



Overview

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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.
