# Verified Scalability Guide for Cisco Nexus Dashboard Fabric Controller, Release 12.2.3

Revised: February 3, 2026

# New and Changed Information

The following table provides an overview of the significant changes to this guide for this current release. The table does not provide an exhaustive list of all changes made to the guide or of the new features in this release.

| Date | Changes |
|---|---|
| July 16, 2025 | First release of this document. |

# Verified Scale Limits for Release 12.2.3

This section provides verified scalability values for various deployment types for Cisco Nexus Dashboard Fabric Controller, Release 12.2.3.

The values are validated on testbeds that are enabled with a reasonable number of features and aren't theoretical system limits for Cisco Nexus Dashboard Fabric Controller software or Cisco Nexus/MDS switch hardware and software. When you try to achieve maximum scalability by scaling multiple features at the same time, results might differ from the values that are listed here.

### Nexus Dashboard System Resources

The following table provides information about Server Resource Requirements to run NDFC on top of Nexus Dashboard. Refer to Nexus Dashboard Capacity Planning to determine the number of switches supported for each deployment.

Cisco Nexus Dashboard can be deployed using number of different form factors. NDFC can be deployed on the following form factors:

- pND - Physical Nexus Dashboard
- vND - Virtual Nexus Dashboard

***Table 1: Server Resource Requirements to run NDFC on top of Nexus Dashboard***

| Deployment Type | Node Type | CPUs | Memory | Storage (Throughput: 40-50 MB/s) |
|---|---|---|---|---|
| Fabric Discovery | Virtual Node (vND) – app node | 16 vCPUs | 64 GB | 550 GB SSD |
| | Physical Node (pND)<br>(PID: SE-NODE-G2) | 2 x 10-core 2.2GHz Intel Xeon Silver CPU | 256 GB of RAM | 4 x 2.4 TB HDDs<br>400 GB SSD<br>1.2 TB NVME drive |
| | Physical Node (pND)<br>(PID: ND-NODE-L4) | 2.8GHz AMD CPU | 256 GB of RAM | 4 x 2.4 TB HDDs<br>960 GB SSD<br>1.6 TB NVME drive |

| Deployment Type | Node Type | CPUs | Memory | Storage (Throughput: 40-50 MB/s) |
|---|---|---|---|---|
| Fabric Controller | Virtual Node (vND) – app node | 16 vCPUs | 64 GB | 550 GB SSD |
| | Physical Node (pND)<br>(PID: SE-NODE-G2) | 2 x 10-core 2.2GHz Intel Xeon Silver CPU | 256 GB of RAM | 4 x 2.4 TB HDDs<br>400 GB SSD<br>1.2 TB NVME drive |
| | Physical Node (pND)<br>(PID: ND-NODE-L4) | 2.8GHz AMD CPU | 256 GB of RAM | 4 x 2.4 TB HDDs<br>960 GB SSD<br>1.6 TB NVME drive |
| SAN Controller | Virtual Node (vND) – app node<br>(with SAN Insights) | 16 vCPUs<br>(with physical reservation) | 64 GB<br>(with physical reservation) | 550 GB SSD |
| | Data Node (vND) – Data node<br>(with SAN Insights) | 32 vCPUs<br>(with physical reservation) | 128GB<br>(with physical reservation) | 3 TB SSD |
| | Physical Node (pND)<br>(PID: SE-NODE-G2) | 2 x 10-core 2.2GHz Intel Xeon Silver CPU | 256 GB of RAM | 4 x 2.4 TB HDDs<br>400 GB SSD<br>1.2 TB NVME drive |
| | Physical Node (pND)<br>(PID: ND-NODE-L4) | 2.8GHz AMD CPU | 256 GB of RAM | 4 x 2.4 TB HDDs<br>960 GB SSD<br>1.6 TB NVME drive |

### Scale Limits for NDFC Fabric Discovery

***Table 2: Scale Limits for Fabric Discovery Persona and Nexus Dashboard***

| Profile | Deployment Type | Verified Limit |
|---|---|---|
| Fabric Discovery | 1-Node vND (app node) | 100 switches |
| Fabric Discovery | 3-Node vND (app node) | 200 switches |
| Fabric Discovery | 5-Node vND (app node) | 1000 switches |
| Fabric Discovery | 1-Node pND | 100 switches |
| Fabric Discovery | 3-Node pND | 1000 switches |

## Scale Limits for NDFC Fabric Controller

***Table 3: Scale Limits for Fabric Controller Persona and Nexus Dashboard***

| Profile | Deployment Type | Verified Limit |
|---|---|---|
| Fabric Controller | 1-Node vND (app node) | 50 switches |
| Fabric Controller | 3-Node vND (app node) | 100 switches |
| Fabric Controller | 5-Node vND (app node) | 400 switches for Easy Fabrics[1] |
| Fabric Controller | 5-Node vND (app node) | 1000 switches for External Fabrics[2] |
| Fabric Controller | 1-Node pND | 50 switches |
| Fabric Controller | 3-Node pND | 500 switches for Easy Fabrics[1] |
| Fabric Controller | 3-Node pND | 1000 switches for External Fabrics[2] |

[1] Easy Fabrics include Data Center VXLAN EVPN fabrics and BGP fabrics.

[2]External Fabrics include Flexible Network fabrics, Classic LAN fabrics, External Connectivity Network fabrics, and Multi-Site Interconnect Network fabrics. Both managed and monitored mode are supported.

***Table 4: Scale Limits for Switches and Fabrics in Fabric Controller***

| Description | Verified Limit |
|---|---|
| Switches per fabric | 200 |
| Physical Interfaces per NDFC instance[1] | 30000 |

[1] Supported scale for 1-node vND is 2500 physical interfaces.

***Table 5: Scale Limits For Provisioning New Data Center VXLAN EVPN Fabrics (also referred to as "Greenfield" Deployment)***

| Description | Verified Limit |
|---|---|
| **Fabric Underlay Overlay** | |
| Switches per fabric | 200 |
| Overlay Scale for VRFs and Networks[1] | 500 VRFs, 2000 Layer-3 Networks<br>or<br>2500 Layer-2 Networks |
| VRF instances for external connectivity | 500 |
| IPAM Integrator application | 150 networks with a total of 4K IP allocations on the Infoblox server |

| Description | Verified Limit |
|---|---|
| ToR and Leaf devices | A Data Center VXLAN EVPN fabric can manage both Layer-2 ToR switches and leaf switches. Maximum scale for this sort of fabric is 40 leaf switches and 320 ToR switches.<br>Maximum of 32 ToR switches (or 16 vPC-ToR pairs) can be connected per leaf-vPC pair. |
| **Endpoint Locator**[2] | |
| Endpoints | 100000 |
| **VXLAN EVPN Multi-Site Domain** | |
| Sites | 30 |
| **Virtual Machine Manager (VMM)**[3] | |
| Virtual Machines (VMs) | 5500 |
| VMware Center Servers | 4 |
| Kubernetes Visualizer application | Maximum of 160 namespaces with maximum of 1002 pods |

[1] Supported scale for 1-node vND is 250 VRFS and 1000 networks.

[2] Supported scale for 1-node vND is 1 instance of endpoint locator with 10000 endpoints.

[3] Supported scale for 1-node vND is 1 VMware Center Server and 1000 VMs.

**Note**

- Refer to the following table if you are transitioning a command line interface (CLI) configured Cisco Nexus 9000 series switches based VXLAN EVPN fabric to NDFC.
- If you are performing a Brownfield migration, where you transition an existing Data Center VXLAN EVPN fabric management to NDFC, note that the scale limts provided below no longer apply once that Brownfield migration is completed and you should be using the scale limits provided in the Greenfield table above instead.

***Table 6: Scale Limits For Transitioning Existing Data Center VXLAN EVPN Fabric Management to NDFC (also referred to as "Brownfield Migration")***

| Description | Verified Limit |
|---|---|
| **Fabric Underlay and Overlay** | |
| Switches per fabric | 200 |
| Physical Interfaces | 11500 |
| VRF instances | 400 |
| Overlay networks | 1050 |
| VRF instances for external connectivity | 400 |
| **Endpoint Locator** | |

| Description | Verified Limit |
|---|---|
| Endpoints | 50000 |
| **IPAM Integrator application** | 150 networks with a total of 4K IP allocations on the Infoblox server |
| **Virtual Machine Manager (VMM)** | |
| Virtual Machines (VMs) | 5500 |
| VMware Center Servers | 4 |
| Kubernetes Visualizer application | Maximum of 160 namespaces with maximum of 1002 pods |

### Scale Limits for Cohosting NDFC and Other Services

***Table 7: Scale Limits for Cohosting Nexus Dashboard Insights and NDFC (NDFC 12.1.3/ND 3.0.1 and earlier)***

| Profile | Deployment Type | Verified Limit |
|---|---|---|
| Nexus Dashboard Insights and Nexus Dashboard Fabric Discovery | 3-Node pND | • 50 switches<br>• 10,000 flows/sec |
| Nexus Dashboard Insights and Nexus Dashboard Fabric Controller | 3-Node pND | • 50 switches<br>• 10,000 flows/sec |

***Table 8: Scale Limits for Cohosting Nexus Dashboard Insights and NDFC (NDFC 12.2.1/ND 3.1 and later)***

| Profile | Deployment Type | Verified Limit |
|---|---|---|
| Nexus Dashboard Insights and Nexus Dashboard Fabric Discovery (NX-OS without controller mode[1]) | 3-Node pND | • 250 switches<br>• 10,000 flows/sec |
| Nexus Dashboard Insights and Nexus Dashboard Fabric Controller | 3-Node pND | • 250 switches<br>• 10,000 flows/sec |

[1] NX-OS Discovery mode is required when you deploy Nexus Dashboard Insights for NX-OS fabrics without using NDFC.

### Scale Limits for IPFM Fabrics

***Table 9: Scale Limits for Nexus Dashboard and IPFM Fabrics***

| Profile | Deployment Type | Verified Limit |
|---|---|---|
| Fabric Controller | 1-Node vND | 35 switches (2 spine switches and 33 leaf switches) |

| Profile | Deployment Type | Verified Limit |
|---|---|---|
| Fabric Controller | 3-Node vND | 120 switches (2 spine switches, 100 leaf switches, and 18 Tier-2 leaf switches) |
| Fabric Controller | 1-Node pND | 35 switches (2 spine switches and 33 leaf switches) |
| Fabric Controller | 3-Node pND | 120 switches (2 spine switches, 100 leaf switches, and 18 Tier-2 leaf switches) |

***Table 10: Scale Limits for IPFM Fabrics***

| Description | Verified Limit | | | |
|---|---|---|---|---|
| | NBM Active Mode Only | NBM Passive Mode Only | Mixed Mode | |
| | | | NBM Active VRF | NBM Passive VRF |
| Switches | 120 | 32 | 32 | 32 |
| Number of flows | 32000 | 32000 | 32000 | 32000 |
| Number of End Points (Discovered Hosts) | 5000 | 1500 | 3500 | 1500 |
| VRFs | 16 | 16 | 16 | 16 |
| Host Policy - Sender | 8000 | NA | 8000 | NA |
| Host Policy - Receiver | 8000 | NA | 8000 | NA |
| Host Policy - PIM (Remote) | 512 | NA | 512 | NA |
| Flow Policy | 2500 | NA | 2500 | NA |
| NBM ASM group-range | 20 | NA | 20 | NA |
| Host Alias | 2500 | NA | 2500 | NA |
| Flow Alias | 2500 | NA | 2500 | NA |
| NAT Flows | 3000 | 3000 | 3000 | 3000 |
| RTP Flow Monitoring | 8000 | 8000 | 8000 | 8000 |
| PTP Monitoring | 120 switches | 32 switches | 32 switches | 32 switches |

### Scale Limits for NDFC SAN Controller

*Table 11: Scale Limits for SAN Zones*

| Description | Verified Limits |
|---|---|
| Zone sets | 1000 |
| Zone | 16000 |

*Table 12: Scale Limits for Nexus Dashboard and SAN Controller Persona*

| Profile | Deployment Type | Verified Limit | |
|---|---|---|---|
| | | Without SAN Insights | With SAN Insights |
| SAN Controller | 1-Node vND (app node)[1] | 80 switches, 20K ports | 40 switches, 10K ports, and 40K ITs |
| | 1-Node vND (data node) | 80 switches, 20K ports | 80 switches, 20K ports, and 1M ITLs/ITNs [2] |
| | 1-Node pND (SE) | 80 switches, 20K ports | 80 switches, 20K ports, and 120K ITLs/ITNs |
| SAN Controller | 3-Node vND (app node) | 160 switches, 40K ports | 80 switches, 20K ports, and 100K ITs |
| | 3-Node vND (data node) | 160 switches, 40K ports | 160 switches, 40K ports, and 240K ITLs/ITNs |
| | 3-Node pND | 160 switches, 40K ports | 160 switches, 40K ports, and 500K ITLs/ITNs |

[1] App nodes have fewer features than data nodes. For example, the `lun` and `fc-scsi.scsi_initiator_itl_flow` features are not supported in the app ova, whereas those features are supported in the data ova. Therefore, you would have to install the data ova in order to use the `lun` or `fc-scsi.scsi_initiator_itl_flow` features.

[2] 1 million flows is the maximum number supported. If other features are enabled that consume resources, 1 million flows will not be stable in all situations. NDFC consumes more resources per flow when processing telemetry from a larger number of devices. Watch flow counts and node memory usage (1 minute averages above ~105GB starts to show instability).

**Note** ITLs - Initiator-Target-LUNs

ITNs - Initiator-Target-Namespace ID

ITs - Initiator-Targets

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