使用Nexus 1000V跟蹤UCS中的MAC地址

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簡介

本檔案介紹如何在以下網路層級追蹤虛擬機器(VM)和VMkernel(VMK)介面的MAC位址：

- Cisco Nexus 5000 系列交換器
- 思科整合運算系統(UCS)6248光纖互連(FI)
- VMware ESXi主機
- Cisco Nexus 1000V交換器

在故障排除和設計方面，瞭解VM或VMK介面用於通訊的上行鏈路非常重要。

必要條件

需求

思科建議您瞭解以下主題：

- Cisco NX-OS中的vPC功能
- 思科整合運算系統
- VMware ESXi
- Cisco Nexus 1000V交換器

採用元件

本文中的資訊係根據以下軟體和硬體版本：

- Cisco Nexus 5020交換器版本5.0(3)N2(2a)
- 思科整合運算系統版本2.1(1d)
- 思科整合運算系統B200 M3刀鋒伺服器(含思科虛擬介面卡(VIC)1240(Palo)CNAvSphere 5.1（ESXi和vCenter）
- Cisco Nexus 1000V交換器版本4.2(1)SV2(1.1a)

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。如果您的網路正在作用，請確保您已瞭解任何指令可能造成的影響。

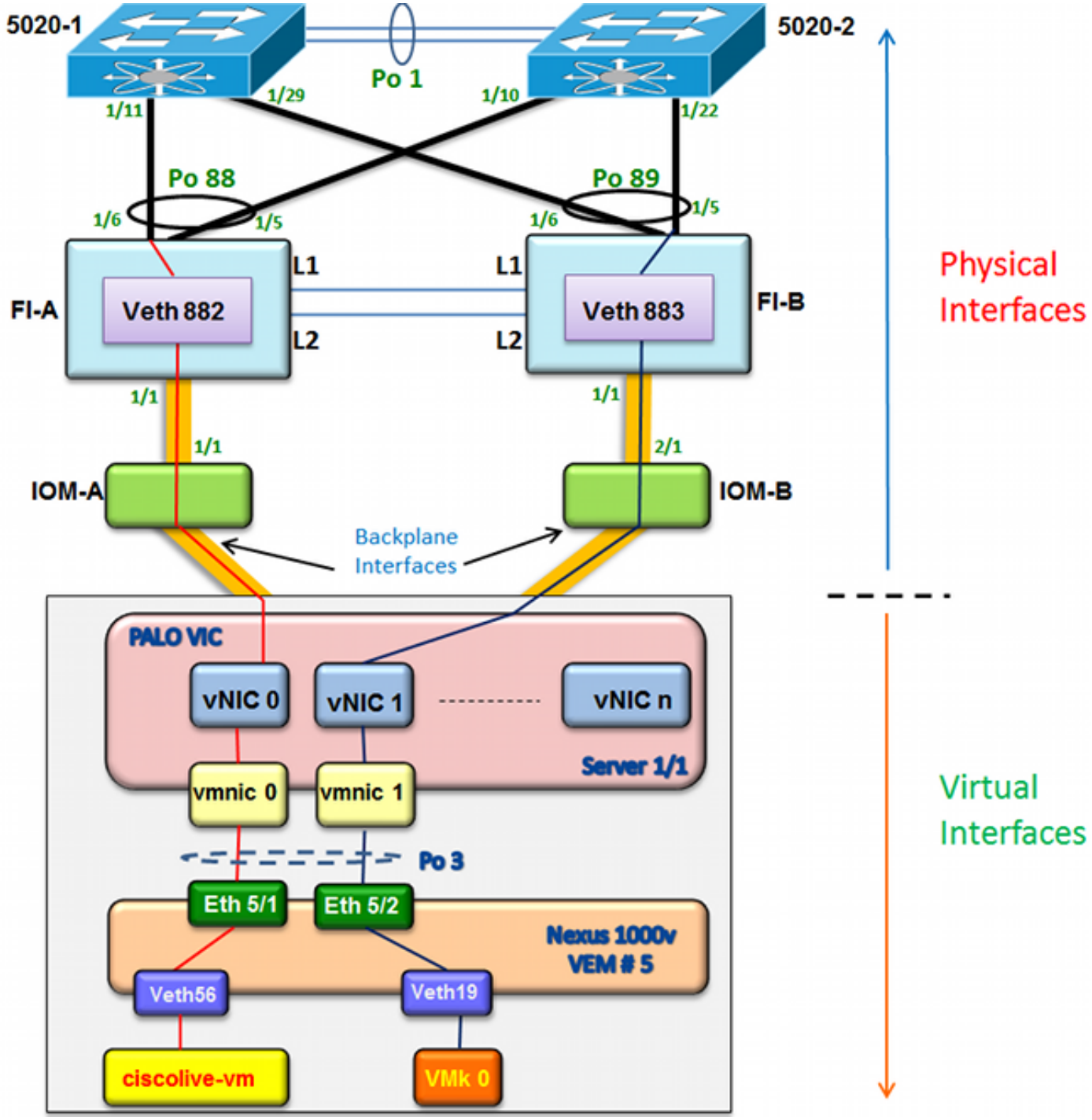
設定

網路拓撲

在此示例設定中，VM和VMK介面位於同一主機（IP地址172.16.18.236）和同一VLAN 18(子網172.16.18.0/24)上。

在Nexus 1000V中，主機表示為虛擬乙太網模組(VEM)編號5。

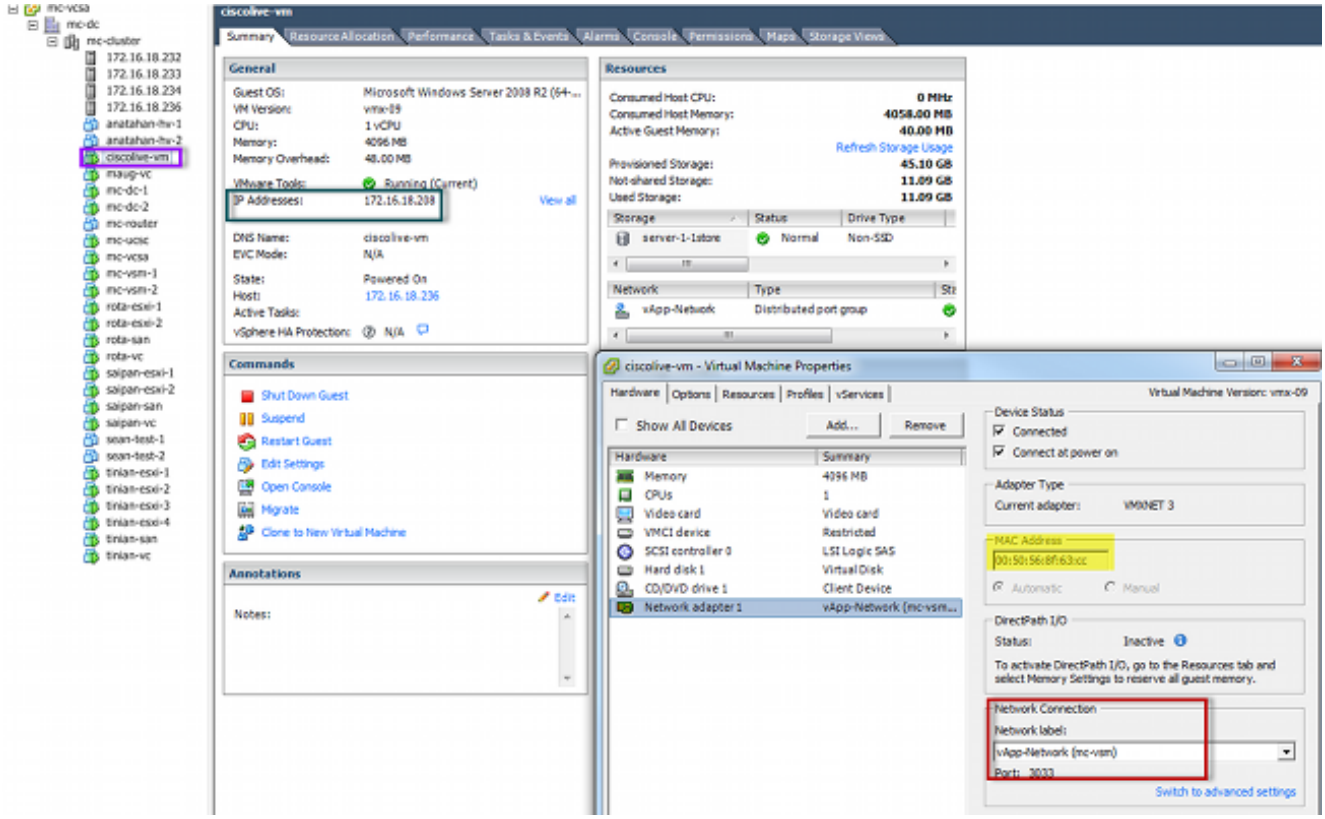
在UCS中，主機安裝在機箱1的刀片式伺服器1上。



跟蹤不同網段的MAC地址

此程式介紹如何追蹤各種網路層級的MAC位址。

1. 在vCenter中，找到要跟蹤的VM的MAC地址。在本示例中，VM(ciscolive-vm)的MAC地址為0050:568f:63cc:



2. 在ESXi shell上輸入**esxcfg-vmknic -l**命令，以便從主機查詢VMK介面的MAC地址。在本示例中，VMK(vmk0)是管理介面，MAC地址為0050:56:67:8e:b9:

```
mc-vsm# show mac address-table | in 8eb9
18         0050.5667.8eb9    static  0         Veth19                    5
18         0050.5667.8eb9    dynamic 0         Po4                       6
mc-vsm# show mac address-table | in 63cc
18         0050.568f.63cc    dynamic 93        Po1                       3
18         0050.568f.63cc    dynamic 93        Po2                       4
18         0050.568f.63cc    static  0         Veth56                    5
18         0050.568f.63cc    dynamic 93        Po4                       6
mc-vsm#
```

3. 確認已在ESXi主機(VEM)和Nexus 1000V上獲取VM(ciscolive-vm)和VMK介面(vmk0)的MAC地址。

   在VEM級別，輸入**vemcmd show l2 18**命令以確認已獲知兩個MAC地址：

```
~ # vemcmd show l2 18
Bridge domain     7 brtmax 4096, brtcnt 82, timeout 300
VLAN 18, swbd 18, ""
Flags:  P - PVLAN  S - Secure  D - Drop
        Type          MAC Address    LTL    timeout    Flags     PVLAN
      Static    00:50:56:8f:61:8b     75          0
      Static    00:50:56:8f:a4:a5     67          0
     Dynamic    00:50:56:5f:e9:a8     52          1
      Static    00:50:56:8f:51:97     78          0
     Dynamic    00:0c:29:15:fa:c6    305         27
     Dynamic    00:50:56:5f:88:58     60          1
      Static    00:50:56:8f:63:cc     68          0
     Dynamic    00:50:56:5f:7c:bd     59          1
     Dynamic    00:50:56:a2:14:f2     57          1
      Static    00:50:56:8f:11:3a     50          0
      Static    00:50:56:8f:f5:53     65          0
     Dynamic    00:50:56:a2:46:25     54          1
     Dynamic    00:50:56:8f:62:56    305          2
      Static    00:50:56:8f:21:35     54          0
     Dynamic    00:50:56:8f:86:19    305        192
      Static    00:50:56:8f:d5:fd     58          0
     Dynamic    00:02:3d:40:dd:03    305          4
     Dynamic    00:50:56:b7:70:37    305          1
     Dynamic    00:50:56:8f:c5:07    305          1
     Dynamic    00:50:56:8f:81:09    305        230
     Dynamic    00:0c:29:8b:01:22    305         73
     Dynamic    00:50:56:8f:54:48    305          6
     Dynamic    00:50:56:63:8f:4d     59          1
     Dynamic    00:50:56:8f:17:20    305          0
     Dynamic    00:50:56:8f:90:5b    305         60
      Static    00:50:56:8f:a1:3a     66          0
      Static    00:50:56:8f:45:0b     64          0
     Dynamic    00:50:56:a2:32:6f     63          2
     Dynamic    00:50:56:5f:19:5c     63          1
      Static    00:50:56:8f:90:a4     51          0
      Static    00:50:56:67:8e:b9     49          0
     Dynamic    00:25:b5:10:10:4f    305        306
```

在Nexus 1000V級別，輸入**show mac address-table**命令以確認兩個MAC地址均在VEM # 5上的VLAN 18上獲知：

```
mc-vsm# show mac address-table | in 8eb9
18         0050.5667.8eb9    static  0         Veth19                         5
18         0050.5667.8eb9    dynamic 0         Po4                            6
mc-vsm# show mac address-table | in 63cc
18         0050.568f.63cc    dynamic 93        Po1                            3
18         0050.568f.63cc    dynamic 93        Po2                            4
18         0050.568f.63cc    static  0         Veth56                         5
18         0050.568f.63cc    dynamic 93        Po4                            6
mc-vsm#
```

輸入VEM # 5的**show port-channel summary**命令以檢視port-channel和成員埠：

```
mc-vsm#
mc-vsm# show port-channel summary
Flags:  D - Down         P - Up in port-channel (members)
        I - Individual   H - Hot-standby (LACP only)
        s - Suspended    r - Module-removed
        S - Switched     R - Routed
        U - Up (port-channel)
--------------------------------------------------------------------------------
Group Port-       Type     Protocol  Member Ports
      Channel
--------------------------------------------------------------------------------
1     Po1(SU)     Eth      NONE      Eth3/1(P)    Eth3/2(P)    Eth3/9(r)
                                     Eth3/10(r)
2     Po2(SU)     Eth      NONE      Eth4/1(P)    Eth4/2(P)    Eth4/9(P)
                                     Eth4/10(P)
3     Po3(SU)     Eth      NONE      Eth5/1(P)    Eth5/2(P)    Eth5/9(r)
                                     Eth5/10(r)
4     Po4(SU)     Eth      NONE      Eth6/1(P)    Eth6/2(P)    Eth6/11(P)
                                     Eth6/12(P)
```

4. 從Nexus 1000V收集更多詳細資訊。

輸入**show interface vethernet 56**命令以檢視Veth56與VM(ciscolive-vm)對應：

```
mc-vsm# show interface vethernet 56
Vethernet56 is up
  Port description is ciscolive-vm, Network Adapter 1
  Hardware: Virtual, address: 0050.568f.63cc (bia 0050.568f.63cc)
  Owner is VM "ciscolive-vm", adapter is Network Adapter 1
  Active on module 5
  VMware DVS port 3033
  Port-Profile is vApp-Network
  Port mode is access
  5 minute input rate 80 bits/second, 0 packets/second
  5 minute output rate 12552 bits/second, 8 packets/second
  Rx
    23795 Input Packets 7293075158593488853 Unicast Packets
    203449390 Multicast Packets 4294967761 Broadcast Packets
    2333878 Bytes
  Tx
    1350625 Output Packets 4768 Unicast Packets
    519692101807 Multicast Packets 4321524090 Broadcast Packets 1345857 Flood Packets
    254466737 Bytes
    0 Input Packet Drops 0 Output Packet Drops
```

輸入**show interface vethernet 19**命令以檢視Veth19與主機的VMK介面(vmk0)對應：

```
mc-vsm# show interface vethernet 19
Vethernet19 is up
  Port description is VMware VMkernel, vmk0
  Hardware: Virtual, address: 0050.5667.8eb9 (bia 0050.5667.8eb9)
  Owner is VMware VMkernel, adapter is vmk0
  Active on module 5
  VMware DVS port 2110
  Port-Profile is 13
  Port mode is access
  5 minute input rate 12904 bits/second, 1 packets/second
  5 minute output rate 13384 bits/second, 8 packets/second
  Rx
    12200 Input Packets 7310589476873731518 Unicast Packets
    7310589476867241067 Multicast Packets 873444753044241742 Broadcast Packets
    16040625 Bytes
  Tx
    65549 Output Packets 3731 Unicast Packets
    141938759046 Multicast Packets 137454132371 Broadcast Packets 59221 Flood Packets
    12416427 Bytes
    82273436451366782555 Input Packet Drops 210453427045 Output Packet Drops
```

5. 檢查從VM(ciscolive-vm)和VMK interface(vmk0)到主機上游介面的流量固定情況。

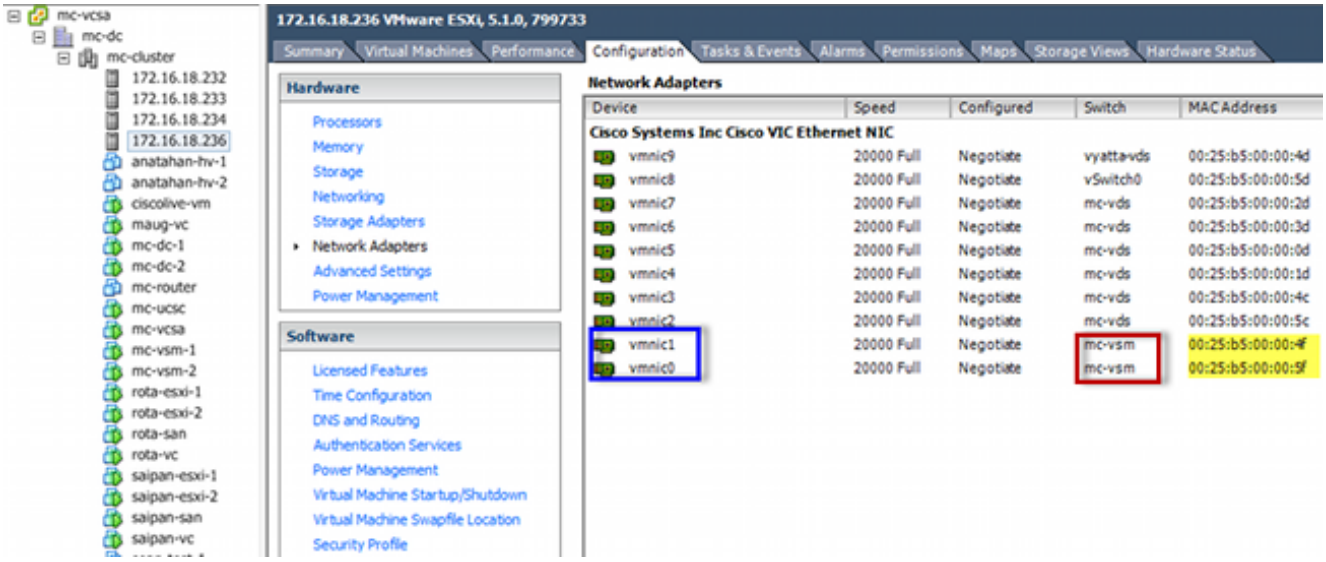
```
mc-vsm# module vem 5 execute vemcmd show port vsm
  LTL    VSM Port  Admin Link  State  PC-LTL  SGID  Vem Port  Type
    6    Internal  DOWN  UP    FWD         0              vns
    8    Internal    UP  UP    FWD         0
    9    Internal  DOWN  DOWN  FWD         0
   10    Internal  DOWN  DOWN  FWD         0     0
   11    Internal  DOWN  DOWN  FWD         0
   12    Internal  DOWN  DOWN  FWD         0     0
   14    Internal  DOWN  DOWN  FWD         0
   15    Internal  DOWN  DOWN  FWD         0
   16    Internal  DOWN  DOWN  FWD         0              ar
   17      Eth5/1    UP  UP    FWD       305     0     vmnic0
   18      Eth5/2    UP  UP    FWD       305     1     vmnic1
   49      Veth19    UP  UP    FWD         0     1       vmk0
   50      Veth23    UP  UP    FWD         0     1  tinian-san.eth0
   51      Veth38    UP  UP    F/B*        0     0  tinian-esxi-1.eth3
   52      Veth37    UP  UP    F/B*        0     0  tinian-esxi-1.eth2
   53      Veth22    UP  UP    F/B*        0     1  tinian-esxi-1.eth1
   54      Veth21    UP  UP    F/B*        0     0  tinian-esxi-1.eth0
   55      Veth36    UP  UP    F/B*        0     1  tinian-esxi-2.eth3
   56      Veth35    UP  UP    F/B*        0     0  tinian-esxi-2.eth2
   57      Veth25    UP  UP    F/B*        0     1  tinian-esxi-2.eth1
   58      Veth24    UP  UP    F/B*        0     0  tinian-esxi-2.eth0
   59      Veth43    UP  UP    F/B*        0     1  tinian-esxi-3.eth3
   60      Veth44    UP  UP    F/B*        0     0  tinian-esxi-3.eth2
   61      Veth45    UP  UP    F/B*        0     1  tinian-esxi-3.eth1
   62      Veth46    UP  UP    F/B*        0     0  tinian-esxi-3.eth0
   63      Veth47    UP  UP    F/B*        0     1  tinian-esxi-4.eth3
   64      Veth48    UP  UP    F/B*        0     0  tinian-esxi-4.eth2
   65      Veth49    UP  UP    F/B*        0     1  tinian-esxi-4.eth1
   66      Veth50    UP  UP    F/B*        0     0  tinian-esxi-4.eth0
   67      Veth26    UP  UP    FWD         0     1  tinian-vc.eth0
   68      Veth56    UP  UP    FWD         0     0  ciscolive-vm.eth0
   69      Veth31    UP  UP    FWD         0     1  maug-vc.eth0
   75      Veth59    UP  UP    FWD         0     0  mc-ucsc.eth0
   78      Veth72    UP  UP    FWD         0     1  mc-dc-2.eth0
  305         Po3    UP  UP    FWD         0

* F/B: Port is BLOCKED on some of the vlans.
       One or more vlans are either not created or
       not in the list of allowed vlans for this port.
 Please run "vemcmd show port vlans" to see the details.
mc-vsm#
```

此輸出顯示VM(ciscolive-vm)和VMK interface(vmk0)與其對應的VM網路介面控制器(VMNIC)的使用者組ID(SGID)對映。 該對映顯示用於通訊的VMNIC:

- VM的SGID 0(ciscolive-vm)與vmnic0的SGID 0匹配。
- VMK interface(vmk0)的SGID 1與vmnic1的SGID 1匹配。

6. 從vCenter或ESXi命令列介面(CLI)獲取VMNIC的MAC地址。

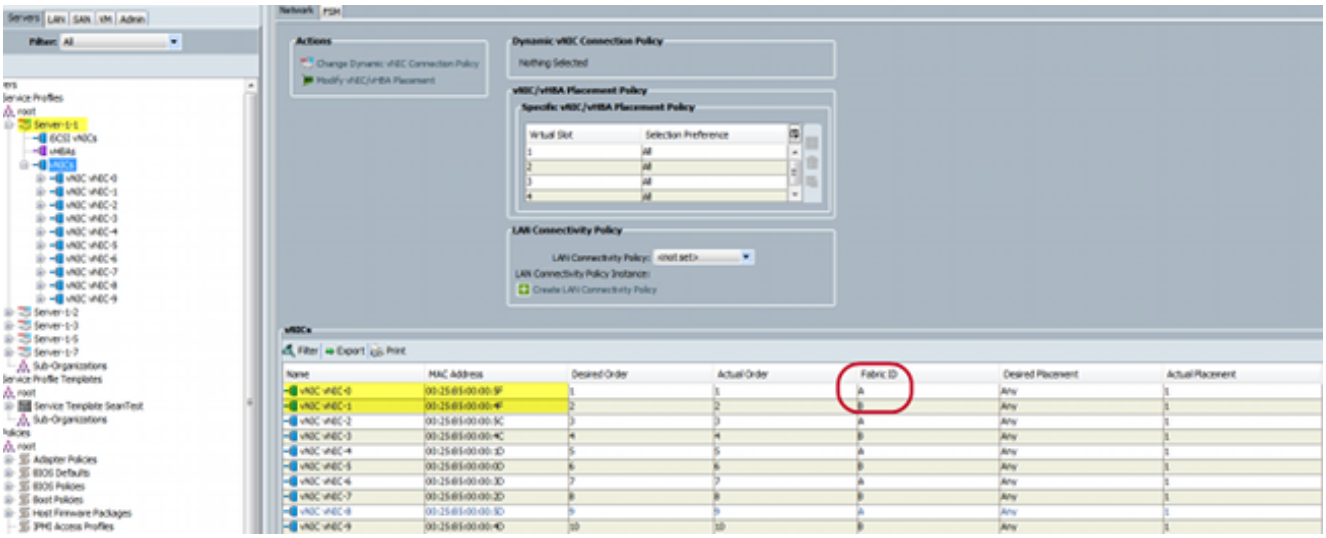
在vCenter中，導航到**Configuration**標籤：



在ESXi CLI上，輸入**esxcfg-nic -1**命令：

```
~ # esxcfg-nics -l
Name    PCI           Driver      Link Speed      Duplex MAC Address       MTU    Description
vmnic0  0000:06:00.00 enic        Up   20000Mbps  Full   00:25:b5:00:00:5f 1500   Cisco Systems Inc Cisco VIC Ethernet NIC
vmnic1  0000:07:00.00 enic        Up   20000Mbps  Full   00:25:b5:00:00:4f 1500   Cisco Systems Inc Cisco VIC Ethernet NIC
vmnic2  0000:08:00.00 enic        Up   20000Mbps  Full   00:25:b5:00:00:5c 9000   Cisco Systems Inc Cisco VIC Ethernet NIC
vmnic3  0000:09:00.00 enic        Up   20000Mbps  Full   00:25:b5:00:00:4c 9000   Cisco Systems Inc Cisco VIC Ethernet NIC
vmnic4  0000:0a:00.00 enic        Up   20000Mbps  Full   00:25:b5:00:00:1d 9000   Cisco Systems Inc Cisco VIC Ethernet NIC
vmnic5  0000:0b:00.00 enic        Up   20000Mbps  Full   00:25:b5:00:00:0d 9000   Cisco Systems Inc Cisco VIC Ethernet NIC
vmnic6  0000:0c:00.00 enic        Up   20000Mbps  Full   00:25:b5:00:00:3d 9000   Cisco Systems Inc Cisco VIC Ethernet NIC
vmnic7  0000:0d:00.00 enic        Up   20000Mbps  Full   00:25:b5:00:00:2d 9000   Cisco Systems Inc Cisco VIC Ethernet NIC
vmnic8  0000:0e:00.00 enic        Up   20000Mbps  Full   00:25:b5:00:00:5d 9000   Cisco Systems Inc Cisco VIC Ethernet NIC
vmnic9  0000:0f:00.00 enic        Up   20000Mbps  Full   00:25:b5:00:00:4d 9000   Cisco Systems Inc Cisco VIC Ethernet NIC
```

7. 在UCS Manager(UCSM)中，找到與VMNIC對應的UCS的虛擬網路介面控制器(vNIC):



vNIC-0的主FI是FI-A，vNIC-1的主FI是FI-B。現在，您可以推斷來自VM(ciscolive-vm)的流量通過FI-A，而來自VMK介面(vmk0)的流量通過FI-B。

8. 確認已在FI-A上獲取虛擬機器(ciscolive-vm)的MAC地址：

```
Mike-Cliff-Pod-16-A(nxos)# show mac address-table | in 63cc
* 18        0050.568f.63cc    dynamic    0           F     F  Veth882
Mike-Cliff-Pod-16-A(nxos)#
Mike-Cliff-Pod-16-A(nxos)# show int vethernet 882
Vethernet882 is up
    Bound Interface is port-channel1288
  Hardware: Virtual, address: 547f.eea2.5ac0 (bia 547f.eea2.5ac0)
  Description: server 1/1, VNIC vNIC-0
  Encapsulation ARPA
  Port mode is trunk
  EtherType is 0x8100
  Rx
    38196726 unicast packets  130708 multicast packets  99167 broadcast packets
    38426601 input packets  44470647026 bytes
    0 input packet drops
  Tx
    18711011 unicast packets  552876 multicast packets  10560283 broadcast packets
    29824170 output packets  9379742901 bytes
    0 flood packets
    0 output packet drops
```

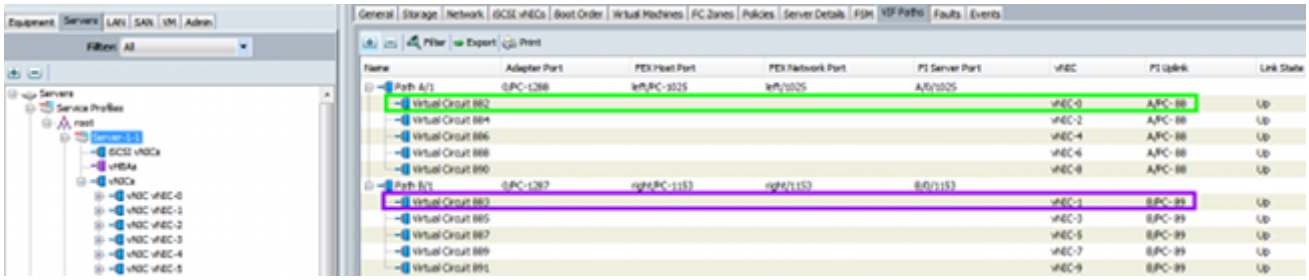
9. 確認已在FI-B上獲取VMK 介面(vmk0)的MAC地址：

```
Mike-Cliff-Pod-16-B(nxos)# show mac address-table | in 8eb9
* 18        0050.5667.8eb9    dynamic    0           F     F  Veth883
Mike-Cliff-Pod-16-B(nxos)#
Mike-Cliff-Pod-16-B(nxos)# show int vethernet 883
Vethernet883 is up
    Bound Interface is port-channel1287
  Hardware: Virtual, address: 547f.eea3.c7e0 (bia 547f.eea3.c7e0)
  Description: server 1/1, VNIC vNIC-1
  Encapsulation ARPA
  Port mode is trunk
  EtherType is 0x8100
  Rx
    30553743 unicast packets  94871 multicast packets  1633080 broadcast packets
    32281694 input packets  32522468006 bytes
    0 input packet drops
  Tx
    16919347 unicast packets  588794 multicast packets  8994408 broadcast packets
    26502549 output packets  8364051391 bytes
    0 flood packets
    0 output packet drops
```

10. 使用**show circuit detail**指令檢查這些Veth是否固定至其上行鏈路：

```
Mike-Cliff-Pod-16-B /org/service-profile # show circuit detail
Service Profile: Server-1-1
Server: 1/1
    Fabric ID: A
        VIF: 882
        vNIC: vNIC-0
        Link State: Up
        Oper State: Active
        State Reason:
        Admin Pin: 0/0
        Oper Pin: 0/88
        Encap: Virtual
        Transport: Ether
    Fabric ID: B
        VIF: 883
        vNIC: vNIC-1
        Link State: Up
        Oper State: Active
        State Reason:
        Admin Pin: 0/0
        Oper Pin: 0/89
        Encap: Virtual
        Transport: Ether
```

附註：輸出類似資訊的其它命令包括**show pinning server-interfaces**、**show pinning border-interfaces**和**show pinning interface vethernet x**。您還可以檢查UCSM中的固定連線：



11. 收集有關port-channel的其他詳細資訊。在此配置中，每個FI使用三個埠通道。例如，FI-B有三個關聯的埠通道：

- 埠通道89是FI-B和上游Nexus 5020之間的鏈路聚合控制協定(LACP)埠通道。
- 埠通道1153是自動建立的，位於FI-B和輸入/輸出模組(IOM)-B之間。
- 埠通道1287是自動建立的，位於IOM-B和Cisco VIC 1240（刀片）之間。

1. 輸入**show port-channel summary**命令以檢視FI-B的port-channel配置：

```
Mike-Cliff-Pod-16-B(nxos)# show port-channel summary
Flags:  D - Down        P - Up in port-channel (members)
        I - Individual  H - Hot-standby (LACP only)
        s - Suspended   r - Module-removed
        S - Switched    R - Routed
        U - Up (port-channel)
--------------------------------------------------------------------------------
Group Port-       Type     Protocol  Member Ports
      Channel
--------------------------------------------------------------------------------
89    Po89(SU)    Eth      LACP      Eth1/5(P)    Eth1/6(P)
1153  Po1153(SU)  Eth      NONE      Eth1/1(P)
1287  Po1287(SU)  Eth      NONE      Eth1/1/1(P)  Eth1/1/3(P)
Mike-Cliff-Pod-16-B(nxos)#
```

2. 輸入**show cdp neighbors**命令以發現和檢視有關FI-B的其他資訊：

```
Mike-Cliff-Pod-16-B(nxos)# show cdp neighbors
Capability Codes: R - Router, T - Trans-Bridge, B - Source-Route-Bridge
                  S - Switch, H - Host, I - IGMP, r - Repeater,
                  V - VoIP-Phone, D - Remotely-Managed-Device,
                  s - Supports-STP-Dispute

Device-ID              Local Intrfce Hldtme Capability  Platform      Port ID

SJ-SV-C4K-1            mgmt0         179    R S I     WS-C4506      Gig5/40
N5K-Rack16-2(FLC12110027)Eth1/5        163    S I s     N5K-C5020P-BA Eth1/22
N5K-Rack16-1(SSI1351055H)Eth1/6        157    S I s     N5K-C5020P-BF Eth1/29
mc-vsm(19813088413551897l9)Eth1/1/3    160    S I s     Nexus1000V    Eth5/2
```

3. 輸入**show port-channel summary**命令以檢視FI-A的port-channel配置：

```
Mike-Cliff-Pod-16-A(nxos)# show port-channel summary
Flags:  D - Down        P - Up in port-channel (members)
        I - Individual  H - Hot-standby (LACP only)
        s - Suspended   r - Module-removed
        S - Switched    R - Routed
        U - Up (port-channel)
--------------------------------------------------------------------------------
Group Port-       Type     Protocol  Member Ports
      Channel
--------------------------------------------------------------------------------
88    Po88(SU)    Eth      LACP      Eth1/5(P)    Eth1/6(P)
1025  Po1025(SU)  Eth      NONE      Eth1/1(P)
1288  Po1288(SU)  Eth      NONE      Eth1/1/1(P)  Eth1/1/3(P)
Mike-Cliff-Pod-16-A(nxos)#
```

4. 輸入**show cdp neighbors**命令以發現和檢視有關FI-A的其他資訊：

```
Mike-Cliff-Pod-16-A(nxos)# show cdp neighbors
Capability Codes: R - Router, T - Trans-Bridge, B - Source-Route-Bridge
                  S - Switch, H - Host, I - IGMP, r - Repeater,
                  V - VoIP-Phone, D - Remotely-Managed-Device,
                  s - Supports-STP-Dispute

Device-ID              Local Intrfce Hldtme Capability  Platform      Port ID

SJ-SV-C4K-1            mgmt0         142    R S I     WS-C4506      Gig5/39
N5K-Rack16-2(FLC12110027)Eth1/5        147    S I s     N5K-C5020P-BA Eth1/10
N5K-Rack16-1(SSI1351055H)Eth1/6        121    S I s     N5K-C5020P-BF Eth1/11
mc-vsm(1981308841355189719)Eth1/1/1      167    S I s     Nexus1000V    Eth5/1
```

12. 確定從port-channel中固定成員介面的具體情況。

    輸入**show port-channel**命令，以檢視FI-B - VMK interface(vmk0)MAC地址已固定到port-channel 89的Ethernet1/6:

```
Mike-Cliff-Pod-16-B(nxos)# show port-channel load-balance forwarding-path interface port-channel 1287 vlan 18 src-mac 0050.5667.8eb9 dst-ip 172.16.18.1
Missing params will be substituted by 0's.
Load-balance Algorithm on FEX: source-dest-ip
crc8_hash: 209  Outgoing port id: Ethernet1/1/3
Param(s) used to calculate load-balance:
        dst-ip:  172.16.18.1
        src-ip:  0.0.0.0
        dst-mac: 0000.0000.0000
        src-mac: 0050.5667.8eb9
Mike-Cliff-Pod-16-B(nxos)#
Mike-Cliff-Pod-16-B(nxos)#
Mike-Cliff-Pod-16-B(nxos)# show port-channel load-balance forwarding-path interface port-channel 89 vlan 18 src-mac 0050.5667.8eb9 dst-ip 172.16.18.1
Missing params will be substituted by 0's.
Load-balance Algorithm on switch: source-dest-ip
crc8_hash: 5    Outgoing port id: Ethernet1/6
Param(s) used to calculate load-balance:
        dst-ip:  172.16.18.1
        src-ip:  0.0.0.0
        dst-mac: 0000.0000.0000
        src-mac: 0050.5667.8eb9
Mike-Cliff-Pod-16-B(nxos)#
```

    輸入**show port-channel**命令，以檢視FI-A - VM(ciscolive-vm)MAC位址已固定到port-channel 88的Ethernet1/5:

```
Mike-Cliff-Pod-16-A(nxos)#  show port-channel load-balance forwarding-path interface port-channel 1288 vlan 18 src-mac 0050.5685.63cc dst-ip 172.16.18.1
Missing params will be substituted by 0's.
Load-balance Algorithm on FEX: source-dest-ip
crc8_hash: 214  Outgoing port id: Ethernet1/1/3
Param(s) used to calculate load-balance:
        dst-ip:  172.16.18.1
        src-ip:  0.0.0.0
        dst-mac: 0000.0000.0000
        src-mac: 0050.5685.63cc
Mike-Cliff-Pod-16-A(nxos)#
Mike-Cliff-Pod-16-A(nxos)#
Mike-Cliff-Pod-16-A(nxos)#  show port-channel load-balance forwarding-path interface port-channel 88 vlan 18 src-mac 0050.5685.63cc dst-ip 172.16.18.1
Missing params will be substituted by 0's.
Load-balance Algorithm on switch: source-dest-ip
crc8_hash: 2    Outgoing port id: Ethernet1/5
Param(s) used to calculate load-balance:
        dst-ip:  172.16.18.1
        src-ip:  0.0.0.0
        dst-mac: 0000.0000.0000
        src-mac: 0050.5685.63cc
```

13. 檢查是否在上游Nexus 5020上獲知了MAC地址。

    輸入**show mac address-table**命令以檢視Nexus 5020-1上獲取了VMK interface(vmk0)MAC地址：

```
N5K-Rack16-1#
N5K-Rack16-1# show mac address-table | in 8eb9
* 18        0050.5667.8eb9    dynamic    10          F     F   Po89
N5K-Rack16-1#
```

    輸入**show mac address-table**命令，以檢視在Nexus 5020-2上獲取的VM(ciscolive-

vm)MAC地址：

```
N5K-Rack16-2#
N5K-Rack16-2# show mac address-table | in 63cc
* 18        0050.568f.63cc    dynamic   0           F     F  Po88
N5K-Rack16-2#
```

當您排除網路故障時，此示例可幫助您快速隔離和識別MAC地址學習的方式和位置，以及網路流量的預期路徑。

驗證

驗證程式包括在配置示例中。

疑難排解

此配置示例旨在幫助進行網路故障排除。