Deploying Cisco Nexus Data Broker Embedded for OpenFlow

This chapter contains the following sections:

Obtaining the Cisco Nexus Data Broker Embedded Software for OpenFlow

Attention Starting with Cisco NXOS Release I5, Openflow is not supported for Cisco NDB.

Step 1 In a web browser, navigate to Cisco.com.

Step 2 Under **Support**, click **All Downloads**.

Step 3 In the center pane, click **Cloud and Systems Management**.

Step 4 If prompted, enter your Cisco.com username and password to log in.

Step 5 In the right pane, click **Network Controllers and Applications**, and then click **Cisco Nexus Data Broker.**

Step 6 Download and unzip the **Cisco Nexus Data Broker Release 3.2.2** application bundle zip file. For more information regarding the NDB zip file name, see Cisco Nexus Data Broker Software Release Filename Matrix.
The application bundle zip file contains the following:

- The Cisco Nexus Data Broker Software Application package, for example, **ndb1000-sw-app-emb-k9-3.2.2.ova**
- The Cisco Plug-in for OpenFlow package, for example, **ofa_mmemb-2.1.4-r2-nxos-SPA-k9.ova**

What to Do Next

Install the software on a Cisco Nexus 3000, 3100, 3200, 3500, or 9000 Series switch.

Upgrading to Release 3.2.2

This process involves using the GUI to download the configuration, perform the upgrade, and then upload the configuration.

Before You Begin

Step 1 Navigate to the **System** tab under **Administration**.
The **System Administration** window is displayed.

Step 2 Click **Download Configuration**.
It downloads the configuration in a zip file format. The name of the zip file is **configuration_startup.zip**.

Step 3 Download the configuration in Cisco NDB 3.1 or Cisco NDB 3.2.

Step 4 Deactivate Cisco NDB and uninstall Cisco NDB using the following steps:

Step 5 **configure terminal**

Example:
```
device# configure terminal
```

Step 6 **virtual-service virtual-services-name**

Example:
```
device(config)# virtual-service <virtual-services-name>
```

Step 7 **no activate**

Example:
```
device(config-virt-serv)# no activate
```

Step 8 **no virtual-service <virtual-services-name>**

Example:
```
device(config)# no virtual-service <virtual-services-name>
```

Step 9 **end**

Example:
```
device(config-virt-serv)# end
```

Step 10 **virtual-service uninstall name virtual-services-name**

Example:
```
# virtual-service uninstall name <virtual-services-name>
```

Step 11 **copy running-config startup-config**

Example:

```
# copy running-config startup-config
```

Step 12 Install and activate Cisco NDB 3.2.2 using the following steps:

Step 13 **virtual-service install name <virtual-services-name> package bootflash: ndb1000-sw-app-emb-k9-3.2.2.ova**

Step 14 **show virtual-service list**

Use the show command to check the status of the virtual service installation. After the status of the virtual service becomes listed as **Installed**, run the following commands to activate the service.

Step 15 **configure terminal**

Step 16 device(config)# **virtual-service <virtual-services-name>**

Step 17 device(config)# **activate**

Step 18 device(config)# **end**

Step 19 device(config)# **copy running-config startup-config**

Step 20 Run the **<python activator script>** script using the **python bootflash:<python activator script> -v <ndb virtual service name>** command.

Note The NDB activator script is different for the different Cisco NXOS versions:

- NDBActivator2.0_A6_A8_Plus.py: For Cisco NXOS versions A6 and A8.
- NDBActivator2.0_I3_I4.py: For Cisco NXOS versions I3 and I4.

Note For NXOS devices with A6/A8 version, run the activator script in root user. Copy the activator script in the bootflash of the device and complete the following steps:

```
N3K-130# run bash
bash-3.2$ sudo su
bash-3.2# cd /bootflash/
bash-3.2# python NDBActivator2.0_A6_A8_Plus.py -v ndb
2017-02-27 09:08:05,923 - __main__ - INFO - Successfully created /embndb/interface file with management
 interface details
bash-3.2#
```

Example:

```
device#  configure terminal
device(config)#  virtual-service <virtual-services-name>
device(config)#  no activate
device(config)#  show virtual-service list  (Wait until deactivated complete)
device(config)#  activate
device(config)#  show virtual-service list (Wait until activated complete)
device(config)#  end
device(config)#  copy running-config startup-config
```

Step 21 Upload Cisco NDB configuration that is downloaded in step 1 in the Cisco NDB user interface (UI).

Installing and Activating the Cisco Nexus Data Broker Embedded Software for OpenFlow

Before You Begin

Note You cannot install a new version of the Cisco Nexus Data Broker Embedded if you already have an existing Cisco Monitor Manager Embedded application installed and active.

Before you begin installing a new version of the Cisco Nexus Data Broker Embedded, you must:

- Deactivate your current Cisco Monitor Manager Embedded OVA file.
- Uninstall the Cisco Monitor Manager Embedded OVA file.

Important Ensure that you have at least 1 GB of available space in the bootflash. For example, the **ofa_mmemb-2.1.4-r2-nxos-SPA-k9.ova** and **ndb1000-sw-app-emb-k9-3.2.2.ova** file require a total of 850 MB of space in the bootflash for the decompression and installation processes. For more information regarding the NDB zip file name, see Cisco Nexus Data Broker Software Release Filename Matrix.

DETAILED STEPS

	Command or Action	Purpose
Step 1	switch# **copy** [*scp: | ftp: | http:*] *//download_dir* **ofa_mmemb-2.1.4-r2-nxos-SPA-k9.ova bootflash: vrf management** OR switch# **copy** [*scp: | ftp: | http:*] *//download_dir* **download_dir ofa_mmemb-1.1.5-r3-n3000-SPA-k9.ova bootflash: vrf management**	Copies the Cisco Plug-in for OpenFlow package from the directory where you downloaded it to the switch.
Step 2	switch# **copy** [*scp: | ftp: | http:*] *//download_dir* **ndb1000-sw-app-emb-k9-3.2.2.ova bootflash:vrf management**	Copies the Cisco Nexus Data Broker Embedded package from the directory where you downloaded it to the switch.
Step 3	switch# **show virtual-service list**	Monitors the status of the copy processes.
Step 4	switch# **virtual-service install name ofa_ndbemb package bootflash:ofa_mmemb-2.1.4-r2-nxos-SPA-k9.ova** OR switch# **virtual-service install name ofa_ndbemb package bootflash:ofa_mmemb-2.1.4-r2-nxos-SPA-k9.ova**	Installs the Cisco Plug-in for OpenFlow package on the switch.
Step 5	switch# **virtual-service install name ndb_emb package bootflash:ndb1000-sw-app-emb-k9-3.2.2.ova**	Installs the Cisco Nexus Data Broker Embedded package on the switch.
Step 6	switch# **show virtual-service list**	Monitors the status of the installations.

	Command or Action	Purpose
		Note Do not continue until both OVA files have been successfully installed.
Step 7	switch# **configure terminal**	Enters global configuration mode on the switch.
Step 8	switch (config)# **virtual-service ofa_ndbemb**	Starts the virtual service for the Cisco Plug-in for OpenFlow package and enters virtual service configuration mode on the switch.
Step 9	switch(config-virt-serv)# **activate**	Activates the Cisco Plug-in for OpenFlow package.
Step 10	switch(config-virt-serv)# **exit**	Returns to global configuration mode.
Step 11	switch(config)# **virtual-service ndb_emb**	Starts the virtual service for the Cisco Nexus Data Broker Embedded package and enters virtual service configuration mode on the switch.
Step 12	switch(config-virt-serv)# **activate**	Activates the Cisco Nexus Data Broker Embedded package.
Step 13	switch(config-virt-serv)# **exit**	Exits virtual service configuration mode on the switch.
Step 14	switch(config)# **show virtual-service list**	Monitors the status of the package activations.
Step 15	Run the **NDB python activator script** script from the **ndb** directory in the GitHub repository at https://github.com/datacenter/nexus9000/blob/master/nexusdatabroker/ using the **python bootflash:<python NDB activator script> -v ndb** command.	Creates `/embndb/interface` file with management interface details: • If the Cisco NDB version is 2.x.x, the following error message is displayed, "Not supported version, please upgrade to the newer version" • If the Cisco NDB version is 3.0.0 or 3.1.0, the */xnclite/launcher.sh* file is updated. • If the Cisco NDB version is 3.2.0, */xnclite/launcher.sh* is not updated. . **Note** The NDB activator script is different for the different Cisco NXOS versions: • NDBActivator2.0_A6_A8.py: For Cisco NXOS versions A6 and A8. • NDBActivator2.0_I3_I4.py: For Cisco NXOS versions I3 and I4.

Step 16	Deactivate the NDB virtual service and activate it.
	Example:
	`device# configure terminal`
	`device(config)# virtual-service <virtual-services-name>`
	`device(config)# no activate`
	`device(config)# show virtual-service list (Wait`
		Update the configuration changes.

	Command or Action	Purpose

	until deactivated complete)
	device(config)# activate
	device(config)# show virtual-service list (Wait until activated complete)
	device(config)# end
	device(config)# copy running-config startup-config	

Configuring the Cisco Plug-in for OpenFlow

The Cisco Plug-in for OpenFlow needs to be connected to the Cisco Nexus Data Broker locally running on the Cisco Nexus 3000, 3100, 3200, 3500, or 9000 Series switch.

Note The steps in this procedure continue the steps that were completed in the previous section.

Before You Begin

Install and activate the Cisco Nexus Data Broker package and the Cisco Plug-in for OpenFlow package.

Enter the following pre-requisite command **hardware profile openflow** for the Cisco Nexus 3000 and 3100 Series switches. Enter the following pre-requisite command **hardware profile forwarding-mode openflow-hybrid** for the Cisco Nexus 3500 Series switches.

Step 1 Enter the configuration mode on the switch.
configure terminal

Step 2 Enter the Cisco Plug-in for OpenFlow configuration mode on the switch.
switch(config)# **openflow**

Step 3 Choose the switch to which you want to connect.
switch(config-ofa)# **switch** *switch_num*

Caution Set the *switch_num* to **1**. This is the default value. Only expert users should set the *switch_num* number to any value other than 1.

Step 4 Choose the pipeline to which you want to connect.
switch(config-ofa-switch)# **pipeline** *pipeline_num*

Caution Set the *pipeline_num* to **201** for Cisco Nexus 3000, 3100, 3200, and 9300 Series switches. This is the default value. Only expert users should set the *pipeline_num* number to any value other than 201.

Set the *pipeline_num* to **203** for Cisco Nexus 3500 Series switches This is the default value. Only expert users should set the *pipeline_num* number to any value other than 203.

Step 5 Configure the controller address using vrf management.
switch(config-ofa-switch)# **controller ipv4** *management_interface_address* **port** *port_num* **vrf management security none**

Note
- The controller ipv4 address should match the management interface (mgmt0) address.
- By default, the Cisco Plug-in for OpenFlow listens on port 6653.

Step 6 Assign ports to the Cisco Plug-in for OpenFlow.
switch(config-ofa-switch)# **of-port interface** *ethernet_port_num*

Example:
switch(config-ofa-switch)# **of-port interface** ethernet1/10

Step 7 Exit from the current configuration command mode and return to EXEC mode.
switch(config-ofa-switch)# **end**

Step 8 Verify that the Cisco Plug-in for OpenFlow is connected to the Cisco Nexus Data Broker.
switch# **show openflow switch** *switch_num* **controllers**

See the Cisco Plug-in for OpenFlow Configuration Guide 1.3

Logging in to the Cisco Nexus Data Broker GUI

The default HTTPS web link for the Cisco Nexus Data Broker GUI is `https://Nexus_Switch_Management_IP:8443/monitor`

Note You must manually specify the https:// protocol in your web browser. The controller must also be configured for HTTPS.

Step 1 In your web browser, enter the Cisco Nexus Data Broker web link, for example, *https://Nexus_Switch_Management_IP:8443/monitor*.

Step 2 On the launch page, do the following:

a) Enter your username and password.
The default username and password is admin/admin.

b) Click **Log In**.

What to Do Next

See the *Cisco Nexus Data Broker Configuration Guide* for the procedures that you need to configure Cisco Nexus Data Broker.