# **Create Port Policy with Pin Groups for UCS Domain in IMM**

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### Introduction

This document describes the difference between Hard- and Dynamic Pinning, Hard Pinning configuration for a Unified Computing System domain on IMM.

# **Prerequisites:**

### Requirements

Cisco recommends you have knowledge of these topics:

- Intersight Managed Mode
- Pin Groups
- Pinning: Dynamic Pinning & Static Pinning
- Fibre Channel
- Disjoint Layer 2

#### **Components Used**

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

- Cisco UCS 6454 54-Port Fabric Interconnect in Ethernet and Fibre Channel End Host Mode
- Infrastructure bundle version: 4.2.1m
- Cisco UCS B200 M5 Server
- Server firmware version: 4.2.1a

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, ensure that you understand the potential impact of any command.

### **Background Information**

Pinning is the process that Fabric Interconnect (FI) uses to establish the communication between servers and the network.

Virtual Network Interface Cards (vNICs) establish the connection to an uplink port or port channel available in the Fabric Interconnect. This process is known as Pinning.

Dynamic Pinning is the configuration that Fabrics Interconnect has as default.

Fabric Interconnect automatically binds server vNICs to uplink FI ports depending on the number of available uplinks configured.

**Static pinning** requires the administrator to use manual pin groups to bind vNICs to the uplink ports. FI does not do the configuration automatically.

**Note**: If the purpose is to disjoint the networks (separate VLANs in uplinks) the best approach for this is to configure Disjoint Layer 2, for reference see: <u>Configure Disjoint Layer 2 in Intersight Managed</u> <u>Mode Domain</u>

# Topology

This configuration example in this document is based on the next topologies.



Eth pinnning topology



Login to Intersight GUI as an administrator user.

#### **Create Port Policy for UCS Domain**

#### **Configuration of Ethernet ports**

- Step 1. Locate on the Infrastructure Service tab. In the navigation plane, click on Configure Tab.
- **Step 2.** On the Configure Tab, expand Configure > Policies.
- Step 3. Click on Policies.
- Step 4. Navigate to Create Policy and click on the button.

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:\$1	Overview		Pol	licies					
æ				.27-vfc-adapter-policy1	ι	JCS Server	Fibre Channel Adapter	© N/A	
0	Operate			.27-vfc-network-policy1	L.	JCS Server	Fibre Channel Network	© N/A	
	Servers			.27-vtc-qos-policy1	L.	JCS Server	Fibre Channel QoS	© N/A	
	Chassis			.27-veth-network-policy1	ι	JCS Server	Ethernet Network	© N/A	
	Fabric Interconnects	cts		.27-veth-gos-policy1	L.	JCS Server	Ethernet QoS	© N/A	
	HyperFlex Clusters			.27-veth-adapter-policy1	L.	JCS Server	Ethernet Adapter	© N/A	
				iSCSI-LAN-Policy	ι	JCS Server	LAN Connectivity	6 O	
_				UCSC-lan-connectivity-policy	/ L	JCS Server	LAN Connectivity	6	
	Configure			UCSC-Idap-policy	0 (	JCS Server	LDAP	© ©	
	Profiles			UCSC-vtc-qos-policy1	ι	JCS Server	Fibre Channel QoS	© N/A	
	Templates			UCSC-vfc-adapter-policy1	ι	JCS Server	Fibre Channel Adapter	© N/A	
	Policies	1		UCSC-vfc-network-policy1	L.	JCS Server	Fibre Channel Network	© N/A	
	Pools			UCSC-veth-network-policy2	ι	JCS Server	Ethernet Network	© N/A	
	10013			UCSC-veth-gos-policy1	ι	JCS Server	Ethernet QoS	© N/A	
				UCSC-veth-adapter-policy1	L.	JCS Server	Ethernet Adapter	© N/A	
N	Command Palette			UCSC-veth-gos-policy2	L.	JCS Server	Ethernet QoS	© N/A	
Navi	gate Intersight with Ctrl+K or g	<b>1</b> 0		UCSC-veth-adapter-policy2	ι	JCS Server	Ethernet Adapter	© N/A	
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				M2-HWRAID-Booting	ι	JCS Server	Boot Order	۵ (۵	

Create Policy

**Step 5.** On Platform Type, click on the **UCS Domain** option to filter policies and to find the Port policy easier. Select **Port** and click on **Start**.

=	disco Intersight	×	nfrastructure Service 🗸					Q Search
×.	Overview		* Policies Select Policy Type					
0	Operate							
	Servers		Filters					
	Chassis							
	Fabric Interconnects		Platform Type	Ethernet Network Control	Link Control	Port	System QoS	
	HyperFlex Clusters			Ethernet Network Group	Multicast Policy		O VLAN	
	Integrated Systems		UCS Server 1	Flow Control	Network Connectivity	Switch Control	O VSAN	
	Configure		UCS Chassis	Link Aggregation	○ NTP	Syslog		
	Profiles		HyperFlex Cluster					
	Templates		C Kubernetes Cluster					
	Policies							
	Pools							
Nav to H	Command Palette	×						
				Cancel				

Port Policy

Step 6. Fill in the information required such as Organization, Name, and Switch Model. Those are mandatory

Configure unified ports to the number of Fibre Channel ports. For this sample configuration, the number of FC ports would be 4. Verify the number of FC and Ethernet ports. Click **Next**.

Note: The maximum number is FC ports for Fabric Interconnect 6454 is 16.



Unified port

For this sample configuration, Breakout ports are not required. If needed, on **Breakout Options** set the number of ports and modify the speed as desired.

Step 9. On port roles, complete the next actions to configure server ports:

• Select ports and click on **Configure**. It takes you to a new window where you display a menu to select the desired type of role for the selected ports have.

For this sample configuration, port 33 is used as a server port.

**Tip**: This configuration example only shows the Ethernet Uplink configuration and FC Uplinks configuration. Other port roles can be configured in this step as well.

≡	duelle Intersight	😂 Infrastructure Service 🗸	Q See	rch
1\$K	Overview	Policies > Port Create		
0	Operate ^		Dort Polor	
	Servers	General General	Fort Roles	
	Chassis	Unified Port	Configure port roles to define the traffic type carried through a unified port connection.	
	Fabric Interconnects	Breakout Options	Port Roles Port Channels Pin Groups	
	HyperFlex Clusters	Port Roles 2	Configure Selected Parts Part 33   Clear Selection	
	Integrated Systems			
۵,	Configure ^			17 47 18
	Profiles			•
	Templates			Ð
	Policies			
	Pools			

For this sample configuration, it is set as Port. Use Port Channel if your environment requires it.Select the desired ethernet uplink for this Pin Group.

≡	circe Intersight	×	infrastructure Service 🗸					
*	Overview		Policies > Port Create					
0	Operate ^							
	Servers			Create P	in Group			
	Chassis			Configuration				
	Fabric Interconnects							
	HyperFlex Clusters			Pin Group Type	RAN			
	Integrated Systems							
۰.	Configure ^			EMMGMT	••			
	Profiles							
	Templates			Interface Type				
	Policies			Port O	Port Channels			
	Pools			Part Selection			💽 Enat	ked
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							Ethernet Uplink	
				Name		Turne	Brain	0
				e port 53		Ethernet	Ethernet Uplink	
				O port 54		Ethernet	Ethernet Uplink	
				Selected 1 of 2	Show Selected	Unselect All		
			Cancel					

Pin Group for Management

- Repeat the procedure for the uplink. For this sample configuration, the second uplink is named **EthPROD.**
- Click Save.

Create Pin Group		
Configuration		
Pin Group Type		
⊙ LAN ○ SAN		
Pin Group Name * EthPROD		
Interface Type		
Port OPort Channels		
Port Selection		C Enabled
		se stansassessessessessessessessessessessessess
		ø
Name	Туре	Role
O port 53	Ethernet	Ethernet Uplink

#### **Configuration of Fibre Channel ports**

Step 1. Complete the next actions to configure Fibre Channel ports.

• Navigate to the **Port Roles** tab. Select the desired FC ports to use, and right-click **Configure**.

≡	diale Intersight	1 Infrastructure Service V							Q Search
1\$K.	Overview	Policies > Port							
٥	Operate     A       Servers     A       Chassis     A       Fabric Interconnects     A       HyperFlex Clusters     A       Integrated Systems     A       Configure     A       Profiles     A       Templates     B	<ul> <li>General</li> <li>Unified Port</li> <li>Breakout Options</li> <li>Port Roles</li> <li>2</li> <li>1</li> </ul>	Port Roles         Configure port roles to define the traffic type carried through a unified port connection.         Port Roles       Port Channels         Port Roles       Port 3, Port 2         Centragere       Selected Ports         Port 3, Port 2       Centragere         Centragere       Selected Ports         Centragere       Selected Ports         Centragere       Selected Ports         Centragere       Selected Ports         Centre       Selected Ports						
New Navi to H	Command Palette * gate intensight with Ctri+K or go alp > Command Palette				Name port 1 port 2 port 3	Type FC FC FC	Role Unconfigured Unconfigured Unconfigured	Connected Device Type	Device Numbr
			Cancel		port 4	FC	Unconfigured		

- Select a role for this FC port, set the speed, and type the **VSANID** that is associated with these ports.
- Click on Save.

≡	cisco Intersight	🔆 Infrastructure Service 🗸		Q Search
×\$1.	Overview	Policies > Port Create		
0	Operate ^			
	Servers		Configure (2 Ports)	
	Chassis			
	Fabric Interconnects		Configuration	
	HyperFlex Clusters		Selected Ports Port 1, Port 2	
	Integrated Systems		FC Uplink v	
.0	Configure ^			
	Profiles		Admin Speed VSAN ID * → 166bos ∨ 0 100 D 0	
	Templates			
	Policies			
	Pools			
Ne	Command Palette			
Nev to M	gate Intersight with Ctrl+K or go			
		Cancel		

Fiber channel uplink configuration

Step 2. Create Pin Group for FC uplinks. The procedure is similar to the configuration of Ethernet ports.

- Select SAN as Pin Group Type. Name the Pin Group with a reference for its use. **OldStorage** exemplifies what it is used for.
- Interface Type depends on the needs of the environment.
- Select the desired FC uplink for this Pin Group.

≡	dude Intersight	×	Infrastructure Service 🤝					
*	Overview		Policies > Port Create					
0	Operate ^							
	Servers			Create	Pin Group			
	Chassis			Configuration				
	Fabric Interconnects							
	HyperFlex Clusters			Pin Group Ty	pe			
	Integrated Systems				ann			
	Configure ^			OldStorage				
	Profiles							
	Templates			Interface Typ	*			
	Policies			Pert C	Port Channels			
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				O port 2		FC	FC Uplink	
				Selected 1 of	2 Show Selected	Unselect All		
			Cancel					

. Select Organization, name your policy, and choose the target platform for which the server profile is applicable. Click **Next.** 

≡	cisco Intersight	😂 Infrastructure Service 🗸	Q Search
×\$1.	Overview	Policies > LAN Connectivity	
©	Operate     ^       Servers     -       Chassis     -       Fabric Interconnects     -       HyperFlex Clusters     -       Integrated Systems     -       Configure     ^       Profiles     -       Templates     -       Pools     -	General     Policy Details	General         Add a name, description and tag for the policy.         Organization *         default         Name *         Static_LAN         Target Platform °         OUCS Server (Standalone) ® UCS Server (FI-Attached)         Set Tags
Navi to H	Command Palette × gate Intensight with Ctrl+K or go elp > Command Palette		<= 1024 Cancel

General information for LAN policy

Step 3. Navigate to vNIC Configuration and click on Add vNIC button.

Step 4. Name your vNIC and select the Pin Group name associated with this vNIC for static pinning.

**Step 5**. Select or create a **Pool Policy** for Mac addresses about to utilize. You can choose the Static option if you need a specific one.

Step 6. Select carefully the switch ID this vNIC is going to belong to.

For this sample configuration, **MGMT\_A** belongs to the **EthMGMT** pin group and it points to Fabric Interconnect A.

=	tinde Intersight	×	Infrastructure Service $$		
*	Overview				
Ø	Operate Servers Chassis Fabric Interconnects		Add vNIC		Ceneral Name* Pin Group Name MOMEA <u>EewKOMT × v o</u>
ه,	Properties Contents Configure Profiles Templates Policies			3	MAC Pool Static MAC Pool • Selected Pool MAC-POOL-MAX-IMM   × • •   2
Nav to P	Pools  Command Palette gate interright with CodeK or g leip > Command Palette			I	Simple         Advanced           Simple         Advanced           When Simple Placement is selected, the Slot ID and PCI Link are automatically determined by the system. vNICs are displayed on the first VIC. The Slot ID determines the first VIC. Slot ID numbering begins with MLOM and thereafter it begins incrementing by 1 satiring from 1.
					Switch ID *

and select a policy for each marked (\*) policy. Four of them need one policy selected to be able to Add your vNIC.

Step 8. Click Add once completed.



Fialover and policies for vNIC configuration

Step 9. Repeat the procedure since step 3 for the other vNICs. Then Verify all are properly configured.

≡	號 Intersight 🛛 🔀	; Infrastructure Service 🗸					
*	Overview	Policies > LAN Connectivity > Static_LAN					
0	Operate ^ Servers Chassis Fabric Interconnects	General     Policy Details	None Pool	Static			
,e	HyperFlex Clusters Integrated Systems Configure ^ Profiles		VNIC Configuration				
1	Templates Policies Pools		For manual placement option your  Add vNIC	eed to specify placement for each wHC. L	eem more at Help Center		
	Command Palette		C Name	: Slot ID :	Switch ID :	PCI Order :	Failov :
Navi to H	igate intensight with ChrieK or go leip > Command Palette		MGMT_B     PROQ_B     MGMT_A     PROQ_A	Auto Auto Auto Auto	B B A	0 1 2 3	Enabled Enabled Enabled Enabled
			1 Z D				

Step 10. Click on Create.

LAN policy Verification

#### **Create SAN Connectivity Policy for UCS Server.**

**Step 1**. Navigate to **Create Policy** and click on the button. On Platform Type, click on the **UCS Server** option to filter policies and to find the **SAN Connectivity** policy easier. Select it and click on **Start**.

. Select Organization, name your policy, and choose the target platform for which the server profile is applicable. Click **Next.** 

≡	-deader Intersight 🛛 🔀	Infrastructure Service $$	
*	Overview	Policies > SAN Connectivity Create	
¢	Operate     ^       Servers     -       Chassis     -       Fabric Interconnects     -       HyperFlex Clusters     -       Integrated Systems     -       Configure     ^       Profiles     -       Templates     -       Policies     -	Ceneral     Policy Details	General         Add a name, description and tag for the policy.         Organization *         default         Name *         Static_SAN         Target Platform ©         O UCS Server (Ri-Attached)         Set Tags
Navi 10 H	Command Palette * state Intensight with ChileK or go alsp > Command Palette		Cancel

General Information SAN policy

Step 3. Select Manual vHBAs Placement.

Step 4. Navigate to WWNN and select or create WWNN Pool.

Step 5. Click on Add vHBA button.

≡	dealer Intersight	89	nfrastructure Service $$		l
*	Overview		Policies > SAN Connectivity Create		
	Operate     A       Servers     A       Chassis     A       Fabric Interconnects     A       HyperFlex Clusters     A       Integrated Systems     A       Configure     A       Profiles     A       Templates     B		<ul> <li>General</li> <li>Policy Details</li> </ul>	Policy Details         Add policy details         Manual vHEAs Placement         Auto vHEAs Placement         WWNN         Pool         Static         WWNN Pool * O         Selected Pool       WMANLPOOL         Selected Pool       WMANLPOOL         Image: Text and placement option you need to specify placement for each vHEA. Learn more at Help Center	
6	Command Palette			Add Filer	
	ngana maktugat wan centek or go Weip > Command Pulette			Name : Slot ID : Switch ID PCI Order NO ITEMS AVAILABLE	
				Cancel	

SAN policy

#### Step 6.

Name your vHBA and select the Pin Group name associated with this vHBA for static pinning. Choose **fc-initiator** as vHBA Type.

. Select a policy for each marked (\*) policy. Three of them need one policy selected to be able to Add your vHBA.

Step 10. Click Add once completed.



vHBA configuration policy

Step 11. Repeat the procedure from step 3 for the other vNICs. Then Verify all are properly configured.

Step 12. Click Create.								
≡	the intersight	\$¢ Infrastructure Service ∨						
*	Overview	Policies > SAN Connectivity > Static_SAN						
(Ø)	Operate / Servers Chassis Fabric Interconnects	General     Policy Details	Policy D Add policy def	etails aits xual vHBAs Placement				
	HyperFlex Clusters		WWNN					
,e	Integrated Systems Configure Profiles Templates		Pool         Static           WWNN Pool * ○         Selected Pool         ×         ↓         ↓					
	Policies		For manual placement option you need to specify placement for each VHBA. Learn more at Help Center					
	Pools							
New Command Palette								
Nav to R	igate intensight with Ctol+K or go letp > Command Palette		O Name		Silot ID	; Switch ID	PCI Order	
			NewS	torage_A	Auto	A	4	
			Oldst	xage_B	Auto	8		
			NewS	torage,8	Auto	в		
			OldSh	xage_A	Auto	A		
Verification SAN policy								

rage

Ste

Caution

: Verify numbers on the PCI Order are not repeated. The adapter cannot have the same PCI order for vNICs or vHBAs.

# Verify

Associate the Port policy to your UCS Domain and then LAN & SAN policies to your Service Profile.

To verify the configuration with the command **show pinning server-interfaces** from the command line if your Fabric Interconnect.

UCS-TS-MXC-P25-6454-IMM-A(nx-os)	# show	pinning	server-interfaces
		1 2	

SIF Interface	Sticky	Pinned Border Interface	+ Pinned Du
 Vlan1	No	+ -	+
sup-eth0	No	_	—
sup-eth1	No	Eth1/45	0:37:39
Po1025	No		
Po1287	No	-	—
Po1302	No	_	_
Po1303	No	_	_
Eth1/9	No	_	_
Eth1/10	No		
Eth1/13	No	_	_
Eth1/28	No		
Eth1/33	No	_	_
Veth801	Yes(hard-pinned)	-	_
Veth811	Yes(hard-pinned)	_	-
Veth814	Yes(hard-pinned)		
Veth815	Yes(hard-pinned)		
Veth817	No	-	—
Veth820	No		-
Veth32768	No	-	-
Eth1/1/1	No	-	-
Eth1/1/2	No	-	-
Eth1/1/3	No		
Eth1/1/4	No		
Eth1/1/5	No		
Eth1/1/6	No		
Eth1/1/7	No		
Eth1/1/8	No		
Eth1/1/9	No		
Eth1/1/10	No		_
Eth1/1/11	No		
Eth1/1/12	No		
Eth1/1/13	No		
Eth1/1/14	No		
Eth1/1/15	No	-	

Hard pinning

There is no command that explicitly shows hard pinning is enabled as Ethernet does.

However, you can type **show npv traffic-map** command to verify the uplink configured o your policy.

This command works when the Fabric Interconnect is in End Host Mode. Otherwise, the command is not available.

UCS-TS-MXC-P25-6454-IMM-A(nx-os)# show npv traffic-map NPV Traffic Map Information: