Cisco Nexus Dashboard Fabric Controller Installation and Upgrade Guide, Release 12.0.2f

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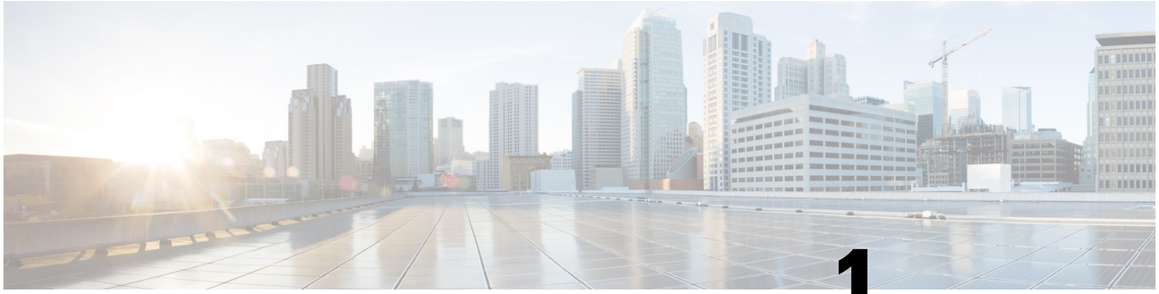


CHAPTER 1

Overview

Overview

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

Cisco Nexus Dashboard Fabric Controller is the comprehensive management solution for all NX-OS deployments spanning LAN Fabric, SAN, and IP Fabric for Media (IPFM) networks in data centers powered by Cisco. Cisco Nexus Dashboard Fabric Controller also supports other devices, such as IOS-XE switches, IOS-XR routers, and non-Cisco devices. Being a multi-fabric controller, Cisco Nexus Dashboard Fabric Controller manages multiple deployment models like VXLAN EVPN, Classic 3-Tier, FabricPath, and Routed based fabrics for LAN while providing ready-to-use control, management, monitoring, and automation capabilities for all these environments. In addition, Cisco NDFC when enabled as a SAN Controller automates Cisco MDS Switches and Cisco Nexus Family infrastructure in NX-OS mode with a focus on storage-specific features and analytics capabilities.

Nexus Dashboard Fabric Controller primarily focuses on Control and Management for three primary market segments:

- LAN networking including VXLAN, Multi-Site, Classic Ethernet, and External Fabrics supporting Cisco Nexus switches running standalone NX-OS, with additional support for IOS-XR, IOS-XE, and adjacent Host, Compute, Virtual Machine, and Container Management systems.
- SAN networking for Cisco MDS and Cisco Nexus switches running standalone NX-OS, including support for integration with storage arrays and additionally Host, Compute, Virtual Machine, and Container Orchestration systems.
- Media Control for Multicast Video production networks running Cisco Nexus switches operated as standalone NX-OS, with additional integrations for 3rd party media control systems.

Previously, DCNM was an application server running on a VM deployed via OVA or ISO, a physical appliance deployed via ISO, or software installed on a qualified Windows or Linux machine. Cisco Nexus Dashboard

Fabric Controller, Release 12 is available as an application running exclusively on top of the Cisco Nexus Dashboard Virtual or Physical Appliance.

Virtual Nexus Dashboard deployment with OVA is also referred to as virtual Nexus Dashboard (vND) deployment, while the deployment of Nexus Dashboard on physical appliance (Service Engine) is known as physical Nexus Dashboard (pND) deployment. To deploy Nexus Dashboard based on your requirement, refer to *Cisco Nexus Dashboard Deployment Guide*.

Beginning with Release 12, Cisco Nexus Dashboard Fabric Controller has a single installation mode. Post installation, it supports selection from multiple personas at run-time. After the Nexus Dashboard Fabric Controller Release 12.0.2f is installed, you can choose from one of the following personas:

- **Fabric Discovery**—Discover, Monitor, and Visualize LAN Deployments.
- **Fabric Controller**—LAN Controller for Classic Ethernet (vPC), Routed, VXLAN, and IP Fabric for Media Deployments.
- **SAN Controller**—SAN Controller for MDS and Nexus switches. Enhanced SAN Analytics with streaming telemetry.

Note For any given instance of Nexus Dashboard, only one version of NDFC service will be active. On the active NDFC service, you can configure only one persona at any given instance.

All features/services are modularized, broken into smaller microservices, and the required microservices are orchestrated based on the feature set or feature selections. Therefore, if any feature or microservice is down, only that microservice is restarted and recovered, resulting in minimal disruption.

In contrast to the previous DCNM Active-Standby HA model, Cisco NDFC introduces Active-Active HA deployment model utilizing all three nodes in a cluster for deploying microservices. This has significant improvement in both latency and effective resource utilization.

Note For NDFC to run on top of the virtual Nexus Dashboard (vND) instance, you must enable promiscuous mode on port groups that are associated with Nexus Dashboard interfaces where External Service IP addresses are specified. vND comprises of Nexus Dashboard management interface and data interface. By default, for LAN deployments, 2 external service IP addresses are required for the Nexus Dashboard management interface subnet. Therefore, you must enable promiscuous mode for the associated port-group. If inband management or Endpoint Locator (EPL) is enabled, you must specify External Service IP addresses in the Nexus Dashboard data interface subnet. You must also enable the promiscuous mode for the Nexus Dashboard data/fabric interface port-group. For NDFC SAN Controller, promiscuous mode must be enabled only on the Nexus Dashboard data interface associated port-group. For NDFC SAN Controller, promiscuous mode only needs to be enabled on the Nexus Dashboard data interface associated port-group. For more information, refer to *Cisco Nexus Dashboard Deployment Guide*.

For more information, see Cisco Nexus Dashboard Fabric Controller (Formerly DCNM).

Change History

The following table shows the change history for this document.

Table 1: Change History

Date	Description
17 December 2021	Release 12.0.2f became available.

Deployment Options

The following deployment options are available for Cisco Nexus Dashboard Fabric Controller:

- NDFC on Single node (non-HA Cluster)

  On Single node Nexus Dashboard, you can deploy NDFC with the following personas:

  - SAN Controller with SAN Insights
  - Fabric Controller for IP Fabric for Media (IPFM) deployments
  - Fabric Controller for lab/non-production environments (<= 25 switches)

- NDFC on a 3-node Cluster (Active-Active HA mode)

  On 3-Node Nexus Dashboard, you can deploy NDFC with the following personas:

  - Fabric Discovery
  - Fabric Controller
  - SAN Controller with or without SAN Insights

Note For NDFC deployments, the Nexus Dashboard node should have a different subnet on the management interface and the data/fabric interface. In addition, in a 3-node Nexus Dashboard cluster, all Nexus Dashboard nodes should be layer-2 adjacent. In other words, the 3 Nexus Dashboard nodes must all belong to the same management and data networks respectively. In summary, Nexus Dashboard Fabric Controller is not supported on Nexus Dashboard nodes that are deployed with management and data networks using overlapping subnets.

- NDFC on a 5-node virtual Nexus Dashboard (vND) Cluster (Active-Active HA mode)

  From Release 12.0.2f, on 5-Node Nexus Dashboard, you can deploy NDFC with the following personas:

  - Fabric Discovery
  - Fabric Controller

In the 3-node and 5-node deployment, there are 3 Nexus Dashboard master nodes. In the 5-node deployment, the additional 2 nodes serve as worker nodes. The 3-node or 5-node cluster deployment is an active-active solution, that is, all nodes are utilized to run micro-services of Nexus Dashboard Fabric Controller. When a node fails, microservices running on the node, are moved to the other nodes. Nexus Dashboard Fabric Controller will perform normally under one node failure scenarios. However, it is expected that there will be a brief disruption to services that must be migrated on node failure. After the migration of services is complete, the supported scale will continue to function albeit at degraded performance. To restore optimal NDFC performance, a system running with one failed node is not the desired situation and must be rectified at the earliest. A 3-node or 5-node cluster cannot tolerate failure of two nodes and all NDFC services will be disrupted.

Refer to Nexus Dashboard Capacity Planning to determine the number of switches supported for each deployment.

For virtual Nexus Dashboard OVA deployments on ESXi environments, it is imperative that promiscuous mode is enabled on the port groups associated with Nexus Dashboard management and Nexus Dashboard data/fabric interfaces. Otherwise, some of the functionality such as SNMP trap, Image management, Endpoint Locator, SAN Insights and so on will not work.

Note Nexus Dashboard cluster federation is not supported with Nexus Dashboard Fabric Controller.

Deployment Profiles

While enabling Cisco Nexus Dashboard Fabric Controller, based on the persona, you can choose a deployment profile. When deploying the application, the Nexus Dashboard indicates the deployment profile that is chosen for the cluster form factor. This generally does not need to be overridden, unless explicitly stated below.

To choose an appropriate profile, refer to the following recommendations.

virtual-demo

This deployment profile must be selected for the application running on a virtual Nexus Dashboard cluster deployed using the app OVA.

Note You can override this profile only when enabling the application on the Nexus Dashboard.

Supported deployment personas include:

- Fabric Discovery in a single node cluster
- Fabric Controller deployment in single node cluster
- Fabric Controller with IPFM in a single node cluster
- SAN Controller deployment with SAN Insights in a single node cluster

Note **virtual-demo** profile is purely for demo purposes and not intended to be used for production environments.

virtual-app

This deployment profile must be selected for the application running on a virtual Nexus Dashboard cluster deployed using the app OVA. By default, this profile is selected when the application is enabled on a app node virtual Nexus Dashboard.

Supported deployment personas include:

- Fabric Controller in 3-node or 5-node cluster
- Fabric Controller with IPFM in single or 3-node cluster
- SAN Controller in single or 3-node cluster

Note SAN Insights is not supported with this deployment profile.

virtual-data

This deployment profile must be selected for the application running on a virtual Nexus Dashboard cluster deployed using the data OVA. This profile should be used for the SAN Controller persona with SAN Insights. By default, this profile will be selected when the application is enabled on a data node virtual Nexus Dashboard.

Supported deployment personas include:

- SAN Controller in single or 3 node cluster

Note SAN Insights is supported with this deployment profile in single or 3 master cluster node

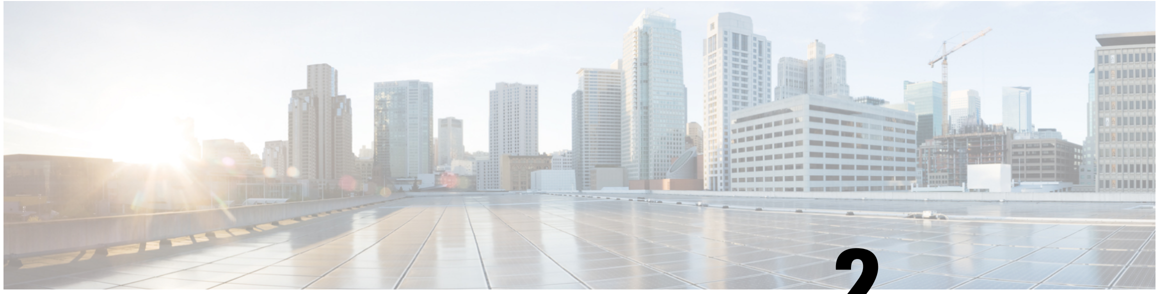
physical

This deployment profile must be selected for the application running on a physical Nexus Dashboard cluster. By default, this profile will be selected when the application is enabled on a physical Nexus Dashboard.

Supported deployment personas include:

- Fabric Controller in 3 node cluster
- Fabric Controller with IPFM in single or 3 node cluster
- SAN Controller in single or 3 node cluster

Note SAN Insights is supported with this deployment profile.



CHAPTER 2

System Requirements

System Requirements

This chapter lists the tested and supported hardware and software specifications for Cisco Nexus Dashboard Fabric Controller architecture. The application is in English locales only.

The following sections describes the various system requirements for the proper functioning of your Cisco Nexus Dashboard Fabric Controller, Release 12.0.2f.

Note We recommend that you do not upgrade any underlying third-party software separately. All the necessary software components will be updated during the inline upgrade procedure. Upgrading the components outside of Nexus Dashboard Fabric Controller upgrade causes functionality issues.

- Cisco Nexus Dashboard Version Compatibility
- Nexus Dashboard Server Resource (CPU/Memory) Requirements
- Nexus Dashboard Networks
- Supported Latency
- Supported Web Browsers
- Other Supported Software

Cisco Nexus Dashboard Version Compatibility

Cisco Nexus Dashboard Fabric Controller (NDFC) requires Nexus Dashboard version **2.1(2d)** or higher. If you try to upload NDFC 12.0.2f on a Nexus Dashboard version earlier than 2.1(2d), you will not be allowed to upload the application. To download the correct version of Nexus Dashboard, visit Software Download – Nexus Dashboard.

Nexus Dashboard Server Resource (CPU/Memory) Requirements

Table 2: Server Resource (CPU/Memory) Requirements to run NDFC on top of ND

Deployment Type	Node Type	CPUs	Memory	Storage (Throughput: 40-50MB/s)
Fabric Discovery	Virtual Node (vND) – app OVA	16vCPUs	64GB	550GB SSD
	Physical Node (pND) (PID: SE-NODE-G2)	2x 10-core 2.2G Intel Xeon Silver CPU	256 GB of RAM	4x 2.4TB HDDs 400GB SSD 1.2TB NVME drive
Fabric Controller	Virtual Node (vND) – app OVA	16vCPUs	64GB	550GB SSD
	Physical Node (pND) (PID: SE-NODE-G2)	2x 10-core 2.2G Intel Xeon Silver CPU	256 GB of RAM	4x 2.4TB HDDs 400GB SSD 1.2TB NVME drive
SAN Controller	Virtual Node (vND) – app OVA (without SAN Insights)	16vCPUs	64GB	550GB SSD
	Data Node (vND) – Data OVA (with SAN Insights)	32vCPUs	128GB	3TB SSD
	Physical Node (pND) (PID: SE-NODE-G2)	2x 10-core 2.2G Intel Xeon Silver CPU	256 GB of RAM	4x 2.4TB HDDs 400GB SSD 1.2TB NVME drive

Nexus Dashboard Networks

When first configuring Nexus Dashboard, on every node, you must provide two IP addresses for the two Nexus Dashboard interfaces—one connected to the Data Network and the other to the Management Network. The data network is typically used for the nodes' clustering and north-south connectivity to the physical network. The management network typically connects to the Cisco Nexus Dashboard Web UI, CLI, or API.

For enabling the Nexus Dashboard Fabric Controller, the Management and Data Interfaces on a Nexus Dashboard node must be in different subnets. The interfaces between different nodes that belong to the same Nexus Dashboard cluster, must be within the same Layer-2 Network and Layer-3 subnet.

Connectivity between the Nexus Dashboard nodes is required on both networks with the round trip time (RTT) not exceeding 50ms. Other applications running on the same Nexus Dashboard cluster may have lower RTT requirements and you must always use the lowest RTT requirement when deploying multiple applications in the same Nexus Dashboard cluster. Refer to *Cisco Nexus Dashboard Deployment Guide* for more information.

Table 3: Network Requirements for NDFC on Nexus Dashboard

Management Interface	Data Interface	Persistent IPs	Support for Data and Management in the same subnet
Layer 2 adjacent	Layer 2 adjacent	One of the following for LAN: • 2 IPs in management network if using the default LAN Device Management Connectivity setting • 2 IPs in data network if setting LAN Device Management Connectivity to `Data` Plus one IP per fabric for EPL in data network Plus one IP for Telemetry receiver in data or management network if IP Fabric for Media is enabled. • Plus one IP for SNMP and Syslog in data or management network For SAN: • 2 IPs in data network Plus one IP per node in data network for SAN Insights receiver if enabled. Plus one IP for SNMP and Syslog	Not supported

Management Interface	Data Interface	Persistent IPs	Support for Data and Management in the same subnet
Layer 3 adjacent	Layer 3 adjacent	For LAN: - Data network 2 IPs in data network if setting LAN Device Management Connectivity to `Data` Plus one IP per fabric for EPL in data network Plus one IP for Telemetry receiver in data or management network if IP Fabric for Media is enabled. For SAN: - Data network 2 IPs in data network Plus one IP per node in data network for SAN Insights receiver if enabled.	Persistent IPs belong to a dedicated subnet (not mgmt subnet, nor data subnet)

Virtual Nexus Dashboard (vND) Prerequisites

For virtual Nexus Dashboard deployments, each vND node has 2 interfaces or vNICs. The Data vNIC maps to bond0 (also known as bond0br) interface and Management vNIC maps to bond1 (also known as bond1br) interface. The requirement is to enable/accept promiscuous mode on the port groups associated with the Nexus Dashboard Management and/or Data vNICs where IP stickiness is required. The Persistent IP addresses are given to the pods (e.g., SNMP Trap/Syslog receiver, Endpoint Locator instance per Fabric, SAN Insights receiver, etc.). Every POD in Kubernetes can have multiple virtual interfaces. Specifically for IP stickiness, an extra virtual interface is associated with the POD that is allocated an appropriate free IP from the external service IP pool. The vNIC has its own unique MAC address that is different from the MAC addresses associated with the vND virtual vNICs. Moreover, all North-to-South communication to and from these PODs go out of the same bond interface. By default, the VMware ESXi systems check if the traffic flows out of a particular VM vNIC matches the Source-MAC associated with that vNIC. In the case of NDFC pods with an external service IP, the traffic flows are sourced with the Persistent IP addresses of the given PODs that map to the individual POD MAC associated with the virtual POD interface. Therefore, we need to enable the required settings on the VMware side to allow this traffic to flow seamless in and out of the vND node.

For more information, refer to *Cisco Nexus Dashboard Deployment Guide*.

Supported Latency

As Cisco Nexus Dashboard Fabric Controller is deployed atop Cisco Nexus Dashboard, the latency factor is dependent on Cisco Nexus Dashboard. Refer to Cisco Nexus Dashboard Deployment Guide for information about latency.

Supported Web Browsers

Cisco Nexus Dashboard Fabric Controller is supported on the following web browsers:

- Google Chrome version 96.0.4664.93
- Microsoft Edge version 96.0.1054.43 (64-bit)
- Mozilla Firefox version 94.0.2 (64-bit)

Other Supported Software

The following table lists the other software that is supported by Cisco Nexus Dashboard Fabric Controller Release 12.0.2f.

Component	Features
Security	• ACS versions 4.0, 5.1, 5.5, and 5.8 • ISE version 2.6 • ISE version 3.0 • Telnet Disabled: SSH Version 1, SSH Version 2, Global Enforce SNMP Privacy Encryption. • Web Client: HTTPS with TLS 1, 1.1 and 1.2 • TLS 1.3

CHAPTER 3

Prerequisites

This chapter provides release-specific prerequisites information for your deployment of *Cisco Nexus Dashboard Fabric Controller*.

Prerequisites

Before you install the Cisco Nexus Dashboard Fabric Controller on Cisco Nexus Dashboard, you must need to meet the following prerequisites:

Nexus Dashboard

You must have Cisco Nexus Dashboard cluster deployed and its fabric connectivity configured, as described in *Cisco Nexus Dashboard Deployment Guide* before proceeding with any additional requirements and the Nexus Dashboard Fabric Controller service installation described here.

Nexus Dashboard Fabric Controller Release	Minimum Nexus Dashboard Release
Release 12.0.2f	Cisco Nexus Dashboard, Release 2.1.2d or later **Note** Cisco Nexus Dashboard cluster in Linux KVM does not support Nexus Dashboard Fabric Controller Release 12.0.2f.

Nexus Dashboard Networks

When first configuring Nexus Dashboard, on every node, you must provide two IP addresses for the two Nexus Dashboard interfaces—one connected to the Data Network and the other to the Management Network. The data network is typically used for the nodes' clustering and north-south connectivity to the physical network. The management network typically connects to the Cisco Nexus Dashboard Web UI, CLI, or API.

For enabling the Nexus Dashboard Fabric Controller, the Management and Data Interfaces on a Nexus Dashboard node must be in different subnets. The interfaces between different nodes that belong to the same Nexus Dashboard cluster, must be within the same Layer-2 Network and Layer-3 subnet.

Connectivity between the Nexus Dashboard nodes is required on both networks with the round trip time (RTT) not exceeding 50ms. Other applications running on the same Nexus Dashboard cluster may have lower RTT requirements and you must always use the lowest RTT requirement when deploying multiple applications in the same Nexus Dashboard cluster. Refer to *Cisco Nexus Dashboard Deployment Guide* for more information.

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Management Interface	Data Interface	Persistent IPs	Support for Data and Management in the same subnet
Layer 3 adjacent	Layer 3 adjacent	For LAN: • Data network 2 IPs in data network if setting LAN Device Management Connectivity to `Data` Plus one IP per fabric for EPL in data network Plus one IP for Telemetry receiver in data or management network if IP Fabric for Media is enabled. For SAN: • Data network 2 IPs in data network Plus one IP per node in data network for SAN Insights receiver if enabled.	Persistent IPs belong to a dedicated subnet (not mgmt subnet, nor data subnet)

Virtual Nexus Dashboard (vND) Prerequisites

For virtual Nexus Dashboard deployments, each vND node has 2 interfaces or vNICs. The Data vNIC maps to bond0 (also known as bond0br) interface and Management vNIC maps to bond1 (also known as bond1br) interface. The requirement is to enable/accept promiscuous mode on the port groups associated with the Nexus Dashboard Management and/or Data vNICs where IP stickiness is required. The Persistent IP addresses are given to the pods (e.g., SNMP Trap/Syslog receiver, Endpoint Locator instance per Fabric, SAN Insights receiver, etc.). Every POD in Kubernetes can have multiple virtual interfaces. Specifically for IP stickiness, an extra virtual interface is associated with the POD that is allocated an appropriate free IP from the external service IP pool. The vNIC has its own unique MAC address that is different from the MAC addresses associated with the vND virtual vNICs. Moreover, all North-to-South communication to and from these PODs go out of the same bond interface. By default, the VMware ESXi systems check if the traffic flows out of a particular VM vNIC matches the Source-MAC associated with that vNIC. In the case of NDFC pods with an external service IP, the traffic flows are sourced with the Persistent IP addresses of the given PODs that map to the individual POD MAC associated with the virtual POD interface. Therefore, we need to enable the required settings on the VMware side to allow this traffic to flow seamless in and out of the vND node.

For more information, refer to *Cisco Nexus Dashboard Deployment Guide*.

Nexus Dashboard Cluster Sizing

Nexus Dashboard supports cohosting of services. Depending on the type and number of services you choose to run, you may be required to deploy extra worker nodes in your cluster. For cluster sizing information and recommended number of nodes based on specific use cases, see the Cisco Nexus Dashboard Capacity Planning tool.

If you plan to host other applications in addition to the Nexus Dashboard Fabric Controller, ensure that you deploy and configure additional Nexus Dashboard nodes based on the cluster sizing tool recommendation, as described in the *Cisco Nexus Dashboard User Guide*, which is also available directly from the Nexus Dashboard Web UI.

Network Time Protocol (NTP)

Nexus Dashboard Fabric Controller uses NTP for clock synchronization, so you must have an NTP server configured in your environment.

Clocks on all nodes must be synchronized within the same second. Any delta between two nodes that exceeds more than 1 second could affect database consistency mechanism between the nodes.

CHAPTER 4

Installing Cisco Nexus Dashboard Fabric Controller

This chapter contains the following sections:

Installing Nexus Dashboard Fabric Controller Service Using App Store

To install Cisco Nexus Dashboard Fabric Controller Release 12.0.2f in an existing Cisco Nexus Dashboard cluster, perform the following steps:

Before you begin

- Ensure that you've installed the required form factor of Cisco Nexus Dashboard. For instructions, refer to *Cisco Nexus Dashboard Deployment Guide*.
- Ensure that you meet the requirements and guidelines described in Prerequisites, on page 13.
- The Cisco DC App Center must be reachable from the Nexus Dashboard via the Management Network directly or using a proxy configuration. Nexus Dashboard proxy configuration is described in the *Cisco Nexus Dashboard User Guide*.

  If you are unable to establish the connection to the DC App Center, skip this section and follow the steps described in Installing Nexus Dashboard Fabric Controller Service Manually, on page 19.
- Ensure that the services are allocated with IP pool addresses on the Cisco Nexus Dashboard. For more information, refer to *Cluster Configuration* section in *Cisco Nexus Dashboard User Guide*.

Procedure

Step 1 Launch the Cisco **Nexus Dashboard** Web UI using appropriate credentials.

Step 2 Click on **Admin Console** > **Services** menu in the left navigation pane to open the Services Catalog window.

Step 3 On the **App Store** tab, identify the Nexus Dashboard Fabric Controller Release 12.0.2f card and click **Install**.

Step 4 On the License Agreement screen, read the CISCO APP CENTER AGREEMENT and click on **Agree and Download**.

Wait for the application to be downloaded to the Nexus Dashboard and deployed.

It may take up to 30 minutes for the application to replicate to all nodes and all services to fully deploy.

Nexus Dashboard Fabric Controller application appears in the **Services Catalog**. The status is shown as **Initializing**.

Step 5 After the Nexus Dashboard Fabric Controller application is initialized, click **Enable** on the Nexus Dashboard Fabric Controller application card.

The **Enable Cisco Nexus Dashboard Fabric Controller** window appears.

Step 6 Click on the **Deployment Profile** field to view the different profiles.

Deployment profile contains the resources profile required for Cisco Nexus Dashboard Fabric Controller. For more information, refer to Deployment Profiles, on page 4.

Step 7 Click **Enable**.

After the services are enabled, the button on the Nexus Dashboard Fabric Controller card shows **Open**.

Wait until all the pods and containers are up and running.

Step 8 Click on **Open** to launch Cisco Nexus Dashboard Fabric Controller Web UI.

Note The single sign-on (SSO) feature allows you to log in to the application using the same credentials as you used for the Nexus Dashboard.

The **Nexus Dashboard Fabric Controller Web UI** opens in a new browser. The **Feature Management** window appears.

Note If External Service Pool IP addresses are not configured, an error message appears. Go to **Nexus Dashboard Web UI > Infrastructure > Cluster Configuration**. Configure the Management Service and Data Service IP addresses in the External Service Pools section. For more information, refer to *Cluster Configuration* section in *Cisco Nexus Dashboard User Guide*.

Three cards namely **Fabric Discovery**, **Fabric Controller**, and **SAN Controller** is displayed.

Step 9 Based on the requirement, select the deployment.

From the list of Features, select features that you need to enable on the Nexus Dashboard Fabric Controller deployment.

Note The list of features displayed is based on the Deployment selected on the card.

Step 10 Click **Apply** to deploy Nexus Dashboard Fabric Controllerwith the selected features.

After the installation is complete, the deployment card and all the features status show as **Started**.

Installing Nexus Dashboard Fabric Controller Service Manually

To manually upload and install Cisco Nexus Dashboard Fabric Controller Release 12.0.2f in an existing Cisco Nexus Dashboard cluster, perform the following steps:

Before you begin

- Ensure that you've installed the required form factor of Cisco Nexus Dashboard. For instructions, refer to *Cisco Nexus Dashboard Deployment Guide*.
- Ensure that you meet the requirements and guidelines described in Prerequisites, on page 13.
- Ensure that the services are allocated with IP pool addresses on the Cisco Nexus Dashboard. For more information, refer to *Cluster Configuration* section in *Cisco Nexus Dashboard User Guide*.

Procedure

Step 1 Go to the following site: https://dcappcenter.cisco.com.

Cisco DC App Center page opens.

In the **All apps** section, all the applications supported on Cisco Nexus Dashboard.

Step 2 Locate the Cisco Nexus Dashboard Fabric Controller Release 12.0.2f application and click the **Download** icon.

Step 3 On the License Agreement screen, read the CISCO APP CENTER AGREEMENT and click on **Agree and Download**.

Save the Nexus Dashboard Fabric Controller application to your directory that is easy to find when you must import/upload to Nexus Dashboard.

Step 4 Launch the Cisco **Nexus Dashboard** using appropriate credentials.

Step 5 Choose **Admin Console** > **Services** > **Installed Services** to view the services installed on the Cisco Nexus Dashboard.

Step 6 From the **Actions** drop-down list, choose **Upload Service**.

Step 7 Choose the **Location** toggle button and select either Remote or Local.

You can choose to either upload the service from a remote or local directory.

- If you select **Remote**, in the **URL** field, provide an absolute path to the directory where the Nexus Dashboard Fabric Controller application is saved.
- If you select **Local**, click **Browse** and navigate to the location where the Nexus Dashboard Fabric Controller application is saved. Select the application and click **Open**.

Step 8 Click **Upload**.

Nexus Dashboard Fabric Controller application appears in the Services Catalog. The status is shown as Initializing.

Wait for the application to be downloaded to the Nexus Dashboard and deployed.

It may take up to 30 minutes for the application to replicate to all nodes and all services to fully deploy.

Nexus Dashboard Fabric Controller application appears in the **Services Catalog**. The status is shown as **Initializing**.

Step 9 After the Nexus Dashboard Fabric Controller application is initialized, click **Enable** on the Nexus Dashboard Fabric Controller application card.

The **Enable Cisco Nexus Dashboard Fabric Controller** window appears.

Step 10 Click on the **Deployment Profile** field to view the different profiles.

Deployment profile contains the resources profile required for Cisco Nexus Dashboard Fabric Controller. For more information, refer to Deployment Profiles, on page 4.

Step 11 Click **Enable**.

After the services are enabled, the button on the Nexus Dashboard Fabric Controller card shows **Open**.

Wait until all the pods and containers are up and running.

Step 12 Click on **Open** to launch Cisco Nexus Dashboard Fabric Controller Web UI.

Note The single sign-on (SSO) feature allows you to log in to the application using the same credentials as you used for the Nexus Dashboard.

The **Nexus Dashboard Fabric Controller Web UI** opens in a new browser. The **Feature Management** window appears.

Note If External Service Pool IP addresses are not configured, an error message appears. Go to **Nexus Dashboard Web UI > Infrastructure > Cluster Configuration**. Configure the Management Service and Data Service IP addresses in the External Service Pools section. For more information, refer to *Cluster Configuration* section in *Cisco Nexus Dashboard User Guide*.

Three cards namely **Fabric Discovery**, **Fabric Controller**, and **SAN Controller** is displayed.

Step 13 Based on the requirement, select the deployment.

From the list of Features, select features that you need to enable on the Nexus Dashboard Fabric Controller deployment.

Note The list of features displayed is based on the Deployment selected on the card.

Step 14 Click **Apply** to deploy Nexus Dashboard Fabric Controller with the selected features.

After the installation is complete, the deployment card and all the features status show as **Started**.

CHAPTER 5

Upgrading Cisco Nexus Dashboard Fabric Controller

This chapter provides information about upgrading Cisco Nexus Dashboard Fabric Controller, and contains the following sections:

Upgrade Paths to Release 12.0.2f

The following table summarizes the type of upgrade that you must follow to upgrade to Release 12.0.2f.

Go to Software Download to download the Upgrade Tool scripts.

Current Release Number	Deployment Type	Upgrade type when upgrade to Release 12.0.2f
12.0.1a	All	1. Upgrade Nexus Dashboard version 2.1.1e to version 2.1.2d 2. Upgrade NDFC application to 12.0.2f.
11.5(3)	LAN Fabric Deployment **Note** Media Controller and all SAN deployments are not supported in Release 11.5(3).	1. Backup using **DCNM_To_NDFC_Upgrade_Tool_OVA_ISO.zip** 2. Restore on Nexus Dashboard Fabric Controller **Web UI > Operations > Backup & Restore**

Current Release Number	Deployment Type	Upgrade type when upgrade to Release 12.0.2f
11.5(2)	SAN Deployment on Windows and Linux	1. Backup using **DCNM_To_NDFC_Upgrade_Tool_LIN_WIN.zip** 2. Restore on Nexus Dashboard Fabric Controller **Web UI** > **Operations** > **Backup & Restore**
	SAN Deployment on OVA/ISO/SE	1. Backup using **DCNM_To_NDFC_Upgrade_Tool_OVA_ISO.zip** 2. Restore on Nexus Dashboard Fabric Controller **Web UI** > **Operations** > **Backup & Restore**
	LAN Fabric Deployment on OVA/ISO/SE	1. Backup using **DCNM_To_NDFC_Upgrade_Tool_OVA_ISO.zip** 2. Restore on Nexus Dashboard Fabric Controller **Web UI** > **Operations** > **Backup & Restore**
11.5(1)	SAN Deployment on Windows and Linux	1. Backup using **DCNM_To_NDFC_Upgrade_Tool_LIN_WIN.zip** 2. Restore on Nexus Dashboard Fabric Controller **Web UI** > **Operations** > **Backup & Restore**
	SAN Deployment on OVA/ISO/SE	1. Backup using **DCNM_To_NDFC_Upgrade_Tool_OVA_ISO.zip** 2. Restore on Nexus Dashboard Fabric Controller **Web UI** > **Operations** > **Backup & Restore**
	LAN Fabric Deployment on OVA/ISO/SE	1. Backup using **DCNM_To_NDFC_Upgrade_Tool_OVA_ISO.zip** 2. Restore on Nexus Dashboard Fabric Controller **Web UI** > **Operations** > **Backup & Restore**
	Media Controller Deployment on OVA/ISO	1. Backup using **DCNM_To_NDFC_Upgrade_Tool_OVA_ISO.zip** 2. Restore on Nexus Dashboard Fabric Controller **Web UI** > **Operations** > **Backup & Restore**

Persona Compatibility for Upgrade

By using the appropriate Upgrade Tool, you can restore data that is backed up from DCNM Release 11.5(1) or 11.5(2) or 11.5(3) on a newly deployed Cisco Nexus Dashboard Fabric Controller for the personas as mentioned in the following table:

Backup from DCNM 11.5(x)[1] [2]	Persona Enabled in NDFC 12.0.2f after Upgrade
DCNM 11.5(x) LAN Fabric Deployment on OVA/ISO/SE	Fabric Controller + Fabric Builder
DCNM 11.5(x) PMN Deployment on OVA/ISO/SE	Fabric Controller + IP Fabric for Media (IPFM)
DCNM 11.5(x) SAN Deployment on OVA/ISO/SE	SAN Controller
DCNM 11.5(x) SAN Deployment on Linux	SAN Controller
DCNM 11.5(x) SAN Deployment on Windows	SAN Controller

[1] All references to 11.5(x) are for 11.5(1) or 11.5(2). Upgrade to NDFC 12 from DCNM 11.5(3) is supported for LAN Fabric Deployments only.

[2] DCNM Release 11.5(3) does not support Media Controller and SAN deployments.

Feature Compatibility Post Upgrade

The following table lists caveats associated with features that are restored from DCNM 11.5(x) backup after upgrade to NDFC, Release 12.0.2f.

Feature in DCNM 11.5(x)	Upgrade Support
Nexus Dashboard Insights configured Refer to Nexus Dashboard Insights User Guide for more information.	Supported
Container Orchestrator (K8s) Visualizer	Supported
VMM Visibility with vCenter	Supported
Nexus Dashboard Orchestrator configured	Not Supported
Preview features configured	Not supported
LAN switches in SAN installations	Not supported
Switches discovered over IPv6	Not supported
DCNM Tracker	Not supported
SAN CLI templates	Not carried over from 11.5(x) to 12.0.2f
Switch images/Image Management data	Not carried over from 11.5(x) to 12.0.2f
Slow drain data	Not carried over from 11.5(x) to 12.0.2f
Infoblox configuration	Not carried over from 11.5(x) to 12.0.2f
Endpoint Locator configuration	You must reconfigure Endpoint Locator (EPL) post upgrade to Release 12.0.2f. However, historical data is retained up to a maximum size of 500 MB.
Alarm Policy configuration	Not carried over from 11.5(x) to 12.0.2f

Feature in DCNM 11.5(x)	Upgrade Support
Performance Management data	CPU/Memory/Interface statistics up to 90 days is restored post upgrade.

Downloading the Nexus Dashboard Fabric Controller Upgrade Tool

To download Upgrade tool to upgrade from Cisco DCNM to Nexus Dashboard Fabric Controller, perform the following steps:

Before you begin

- Identify the deployment type of Cisco DCNM Release 11.5(x) setup.

Procedure

Step 1 Go to the following site: http://software.cisco.com/download/.

A list of the latest release software for Cisco Nexus Dashboard Fabric Controller available for download is displayed.

Step 2 In the Latest Releases list, choose Release 12.0.2f.

Step 3 Based on your Cisco DCNM 11.5(x) deployment type, locate the **DCNM_To_NDFC_Upgrade_Tool** and click the **Download** icon.

The following table displays the DCNM 11.5(x) deployment type, and the corresponding Nexus Dashboard Fabric Controller upgrade tool that you must download.

Table 5: DCNM 11.5(x) Deployment type and Upgrade Tool Compatibility Matrix

DCNM 11.5(x) deployment type	UpgradeTool Name
ISO/OVA	DCNM_To_NDFC_Upgrade_Tool_OVA_ISO
Linux	DCNM_To_NDFC_Upgrade_Tool_LIN_WIN.zip
Windows	DCNM_To_NDFC_Upgrade_Tool_LIN_WIN.zip

Step 4 Save the appropriate **Upgrade Tool** to the 11.5(x) server using **sysadmin** credentials.

Backup Using the Upgrade Tool

Stop Performance Management collection before running backup script for large scaled DCNM. To stop the Performance Management collection, perform the following steps:

- Navigate to **Administration** > **DCNM Server** > **Server Status**.
- Click on **Stop Service** of **Performance Collector** and wait a few seconds.
- Click on the **refresh** icon on the top right to check the status. Make sure it shows **Stopped**.

The backup tool collects last 90 days Performance Management data.

To run the **DCNM_To_NDFC_Upgrade_Tool** to take a backup of all the applications and data on DCNM 11.5, perform the following steps:

Before you begin

- On Cisco DCNM Release 11.5(1), ensure that you validate each fabric before proceeding to take backup. Choose Cisco DCNM **Web UI** **> Administration > Credentials Management > SAN Credentials**. Select each fabric and click **Validate** to validate credentials before taking backup.
- Ensure that you've copied the appropriate Upgrade Tool to the server of your DCNM 11.5(x) setup.
- Ensure that you have enabled execution permissions to the Upgrade tool. Use **chmod +x .** to enable executable permissions.

  ```
  [root@dcnm]# chmod +x ./DCNM12UpgradeToolOVAISO
  ```

Procedure

Step 1 Log on to the Cisco DCNM Release 11.5(x) appliance console.

Step 2 Run the following command to create a screen session.

```
dcnm# screen
```

This creates a session which allows you to execute the commands. The commands continue to run even when the window is not visible or if you get disconnected.

Step 3 Log on to the /root/ directory, by using the su command.

```
dcnm# su
Enter password: <<enter-password>>
[root@dcnm]#
```

Step 4 Execute the upgrade tool, by using the **./DCNM_To_NDFC_Upgrade_Tool** command.

For OVA/ISO-

```
[root@dcnm]# ./DCNM_To_NDFC_Upgrade_Tool_OVA_ISO /* for OVA/ISO
```

For Windows/Linux-

```
root@dcnm]# unzip DCNM_To_NDFC_Upgrade_Tool_LIN_WIN.zip
[root@dcnm-rhel]# cd DCNM_To_NDFC_Upgrade_Tool_LIN_WIN/
[root@dcnm-rhel DCNM_To_NDFC_Upgrade_Tool_LIN_WIN]# ls
DCNMBackup.bat  DCNMBackup.sh  jar
[root@rhel DCNM_To_NDFC_Upgrade_Tool_LIN_WIN]# ./DCNMBackup.sh        /* Enter this command
 for Linux appliance */
OR
[root@rhel DCNM_To_NDFC_Upgrade_Tool_LIN_WIN]# ./DCNMBackup.bat       /* Enter this command
 for Windows appliance */
```

The upgrade tool analysis the DCNM appliance data, and determines whether you can upgrade to Cisco Nexus Dashboard Fabric Controller Release 12.0.2f or not.

Note The backup that is generated by using this tool can be used to restore data, after upgrade.

Step 5 At the prompt to continue with backup, press **y**.

```
********************************************************************************
Welcome to DCNM-to-NDFC Upgrade Tool for OVA/ISO.
This tool will analyze this system and determine whether you can move to NDFC 12.0.2f or
not.
If upgrade to NDFC 12.0.2f is possible, this tool will create files to be used for performing
 the upgrade.
NOTE: only backup files created by this tool can be used for upgrading, older backup files
 created with 'appmgr backup'
CAN NOT be used for upgrading to NDFC 12.0.2f
Thank you!
********************************************************************************

Continue? [y/n]: y

Collect operational data (e.g. PM, EPL)? [y/n]: y

Does this DCNM 11.5(1) have DCNM Tracker feature enabled on any switch on any fabric? [y/n]:
 n
```

Step 6 Enter the encryption key to the backup file.

Note You must provide this encryption key when you're restoring the backup file. Ensure that you save the encryption key in a safe location. If you loose the encryption key, you cannot restore the backup.

```
Sensitive information will be encrypted using an encryption key.
This encryption key will have to be provided when restoring the backup file generated by
this tool.

Please enter the encryption key:      /* enter the encryption key for the backup file */
Enter it again for verification:      /* re-enter the encryption key for the backup file
*/

...
...
Creating backup file
Done.
Backup file: backup11_dcnm-172-23-87-224_20210928-093355.tar.gz       /* backup file name*/
[root@dcnm]#
```

The encrypted backup file is created.

Step 7 Copy the backup file to a safe location and shut down the application 11.5(x) DCNM appliance.

Example

Example for taking backup using the DCNM backup Tool

- **Taking backup on DCNM 11.5(x) OVA/ISO appliance**

```
[root@dcnm]# chmod +x DCNM_To_NDFC_Upgrade_Tool_OVA_ISO
[root@dcnm]# ./DCNM_To_NDFC_Upgrade_Tool_OVA_ISO
********************************************************************************
```

```
Welcome to DCNM-to-NDFC Upgrade Tool for OVA/ISO.

This tool will analyze this system and determine whether you can move to
NDFC 12.0.2f or not.

If upgrade to NDFC 12.0.2f is possible, this tool will create files
to be used for performing the upgrade.

NOTE:
only backup files created by this tool can be used for upgrading,
older backup files created with 'appmgr backup' CAN NOT be used
for upgrading to NDFC 12.0.2f

Thank you!

******************************************************************************

Continue? [y/n]: y

Collect operational data (e.g. PM, EPL)? [y/n]: y

Does this DCNM 11.5(1) have DCNM Tracker feature enabled on any switch on any fabric?
[y/n]: n

Sensitive information will be encrypted using an encryption key.
This encryption key will have to be provided when restoring
the backup file generated by this tool.

Please enter the encryption key:      /* enter the encryption key for the backup file
*/
Enter it again for verification:      /* re-enter the encryption key for the backup
file */

Adding backup header
Collecting DB table data
Collecting DB sequence data
Collecting stored credentials
Collecting Custom Templates
Collecting CC files
Collecting L4-7-service data
Collecting CVisualizer data
Collecting EPL data
Collecting PM data - WARNING: this will take a while!
Collecting AFW app info
Decrypting stored credentials
Creating backup file
Done.
Backup file: backup11_dcnm-172-23-87-224_20210913-012857.tar.gz        /* backup file
name*/
[root@dcnm]#
```

- **Taking backup on DCNM 11.5(x) Windows/Linux appliance**

```
[root@dcnm]# chmod +x DCNM_To_NDFC_Upgrade_Tool_LIN_WIN
[root@dcnm]# unzip DCNM_To_NDFC_Upgrade_Tool_LIN_WIN.zip
Archive:  DCNM_To_NDFC_Upgrade_Tool_LIN_WIN.zip
    creating: DCNM_To_NDFC_Upgrade_Tool_LIN_WIN/
    creating: DCNM_To_NDFC_Upgrade_Tool_LIN_WIN/jar/
   inflating: DCNM_To_NDFC_Upgrade_Tool_LIN_WIN/jar/bcprov-jdk15on-1.68.jar
   inflating: DCNM_To_NDFC_Upgrade_Tool_LIN_WIN/jar/DCNMBackup.java
   inflating: DCNM_To_NDFC_Upgrade_Tool_LIN_WIN/jar/sequences.info.oracle
   inflating: DCNM_To_NDFC_Upgrade_Tool_LIN_WIN/jar/slf4j-simple-1.7.21.jar
   inflating: DCNM_To_NDFC_Upgrade_Tool_LIN_WIN/jar/jnm.jar
  inflating: DCNM_To_NDFC_Upgrade_Tool_LIN_WIN/jar/not-going-to-be-commons-ssl-0.3.20.jar
```

```
   inflating: DCNM_To_NDFC_Upgrade_Tool_LIN_WIN/jar/tables.info.postgres
   inflating:
DCNM_To_NDFC_Upgrade_Tool_LIN_WIN/jar/jarchivelib-0.7.1-jar-with-dependencies.jar
   inflating: DCNM_To_NDFC_Upgrade_Tool_LIN_WIN/jar/tables.info.oracle
   inflating: DCNM_To_NDFC_Upgrade_Tool_LIN_WIN/jar/sequences.info.postgres
   inflating: DCNM_To_NDFC_Upgrade_Tool_LIN_WIN/jar/log4j.properties
   inflating: DCNM_To_NDFC_Upgrade_Tool_LIN_WIN/DCNMBackup.sh
   inflating: DCNM_To_NDFC_Upgrade_Tool_LIN_WIN/DCNMBackup.bat

[root@dcnm-rhel]# cd DCNM_To_NDFC_Upgrade_Tool_LIN_WIN/
[root@dcnm-rhel DCNM_To_NDFC_Upgrade_Tool_LIN_WIN]# ls
DCNMBackup.bat  DCNMBackup.sh  jar
[root@rhel DCNM_To_NDFC_Upgrade_Tool_LIN_WIN]# ./DCNMBackup.sh        /* Enter this 
command for Linux appliance */
OR
[root@rhel DCNM_To_NDFC_Upgrade_Tool_LIN_WIN]# ./DCNMBackup.bat        /* Enter this 
command for Windows appliance */

Enter DCNM root directory [/usr/local/cisco/dcm]:

Initializing, please wait...

Note: ./jar/DCNMBackup.java uses unchecked or unsafe operations.
Note: Recompile with -Xlint:unchecked for details.
*******************************************************************************

Welcome to DCNM-to-NDFC Upgrade Tool for Linux/Windows.

This tool will analyze this system and determine whether you can move to NDFC 12.0.2f
or not.

If upgrade to NDFC 12.0.2f is possible, this tool will create files to be used for
performing the upgrade.

Thank you!

*******************************************************************************

This tool will backup config data. Exporting Operational data like Performance(PM) might
 take some time.

Do you want to export operational data also? [y/N]: y
*******************************************************************************

Sensitive information will be encrypted using an encryption key.
This encryption key will have to be provided when restoring the backup file generated
by this tool.

Please enter the encryption key:       /* enter the encryption key for the backup file
 */
Enter it again for verification:       /* re-enter the encryption key for the backup 
file */
2021-09-13 14:36:31 INFO  DCNMBackup:223 - Inside init() method
2021-09-13 14:36:31 INFO  DCNMBackup:245 - Loading properties....
2021-09-13 14:36:31 INFO  DCNMBackup:301 - Inside checkLANSwitches...
2021-09-13 14:36:32 INFO  DCNMBackup:315 - LAN Switch count: 0
2021-09-13 14:36:32 INFO  DCNMBackup:342 - Inside exportDBTables...
2021-09-13 14:36:32 INFO  DCNMBackup:358 - Exporting ---------> statistics
2021-09-13 14:36:32 INFO  DCNMBackup:358 - Exporting ---------> sequence
...
...
...
2021-09-13 14:49:48 INFO  DCNMBackup:1760 - ###### Total time to export Hourly data:
```

```
42 seconds.


2021-09-13 14:49:48 INFO  DCNMBackup:1767 - Exporting SanPort Daily entries.
2021-09-13 14:49:48 INFO  DCNMBackup:1768 - Total number of ports: 455
2021-09-13 14:49:48 INFO  DCNMBackup:1769 - This might take a while, please wait...
2021-09-13 14:50:23 INFO  DCNMBackup:1791 - Total number of Json data entries in
backup/es/pmdb_sanportratedata_daily.data ==> 13751
2021-09-13 14:50:23 INFO  DCNMBackup:1795 - ###### Total time to export Daily data: 34
 seconds.


2021-09-13 14:50:23 INFO  DCNMBackup:1535 - ###### Total time to export PM data: 81
seconds.


2021-09-13 14:50:23 INFO  DCNMBackup:879 - Creating final tar.gz file....
2021-09-13 14:50:30 INFO  DCNMBackup:892 - Final tar.gz elapsed time: 7049 in ms
2021-09-13 14:50:30 INFO  DCNMBackup:893 - Backup done.
2021-09-13 14:50:30 INFO  DCNMBackup:894 - Log file: backup.log
2021-09-13 14:50:30 INFO  DCNMBackup:895 - Backup file:
backup11_rhel77-160_20210913-149215.tar.gz        /* backup file name*/
[root@rhel DCNM_To_NDFC_Upgrade_Tool_LIN_WIN]#
```

Upgrading from Cisco DCNM 11.5(x) to Cisco NDFC Release 12.0.2f

To upgrade to Cisco Nexus Dashboard Fabric Controller Release 12.0.2f from DCNM Release 11.5(x), perform the following steps:

context here

Before you begin

- Ensure that you've access to the Backup file created from 11.5(x) appliance.

  If you do not have the encryption key, you cannot restore from the backup file.

- Ensure that you've installed the required form factor of Cisco Nexus Dashboard. For instructions, refer to *Cisco Nexus Dashboard Deployment Guide*.

- Ensure that you've installed a fresh installation of Cisco Nexus Dashboard Fabric Controller. For instructions to install Cisco Nexus Dashboard Fabric Controller, refer to:

  - Installing Nexus Dashboard Fabric Controller Service Manually, on page 19.
  - Installing Nexus Dashboard Fabric Controller Service Using App Store, on page 17

Procedure

Step 1 On **Nexus Dashboard** > **Services**, identify Cisco Nexus Dashboard Fabric Controller card and click **Open**.

On the Nexus Dashboard Fabric Controller Web UI, **Feature Management** screen is displayed.

Note that none of the personas are selected on the freshly installed Nexus Dashboard Fabric Controller.

Step 2 Click **Restore**.

The **Operations** > **Backup & Restore** window opens.

Step 3 Click **Restore**.

The **Restore now** window appears.

Step 4 Under **Type**, select your desired format to restore.

- Choose **Config only** to restore only configuration data.
- Choose **Full** to restore all previous version data to this application.

Step 5 Choose the appropriate destination where you have stored the backup file.

- Choose **Upload File** if the file is stored in a local directory.
  a. Open the directory where you’ve saved the backup file.
  b. Drag and drop the backup file to the **Restore now** window

  or

  Click **Browse**. Navigate to the directory where you’ve saved the backup file. Select the backup file and click **Open**.

  c. Enter the **Encryption Key** to the backup file.

- Choose **Import from SCP** if the backup file is stored in a remote directory.
  a. In the **SCP Server** field, provide the SCP server IP Address.
  b. In the **File Path** field, provide the relative file path to the backup file.
  c. In the **Username** and **Password** fields, enter appropriate details.
  d. In the **Encryption Key** field, enter the Encryption Key to the backup file.

Step 6 Click **Restore**.

A progress bar appears showing the completed percentage and the description of the operation. The Web UI is locked while the upgrade is in progress. After the restore is complete, the backup file appears in the table on **Backup & Restore** screen. The time required to restore depends on the data in the backup file.

Note An error appears if you've not allocated with IP pool addresses on the Cisco Nexus Dashboard. For more information, refer to *Cluster Configuration* section in *Cisco Nexus Dashboard User Guide*.

After successful restoration, a notification banner appears as below:

```
Reload the page to see latest changes.
```

Click **Reload the page**, or refresh the browser page to complete restore and begin using you Cisco Nexus Dashboard Fabric Controller Web UI.

Upgrading from Cisco NDFC Release 12.0.1a to NDFC Release 12.0.2f

To upgrade to Cisco Nexus Dashboard Fabric Controller Release 12.0.2f from NDFC Release 12.0.1a, perform the following steps:

context here

Before you begin

- Cisco NDFC 12.0.2f is compatible with Nexus Dashboard Release 2.1.2d or later. Upgrade the Nexus Dashboard to Release 2.1.2d. For instructions, refer to Upgrading Nexus Dashboard.

Note You cannot install or upgrade to NDFC Release 12.0.2f without Nexus Dashboard Release 2.1.2d or later. If NDFC Release 12.0.1a is disabled, you cannot upgrade to NDFC Release 12.0.2f.

- Ensure that NDFC Release 12.0.1a is up and operational.
- If you've enabled preview features in 12.0.1a, you must disable those features (such as VMM Visualization and Kubernetes Visualization). On the Web UI, choose **Settings** > **Feature Management**. Ensure that you the **VMM Visualizer** and **Kubernetes Visualizer** check boxes are unchecked.

Procedure

Step 1 Ensure that the Nexus Dashboard Release 2.1.2d or later is installed.

On **Nexus Dashboard** > **Services**, you must see Nexus Dashboard Fabric Controller Release 12.0.1a.

Step 2 From the **Actions** drop-down list, choose **Upload Service**.

Step 3 Choose the **Location** toggle button and select either Remote or Local.

You can choose to either upload the service from a remote or local directory.

- If you select **Remote**, in the **URL** field, provide an absolute path to the directory where the Nexus Dashboard Fabric Controller application is saved.
- If you select **Local**, click **Browse** and navigate to the location where the Nexus Dashboard Fabric Controller application is saved. Select the application and click **Open**.

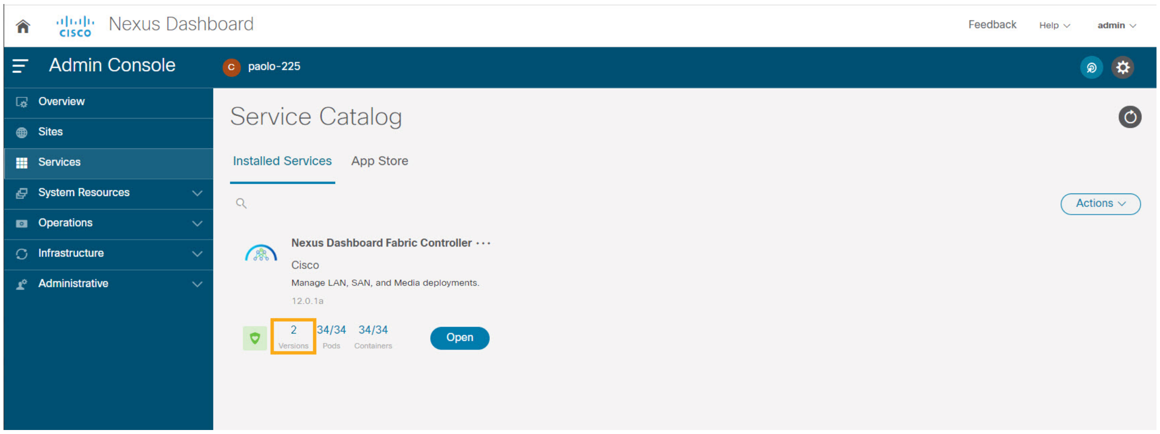
Step 4 Click **Upload**.

A second Nexus Dashboard Fabric Controller application appears in the Services Catalog. The progress bar indicates the upload status.

Wait for the application to be downloaded to the Nexus Dashboard and deployed.

It may take up to 30 minutes for the application to replicate to all nodes and all services to fully deploy.

Nexus Dashboard Fabric Controller application appears in the **Services Catalog**. Note that Versions displays as 2 on the Nexus Dashboard Fabric Controller card.



Step 5 On the Nexus Dashboard Fabric Controller card, click on ellipsis (…) icon. From the drop-down list, select **Available Versions**.

The **Available Versions** table displays both **12.0.1a** and **12.0.2f**.

Step 6 Click **Activate** in the 12.0.2f version row to activate NDFC Release 12.0.2f.

The **Activate Nexus Dashboard Fabric Controller** window appears.

Step 7 Verify if all the configurations displayed are correct. Click **Activate**.

After the services are enabled, the button on the Nexus Dashboard Fabric Controller card shows **Open**.

Wait until all the pods and containers are up and running.

Step 8 Click on **Open** to launch Cisco Nexus Dashboard Fabric Controller Web UI.

Note The single sign-on (SSO) feature allows you to log in to the application using the same credentials as you used for the Nexus Dashboard.

The **Nexus Dashboard Fabric Controller Web UI** opens in a new browser. The **Feature Management** window appears.

Note If External Service Pool IP addresses are not configured, an error message appears. Go to **Nexus Dashboard Web UI > Infrastructure > Cluster Configuration**. Configure the Management Service and Data Service IP addresses in the External Service Pools section. For more information, refer to *Cluster Configuration* section in *Cisco Nexus Dashboard User Guide*.

Three cards namely **Fabric Discovery**, **Fabric Controller**, and **SAN Controller** is displayed.

Step 9 Based on the requirement, select the deployment.

From the list of Features, select features that you need to enable on the Nexus Dashboard Fabric Controller deployment.

Note The list of features displayed is based on the Deployment selected on the card.

Step 10 Click **Apply** to deploy Nexus Dashboard Fabric Controllerwith the selected features.

After the installation is complete, the deployment card and all the features status show as **Started**.

Feature Management

After restoring the backup, based on the type of deployment, Nexus Dashboard Fabric Controller Release 12.0.2f is deployed with one of the following personalities:

- Fabric Controller
- SAN Controller

The status on the Feature Management changes to **Starting**. Additionally, you can select the features that you want to enable. Check the **Feature** check box and click **Save & Continue**.

Note There are caveats associated with features enabled on DCNM 11.5(x) with respect to upgrade to NDFC, Release 12.0.2f. For more information, see Feature Compatibility Post Upgrade, on page 23.

Changing across Feature-Set

Nexus Dashboard Fabric Controller 12 allows you to switch from one feature set to another. Choose **Settings > Feature Management**. Select the desired feature set and applications in the table below. Click **Save & Continue**. Refresh the browser to begin using Cisco Nexus Dashboard Fabric Controller with the new feature set and applications.

There are a few features/applications supported with specific deployments. When you change the feature set, some of these features are not supported in the new deployment. The following table provides details about the pre-requisites and criteria based on which you can change the feature set.

Table 6: Supported Switching between deployments

From/To	Fabric Discovery	Fabric Controller	SAN Controller
Fabric Discovery	-	Only monitor mode fabric is supported in Fabric Discovery deployment. When you change the feature set, the fabric can be used in the Fabric Controller deployment.	Not supported
Fabric Controller	You must delete the existing fabrics before changing the fabric set.	If you’re changing from Easy Fabric to IPFM fabric application, you must delete the exiting fabrics.	Not supported
SAN Controller	Not supported	Not supported	-

Post Upgrade Tasks

The following sections describe the tasks that must be performed post upgrading to Cisco NDFC, Release 12.0.2f.

Post Upgrade tasks for SAN Controller

After restoring the data from backup, all the server-smart licenses are **OutofCompliance**.

To migrate to Smart Licensing using Policy, launch Nexus Dashboard Fabric Controller. On the Web UI, choose **Operations > License Management > Smart** tab. Establish trust with CCSM using SLP. For instructions, refer to *License Management* chapter in *Cisco Nexus Dashboard Fabric Controller Configuration Guides*.

Post Upgrade tasks for Fabric Controller

The following features are not carried over when you upgrade from DCNM 11.5(x) to Cisco NDFC 12.0.2f:

- Endpoint Locator must be reconfigured
- IPAM Integration must be reconfigured
- Alarm Policies must be reconfigured
- Custom topologies must be recreated and saved
- PM collection must be re-enabled on fabrics
- Switch images must be uploaded

Managing Trap IP on Nexus Dashboard and Nexus Dashboard Fabric Controller

Deployment Type in Release 11.5(x)	In 11.5(x), trap IP address is collected from	LAN Device Management Connectivity	In 12.0.2f, trap IP address belongs to	Result
LAN Fabric Media Controller	eth1 (or vip1 for HA systems)	Management	Belongs to Management subnet	Honored[3]
LAN Fabric Media Controller	eth0 (or vip0 for HA systems)	Management	Does not belong to Management subnet	Ignored, another IP from the Management pool will be used as trap IP
LAN Fabric Media Controller	eth0 (or vip0 for HA systems)	Data	Belongs to Data subnet	Honored
LAN Fabric Media Controller	eth0 (or vip0 for HA systems)	Data	Does not belong to Data subnet	Ignored, another IP from the Data pool will be used as trap IP

Deployment Type in Release 11.5(x)	In 11.5(x), trap IP address is collected from	LAN Device Management Connectivity	In 12.0.2f, trap IP address belongs to	Result
SAN Management	OVA/ISO – • trap.registaddress (if set) • eth0 (if trap.registaddress is not set) Windows/Linux – • trap.registaddress (if set) • Interface based on event-manager algorithm (if trap.registaddress is not set	Not applicable	Belongs to Data subnet	Honored
		Not applicable	Does not belong to Data subnet	Ignored, another IP from the Data pool will be used as trap IP

[3] There is no configuration difference. No further action required.

** **Honored** - There is no configuration difference. No further action required.*

*** **Ignored** - Configuration difference is created. On the **Web UI > LAN > Fabrics > Fabrics**, double click on the Fabric to view **Fabric Overview**. From **Fabrics Actions** drop-down list, select **Recalculate Config**. Click **Deploy Config**.*

Changes to Templates for Fabric, Interfaces, and Links

The following fabrics, interface and link template names are changed in Nexus Dashboard Fabric Controller Release 12.0.2f, where the **_11_1** string is removed.

Fabric Templates:

- Easy_Fabric.template
- External_Fabric.template
- MSD_Fabric.template

Interface Policy Template :

- int_access_host.template
- int_dot1q_tunnel_host.template
- int_routed_host.template
- int_trunk_host.template
- int_intra_fabric_num_link.template
- int_intra_fabric_unnum_link.template

- int_intra_vpc_peer_keep_alive_link.template
- int_loopback.template
- int_mgmt.template
- int_monitor_ethernet.template
- int_monitor_port_channel.template
- int_nve.template
- int_port_channel_aa_fex.template
- int_port_channel_fex.template
- int_port_channel_access_host.template
- int_port_channel_dot1q_tunnel_host.template
- int_port_channel_trunk_host.template
- int_subif.template
- int_vpc_access_host.template
- int_vpc_dot1q_tunnel.template
- int_vpc_trunk_host.template
- int_vpc_peer_link_po.template

Link IFC Templates:

- ext_fabric_setup.template
- ext_multisite_underlay_setup.template