# **Configure Boot from SAN in Intersight Managed Mode**

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# Introduction

This document describes how to configure boot from Storage Area Network (SAN) in servers managed by Intersight Managed Mode (IMM).

# Prerequisites

### Requirements

Cisco recommends that you have knowledge of these topics:

- Basic knowledge of SAN topologies
- Basic understanding of UCS Server Profiles in Intersight Managed Mode.

### **Components Used**

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

- UCS-FI-64108, Firmware 4.2(1I)
- UCSX-210C-M6, Firmware 4.2(1I)

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**

Ensure that you have these requirements before you attempt this configuration:

- Virtual Storage Area Network (VSAN) ID
- World Wide Port Name (WWPN) from initiators and targets
- Logical Unit Number (LUN) ID

Server and Domain profiles configuration, the Policies and Pools required are:

- VSAN Policy
- Port Policy
- Boot Order Policy
- SAN Connectivity Policy
- WWPN Pool

# **Configure SAN**

### **UCS Domain Profile**

#### Step 1. Configure VSAN Policy.

- Navigate to Policies > Create Policy and select VSAN.
- Name the policy and add the required VSAN(s) to it. This example uses VSAN-A 100 and VSAN-B 200 as shown in the image.



**Note**: Storage option is revelant when Fibre Channel (FC) Zone policy is configured, not mandatory for this configuration.

Step 2. Configure Port Policy.

- Navigate to **Policies** > **Create Policy** and select **Port**.
- Enter a **Name** and select the **Switch model** from the list. Once that is done, configure Unified Ports.
- Go to **Port roles** and select the ports needed for FC uplink and click on **Configure**.

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ø	OPERATE ^	1 General		Dest Deles Dest Observals D					
	Servers	2 Unified Port	-	Port Roles Port Channels P	n Groups				
	Fabric Interconnects	3 Breakout Options		Configure Selected Ports	Port 1, Port 2 Clear Selec				
	Networking	Port Roles			14714 154716 . 174716 194726 214722 234	17 34. 25 AT 20. 27 AT 20. 28 AT 30. 23 AT 34.			
	HyperFlex Clusters								
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	Orchestration						• FC Uplink • Un	configured • Server •	Ethernet Uplink
	Profiles								
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	Policies			Name	Туре	Role	Port Channel	Mode	
				port 1		FC Uplink			
(¢)	ADMIN ^			port 2		FC Uplink			
-	Targets			port 3		Unconfigured			
	UCC Disaster			port 4		Unconfigured			
	Outs Director			port 5		Unconfigured			
	Sortware Repository			port 6		Unconfigured			
		< Back	Cancel						Save

#### • Select the Role as FC Uplink, Admin speed and desired VSAN.

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ш. Ф			<b>(</b> ]	Configure Port					
	Fabric Interconnects Networking HyperFlex Clusters	Configuration Selected Port Role							
×	CONFIGURE ^	FC Uplink Admin Speed		VSAN ID *					
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-									
ড়া	ADMIN ^ Targets UCS Director								
	Software Repository								

 You can add the policies to the Domain profile. Go to Profiles > UCS Domain Profiles > Edit Domain profile (if profile already exists) or Create domain profile then Add the required polices to your Domain Profile.

### **Server Profile**

- Navigate to Policies > Create UCS Server Profile.
- Enter a Name and select the Target Platform.

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<u>00o</u>	MONITOR	⊡ Progress	Step 1
Ŷ	OPERATE ^		General
	Servers	General	Enter a name, description, tag and select a platform for the server profile.
	Chassis	2 Server Assignment	
	Fabric Interconnects	3 Compute Configuration default	
	Networking	Management Configuration	
	HyperFlex Clusters	5 Storage Configuration SAN-Boot-1-1	
×	CONFIGURE ^	6 Network Configuration Target Blatform	
	Orchestration	UCS Server (S	Standalone) 💿 UCS Server (FI-Attached)
	Profiles	7 summary	
	Templates	Set Tags	
	Policies		
	Pools	Description	
ē	ADMIN ^		<= 1024
	Targets		
	UCS Director		
	Software Repository		Next >

• On **Compute Configuration** add **Boot Order policy** where Boot SAN options are configured.

Step 4. Create a Boot Order Policy

		South oney and a	du SAN DOUL OPTIONS	nom the drop down is	
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Ŷ	OPERATE ^	(1) General	Configured Boot Mode 💿	· / ·····	
	Servers	2 Policy Details	Legacy O Unified Extensible Firmw	are Interface (UEFI)	
	Chassis		Add Boot Device		
	Fabric Interconnects		iSCSI Boot		
	HyperFlex Clusters		Local CDD		
×	CONFIGURE ^		Local Disk PCH Storage		
	Orchestration		PXE Boot		
	Profiles		SAN Boot		
	Templates		SD Card		
	Policies		UEFI Shell USB		
	Pools		Virtual Media		
৾ড়	ADMIN ^				
	LICE Director	< Back	Cancel		Create

• Name the Boot Policy and add SAN Boot options from the drop down list.

• Enter the settings for the Virtual Host Bus Adapter (vHBA).

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<u>01o</u>		🖅 Progress							
ø	OPERATE ^	General	- SAN Boot (HBA_A)		C Enabled				
	Servers		Device Name *	LUN					
	Chassis	2 Policy Details	HBA_A			0-2	9 55		
	Fabric Interconnects		Sint	Interface Name *					
	Networking			HBA_A					
	HyperFlex Clusters								
×	CONFIGURE ^		Target WWPN * 56:c9:ce:90:cd:93:ff:0A						
	Orchestration								
	Profiles		- SAN Boot (HBA_B)		C Enabled				
	Templates								
	Policies		HBA_B	<u> </u>			55		
ø	ADMIN ^		MLOM	HBA_B					
	Targets								
	UCS Director		Target WWPN * 56:c9:ce:90:cd:93:ff:0a						
	Software Repository								

Device Name is the name for reference on the Policy.

LUN identifier for the physical or virtual storage.

**Slot** is the slot adapter and port. This example is Modular Lan on Motherboard (MLOM).

- You can verify Slot on the Inventory of the server by Servers Tab > Select server > Inventory > Network Adapter > Adapter ID.
- You can add extra Virtual Media Option to install iso through KVM.

Device Name * CD O Sub-Type KVM MAPPED DVD V O		Enabled	Ū		
CD O Sub-Type					
Sub-Type					
Sub-Type					
Sub-Type KVM MAPPED DVD	0 L T				
	Sub-Type				
	KVM MAPPED DVD				
		⊙ Sub-Type KVM MAPPED DVD	© Enabled Sub-Type KVM MAPPED DVD	© Enabled 1	© Enabled n ^

• Add extra policies on Compute Configuration, Management Configuration and Storage Configuration as needed (optional).

#### Step 5. Create SAN Connectivity Policy.

• Name the policy and add the WWNN (pool or static) and then add the vHBA(s).

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ம் ஓ		Edit vHBA		
	Chassis	General		
		Name* vHBA Type HBA_B © fc-initiator		
×	HyperFlex Clusters CONFIGURE	Pin Group Name v o		
		WWPN Address		
	Templates	Pool Static		
	Policies	WWPN Address Pool • © Selected Pool UCSX,WWPN_B		
ø		Placement		
	Targets UCS Director	Sket ID * Switch ID * MLOM © 8		
	Software Repository			
		PCI Order 1		

Note: VHBA name must be the same as the one that was previously configured.

### Step 6. Create a Fibre Channel Network Policy.

• Fibre Channel Network is required to assign VSAN to VHBA and for Boot from SAN. Select Select Policy(s) and Create New.

≡	cisco Intersight	CONFIGURE > Policies > SAN Connectivity > UCSX-SAN > Edit	구 🖬 334 🔺 310 🕑 📢 29 억, 😳 ⑦ Luis Uribe 옾
<u>00o</u>	MONITOR		Select Policy ×
Ŷ	OPERATE ^		Policies 6 Create New
	Servers		
	Chassis		1.27-vfc-network-policy1 @
	Fabric Interconnects		UCSC-vfc-network-policy1
	Networking		MX_SAN_B 💿
	HyperFlex Clusters	Persistent LUN Bindings O	🗐 MX_SAN_A 💿
×	CONFIGURE ^	Fibre Channel Network * O	FC_NETWORK 💿
	Orchestration		FCN_IMM @
	Profiles	Fibre Channel OoS * ⊙	
	Templates		
	Policies	Fibre Channel Adapter * ⊙	
	Pools		
Ţ	ADMIN ^	FC Zone O	
	Targets		
	UCS Director		
	Software Repository		

• Configure the required VSAN.

≡	cisco Intersight	CONFIGURE > Policies > SAN	Connectivity > UCSX-SAN > Edit > Create Fibre Channel Netwo	nk 🗘 🖪 334 🔺 310 🕝 📢 29 🔍 🔅 🕜 Luis Unibe 🕰				
<u>00o</u>	MONITOR	🔄 Progress		Step 2				
Ŷ	OPERATE ^	Ganaral	{ <b>``</b>	Policy Details				
	Servers		~ <b>~</b> ~	Add policy details				
	Chassis	2 Policy Details		All Platforms UCS Server (Standalone) UCS Server (Fi-Attached)				
	Fabric Interconnects		Fibre Channel Network	· · · · · · · · · · · · · · · · · · ·				
	Networking		VSAN ID					
	HyperFlex Clusters		100					
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	Orchestration							
	Profiles							
	Templates							
	Policies							
	Pools							
٩	ADMIN ^							
	Targets							
	UCS Director							
	Software Repository	< Back	Cancel	Create				

Note: The rest of the policies in VHBA configuration are not mandatory for boot from SAN.

- Add extra vHBA(s) to complete the SAN Connectivity Policy configuration (optional).
- SAN configuration for the Server Profile is complete now, if configuration at the storage switch for access control between hosts and storage devices is done, also called Zoning, target(s) are displayed through KVM while server is in the boot process.
- Add LAN Connectivity Policy to configure Virtual Network Interface Cards (VNIC).

# Verify

To verify SAN configuration navigate to pools and policies you created as this information is not displayed on Server Profile.

#### For WWPN:

• Navigate to **Pools**, look for the **WWPN Pool** created and click on the usage tab. It shows the WWPN in use and which Server Profile uses it.

≡	uluulu دisco Intersight	CONFIGURE > Pools > WWNN-UCX-Servers		🗘 🗖 298 🔺 338 🛛 🖓 📢 30 🔍 🌐 😳 Luis Uribe 🕰
<u>00o</u>	MONITOR			Actions
ŵ	OPERATE ^	Details	Configuration & Usage	
	Servers Chassis Fabric Interconnects Networking HyperFlex Clusters Integrated Systems	Name     WWNN-UCX-Servers       Type     WWNN       Size     8       Used     1       Available     7       Last Update     May 20, 2022 11:42 AM       Description     -	Configuration Usage <u>Add Filter</u> Initiator 20 00:00:25:B5:00:08:01	I items found       10 ∨ per page       1 of 1 > >       Image: Control of 1 > >         Server Profile       UCSX-Server-boot-SAN         UCSX-Server-boot-SAN       Image: Control of 1 > >
×	CONFIGURE ^	Organization default		
	Orchestration	Tags Set		
	Profiles			
	Templates			
	Policies			
	Pools			

For Boot Process:

• Target WWPN(s) are displayed while the server is in the Boot Process.

### Troubleshoot

Press F6 Key while the server is in the boot process. This interrupts the initialization and takes the server to the boot menu, where we you connect to adapter and type commands to check connectivity.

Open an SSH session to any of the fabric interconnects IP addresses and execute the next commands:

```
FI-A # connect adapter x/y/z -> (x = Chassis, y = Blade, z = Adapter)
Entering character mode
Escape character is '^]'.
(none) login: dbgsh
adapter (top):2# attach-fls
adapter (fls):1# lunlist
lunlist.
vnic : 16 lifid: 16
• FLOGI State : flogi est (fc_id 0x010303)
• PLOGI Sessions
• WWNN 58:cc:f0:98:49:62:0b:fa WWPN 58:cc:f0:98:49:62:0b:fa fc_id 0x000000
• LUN's configured (SCSI Type, Version, Vendor, Serial No.)
LUN ID : 0x00000000000000 access failure
• REPORT LUNs Query Response
• WWNN 58:cc:f0:90:49:62:0b:fa WWPN 58:cc:f0:90:49:62:0b:fa fc_id 0x000000
• LUN's configured (SCSI Type, Version, Vendor, Serial No.)
LUN ID : 0x00000000000000 access failure
• REPORT LUNs Query Response
```

```
vnic : 17 lifid: 17
• FLOGI State : flogi est (fc_id 0x010303)
• PLOGI Sessions
• WWNN 58:cc:f0:90:49:63:0b:fa WWPN 58:cc:f0:90:49:63:0b:fa fc_id 0x000000
• LUN's configured (SCSI Type, Version, Vendor, Serial No.)
LUN ID : 0x0000000000000 access failure
• REPORT LUNS Query Response
• WWNN 58:cc:f0:98:49:63:0b:fa WWPN 58:cc:f0:98:49:63:0b:fa fc_id 0x000000
• LUN's configured (SCSI Type, Version, Vendor, Serial No.)
LUN ID : 0x0000000000000 access failure
• REPORT LUNS Query Response
• WWNN 58:cc:f0:98:49:63:0b:fa fc_id 0x000000
• LUN's configured (SCSI Type, Version, Vendor, Serial No.)
LUN ID : 0x00000000000000 access failure
• REPORT LUNS Query Response
• Nameserver Query Response
```

**Tip**: If fc\_id is equal to 0x0000 like in this example review Zoning configuration in Fibre Switch and LUN Masking in storage array. Verify WWPN of initiators are configured properly in Storage Array.

### **Related Information**

Troubleshoot SAN Boot and SAN Connectivity Issues

**Domain Profile Configuration** 

Server Profile Configuration

Technical Support & Documentation - Cisco Systems