

使用API Explorer和NXOS排除UCS域上的IMM网络故障

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简介

本文档介绍在Intersight托管模式下对统一计算系统(UCS)域的网络连接或数据包寿命的分析，并使用API Explorer和NXOS命令识别服务器的内部连接。

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先决条件

要求

Cisco 建议您了解以下主题：

- Intersight
- 物理网络连接
- 应用编程接口(API)

使用的组件

本文档中的信息基于以下软件和硬件版本：

- 思科UCS 6454交换矩阵互联，固件4.2(1e)
- UCSB-B200-M5刀片服务器，固件4.2(1a)
- Intersight软件即服务(SaaS)

本文档中的信息都是基于特定实验室环境中的设备编写的。本文档中使用的所有设备最初均采用原始（默认）配置。如果您的网络处于活动状态，请确保您了解所有命令的潜在影响。

背景信息

交换矩阵互联和虚拟网络接口(vNIC)之间的连接通过虚电路(称为虚拟接口(VIF))建立。此类VIF被固定到上行链路，并允许与上游网络通信

在Intersight管理模式下，没有命令将虚拟接口映射到每台服务器，如**show service-profile circuit**。API Explorer/NXOS命令可用于确定在UCS域内创建的内部电路的关系。

API资源管理器

API资源管理器可从任一交换矩阵互联（主要或从属）的图形用户界面(GUI)访问。登录控制台后，导航至Inventory，选择服务器，然后点击Launch API Explorer。

The screenshot shows the Cisco Device Console interface. At the top, it displays 'DEVICE CONSOLE' and 'UCS-TS-MXC-P25-6454-IMM'. Below this is a navigation bar with tabs: 'SYSTEM INFORMATION', 'DEVICE CONNECTOR', 'INVENTORY' (which is selected), and 'DIAGNOSTIC DATA'. Under 'INVENTORY', there are two sub-tabs: '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' (which is highlighted with a red box), and 'Generate Tech Support Bundle'.

API资源管理器包含API参考，其中列出了可用的呼叫。它还包括用于测试API调用的具象状态传输(REST)客户端接口。

The screenshot shows the API Explorer interface. At the top, it displays 'API EXPLORER' and 'UCS-TS-MXC-P25-6454-IMM-1-1 (Server)'. Below this is a sidebar titled 'API Reference v2019.2' with a tree view of available services: AccountService, AccountService/Accounts, AccountService/ActiveDirectory/Cert..., AccountService/ExternalAccountPro..., AccountService/LDAP/Certificates, AccountService/Roles, CertificateService, CertificateService/Actions/Certificate..., CertificateService/Actions/Certificate..., and Chassis. A 'GET' button is visible next to the AccountService entry. The main area shows a 'Response Model' for the AccountService. To the right, a 'REST Client' window is open, showing a 'GET /redfish/v1/AccountService' request. This window has tabs for 'Response Text' and 'Response Info'. A red box highlights the 'REST Client' window.

通过API调用识别VIF

您可以使用一组API调用来确定哪个VIF对应每个虚拟vNIC。这样您就可以更有效地排除NXOS故障。

在本文档中，使用API调用的导航通过以下项目完成：机箱、服务器、网络适配器、vNIC/vHBA。

API调用

获取机箱ID

获取适配器ID

GET网络详细信息 (vnic/vhba列表)

GET网络设备功能 (vNIC配置)

语法

/redfish/v1/Chassis

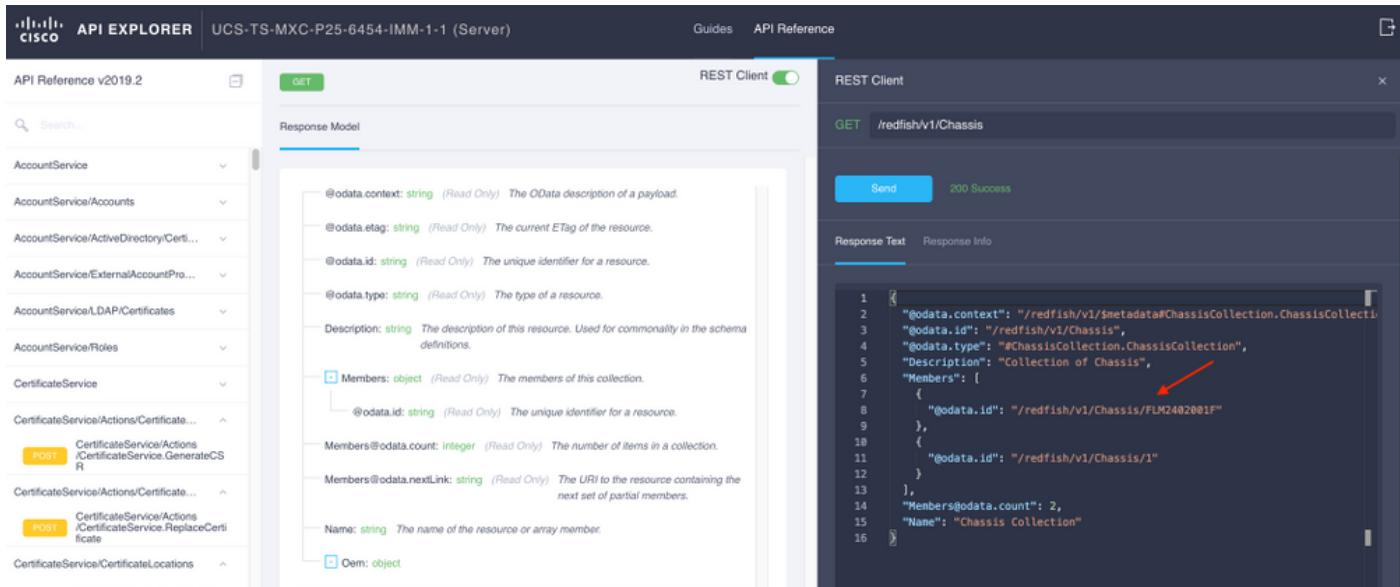
/redfish/v1/机箱/{机箱ID}/网络适配器

/redfish/v1/机箱/{机箱ID}/网络适配器/{网络适配器ID}

/redfish/v1/机箱

/{ChassisId}/NetworkAdapters/{NetworkAdapterId}/NetworkDeviceFunctions

检索机箱ID



The screenshot shows the Cisco API Explorer interface. On the left, the 'Response Model' pane displays the schema for the Chassis collection, including properties like @odata.context, @odata.id, @odata.type, Description, and Members. On the right, the 'REST Client' pane shows a successful GET request to /redfish/v1/Chassis. The response text pane displays the JSON response, which includes a 'Members' array with one item. The item has an '@odata.id' field set to '/redfish/v1/Chassis/FLM2402001F'. A red arrow points to this specific ID.

```
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 }
```

复制API调用的机箱ID。

/redfish/v1/Chassis/FLM2402001F

检索网络适配器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

```

复制下一API调用的网络ID。

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

```

复制网络适配器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

检索相应vNIC的VIF ID

The screenshot shows the Cisco API Explorer interface. On the left, there's a sidebar with a tree view of API endpoints categorized by resource type (e.g., Chassis, NetworkAdapters, NetworkDeviceFunctions) and methods (GET, POST, PATCH, PUT, DELETE). The main area is titled 'REST Client' and shows a 'GET' request to the specified URL. The 'Response Model' pane displays the JSON schema for the returned object, which includes fields like 'VifCookie', 'VifId', and 'VifState'. A red box highlights the 'Vif' section of the JSON code.

在这种情况下，vNIC-A映射到VIF 800。在此，NXOS命令包含此虚拟接口。

使用NXOS和Grep过滤器识别VIF

如果API资源管理器不可用，或者您无权访问GUI，则CLI命令可用于检索VIF信息。

注意：要使用这些命令，您必须知道服务器配置文件。

```
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
```

命令语法

使用

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

列出与每个vNIC/vHBA关联的Vethernet

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

列出详细的Vethernet配置

NXOS故障排除

vNIC映射到相应的Vethernet后，可以使用用于排除物理接口故障的相同命令在NXOS上执行分析。

vNIC的表示法为veth - Vethernet。

show interface brief显示Veth800处于下行状态，原因是ENM源引脚故障。

```
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显示Vethernet 800处于正在初始化状态。

```
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
```

VIF需要固定到上行链路接口，在此场景中，**show pinning border interface**不显示固定到任何上行链路的Vethernet。

```
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
```

这表示上行链路需要额外配置。此输出对应于以太网上行链路1/46的**show running configuration**。

```
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，其中Veth800使用上行链路上不存在的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域上，使用中的VLAN也必须包含在vNIC和上行链路中。VLAN策略配置交换矩阵互联上的VLAN。图中显示了此UCS域的配置。

The screenshot shows the Cisco Intersight interface under the 'CONFIGURE' tab. In the left sidebar, 'Policies' is selected. The main area displays a table for a policy named 'vlans-IMM'. The 'Usage' section shows 4 items found, and the 'Configuration' section lists two entries: 'VLAN ID 69' and 'VLAN ID 470'. Both entries have 'Multicast' set to 'multicast-IMM' and 'Auto Allow On Uplinks' set to 'Yes'. A red box highlights the 'Edit Policy' button at the top right of the configuration table.

策略中不存在VLAN 1，因此必须添加它。

选择Edit Policy以允许连接。此更改需要部署UCS域配置文件。

The screenshot shows the 'Edit Policy' dialog for the 'vlans-IMM' policy. The 'Step 2 Policy Details' section is active. A message states: 'This policy is applicable only for UCS Domains. Redeploy the associated profile(s) for these changes to take effect.' Below this is a 'VLANs' table with three items: 'multicast-IMM' (Auto Allow On Uplinks: Yes), 'multicast-IMM' (Auto Allow On Uplinks: Yes), and 'multicast-IMM' (Auto Allow On Uplinks: Yes). A checkbox 'Set Native VLAN ID' is present. At the bottom are 'Cancel', 'Save' (highlighted in blue), and 'Update' buttons.

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分配可通过CLI进行验证：

```
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)#
现在添加了必要的VLAN，可以使用相同的命令集来验证Vethernet800上的连通性：
```

```
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列在上行链路以太网接口的固定接口上：

```
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现在已准备好将流量传输到上游网络。

相关信息

- [Intersight中的域配置文件](#)
- [Intersight中的服务器配置文件](#)
- [Intersight中的域策略](#)
- [技术支持和文档 - Cisco Systems](#)