

# Risoluzione dei problemi della rete IMM nel dominio UCS con API Explorer e NXOS

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## Introduzione

Questo documento descrive l'analisi della connettività di rete o della durata del pacchetto per un dominio UCS (Unified Computing System) in modalità Intersight Managed e identifica la connessione interna per i server con i comandi API Explorer e NXOS.

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## Prerequisiti

### Requisiti

Cisco raccomanda la conoscenza dei seguenti argomenti:

- Intersight
- Connnettività di rete fisica
- API (Application Programming Interface)

## Componenti usati

Le informazioni fornite in questo documento si basano sulle seguenti versioni software e hardware:

- Cisco UCS 6454 Fabric Interconnect, firmware 4.2(1e)
- Server blade UCSB-B200-M5, firmware 4.2(1a)
- SaaS (Intersight software as a service)

Le informazioni discusse in questo documento fanno riferimento a dispositivi usati in uno specifico ambiente di emulazione. Su tutti i dispositivi menzionati nel documento la configurazione è stata ripristinata ai valori predefiniti. Se la rete è operativa, valutare attentamente eventuali

conseguenze derivanti dall'uso dei comandi.

## Premesse

La connessione tra le interconnessioni Fabric e le vNIC (Virtual Network Interface) viene stabilita tramite circuiti virtuali, denominati VIF (Virtual Interface). Tali file VIF sono bloccati sugli uplink e consentono la comunicazione con la rete upstream

In modalità Intersight Managed non è disponibile alcun comando che esegue il mapping delle interfacce virtuali con ciascun server, ad esempio **show service-profile circuit**. I comandi API Explorer/NXOS possono essere usati per determinare la relazione dei circuiti interni creati all'interno del dominio UCS.

## Esplora API

API Explorer è disponibile dall'interfaccia grafica utente (GUI) di una delle interconnessioni fabric (primaria o subordinata). Una volta effettuato l'accesso alla console, passare a Inventory, selezionare il server e fare clic su Avvia API Explorer.

The screenshot shows the Cisco Device Console interface for a server named 'UCS-TS-MXC-P25-6454-IMM'. The 'INVENTORY' tab is selected. Under the 'Servers' tab, there is a table with one row. The row contains the following information:

Name	Health	Status	PID	Serial	User Label	...
UCS-TS-MXC-P25-6454-I	Healthy	Active	UCSB-B200-M5	FLM2402001F	IMM_server	...

Below the table, a context menu is open for the first row. The menu items are: Power Off, Turn On Locator, Launch KVM, Launch API Explorer (which is highlighted with a red box), and Generate Tech Support Bundle.

API Explorer contiene un riferimento API che elenca le chiamate disponibili. Include inoltre un'interfaccia client REST (Reform State Transfer) per testare le chiamate API.

## Identificazione VIF tramite chiamate API

È possibile utilizzare un set di chiamate API per determinare quale VIF corrisponde a ciascuna vNIC virtuale. Ciò consente di risolvere in modo più efficace i problemi relativi a NXOS.

Ai fini di questo documento, la navigazione con le chiamate API viene effettuata attraverso questi elementi: Chassis, server, scheda di rete, vNIC/vHBA.

Chiamata API  
OTTIENI ID chassis  
GET Adapter ID  
DETTAGLI GET Network (elenco di vlan/vhba)  
GET Funzioni dispositivo di rete (configurazione vNIC)

Sintassi  
 /redfish/v1/Chassis  
 /redfish/v1/Chassis/{IDchassis}/Schede di rete  
 /redfish/v1/Chassis/{IDchassis}/AdattatoriRete/{IDadattatoreRete}  
 /redfish/v1/Chassis/{IDchassis}/NetworkAdapters/{IDSchedaRete}/NetworkDeviceFunctions

### Recupera ID chassis

```

1  "@odata.context": "/redfish/v1/$metadata#ChassisCollection.ChassisCollection"
2  "@odata.id": "/redfish/v1/Chassis",
3  "@odata.type": "#ChassisCollection.ChassisCollection",
4  "Description": "Collection of Chassis",
5  "Members": [
6      {
7          "@odata.id": "/redfish/v1/Chassis/FLM2402001F"
8      },
9  ],
10  {
11      "@odata.id": "/redfish/v1/Chassis/1"
12  }
13 ],
14 "Members@odata.count": 2,
15 "Name": "Chassis Collection"
16 ]
    
```

## Copiare l'ID chassis per la chiamata API.

/redfish/v1/Chassis/FLM2402001F

### Recupera ID scheda di rete

The screenshot shows the Cisco API Explorer interface. On the left, the sidebar lists various API endpoints for Chassis, NetworkAdapters, and NetworkDeviceFunctions. In the center, a 'GET' request is selected for the endpoint '/redfish/v1/Chassis/{ChassisId}/NetworkAdapters'. The 'Parameters' tab is active, showing 'ChassisId' as a required string parameter. The 'Response Model' tab is also visible. On the right, the 'REST Client' section shows the URL 'GET /redfish/v1/Chassis/{ChassisId}/NetworkAdapters' with '{ChassisId}' set to 'FLM2402001F'. Below this, a 'Send' button and a '200 Success' status are shown. The 'Response Text' tab displays the JSON response, which includes the '@odata.context', '@odata.id', '@odata.type', 'Description', 'Members', 'Members@odata.count', and 'Name' fields. A red arrow points from the 'Members' field in the JSON response to the 'Members' section in the 'Response Model' tab.

```
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-ML0M-40G-04_FCH23527C67"
8    }
9  ],
10 },
11 "Members@odata.count": 1,
12 "Name": "NetworkAdapter Collection"
```

## Copiare l'ID di rete per la chiamata API successiva.

/redfish/v1/Chassis/FLM2402001F/NetworkAdapters/UCSB-ML0M-40G-04\_FCH23527C67

### Recupera ID vNIC

The screenshot shows the Cisco API Explorer interface. On the left, the sidebar lists various API endpoints for Chassis, NetworkAdapters, and NetworkDeviceFunctions. In the center, a 'GET' request is selected for the endpoint '/redfish/v1/Chassis/{ChassisId}/NetworkAdapters/{NetworkAdapterId}'. The 'Parameters' tab is active, showing 'ChassisId' and 'NetworkAdapterId' as required string parameters. The 'Response Model' tab is also visible. On the right, the 'REST Client' section shows the URL 'GET /redfish/v1/Chassis/{ChassisId}/NetworkAdapters/{NetworkAdapterId}' with '{ChassisId}' set to 'FLM2402001F' and '{NetworkAdapterId}' set to 'UCSB-ML0M-40G-04\_FCH23527C67'. Below this, a 'Send' button and a '200 Success' status are shown. The 'Response Text' tab displays the JSON response, which includes the '@odata.id', 'Actions', 'Controllers', 'ControllerCapabilities', 'NetworkPortCount', 'FirmwarePackageVersion', 'Links', 'NetworkDeviceFunctions', and 'NetworkPorts' fields. A red box highlights the 'NetworkDeviceFunctions' field, which contains multiple entries for 'Vnic-A', 'Vnic-B', 'Vhba-a', and 'Vhba-b'. A red arrow points from the 'NetworkDeviceFunctions' field in the JSON response to the 'NetworkDeviceFunctions' section in the 'Response Model' tab.

```
3  "@odata.id": "/redfish/v1/Chassis/FLM2402001F/NetworkAdapters/UCSB-ML0M-40G-04_FCH23527C67",
4  "@odata.type": "#NetworkAdapter.v1_2_0.NetworkAdapter",
5  "Actions": {
6    "NetworkAdapter.ResetSettingsToDefault": {
7      "target": "/redfish/v1/Chassis/FLM2402001F/NetworkAdapters/UCSB-ML0M-40G-04_FCH23527C67/Actions/NetworkAdapter.ResetSettingsToDefault"
8    }
9  },
10 "Controllers": [
11   {
12     "ControllerCapabilities": {
13       "NetworkDeviceFunctionCount": 4,
14       "NetworkPortCount": 2
15     },
16     "FirmwarePackageVersion": "5.21(a)",
17     "Links": {
18       "NetworkDeviceFunctions": [
19         {
20           "@odata.id": "/redfish/v1/Chassis/FLM2402001F/NetworkAdapters/UCSB-ML0M-40G-04_FCH23527C67/NetworkDeviceFunctions/Vnic-A"
21         },
22         {
23           "@odata.id": "/redfish/v1/Chassis/FLM2402001F/NetworkAdapters/UCSB-ML0M-40G-04_FCH23527C67/NetworkDeviceFunctions/Vnic-B"
24         },
25         {
26           "@odata.id": "/redfish/v1/Chassis/FLM2402001F/NetworkAdapters/UCSB-ML0M-40G-04_FCH23527C67/NetworkDeviceFunctions/vhba-a"
27         },
28         {
29           "@odata.id": "/redfish/v1/Chassis/FLM2402001F/NetworkAdapters/UCSB-ML0M-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-ML0M-40G-04_FCH23527C67/NetworkPorts/Port-1"
36         },
37         {
38           "@odata.id": "/redfish/v1/Chassis/FLM2402001F/NetworkAdapters/UCSB-ML0M-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-ML0M-40G-04_FCH23527C67/NetworkPorts/Port-1"
48     },
49     {
50       "@odata.id": "/redfish/v1/Chassis/FLM2402001F/NetworkAdapters/UCSB-ML0M-40G-04_FCH23527C67/NetworkPorts/Port-2"
51     }
52   ],
53   "NetworkPorts@odata.count": 2
54 }
```

## Copiare l'ID delle schede di rete.

/redfish/v1/Chassis/FLM2402001F/NetworkAdapters/UCSB-ML0M-40G-

04\_FCH23527C67/NetworkDeviceFunctions/Vnic-A

/redfish/v1/Chassis/FLM2402001F/NetworkAdapters/UCSB-ML0M-40G-

04\_FCH23527C67/NetworkDeviceFunctions/Vnic-B

## Recuperare l'ID VIF della vNIC corrispondente

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" and shows a "GET" request to the endpoint "/redfish/v1/Chassis/{ChassisId}/NetworkAdapters/{NetworkAdapterId}/NetworkDeviceFunctions/{NetworkDeviceFunctionId}". The "Parameters" section defines three path parameters: "ChassisId" (string), "NetworkAdapterId" (string), and "NetworkDeviceFunctionId" (string). The "Response Model" section displays a JSON snippet representing the response structure. A red box highlights the "Vif": { "VifCookie": 800, "VifId": 800, "VifState": "Down" } field, which corresponds to the VIF configuration.

In questo caso, la scheda vNIC-A è mappata a VIF 800. Da qui, i comandi NXOS contengono questa interfaccia virtuale.

## Identificazione di VIF con NXOS e filtri Grep

Se API Explorer non è disponibile o non si ha accesso alla GUI, è possibile usare i comandi CLI per recuperare le informazioni VIF.

**Nota:** Per utilizzare questi comandi è necessario conoscere il profilo del server.

```
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
```

### Sintassi dei comandi

```
show run interface | grep prev 1 <nome profilo server>
```

```
show run interface | grep prev 1 next 10 <nome profilo server>
```

### Utilizzo

Elenca le reti Ethernet associate a ciascuna scheda vNIC/vHBA

Elenca la configurazione Ethernet dettagliata

## Risoluzione dei problemi NXOS

Una volta che la vNIC è stata mappata alla corrispondente Ethernet, l'analisi può essere eseguita su NXOS con gli stessi comandi utilizzati per risolvere i problemi delle interfacce fisiche.

La notazione per le vNIC è veth - Ethernet.

**show interface brief** mostra Veth800 in stato inattivo con ENM Source Pin Failure come motivo.

```
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** mostra che Ethernet 800 è in stato **initializing**.

```
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 file VIF deve essere bloccato su un'interfaccia uplink, in questo scenario l'**interfaccia show pinning border** non visualizza la rete Ethernet bloccata su alcun uplink.

```
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
```

Ciò significa che gli uplink richiedono una configurazione aggiuntiva. Questo output corrisponde alla **configurazione show running** di Ethernet Uplink 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 details che Veth800 usa la VLAN 1 che non è presente sugli uplink.
```

```
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
```

Su un dominio UCS, la VLAN in uso deve essere inclusa anche sulla vNIC e sugli uplink. Il criterio VLAN configura le VLAN sulle interconnessioni dell'infrastruttura. Nell'immagine viene illustrata la configurazione del dominio UCS.

CONFIGURE > Policies > vlans-IMM

Details		Usage					Configuration	
Name	vlans-IMM	4 items found   10 per page   <input type="button" value="Edit Filter"/> <input type="button" value="Print"/> <input type="button" value="Copy"/> <input type="button" value="Delete"/> Name Status Platform Type Type Device Name Last Update					VLAN ID 69 Name / Prefix: VLAN_vMotion Multicast: multicast-IMM Auto Allow On Uplinks: Yes	
Description	-						VLAN ID 470 Name / Prefix: VLAN_470 Multicast: multicast-IMM Auto Allow On Uplinks: Yes	
Type	VLAN							
Usage	4							
Last Update	Jul 19, 2021 5:43 PM							
Organization	default							
Tags	<input type="button" value="Set"/>							
No Tags								

La VLAN 1 non è presente nel criterio, quindi deve essere aggiunta.

Per consentire la connettività, selezionare **Modifica criterio**. Questa modifica richiede la distribuzione del profilo di dominio UCS.

CONFIGURE > Policies > VLAN > vlans-IMM > Edit

Step 2  
Policy Details  
Add 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.

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

Set Native VLAN ID

< Back Cancel Update

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

L'assegnazione della VLAN può essere verificata dalla 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) #
```

Dopo aver aggiunto le VLAN necessarie, è possibile usare lo stesso gruppo di comandi per verificare la connettività su Ethernet800:

```
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 è elencato sulle interfacce bloccate alle interfacce Ethernet uplink:

```
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) #
```

I file VIF sono ora pronti per trasmettere il traffico alla rete a monte.

## Informazioni correlate

- [Profili di dominio in Intersight](#)
- [Profili server in Intersight](#)
- [Domain Policies in Intersight](#)
- [Documentazione e supporto tecnico – Cisco Systems](#)