Virtual Interface Adapter in a Service Profile Scenario

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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**:

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Modify vNIC/vHBA Placemen	t	- 63
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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:

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Network Modify vNIC Virtual Interface Adapter Placement

Storage Modify vHBA Virtual Interface Adapter Placement

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	B - VHBA /	cD			E vHBA vsan3	20:00:B9:00:A1:00:00:10	unspecified	15	any	any
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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

Fault Summary	СЭ 🔘 🛛 New - 🕞 Qotions 🛛 🕙 🕚	O Exit doub
1 4 13 15	>> the ipment > (ii) Chassis > (iii) Chassis 1	* 🥪 Servers * 🥪 Server 7 * 🌉 Interface Cards * 📜 Interface Card 1
Equipment Servers LAN SAN VM Admin	General Interfaces NICs HEAS Faults Eve	nts Statistics
Filten Al 🔹	Fault Summary	Properties
	😣 🔻 🛆 🙆	10:1
Equipment	0 0 0 0	Product Name: Cisco CNA M72XR-E
B Bill Chassis	Status	Revision: 0 Serial Number (SN): EX81005001U
B B Fans IO Modules	Overall Status: † operable	Part Details
B B PSUs	Actions	Name: Gere CNA M22KB-E
B Server 1	🚢 Updata Finanata	Description: PCI Express Dual Port 10Gb Converged
B- gp Server 2 B- gp Server 3	Activate Rimonare	PID: N20-AE0102
B - Cap Server 5	The view POST Results	VID: W01
B Server 7		SRU: N20-AE0102
Interface Cards Interface Cards		
B DCE Interface		
🗟 🔚 Interface Card 2 🚃		

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)

\bigcirc	Interface Card	is							
Equipment Eervers LAN SAN VM Admin	🛃 Filter 👄 Exp	port 😸 Print							
Filter: Al	Name	Vandor	PID	Serial	Overal Status	Operability	Thermal		
± =	Therface C.	Cisco Systems Inc	N20-AE0102	EXB1005001U	operabe	operable	N/A	~	
B B Equipment	Interface C.	Cisco Systems Inc	N20-AE0002	EXML251002D	operabe	operable	N/A		
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Provide Chassis 1									
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Interface Card 1									
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B IDA									
E - NICS									
R DCE Interfaces								- 11	
HBAS									
B NIG								- 11	

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/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

a. This step verifies that **vnic–emulex–c/d** can be specified manually.

Modify vNIC/vHBA Placeme	nt			
Specify how vNICs and vHBAs are plac	ed on physical network	interface cards		
NIC/VHBA Placement specifies how VVICs and VHBAs n a server hardware configuration independent way. Select Placement: Specify Manually Virtual Network Interface connection provides a m vNICs and vHBAs are assigned to one of Virtual Net performed expicitly by selecting which Virtual Net automatically by selecting "any". vNIC/VHBA placement on physical network interfar Please select one Virtual Network Interface and or	ene placed on physical netwo Create Placemen echanism of placing WIICs ar struck Interface connection is work Interface connection is to controlled by placement te or more vNICs or vHBAs	rk interface (mezzanine t Profile xd vHBAs on physical net specified below. This ass used by vNIC or vHBA o preferences.) cards work nterface cards. ignment can be it can be done	
NIICs vHBAs Name vnic-emuleix-d vnic-emuleix-d vnic-emuleix-d << remove <<	Specific Virtual Network Into Name SycCon 1 VRIC viik-remut VRIC viik-remut	erfaces (dick on a cell to Order lex-ra 1 lex b 2 Move Up	edit) Selection Praference all all	

b. Reassign the vNICs placements.

 Modify vNIC/vHBA Placement Modify vNIC/vHBA Placement Specify how vNICs and vHBAs are placement 	ent ced on physical networ	k in:erface cards		
NIC/VHBA Placement specifies how VNICs and VHBA 5 a server hardware configuration independent way.	s are placed on physical net	work interface (mezzanine) c	ards	
Select Placement: Specify Manually Virtual Network Interface connection provides a vNICS and vrtBks are assigned to one of Virtual Net performed explicitly by selecting which Virtual Net automatically by relecting "any". vNIC/VHER clacement on physical network interf	Create Placene mechanism of placing vNICs wetwork.Interface connection ace is controlled by placemer	ent Profile and H1BAs on physical netwo in specified below. This assig is used by vNIC or vHBA or it nt preferences.	ork interface cards mert can be can be done a/b to	ed will's p slot 2
Please select one Virtual Network Interface and o	one or more VNDCs or VHBAs Specific Virtual Network I	nterlaces (click on a cell ty e	91)	Added new vNICs c/d to slcit 1
VNICs VHEAs Name IC >> assign >> << remove <<	Name	Order nuleo-c 1 nuleo-d 2 nuleo-a 1 nuleo-b 2	Selection Presentance all	
<u> </u>		📥 Move Up 🦄	Моче Вонп	

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 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
1
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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