dashboard Insights 6.1.3 (6.1.3.94 and 6.1.3.98) on Nexus Dashboard 2.2.2	Nexus Dashboard Insights 6.2.2 (6.2.2.368) on Nexus Dashboard 2.3.2
Nexus Dashboard Insights 6.1.3 (6.1.3.94 and 6.1.3.98) on Nexus Dashboard 2.2.2	Nexus Dashboard Insights 6.2.1 (6.2.1.329) on Nexus Dashboard 2.3.2
Nexus Dashboard Insights 6.1.2 (6.1.2.89) on Nexus Dashboard 2.2.1	Nexus Dashboard Insights 6.1.3 (6.1.3.94 and 6.1.3.98) on Nexus Dashboard 2.2.2
Nexus Dashboard Insights 6.1.1 (6.1.1.65) on Nexus Dashboard 2.2.1	Nexus Dashboard Insights 6.1.3 on Nexus Dashboard 2.2.2
Nexus Dashboard Insights 6.1.1 (6.1.1.65) on Nexus Dashboard 2.2.1	Nexus Dashboard Insights 6.1.2 on Nexus Dashboard 2.2.1
Nexus Dashboard Insights 6.0.2 patch (6.0.2.1945) on Nexus Dashboard 2.1.2	Nexus Dashboard Insights 6.1.1 on Nexus Dashboard 2.2.1
Nexus Dashboard Insights 6.0.2 (6.0.2.1928) on Nexus Dashboard 2.1.2	Nexus Dashboard Insights 6.1.1 on Nexus Dashboard 2.2.1
Nexus Dashboard Insights 6.0.2 (6.0.2.1928) on Nexus Dashboard 2.1.2	Nexus Dashboard Insights 6.0.2 patch (6.0.2.1945) on Nexus Dashboard 2.1.2
Nexus Dashboard Insights 6.0.1 (6.0.1.23) on Nexus Dashboard 2.1.1	Nexus Dashboard Insights 6.0.2 patch (6.0.2.1945) on Nexus Dashboard 2.1.2
Nexus Dashboard Insights 6.0.1 patch (6.0.1.41) on Nexus Dashboard 2.1.1	Nexus Dashboard Insights 6.0.2 (6.0.2.1928) on Nexus Dashboard 2.1.2
Nexus Dashboard Insights 6.0.1 (6.0.1.23) on Nexus Dashboard 2.1.1	Nexus Dashboard Insights 6.0.2 (6.0.2.1928) on Nexus Dashboard 2.1.2
Nexus Dashboard Insights 6.0.1 on Nexus Dashboard 2.1.1	Nexus Dashboard Insights 6.0.1 patch on Nexus Dashboard 2.1.1

From	To
Cisco Nexus Insights 5.1 on Nexus Dashboard 2.0.2	Nexus Dashboard Insights 6.0.1 on Nexus Dashboard 2.1.1

- See [Cisco Nexus Dashboard Deployment Guide](#) for information on upgrading Cisco Nexus Dashboard.

- For cluster sizing information and recommended number of nodes based on specific use cases, see the [Cisco Nexus Dashboard Capacity Planning Tool](#).

Guidelines and Limitations

- If you are running Nexus Dashboard Insights 6.2.1, you must disable the service before upgrading to Nexus Dashboard, Release 2.3.2. After the Nexus Dashboard upgrade is complete, enable Nexus Dashboard Insights 6.2.1 and then install and upgrade to Nexus Dashboard Insights, Release 6.2.2.

- It is recommended to upgrade the platform and the service together. You must perform the upgrade in the following order:

  1. Upgrade Nexus Dashboard.

  2. In the same maintenance window as the platform upgrade, upgrade Nexus Dashboard Insights.

- If you are running Cisco Network Assurance Engine in your cluster, you must delete Cisco Network Assurance Engine before upgrading.

- After upgrading from Nexus Insights 5.1 to Nexus Dashboard Insights Release 6.0.1, you must set the NDFC and switch credential in Nexus Dashboard Insights to run Assurance Analysis and Delta Analysis. See section "Cisco Nexus Dashboard Insights Configuring the Basics for Day 0 Setup" in the *Cisco Nexus Dashboard Insights User Guide - For Cisco DCNM*

Upgrading Nexus Dashboard Insights

Use this procedure to upgrade Nexus Dashboard Insights on Cisco Nexus Dashboard.

Before you begin

- You must have administrator credentials to upgrade Nexus Dashboard Insights .

- You have downloaded the latest version of Nexus Dashboard Insights from the Cisco DC App Center.

- Ensure that you have to upgraded to Nexus Dashboard Release 2.3.2. See [Cisco Nexus Dashboard Deployment Guide](#).

- You must delete the older versions of Cisco Network Assurance Engine before upgrading to the latest version of Nexus Dashboard Insights.

Procedure

1. Log in to the Nexus Dashboard GUI with admin privileges.

2. From the drop-down list select Admin Console.

3. Click **Services** tab on the left navigation pane.

4. Click **Actions** > **Upload Service**.

5. Install the new version. See Installing Nexus Dashboard Insights.

6. Click **Refresh** to check the upload status.

7. Click the ellipses icon on the Nexus Dashboard Insights tile.

8. Click **Available Versions**.

   The popup window displays the available Nexus Dashboard Insights versions.

9. Click **Activate**.

10. Once the new version appears on the Nexus Dashboard Insights tile, the upgrade is complete.

11. Click **Open** to launch the upgraded Nexus Dashboard Insights service.

    This upgrade procedure preserves the user data from the previous installation. Nexus Dashboard Insights detects and adds the on-boarded site automatically since the data is already available.