Cisco Network Assurance Engine App Installation and Upgrade Guide, Release 5.1(1)

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Cisco Network Assurance Engine Application

Overview

The Cisco Network Assurance Engine app provides continuous verification and analysis of the entire data center network, giving operators confidence that their network is operating consistent with intent. It combines mathematically accurate network models with codified Cisco domain knowledge to generate smart events that pinpoint deviations from intent and offer remediation recommendations.

Management and Network Connectivity

Cisco NAE app can be deployed on the Cisco Nexus Dashboard cluster with each NAE services scheduled to run on any Cisco Nexus Dashboard node. The Out-of-band management interface on the Cisco Nexus Dashboard will be used as management interface on Cisco Nexus Dashboard. The In-band management interface will be used by the application to access the management network of the Cisco ACI and Cisco NX-OS fabrics. If in-band management interface is not configured, then out-of-band management interface will not be be used. Cisco NAE GUI is also reachable through the Cisco Nexus Dashboard Dashboard.

Cisco NAE app can collect data from the assured networks using the network's in-band management interface or out-of-band management interface. This is applicable when the Cisco NAE app is hosted on the Cisco Nexus Dashboard. As the Cisco Nexus Dashboard uses its data port to connect to the assured networks, you must connect either the network's in-band management or out-of-band management subnet to the Cisco Nexus Dashboard's data port. You can connect directly or use the Layer-2 or Layer-3 network. If the same Cisco Nexus Dashboard is hosting other applications that must use the network's in-band management interface, such as Cisco Nexus Insights, you can use the in-band management for all the applications hosted on the Cisco Nexus Dashboard. The Cisco NAE app does not use Cisco Nexus Dashboard's native site on-boarding process. To add a network site to the Cisco NAE app, you must create an assurance group for the network site in the Cisco NAE app. See *Cisco NAE Getting Started Guide* for more information.
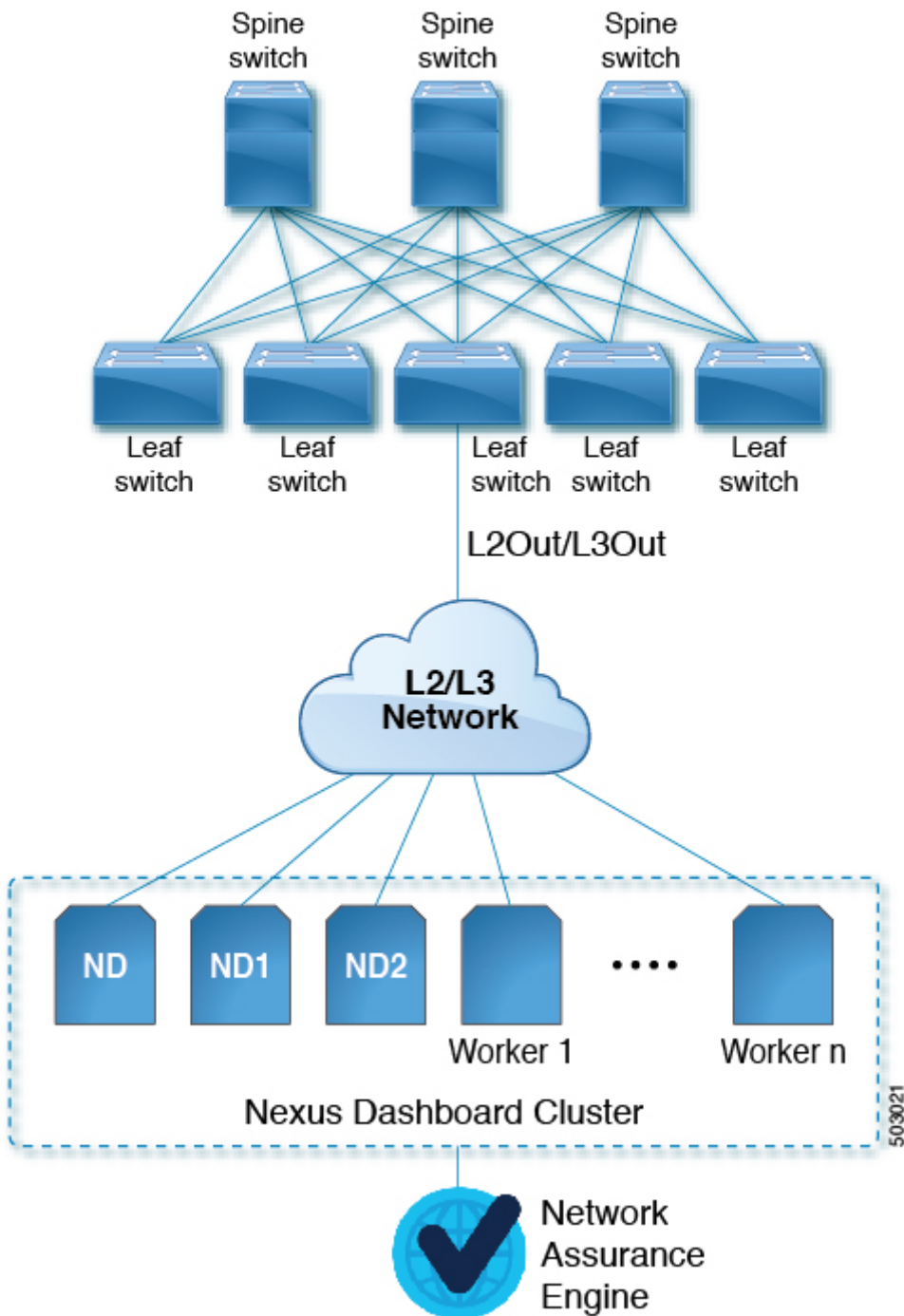
Figure 1. Cisco NAE App

When Cisco NAE app is deployed in Cisco Nexus Dashboard, it uses each of the two networks for different purposes as shown in the following table:

Traffic Type	Network
Cisco APIC Any other remote devices or controllers	Data network
Intra-cluster communication	Data network
Remote authentication (LDAP/TACACS)	Data network

See the Cisco Nexus Dashboard Deployment Guide for information regarding Cisco Nexus Dashboard.

Installation Requirements

System Requirements

The following tables identify the system requirements for installing the Cisco NAE app on Cisco Nexus Dashboard.

Table 1. System Requirements

Requirement	Description
Cisco Nexus Dashboard	Physical form factor (ISO form factor)
Cisco Nexus Dashboard services nodes	A minimum of 3 node cluster

See the Cisco Nexus Dashboard Deployment Guide and Cisco Nexus Dashboard User Guide for information regarding Cisco Nexus Dashboard.

See the Cisco Network Assurance Engine Documentation for information regarding Cisco NAE documentation.

Software Compatibility Information

Table 2. Compatiblity Information

Product Name	Release
Cisco Nexus Dashboard	• 2.0.2 • 2.0.1
Cisco DCNM	• 11.4(1) • 11.3(1)
Cisco APIC	• 5.1(2) • 5.1(1) • 5.0(2) • 5.0(1) • 4.2(7) • 4.2(6) • 4.2(5) • 4.2(4) • 4.2(3) • 3.2(9)

See the Compatibility Matrix for more information.

Verified Scalability

The following table lists the maximum verified scalability limits for the Cisco NAE app.

Table 3. Verified Scalability Limits

Feature	Scale Limit for Deployment Profile: Small	Scale Limit for Deployment Profile: Medium	Scale Limit for Deployment Profile: Large
APIC Fabric Size	50 leaf switches	100 leaf switches	400 leaf switches
DCNM Fabric Size	50 leaf switches	100 leaf switches	400 leaf switches
MSO Size	Up to 4 ACI fabrics	Up to 4 ACI fabrics	Up to 4 ACI fabrics

See the Cisco Nexus Dashboard Cluster Sizing for more information.

Installing Cisco Network Assurance Engine App

Prerequisites

- You have installed Cisco Nexus Dashboard Release 2.0.1.

- Cisco Nexus Dashboard cluster is successfully deployed.

- You have configured the in-band management interface in Cisco Nexus Dashboard.

- You have downloaded the Cisco NAE app from the Cisco DC App Center.

- You have the credentials for the SMTP server.

- Ensure that ports 443 and 22 are open for HTTPS and SSH communication between the Cisco NAE app and Cisco APIC.

- LDAP and TACACS+ server should be accessible from the in-band interface of the Cisco Nexus Dashboard.

- NVMe (Non-Volatile Memory Express) of 1.6T per Cisco Nexus Dashboard node is required for the Cisco NAE app.

Guidelines and Limitations

- Cisco NAE app is only supported on Cisco Nexus Dashboard cluster SE-CL-L3.

- If you are deploying Multi-Site Orchestrator, Nexus Insights, and Network Assurance Engine in the same cluster, you must ensure that Nexus Insights and Network Assurance Engine are installed and enabled first before enabling the Multi-Site Orchestrator application.

Installing the Cisco NAE App

Use this procedure to install the Cisco NAE app on Cisco Nexus Dashboard.

> Starting from Cisco NAE app Release 5.1(1), when you enable an application, you will be prompted to select a Deployment Profile, which will define the resources that the Cisco Nexus Dashboard will allocate to the Cisco NAE app.

> Before enabling the Cisco NAE app, ensure that Cisco Nexus Dashboard cluster has at least three healthy master nodes.

Before You Begin

- You must have administrator credentials to install the Cisco NAE app.

- You have installed and configured the Cisco Nexus Dashboard.

- You have downloaded the Cisco NAE app from the Cisco DC App Center.

Procedure

1. Download the the Cisco NAE app from the Cisco DC App Center.

2. Host the downloaded app to a http server and copy the URL.

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

4. In the **Navigation** pane, choose **Service Catalog** .

5. Click **Actions** > **Upload App**.

6. Choose **Remote**.

7. In the **URL** field, enter the http address of the Cisco NAE app and click Submit.

8. Once the application installation is completed, click **Enable**. In the Cisco NAE installed on Cisco Nexus Dashboard, make sure that the health icon is green and all the pods and containers are running.

9. From the **Deployment Profile** drop-down list, select the deployment profile you want to use. The deployment profile defines the resources that the Cisco Nexus Dashboard will allocate to the Cisco NAE app. The available profiles include Physical-standard-nae-small, Physical-standard-nae-medium, and Physical-standard-nae-large.

10. Click **Enable**.

11. The Cisco NAE app GUI appears. Complete the following fields for **Administrator Profile**.

    a. Enter the email address.

    b. Enter the password and enter the password again to confirm.

12. Complete the following fields for SMTP server.

Cisco NAE app leverages email as the mechanism for password recovery. SMTP Server configuration is required for password recovery.

> 🛈 We strongly recommended that you configure the SMTP server information, since it is required by the admin for password recovery.

a. Enter the host name of the SMTP server.

b. Enter the port number. Examples include common default ports, SMTP port number 25, or secure SMTP (SSL) port number 465.

c. (Optional) Check the **SSL** check box to configure SSL for SMTP.

d. Enter the username and password to access the SMTP server.

12. Click **Submit**.

13. Click **Open** to open the Cisco NAE app.

Installing the Cisco NAE App Using AppStore

Use this procedure to install the Cisco NAE app on Cisco Nexus Dashboard using AppStore. The AppStore screen allows you to deploy applications directly from the Cisco DC App Center.

> ⓘ Starting from Cisco NAE app Release 5.1(1), when you enable an application, you will be prompted to select a Deployment Profile, which will define the resources that the Cisco Nexus Dashboard will allocate to the Cisco NAE app.

> ⓘ Before enabling the Cisco NAE app, ensure that Cisco Nexus Dashboard cluster has at least three healthy master nodes.

Before You Begin

- You must have administrator credentials to install the Cisco NAE app.

- You have installed and configured the Cisco Nexus Dashboard.

- The Cisco DC App Center must be reachable from the Cisco Nexus Dashboard via the Management Network directly or using a proxy configuration. See the *Cisco Nexus Dashboard User Guide* for information about setting up a proxy.

Procedure

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

2. In the **Navigation** pane, choose **Service Catalog** .

3. In the main pane, select the AppStore tab.

4. In the Cisco NAE tile, click **Install**. Cisco Nexus Dashboard will download the application directly from the Cisco DC App Center and install it. After the process completes, the application will be available in your Service Catalog.

5. Once the application installation is completed, click **Enable**. In the Cisco NAE installed on Cisco Nexus Dashboard, make sure that the health icon is green and all the pods and containers are running.

6. From the **Deployment Profile** drop-down list, select the deployment profile you want to use. The deployment profile defines the resources that the Cisco Nexus Dashboard will allocate to the Cisco NAE app. The available profiles include Physical-standard-nae-small, Physical-standard-nae-medium, and Physical-standard-nae-large.

7. Click **Enable**.

8. The Cisco NAE app GUI appears. Complete the following fields for **Administrator Profile**.

    a. Enter the email address.

    b. Enter the password and enter the password again to confirm.

9. Complete the following fields for SMTP server.

Cisco NAE app leverages email as the mechanism for password recovery. SMTP Server configuration is required for password recovery.

> ⓘ We strongly recommended that you configure the SMTP server information, since it is required by the admin for password recovery.

a. Enter the host name of the SMTP server.

b. Enter the port number. Examples include common default ports, SMTP port number 25, or secure SMTP (SSL) port number 465.

c. (Optional) Check the **SSL** check box to configure SSL for SMTP.

d. Enter the username and password to access the SMTP server.

10. Click **Submit**.

11. Click **Open** to open the Cisco NAE app.

Viewing Cisco NAE App Information

Use this procedure to view Cisco NAE app information in Cisco Nexus Dashboard.

Procedure

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

2. In the **Navigation** pane, choose **Service Catalog** to view the apps hosted on Cisco Nexus Dashboard.

3. Click the app to display the app summary pane. The summary pane displays the app summary information such as name, description, app version, and system resources.

4. Click to view the app details pane.

    a. The **Overview** tab displays the app information such as name, description, app version, operational status, app resources, and resource profile.

    b. The **System Resources** tab displays the configured pods and containers running on the selected app.

        i. Click **Pods** to view the pod details such as status, name, IP address, containers, age, CPU usage, and memory.

        ii. Click **Containers** to view the container details such as status, name, namespace, pod name, restart count, and age.

Deleting Cisco NAE App

Use this procedure to delete a Cisco NAE app.

Procedure

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

2. In the **Navigation** pane, choose **Service Catalog** to view the apps hosted on Cisco Nexus Dashboard.

3. Select the Cisco NAE app.

4. Click and then click **Disable** to disable the app.

5.

Click ⋯ and then click **Delete** to delete the app.

6.

Click ⋯ and then click **Restart** to restart the app.

Upgrading Cisco Network Assurance Engine App

Supported Upgrade Paths

Table 4. Supported Upgrade Paths for Cisco NAE App

From	To
Cisco NAE app Release 5.1.1a on Cisco Nexus Dashboard Release 2.0.1x	Cisco NAE app Release 5.1.1b on Cisco Nexus Dashboard Release 2.0.2x
Cisco NAE app Release 5.0.1a on Cisco Application Services Engine Release 1.1.3d	Cisco NAE app Release 5.1.1b on Cisco Nexus Dashboard Release 2.0.2x

Important Notes

- Downgrade of Cisco NAE app is not supported.

- After upgrading to the latest version of the app, you must not activate the older version of the app.

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

  a. Upgrade Cisco Application Services Engine Release 1.1.3d to Cisco Nexus Dashboard Release 2.0.x.

  b. In the same maintenance window as the platform upgrade, upgrade the Cisco NAE app Release 5.0.1x to Cisco NAE app Release 5.1.1x.

- Any running Cisco NAE analysis is automatically stopped as part of the app upgrade process. The Cisco NAE analysis must be manually restarted using the GUI after the Cisco NAE app upgrade is complete.

- Upgrade to Cisco Application Services Engine Release 1.1.3e is not supported for Cisco ASE clusters that are running Cisco NAE Release 5.0.1x. The supported upgrade path for Cisco NAE Release 5.0.1x is from Cisco Application Services Engine Release 1.1.3d to Cisco Nexus Dashboard 2.0.x.

- Upgrade from Cisco NAE app Release 5.1.1 to Cisco NAE app Release 5.1.1a is not supported.

- You must disable the Cisco NAE app before upgrading the Cisco Nexus Dashboard cluster, and re-enable the app after the upgrade completes successfully. See Cisco Nexus Dashboard Deployment Guide for more information.

- If you are running Multi-Site Orchestrator and Nexus Insights in your cluster and you want to install or upgrade Network Assurance Engine application, you must follow the following order of steps:

  ◦ Disable Multi-Site Orchestrator application.

  ◦ Disable Network Assurance Engine application if already installed.

  ◦ Install or upgrade Network Assurance Engine application.

- Enable Network Assurance Engine application.

- Re-enable Multi-Site Orchestrator application.

If you are not running Nexus Insights in your cluster, you can install Network Assurance Engine normally.

- ● If you are deploying Multi-Site Orchestrator, Nexus Insights, and Network Assurance Engine in the same cluster, you must ensure that Nexus Insights and Network Assurance Engine are installed and enabled first before enabling the Multi-Site Orchestrator application.

Upgrading the Cisco NAE App

Use this procedure to upgrade the Cisco NAE app on Cisco Nexus Dashboard.

Before You Begin

- You must have administrator credentials to upgrade the Cisco NAE app.

- You have downloaded the Cisco NAE app.

Procedure

1. Download the the Cisco NAE app from the Cisco DC App Center.

2. Host the downloaded app to a http server and copy the URL.

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

4. In the **Navigation** pane, choose **Service Catalog** .

5. Click **Actions** > **Upload App**.

6. In the **URL** field, enter the http address of the Cisco NAE app and click Submit.

7. Click ••• and choose **Available Versions**.

8. Select the app version and click **Activate**.

9. From the **Deployment Profile** drop-down list, select the deployment profile you want to use.

10. Click **Activate**. After the upgrade is completed, make sure that the health icon is green and all the pods and containers are running.

11. Click **Open** to open latest version of the Cisco NAE app.