

Cisco Nexus Dashboard Orchestrator Verified Scalability Guide, Release 3.7(1)

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New and Changed Information

The following table provides an overview of the significant changes to the organization and features in this guide from the time the guide was first published to the latest update.

Table 1: Latest Updates

Date	Changes
December 05, 2023	Updated the "Service Graph nodes per Service Graph" scale.
January 12, 2023	Additional scale information for the following ACI fabric objects: • VRFs per Schema • Contracts per Schema • Filters per Schema • Service Graphs per Schema • Service Graph nodes per Service Graph
May 31, 2022	Updated the "Sites" scale for ACI fabrics from 12 to 14.
March 14, 2022	First release of this document.

Overview

This guide contains the maximum verified scalability limits for Cisco Multi-Site.

These values are based on a profile where each feature was scaled to the numbers specified in the tables. These numbers do not represent the theoretically possible scale.

Note The total number of objects within each site must not exceed the maximum verified scalability limit for that fabric version. For more information on site-specific scalability limits, see the Cisco ACI Verified Scalability Guide, Cisco Cloud Network Controller Verified Scalability Guide, or Cisco NDFC Verified Scalability Guide for your fabric type and release.

ACI Fabrics Scalability Limits

This release supports managing only DCNM fabrics or only ACI fabrics by the same Nexus Dashboard Orchestrator. The following scale limits apply when managing ACI fabrics.

General Scalability Limits

Object	Scale
Sites	14
Pods per site	12
Leaf switches per site	400 in a single pod 500 across all pods in Multi-Pod fabrics
Total leaf switches across all sites	`Sites * Leaf switches per site` For example, 6000 if every site is deployed as a Multi-Pod fabric.
Endpoints per site	The NDO endpoint scale for each site is the same as the scale supported by the site's APIC. For detailed information, see the Cisco APIC Verified Scalability Guide for the APIC release version managing each site. **Note** If the site is part of a Multi-Site domain, the total number of endpoints is the sum of local and remote endpoints.

Nexus Dashboard Orchestrator Objects Scale

Object	Up to 4 Sites	Up to 14 Sites
Number of Schemas	1000	80
Templates per Schema	10	10
Application Profiles per Schema	200	200
VRFs per Schema	200	200
Contracts per Schema	500	500
Filters per Schema	500	500
Service Graphs per Schema	500	500
Service Graph nodes per Service Graph	2	2
Policy Objects per Schema	1000	1000

Object	Up to 4 Sites	Up to 14 Sites
Contract Preferred Group (BD/EPG combinations) **Note** The listed scale represents the number of EPGs that are part of the Preferred Group (across all the defined VRFs) that can be deployed in each site. This means that the maximum number of EPGs in the Preferred Group that can be managed by a single Nexus Dashboard Orchestrator instance can range from 500 (if all the EPGs are stretched) to 500*12 if only site-local EPGs are defined in each site.	500	500

NDO-Deployed Objects Scale

To better understand the scalability values captured in the following table, it is important to clarify that there are three kind of NDO-deployed objects:

- Site local objects—these are the objects defined in templates associated to a single site, which get deployed by NDO only in that specific site.
- Shadow objects:—these are the objects deployed by NDO in a site as a result of a contract established between site local and remote objects, they are the representation ("shadow)" of the remote object in the local site.
- Stretched objects—these are the objects defined in templates that are associated to multiple sites, which get deployed by NDO concurrently on all those sites.

The table below captures the maximum number of objects that NDO can deploy in a given site and includes the sum of all three kinds of objects described above.

For example, if you have two sites and you define three templates on NDO—`template-1` associated to `site-1`, `template-2` associated to `site-2`, and `template-stretched` associated to both `site-1` and `site-2`—then:

- If you configure and deploy `EPG-1` in `template-1`, this will count as one EPG towards maximum allowed for `site-1`.
- If you configure and deploy `EPG-2` in `template-2`, this will count as one EPG towards maximum allowed for `site-2`.
- If you apply a contract between `EPG-1` and `EPG-2` or add both EPGs to the Preferred Group), a shadow `EPG-2` will be created in `site-1` and a shadow `EPG-1` in `site-2`. As a result, two EPGs will now be counted towards maximum allowed in each site.
- Finally, if you configure and deploy `EPG-3` in `template-stretched`, it will count as another EPG in each site, bringing the total to 3 EPGs towards maximum allowed scale.

It is worth adding that the maximum number of objects supported in a given fabric (and captured in the Verified Scalability Guide for Cisco APIC) must not exceed the sum of objects locally defined on APIC plus the objects pushed from NDO to that site (NDO-deployed objects).



Note For maximum scale Nexus Dashboard Orchestrator configurations with many features enabled simultaneously, we recommend that those configurations be tested in a lab before deployment.

Object	Maximum number of objects per site for up to 4 sites	Maximum number of objects per site for 5-14 sites
Tenants	1000	400
VRFs	2000	1000
BDs	6000	4000
Contracts	6000	4000
EPGs	6000	4000
Isolated EPGs	500	500
Microsegment EPGs	500	500
L3Out external EPGs	500	500
Subnets	8000	8000
Number of L4-L7 logical devices	400	400
Number of graph instances	250	250
Number of device clusters per tenant	10	10
Number of graph instances per device cluster	125	125

SD-Access and Cisco ACI Integration Scale

Starting with Release 3.6(1), you can onboard a Cisco DNA Center (DNAC) to your Nexus Dashboard Orchestrator for SD-Access and ACI integration.



Note Cisco Nexus Dashboard and Cisco DNAC integration allows for automation of a subset of network connectivity and macro segmentation scenarios across Nexus and campus SDA fabric deployments. This integration is under limited availability. Please contact your Cisco representative for additional information

The following scale limits apply for this use case:

- Only a single DNAC can be onboarded to your Nexus Dashboard Orchestrator for SD-Access and ACI integration.
- Up to 2 Cisco ACI sites are supported for peering with SD-Access.

  Each ACI site can be a single Pod or a Multi-Pod fabric.
- Multiple SD-Access (campus) sites are supported if managed by a single DNAC.
- A virtual network (VN) can be mapped to a maximum of 10 ACI VRFs.
- Up to 32 virtual networks (VNs) from the SD-Access domain can be extended into the ACI domain.

VRF/BD VNID Translation Scale

Object	Scale
Fixed spines	21,000
Modular spines	42,000

NDFC Fabrics Scalability Limits

This release of Nexus Dashboard Orchestrator supports managing only NDFC fabrics or only ACI fabrics by the same Nexus Dashboard Orchestrator. The following scale limits apply when managing NDFC fabrics.

General Scalability Limits

Object	Scale
Sites A "site" in NDO context is equivalent to an NDFC "fabric".	12
Leaf switches per site	150 per NDFC fabrics For complete information about NDFC-specific scale, see the *Verified Scalability Guide for Cisco Nexus Dashboard Fabric Controller* for your release.
Fabrics per NDFC instance	5
Border Gateways per site	4

Nexus Dashboard Orchestrator Objects Scale

Object	Scale
Policy Objects per Schema	1000
Templates per Schema	10
Number of Schemas	80
Nexus Dashboard Orchestrator Users (nonparallel*) *Nexus Dashboard Orchestrator processes requests sequentially from multiple users even if they are deploying different schemas.	50

NDO-Managed Objects Scale

When NDO manages NDFC fabrics, there is no concept of "shadow" objects. Hence, the scalability values captured in the table below only refer to the sum of site-local and stretched objects deployed by NDO in a given site.

Object	Scale (Stretched)
VRFs	500
Networks	1000 (L3) 1500 (L2)

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