Virtual Interface Adapter in a Service Profile Scenario

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Introduction

The new Cisco Unified Computing System (UCS) Cisco Blade Server B440 M1 allows for Virtual Interface Adapter placement in UCS Manager (UCSM) service profiles. This is known as *Virtual Host Interface Placement Assignment*.

Virtual Host Interface Placement Assignment specifies how vNICs and vHBAs are placed on physical network interface (mezzanine) cards in a server hardware configuration independent of one another. When a logical server is associated to a blade, a Virtual Interface Adapter is assigned to a physical adapter.

With the new B440 M1 blade server there are two Virtual Interface Adapters that can assign vNICs/vHBAs to a specific Virtual Interface Adapter (1 to 2). If a vNIC/vHBA is not assigned to a Virtual Interface Adapter, the Unified Computing Manager (UCM) applies a default policy based on **pci bdf order**. Further, UCSM gives you the ability to customize each individual Virtual Interface Adapter and to create Virtual Interface *Adapter profiles* that can be used after server blade implementation or recovery.

Prerequisites

Requirements

Cisco recommends that you have knowledge of these topics:

- Cisco UCS 5108 Chassis
- Cisco UCS 6100XP Fabric Interconnet with release 4.1(3)N2
- Cisco UCS B440–M1 Blade Server
- Cisco UCSM version 1.3

Components Used

The information in this document is based on these software and hardware versions:

- Cisco UCS B440–M1 Blade Server

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. If your network is live, make sure that you understand the potential impact of any command.

Conventions

Refer to Cisco Technical Tips Conventions for more information on document conventions.

Background Information

Cisco UCSM allows you to define the B440–M1 10Gb mezzanine adapters, of which there are now four:

- QLogic Schultz based CNA (M72KR–Q)
- Emulex Tigershark based CNA (M72KR–E)
- Intel Niantic based NIC (M61KR–I)
- Broadcom Everest based NIC (M51KR–I)

The B440–M1 10Gb mezzanine adapters used for this document are Emulex–based CNA M72KR–E that supports two vHBAs/vNICs.

This is an example of a 2–slot (1 and 2) Interface Adapter with 2 HBAs and 2 NICs per Virtual Interface Adapter:
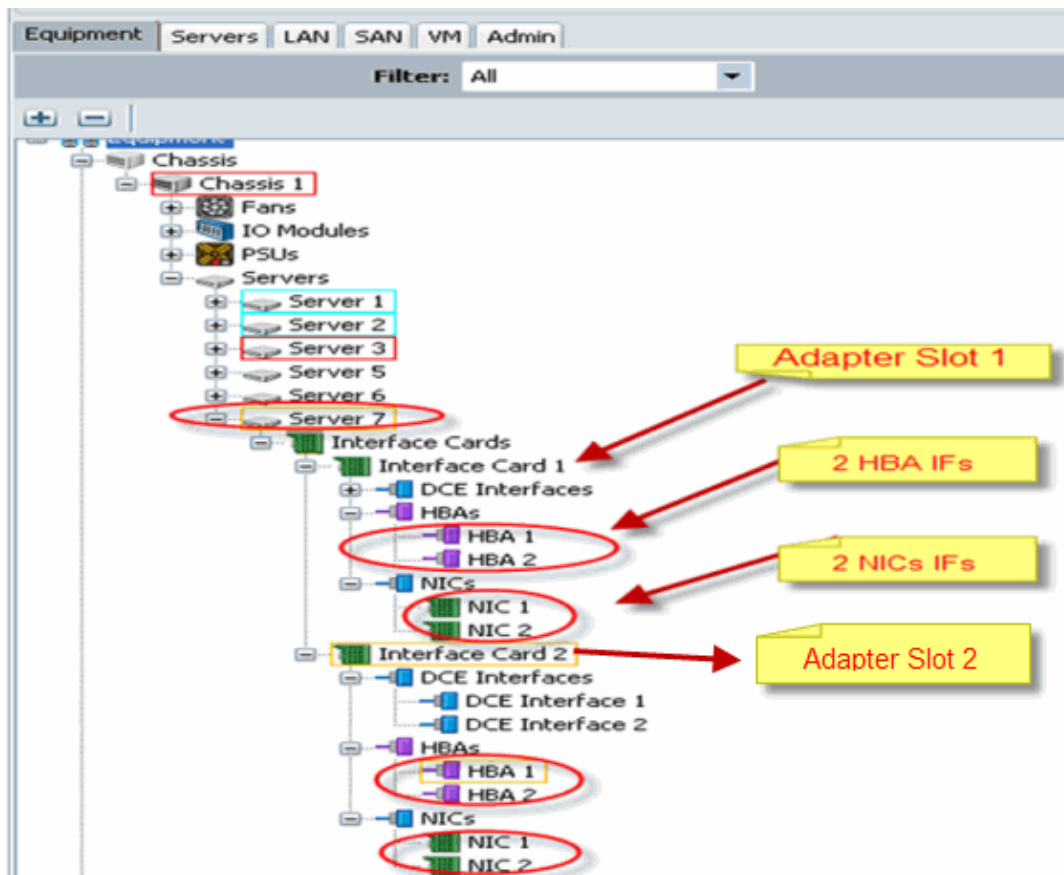
Note: Pictured above is a Cisco UCSM equipment view of the Emulex installed adapters.

The service profile also supports vNIC/vHBA placement in UCSM GUI, which allows for Virtual Interface Adapter properties configuration of selection preference:

- **All:** Any vNIC/vHBA can be assigned to this Virtual Interface Adapter.
- **Assigned−Only:** Only the explicitly assigned vNIC/vHBA can belong to this Virtual Interface Adapter.
- **Exclude−Dynamic:** UCSM cannot assign dynamic vNICs to this Virtual Interface Adapter.
- **Exclude−Unassigned:** UCSM cannot assign static (non dynamic) vNICs to this Virtual Interface Adapter.

The above selection preference options indicate how UCSM can use this Virtual Interface Adapter when it assigns a vNIC/vHBA.

Note: Numerical order means vNIC/vHBA can be ordered inside a Virtual Interface Adapter.

This shows selection preference where vCon1 is assigned **all** and vCon2 is assigned **assigned−only**:
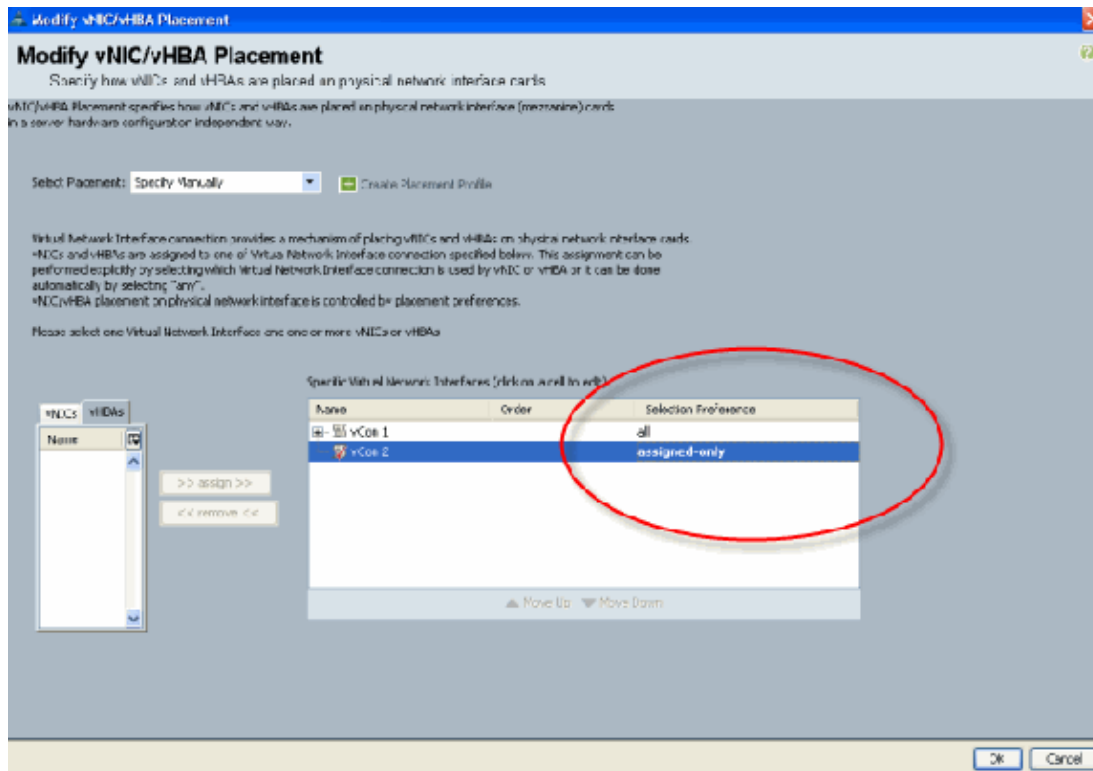
Virtual Interface Adapter in Service Profile

Configuring the service profile for the Virtual Interface Adapter requires an understanding of how the software assigns the adapters for the B440–M1:

- vNICs and vHBAs are assigned to the Virtual Interface Adapter implicitly by the user or automatically by UCSM during LS association.
- During the LS association, the Virtual Interface Adapter is mapped to physical mezzanine cards.

vNIC/vHBA Placement

Default placement of vNICs/vHBAs:

- If the 2 adapters are present, by default, the B440–M1 adapter assigns vNICs/vHBAs starting from the slot on the right (slot 1) and equally distributes the total number between the 2 adapters. For example: If you have 4 vNICs (i.e., 1, 2, 3, and 4), it will assign 1 and 2 on the slot 1 adapter and 3 and 4 on the slot 0 adapter.

Specific placement of vNICs/vHBAs:

- If more control is needed on how to place a vNIC/vHBA to a specific adapter, you can use the concept of *Virtual Interface Adapter* .

Service Profile

Perform these steps:

1. Creation of the service profile is not new to Cisco UCS and can be referenced in Configuring Service Profiles for details on creation.

2. With Cisco UCSM during service profile creation, you can perform your desired Virtual Interface Adapter placement or use the **Modify vNIC/vHBA Placement** under **Actions** for both Network (vNICs) or Storage (vHBAs). Refer to Setting the vNIC/vHBA Placement for more details on service profile configuration of Virtual Interface Adapters.

This is an illustration of Virtual Interface Adapter placement for vNICs/vHBAs after service profile creation of CE–B440–M1–SP:

Network Modify vNIC Virtual Interface Adapter Placement
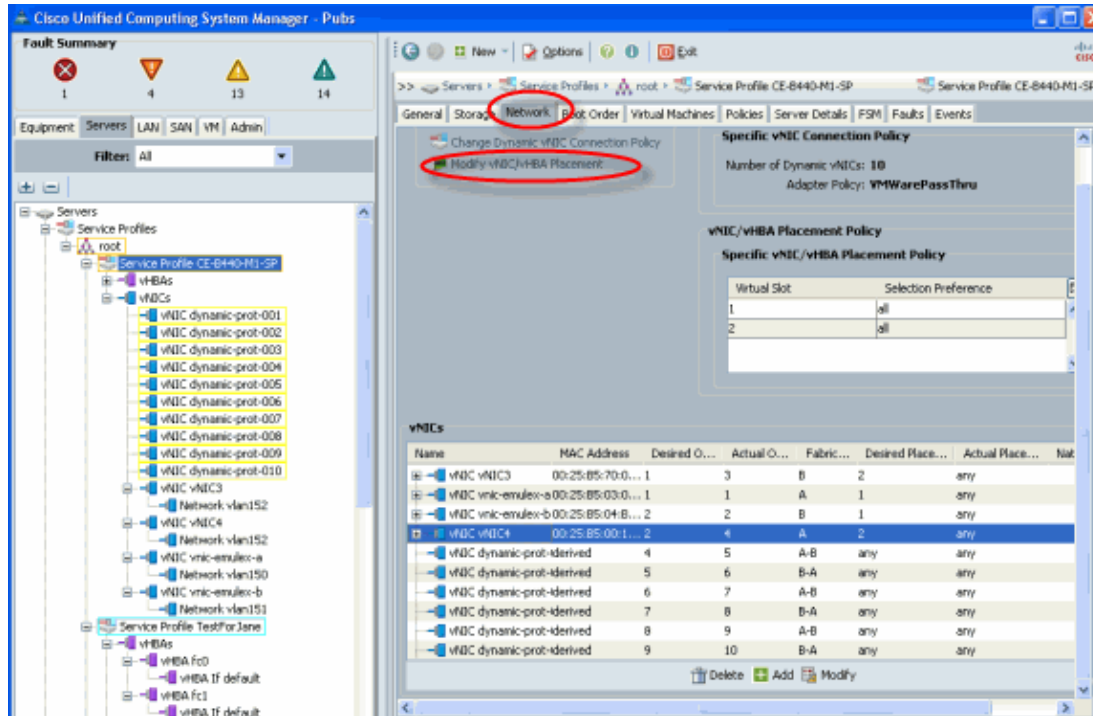
**Storage Modify vHBA Virtual Interface Adapter Placement**
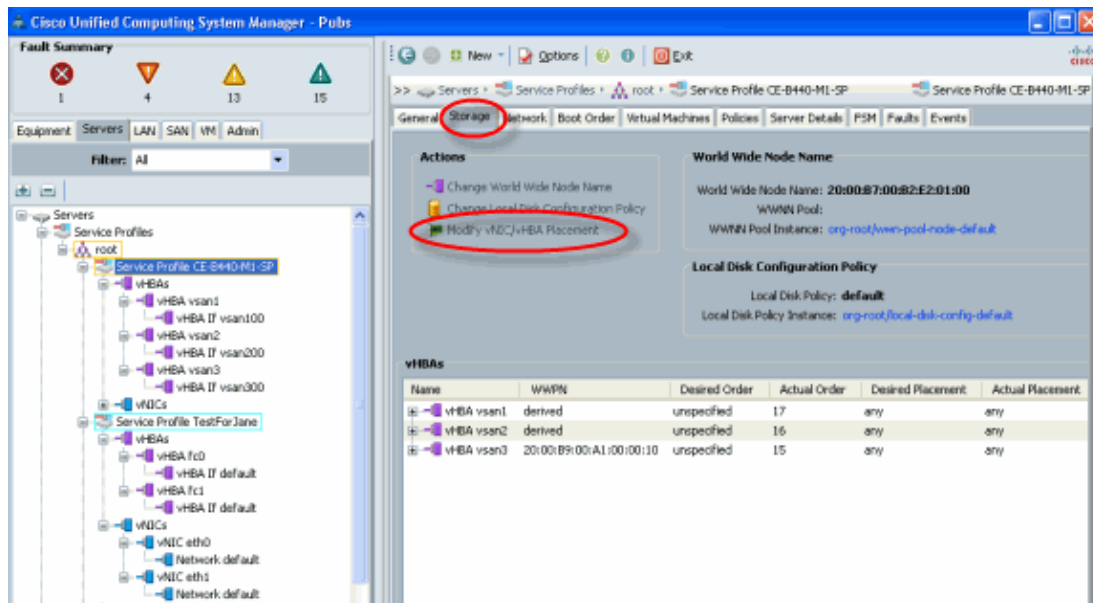
Hardware Adapter Verification

This section describes how to verify Physical Adapters installed in a Cisco UCS 5108 chassis:

From the **Equipment** tab of UCSM, choose the appropriate interface card under the Interface Cards of the server. Refer to Managing Firmware for further UCSM GUI Equipment tab pane functions.

Adapter Hardware Identification
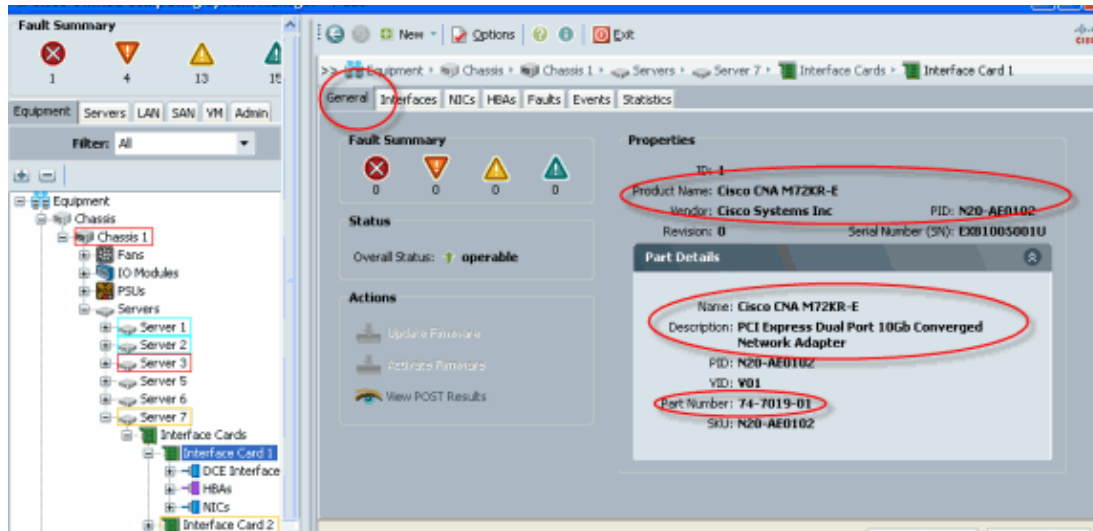
Service Profile Default and Selection of Virtual Interface Placement Interface Adapter Card 2

The Default Virtual Interface Placement section describes how to use the default and selection Virtual Interface Placement using the Cisco B440–M1 Emulex Adapter Interface Card 2 with UCSM.

Default Virtual Interface Placement
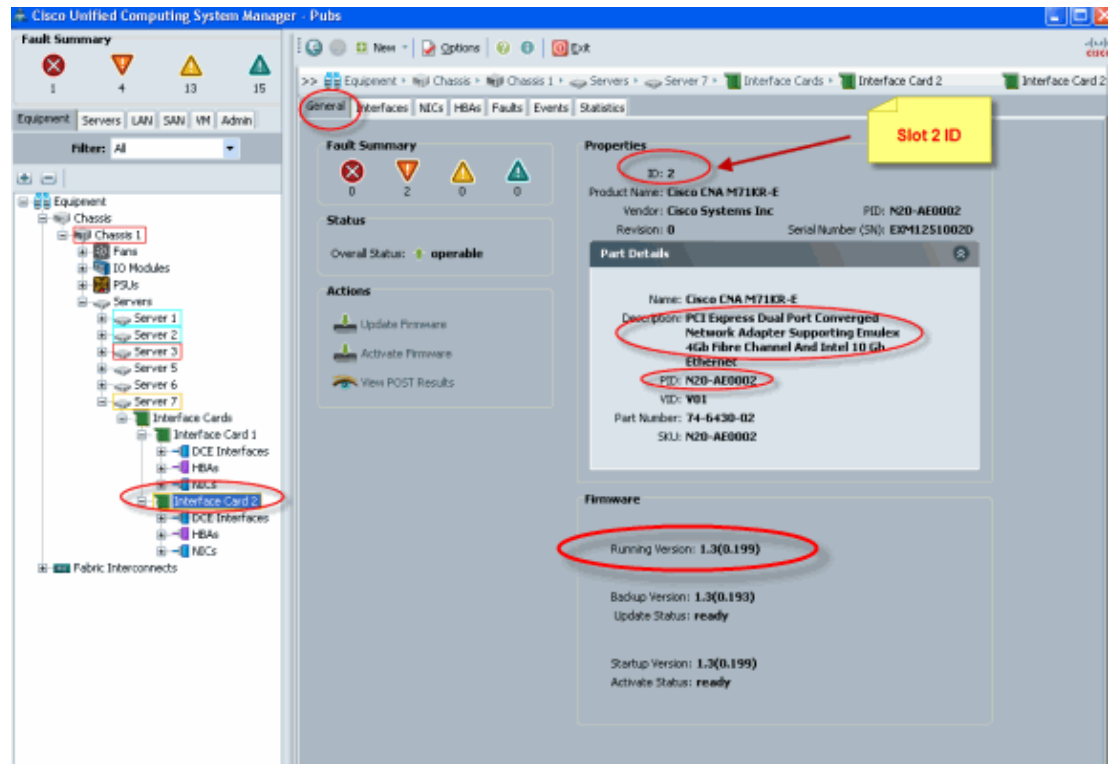
Perform these steps:

    1. Verify hardware for the B440–M1 Emulex Adapter Interface Card 2:

        a. Verify hardware for the B440–M1 Emulex Adapter.

        Identify Adapter Type for B440–M1 Interface Cards (slot1 and slot2)
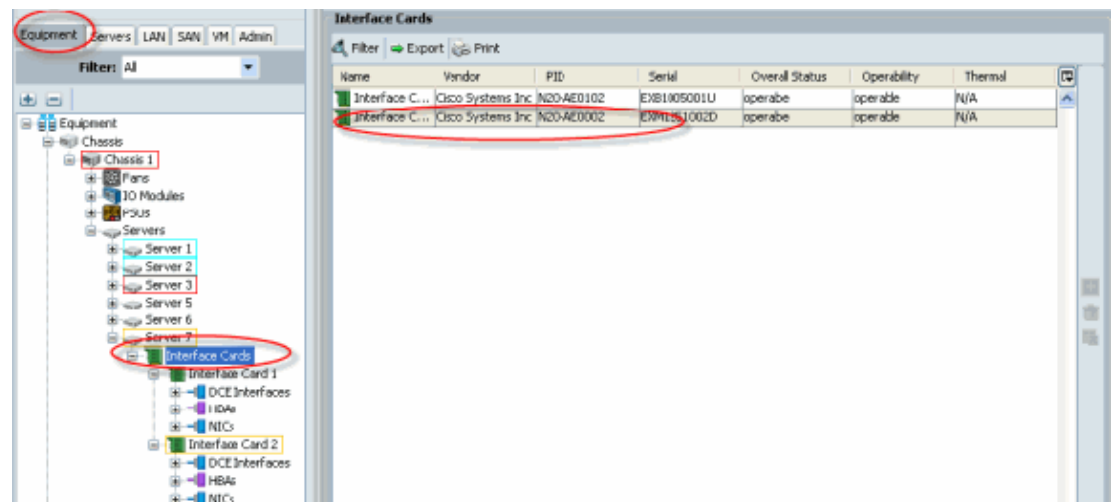
b. Verify hardware for the B440–M1 Emulex Adapter details for Interface Card 2.

Verifying Interface Adapter details for slot 2 Interface Card 2

2. Configure the service profile for the B440–M1 Emulex Adapter Interface Card 2:
3. Verify the default virtual interface placement.

Create a Service Profile

Refer to Configuring Service Profiles for further details on service profile creation.

1. Create a service profile for Interface Card 2.
2. Create two vNICs for the service profile created.

   a. **Server Profile created with default 2 vNICs**
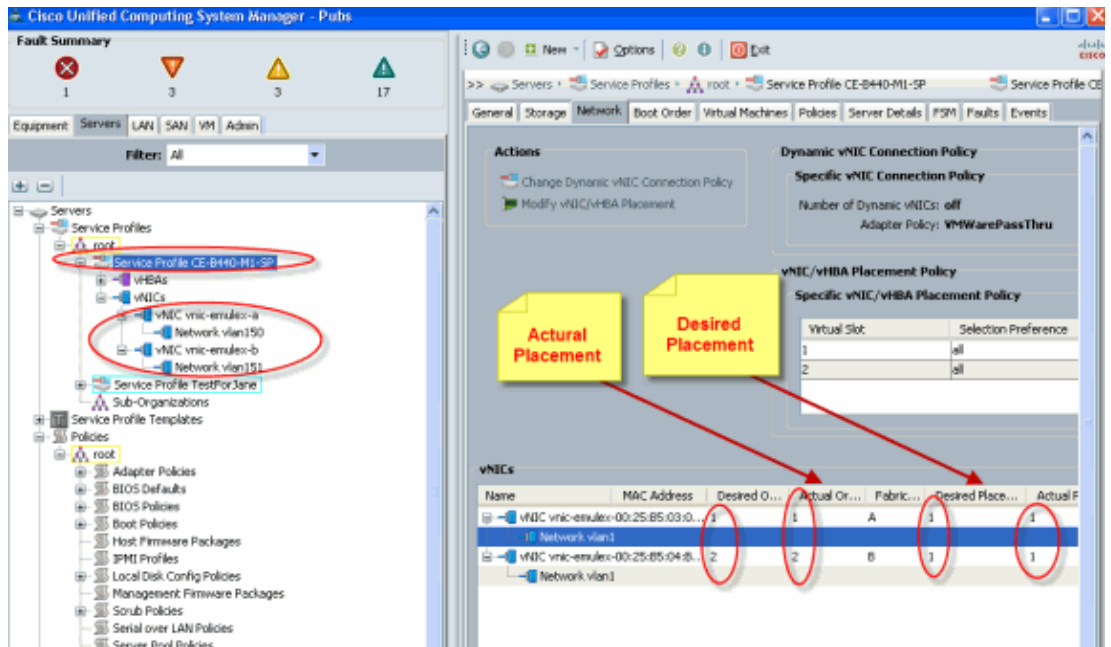
b. The below snapshot shows the order placement vCon 1 that has been assigned placement default Interface Card 1 slot 1 for the vNICs defined in the service profile.

vNICs assigned to Interface Card 1
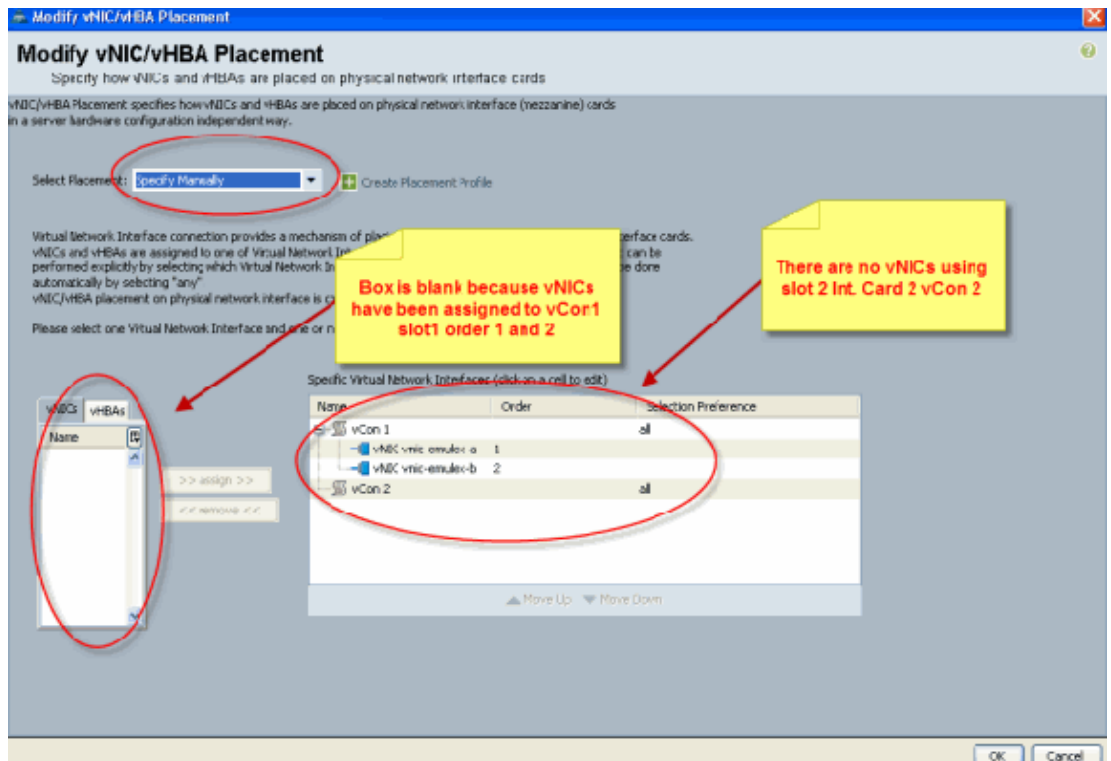

```
Pubs-B /org # scope service-profile server 1/7
Pubs-B /org/service-profile # show vnic detail


Name: vnic-emulex-a
    Fabric ID: A
    Dynamic MAC Addr: 00:25:B5:03:03:0B
    Desired Order: 1
    Actual Order: 1
    Desired VCon Placement: 1
```

```
                     Actual VCon Placement: 1
                     Equipment: sys/chassis-1/blade-7/adaptor-1/host-eth-1

               Name: vnic-emulex-b
                     Fabric ID: B
                     Dynamic MAC Addr: 00:25:B5:04:B2:07
                     Desired Order: 2
                     Actual Order: 2
                     Desired VCon Placement: 1
                     Actual VCon Placement: 1
                     Equipment: sys/chassis-1/blade-7/adaptor-1/host-eth-2
```

3. Verify vNIC default Virtual Interface Adapter placement.

Default Virtual Interface Placement


```
          Pubs-B /org # scope service-profile server 1/7

          Pubs-B /org/service-profile # show vnic detail

           Name: vnic-emulex-c
              Fabric ID: A
              Dynamic MAC Addr: 00:25:B5:00:A5:00
              Desired Order: 3
              Actual Order: 1
              Desired VCon Placement: Any
              Actual VCon Placement: 2
              Equipment: sys/chassis-1/blade-7/adaptor-2/host-eth-1

           Name: vnic-emulex-d
              Fabric ID: B
              Dynamic MAC Addr: 00:25:B5:00:00:00
              Desired Order: 4
              Actual Order: 2
              Desired VCon Placement: Any
              Actual VCon Placement: 2
              Equipment: sys/chassis-1/blade-7/adaptor-2/host-eth-2
```
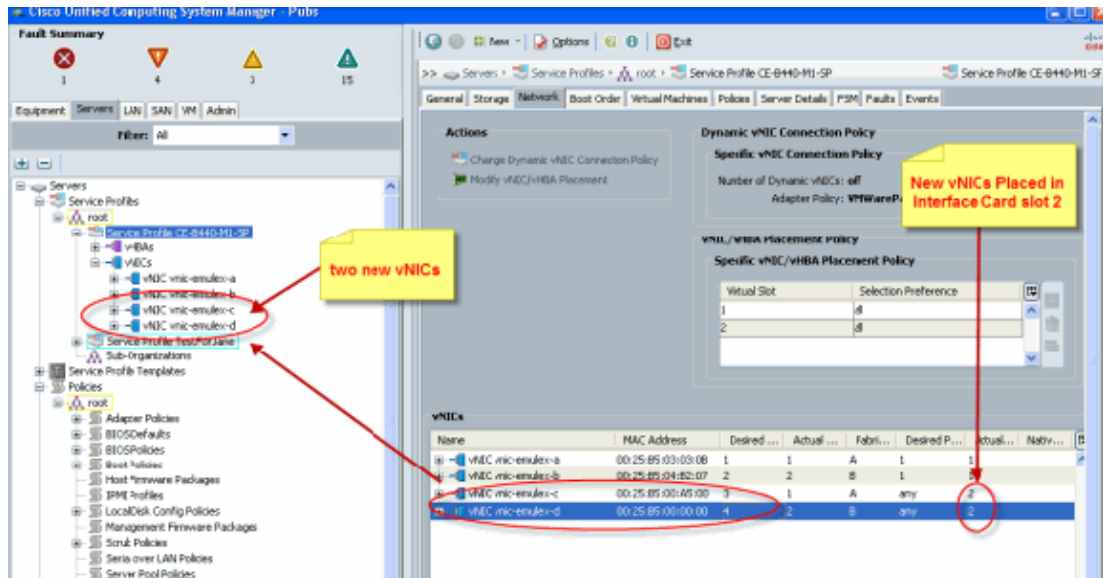
Manual Virtual Interface Adapter Placement

1. In order to use Cisco UCSM Modify vNICs/vHBAs Placement, refer to Setting the vNIC/vHBA Placement.
2. Assign the new vNICs (**vnic−emulex−c** and **vnic−emulex−d**) to Interface Card 1 (Slot 1) from Slot 2

and assign vnic–emulex–a/b vNICs.

    a. This step verifies that **vnic–emulex–c/d** can be specified manually.
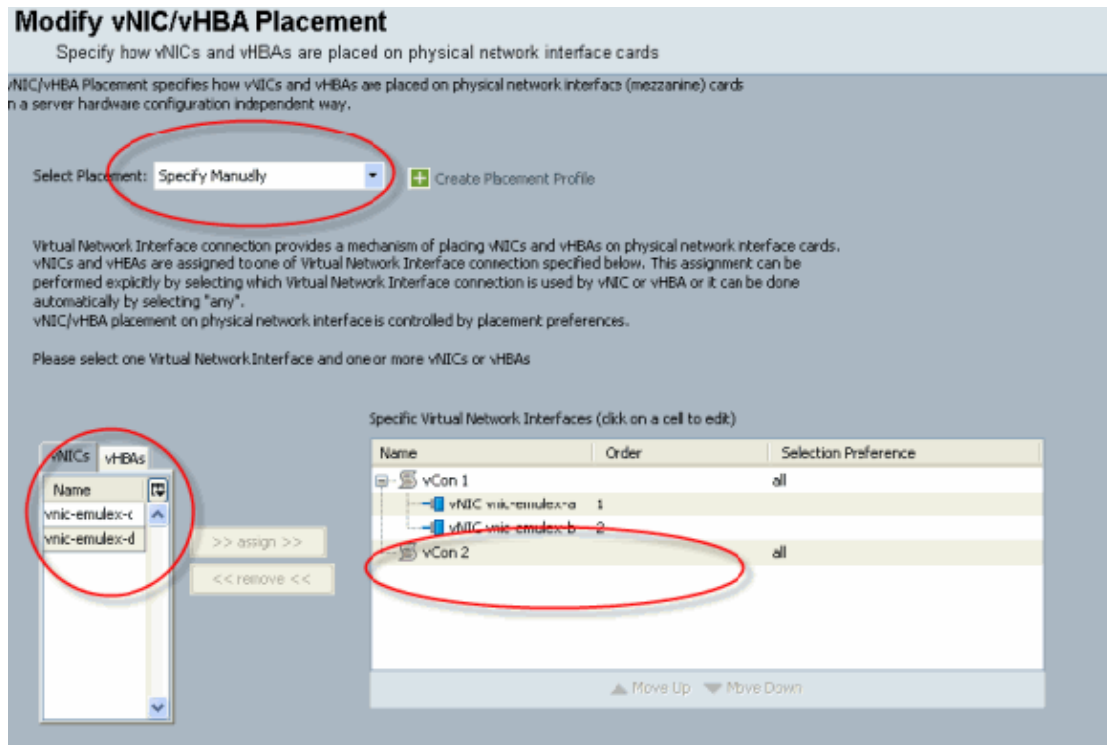
b. Reassign the vNICs placements.
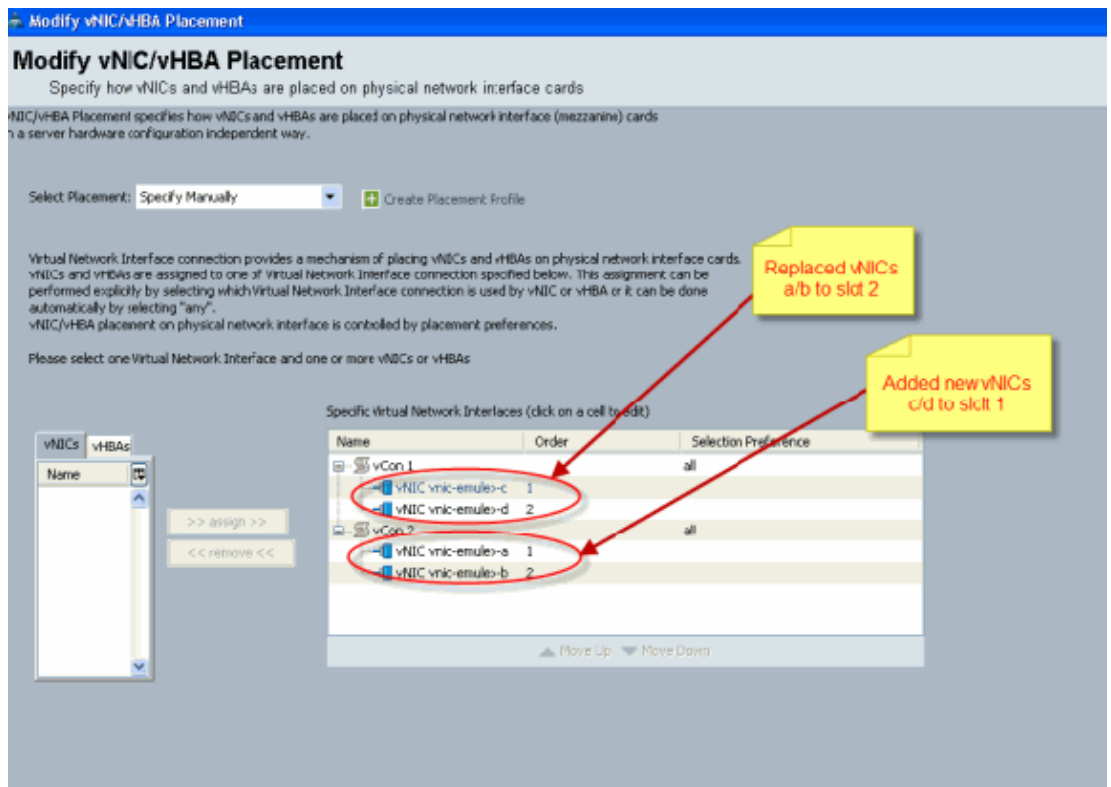

```
        vNIC:

            Name: vnic-emulex-a
            Fabric ID: A
            Dynamic MAC Addr: 00:25:B5:03:03:0B
```

```
                Desired Order: 1
                Actual Order: 1
                Desired VCon Placement: 2
                Actual VCon Placement: 2
                Equipment: sys/chassis-1/blade-7/adaptor-2/host-eth-1

            Name: vnic-emulex-b
            Fabric ID: B
            Dynamic MAC Addr: 00:25:B5:04:B2:07
            Desired Order: 2
            Actual Order: 2
            Desired VCon Placement: 2
            Actual VCon Placement: 2
            Equipment: sys/chassis-1/blade-7/adaptor-2/host-eth-2

            Name: vnic-emulex-c
            Fabric ID: A
            Dynamic MAC Addr: 00:25:B5:00:A5:00
            Desired Order: 1
            Actual Order: 1
            Desired VCon Placement: 1
            Actual VCon Placement: 1
            Equipment: sys/chassis-1/blade-7/adaptor-1/host-eth-1

          Name: vnic-emulex-d
            Fabric ID: B
            Dynamic MAC Addr: 00:25:B5:00:00:00
            Desired Order: 2
            Actual Order: 2
            Desired VCon Placement: 1
            Actual VCon Placement: 1
            Equipment: sys/chassis-1/blade-7/adaptor-1/host-eth-2

    Pubs-B /org/service-profile # show vcon expand detail

    Virtual Network Interface:
        Virtual Network Interface ID: 1 This is Adapter ID:1 Slot1
        Selection Preference: All

         Virtual Network Interface ID: 2 This is Adapter ID:2 Slot2
        Selection Preference: All

    Pubs-B /chassis/server # show server adapter vnics

    Eth Interface:

    Adapter Interface Vnic Dn    Dynamic MAC Addr Type
    ------- --------- ---------- ---------------- ----

    1     1 org-root/ls-CE-B440-M1-SP/ether-vnic-emulex-c 00:25:B5:00:A5:00 Ether
    1     2 org-root/ls-CE-B440-M1-SP/ether-vnic-emulex-d 00:25:B5:00:00:00 Ether

    2     1 org-root/ls-CE-B440-M1-SP/ether-vnic-emulex-a 00:25:B5:03:03:0B Ether
    2     2 org-root/ls-CE-B440-M1-SP/ether-vnic-emulex-b 00:25:B5:04:B2:07 Ether
```

Related Information

- **Cisco UCS Manager GUI Configuration Guide, Release 1.3(1)**
- **Setting the vNIC/vHBA Placement**
- **Technical Support & Documentation – Cisco Systems**

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