Deployment Overview and Requirements

Deployment Overview

Cisco Nexus Dashboard is a central management console for multiple data center sites and a common platform for hosting Cisco data center operation services, such as Nexus Dashboard Insights and Nexus Dashboard Orchestrator. These services are available for all the data center sites and provide real time analytics, visibility, assurance for network policies and operations, as well as policy orchestration for the data center fabrics, such as Cisco ACI or Cisco NDFC.

Nexus Dashboard provides a common platform and modern technology stack for the above-mentioned micro-services-based applications, simplifying the life cycle management of the different modern applications and reducing the operational overhead to run and maintain these applications. It also provides a central integration point for external 3rd party applications with the locally hosted applications.

Each Nexus Dashboard cluster typically consists of 3 `master` nodes. In addition, you can provision a number of `worker` nodes to enable horizontal scaling and `standby` nodes for easy cluster recovery in case of a master node failure. For maximum number of `worker` and `standby` nodes supported in this release, see the "Verified Scalability Limits" sections of the *Cisco Nexus Dashboard Release Notes*.

Note This document describes initial configuration of the 3-node cluster. After your cluster is up and running, you can configure and deploy additional nodes as described in the *Cisco Nexus Dashboard User Guide*, which is also available directly from the Nexus Dashboard GUI.

Hardware vs Software Stack

Nexus Dashboard is offered as a cluster of specialized Cisco UCS servers (Nexus Dashboard platform) with the software framework (Nexus Dashboard) pre-installed on it. The Cisco Nexus Dashboard software stack can be decoupled from the hardware and deployed in a number of virtual form factors. For the purposes of

this document, we will use "Nexus Dashboard platform" specifically to refer to the hardware and "Nexus Dashboard" to refer to the software stack and the GUI console.

This guide describes the initial deployment of the Nexus Dashboard software; hardware setup is described in the *Nexus Dashboard Hardware Setup Guide*, while other Nexus Dashboard operations procedures are described in the *Cisco Nexus Dashboard User Guide*.

Services

Nexus Dashboard is a standard appliance platform to build and deploy services that would allow you to consume all Nexus Dashboard products in a consistent and uniform manner. You can subscribe and consume services like Insights, Orchestrator, Fabric Controller, and Data Broker with the Nexus Dashboard platform providing the necessary capacity and life cycle management operations for these services.

Typically, the Nexus Dashboard platform is shipped with only the software required for managing the lifecycle of these services, but no actual services are packaged with the appliance. If you allow public network connectivity from your data centers, you can download and install the services with a few clicks. However, without public network connectivity, you will need to manually download these services, upload them to the platform, and perform installation operations before you can use them.

Beginning with Release 2.1(2), if you are ordering the physical Nexus Dashboard servers, you have the option to choose Nexus Dashboard Insights and Nexus Dashboard Orchestrator services to be pre-installed on the hardware before it is shipped to you. For more information, see the *Nexus Dashboard Ordering Guide*. Note that if you are deploying the virtual or cloud form factors of the Nexus Dashboard, there are no changes to service installation and you will need to deploy the services separately after the cluster is ready.

Available Form Factors

This release of Cisco Nexus Dashboard can be deployed using a number of different form factors. Keep in mind however, you must use the same form factor for all nodes, mixing different form factors within the same cluster is not supported.

- Cisco Nexus Dashboard physical appliance (`.iso`)

  This form factor refers to the original physical appliance hardware that you purchased with the Cisco Nexus Dashboard software stack pre-installed on it.

  The later sections in this document describe how to configure the software stack on the existing physical appliance hardware to deploy the cluster. Setting up the original Cisco Nexus Dashboard platform hardware is described in *Cisco Nexus Dashboard Hardware Setup Guide*.

- VMware ESX (`.ova`)

  Virtual form factor that allows you to deploy a Nexus Dashboard cluster using three VMware ESX virtual machines.

- Linux KVM (`.qcow2`)

  Virtual form factor that allows you to deploy a Nexus Dashboard cluster using three Linux KVM virtual machines.

- Amazon Web Services (`.ami`)

  Cloud form factor that allows you to deploy a Nexus Dashboard cluster using three AWS instances.

- Microsoft Azure (`.arm`)

  Cloud form factor that allows you to deploy a Nexus Dashboard cluster using three Azure instances.

Upgrading From Previous Versions of Nexus Dashboard

If you are already running a Nexus Dashboard, Release 2.0.1 or later, you can upgrade directly to the latest release while retaining the cluster configuration and applications, as described in Upgrading Nexus Dashboard

Upgrading From Application Services Engine

If you are running Cisco Application Services Engine, you must upgrade to Nexus Dashboard release 2.0.2g or later as described in *Cisco Nexus Dashboard Deployment Guide, Release 2.0(x)* before upgrading to Nexus Dashboard release 2.1.x.

Cluster Sizing Guidelines

Nexus Dashboard supports co-hosting of applications. Depending on the type and number of applications you choose to run, you may be required to deploy additional worker nodes in your cluster. For cluster sizing information and recommended number of nodes based on specific use cases, see Cisco Nexus Dashboard Cluster Sizing.

After your initial 3-node cluster is up and running, you can configure and deploy additional nodes as described in the *Cisco Nexus Dashboard User Guide*, which is also available directly from the Nexus Dashboard GUI.

Supported Services

For the full list of supported applications and the associated compatibility and interoperability information, see the Nexus Dashboard and Services Compatibility Matrix.

Prerequisites and Guidelines

Network Time Protocol (NTP) and Domain Name System (DNS)

The Nexus Dashboard nodes require valid DNS and NTP servers for all deployments and upgrades.

Lack of valid DNS connectivity (such as if using an unreachable or a placeholder IP address) can prevent the system from deploying or upgrading successfully.

Note Nexus Dashboard acts as both a DNS client and resolver. It uses an internal Core DNS server which acts as DNS resolver for internal services. It also acts as a DNS client to reach external hosts within the intranet or the Internet, hence it requires an external DNS server to be configured.

Nexus Dashboard External Networks

Cisco Nexus Dashboard is deployed as a cluster, connecting each service node to two networks. When first configuring Nexus Dashboard, you will need to provide two IP addresses for the two Nexus Dashboard interfaces—one connected to the Data Network and the other to the Management Network.

Individual services installed in the Nexus Dashboard may utilize the two networks for additional purposes, so we recommend consulting the specific service's documentation in addition to this document for your deployment planning.

Table 1: External Network Purpose

Data Network	Management Network
• Nexus Dashboard node clustering • Service to service communication • Nexus Dashboard nodes to Cisco APIC, Cloud APIC, and NDFC/DCNM communication For example, the network traffic for services such as Nexus Dashboard Insights.	• Accessing Nexus Dashboard GUI • Accessing Nexus Dashboard CLI via SSH • DNS and NTP communication • Nexus Dashboard firmware upload • Accessing Cisco DC App Center (AppStore) If you want to use the Nexus Dashboard App Store to install services, https://dcappcenter.cisco.com must be reachable via the Management Network • Intersight device connector

The two networks have the following requirements:

- For physical clusters, the management network must provide IP reachability to each node's CIMC via TCP ports 22/443.

  Nexus Dashboard cluster configuration uses each node's CIMC IP address to configure the node.

- For Nexus Dashboard Insights service, the data network must provide IP reachability to the in-band network of each fabric and of the APIC.
- For Nexus Dashboard Insights and AppDynamics integration, the data network must provide IP reachability to the AppDynamics controller.
- For Nexus Dashboard Orchestrator service, the data network can have in-band and/or out-of-band IP reachability for Cisco APIC sites but must have in-band reachability for Cisco NDFC/DCNM sites.
- The data network interface requires a minimum MTU of 1500 to be available for the Nexus Dashboard traffic.

  Higher MTU can be configured if desired.

- The table bellow summarize service-specific requirements for the management and data networks.

Note Changing the data subnet requires redeploying the cluster, so we recommend using a larger subnet than the bare minimum required by the nodes and services to account for any additional services in the future. In addition to the requirements listed in this section, ensure that you consult the *Release Notes* for the specific service you plan to deploy.

Also note that if the two interfaces are in the same subnet, either of the IPs may be used as the source for traffic. For example, if you have remote authentication configured, you must add both management and data IPs to the list of permitted IP addresses on your external authentication provider because either of the two interfaces may be used as the source for authentication traffic.

Allocating persistent IP addresses is done after the cluster is deployed using the External Service Pools configuration in the UI, as described in the *Cisco Nexus Dashboard User Guide*.

We recommend consulting the specific service's documentation for any additional requirements and caveats related to persistent IP configuration.

Table 2: Service-Specific Network Requirements

Nexus Dashboard Service	Management Interface	Data Interface	Total Number of Persistent IPs	Support for Data and Management in the same subnet
Nexus Dashboard Orchestrator	Layer 3 adjacent	Layer 3 adjacent	N/A	Yes However, we recommend separate subnets for the two networks
Nexus Dashboard Insights without SFLOW/NetFlow (ACI fabrics)	Layer 3 adjacent	Layer 3 adjacent	N/A	Yes However, we recommend separate subnets for the two networks
Nexus Dashboard Insights without SFLOW/NetFlow (NDFC/DCNM fabrics)	Layer 3 adjacent	Layer 2 adjacent	6 IPs in data interface network if using IPv4 7 IPs in data interface network if using IPv6	No
Nexus Dashboard Insights with SFLOW/NetFlow (ACI or NDFC/DCNM fabrics)	Layer 3 adjacent	Layer 2 adjacent	6 IPs in data interface network	No

Nexus Dashboard Service	Management Interface	Data Interface	Total Number of Persistent IPs	Support for Data and Management in the same subnet
Nexus Dashboard Fabric Controller	Layer 2 adjacent	Layer 2 adjacent	One of the following: • 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 1 IP per fabric for EPL in data network	No
Nexus Dashboard Data Broker	Layer 3 adjacent	N/A	N/A	Yes

- Connectivity between the nodes is required on both networks with the following additional round trip time (RTT) requirements.

Note You must always use the lowest RTT requirement when deploying the Nexus Dashboard cluster and services. For example, if you plan to co-host the Insights and Orchestrator services, site connectivity RTT must not exceed 50ms.

Table 3: RTT Requirements

Service	Connectivity	Maximum RTT
Nexus Dashboard Orchestrator	Between nodes	50 ms
	To sites	For APIC sites: 500 ms For NDFC/DCNM sites: 150 ms

Service	Connectivity	Maximum RTT
Nexus Dashboard Insights	Between nodes	50 ms
	To sites	50 ms
Nexus Dashboard Fabric Controller	Between nodes	50 ms
	To sites	50 ms
Nexus Dashboard Data Broker	Between nodes	150 ms
	To sites	500 ms

Nexus Dashboard Internal Networks

Two additional internal networks are required for communication between the containers used by the Nexus Dashboard:

- **Application overlay** is used for applications internally within Nexus Dashboard

  Application overlay must be a `/16` network and a default value is pre-populated during deployment.

- **Service overlay** is used internally by the Nexus Dashboard.

  Service overlay must be a `/16` network and a default value is pre-populated during deployment.

If you are planning to deploy multiple Nexus Dashboard clusters, they can use the same Application and Service subnets.

Note Communications between containers deployed in different Nexus Dashboard nodes is VXLAN-encapsulated and uses the data interfaces IP addresses as source and destination. This means that the Application Overlay and Service Overlay addresses are never exposed outside the data network and any traffic on these subnets is routed internally and does not leave the cluster nodes.

For example, if you had another service (such as DNS) on the same subnet as one of the overlay networks, you would not be able to access it from your Nexus Dashboard as the traffic on that subnet would never be routed outside the cluster. As such, when configuring these networks, ensure that they are unique and do not overlap with any existing networks or services external to the cluster, which you may need to access from the Nexus Dashboard cluster nodes.

For the same reason, we recommend not using `169.254.0.0/16` (the Kubernetes br1 subnet) for the App or Service subnets.

Communication Ports

The following ports are required by the Nexus Dashboard cluster and its services:

Table 4: Nexus Dashboard Communication Ports (Management Network)

Service	Port	Protocol	Direction `In`—towards the cluster `Out`—from the cluster towards the fabric or outside world	Connection
ICMP	ICMP	ICMP	In/Out	Other cluster nodes, CIMC, default gateway
SSH	22	TCP	In/Out	CLI and CIMC of the cluster nodes
TACACS	49	TCP	Out	TACACS server
DNS	53	TCP/UDP	Out	DNS server
HTTP	80	TCP	Out	Internet/proxy
NTP	123	UDP	Out	NTP server
HTTPS	443	TCP	In/Out	UI, other clusters (for multi-cluster connectivity), fabrics, Internet/proxy
LDAP	389 636	TCP	Out	LDAP server
Radius	1812	TCP	Out	Radius server
KMS	9880	TCP	In/Out	Other cluster nodes and ACI fabrics
Infra-Service	30012 30021 30500-30600	TCP/UDP	In/Out	Other cluster nodes

Table 5: Nexus Dashboard Communication Ports (Data Network)

Service	Port	Protocol	Direction `In`—towards the cluster `Out`—from the cluster towards the fabric or outside world	Connection
SSH	22	TCP	Out	Inband of switches and APIC
HTTPS	443	TCP	Out	Inband of switches and APIC/NDFC/DCNM
VXLAN	4789	UDP	In/Out	Other cluster nodes
KMS	9880	TCP	In/Out	Other cluster nodes and ACI fabrics
Infra-Service	3379 3380 8989 9090 9969 9979 9989 15223 30002-30006 30009-30010 30012 30014-30015 30018-30019 30025 30027	TCP	In/Out	Other cluster nodes
Kafka	30001	TCP	In/Out	Inband of switches and APIC/NDFC/DCNM
Infra-Service	30016 30017	TCP/UDP	In/Out	Other cluster nodes

Service	Port	Protocol	Direction `In`—towards the cluster `Out`—from the cluster towards the fabric or outside world	Connection
Infra-Service	30500-30600	TCP/UDP	In/Out	Other cluster nodes

Table 6: Nexus Dashboard Insights Communication Ports (Data Network)

Service	Port	Protocol	Direction `In`—towards the cluster `Out`—from the cluster towards the fabric or outside world	Connection
Show Techcollection	2022	TCP	In/Out	Inband of switches and APIC/NDFC/DCNM
Flow Telemetry	5640-5671	UDP	In	Inband of switches
TAC Assist	8884	TCP	In/Out	External
KMS	9989	TCP	In/Out	Other cluster nodes and ACI fabrics
SW Telemetry	5695 30000 57500 30570	TCP	In/Out	Other cluster nodes

Fabric Connectivity

The following sections describe how to connect your Nexus Dashboard cluster to your fabrics.

For on-premises APIC or NDFC/DCNM fabrics, you can connect the Nexus Dashboard cluster in one of two ways:

- The Nexus Dashboard cluster connected to the fabric via a Layer 3 network.
- The Nexus Dashboard nodes connected to the leaf switches as typical hosts.

For Cloud APIC fabrics, you will need to connect via a Layer 3 network.

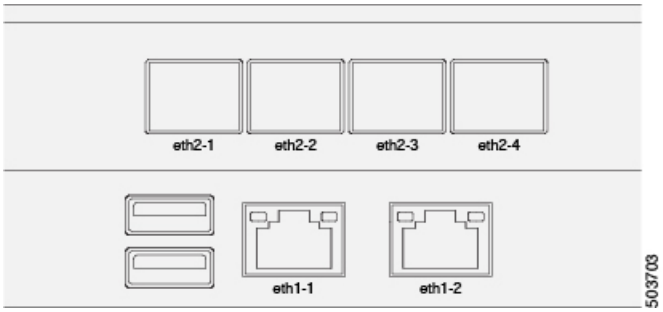
Physical Node Cabling

If you plan to deploy a virtual or cloud form factor cluster, you can skip this section.

The following figure shows the Nexus Dashboard physical node interfaces:

- `eth1-1` and `eth1-2` must be connected to the Management network
- `eth2-1` and `eth2-2` must be connected to the Data network

Figure 1: Node Connectivity



The interfaces are configured as Linux bonds (one for the data interfaces and one for the management interfaces) running in active-standby mode. All interfaces must be connected to individual host ports, PortChannel or vPC are not supported.

When Nexus Dashboard nodes are connected to Cisco Catalyst switches, packets are tagged with `vlan0` if no VLAN is specified. In this case, you must add `switchport voice vlan dot1p` command to the switch interfaces where the nodes are connected to ensure reachability over the data network.

Connecting via External Layer 3 Network

We recommend connecting the Nexus Dashboard cluster to the fabrics via an external Layer 3 network as it does not tie the cluster to any one fabric and the same communication paths can be establish to all sites. Specific connectivity depends on the type of applications deployed in the Nexus Dashboard:

- If you are deploying Nexus Dashboard Orchestrator to manage Cisco ACI fabrics only, you can establish connectivity from the data interface to either the in-band or out-of-band (OOB) interface of each site's APIC or both.
- If you are deploying Nexus Dashboard Orchestrator to manage Cisco NDFC/DCNM fabrics, you must establish connectivity from the data interface to the in-band interface of each site's DCNM.
- If you are deploying Day-2 Operations applications, such as Nexus Dashboard Insights, you must establish connectivity from the data interface to the in-band network of each fabric and of the APIC.

If you plan to connect the cluster across a Layer 3 network, keep the following in mind:

- For ACI fabrics, you must configure an L3Out and the external EPG for Cisco Nexus Dashboard data network connectivity in the management tenant.

  Configuring external connectivity in an ACI fabric is described in Cisco APIC Layer 3 Networking Configuration Guide.

- For NDFC/DCNM fabrics, if the data interface and DCNM's inband interface are in different subnets, you must add a route on NDFC/DCNM to reach the Nexus Dashboard's data network address.

You can add the route from the NDFC/DCNM UI by navigating to **Administration** > **Customization** > **Network Preference** > **In-Band (eth2)** , then adding the route and saving.

- If you specify a VLAN ID for your data interface during setup of the cluster, the host port must be configured as `trunk` allowing that VLAN.

  However, in most common deployments, you can leave the VLAN ID empty and configure the host port in `access` mode.

The following two figures show two distinct network connectivity scenarios when connecting the Nexus Dashboard cluster to the fabrics via a Layer 3 network. The primary purpose of each depends on the type of application you may be running in your Nexus Dashboard.

Figure 2: Connecting via Layer 3 Network, Day-2 Operations Applications

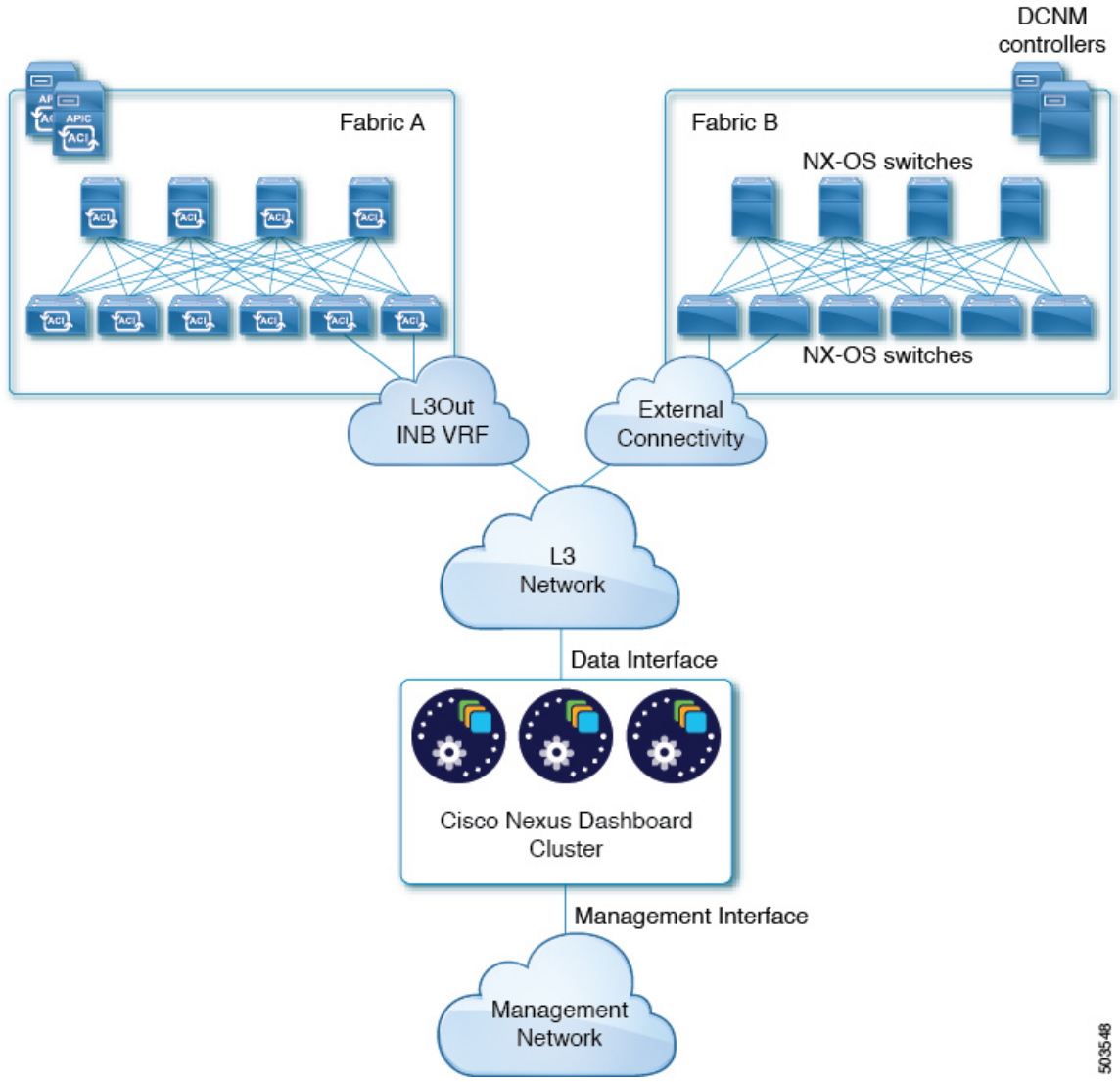
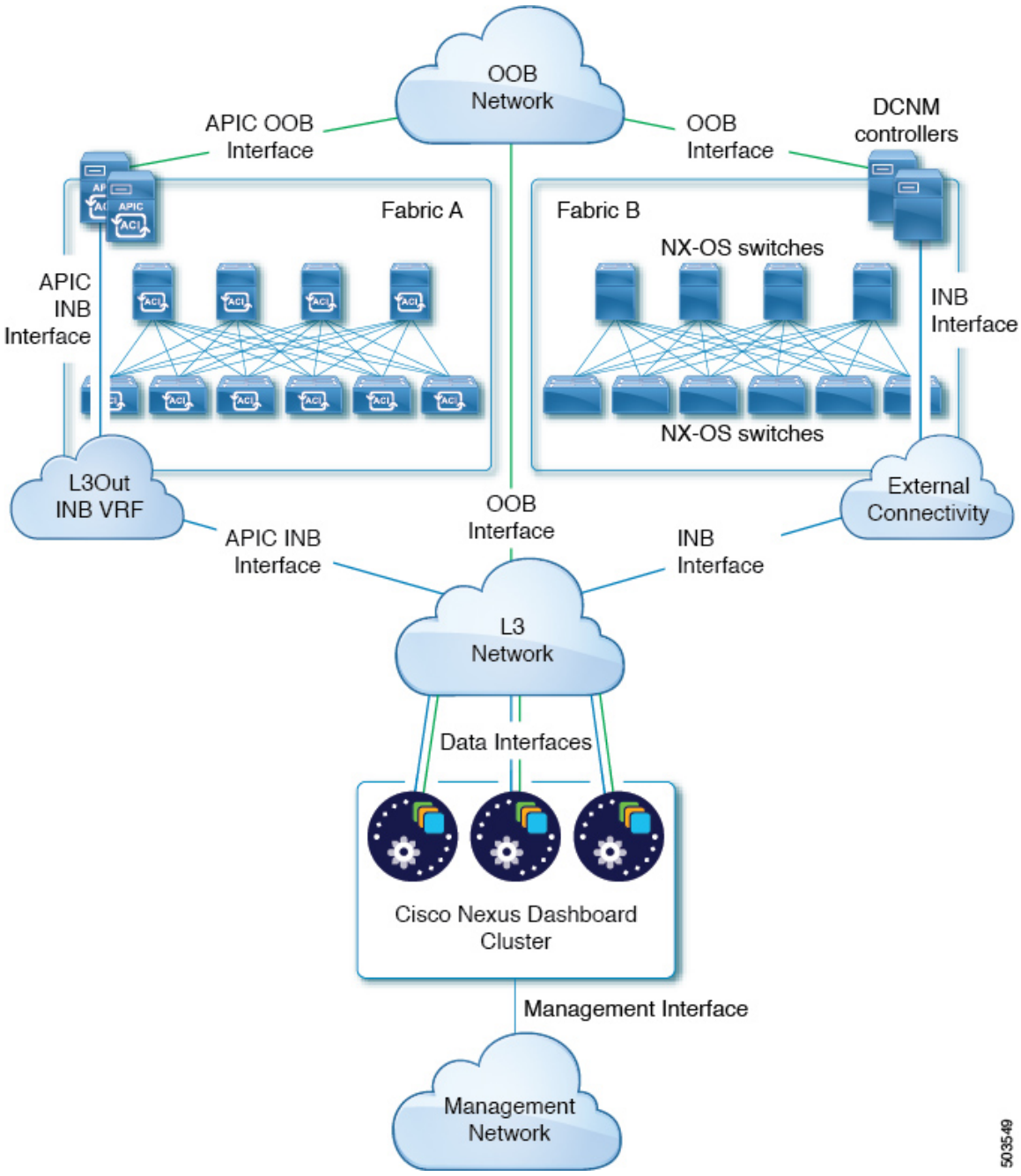


Figure 3: Connecting via Layer 3 Network, Nexus Dashboard Orchestrator



Connecting Nodes Directly to Leaf Switches

You can also connect the Nexus Dashboard cluster directly to one of the fabrics. This provides easy connectivity between the cluster and in-band management of the fabric, but ties the cluster to the specific fabric and requires reachability to other fabrics to be established through external connectivity. This also makes the cluster dependent on the specific fabric so issues within the fabric may impact Nexus Dashboard connectivity. Like in the previous example, connectivity depends on the type of applications deployed in the Nexus Dashboard:

- If you are deploying Nexus Dashboard Orchestrator to manage Cisco ACI fabrics only, you can establish connectivity from the data interface to either the in-band or out-of-band (OOB) interface of each site's APIC
- If you are deploying Nexus Dashboard Insights, you must establish connectivity from the data interface to the in-band interface of each fabric.

  For ACI fabrics, the data interface IP subnet connects to an EPG/BD in the fabric and must have a contract established to the local in-band EPG in the management tenant. We recommend deploying the Nexus Dashboard in the management tenant and in-band VRF. Connectivity to other fabrics is established via an L3Out.
- If you are deploying Nexus Dashboard Insights with ACI fabrics, the data interface IP address and the ACI fabric's in-band IP address must be in different subnets.

If you plan to connect the cluster directly to the leaf switches, keep the following in mind:

- If deploying in VMware ESX or Linux KVM, the host must be connected to the fabric via trunk port.
- If you specify a VLAN ID for your data network during setup of the cluster, the Nexus Dashboard interface and the port on the connected network device must be configured as `trunk`

  However, in most cases we recommend not assigning a VLAN to the data network, in which case you must configure the ports in `access` mode.
- For ACI fabrics:
  - We recommend configuring the bridge domain (BD), subnet, and endpoint group (EPG) for Cisco Nexus Dashboard connectivity in management tenant.

    Because the Nexus Dashboard requires connectivity to the in-band EPG in the in-band VRF, creating the EPG in the management tenant means no route leaking is required.
  - You must create a contract between the fabric's in-band management EPG and Cisco Nexus Dashboard EPG.
  - If several fabrics are monitored with apps on the Nexus Dashboard cluster, L3Out with default route or specific route to other ACI fabric in-band EPG must be provisioned and a contract must be established between the cluster EPG and the L3Out's external EPG.

The following two figures show two distinct network connectivity scenarios when connecting the Nexus Dashboard cluster directly to the fabrics' leaf switches. The primary purpose of each depends on the type of application you may be running in your Nexus Dashboard.

Note that the "L3 Network" and the "Management Network" can be the same network infrastructure, for example in case the Nexus Dashboard nodes have the management and data network interfaces in the same subnet.

Figure 4: Connecting Directly to Leaf Switches, Day-2 Operations Applications

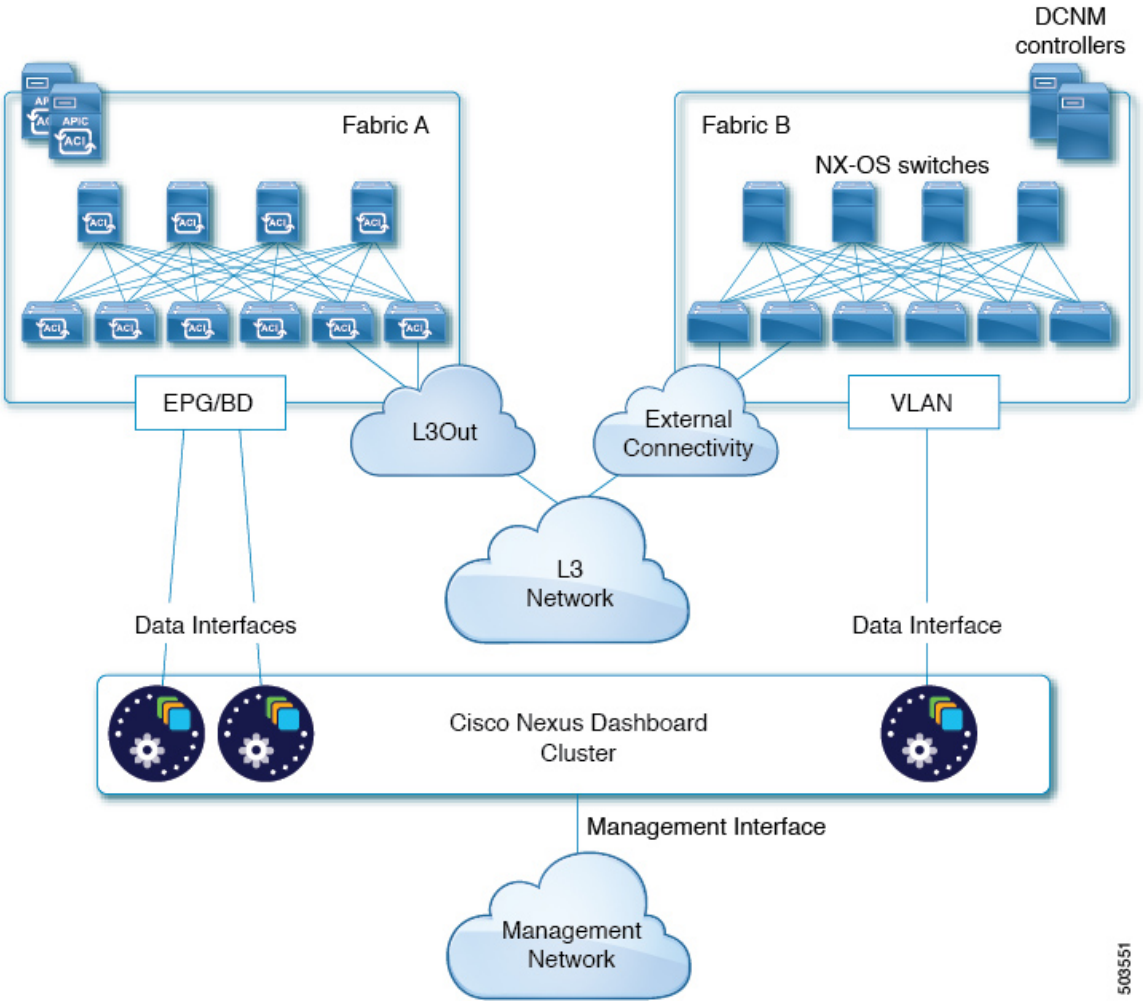
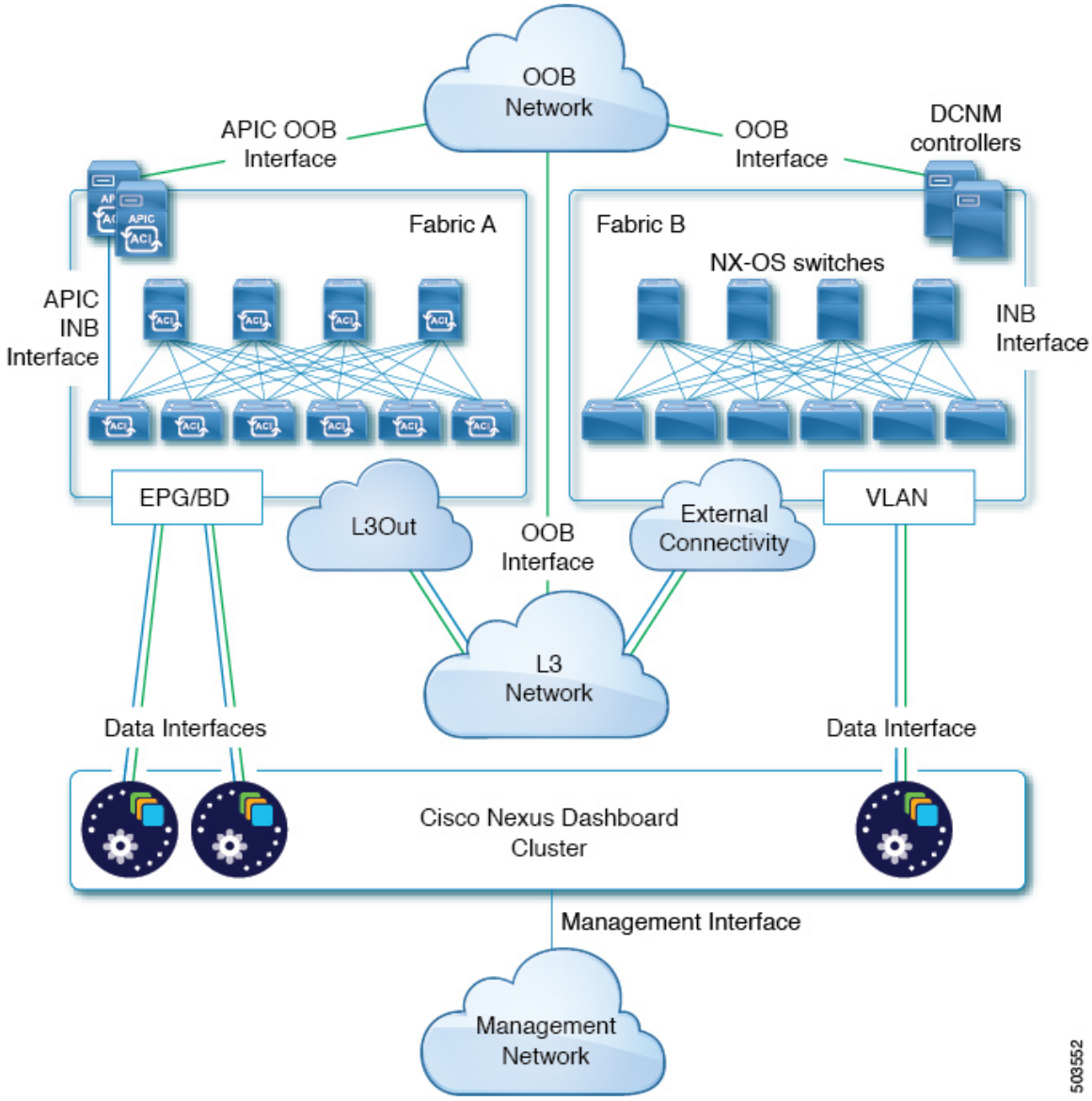


Figure 5: Connecting Directly to Leaf Switches, Nexus Dashboard Orchestrator



Node Distribution Across Sites

Nexus Dashboard supports distribution of cluster nodes across multiple sites. The following node distribution recommendations apply to both physical and virtual clusters.

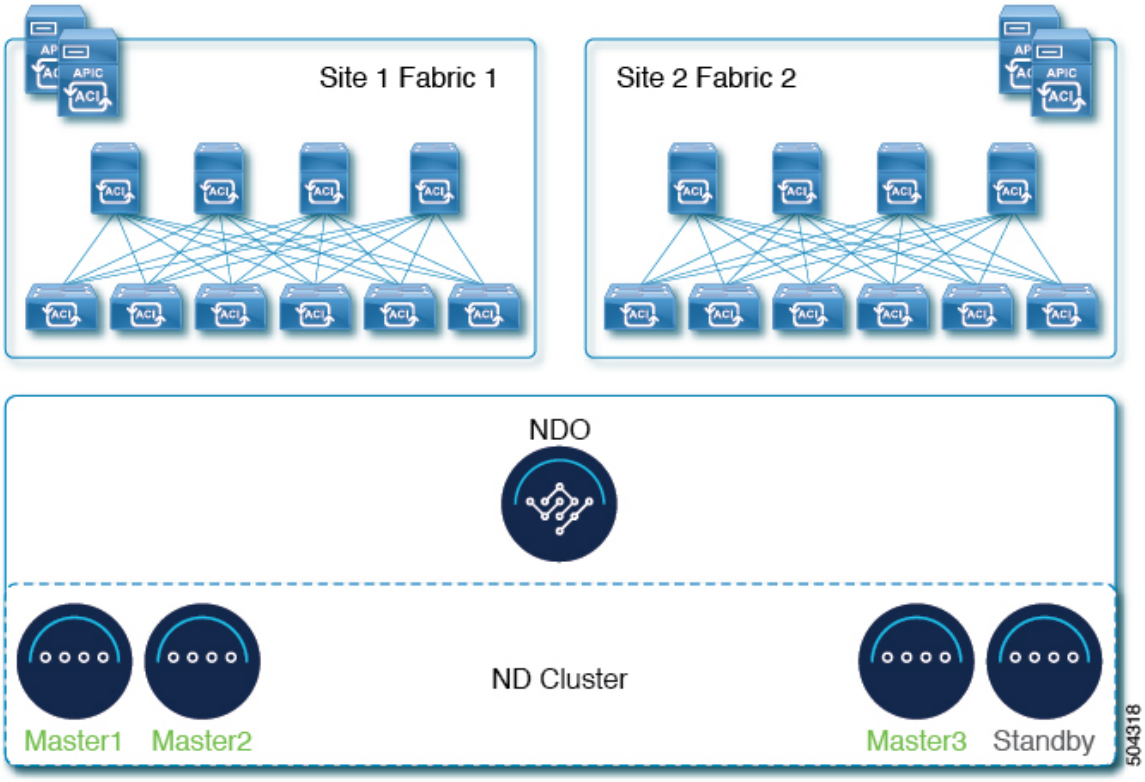
Node Distribution for Nexus Dashboard Insights

For Nexus Dashboard Insights, we recommend centralized, single-site deployment. This service does not gain redundancy benefits from distributed cluster, which could instead expose the cluster to interconnection failures when nodes are in different sites.

Node Distribution for Nexus Dashboard Orchestrator

For Nexus Dashboard Orchestrator, we recommend a distributed cluster. Keep in mind that at least two Nexus Dashboard master nodes are required for the cluster to remain operational, so when deploying a Nexus Dashboard cluster across two sites, we recommend deploying a standby node in the site with the single master node as shown in the following figure:

Figure 6: Node Distribution Across Two Sites for Nexus Dashboard Orchestrator



Node Distribution for Fabric Controller

For Nexus Dashboard Fabric Controller, we recommend a centralized, single-site deployment. This service does not support recovery in case if 2 `master` node are not available and thus gains no redundancy benefits from distributed cluster, which could instead expose the cluster to interconnection failures when nodes are in different sites.

Services Co-location Use Cases

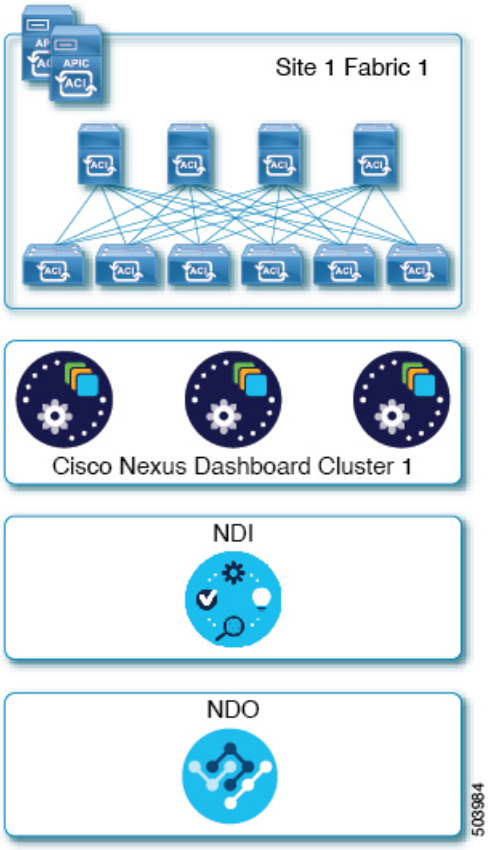
This section describes a number of recommended deployment scenarios for specific single-service or multiple services co-hosting use cases.

Note This release does not support co-hosting services in Nexus Dashboard clusters that are deployed in Linux KVM, AWS, or Azure. All services co-hosting scenarios below apply for physical or VMware ESX cluster form factors only.

Single Site, Nexus Dashboard Insights and Orchestrator

In a single site scenario with Nexus Dashboard Insights and Orchestrator services, a single Nexus Dashboard cluster can be deployed with both services co-hosted on it.

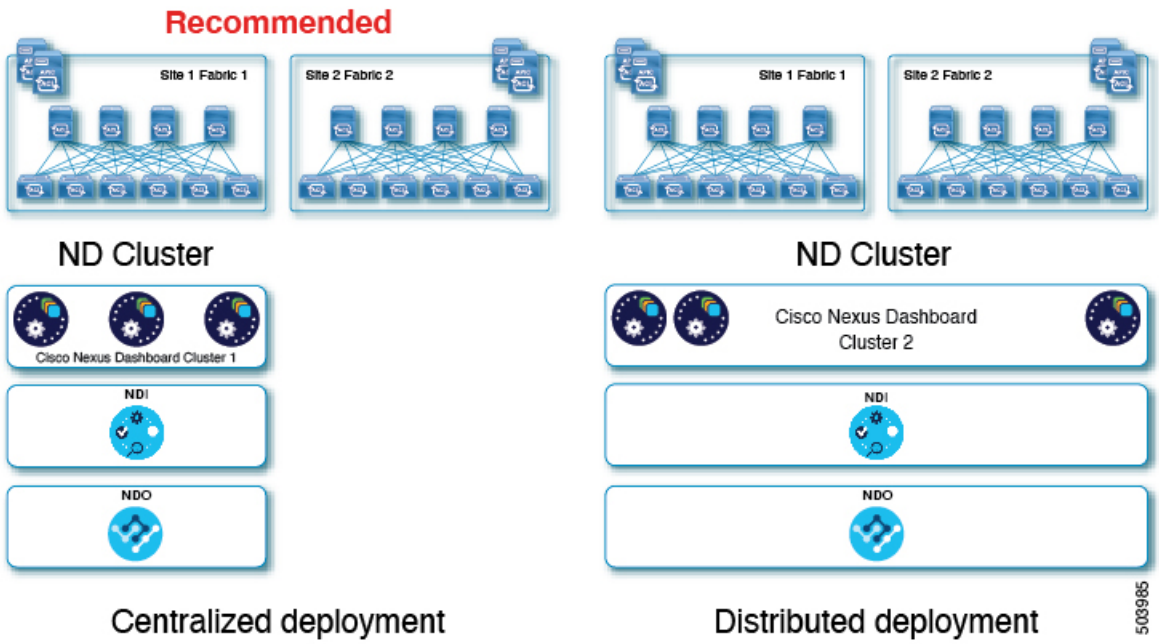
Figure 7: Single Site, Nexus Dashboard Insights and Orchestrator



Multiple Sites, Single Cluster for Nexus Dashboard Insights and Orchestrator

In a multiple sites scenario with Nexus Dashboard Insights and Orchestrator services, a single Nexus Dashboard cluster can be deployed with both services co-hosted on it. In this case, the nodes can be distributed between the sites, however since the Insights service does not gain redundancy benefits from a distributed cluster and could instead be exposed to interconnection failures when nodes are in different sites, we recommend the deployment option on the left:

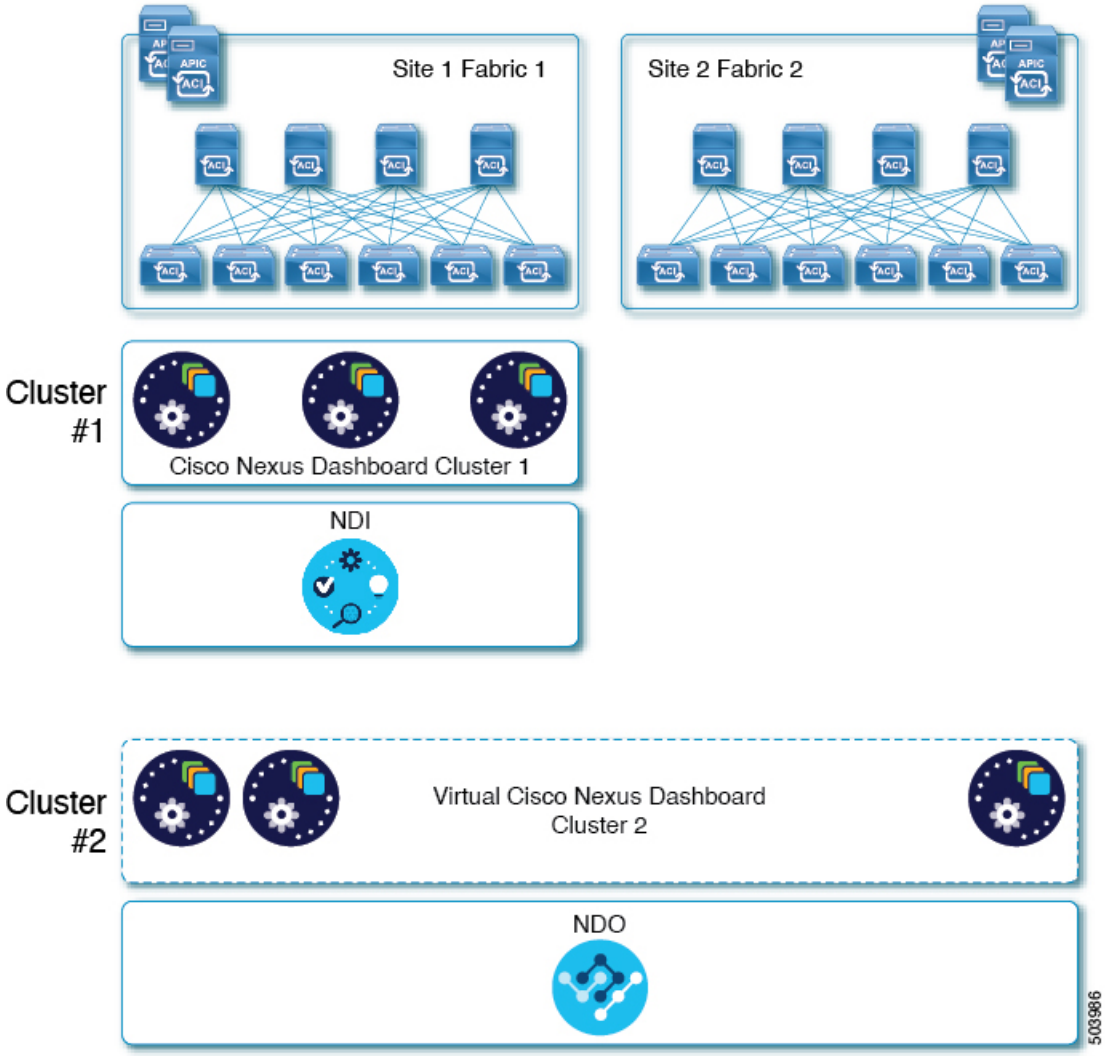
Figure 8: Multiple Sites, Single Cluster for Nexus Dashboard Insights and Orchestrator



Multiple Sites, Multiple Clusters for Nexus Dashboard Insights and Orchestrator

In this case, we recommend deploying two Nexus Dashboard cluster, with one of them dedicated to the Nexus Dashboard Orchestrator service using the virtual or cloud form factor and the nodes distributed across the sites.

Figure 9: Multiple Sites, Multiple Clusters for Nexus Dashboard Insights and Orchestrator



Pre-Installation Checklist

Before you proceed with deploying your Nexus Dashboard cluster, prepare the following information for easy reference during the process:

Table 7: Cluster Details

Parameters	Example	Your Entry
Cluster **Name**	`nd-cluster`	
NTP Server	`171.68.38.65`	
DNS Provider	`64.102.6.247 171.70.168.183`	

Parameters	Example	Your Entry
DNS Search Domain	`cisco.com`	
App Network	`172.17.0.1/16`	
Service Network	`100.80.0.0/16`	

Table 8: Node Details

Parameters	Example	Your Entry
For physical nodes, **CIMC** address and login information of the first node	`10.195.219.84/24` Username: `admin` Password: `Cisco1234`	
For physical nodes, **CIMC** address and login information of the second node	`10.195.219.85/24` Username: `admin` Password: `Cisco1234`	
For physical nodes, **CIMC** address and login information of the third node	`10.195.219.86/24` Username: `admin` Password: `Cisco1234`	
Password used for each node's `rescue-user` and the initial GUI password. We recommend configuring the same password for all nodes in the cluster.	`Welcome2Cisco!`	
Management IP of the first node	`192.168.9.172/24`	
Management Gateway of the first node.	`192.168.9.1`	
Data Network IP of the first node	`192.168.6.172/24`	
Data Network Gateway of the first node	`192.168.6.1`	
(Optional) **Data Network VLAN** of the first node	`101`	
Management IP of the second node	`192.168.9.173/24`	
Management Gateway of the second node.	`192.168.9.1`	

Parameters	Example	Your Entry
Data Network IP of the second node	`192.168.6.173/24`	
Data Network Gateway of the second node	`192.168.6.1`	
(Optional) **Data Network VLAN** of the second node	`101`	
Management IP of the third node	`192.168.9.174/24`	
Management Gateway of the third node.	`192.168.9.1`	
Data Network IP of the third node	`192.168.6.174/24`	
Data Network Gateway of the third node	`192.168.6.1`	
(Optional) **Data Network VLAN** of the third node	`101`	