

Solución de problemas de la red IMM en el dominio UCS con el Explorador de API y NXOS

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Introducción

Este documento describe el análisis de la conectividad de red o la vida útil del paquete para un dominio de Unified Computing System (UCS) en el modo administrado de Intersight e identifica la conexión interna de los servidores con los comandos API Explorer y NXOS.

Colaborado por Luis Uribe, ingeniero del TAC de Cisco.

Prerequisites

Requirements

Cisco recomienda que tenga conocimiento sobre estos temas:

- Intersight
- Conectividad de red física
- Interfaz de programación de aplicaciones (API)

Componentes Utilizados

La información que contiene este documento se basa en las siguientes versiones de software y hardware.

- Fabric Interconnect Cisco UCS 6454, firmware 4.2(1e)
- Servidor blade UCSB-B200-M5, firmware 4.2(1a)
- Software de interconexión como servicio (SaaS)

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. Si tiene una red en vivo, asegúrese de entender el posible impacto de cualquier comando.

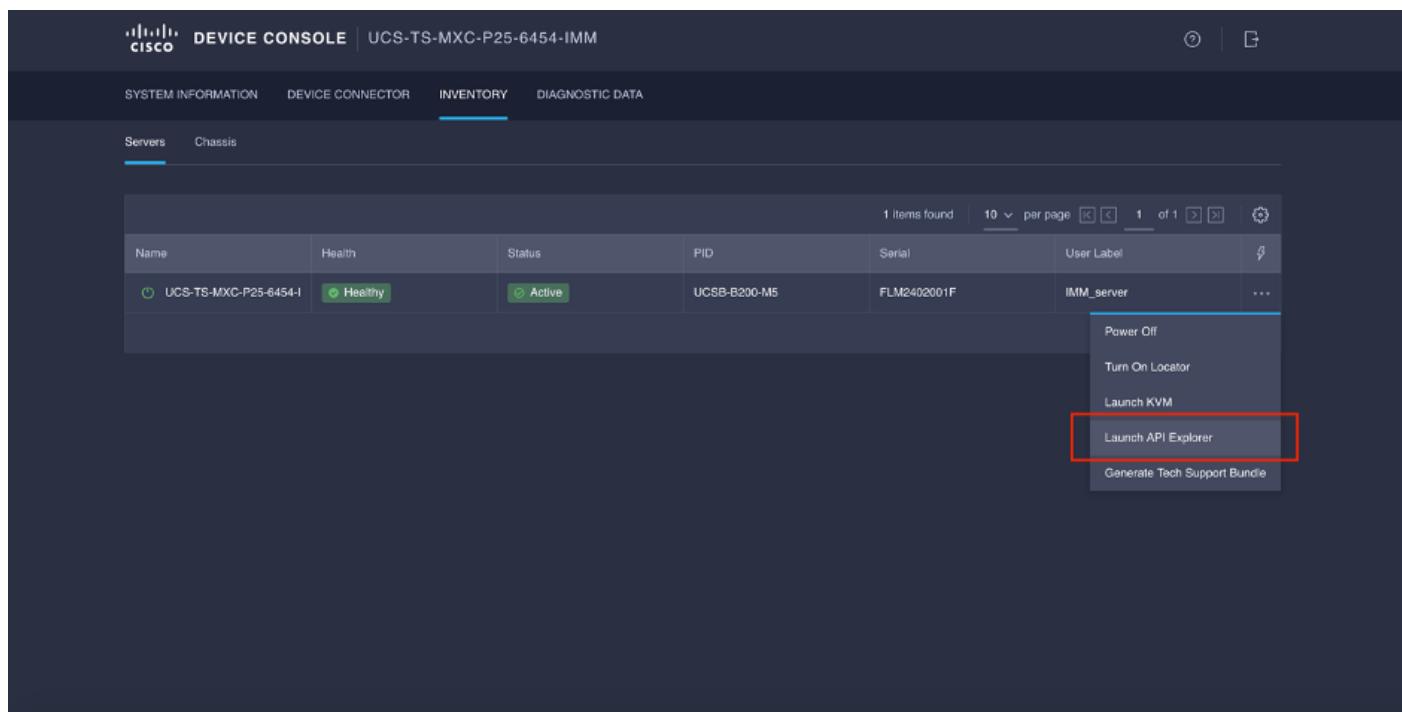
Antecedentes

La conexión entre Fabric Interconnects y Virtual Network Interface (vNIC) se establece a través de circuitos virtuales, llamados Virtual Interface (VIF). Tales VIF están anclados a enlaces ascendentes y permiten la comunicación con la red ascendente

En el Modo administrado de Intersight no hay ningún comando que mapee las interfaces virtuales con cada servidor como **show service-profile circuit**. Los comandos API Explorer/NXOS se pueden utilizar para determinar la relación de los circuitos internos creados dentro del dominio UCS.

Explorador de API

API Explorer está disponible en la interfaz gráfica de usuario (GUI) de cualquiera de los fabric interconnects (principal o subordinado). Una vez que haya iniciado sesión en la consola, vaya a Inventory (Inventario), seleccione el servidor y, a continuación, haga clic en Launch API Explorer (Iniciar el Explorador de API).



The screenshot shows the Cisco Device Console interface. At the top, it displays "DEVICE CONSOLE | UCS-TS-MXC-P25-6454-IMM". Below the header, there are tabs for "SYSTEM INFORMATION", "DEVICE CONNECTOR", "INVENTORY" (which is selected and highlighted in blue), and "DIAGNOSTIC DATA". Under the "INVENTORY" tab, there are sub-tabs for "Servers" (selected) and "Chassis". The main area shows a table with one item found. The table columns are: Name, Health, Status, PID, Serial, and User Label. The single row contains: UCS-TS-MXC-P25-6454-I, Healthy, Active, UCSB-B200-M5, FLM2402001F, and IMM_server. To the right of the table is a context menu with several options: Power Off, Turn On Locator, Launch KVM, Launch API Explorer (this option is highlighted with a red box), and Generate Tech Support Bundle.

El Explorador de la API contiene una Referencia de la API, que muestra las llamadas disponibles. También incluye una interfaz de cliente de transferencia de estado representacional (REST) para probar las llamadas de API.

The screenshot shows the Cisco API Explorer interface with the REST Client panel highlighted by a red box. The REST Client panel displays a GET request to /redfish/v1/AccountService, a Send button, Response Text (containing '1'), and Response Info.

API Reference v2019.2

GET

Response Model

AccountService

- GET** AccountService
- PATCH** AccountService
- PUT** AccountService

AccountService/Accounts

AccountService/ActiveDirectory/Certi...

AccountService/ExternalAccountPro...

AccountService/LDAP/Certificates

AccountService/Roles

CertificateService

CertificateService/Actions/Certificate...

CertificateService/Actions/Certificate...

CertificateService/CertificateLocations

Chassis

REST Client

GET /redfish/v1/AccountService

Send

Response Text **Response Info**

```
1
```

Identificación de VIF mediante llamadas API

Puede utilizar un conjunto de llamadas API para determinar qué VIF corresponde a cada vNIC virtual. Esto le permite resolver problemas de NXOS de manera más eficaz.

A los efectos de este documento, la navegación con llamadas API se realiza a través de estos elementos: Chasis, servidor, adaptador de red, vNIC/vHBA.

Llamada de API

ID del chasis GET

ID del adaptador GET

GET Network details (lista de vnics/vhbas)

Funciones de dispositivos de red GET (configuración vNIC)

Sintaxis

/redfish/v1/Chassis

/redfish/v1/Chassis/{ChassisId}/Network

Adapters

/redfish/v1/Chassis/{ChassisId}/Network
Adapters/{NetworkAdapterId}

/redfish/v1/Chassis/{ChassisId}/NetworkAdapters/{NetworkAdapterId}/NetworkDeviceFunctions

Recuperar ID del chasis

The screenshot shows the Cisco API Explorer interface with the REST Client tab selected. On the left, a sidebar lists various service endpoints like AccountService, AccountService/Accounts, and CertificateService. The main area displays the Response Model for the GET request to /redfish/v1/Chassis. The response includes properties such as @odata.context, @odata.etag, @odata.id, @odata.type, Description, Members, and Name. Below the response model, a code editor shows the JSON structure of the response, which includes a collection of chassis objects with their respective IDs and names. A red arrow points to the ID of the first chassis object in the list.

```
1  {
2     "@odata.context": "/redfish/v1/$metadata#ChassisCollection.ChassisCollection",
3     "@odata.id": "/redfish/v1/Chassis",
4     "@odata.type": "#ChassisCollection.ChassisCollection",
5     "Description": "Collection of Chassis",
6     "Members": [
7         {
8             "@odata.id": "/redfish/v1/Chassis/F1M2402001F"
9         },
10        {
11            "@odata.id": "/redfish/v1/Chassis/1"
12        }
13    ],
14    "Members@odata.count": 2,
15    "Name": "Chassis Collection"
16 }
```

Copie el ID del chasis para la llamada de la API.

/redfish/v1/Chassis/FLM2402001F

Recuperar la ID del adaptador de red

The screenshot shows the Cisco API Explorer interface. On the left, there's a sidebar with various API endpoints for Chassis, NetworkAdapters, and NetworkDeviceFunctions. In the center, a 'REST Client' section is open for the GET request to '/redfish/v1/Chassis/{ChassisId}/NetworkAdapters'. The 'Parameters' tab is selected, showing 'ChassisId' as a required string parameter. The 'Response Model' tab shows a JSON schema for the response. Below the parameters, the URL is expanded to '/redfish/v1/Chassis/FLM2402001F/NetworkAdapters'. The 'Send' button is highlighted in blue. To the right, the response is shown as a 200 Success status with a JSON payload. A red arrow points from the 'Members' field in the JSON response to the 'Members' field in the 'Response Text' section below it.

```
1  "@odata.context": "/redfish/v1/$metadata#NetworkAdapterCollection.NetworkAdapterCollection",
2  "@odata.id": "/redfish/v1/Chassis/FLM2402001F/NetworkAdapters",
3  "@odata.type": "#NetworkAdapterCollection.NetworkAdapterCollection",
4  "Description": "Collection of NetworkAdapter resource instances for this system",
5  "Members": [
6    {
7      "@odata.id": "/redfish/v1/Chassis/FLM2402001F/NetworkAdapters/UCSB-MLOM-40G-04_FCH23527C67"
8    }
9  ],
10 },
11 "Members@odata.count": 1,
12 "Name": "NetworkAdapter Collection"
```

Copie el ID de red para la próxima llamada de API.

/redfish/v1/Chassis/FLM2402001F/NetworkAdapters/UCSB-MLOM-40G-04_FCH23527C67

Recuperar ID vNIC

The screenshot shows the Cisco API Explorer interface. On the left, there's a sidebar with various API endpoints for Chassis, NetworkAdapters, and NetworkDeviceFunctions. In the center, a 'REST Client' section is open for the GET request to '/redfish/v1/Chassis/{ChassisId}/NetworkAdapters/{NetworkAdapterId}'. The 'Parameters' tab is selected, showing 'ChassisId' and 'NetworkAdapterId' as required string parameters. The 'Response Model' tab shows a JSON schema for the response. Below the parameters, the URL is expanded to '/redfish/v1/Chassis/FLM2402001F/NetworkAdapters/UCSB-MLOM-40G-04_FCH23527C67'. The 'Send' button is highlighted in blue. To the right, the response is shown as a 200 Success status with a JSON payload. A red box highlights the 'NetworkDeviceFunctions' section of the JSON response, which contains multiple entries for different vNICs (A, B, and C).

```
3  "@odata.id": "/redfish/v1/Chassis/FLM2402001F/NetworkAdapters/UCSB-MLOM-40G-04_FCH23527C67",
4  "@odata.type": "#NetworkAdapter.v1_2_0.NetworkAdapter",
5  "Actions": {
6    "NetworkAdapter.ResetSettingsToDefault": {
7      "target": "/redfish/v1/Chassis/FLM2402001F/NetworkAdapters/UCSB-MLOM-40G-04_FCH23527C67/Actions/NetworkAdapter.ResetSettingsToDefault"
8    }
9  },
10 "Controllers": [
11   {
12     "ControllerCapabilities": {
13       "NetworkDeviceFunctionCount": 4,
14       "NetworkPortCount": 2
15     },
16     "FirmwarePackageVersion": "5.2(1a)",
17     "Links": {
18       "NetworkDeviceFunctions": [
19         {
20           "@odata.id": "/redfish/v1/Chassis/FLM2402001F/NetworkAdapters/UCSB-MLOM-40G-04_FCH23527C67/NetworkDeviceFunctions/Vnic-A"
21        },
22        {
23           "@odata.id": "/redfish/v1/Chassis/FLM2402001F/NetworkAdapters/UCSB-MLOM-40G-04_FCH23527C67/NetworkDeviceFunctions/Vnic-B"
24        },
25        {
26           "@odata.id": "/redfish/v1/Chassis/FLM2402001F/NetworkAdapters/UCSB-MLOM-40G-04_FCH23527C67/NetworkDeviceFunctions/vhba-a"
27        },
28        {
29           "@odata.id": "/redfish/v1/Chassis/FLM2402001F/NetworkAdapters/UCSB-MLOM-40G-04_FCH23527C67/NetworkDeviceFunctions/vhba-b"
30        }
31      ],
32      "NetworkDeviceFunctions@odata.count": 4,
33      "NetworkPorts": [
34        {
35          "@odata.id": "/redfish/v1/Chassis/FLM2402001F/NetworkAdapters/UCSB-MLOM-40G-04_FCH23527C67/NetworkPorts/Port-1"
36        },
37        {
38          "@odata.id": "/redfish/v1/Chassis/FLM2402001F/NetworkAdapters/UCSB-MLOM-40G-04_FCH23527C67/NetworkPorts/Port-2"
39        }
40      ],
41      "NetworkPorts@odata.count": 2
42    }
43  ],
44  "NetworkDeviceFunctions@odata.count": 4,
45  "NetworkPorts": [
46    {
47      "@odata.id": "/redfish/v1/Chassis/FLM2402001F/NetworkAdapters/UCSB-MLOM-40G-04_FCH23527C67/NetworkPorts/Port-1"
48    },
49    {
50      "@odata.id": "/redfish/v1/Chassis/FLM2402001F/NetworkAdapters/UCSB-MLOM-40G-04_FCH23527C67/NetworkPorts/Port-2"
51    }
52  ],
53  "NetworkPorts@odata.count": 2
```

Copie la ID del adaptador de red.

/redfish/v1/Chassis/FLM2402001F/NetworkAdapters/UCSB-MLOM-40G-

04_FCH23527C67/NetworkDeviceFunctions/Vnic-A

/redfish/v1/Chassis/FLM2402001F/NetworkAdapters/UCSB-MLOM-40G-

04_FCH23527C67/NetworkDeviceFunctions/Vnic-B

Recuperar el ID de VIF del vNIC correspondiente

The screenshot shows the Cisco API Explorer interface. On the left, there's a sidebar with a search bar and a list of API endpoints categorized by method (POST, GET, PATCH, PUT, DELETE) and resource path. The main area is titled 'REST Client' with a 'GET' button. Below it, there are three tabs: 'Parameters', 'Response Model', and 'API Reference'. Under 'Parameters', there are three fields: 'ChassisId' (string), 'NetworkAdapterId' (string), and 'NetworkDeviceFunctionId' (string). Each field has a description and a 'path' indicator. To the right, the 'Response Model' tab is selected, showing a JSON code block for the GET /redfish/v1/Chassis/{ChassisId}/NetworkAdapters/{NetworkAdapterId}/NetworkDeviceFunctions/{NetworkDeviceFunctionId} endpoint. A red box highlights the 'VifId' field in the JSON response.

En este caso, vNIC-A se mapea a **VIF 800**. Desde aquí, los comandos NXOS contienen esta interfaz virtual.

Identificación de VIF con NXOS y Filtros Grep

Si el Explorador de API no está disponible o no tiene acceso a la GUI, se pueden utilizar comandos CLI para recuperar información de VIF.

Nota: Debe conocer el perfil del servidor para utilizar estos comandos.

```
UCS-TS-MXC-P25-6454-IMM-A(nx-os)# show run interface | grep prev 1 IMM-Server-1
switchport trunk allowed vsan 1
switchport description SP IMM-Server-1, vhBA vhba-a, Blade:FLM2402001F
--
interface Vethernet800
description SP IMM-Server-1, vNIC Vnic-A, Blade:FLM2402001F
--
interface Vethernet803
description SP IMM-Server-1, vNIC Vnic-b, Blade:FLM2402001F
--
interface Vethernet804
description SP IMM-Server-1, vhBA vhba-a, Blade:FLM2402001F
```

Sintaxis del comando

show run interface | grep prev 1 <nombre del perfil del servidor>

show run interface | grep prev 1 next 10 <server profile name>

Uso

Muestra las redes asociadas a cada vNIC/vHBA

Muestra la configuración detallada de Ethernet

Solución de problemas de NXOS

Una vez que el vNIC se ha asignado a la Ethernet correspondiente, se puede realizar un análisis en NXOS con los mismos comandos que se utilizan para resolver problemas de interfaces físicas.

La notación para vNIC es veth - Vethernet.

show interface brief muestra Veth800 en estado descendente con ENM Source Pin Failure como la razón.

```
UCS-TS-MXC-P25-6454-IMM-A# connect nxos UCS-TS-MXC-P25-6454-IMM-A(nx-os)# show interface brief | grep -i Veth800 Veth800 1 virt trunk down ENM Source Pin Fail auto
```

show interface muestra que la Ethernet 800 está en un **estado de inicialización**.

```
UCS-TS-MXC-P25-6454-IMM-A(nx-os) # show interface Vethernet 800 Vethernet800 is down
(initializing) Port description is SP IMM-Server-1, vNIC Vnic-A, Blade:FLM2402001F Hardware is
Virtual, address is 0000.abcd.dcba Port mode is trunk Speed is auto-speed Duplex mode is auto
300 seconds input rate 0 bits/sec, 0 packets/sec 300 seconds output rate 0 bits/sec, 0
packets/sec Rx 0 unicast packets 0 multicast packets 0 broadcast packets 0 input packets 0 bytes
0 input packet drops Tx 0 unicast packets 0 multicast packets 0 broadcast packets 0 output
packets 0 bytes 0 flood packets 0 output packet drops UCS-TS-MXC-P25-6454-IMM-A(nx-os) # show
running-config interface Vethernet 800 !Command: show running-config interface Vethernet800
!Running configuration last done at: Mon Sep 27 16:03:46 2021 !Time: Tue Sep 28 14:35:22 2021
version 9.3(5)I42(1e) Bios:version 05.42 interface Vethernet800 description SP IMM-Server-1,
vNIC Vnic-A, Blade:FLM2402001F no lldp transmit no lldp receive no pinning server sticky pinning
server pinning-failure link-down no cdp enable switchport mode trunk switchport trunk allowed
vlan 1,470 hardware vethernet mac filtering per-vlan bind interface port-channel1280 channel 800
service-policy type qos input default-IMM-QOS no shutdown
```

Un VIF necesita estar anclado a una interfaz de link ascendente, en este escenario **show pinning border interface** no muestra el Vethernet conectado a ningún link ascendente.

```
UCS-TS-MXC-P25-6454-IMM-A(nx-os)# show pinning border-interfaces -----+-----  
+----- Border Interface Status SIFs -----+-----  
----- Eth1/45 Active sup-eth1 Eth1/46 Active Eth1/1/33
```

Esto indica que los enlaces ascendentes requieren configuración adicional. Esta salida corresponde a la **configuración show running** del link ascendente Ethernet 1/46.

```
UCS-TS-MXC-P25-6454-IMM-B(nx-os) # show running-config interface ethernet 1/45 !Command: show running-config interface Ethernet1/45 !No configuration change since last restart !Time: Wed Sep 29 05:15:21 2021 version 9.3(5)I42(1e) Bios:version 05.42 interface Ethernet1/45 description Uplink pinning border switchport mode trunk switchport trunk allowed vlan 69,470 no shutdown
```

show mac address-table detalla que Veth800 utiliza VLAN 1 que no está presente en los links ascendentes.

En un dominio UCS, la VLAN en uso se debe incluir también en el vNIC y en los enlaces ascendentes. La política de VLAN configura las VLAN en los fabric interconnects. La imagen muestra la configuración de este dominio UCS.

CONFIGURE > Policies > vLans-IMM

Details

Name	Description	Type	Usage	Last Update
vLans-IMM	-	VLAN	4	Jul 19, 2021 5:43 PM

Usage

Name	Status	Platform Type	Type	Device Name	Last Update
IMM-Domain-B	OK	UCS Domain	Profile	UCS-T5-MXC-P25	Aug 24, 2021 6:2...
IMM-Domain-A	OK	UCS Domain	Profile	UCS-T5-MXC-P25	Aug 24, 2021 6:2...
IMM-Was-M6-B	OK	UCS Domain	Profile	UCS-T5-MXC-P25	Jul 27, 2021 8:1...
IMM-Was-M6-A	OK	UCS Domain	Profile	UCS-T5-MXC-P25	Jul 27, 2021 8:1...

Configuration

VLAN ID	Name / Prefix	Multicast	Auto Allow On Uplinks
69	VLAN_vMotion	multicast-IMM	Yes
470	VLAN_470	multicast-IMM	Yes

Native VLAN ID

La VLAN 1 no está presente en la política, por lo que se debe agregar.

Seleccione **Editar política** para permitir la conectividad. Este cambio requiere la implementación del perfil de dominio de UCS.

CONFIGURE > Policies > VLAN > vLans-IMM > Edit

Progress

- General
- Policy Details

This policy is applicable only for UCS Domains

Step 2
Policy Details
Add policy details

This policy is associated with Profile(s). Redeploy the associated profile(s) for these changes to take effect.

VLANs

Multicast	Auto Allow On Uplinks
multicast-IMM	Yes
multicast-IMM	Yes
multicast-IMM	Yes

Set Native VLAN ID

< Back Cancel Update

La asignación de VLAN se puede verificar mediante CLI:

```
UCS-TS-MXC-P25-6454-IMM-A(nx-os)# show running-config interface ethernet 1/45 !Command: show
running-config interface Ethernet1/45 !Running configuration last done at: Wed Sep 29 07:50:43
2021 !Time: Wed Sep 29 07:59:31 2021 version 9.3(5)I42(1e) Bios:version 05.42 interface
Ethernet1/45 description Uplink pinning border switchport mode trunk switchport trunk allowed
vlan 1,69,470 udld disable no shutdown UCS-TS-MXC-P25-6454-IMM-A(nx-os) #
```

Ahora que se agregan las VLAN necesarias, se puede utilizar el mismo conjunto de comandos para verificar la conectividad en Vethernet800:

```
UCS-TS-MXC-P25-6454-IMM-A(nx-os)# show interface brief | grep -i Veth800 Veth800 1 virt trunk up
none auto UCS-TS-MXC-P25-6454-IMM-A(nx-os)# show interface Vethernet 800 Vethernet800 is up Port
description is SP IMM-Server-1, vNIC Vnic-A, Blade:FLM2402001F Hardware is Virtual, address is
0000.abcd.dcba Port mode is trunk Speed is auto-speed Duplex mode is auto 300 seconds input rate
0 bits/sec, 0 packets/sec 300 seconds output rate 0 bits/sec, 0 packets/sec Rx 0 unicast packets
1 multicast packets 6 broadcast packets 7 input packets 438 bytes 0 input packet drops Tx 0
unicast packets 25123 multicast packets 137089 broadcast packets 162212 output packets 11013203
bytes 0 flood packets 0 output packet drops UCS-TS-MXC-P25-6454-IMM-A(nx-os) # show running-
config interface Vethernet 800 !Command: show running-config interface Vethernet800 !Running
configuration last done at: Wed Sep 29 07:50:43 2021 !Time: Wed Sep 29 07:55:51 2021 version
9.3(5)I42(1e) Bios:version 05.42 interface Vethernet800 description SP IMM-Server-1, vNIC Vnic-
A, Blade:FLM2402001F no lldp transmit no lldp receive no pinning server sticky pinning server
pinning-failure link-down switchport mode trunk switchport trunk allowed vlan 1,69,470 hardware
vethernet mac filtering per-vlan bind interface port-channel1280 channel 800 service-policy type
qos input default-IMM-QOS no shutdown
```

Veth800 aparece en las interfaces fijadas a las interfaces Ethernet de enlace ascendente:

```
UCS-TS-MXC-P25-6454-IMM-A(nx-os)# show pinning border-interfaces -----
+-----+-----+-----+-----+-----+-----+
|-----+-----+-----+-----+-----+-----+
|----- Border Interface Status SIFs -----+-----+
|-----+-----+-----+-----+-----+-----+
|----- Eth1/45 Active sup-eth1 Veth800 Veth803 Eth1/46
Active Eth1/1/33 Total Interfaces : 2 UCS-TS-MXC-P25-6454-IMM-A(nx-os) #
```

Las VIF ya están listas para transmitir tráfico a la red ascendente.

Información Relacionada

- [Perfiles de Dominio en Intersight](#)
- [Perfiles de servidor en Intersight](#)
- [Políticas de dominio en perspectiva](#)
- [Soporte Técnico y Documentación - Cisco Systems](#)