

# 使用API Explorer和NXOS排除UCS域上的IMM網路故障

## 目錄

[簡介](#)

[必要條件](#)

[需求](#)

[採用元件](#)

[背景資訊](#)

[API資源管理器](#)

[通過API呼叫識別VIF](#)

[使用NXOS和Grep過濾器識別VIF](#)

[NXOS疑難排解](#)

[相關資訊](#)

## 簡介

本文檔介紹在Intersight管理模式下對統一計算系統(UCS)域的網路連線或資料包壽命的分析，並使用API資源管理器和NXOS命令確定伺服器的內部連線。

作者：Luis Uribe，思科TAC工程師。

## 必要條件

### 需求

思科建議您瞭解以下主題：

- Intersight
- 物理網路連線
- 應用程式開發介面(API)

### 採用元件

本文中的資訊係根據以下軟體和硬體版本：

- Cisco UCS 6454交換矩陣互聯，韌體4.2(1e)
- UCSB-B200-M5刀鋒伺服器，韌體4.2(1a)
- Intersight軟體即服務(SaaS)

本文中的資訊是根據特定實驗室環境內的裝置所建立。文中使用到的所有裝置皆從已清除（預設）的組態來啟動。如果您的網路運作中，請確保您瞭解任何指令可能造成的影響。

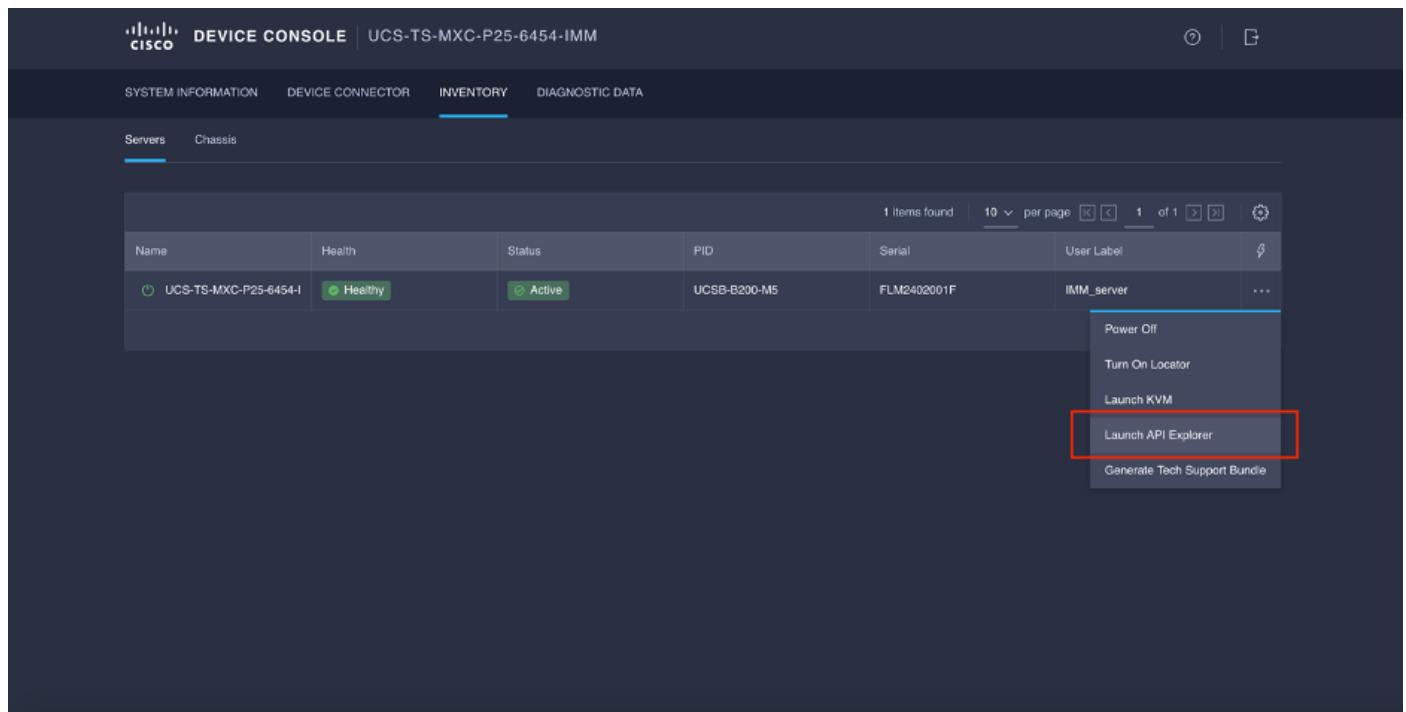
## 背景資訊

交換矩陣互聯和虛擬網路介面(vNIC)之間的連線是通過稱為虛擬介面(VIF)的虛擬電路建立的。這種VIF被固定到上行鏈路並允許與上游網路通訊

在Intersight託管模式下，沒有命令將虛擬介面對映到每個伺服器，例如**show service-profile circuit**。API Explorer/NXOS命令可用於確定UCS域內建立的內部電路之間的關係。

## API資源管理器

API資源管理器可從任一交換矩陣互聯（主或從級）的圖形使用者介面(GUI)中獲得。登入到控制檯後，導航到清單，選擇伺服器，然後按一下Launch API Explorer。



API資源管理器包含一個API引用，其中列出了可用的呼叫。它還包括用於測試API呼叫的表示性狀態傳輸(REST)客戶端介面。

A screenshot of the API Explorer interface. At the top, it says 'API EXPLORER' and 'UCS-TS-MXC-P25-6454-IMM-1-1 (Server)'. Below that is a sidebar with 'API Reference v2019.2' and a tree view of resources like 'AccountService', 'AccountService/Accounts', etc. On the right, there's a 'REST Client' section with a 'GET /redfish/v1/AccountService' button. A red box highlights this section. Below it is a 'Response Text' field containing the number '1'.

## 通過API呼叫識別VIF

您可以使用一組API呼叫來確定與每個虛擬vNIC對應的VIF。這使您可以更有效地對NXOS進行故障排除。

對於本文檔而言，使用API呼叫導航是通過以下專案完成的：機箱、伺服器、網路介面卡、vNIC/vHBA。

#### API呼叫

獲取機箱ID

獲取介面卡ID

GET 網路詳細資訊 ( vNIC/VHBA 清單 )

GET 網路裝置功能 ( vNIC 配置 )

#### 語法

/redfish/v1/Chassis

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

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

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

## 檢索機箱ID

The screenshot shows the Cisco API Explorer interface. On the left, the navigation pane lists various service endpoints like AccountService, CertificateService, and CertificateService/Actions. In the center, a detailed view of the 'Chassis' endpoint is shown, including its OData schema and response model. On the right, a REST Client window displays the results of a GET request to '/redfish/v1/Chassis'. The response is a JSON object representing a chassis collection, with a red arrow pointing to the 'Members' field.

```
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/FLM2402001F"
9          },
10         {
11             "@odata.id": "/redfish/v1/Chassis/1"
12         }
13     ],
14     "Members@odata.count": 2,
15     "Name": "Chassis Collection"
16 }
```

## 複製API呼叫的機箱ID。

/redfish/v1/Chassis/FLM2402001F

## 檢索網路介面卡ID

API Reference v2019.2

REST Client

GET /redfish/v1/Chassis/{ChassisId}/NetworkAdapters

ChassisId ( string ) path

The value of the Id property of the Chassis resource

```

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"
13

```

複製下一個API呼叫的網路ID。

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

檢索vNIC ID

API Reference v2019.2

REST Client

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

ChassisId ( string ) path

The value of the Id property of the Chassis resource

NetworkAdapterId ( string ) path

The value of the Id property of the NetworkAdapter resource

```

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       "NetworkServiceFunctionCount": 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

```

複製網路介面卡ID。

/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

檢索對應vNIC的VIF ID

The screenshot shows the Cisco API Explorer interface. On the left, there's a sidebar with various API endpoints listed under categories like Chassis, NetworkAdapters, and NetworkDeviceFunctions. The main area shows a 'GET' request to the specified URL. The 'Parameters' section defines three path variables: 'ChassisId' (string), 'NetworkAdapterId' (string), and 'NetworkDeviceFunctionId' (string). The 'Response Model' section shows the JSON schema for the response, which includes fields like 'VifCookie', 'VifId', and 'VifState'. A red box highlights the 'Vif' section of the JSON response body.

在這種情況下，vNIC-A對映到VIF 800。在此處，NXOS命令包含此虛擬介面。

## 使用NXOS和Grep過濾器識別VIF

如果API Explorer不可用，或者您對GUI沒有訪問許可權，則可以使用CLI命令檢索VIF資訊。

**附註：**您必須知道伺服器配置檔案才能使用這些命令。

```
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
```

### 指令語法

使用

show run interface | grep prev 1 <伺服器配置檔名稱>

列出與每個vNIC/vHBA關聯的子網

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

列出詳細的Vethernet配置

## NXOS疑難排解

vNIC對映到對應的Vethernet後，可以使用用於排除物理介面故障的相同命令對NXOS進行分析。

vNIC的記法是veth - Vethernet。

**show interface brief**顯示Veth800處於關閉狀態，原因是ENM Source Pin Failure。

```
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**顯示Vethernet 800處於初始化狀態。

```
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
```

需要將VIF固定至上行鏈路介面，在這種情況下，**show pinning border interface**不會顯示固定至任何上行鏈路的乙太網。

```
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
```

這表示上行鏈路需要額外的配置。此輸出與**show running configuration of Ethernet Uplink 1/46**相對應。

```
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 details that Veth800使用VLAN 1，而上行鏈路上不存在該VLAN 1。
```

```
UCS-TS-MXC-P25-6454-IMM-A(nx-os)# show mac address-table Legend: * - primary entry, G - Gateway
MAC, (R) - Routed MAC, O - Overlay MAC age - seconds since last seen,+ - primary entry using vPC
Peer-Link, (T) - True, (F) - False, C - ControlPlane MAC, ~ - vsan VLAN MAC Address Type age
Secure NTFY Ports -----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
* 1 0025.b501.0036 static - F F Veth800
```

在UCS域中，vNIC和上行鏈路上也必須包括正在使用的VLAN。VLAN策略在交換矩陣互聯上配置VLAN。該圖顯示了此UCS域的配置。

Cisco Intersight CONFIGURE > Policies > VLANs-IMM

Details		Usage		Configuration	
Name	vlan-IMM	4 items found	10 per page	VLAN ID 69	VLAN_ID_69
Description	-			Name / Prefix	VLAN_vMotion
Type	VLAN			Multicast	multicast-IMM
Usage	4			Auto Allow On Uplinks	Yes
Last Update	Jul 19, 2021 5:43 PM			VLAN ID 470	VLAN_470
Organization	default			Name / Prefix	VLAN_470
Tags	No Tags			Multicast	multicast-IMM
Set				Auto Allow On Uplinks	Yes

**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...

**Native VLAN ID**

策略上不存在VLAN 1，因此必須新增它。

選擇Edit Policy以允許連線。此更改需要部署UCS域配置檔案。

Cisco Intersight CONFIGURE > Policies > VLAN > vlan-IMM > Edit

**Progress**

- General
- Policy Details

**Step 2 Policy Details**

This policy is applicable only for UCS Domains.

**VLANs**

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

**Cancel** **Save**

Set Native VLAN ID

**Update**

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

Name	Status	Fabric Interconnect A	Fabric Interconnect B	Last Update
IMM-Was-M6	OK	UCS-TS-MXC-P25-Was-M...	UCS-TS-MXC-P25-Was-M...	2 hours ago
IMM-Domain	OK	UCS-TS-MXC-P25-6454-I...	UCS-TS-MXC-P25-6454-I...	2 hours ago

VLAN分配可通過CLI驗證：

```
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)#
現在新增了必要的VLAN，可以使用同一組命令檢驗Vethernet800上的連通性：
```

```
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列在上行鏈路乙太網介面的固定介面上：

```
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)#
VIF現在已準備好將流量傳輸到上游網路。
```

## 相關資訊

- [Intersight中的域配置檔案](#)
- [Intersight中的伺服器配置檔案](#)
- [Intersight中的域策略](#)
- [技術支援與文件 - Cisco Systems](#)