Extreme networks®

ExtremeCloud™ Orchestrator Hyper-V Integration Guide

Version 3.5.0

Table of Contents

Preface

Read the following topics to learn about:

- The meanings of text formats used in this document.
- Where you can find additional information and help.
- How to reach us with questions and comments.

Text Conventions

Unless otherwise noted, information in this document applies to all supported environments for the products in question. Exceptions, like command keywords associated with a specific software version, are identified in the text.

When a feature, function, or operation pertains to a specific hardware product, the product name is used. When features, functions, and operations are the same across an entire product family, such as Extreme Networks switches or SLX routers, the product is referred to as *the switch* or *the router*.

Table 1: Notes and warnings

Icon	Notice type	Alerts you to...
💡	Tip	Helpful tips and notices for using the product
📒	Note	Useful information or instructions
➡	Important	Important features or instructions
⚠	Caution	Risk of personal injury, system damage, or loss of data
⚠	Warning	Risk of severe personal injury

Table 2: Text

Convention	Description
`screen displays`	This typeface indicates command syntax, or represents information as it is displayed on the screen.
The words *enter* and *type*	When you see the word *enter* in this guide, you must type something, and then press the Return or Enter key. Do not press the Return or Enter key when an instruction simply says *type*.
Key names	Key names are written in boldface, for example **Ctrl** or **Esc**. If you must press two or more keys simultaneously, the key names are linked with a plus sign (+). Example: Press **Ctrl**+**Alt**+**Del**
Words in italicized type	Italics emphasize a point or denote new terms at the place where they are defined in the text. Italics are also used when referring to publication titles.
NEW!	New information. In a PDF, this is searchable text.

Table 3: Command syntax

Convention	Description
bold text	Bold text indicates command names, keywords, and command options.
italic text	Italic text indicates variable content.
`[ ]`	Syntax components displayed within square brackets are optional. Default responses to system prompts are enclosed in square brackets.
`{ x	y	z }`	A choice of required parameters is enclosed in curly brackets separated by vertical bars. You must select one of the options.
`x	y`	A vertical bar separates mutually exclusive elements.
`< >`	Nonprinting characters, such as passwords, are enclosed in angle brackets.
...	Repeat the previous element, for example, `member[member...]`.
`\`	In command examples, the backslash indicates a "soft" line break. When a backslash separates two lines of a command input, enter the entire command at the prompt without the backslash.

Documentation and Training

Find Extreme Networks product information at the following locations:

Current Product Documentation

Release Notes

Hardware and Software Compatibility for Extreme Networks products

Extreme Optics Compatibility

Other Resources such as articles, white papers, and case studies

Open Source Declarations

Some software files have been licensed under certain open source licenses. Information is available on the Open Source Declaration page.

Training

Extreme Networks offers product training courses, both online and in person, as well as specialized certifications. For details, visit the Extreme Networks Training page.

Help and Support

If you require assistance, contact Extreme Networks using one of the following methods:

Extreme Portal

Search the GTAC (Global Technical Assistance Center) knowledge base; manage support cases and service contracts; download software; and obtain product licensing, training, and certifications.

The Hub

A forum for Extreme Networks customers to connect with one another, answer questions, and share ideas and feedback. This community is monitored by Extreme Networks employees, but is not intended to replace specific guidance from GTAC.

Call GTAC

For immediate support: (800) 998 2408 (toll-free in U.S. and Canada) or 1 (408) 579 2800. For the support phone number in your country, visit www.extremenetworks.com/support/contact.

Before contacting Extreme Networks for technical support, have the following information ready:

- Your Extreme Networks service contract number, or serial numbers for all involved Extreme Networks products
- A description of the failure
- A description of any actions already taken to resolve the problem
- A description of your network environment (such as layout, cable type, other relevant environmental information)
- Network load at the time of trouble (if known)
- The device history (for example, if you have returned the device before, or if this is a recurring problem)
- Any related RMA (Return Material Authorization) numbers

Subscribe to Product Announcements

You can subscribe to email notifications for product and software release announcements, Field Notices, and Vulnerability Notices.

1. Go to The Hub.
2. In the list of categories, expand the **Product Announcements** list.
3. Select a product for which you would like to receive notifications.
4. Select **Subscribe**.
5. To select additional products, return to the **Product Announcements** list and repeat steps 3 and 4.

You can modify your product selections or unsubscribe at any time.

Send Feedback

The User Enablement team at Extreme Networks has made every effort to ensure that this document is accurate, complete, and easy to use. We strive to improve our documentation to help you in your work, so we want to hear from you. We welcome all feedback, but we especially want to know about:

- Content errors, or confusing or conflicting information.
- Improvements that would help you find relevant information.
- Broken links or usability issues.

To send feedback, email us at documentation@extremenetworks.com.

Provide as much detail as possible including the publication title, topic heading, and page number (if applicable), along with your comments and suggestions for improvement.

What's New in this Document

There are no content changes for this guide for the ExtremeCloud Orchestrator (XCO) 3.5.0 software release.

Introduction

Introduction to ExtremeCloud Orchestrator

ExtremeCloud Orchestrator (XCO) is a micro-services-based scalable fabric automation application.

> **Note**
> From release 3.2.0 onwards, Extreme Fabric Automation (EFA) is referred to as ExtremeCloud Orchestrator (XCO). The terms EFA and XCO refer to the same product and are used interchangeably.

XCO automates and orchestrates SLX IP fabrics and tenant networks, with support for the following:

- Building and managing non-Clos small data center fabrics and 3-stage and 5-stage IP Clos fabrics
- Managing tenant-aware Layer 2 and Layer 3 networks
- Configuring integration with several ecosystems: VMware vCenter and Microsoft Hyper-V
- Providing a single point of configuration for your entire fabric

XCO consists of core K3s containerized services that interact with each other and with other infrastructure services to provide the core functions of fabric and tenant network automation. For more information, see XCO Microservices on page 12.
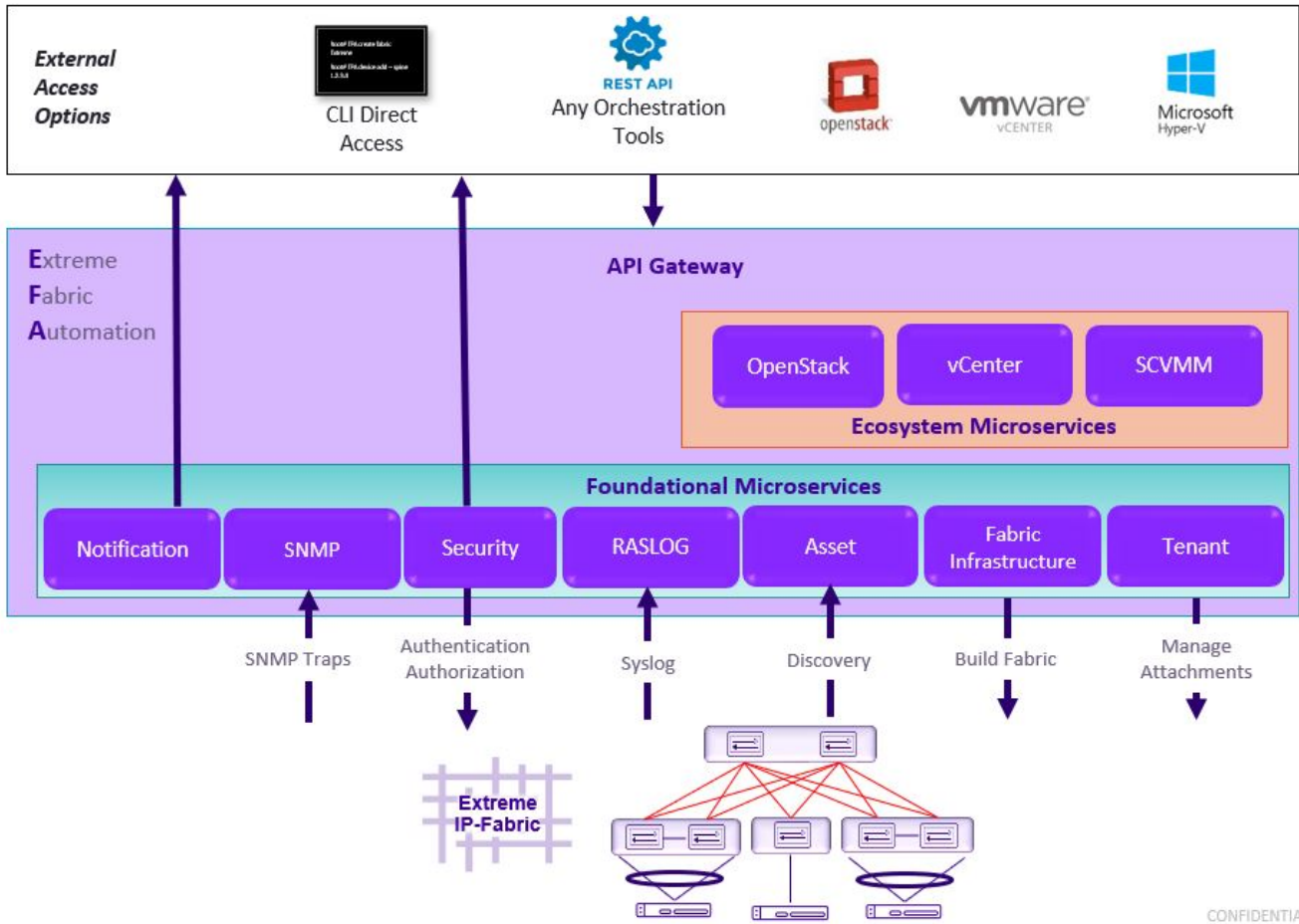
Figure 1: XCO orchestration

XCO Microservices

XCO consists of core K3s containerized microservices that interact with each other and with other infrastructure services to provide the core functions of fabric and tenant network automation.
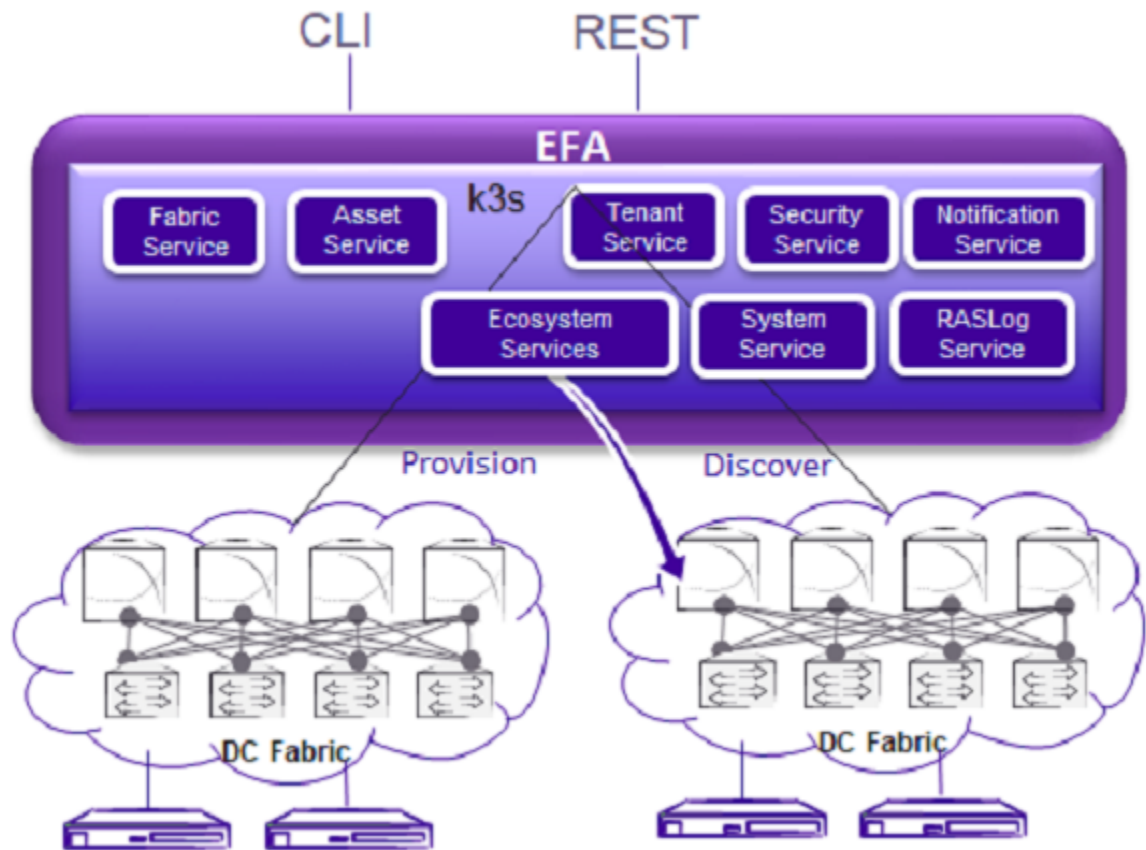
Figure 2: Microservices in the XCO architecture

Fabric Service

The Fabric Service is responsible for automating the fabric BGP underlay and EVPN overlay. By default, the EVPN overlay is enabled but you can turn it off it before provisioning, if necessary. The Fabric Service exposes the CLI and REST API for automating the fabric underlay and overlay configuration.

The Fabric Service features include:
- Support for small data centers (non-Clos)
- Support for 3-stage and 5-stage Clos fabrics
- Support for MCT configuration

Underlay automation includes interface configurations (IP numbered), BGP underlay for spine and leaf, BFD, and MCT configurations. Overlay automation includes EVPN and overlay gateway configuration.

Tenant Service

The Tenant Service manages tenants, tenant networks, and endpoints, fully leveraging the knowledge of assets and the underlying fabric. You can use the CLI and REST API for tenant network configuration on Clos and small data center fabrics.

Tenant network configuration includes VLAN, BD, VE, EVPN, VTEP, VRF, and router BGP configuration on fabric devices to provide Layer 2 extension, Layer 3 extension across the fabric, Layer 2 hand-off, and Layer 3 hand-off at the edge of the fabric.

Inventory Service

The Inventory Service acts as an inventory of all the necessary physical and logical assets of the fabric devices. All other XCO services rely on asset data for their configuration automation. The Inventory Service is a REST layer on top of device inventory details, with the capability to filter data based on certain fields. The Inventory Service securely stores the credentials of devices in encrypted form and makes those credentials available to different components such as the Fabric and Tenant services.

The Inventory Service supports the `execute-cli` option for pushing configuration and exec commands to devices. Examples include configuring SNMP parameters or OSPF configurations. This means you can use XCO for SLX-OS commands and push the same configuration to multiple devices.

The Asset Service provides the secure credential store and deep discovery of physical and logical assets of the managed devices. The service publishes the Asset refresh and change events to other services.

Notification Service

The Notification Service sends events, alerts, and tasks to external entities. Notifications sent from XCO are derived from the syslog events received from the devices that XCO manages. Alerts are notifications that services in XCO send for unexpected conditions. Tasks are user-driven operations or timer-based tasks such as device registration or fabric creation.

RASlog Service

The RASlog Service processes syslog messages from devices and forwards notifications to subscribers. For more information, see RASlog Service in the *ExtremeCloud Orchestrator CLI Administration Guide, 3.5.0*.

Security Service

The Security Service consists of authentication and authorization features that enforce a security boundary between northbound clients and downstream operations between XCO and SLX devices. The service also validates users and their credentials through Role-based Access Control (RBAC) and supports local and remote (LDAP) login.

> **Note**
> If you configure LDAP server over SSL, and use IP to connect to the server, ensure that the certificate includes the IP as part of SANs for a successful connection.

SNMP Service

The SNMP Service processes SNMP traps from devices and forwards notifications to subscribers. For more information, see XCO as SNMP Proxy in the *ExtremeCloud Orchestrator CLI Administration Guide, 3.5.0*.

Policy Service

Policy Service in XCO manages and configures IP prefix lists and route maps on fabric devices. It subscribes to the inventory service to receive events including device registration, device deletion, and changes to previously identified IP prefix lists and route maps.

Ecosystem Integration Services

XCO provides one-touch integration with these ecosystems, providing deep insight into VMs, vSwitches, port groups, and hosts, and the translation of these into IP fabric networking constructs.

VMware vCenter Service

The vCenter integration provides connectivity between XCO and vCenter using a REST API. XCO does not connect to individual ESXi servers. All integration is done through vCenter. For more information, see the *ExtremeCloud Orchestrator VMware vCenter Integration Guide, 3.5.0*. Integration support includes the following:

- Registration or deregistration of one or more vCenter servers in XCO
- Updates for vCenter asset details
- Lists of information about vCenter servers
- Inventory integration
- Dynamic updates about Tenant Service integration from vCenter and from XCO services

Hyper-V

The Hyper-V integration supports networking configuration for Hyper-V servers in a datacenter, manual and automated configuration updates when VMs move, and visibility into the VMs and networking resources that are deployed in the Hyper-V

setup. For more information, see *ExtremeCloud Orchestrator Hyper-V Integration Guide, 3.5.0*. Integration support includes the following:

- SCVMM (System Center Virtual Machine Manager) server discovery
- SCVMM server update
- Periodic polling of registered SCVMM servers
- SCVMM server list
- SCVMM server delete and deregister
- Network event handling

OpenStack Service

The OpenStack service integrates Extreme OpenStack plugins with the rest of the XCO foundation services in an IP fabric. Integration support includes the following:

- Create, read, update, delete (CRUD) operations on networks and ports
- LAG support
- Provider network (default, PT)
- VLAN trunking
- Network operations using single-root I/O virtualization (SR-IOV), physical and virtual functions
- vMotion (virtual machine migration)
- ML2 driver with support for:
  - Network and segment provisioning for non-default provider:physical_network (physnet) value.
  - DC-owner-based l2 extension for DC gateway.
- Topology changes for port-based extension of DC gateway addition and deletion of topology entries and its changes on XCO endpoint groups.
- Single-homed connections to the edge port
- Multi-segment support
- Journaling support for L2 and L3
- L3 service plugin:
  - Routing feature support using VRF
  - Flavor (service provider) support
  - Centralized routing
  - IPv6 support (dual stack)
- Layer 3 flavors
- Neighbor Discovery and Router Advertisement support:
  - IPv6 ND MTU support
  - IPv6 No-Autoconfig support

Microsoft Hyper-V

Microsoft's *Hyper-V* is a virtualization product that enables you to create and run multiple *virtual machines* (VM) on supported hardware. You can create multiple operating systems on one physical computer. All installed operating system can

interact with one another while being isolated from one another. Virtualization is used to optimize and increase the efficiency in the use of your resources. This frees up hardware resources for other uses.

Hyper-V Server is a built-in feature of *Microsoft Windows Server Datacenter Edition* and must be enabled before you can use it. When enabled, Hyper-V Manager and associated PowerShell commands also become available.

Hyper-V Servers are managed using the built-in Hyper-V Manager or using the *System Center Virtual Machine Manager* (SCVMM) software installed on a different device. With the Hyper-V Manager, you can manage virtual machines on a single instance of Hyper-V Server on which the Hyper-V Manager is installed. SCVMM is used to manage a larger setup containing a large number of Hyper-V Servers.

System Center Virtual Machine Manager

Microsoft's *System Center Virtual Machine Manager* (SCVMM) is a tool that provides a single location from which you can configure and manage your datacenters. Datacenter components such as virtualization servers, networking components, and storage resources can be managed through the SCVMM tool. You can manage multiple instances of Microsoft's *Hyper-V Server* virtualization platform and those virtual machines that are hosted on them from within SCVMM.

SCVMM is installed on a device that is different from those hosting your Hyper-V servers.

How the XCO Hyper-V Service Works

Use Extreme Networks' ExtremeCloud Orchestrator to automate the configuration of the datacenter's physical network hardware after configuring your Hyper-V servers and their associated virtual machines.
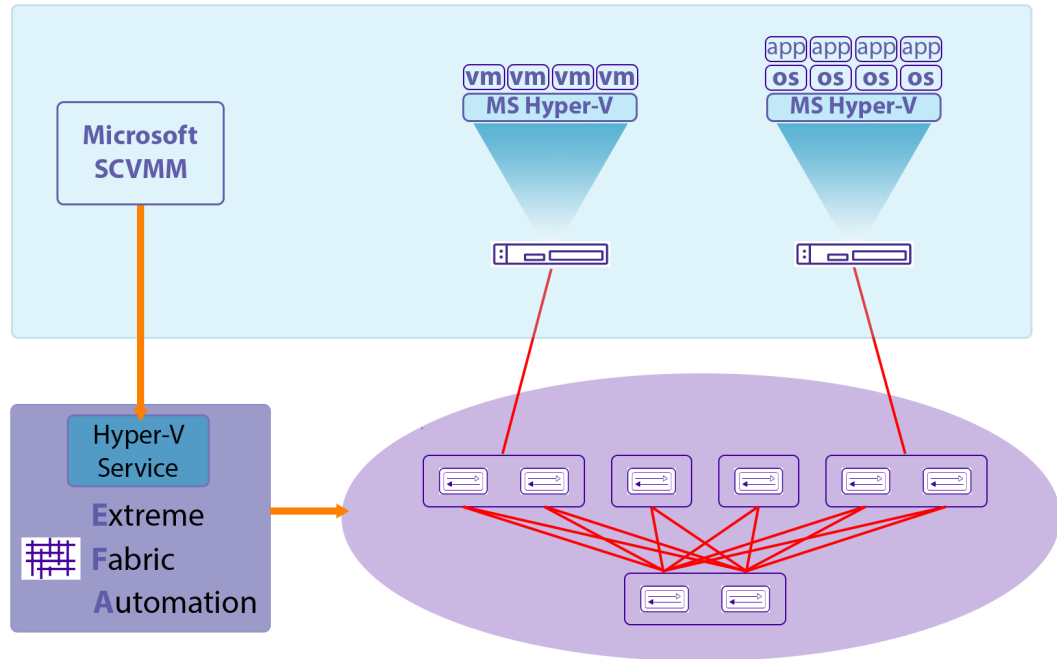
Figure 3: Hyper-V Service Overview

XCO polls the *System Center Virtual Machine Manager* (SCVMM) tool to fetch the hardware configurations from the Hyper-V servers managed by it.

SCVMM communicates with the Hyper-V servers that it manages, using PowerShell commands and through proprietary communication mechanisms. SCVMM also provides a set of PowerShell commands that the XCO's Hyper-V service uses to fetch information from it.

The following information is queried from the SCVMM server.

- Hyper-V servers
- Virtual machines
- VM networks
- Logical networks
- Uplink port profiles
- Virtual switches
- vNIC
- pNIC
- VLANs

XCO pulls the above configuration information from SCVMM periodically. It then interacts with *XCO Tenant Service* to configure the *End Point Groups* (EPG). When configured, this step configures the appropriate VLANs on the connected ports on the switches.

Before you can use XCO Hyper-V service to configure your physical hardware, the following configurations must be performed on the various Hyper-V servers and on

SCVMM. Datacenter admins must configure local entities in their setups. These entities are:

- Virtual machines
- Virtual network adapters
- Virtual switches
- Logical networks
- Virtual machine networks

Admins should also configure the physical network adapters on their Hyper-V servers to provide physical network connection ports to the fabric switches.

Before You Begin

Limitations of the Hyper-V Service

XCO Hyper-V Service has the following limitations and restrictions:

- XCO does not manage Microsoft licenses. Users are responsible for the compliance with Microsoft's licensing terms and compliance.
- XCO cannot detect and fix Hyper-V connection issues.

Microsoft Hyper-V and SCVMM Configurations

No configuration changes are required on either the hosts running Hyper-V or on the server running SCVMM.

You must create a Windows local user on the Microsoft SCVMM server with the following characteristics:

- The user name must be same as the one used when you registered the Microsoft SCVMM server using the `efa scvmm register` command.
- This user should have the same password as the Windows domain user.
- This user must have privileges to run remote PowerShell commands on the Microsoft SCVMM server.

XCO Hyper-V Service Configuration

Integrate XCO Hyper-V Service

To integrate your Microsoft Hyper-V hosts with the XCO Hyper-V service, perform the following steps:

1. Create or modify your fabric as required.
2. Create or modify your tenant information as required.
3. Register your new Microsoft System Center Virtual Machine Manager (SCVMM) as a tenant of the fabric.
4. Verify your integration.

Manage Microsoft Hyper-V Tenants

The primary task in managing your existing Microsoft Hyper-V hosts as tenants is to update them periodically or add new devices to your network. Another task is to delete these servers when they are not required.

Example Network

The following network diagram will be used throughout this section to explain the various configurations.
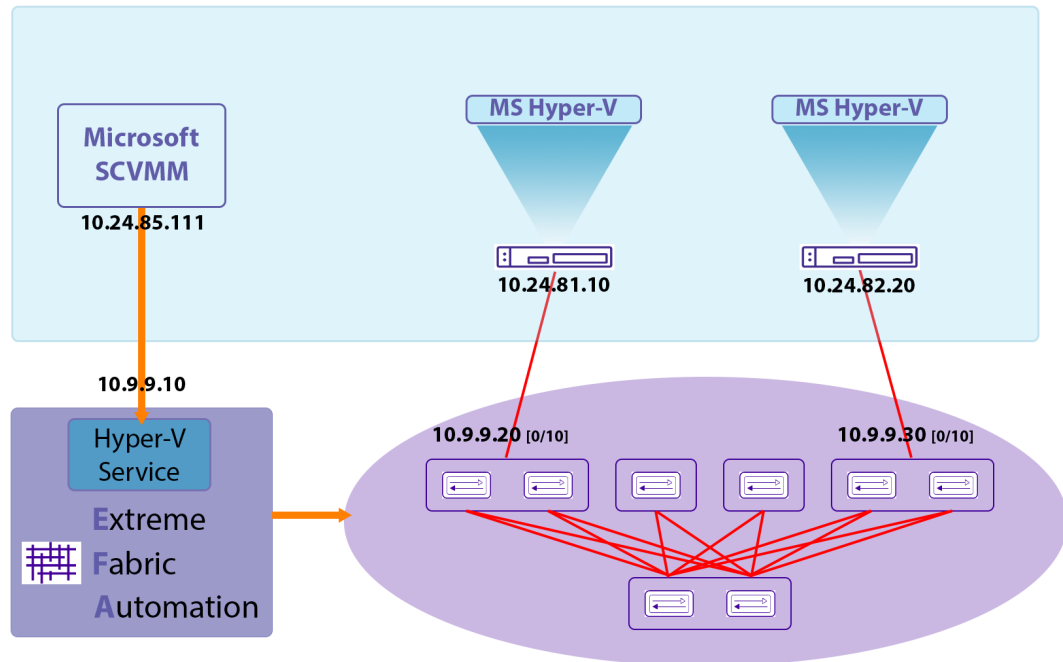
Figure 4: Sample Network Diagram

This table lists the devices, their IP/Port information, and their role within the example network.

IP Address & Port	Device & Role
10.24.85.111	Microsoft System Center Virtual Machine Manager
10.24.81.10	Microsoft Hyper-V Host #1
10.24.82.20	Microsoft Hyper-V Host #2
10.9.9.10	XCO Server
10.9.9.20 [0/10]	Fabric Leaf Node #1. This node is connected to the Microsoft Hyper-V host with IP address 10.24.81.10 on port 10.
10.9.9.30 [0/10]	Fabric Leaf Node #2. This node is connected to the Microsoft Hyper-V host with IP address 10.24.82.20 on port 10.

Verify Fabric Topology

About This Task

Verify that the fabric devices that you wish to add are present in your fabric, and when verified, fetch additional information for each of these devices.

Procedure

Execute the `efa fabric show` command.

```
efa fabric show
```

The command returns information for all the spine and leaf devices in your fabric.

Example

The following example lists the devices that make up your fabric.

```
$ efa fabric show

Fabric Name: efa-fabric-1, Fabric Description: Fabric #1, Fabric Stage: 3, Fabric Type:
clos
+-------------+-----+-------------+-------+-------+-------------+-------------
+----------------+----------------+---------+-------+
| IP ADDRESS  | POD | HOST NAME   | ASN   | ROLE
| DEVICE STATE | APP STATE   | CONFIG GEN REASON | PENDING CONFIGS | VTLB ID | LB ID |
+-------------+-----+-------------+-------+-------+-------------+-------------
+----------------+----------------+---------+-------+
| 10.10.10.10 |     | SLX         | 64512 | spine
| provisioned | cfg in-sync | NA              | NA              | NA      | 1     |
| 10.10.10.20 |     | SLX         | 64512 | spine
| provisioned | cfg in-sync | NA              | NA              | NA      | 1     |
| 10.9.9.20   |     | FRE-134     | 65001 | leaf
| provisioned | cfg in-sync | NA              | NA              | 2       | 1     |
| 10.9.9.30   |     | FRE-135     | 65001 | leaf
| provisioned | cfg in-sync | NA              | NA              | 2       | 1     |
| 10.9.9.40   |     | Orca-74     | 65000 | leaf
| provisioned | cfg in-sync | NA              | NA              | 2       | 1     |
| 10.9.9.50   |     | Orca-76     | 65000 | leaf
| provisioned | cfg in-sync | NA              | NA              | 2       | 1     |
| 10.9.9.60   |     | Avalanche-11 | 65002 | leaf
| provisioned | cfg in-sync | NA              | NA              | 2       | 1     |
| 10.9.9.70   |     | Avalanche-46 | 65002 | leaf
| provisioned | cfg in-sync | NA              | NA              | 2       | 1     |
+-------------+-----+-------------+-------+-------+-------------+-------------
+----------------+----------------+---------+-------+

CONFIG GEN REASON:
LD - Link Delete, LA - Link Add, IU - Interface Update
MD - MCT Delete, OD - Overlay Gateway Delete, OU
- Overlay Gateway Update, ED - Evpn Delete
DD - Dependent Device Update, DA - Device Add, DR
- Device ReAdd, ASN - Asn Update, HN - HostName Update, NA - Not Applicable

PENDING CONFIGS:
MCT - MCT Cluster, O - Overlay Gateway, SYSP - System Properties, INTIP - Interface IP
C/D/U - Create/Delete/Update, PA/PD - Port Add/Port Delete

For App or Device Error/Failure reason, run "efa fabric error show" for details
For config refresh reason, run "efa fabric debug config-gen-reason" for details

--- Time Elapsed: 6.1824056s ---
```

What to Do Next
If needed, create a new fabric and/or add new devices to an existing fabric.

Add Devices To Your Fabric

About This Task
Add devices to a new fabric or to an existing fabric. Do the following:

Procedure

1. Use the `efa fabric device add` command to add a single device. To add multiple devices in a single command, use the `add-bulk` option instead.

   ```
   efa fabric device add
   efa fabric device add-bulk
   ```

2. Use the `efa fabric configure` command with the `--force` option to force the fabric to update itself by removing and adding all devices that make up the fabric. When the fabric comes up again, it will include the newly added devices.

Example

The following command adds two leaf devices and a spine device to an existing fabric.

```
$ efa fabric device add-bulk --name efa-fabric-1 --leaf 10.9.9.80,10.9.9.90 --spine
10.10.10.30 --username administrator@mshyperv.local --password 'aBc123#'

$ efa fabric show

Fabric Name: efa-fabric-1, Fabric Description: Fabric #1, Fabric Stage: 3, Fabric Type:
clos
+--------------+-----+--------------+-------+-------+-------------+-------------
+-----------------+----------------+---------+-------+
| IP ADDRESS   | POD | HOST NAME    | ASN   | ROLE
| DEVICE STATE | APP STATE   | CONFIG GEN REASON | PENDING CONFIGS | VTLB ID | LB ID |
+--------------+-----+--------------+-------+-------+-------------+-------------
+-----------------+----------------+---------+-------+
| 10.10.10.10  |     | SLX          | 64512 | spine
| provisioned  | cfg in-sync | NA               | NA              | NA      | 1     |
| 10.10.10.20  |     | SLX          | 64512 | spine
| provisioned  | cfg in-sync | NA               | NA              | NA      | 1     |
| 10.10.10.30  |     | SLX          | 64512 | spine
| provisioned  | cfg in-sync | NA               | NA              | NA      | 1     |
| 10.9.9.20    |     | FRE-134      | 65001 | leaf
| provisioned  | cfg in-sync | NA               | NA              | 2       | 1     |
| 10.9.9.30    |     | FRE-135      | 65001 | leaf
| provisioned  | cfg in-sync | NA               | NA              | 2       | 1     |
| 10.9.9.40    |     | Orca-74      | 65000 | leaf
| provisioned  | cfg in-sync | NA               | NA              | 2       | 1     |
| 10.9.9.50    |     | Orca-76      | 65000 | leaf
| provisioned  | cfg in-sync | NA               | NA              | 2       | 1     |
| 10.9.9.60    |     | Avalanche-11 | 65002 | leaf
| provisioned  | cfg in-sync | NA               | NA              | 2       | 1     |
| 10.9.9.70    |     | Avalanche-46 | 65002 | leaf
| provisioned  | cfg in-sync | NA               | NA              | 2       | 1     |
| 10.9.9.80    |     | Orca-78      | 65002 | leaf
| provisioned  | cfg in-sync | NA               | NA              | 2       | 1     |
| 10.9.9.90    |     | Avalanche-72 | 65002 | leaf
| provisioned  | cfg in-sync | NA               | NA              | 2       | 1     |
+--------------+-----+--------------+-------+-------+-------------+-------------
+-----------------+----------------+---------+-------+

CONFIG GEN REASON:
LD - Link Delete, LA - Link Add, IU - Interface Update
MD - MCT Delete, OD - Overlay Gateway Delete, OU
- Overlay Gateway Update, ED - Evpn Delete
DD - Dependent Device Update, DA - Device Add, DR
- Device ReAdd, ASN - Asn Update, HN - HostName Update, NA - Not Applicable

PENDING CONFIGS:
MCT - MCT Cluster, O - Overlay Gateway, SYSP - System Properties, INTIP - Interface IP
```

```
C/D/U - Create/Delete/Update, PA/PD - Port Add/Port Delete

For App or Device Error/Failure reason, run "efa fabric error show" for details
For config refresh reason, run "efa fabric debug config-gen-reason" for details

--- Time Elapsed: 6.1824056s ---
```

Example

This command forces all the devices to be removed and added back to the fabric. This step is necessary to ensure that the overlay and underlay information for the newly added devices are propagated throughout the fabric.

```
$ efa fabric configure --name efa-fabric-1 --force
```

Create the SCVMM Tenant

About This Task

Add the SCVMM server to the XCO Hyper-V Service instance. Do the following:

Procedure

1. Use the `efa tenant create` command to create your tenant entry. When creating the tenant, ensure that you provision an adequate number of VLANs that are available for use.
2. After you create the new tenant, verify that the devices you added are added to the correct fabric. Use the `efa inventory device list` command to do so.

Results

This command will create a tenant entry that is used when registering a SCVMM server with XCO.

Example

This command creates a tenant entry with the name `scvmm-10.24.85.111`.

```
$ efa tenant create --name scvmm-10.24.85.111 --vlan-range 2-4096 --port
10.9.9.20[0/10],10.9.9.30[0/10]
```

Use this command to verify if the devices that you have added to the fabric are associated with the correct fabric.

```
$ efa inventory device list

root@ubuntu:~# efa inventory device list
+------------+-----------+-------+--------------+----------+-------+------+--------------+
| IP Address | Host Name | Model | Chassis Name | Firmware | ASN   | Role | Fabric       |
+------------+-----------+-------+--------------+----------+-------+------+--------------+
| 10.9.9.20  | FRE-134   |       |              |          | 65001 | leaf | efa-fabric-1 |
|            |           |       |              |          |       |      |              |
| 10.9.9.30  | FRE-135   |       |              |          | 65001 | leaf | efa-fabric-1 |
|            |           |       |              |          |       |      |              |
+------------+-----------+-------+--------------+----------+-------+------+--------------+
```

```
Device Details
--- Time Elapsed: 32.932576ms ---
```

Register Microsoft SCVMM Server With XCO

About This Task

Register the Microsoft SCVMM server with XCO. Do the following:

Procedure

1. Use the `efa scvmm register` command to register the Microsoft SCVMM server with this XCO instance.
   Before you register the Microsoft SCVMM server, verify that the Microsoft SCVMM entry is created. Use the `efa tenant show` command to do so.
2. After you have registered your Microsoft SCVMM, verify that the Microsoft SCVMM server was registered successfully and know the status of discovery of Hyper-V hosts managed by it.

Example

This example shows the use of the `efa tenant show` command to view a list of registered tenants for this instance of the XCO Hyper-V service.

```
$ efa tenant show

+-------------------+------------+------------+-----------+----------+-----------
+-------+
| Name              | L2VNI-Range | L3VNI-Range | VLAN-Range | VRF-Count
| Enable-BD | Ports |
+-------------------+------------+------------+-----------+----------+-----------
+-------+
| scvmm-10.24.85.111 |            |            | 2-4096    | 0        |
False     |       |
+-------------------+------------+------------+-----------+----------+-----------
+-------+
Tenant Details
--- Time Elapsed: 948.4093ms ---
```

Use this command to register a Microsoft SCVMM server with the IP address of 10.24.85.111 as a tenant with this instance of XCO Hyper-V service.

```
$ efa scvmm register --host 10.24.85.111 --username administrator@mshyperv.local --
password 'aBc123#' --tenant scvmm-10.24.85.111

+----+--------------+-----------+--------------------------+------------+----------+
| ID | Host Name    | Version   | Discovery Status         | Host Count | VM Count |
+----+--------------+-----------+--------------------------+------------+----------+
| 1  | 10.24.85.111 | 4.0.1662.0 | Pending Complete Discovery |          |          |
+----+--------------+-----------+--------------------------+------------+----------+
SCVMM Server Details
--- Time Elapsed: 10.0346556s ---
```

Use this command to verify the status of discovery of your newly added Microsoft SCVMM server.

```
$ efa scvmm list
```

```
+----+--------------+------------+----------------------------+------------+----------+
| ID | Host Name    | Version    | Discovery Status           | Host Count | VM Count |
+----+--------------+------------+----------------------------+------------+----------+
| 1  | 10.24.85.111 | 4.0.1662.0 | Pending Complete Discovery |            |          |
+----+--------------+------------+----------------------------+------------+----------+
SCVMM Server Details
--- Time Elapsed: 10.0346556s ---
```

This example shows the same Microsoft SCVMM server after the discovery process is complete.

```
$ efa scvmm list

+----+--------------+------------+--------------------+------------+----------+
| ID | Host Name    | Version    | Discovery Status   | Host Count | VM Count |
+----+--------------+------------+--------------------+------------+----------+
| 1  | 10.24.85.111 | 4.0.1662.0 | Completed Discovery | 4         | 13       |
+----+--------------+------------+--------------------+------------+----------+
SCVMM Server Details
--- Time Elapsed: 1.3625964s ---
```

Verify Microsoft SCVMM Host Registration

About This Task

Verify that your Microsoft SCVMM host has been successfully registered and that its data has been synchronized with the local XCO Hyper-V service database.

Procedure

1. Use the `efa scvmm list` command to view a list of registered Microsoft SCVMM servers. If your Microsoft SCVMM server is successfully registered, it will appear in this list.

2. Changes to the managed Hyper-V hosts or Virtual Machines on the registered Microsoft SCVMM server are periodically updated with the XCO Hyper-V service. Use the `efa scvmm list` command to view these changes. If the changes are not updated, run the `efa scvmm update` command to force an update, followed by the `efa scvmm list` command to view the updated information.

XCO Hyper-V Service Commands

efa scvmm

The base command for all XCO scvmm actions

Syntax

efa scvmm { **register** | **delete** | **list** | **update** | **links** | **settings** }

Command Default

There are no defaults for this command.

Parameters

register

Registers Microsoft SCVMM server with XCO

delete

Deletes or deregisters the specified Microsoft SCVMM server registered with the XCO Hyper-V service.

list

Lists all the Microsoft SCVMM servers registered as tenants with the XCO Hyper-V Service

update

Updates the local XCO database with topology changes on the virtual machines managed by the Microsoft SCVMM tenants

links

Lists the links on a Microsoft SCVMM server or any Microsoft Hyper-V device that is managed through this tenant. This command can display link information for physical and virtual NICs.

settings

Configures or views the *Polling Frequency* setting for fetching topology changes from Microsoft SCVMM tenants

Examples

This command lists the Microsoft SCVMM servers registered as tenants with this instance of XCO.

```
ubuntu@ubuntu:~$ efa scvmm list

+----+--------------+------------+--------------------+------------+----------+
| ID | Host Name    | Version    | Discovery Status   | Host Count | VM Count |
+----+--------------+------------+--------------------+------------+----------+
| 1  | 10.24.85.111 | 4.0.1662.0 | Completed Discovery | 4         | 13       |
+----+--------------+------------+--------------------+------------+----------+
SCVMM Server Details
--- Time Elapsed: 99.048181ms ---
```

efa scvmm register

The command to register Microsoft SCVMM server as a tenant with the XCO instance. Tenant details must be registered before running this command.

Syntax

efa scvmm register --host *string* **--username** *string* **--password** *string* **-- tenant** *string*

Command Default

This command has no defaults.

Parameters

--host *string*

The IP address or hostname of the Microsoft SCVMM server to register as a tenant of XCO.

--username *string*

User name to connect to the SCVMM server

--password *string*

Password to connect to the SCVMM server

--tenant *string*

Tenant associated with the SCVMM server host

Examples

This example registers a Microsoft SCVMM server as a tenant with XCO Hyper-V service.

```
$ efa scvmm register --host 10.24.85.111 --username administrator@mshyperv.local --
password 'aBc123#' --tenant tenant-10.24.85.111
```

efa scvmm delete

Deletes the Microsoft SCVMM server registered as a tenant with this XCO instance. When the *--cleanup_epgs* parameter is supplied, deletes the EPGs configured for the Microsoft SCVMM tenant.

Syntax

efa scvmm delete --host *string* [**--cleanup_epgs**]

Parameters

--host *string*

IP address or host name of the SCVMM server to connect to

--cleanup_epgs

When included, the EPGs associated with the Microsoft SCVMM server are deleted. When not included, the EPGs associated with the Microsoft SCVMM server are not removed when the server is removed.

Examples

This example deletes the Microsoft SCVMM server with host IP 10.24.85.111 while retaining the associated tenants and EPGs.

```
$ efa scvmm delete --host 10.24.85.111
```

This example deletes the Microsoft SCVMM server with host IP 10.24.85.111 and removes the associated tenants and EPGs too.

```
$ efa scvmm delete --host 10.24.85.111 --cleanup_epgs
```

efa scvmm list

Lists the Microsoft SCVMM servers registered as tenants. If the *--host* parameter is supplied, lists the Microsoft Hyper-V hosts managed by the Microsoft SCVMM server with the specified IP address.

Syntax

efa scvmm list [**--host** *string*]

Parameters

--host *string*

IP address or host name of the SCVMM server to connect to

Examples

This example lists a Microsoft SCVMM server that has just been added as a tenant with this XCO instance.

```
ubuntu@ubuntu:~$ efa scvmm list

+----+--------------+-----------+------------------+------------+----------+
| ID | Host Name    | Version   | Discovery Status | Host Count | VM Count |
+----+--------------+-----------+------------------+------------+----------+
| 1  | 10.24.85.111 | 4.0.1662.0 | Pending Discovery | 4         | 13       |
+----+--------------+-----------+------------------+------------+----------+
SCVMM Server Details
--- Time Elapsed: 99.048181ms ---
```

This example lists a Microsoft SCVMM server with its status updated to this XCO instance.

```
ubuntu@ubuntu:~$ efa scvmm list

+----+--------------+-----------+--------------------+------------+----------+
| ID | Host Name    | Version   | Discovery Status   | Host Count | VM Count |
+----+--------------+-----------+--------------------+------------+----------+
| 1  | 10.24.85.111 | 4.0.1662.0 | Completed Discovery | 4         | 13       |
+----+--------------+-----------+--------------------+------------+----------+
SCVMM Server Details
--- Time Elapsed: 99.048181ms ---
```

This example lists the Microsoft Hyper-V hosts managed by the Microsoft SCVMM server with IP address 10.24.81.10.

```
$ efa scvmm list --host 10.24.81.10
```

efa scvmm update

Updates the local database with configuration changes made to the Microsoft SCVMM server tenants and the Hyper-V hosts managed by them.

Syntax

efa scvmm update --host *string* **--username** *string* **--password** *string*

Command Default

This command has no defaults.

Parameters

--host *string*

IP address or hostname of the Microsoft SCVMM server from which the local XCO Hyper-V service database needs to be updated.

--host *string*

IP address or host name of the SCVMM server to connect to

--password *string*

Password to connect to the SCVMM server

Examples

This example updates the local XCO Hyper-V service database with the latest state of the Microsoft SCVMM server with the IP address 10.24.85.111.

```
$ efa scvmm update --host 10.24.85.111 --username administrator@mshyperv.local --password
'aBc123#'
```

efa scvmm links

Displays the links for Microsoft SCVMM tenants and their Microsoft Hyper-V hosts. For Microsoft SCVMM server tenants, only physical links are displayed. For Microsoft Hyper-V hosts, physical and virtual links are displayed.

Syntax

efa scvmm links physical { **--host** *string* | **--hyperv** *string* }

efa scvmm links virtual --hyperv *string*

Parameters

physical

Displays the physical links for the selected device. The device can be a Microsoft SCVMM server or a Hyper-V server.

virtual

Displays the virtual links created on a Microsoft Hyper-V server

--host *string*

The IP address or host name of the Microsoft SCVMM server for which to view the physical links

--hyperv *string*

The IP address or host name of the Microsoft Hyper-V host for which to view the physical and virtual links

Examples

This example lists the Microsoft Hyper-V devices managed by the SCVMM server with the IP 10.24.85.111.

```
ubuntu@ubuntu:~$ efa scvmm links physical --host 10.24.85.111

Physical Links for SCVMM server 10.24.85.111
+--------------+-------------+-----------+-------------------+--------------+-----------+
| SCVMM Server | HyperV Host | PNIC Name | PNIC MAC          | Interface    | Device    |
+--------------+-------------+-----------+-------------------+--------------+-----------+
| 10.24.85.111 | 10.24.81.10 | vmnic3    | 40:f2:e9:bb:4c:83 | Ethernet 0/10 | 10.9.9.20
|
+--------------+-------------+-----------+-------------------+--------------+-----------+
| 10.24.85.111 | 10.24.82.20 | vmnic3    | 40:f2:e9:bb:58:b2 | Ethernet 0/10 | 10.9.9.30
|
+--------------+-------------+-----------+-------------------+--------------+-----------+
Physical Link Details
--- Time Elapsed: 19.922038ms ---
```

This example lists virtual machines and their virtual links on the Hyper-V host with the IP 10.24.81.10.

```
ubuntu@ubuntu:~$ efa scvmm links virtual --hyperv 10.24.81.10

Virtual Links for Hyper-V host 10.24.81.10
+------------+---------+----------+-------------+---------------+--------------------
```

```
+
| HyperV Host | VM Name | VNIC MAC | VSwitch Name | VMNetwork Name | Logical Network Name
|
+-------------+---------+----------+--------------+----------------+---------------------
+

Virtual Link Details
--- Time Elapsed: 9.66121ms ---
```

efa scvmm settings

A set of commands for viewing and configuring XCO Hyper-V settings

Syntax

efa scvmm settings update --poll-frequency *string*

efa scvmm settings show

Command Default

This command has no defaults.

Parameters

update

Updates the poll frequency value used when polling the Microsoft SCVMM servers registered as tenants of this XCO instance. This is a global value and is applicable to all the SCVMM tenants.

show

Displays the configured poll frequency value for this XCO instance

--poll-frequency *string*

The polling frequency value in hours. Enter a value in the range 1-24 hours.

Examples

This example configures the poll frequency to five (5) hours.

```
ubuntu@ubuntu:~$ efa scvmm settings update --poll-frequency 5
SCVMM service settings updated successfully
--- Time Elapsed: 41.740442ms ---
```

This example shows the current configuration of the poll frequency setting.

```
ubuntu@ubuntu:~$ efa scvmm settings show

SCVMM Service Settings
+--------------------+
| Poll Frequency Hours |
+--------------------+
| 5                  |
+--------------------+
Setting Details
--- Time Elapsed: 5.942588ms ---
```