CISCO Multi Site Verified Scalability User Guide

Contents

CISCO Multi Site Verified Scalability

Product Information

Specifications

- **Product Name:** Cisco Multi-Site Verified Scalability Guide
- **Release Version:** 3.2(1)

Overview

The Cisco Multi-Site Verified Scalability Guide provides information on the maximum verified scalability limits for Cisco Multi-Site. These limits are based on a profile where each feature was scaled to the specified numbers. It is important to note that these numbers do not represent the theoretically possible scale.

The guide also mentions that the total number of objects within each site must not exceed the maximum verified scalability limit for that fabric version. For site-specific scalability limits, users should refer to the Cisco ACI Verified Scalability Guide or Cisco DCNM Verified Scalability Guide for the respective fabric version.

ACI Fabrics Scalability Limits
This release of the product supports managing either DCNM fabrics or ACI fabrics using the same Multi-Site Orchestrator. The following scalability limits apply when managing ACI fabrics:

- **General Scalability Limits:**
  - **Object Sites:** 12
  - **Pods per site:** 12

    - **Leaf switches per site:** 400 in a single pod
    - **Total leaf switches across all sites:** 500 across all pods in Multi-Pod fabrics
    - **Sites * Leaf switches per site:** For example, 6000 if every site is deployed as a Multi-Pod fabric.
- **Object Endpoints Scale:** Not specified
- **Multi-Site Orchestrator Objects Scale:**
    - **Object Scale:** Not specified
    - **Number of Schemas:** 80
    - **Templates per Schema:** 10
    - **Application Profiles per Schema:** 200
    - **Policy Objects per Schema:** 1000
    - **Contract Preferred Group (BD/EPG combinations):** 500
- **Multi-Site Orchestrator Users (nonparallel*):** 50

Multi-Site Orchestrator processes requests sequentially from multiple users even if they are deploying different schemas.

MSO-Deployed Objects Scale
The following table captures the maximum number of objects that MSO (Multi-Site Orchestrator) can deploy in a given site, including the sum of all three kinds of objects:

Kind of Object	Maximum Number of Objects
Objects defined on APIC locally	Not specified
Objects pushed from MSO to the site (MSO-deployed objects)	Not specified
Sum of objects locally defined on APIC and MSO-deployed objects	Not specified

The Verified Scalability Guide for Cisco APIC provides information on the maximum number of objects supported in a given fabric. The sum of objects locally defined on APIC and the objects pushed from MSO to that site must not exceed the maximum number of objects supported.

FAQ

1. **What are the scalability limits for managing DCNM fabrics?**
   The user manual does not provide specific scalability limits for managing DCNM fabrics. Users are advised to refer to the Cisco DCNM Verified Scalability Guide for more information.
2. **What is the significance of the “Preferred Group” in the Contract Preferred Group (BD/EPG combinations) scalability limit?**
   The “Preferred Group” represents the number of EPGs that are part of the Preferred Group, which can be deployed in each site. 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.
3. **How does Multi-Site Orchestrator handle requests from multiple users?**
   Multi-Site Orchestrator processes requests sequentially from multiple users, even if they are deploying different schemas.

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
January 25, 2021	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 or Cisco DCNM Verified Scalability Guide for that fabric version.

ACI Fabrics Scalability Limits

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

General Scalability Limits

Object	Scale
Sites	12
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	150,000 including: • 100,000 – learned from other sites • 50,000 – locally learned in site-local

Multi-Site Orchestrator Objects Scale

Object	Scale
Number of Schemas	80
Templates per Schema	10
Application Profiles per Schema	200
Policy Objects per Schema	1000
Contract Preferred Group (BD/EPG combinations)	500 This value represents the number of EPGs that are pa rt 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 Orches trator instance can range from 500 (if all the EPGs are stretched) to 500*12 if only site-local EPGs are defined in each site.
Multi-Site Orchestrator Users (nonparallel*) *Multi-Site Orchestrator processes requests sequentially from multiple users even if they are deplo ying different schemas.	50

MSO-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 MSO-deployed objects:

- **Site local objects**—these are the objects defined in templates associated to a single site, which get deployed by MSO only in that specific site.
- **Shadow objects:—**these are the objects deployed by MSO 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 MSO concurrently on all those sites.

The table below captures the maximum number of objects that MSO 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 MSO—template-1associated to site-1, template-2associated 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 the maximum allowed for site-1.
- If you configure and deploy EPG-2 in template-2, this will count as one EPG towards the 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 the maximum allowed in each site.

- Finally, if you configure and deploy EPG-3in template-stretched, it will count as another EPG in each site, bringing the total to 3 EPGs towards the 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 MSO to that site (MSO-deployed objects).

Note
For maximum-scale Multi-Site configurations with many features enabled simultaneously, we recommend that those configurations be tested in a lab before deployment.

Object	Scale (Stretched)
Tenants	400
VRFs	1000
BDs	4000
Contracts	4000
EPGs	4000
Isolated EPGs	400
Microsegment EPGs	400
L3Out external EPGs	500
Subnets	8000
Number of L4-L7 logical devices	400
Number of graph instances	250
Number of device clusters per tenant	10
Number of graph instances per device cluster	125

VRF/BD VNID Translation Scale

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

DCNM Fabrics Scalability Limits

This release of Multi-Site Orchestrator supports managing only DCNM fabrics or only ACI fabrics by the same Multi-Site Orchestrator. The following scale limits apply when managing DCNM fabrics.

General Scalability Limits

Object	Scale
Sites	6
Leaf switches per site	150 per DCNM fabric and 350 per DCNM instance 900 total
Border Gateways per site	4

Multi-Site Orchestrator Objects Scale

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

MSO-Deployed Objects Scale
When MSO manages DCNM 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 MSO in a given site.

Object	Scale per Site
VRFs	500
Networks	1000 (L3) 1500 (L2)

- **Americas Headquarters**

  Cisco Systems, Inc. San Jose, CA 95134-1706 USA
- **Asia Pacific Headquarters**

  CiscoSystems(USA)Pte.Ltd. Singapore
- **Europe Headquarters**

  CiscoSystemsInternationalBV Amsterdam,TheNetherlands

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at **www.cisco.com/go/offices**.

Documents / Resources

	CISCO Multi Site Verified Scalability [pdf] User Guide Multi Site Verified Scalability, Verified Scalability, Scalability

References

- User Manual