



Cisco Nexus Dashboard Data Broker Deployment Guide, Release 3.10.4

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CHAPTER 1

Overview

This chapter gives us an overview of the Cisco Nexus Dashboard Data Broker.

- [About Cisco Nexus Dashboard Data Broker](#) , on page 1
- [Cisco Nexus Dashboard Data Broker Hardware and Software Interoperability Matrix](#) , on page 2
- [Python Activator Scripts for NX-OS Images](#), on page 2
- [System Requirements](#), on page 2

About Cisco Nexus Dashboard Data Broker

Visibility into application traffic has traditionally been important for infrastructure operations to maintain security, troubleshooting, and compliance and perform resource planning. With the technological advances and growth in cloud-based applications, it has become imperative to gain increased visibility into the network traffic. Traditional approaches to gain visibility into network traffic are expensive and rigid, making it difficult for managers of large-scale deployments.

Cisco Nexus Dashboard Data Broker with Cisco Nexus Switches provides a software-defined, programmable solution to aggregate copies of network traffic using Switched Port Analyzer (SPAN) or network Test Access Point (TAP) for monitoring and visibility. As opposed to traditional network taps and monitoring solutions, this packet-brokering approach offers a simple, scalable and cost-effective solution that is well-suited for customers who need to monitor higher-volume and business-critical traffic for efficient use of security, compliance, and application performance monitoring tools.

With the flexibility to use a variety of Cisco Nexus Switches and the ability to interconnect them to form a scalable topology provides the ability to aggregate traffic from multiple input TAP or SPAN ports, and replicate and forward traffic to multiple monitoring tools which may be connected across different switches. Using the Cisco NX-API agent to communicate to the switches, Cisco Nexus Dashboard Data Broker provides advance features for traffic management.

Cisco Nexus Dashboard Data Broker provides management support for multiple disjointed Cisco Nexus Dashboard Data Broker networks. You can manage multiple Cisco Nexus Dashboard Data Broker topologies that may be disjointed using the same application instance. For example, if you have 5 data centers and want to deploy an independent solution for each data center, you can manage all 5 independent deployments using a single application instance by creating a logical partition (network slice) for each monitoring network.



Note Beginning with Release 3.10.1, Cisco Nexus Data Broker (NDB) has been renamed to Cisco Nexus Dashboard Data Broker. However, some instances of NDB are present in this document, to correspond with the GUI, and installation folder structure. References of NDB/ Nexus Data Broker/ Nexus Dashboard Data Broker can be used interchangeably.

Cisco Nexus Dashboard Data Broker Hardware and Software Interoperability Matrix

See the relevant *Cisco Nexus Dashboard Data Broker Release Notes* for the latest matrix.

Python Activator Scripts for NX-OS Images

The following table lists the Python Activator scripts and corresponding NX-OS Image names:



Note The activator scripts are available for download at: <https://github.com/datacenter/nexus-data-broker>.



Note Check the Guestshell version using the **show guestshell** command. If the Guestshell version is 2.2 or earlier, either upgrade the Guestshell or destroy and re-run the script to start NDB embedded.

Table 1: Python Activator Scripts for NX-OS Images

Python activator script file name	NX-OS Image
NDBActivator4.0_9.3_plus.py	Cisco NXOS version 9.3(1) and above.

System Requirements

The following table lists the system requirements as per the deployment size:

Table 2: System Requirements per Deployment Size

Description	Small	Medium	Large
CPUs (virtual or physical)	6-core	12-core	18-core
Memory	8 GB RAM	16 GB RAM	24 GB RAM

Description	Small	Medium	Large
Number of switches for TAP and SPAN aggregation	Upto 25 switches	Upto 50 switches	75 to 100 switches
Hard disk	Minimum of 40 GB of free space available on the partition on which the Data Broker software is installed.		
Operating System	A recent 64-bit Linux distribution that supports Java, preferably Ubuntu, Fedora, or Red Hat.		
Other	Java Virtual Machine 1.8.		



CHAPTER 2

Deploying Cisco Nexus Dashboard Data Broker Software in Centralized Standalone Mode

This chapter contains details of procedures for installing and upgrading Nexus Dashboard Data Broker in centralized mode.

Beginning with Release 3.10.1, Cisco Nexus Data Broker (NDB) has been renamed to Cisco Nexus Dashboard Data Broker. However, some instances of NDB are present in this document, to correspond with the GUI, and installation folder structure. References of NDB/ Nexus Data Broker/ Nexus Dashboard Data Broker, can be used interchangeably.

Before your proceed with the upgrade/ install procedures in this chapter, compare the **md5sum** between the Nexus Dashboard Data Broker image on Cisco.com, and the image file copied to linux. Use the following command to check (linux):

```
cisco@NDB-virtual-machine:~/3.10/$ md5sum ndb1000-sw-app-k9-3.10.4.zip  
Displayed output: 518db25b4a89c996340c0316f72a6287 ndb1000-sw-app-k9-3.10.4.zip
```

- [Installing or Upgrading the Cisco Nexus Data Broker Software in Centralized Mode, on page 5](#)
- [Starting the Application , on page 10](#)
- [Verifying The Application Status, on page 10](#)
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Installing or Upgrading the Cisco Nexus Data Broker Software in Centralized Mode

Before proceeding with the installation, check the System Requirements section in the [Overview](#) chapter of this guide.

In Cisco NDB Release 3.10, JRE is unbundled from the NDB package. You need to install Java on the NDB server before starting NDB 3.10.0.



Note Only Oracle Java is supported.

1. Install Java version greater than 1.8.0_45

2. Set `JAVA_HOME` environment variable; command to be used- `export JAVA_HOME=(jre_path)`

Installing the Cisco Nexus Dashboard Data Broker Software in Centralized Mode

Complete these steps to install Cisco Nexus Dashboard Data Broker software in Centralized mode:

Step 1 In a web browser, navigate to **www.cisco.com**.

Step 2 Scroll down, and click **Downloads**.

Step 3 In the **Select a Product** field, enter *Nexus Dashboard Data Broker*.

The file information for Release 3.10.4 is displayed: Cisco Nexus Data Broker Software Application: `ndb1000-sw-app-k9-3.10.4.zip`

Note If prompted, enter your Cisco.com **username** and **password** to log in.

Step 4 Download the Cisco Nexus Data Broker application bundle.

Step 5 Create a directory in your Linux machine where you plan to install Cisco Nexus Dashboard Data Broker.

For example, in your Home directory, create `CISCO_NDB`.

Step 6 Copy the Cisco Nexus Dashboard Data Broker zip file into the directory that you created.

Step 7 Unzip the Cisco Nexus Dashboard Data Broker zip file.

The Cisco Nexus Dashboard Data Broker software is installed in a directory called `ndb`. The directory contains the following:

- `runndb.sh` file—The file that you use to launch Cisco Nexus Dashboard Data Broker.
- `version.properties` file—The Cisco Nexus Dashboard Data Broker build version.
- `configuration` directory—The directory that contains the Cisco Nexus Dashboard Data Broker initialization files.

This directory also contains the `etc` subdirectory that contains profile information, and `startup` subdirectory where configurations are saved.

- `bin` directory—The directory that contains the following script:
 - `ndb` file—This script contains the Cisco Nexus Dashboard Data Broker common CLI.

- `lib` directory—The directory that contains the Cisco Nexus Data Broker Java libraries.

- `logs` directory—The directory that contains the Cisco Nexus Data Broker logs.

Note The `logs` directory is created after the Cisco Nexus Dashboard Data Broker application is started.

- `plugins` directory—The directory that contains the OSGi plugins.

- `work` directory—The webserver working directory.

Note The `work` directory is created after the Cisco Nexus Dashboard Data Broker application is started.

Step 8 Start the data broker application using `runndb.sh -start .`

Upgrading the Application Software in Centralized Mode Using CLI

Use the **upgrade** command to upgrade to release 3.10.4.



Note

- When you upgrade the software to Cisco Nexus Data Broker Release 3.2 or later release, the hostname should not be changed during the upgrade process. If the hostname is changed during the upgrade process, the upgrade might fail. If you are upgrading from release 2.x, 3.0 and 3.1, the domain name configuration in the switch should be removed before upgrading the software.

In case, the upgrade was not successful because of the mismatch of the host name, use RMA to correct the configuration of the device. See the *RMA* section in the *Cisco Nexus Data Broker Configuration Guide*.

- When you run the **upgrade** command, the installation and the configuration are upgraded. However, any changes you made to the shell scripts or configuration files, for example, `config.ini`, are overwritten. After you complete the upgrade process, you must manually reapply your changes to those files.
- The latest Nexus Dashboard Data Broker zip file must be extracted in an empty directory.

Hitless Upgrade

For hitless upgrade, configuration backup for releases prior to NDB Release 3.8, will always be the standard upgrade by re-configuring the devices during the upgrade.

Configuration backup taken for releases NDB 3.8 and after, will always be a Hitless upgrade using CLI.

Before you begin

- Backup up the data broker configuration. See the *Backup/Restore* section in the *Cisco Nexus Dashboard Data Broker Configuration Guide*.
- Back up your `config.ini` file.



Important

You should manually backup your `config.ini` file before upgrading, because the backup process does not back them up for you. If you do not backup your files before upgrading, any changes you made will be lost.



Note

When you run `runndb.sh` script, there is a thread in the script that monitors the log and the Cisco Nexus Data Broker JAVA process to monitor the health of the Cisco Nexus Data Broker. The default value for this option is 30 Seconds.

Step 1 Backup your Cisco Nexus Data Broker release installation using your standard backup procedures.

- Step 2** In a web browser, navigate to [Cisco.com](https://www.cisco.com).
- Step 3** Under **Support**, click **All Downloads**.
- Step 4** In the center pane, click **Cloud and Systems Management**.
- Step 5** In the right pane, click **Network Controllers and Applications**, and then click **Cisco Nexus Dashboard Data Broker**.
- Step 6** Download the Cisco NDB Release 3.10.4 applicable bundle: Cisco Nexus Data Broker Software Application—`ndb1000-sw-app-k9-3.10.4.zip`
- Step 7** Create a temporary directory in your Linux machine where you plan to upgrade to the latest release.
- Step 8** Unzip the release 3.10.4 zip file into the temporary directory that you created.
- Step 9** Navigate to the `ndb` directory that was created when you installed the Cisco Nexus Data Broker release (created in the previous step).
- Step 10** Stop the running Cisco Nexus Data Broker instance.
- Step 11** Navigate to the `ndb/bin` directory in the temporary directory that you created for release 3.10.4 upgrade software.
- Step 12** Upgrade the application by entering the `./ndb upgrade --perform --target-home {ndb_directory_to_be_upgraded} [--verbose] [--backupfile {ndb_backup_location_and_zip_filename}]` command.

You can use one of the following options:

Option	Description
<code>--perform --target-home {ndb_directory_to_be_upgraded}</code>	Upgrades the Cisco ndb Monitor Manager installation to Cisco NDB.
<code>--perform --target-home {ndb_directory_to_be_upgraded} --backupfile {ndb_backup_location_and_zip_filename}</code>	Upgrades the Cisco ndb Monitor Manager installation to Cisco NDB and creates a <code>backup.zip</code> file in the directory path that you set. Note <ul style="list-style-type: none"> You must provide the name of the backup file and the <code>.zip</code> extension. The backup file should not be saved in the <code>ndb</code> directory with current NDB installation or its subdirectory.
<code>--verbose</code>	Displays detailed information to the console. This option can be used with any other option and is disabled by default.
<code>--validate --target-home {ndb_directory_to_be_upgraded}</code>	Validates the installation.
<code>./ndb help upgrade</code>	Displays the options for the <code>upgrade</code> command.

- Step 13** Navigate to the older folder (`xnc` in releases prior to Release 3.10) where you originally installed Cisco NDB. Rename the folder from `xnc` to `ndb`.
- Step 14** Start the application processes using `runndb.sh -start`.

Upgrading the Application Software in Centralized Mode Using GUI



Note The latest Nexus Dashboard Data Broker zip file must be extracted in an empty directory.

Hitless Upgrade

For hitless upgrade, configuration backup for releases prior to NDB Release 3.8, will always be the standard upgrade by re-configuring the devices during the upgrade.

Configuration backup taken for releases NDB 3.8 and after, will always be a Hitless upgrade using CLI.

Complete the following steps to upgrade the application software in the Centralized mode using GUI:

-
- Step 1** Log in to the Nexus Dashboard Data Broker GUI.
- Step 2** Navigate to **Administration > Backup/Restore** to download the configuration in zip file format.
The default name of the zip file is **configuration_startup.zip**.
- Step 3** Stop the current NDB instance using the **runndb.sh -stop** command.
- Example:**

```
./runndb.sh -stop
```
- Step 4** If TLS certification is enabled between NDB server and NXOS switch, copy the **tlsTrustStore** and **tlsKeyStore** files to **/ndb/configuration** from the old ndb backup.
- Step 5** In a web browser, navigate to [Cisco.com](https://www.cisco.com).
- Step 6** Scroll down and click **Downloads**.
The **Software Downloads** page is displayed.
- Step 7** In the **Select a Product** field, type in **Nexus Dashboard Data Broker**.
You are taken to a page from where you can download the latest Nexus Dashboard Data Broker software.
- Step 8** Download the Cisco NDB Release 3.10.4 applicable bundle: Cisco Nexus Data Broker Software Application—ndb1000-sw-app-k9-3.10.4.zip
- Step 9** Create a directory in your Linux machine where you plan to upgrade to Cisco NDB.
- Step 10** Unzip the Cisco NDB Release 3.10.4 zip file into the directory that you created.
- Step 11** Navigate to the **ndb** directory that was created when you installed the Cisco Nexus Data Broker release (created in the previous step).
- Step 12** Start the new NDB installation using the **runndb.sh -start** command.
- Example:**

```
./runndb.sh -start
```
- Step 13** Navigate to **Administration > Backup/Restore**.
- Step 14** To reconfigure the device during the upgrade, select the **Restore** option (by checking the check-box) during configuration upload.
- Step 15** Restart the new NDB instance using the **runndb.sh -restart** command.
- Example:**

```
./runndb.sh -restart
```

Starting the Application

Note When you are running NDB for the first time, the URL that you need to connect to and the port that it is listening on are displayed on the screen. For example, when you run the `./runndb.sh` script, the following message is displayed on the screen: Web GUI can be accessed using below URL: `[https://<IP_address>:8443]`.

Java 8 is required for NDB. Setup `JAVA_HOME` before NDB is started.

You can use one of the following options:

Option	Description
no option	
<code>-jmxport port_number</code>	Enables JMX remote access on the specified JVM port.
<code>-debugport port_number</code>	Enables debugging on the specified JVM port.
<code>-start</code>	
<code>-start port_number</code>	
<code>-stop</code>	
<code>-restart</code>	
<code>-status</code>	
<code>-console</code>	
<code>-help</code>	Displays the options for the <code>./runndb.sh</code> command.
<code>-tls</code>	To enable TLS, start the controller by entering the <code>./runndb.sh -tls -tlskeystore keystore_file_location -tlstruststore truststore_file_location</code> command.

Verifying The Application Status

Step 1 Navigate to the `ndb` directory that was created when you installed the software.

Step 2 Verify that the application is running by entering the `./runndb.sh -status` command.

The controller outputs the following, which indicates that the controller is running the Java process with PID 21680:


```
Controller with PID:21680 -- Running!
```

What to do next

Connect the switches to the controller. For more information, see the configuration guide for your switches.

Upgrading the Application Software with TLS-enabled for Standalone Controller

Use this procedure for upgrading the Nexus Dashboard Data Broker (NDDB) application software in centralized mode, using the GUI, when the TLS certification is enabled in a standalone controller.

- Step 1** Log in to the existing NDDB GUI instance using `https://server IP:8443`.
 - Step 2** Navigate to the **Administration > Backup/ Restore** tab.
 - Step 3** Click **Backup now Locally** to download the configuration as a zip file.
 - Step 4** Stop the current NDDB instance using the `./runndb.sh -stop` command.
 - Step 5** After the NDDB instance is stopped, navigate to the `/ndb/configuration` folder, and copy the `tlsTrustStore` and `tlsKeyStore` files to `local/common` folder.
 - Step 6** Download the NDDB 3.10.4 software from the standard *Cisco.com Downloads* page and start the new NDDB 3.10.4 installation using the `./runndb.sh -start` command.
 - Step 7** Log in to the new instance of the NDDB GUI using `https://server IP:8443`.
 - Step 8** Navigate to the **Administration > Backup/ Restore** tab.
 - Step 9** Click **Restore Locally** to upload the configuration file which you had earlier downloaded (Step 3, above).
After the configuration is uploaded successfully, you will see a success message on the GUI.
 - Step 10** Copy the `tlsTrustStore` and `tlsKeyStore` files to NDB 3.10.4 `/ndb/configuration` folder (which was copied to the `local/common` folder in step 5).
 - Step 11** Stop the NDDB 3.10.4 instance using the `./runndb.sh -stop` command.
 - Step 12** Start the NDDB 3.10.4 instance again using the `./runndb.sh -tls -tlskeystore ./configuration/tlsKeyStore -tlstruststore ./configuration/tlsTrustStore` command.
-



CHAPTER 3

Deploying Cisco Nexus Dashboard Data Broker in Embedded Mode

This chapter contains details of procedures for deploying Cisco Nexus Dashboard Data Broker on Nexus series switches.

Beginning with Release 3.10.1, Cisco Nexus Data Broker (NDB) has been renamed to Cisco Nexus Dashboard Data Broker. However, some instances of NDB are present in this document, to correspond with the GUI, and installation folder structure. References of NDB/ Nexus Data Broker/ Nexus Dashboard Data Broker, can be used interchangeably.

Before you proceed with the upgrade/ install procedures in this chapter, compare the **md5sum** between the Nexus Dashboard Data Broker Cisco.com image and image file copied to linux. Use the following command to check (linux):

```
cisco@NDB-virtual-machine:~/3.10.4/$ md5sum ndb1000-sw-app-emb-i6-plus-k9-3.10.4.zip  
Displayed output: 685a0fe58f3280590dd878b7835241aa ndb1000-sw-app-emb-i6-plus-k9-3.10.4.zip
```

Generating TLS certificate between Nexus Dashboard Data Broker server and Nexus Dashboard Data Broker switch for Embedded mode of deployment is not supported. For details about TLS, see the *Managing TLS Certificate, KeyStore and TrustStore Files* chapter in the *Cisco Nexus Dashboard Data Broker Configuration Guide*.

- [Obtaining the Cisco Nexus Dashboard Data Broker Embedded Software for NX-API, on page 13](#)
- [Installing and Activating the Cisco Nexus Dashboard Data Broker Embedded Software for NX-API Mode for NX-OS 9.3\(1\) or Later, on page 14](#)
- [Upgrading to Release 3.10.4 for Cisco NXOS Release 9.3\(1\) or Later, on page 16](#)

Obtaining the Cisco Nexus Dashboard Data Broker Embedded Software for NX-API

- Step 1** In a web browser, navigate to [Cisco.com](https://www.cisco.com).
- Step 2** Scroll down and click **Downloads**.
- Step 3** In the **Select a Product** field, enter *Nexus Dashboard Data Broker*. The required embedded NXAPI file is displayed.

If prompted, enter your Cisco.com username and password to log in.

Step 4 Download and unzip the **Cisco Nexus Data Broker Release** application bundle zip file.

Step 5 Download activator script. The Python activator script needed to activate the NDB is available at: <https://github.com/datacenter/nexus-data-broker>.

Note Ensure you have the latest script from Github before you start the installation process.

What to do next

Install the software on supported Cisco Nexus series switches. See *Cisco Nexus Dashboard Data Broker Release Notes* for the list of supported platforms.

Installing and Activating the Cisco Nexus Dashboard Data Broker Embedded Software for NX-API Mode for NX-OS 9.3(1) or Later

Cisco Nexus Dashboard Data Broker is not installed as OVA, it is installed in the Guestshell. To install Cisco Nexus Dashboard Data Broker-Embedded software on NXOS 9.3(1) or later release, use the Nexus Dashboard Data Broker activator script, `NDBActivator4.0_9.3_plus.py`.

The activator script performs the following functions:

- Resizes the Guestshell resources.
- Unzips and places the `ndb` folder into the `/usr/bin` directory.
- Configures the Guestshell to management VRF.

Before you begin



Note By default, you cannot install a new version of the Cisco Nexus Dashboard Data Broker-Embedded if you already have an existing Cisco Nexus Dashboard Data Broker-Embedded application installed and active. You can forcefully run the activator script even if it is already activated using **python bootflash** command with **--force** attribute. For example:

```
Syntax: python <file path>NDBActivator4.0_9.3_plus.py -v guestshell+ <zip file path> --force
```

```
Example: python bootflash:NDBActivator4.0_9.3_plus.py -v guestshell+
/bootflash/ndb1000-sw-app-emb-i6-plus-k9-3.10.4.zip --force
```



Note To uninstall Nexus Dashboard Data Broker application, destroy the Guestshell using the command, **guestshell destroy**. If an instance of Nexus Dashboard Data Broker exists in the guestshell and you need to install a new Nexus Dashboard Data Broker instance, you need to destroy the existing Guestshell and re-install the Guestshell and the Nexus Dashboard Data Broker.

```
N9K-switch# guestshell destroy
```



Note After you disable and enable NXAPI mode, you should reconfigure **nxapi use-vrf management** command on the node.



Important Ensure that you have sufficient space available in the bootflash. The **ndb1000-sw-app-emb-i6-plus-k9-3.10.4.zip** file require a total of ~600 MB of space in the bootflash (/volatile folder) for the decompression processes. The script runs only on NXOS platform, version i6(1), with memory greater than 8GB.

Step 1 switch# **copy ftp://10.10.10.1 NDBActivator4.0_9.3_plus.py bootflash:vrf management**

Copies the NDBActivator4.0_9.3_plus.py from the directory where you downloaded it to the switch. You can download the file from different sources such as HTTP, FTP, or SSH.

Step 2 switch# **copy ftp://10.10.10.1 ndb1000-sw-app-emb-i6-plus-k9-3.10.4.zip bootflash:vrf management**

Copies the Cisco Nexus Dashboard Data Broker embedded package from the directory where you downloaded it to the switch. You can download the file from different sources such as HTTP, FTP, or SSH.

Step 3 switch# **show virtual-service list**

Monitors the status of the copy processes.

Step 4 switch# **guestshell enable**

Enables the guestshell.

Step 5 switch# **python bootflash:NDBActivator4.0_9.3_plus.py -v guestshell+ /bootflash/ndb1000-sw-app-emb-i6-plus-k9-3.10.4.zip**

Installs the Cisco Nexus Dashboard Data Broker-Embedded package on the switch.

Step 6 switch# **show virtual-service list**

Monitors the status of the installations.

Note To start the Nexus Dashboard Data Broker application, use the **guestshell enable** command. If the Nexus Dashboard Data Broker application is initiated through the Python script, guestshell is enabled automatically.

Note To stop the Nexus Dashboard Data Broker application, use the **guestshell disable** command. Use **guestshell enable** command to enable Nexus Dashboard Data Broker.

Note Do not continue until installation completes successfully. Nexus Dashboard Data Broker application starts after it is installed successfully.

Step 7 switch# show processes cpu sort | grep java

Example:

```
switch# show processes cpu sort | grep java
```

```
19587 3 6 551 0.00% java
```

```
switch#
```

Verify whether Nexus Dashboard Data Broker installed and initiated successfully.

What to do next

Log in to the Cisco Nexus Dashboard Data Broker GUI using HTTPS. The default HTTPS web link for the Cisco Nexus Dashboard Data Broker GUI is `https://IP_address:8443/monitor`. Enter the username and password (default values are admin/admin).

Upgrading to Release 3.10.4 for Cisco NXOS Release 9.3(1) or Later

This process involves using the GUI to download the configuration, perform the upgrade, and then upload the configuration. The process is applicable for Release 3.10 and later.

For detailed information about upgrading Cisco Nexus OS from I4(6) to I6(1) and I7(1), see *Cisco Nexus 9000 Series NX-OS Software Upgrade and Downgrade Guide, Release 9.3(x)*.

Step 1 Log in to the Nexus Dashboard Data Broker GUI.

Step 2 Navigate to **Administration > Backup/Restore**. Click **Backup and Backup Locally** to download the configuration in a zip file format.

Step 3 Copy the NDBActivator4.0_9.3_plus.py from the directory where you downloaded it to the switch. You can download the file from different sources such as HTTP, FTP, or SSH.

Example:

```
switch# copy scp://10.10.10.1 NDBActivator4.0_9.3_plus.py bootflash:vrf management
```

Step 4 Copy the Cisco Nexus Data Broker Embedded package from the directory where you downloaded it to the switch. You can download the file from different sources such as HTTP, FTP, or SSH.

Example:

```
switch# copy scp://10.10.10.1 ndb1000-sw-app-emb-i6-plus-k9-3.10.4.zip bootflash:vrf management
```

Step 5 Monitor the status of the copy processes.

Example:

```
switch# show virtual-service list
```

Step 6 Enable the guestshell.

Example:

```
switch# guestshell enable
```

Step 7 Install the Cisco Nexus Data Broker Embedded package on the switch.

Example:

```
switch# python bootflash:NDBActivator4.0_9.3_plus.py -v guestshell+  
/bootflash/ndb1000-sw-app-emb-i6-plus-k9-3.10.4.zip
```

Step 8 Monitor the status of installation process.

Example:

```
switch# show virtual-service list
```

To stop the Nexus Dashboard Data Broker application, use the guestshell disable command.

Note Do not continue until the installation is complete. Nexus Dashboard Data Broker application starts after it is installed successfully.

Step 9 Verify whether Nexus Dashboard Data Broker installed and initiated successfully.

Example:

```
switch# show processes cpu sort | grep java  
Example:  
switch# show processes cpu sort | grep java  
19587 3 6 551 0.00% java
```

Step 10 Copy the running configuration to the startup configuration.

Example:

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

Step 11 Upload Cisco Nexus Dashboard Data Broker 3.10.4 configuration that you downloaded in Step 1 in the Cisco Nexus Dashboard Data Broker user interface (UI). Navigate to **Administration > Backup Restore > Restore Locally**.



CHAPTER 4

Deploying Cisco Nexus Dashboard Data Broker Software in Clusters

Beginning with Release 3.10.1, Cisco Nexus Data Broker (NDB) has been renamed to Cisco Nexus Dashboard Data Broker. However, some instances of NDB are present in this document, to correspond with the GUI, and installation folder structure. References of NDB/ Nexus Data Broker/ Nexus Dashboard Data Broker, can be used interchangeably.

This chapter contains the following details:

- [Installing a Cisco Nexus Dashboard Data Broker Cluster](#) , on page 19
- [Upgrading a Cisco Nexus Dashboard Data Broker Cluster](#), on page 21
- [Upgrading the Application Software with TLS-enabled for HA-clustered Controller](#), on page 23

Installing a Cisco Nexus Dashboard Data Broker Cluster

Use this procedure to install a Cisco Nexus Dashboard Data Broker (NDDDB) cluster.

Before you begin

Prerequisites:

- Cisco Nexus Dashboard Data Broker (NDDDB) supports 3-node clusters.
- All IP addresses must be reachable and capable of communicating with each other.
- All switches in the cluster must connect to all the controllers.
- All controllers must have the same HA clustering configuration information in the `config.ini` files.
- All the NDDDB instances should be of the same NDDDB version to form the cluster.
- If using cluster passwords, all controllers must have the same password configured in the `ndbjgroups.xml` file. See *Password Protecting for HA Clusters* section in the *Cisco Nexus Dashboard Data Broker Configuration Guide*.



Note All the NDDDB instances to form the cluster should be of the same NDDDB version.

-
- Step 1** In a web browser, navigate to www.cisco.com.
- Step 2** Scroll down and click **Downloads**.
- Step 3** In the **Select a Product** search box, enter *Nexus Dashboard Data Broker* and you are automatically taken to the latest release **Software Download** screen.
- The file information for Release 3.10.4 is displayed: Cisco Nexus Data Broker Software Application:
`ndb1000-sw-app-k9-3.10.4.zip`
- Step 4** Download the Cisco Nexus Data Broker application bundle. If prompted, enter your Cisco.com username and password to login.
- Step 5** Create a directory in your Linux machine where you plan to install the Data Broker.
- For example, in your Home directory, create `CiscoNDB`.
- Step 6** Copy the Cisco Nexus Dashboard Data Broker zip file to the created NDDDB directory.
- Step 7** Unzip the Data Broker zip file.
- The Data Broker software is installed in a directory called `ndb`. The directory contains the following:
- `runndb.sh` file—file to launch NDDDB.
 - `version.properties` file—NDDDB build version.
 - configuration directory—contains the NDDDB initialization files. This directory also contains the startup subdirectory where configurations are saved.
 - `bin` directory—contains the NDDDB file that has the common CLI.
 - `etc` directory—contains profile information.
 - `lib` directory—contains NDDDB Java libraries.
 - `logs` directory—contains NDDDB logs.
- Note** The logs directory is created after the NDDDB application is started.
- `plugins` directory—The directory that contains the NDDDB plugins.
 - `work` directory—webserver working directory.
- Step 8** Navigate to the `ndb/configuration` directory that was created when you installed the software.
- Step 9** Use any text editor to open the `config.ini` file and locate the following text:
- ```
HA Clustering configuration (semi-colon-separated IP addresses of all controllers that are part
of the cluster.)
supernodes=<ip1>;<ip2>;<ip3>

If a standby node is available:
#supernodes=<ip1>;<ip2>;<ip3>;<ip4>-standby
```
- Step 10** Uncomment the line which consists of supernodes and replace `<ip*>` with NDDDB server IPs.
- IPv4 example:
- ```
# HA Clustering configuration (semi-colon-separated IP addresses of all controllers that are part
of the cluster.)
```

```
supernodes=10.1.1.1;10.2.1.1;10.3.1.1
```

IPv6 example:

```
# HA Clustering configuration (semi-colon-separated IP addresses of all controllers that are part of the cluster.)
```

```
supernodes=2001:22:11::1;2001:33::44::1;2001:55:66::1
```

- Step 11** Save the file and exit the editor.
- Step 12** Repeat steps 5 to 11 in all the Linux machines where the NDDDB is installed.
- Step 13** Start the primary NDDDB server using the `./runndb.sh -start` command.
- Step 14** After the GUI of the primary NDDDB server is up, start the other NDDDB servers using the `./runndb.sh -start` command.
- After the primary is up, await the confirmation message displayed on the GUI before starting the members of the cluster. The displayed message reads, *Primary is ready, bring up the members.*

Upgrading a Cisco Nexus Dashboard Data Broker Cluster

Before you begin

Prerequisites:

- Cisco Nexus Dashboard Data Broker (NDDDB) supports 3-node clusters.
- All IP addresses must be reachable and capable of communicating with each other.
- All switches in the cluster must connect to all the controllers.
- All controllers must have the same HA clustering configuration information in the `config.ini` files.
- All the Nexus Dashboard Data Broker instances should be of the same Nexus Dashboard Data Broker version to form the cluster.
- If using cluster passwords, all controllers must have the same password configured in the `ndbjgroups.xml` file. See *Password Protecting for HA Clusters* section in the *Cisco Nexus Data Broker Configuration Guide*.



Note All the Nexus Dashboard Data Broker instances to form the cluster should be of the same Cisco Nexus Dashboard Data Broker version.

- Step 1** Login to the Cisco Nexus Dashboard Data Broker primary server.
- Step 2** Navigate to **Administration > Backup/ Restore**.
- Step 3** Click **Backup Locally** to download the configuration file.
- Step 4** Stop all Cisco Nexus Dashboard Data Broker instances using the `runndb.xh -stop` command.
- Step 5** If TLS certification is enabled between NDDDB server and NDDDB Devices, take backup of the `tlsTrustStore` and `tlsKeyStore` files from `/ndb/configuration`.
- Step 6** Perform the previous step on all the NDDDB cluster instances.

Step 7 In a web browser, navigate to www.cisco.com.

Step 8 Navigate to **Support > Products > Downloads**.

Step 9 In the Find Products and Downloads search box, enter “Nexus Data Broker” and click on ‘Downloads’ from search response list.

The file information for Release 3.10.4 is displayed: Cisco Nexus Dashboard Data Broker Software Application:
 ndb1000-sw-app-k9-3.10.4.zip

Step 10 Download the Cisco Nexus Dashboard Data Broker application bundle. When prompted, enter your Cisco.com username and password to login.

Step 11 Create a directory in your Linux machine where you plan to install Cisco Nexus Dashboard Data Broker.

For example, in your Home directory, create Cisco Nexus Dashboard Data Broker.

Step 12 Copy the Cisco Nexus Dashboard Data Broker zip file to the directory that you have created.

Step 13 Unzip the Cisco Nexus Dashboard Data Broker zip file.

The Cisco Nexus Dashboard Data Broker software is installed in a directory called `ndb`. The directory contains the following:

- `runndb.sh` file—file to launch NDDB.
- `version.properties` file—NDDB build version.
- `configuration` directory—contains the NDDB initialization files. This directory also contains the startup subdirectory where configurations are saved.
- `bin` directory—contains the NDDB file that has the NDDB common CLI.
- `etc` directory—contains profile information.
- `lib` directory—contains NDDB Java libraries.
- `logs` directory—contains NDDB logs.

Note The logs directory is created after the NDDB application is started.

- `plugins` directory—The directory that contains the NDDB plugins.
- `work` directory—webserver working directory.

Step 14 Navigate to the `ndb/configuration` directory that was created when you installed the software.

Step 15 Use any text editor to open the `config.ini` file and locate the following text:

Step 16 Locate the following text:

```
# HA Clustering configuration (semi-colon-separated IP addresses of all controllers that are part
of the cluster.)
# supernodes=<ip1>;<ip2>;<ip3>
```

```
If a standby node is available:
#supernodes=<ip1>;<ip2>;<ip3>;<ip4>-standby
```

Step 17 Uncomment the line which consists of supernodes and replace `<ip*>` with NDDB Server IPs.

```
IPv4 example:
# HA Clustering configuration (semi-colon-separated IP addresses of all controllers that are part
of the cluster.)
```

```
supernodes=10.1.1.1;10.2.1.1;10.3.1.1
```

IPv6 example:

```
# HA Clustering configuration (semi-colon-separated IP addresses of all controllers that are part
of the cluster.)
supernodes=2001:22:11::1;2001:33::44::1;2001:55:66::1
```

- Step 18** Save the file and exit the editor.
- Step 19** Repeat the steps 7 to 18 in all the Linux machines where the NDDB is installed.
- Step 20** Start the Primary NDDB server using the `./runndb.sh -start` command.
- Step 21** After the GUI of the Primary NDDB Server is up, start the other NDDB servers using the `./runndb.sh -start` command.
- Step 22** Login to the Primary Server NDDB GUI.
- Step 23** Navigate to **Administration > Backup/Restore > Actions > Restore Locally** and upload the configuration you had earlier downloaded.
- Step 24** Stop all instances of NDDB in the cluster using the `./runndb.sh -stop` command.
- Step 25** If TLS certification is enabled between NDDB server and NDDB switches, copy the `tls TrustStore` and `tlSKeyStore` files to `ndb/configuration` taken from the step 5 for all NDDB instances.
- Step 26** Start the primary NDDB server using the `./runndb.sh -start` command.

If TLS certification is enabled, use below commands to start NDDB servers.

```
./runndb.sh -tls -tlskeystore ./configuration/tlsKeyStore -tlstruststore ./configuration/tlsTrustStore
bin/ndb config-keystore-passwords --user <NDB_username> --password <NDB_password> --url
https://<Cluster_NDB_IP>:8443 --verbose --prompt --keystore-password <keystore-password>
--truststore-password <truststore-password>
```

After the primary is up, await the confirmation message displayed on the GUI before starting the members of the cluster. The displayed message reads, *Primary is ready, bring up the members.*

- Step 27** Start the member NDDB server(s) using the `./runndb.sh -start` command.

If TLS certification is enabled, use below commands to start NDDB servers.

```
./runndb.sh -tls -tlskeystore ./configuration/tlsKeyStore -tlstruststore ./configuration/tlsTrustStore
bin/ndb config-keystore-passwords --user <NDB_username> --password <NDB_password> --url
https://<Cluster_NDB_IP>:8443 --verbose --prompt --keystore-password <keystore-password>
--truststore-password <truststore-password>
```

Upgrading the Application Software with TLS-enabled for HA-clustered Controller

Use this procedure for upgrading the Nexus Dashboard Data Broker (NDDB) application software in centralized mode, using the GUI, when the TLS certification is enabled in a HA-clustered controller.

- Step 1** Log in to the existing NDDB GUI instance using `https://server IP:8443`.
- Step 2** Navigate to the **Administration > Backup/ Restore** tab.
- Step 3** Click **Backup now Locally** to download the configuration as a zip file.
- Step 4** Stop the current NDDB instance(s) using the `./runndb.sh -stop` command.

- Step 5** After the NDDB instances are stopped, navigate to the `/ndb/configuration` folder, and copy the `tlsTrustStore` and `tlsKeyStore` files to `local/common` folder.
- Step 6** Download the NDDB 3.10.4 software from the standard *Cisco.com Downloads* page and configure the cluster mode using the "supernodes" configuration in the `config.ini` file and start the new NDDB 3.10.4 cluster using the `./runndb.sh -start` command on all the controllers.
- Step 7** On the primary controller, navigate to the **Administration > Backup/ Restore** tab.
- Step 8** Click **Restore Locally** to upload the configuration file which you had earlier downloaded (Step 3, above).
After the configuration is uploaded successfully, you will see a success message on the GUI.
- Step 9** Copy the `tlsTrustStore` and `tlsKeyStore` files to NDDB 3.10.4 `/ndb/configuration` folder (which was copied to the `local/common` folder in step 5).
- Step 10** Stop the NDDB 3.10.4 instances on all the controllers using the `./runndb.sh -stop` command.
- Step 11** Start the NDDB instance on the primary controller using the `./runndb.sh -tls -tlskeystore ./configuration/tlsKeyStore -tlstruststore ./configuration/tlsTrustStore` command.
Wait for a few minutes; a *ready* message is displayed.
- Step 12** Start the NDDB instance on the other controllers of the cluster using the `./runndb.sh -tls -tlskeystore ./configuration/tlsKeyStore -tlstruststore ./configuration/tlsTrustStore` command.
To start the instances on the other controllers, you need not mention the whole command again (with the TLS keywords). You can use the standard `./runndb.sh -start`.
-