Enabling Next-Generation

Virtualized Data Center

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Deploy ESXi SAN Boot on UCS Blade with Pure Storage FlashArray

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About this Document

This document provides the latest information about the Pure Storage Connector for Cisco UCS Director.

It includes information on how to execute the workflow in UCS Director to deploy ESXi SAN Boot on UCS blade with Pure Storage FlashArray.

Intended Audience

This user guide addresses users of the Pure Storage Connector for Cisco UCS® Director. This user guide assumes that the reader is an experienced user of Cisco UCS Director.

It is assumed the Administrator installing the Connector is well versed in administration of Pure Storage FlashArray, including: creating accounts, licensing of hardware and software & storage configuration. Content related to the administration of Pure Storage is not duplicated in this document.

Revision History

Version	Release Date	Author	Reviewed By	Approved By
1.0	7-Jan-2016	Saifur & Saravanan	Sudheesh	Sudheesh

Introduction

This workflow deploys ESXi host on UCS Blade server using Fiber Channel SAN Boot with Pure FlashArray. It will do End to End provisioning on FlashStack

Getting Started with the Workflow

To begin with, you should first import the workflow in UCS Director.
Complete the following steps to import the workflow:

1. Download the attached .ZIP file onto your computer.
2. Unzip the file on your computer. Once you unzip; **.WFDX** file will be extracted.
3. Log in to UCS Director as a user with the **system-admin** privileges.
4. Go to **Policies > Orchestration** and click **Import**.
5. Click **Browse** and navigate to the location on your computer where the **.WFDX** file is located.

   Select the **.WFDX** file and click **Open**.
6. Click **Upload**.
7. Once the file is uploaded click **Ok > Next**.
8. Click **Import**.

A new folder called "**Pure Storage Flash Array**" is created in "**Policies > Orchestration**".

The **Pure Storage Flash Array** folder contains the imported workflow. You can update the included tasks with information about the specific environment.

Workflow

Deploy ESXi host on UCS Blade FC SAN boot with Pure Storage FlashArray

This workflow provisions ESXi Host on Cisco UCS Blade booting from FC SAN and Integrates with vCenter Server on Pure Storage FlashStack.

UCSD Versions

The version of UCSD that is compatible with this workflow is UCS Director 5.4

Category

Virtualization

Compute

Network and

Storage

Components

Cisco UCS Director

Cisco UCS Director Baremetal Agent

Pure Storage FlashArray 4.6

Prerequisites

Before you execute the Workflow in the UCS Director, ensure the following conditions are met.

1. Pure Storage Open Automation Module must be added and active in UCS Director.
2. The FlashStack Infrastructure components such as VMware vCenter, Cisco UCSM, Cisco Nexus 5Ks/MDS Switches and Pure Storage FlashArray must be added to UCS Director.
3. UCS Director BMA with the following configuration must be integrated into UCS Director.
    - DHCP Scope configured
    - ESXI ISO Image uploaded
    - ESXI OS Templates and Kick-start configuration files created.

Refer **Configure ESXi PXE Image** for more information on configuring ESXI ISO Image.

4. Enable ESXi Install on SAN Boot LUN. To do so, modify the **ks.cfg** file in **/opt/cnsaroot/templates/<ESXi_Image_Name>** folder.

   4.1 Remove # from the following line:

   # install --firstdisk –overwritevmfs

   4.2 Change the above line as mentioned below
   install --firstdisk=remote –overwritevmfs

5. Ensure the UCS blade used for provisioning do not have any local hard disk

6. Ensure vNIC and vHBA templates are created in UCSM

   vNIC Template - Create vNIC templates as per your requirement. We have used 2 vNIC Templates for eth0 and eth1.
   Select **PXE VLAN** as native in any one of the template which will be used for PXE booting.

   vHBA Template - Create number vHBA templates as per your requirement. We have used 4 vHBA templates for vHBA-A, B, C & D.

7. Ensure PXE Boot Policy and SAN Boot Policy are created in UCSM.

8. Ensure VSAN and SAN Zoneset are created on the SAN Switches (Nexus/MDS).

Note1: Specify the primary and secondary vNIC name as eth0-1 & eth1-2.
When UCD creates Service Profile, it will append the numeric 1 and 2 in the vNIC names, the Boot Policy vNIC names should match the Service Profile vNIC name.

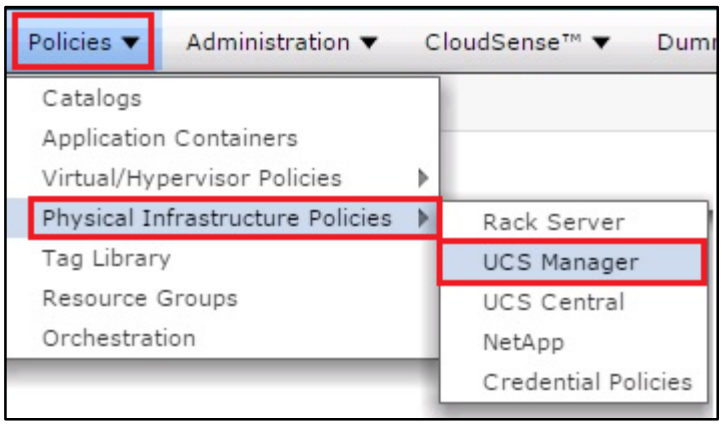
Note2: Specify the primary and secondary vHBA name as vHBA-A-1 & vHBA-B-2.
When UCD creates Service profile it will append the numeric 1 and 2 in the vHBA names , the Boot Policy vHBA names should match the Service Profile vHBA name.

Note3: Specify the Appropriate Storage Target WWPN and LUN ID, specify the LUN ID as "**1**".

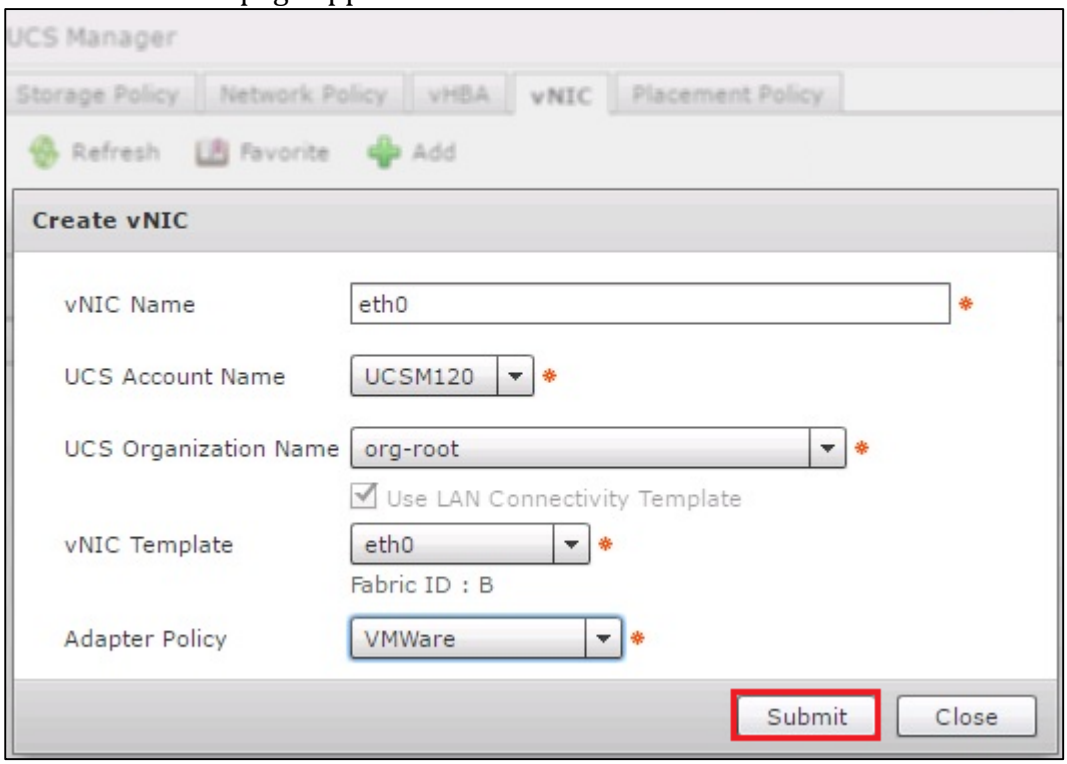
Creating UCS Manager Policies in UCS Director

Before executing the workflow, ensure UCS Manager Policies are created in UCS Director.

1. Login to **UCS Director** with **admin** credentials.
2. Go to **Policies > Physical Infrastructure Policies > UCS Manager**.



3. Click **vNIC** tab > **Add**.
   The **Create vNIC** page appears.

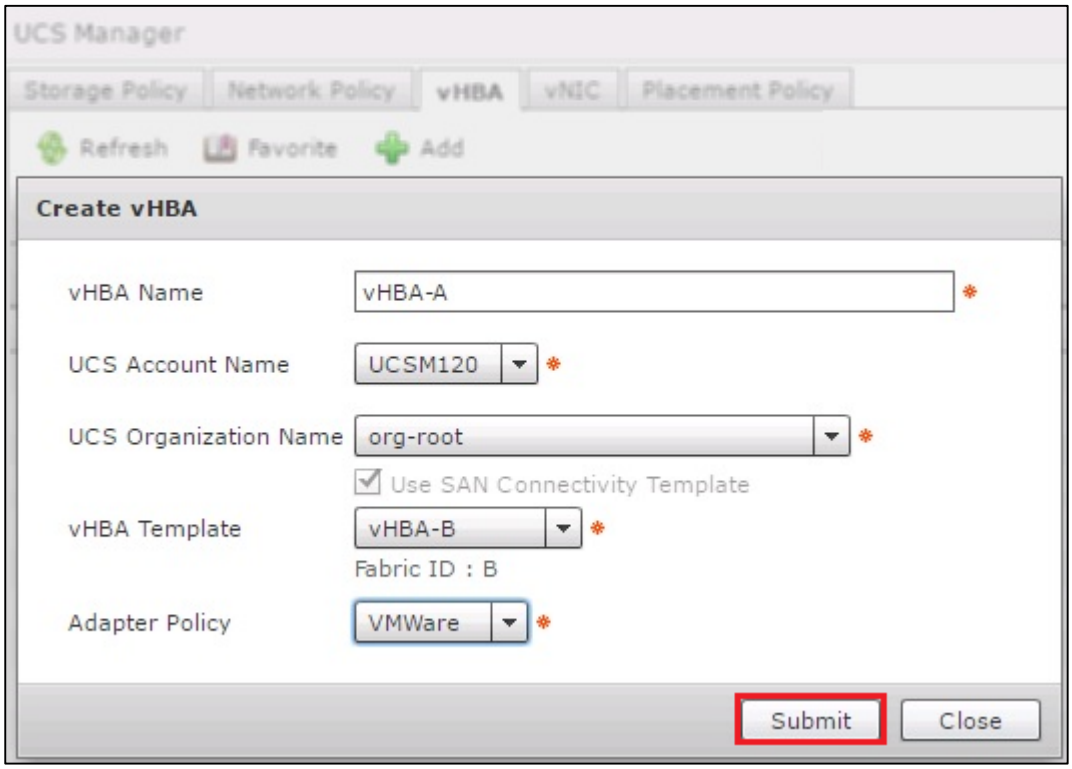


4. Enter the following information:

Field	Description
vNIC Name	Enter **eth0**
UCSM Account Name	Select the UCSM account
UCS Organization Name	Select the organization according to your environment
vNIC Template	Select the template according to your environment
Adapter Policy	Choose VMware from the drop-down list

5. Click **Submit.**
6. Repeat step 4 to create **eth1**.
7. In the UCS Manager, click **vHBA** tab > **Add**.

   The **Create vHBA** page appears.



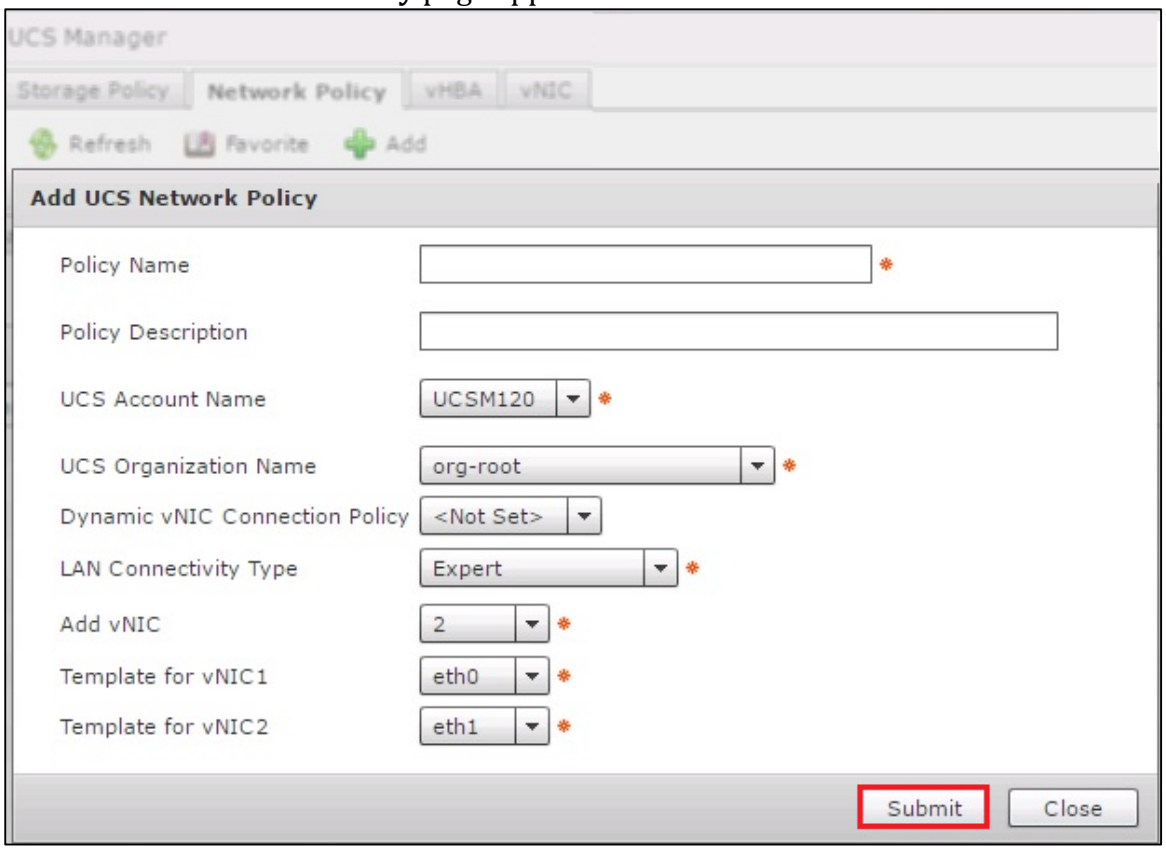
8. Enter the following information:

Field	Description
vHBA Name	Enter **vHBA-A**
UCSM Account Name	Select the UCSM account
UCS Organization Name	Select the organization according to your environment
vHBA Template	Select the template according to your environment
Adapter Policy	Choose VMware from the drop-down list

9. Click **Submit.**

10. Repeat the Setup 8 for creating vHBA-B, C & D.

11. To create a Network Policy, in the UCS Manager; click **Network Policy** tab **> Add**.
The **Add UCS Network Policy** page appears.

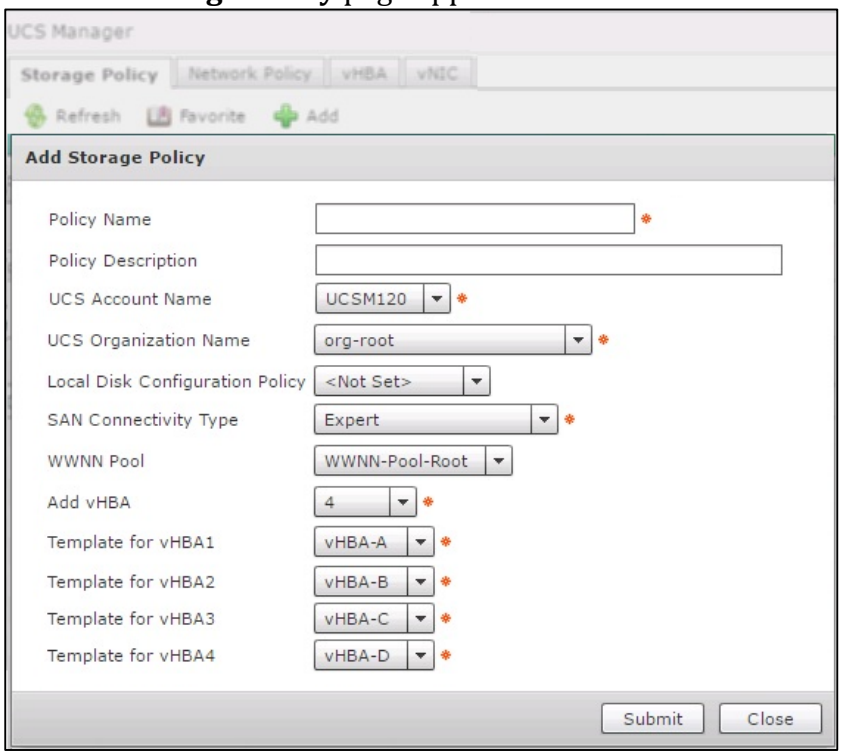


12. Enter the following information:

Field	Description
Policy Name	Enter policy name
Policy Description	Enter description for the policy
UCSM Account Name	Select the UCSM account
UCS Organization Name	Select the organization according to your environment
Dynamic vNIC Connection Policy	Choose **<Not Set>**
LAN Connectivity Policy	Choose **Expert**
Add vNIC	Choose 2 (select numbers as required)
Template for vNIC1	Choose **eth0**
Template for vNIC2	Choose **eth1**

13. Click **Submit.**

14. To create a Storage Policy, in the UCS Manager; click **Storage Policy > Add**.
The **Add Storage Policy** page appears.

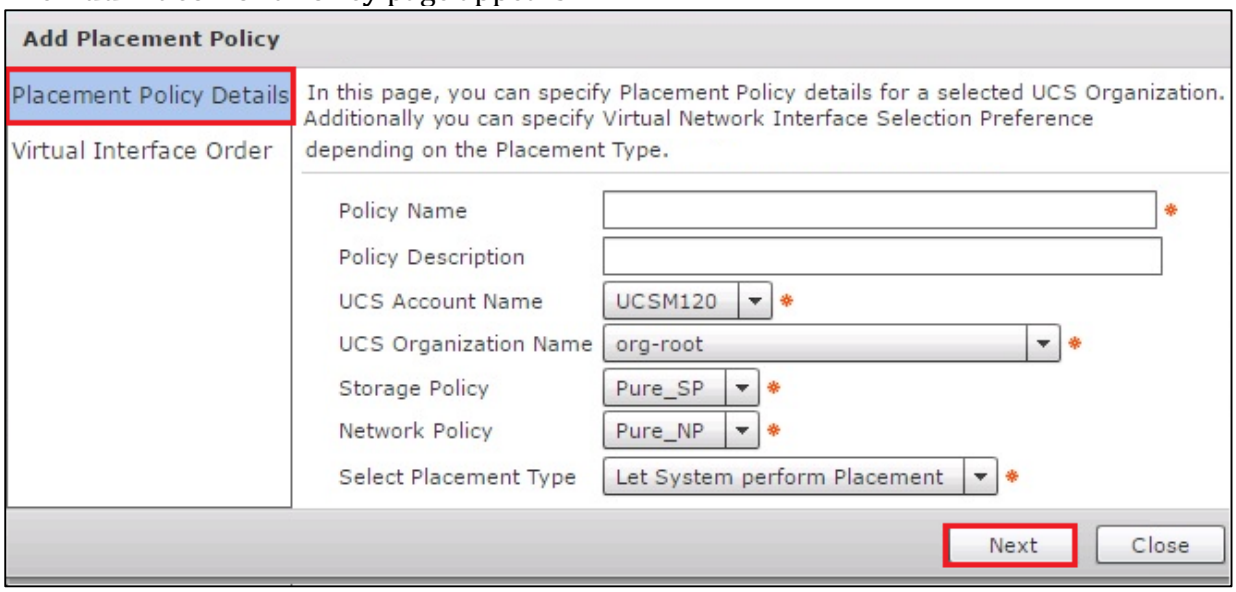


15. Enter the following information:

Field	Description
Policy Name	Enter policy name
Policy Description	Enter description for the policy
UCSM Account Name	Select the UCSM account
UCS Organization Name	Select the organization according to your environment
Local Disk Configuration Policy	Choose **<Not Set>**
SAN Connectivity Policy	Choose **Expert**
WWWN Pool	Choose the Pool according to your environment
Add vHBA	Choose 4 (select numbers as required)
Template for vHBA1	Choose vHBA-A
Template for vHBA2	Choose vHBA-B
Template for vHBA3	Choose vHBA-C
Template for vHBA4	Choose vHBA-D

16. Click **Submit.**

17. To create a Placement Policy, in the UCS Manager; click **Placement Policy > Add**.
The **Add Placement Policy** page appears.



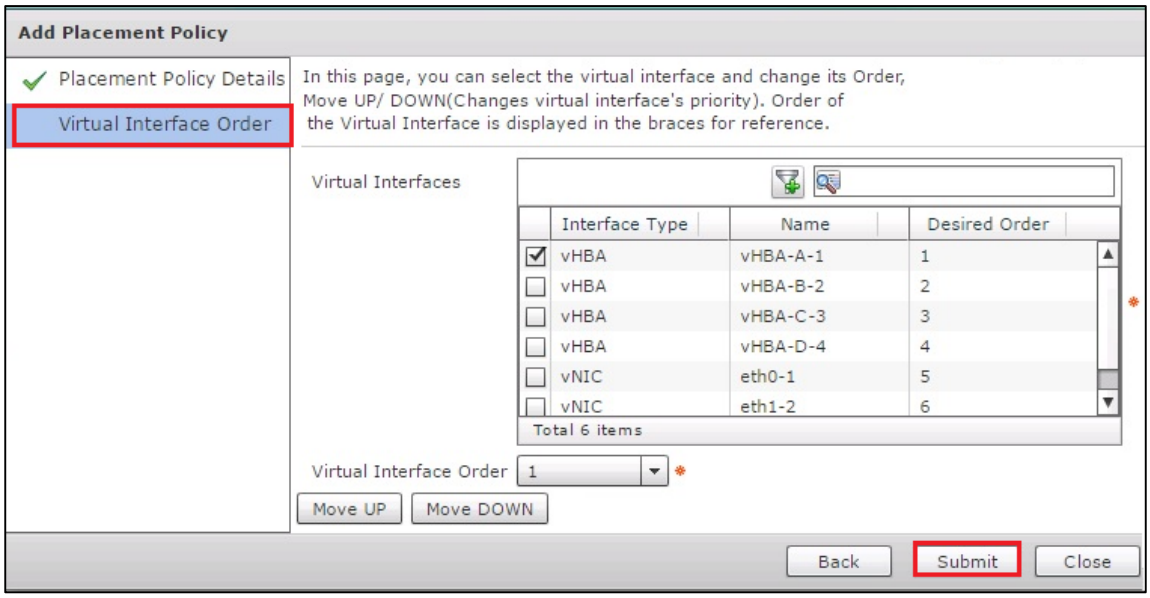
18. Enter the placement policy details:

Field	Description
Policy Name	Enter policy name
Policy Description	Enter description for the policy
UCSM Account Name	Select the UCSM account
UCS Organization Name	Select the organization according to your environment
Storage Policy	Select the storage policy that you created in step
Network Policy	Choose Policy create in step 11
Select Placement Type	Choose "Let System perform Placement"

19. Click **Next.**

20. In the **Virtual Interface** option, change the order as shown below:

Field
vHBA-A-1
Eth1-2
vHBA-B-2
vHBA-C-3
vHBA-D-4



21. Select the Virtual Interface Order as 1.
22. Click **Submit** to save the Policy.

The UCS Manager Policies are created in UCS Director. Now you can execute the workflow in UCSD.

Workflow Tasks

The following are the UCSD tasks mentioned that are part of the workflow.

1. Create UCS Service Profile
2. Associate UCS Service Profile
3. Setup PXE Boot
4. Create Volume
5. Create Host
6. Create HostGroup
7. Connect Volume to Host
8. Connect Host to HostGroup
9. Configure SAN Zoning on Fabric A for vHBA-A

10. Configure SAN Zoning on Fabric A for vHBA-B
11. Configure SAN Zoning on Fabric B for vHBA-C
12. Configure SAN Zoning on Fabric B for vHBA-D
13. UCS Blade Power ON Action
14. Monitor PXE Boot
15. Modify UCS Service Profile Blade Policy
16. Wait for Specified Duration
17. Collect Inventory
18. UCS Blade Power ON Action
19. Wait for Specified Duration
20. Reset UCS Server
21. Register Host with vCenter
22. Create Volume
23. Connect Volume to HostGroup
24. Get VMware Host Node
25. Rescan Storage Adaptor
26. Add Pure Volume to ESXi Host

Editing Admin Inputs

The Admin Input values are pre-defined in the workflow by the admin user.

You need to edit the admin inputs before you execute the workflow.

Click **Edit the Workflow properties**, go to **User Inputs** section and modify the following inputs as applicable.

Admin Input	Description
PURE_TARGET_1_A_WWPN	Select the Storage Target Port WWPN as admin input
PURE_TARGET_1_B_WWPN	Select the Storage Target Port WWPN as admin input
PURE_TARGET_2_A_WWPN	Select the Storage Target Port WWPN as admin input
PURE_TARGET_2_B_WWPN	Select the Storage Target Port WWPN as admin input
UCS ACCOUNT	Select the UCS Manager account

FABRIC A SAN SWITCH	Select the Nexus/ MDS Switch
FABRIC B SAN SWITCH	Select the Nexus/ MDS Switch
HOST GROUP NAME	Enter the Host Group name (The group name consist of Letters, Numbers and "-")
vCenter Account	Select the vCenter account

Configuring Additional Workflow Tasks (Mandatory)

Open the Workflow using **Workflow Designer** and complete the following steps:

Create UCS Service Profile (Create Service Profile for UCS Blade)

1. Open the particular Task.
2. Click **Next** > **Next** > **Revalidate**.
3. Select appropriate **Org Unit** and **Policies**.
4. Click **Next** > **Submit**.

Register Host with vCenter

1. Open the particular Task.
2. Click **Next** > **Next** > **vCenter Account**.
3. Select **Datacenter/Cluster for ESXi Host**.
4. Click **Next** > **Submit**.

Configure SAN Zoning for Pure Storage (Configure Zoning for vHBA-A-1)

1. Open the particular Task.
2. Click **Next** > **Next**.
3. Enter the following details:

Field	Description
Zone Name	• Modify the VSAN Name as per your environment, that is; Z-**VSAN20**-${Host Name}-vHBA-B-2 • Replace **VSAN20** with the VSAN name specific to your environment
Target A Device Alias	• Enter the Device Alias name for your Storage Array Target port, that is; FAM1234-CT0-FC0 (Where FAM1234- Serial Number of the array, CT0-FC0 is the Target Port name of the array)

	• **Note:** Do not use special characters other than **hyphen -** and **underscore _**
Target B Device Alias	• Enter a Device alias name for Target Port B of the storage array similar to Target Port A

4. Click **Next > Submit**.

Repeat the above procedure Configure SAN Zoning for Pure Storage (Configure Zoning for vHBA-A-1) to configure the remaining Zoning tasks.

Configuring Additional Workflow Tasks (Optional)

Connect Volume(s) to Host (Connect Boot Volume to Host)

1. Open the particular Task.
2. Click **Next** > **Next**.
3. Choose **Specify LUN** option.
4. Specify the LUN ID for the Boot LUN (1-9).
5. Click **Next** > **Submit**.

Connect Volume(s) to HostGroup (Connect Datastore Volume to Host Group)

1. Open the particular Task.
2. Click **Next** > **Next**.
3. Choose **Specify LUN** option.
4. Specify the LUN ID for the Datastore LUN (10-255).
5. Click **Next** > **Submit**.

Executing the Workflow

To complete the process of executing the workflow, carryout the following steps:

1. Go to **Policies** > **Orchestration** > **Workflows**.
2. Expand **Folder Pure Storage FlashArray**.
3. Right click on the appropriate workflow and select **Validate**. The workflow should be valid.
4. Right click and select **Execute Now**.

5. Provide the following user input details:

User Input	Description
HOST NAME	Enter Host Name used for Service Profile name and ESXI Hostname (consist of Letters, Numbers, and hypen -)
UCS_SERVER_BLADE	Select UCS Server Blade to install VMware ESXi Hypervisor
OS TYPE	Select OS Type for the Blade(Choose the ESXI OS Template that is created in BMA)
ESXI_MANAGEMENT_IP or IPPOOL	Enter ESXi Management Network IP Address or IP range
SUBNET MASK	Enter Subnet Mask for IP Address
GATEWAY	Enter Gateway for IP Address
NAME SERVER	Enter the Domain Server
ESXi ROOT PASSWORD	Enter the Root Password for ESXi
FLASHARRAY ACCOUNT	Select the FlashArray Account
BOOT VOLUME NAME	Enter the Boot volume name (consist of letters, numbers, hyphen – and underscore _)
SIZE UNIT	Enter the Volume size unit
SIZE NUMBER	Enter the Volume size number
DATASTORE NAME	Enter the Datastore name (consist of letters, numbers, hyphen – and underscore _)
SIZE UNIT	Enter the Volume size unit
SIZE NUMBER	Enter the Volume size number

6. Click **Submit**.

The workflow is executed to provision ESXi Host on Cisco UCS Blade booting from FC SAN and Integrated with vCenter Server on Pure Storage FlashStack.