



Pure Storage Connector for Cisco UCS Director User Guide

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Preface

This document describes how to use the Pure Storage Connector for Cisco UCS® Director. This preface includes the following information:

[Intended Audience](#)

[Software Version](#)

[Document Conventions](#)

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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.

Software Version



This document revision applies to Pure Storage Connector for Cisco UCS Director software version **v03.1.0** and Cisco UCS Director version **6.7.0.0** and **6.7.1.0**.

Document Conventions

This document uses the following typographic conventions:

Convention	Description
Bold	Indicates text on a window, other than the window title, including menus, menu options, buttons, fields, and labels. Example: Click OK .
<i>Italic</i>	Indicates the file name. Example: copy source-file target-file
Hyperlink	A reference to data that the reader can directly follow by clicking on the hyperlinked text

Workflow Documents

Document	Description
 Deploy ESXi iSCSI Boot on UCS Blade	This document gives detailed description on how to deploy ESXi iSCSI Boot on UCS Blade with Pure Storage FlashArray.
 Deploy ESXi SAN Boot on UCS Blade	This document gives detailed description on how to deploy ESXi SAN Boot on UCS Blade with Pure Storage FlashArray.

Chapter 1. Introduction

The Pure Storage Connector for Cisco UCS Director supports tasks that you can use for inventory, orchestration, and in workflows. To aid in storage management and troubleshooting, the Storage Connector for Cisco UCS Director provides system logging options and troubleshooting support.

Supported Storage Version And Model

The Storage Connector for Cisco UCS Director supports the following Pure Storage version.

- Purity v4 (4.x)
- Purity v5 (5.x)

The Storage Connector for Cisco UCS Director supports the following Pure Storage model.

- FlashArray//M
- FlashArray//X

Pure Storage Reports

The Pure Storage Connector for Cisco UCS Director collects the following storage information that is displayed by the Cisco UCS Director:

- Inventory Report
- Storage capacity Report
- Volume Report
- Host Report
- Host Group Report
- Protection Group Report
- Snapshot Report
- Network Report
- Host Connections Report
- FC Target Report
- IQN Target Report
- Pod Report
- Volume Group Report
- System Report
- Space Report
- CloudSense Report

Supported Tasks

The Storage Connector for Cisco UCS Director supports the following tasks for the supported Pure storage systems.

Grouping	Task Name	Description
Volume	Create Volume	Create single or multiple volume.
	Destroy Volume(s)-suffix range	Delete the existing volume(s).
	Resize Volume	Resize the existing volume.
	Clone Volume	Copy the existing volume.
	Restore Volume	Restore the existing Volume.
	Create Volume Group	Create the Volume Group
	Delete Volume Group	Delete the Volume Group
	Move Volume Into Volume Group	Move the Volume into Volume Group
	Move Volume Out from Volume Group	Move the Volume Out from Volume Group
Host and Host Group	Create Host	Create a new Host in Pure Storage FlashArray.
	Delete Host	Delete an existing Host
	Connect Volume(s) to Host	Connect existing volumes to Host
	Disconnect Volume(s) with Host	Disconnect the existing volumes from Host
	Connect WWN(s)/IQN(s) to Host	Provide the WWN/IQN to add in Host
	Create Host Group	Create a new host group.
	Delete Host Group	Delete an existing host group.
	Connect Host to Host Group	Connect existing Host to Host Group.
	Connect Volume(s) to Host Group	Connect existing Volumes to the Host Group.
	Disconnect Volume(s) with Host Group	Disconnect existing Volumes from Host Group
	Disconnect Hosts(s) with Host Group	Disconnect existing Hosts from Host Group
Protection Group	Add Volume to ProtectionGroup	Add existing Volume to the Protection Group
	Add Host to ProtectionGroup	Add existing Host to Protection Group
	Add Target to ProtectionGroup	Add existing Target to Protection Group
	Create ProtectionGroup	Create a new Protection Group
	Create ProtectionGroup with HostGroup	Create ProtectionGroup with the HostGroup

	Delete ProtectionGroup	Delete the existing ProtectionGroup
	Remove Target from ProtectionGroup	Remove the existing Target from the ProtectionGroup.
	Remove Volume From ProtectionGroup	Remove the existing Volume from the ProtectionGroup
Snapshot	Clone Snapshot	Copy the existing Snapshot
	Delete Schedule Snapshot	Delete the existing Schedule Snapshot
	Delete Snapshot	Delete the existing Snapshot
	Schedule Volume Snapshot	Create and schedule snapshot of the volume
Vlan	Create Vlan	Create a new Vlan
	Delete Vlan	Delete the existing Vlan
Pod	Create Pod	Creating a Pod
	Delete Pod	Deleting a Pod
	Move Volume into Pod	Moving Volume into Pod
	Move Volume Out from Pod	Moving Volume Out from Pod
	Add Array to Pod	Adding Array to Pod
	Connect Array	Connecting one FlashArray to another

Supported Workflows

Pure Storage provides workflows for use with the Storage Connector for Cisco UCS Director. Use of provided workflows is optional.

Workflow	Description
Deploy ESXi Host on UCS Blade FC SAN Boot with Pure Storage FlashArray	This workflow deploys ESXi host on UCS Blade server using FC SAN Boot with Pure FlashArray.
Deploy ESXi Host on UCS Blade ISCSI SAN Boot with Pure Storage FlashArray	This workflow deploys ESXi host on UCS Blade server using FC SAN Boot with Pure FlashArray.
Add Pure FlashArray Volume to ESXi Cluster	This workflow will add FlashArray Volume as datastore in ESXi Cluster.
Add Pure FlashArray Volume to ESXi Hosts	This workflow will add FlashArray Volume as datastore in ESXi Hosts.
Add FlashArray Protection Group	This workflow will create a new FlashArray Protection Group.

Copy Snapshot from Volume	This workflow will copy the snapshot from any existing volume.
Create FlashArray Host Group	This workflow will create new FlashArray Host Group.
Create FlashArray Host Group with Hosts	This workflow will create new FlashArray Host Group and add the Hosts too.
Create FlashArray Host and Add initiators	This workflow will create new FlashArray Host and add initiators to it .
Create Volume	This workflow will create new FlashArray Volume.
Destroy FlashArray Protection Group	This workflow will destroy FlashArray Protection Group.
Destroy FlashArray Snapshot	This workflow will destroy FlashArray Snapshot.
Destroy Volume	This workflow will destroy FlashArray Volume.
Eradicate Volume	This workflow will destroy FlashArray Volume and eradicate it.
Remove FlashArray Host	This workflow will remove FlashArray Host.
Remove FlashArray Host Group	This workflow will remove FlashArray Host Group.
Resize FlashArray Volume	This workflow will resize the existing FlashArray Volume.
Resize and expand Pure Storage Datastore	This workflow will resize the existing FlashArray Volume and expand the Pure Storage Datastore in vCenter.

Chapter 2. System Requirements and Installation

This chapter gives an overview of installation process, required hardware and software, and installation of the Connector for Cisco UCS Director.

Summary of Steps

1. Assemble the required hardware and software
2. Add the Pure Storage Open Automation Connector to Cisco UCS Director
3. In Cisco UCS Director, create a FlashStack pod
4. Add Pure FlashArray storage accounts to the pod
5. Test connections to the Pure storage account
6. (Optional) Import, validate, and run Pure storage workflows

Required Hardware and Software

- Supported Pure Storage and licenses
- Software: UCS Director 6.7.0.0/6.7.1.0 with appropriate license

Add Pure Storage Connector

Prerequisites

Locate the **PureStorageUCSDirectorAdaptor** file you downloaded from the Cisco Solution Partners site or other sources.

Install and Deploy/Modify the Connector

1. Log in to Cisco UCS Director by using the Admin role credential.
2. In Cisco UCS Director, from the **Administration** menu, select **Open Automation**.
3. On the **Connectors** tab, click **Add** or Select Existing **Connector** and Click **Modify**.
4. Click **Open**. Select the **PureStorageUCSDirectorAdaptor.zip**.
5. Click **Upload**, and then click **Submit**.
6. If not **Enable**, select the newly added **psucs** module. Click **Enable**.
7. Use SSH to connect to the Cisco UCS Director instance and log in as **shelladmin** (Default password is **changeme**).
8. To enable the Pure Storage Connector, stop all services (option 3), and then restart all services (option 4).
9. **[Optional for modifying the existing connector with v3.1]** Go to the Physical→Storage→FlashArray account's edit/modify button and provide the correct FlashArray IP Address. For more details check [Troubleshooting](#).
10. **Note:** After the Cisco USC Director becomes available, be sure to check that the Connector is Enabled/Active in the same location where it was added.

Create a FlashStack/Generic/Default Pod in Cisco UCS Director

In Cisco UCS Director, create a Pure pod to contain all your Pure storage accounts. Alternatively, locate an existing pod already in use for a Pure product such as Unified Computing System (UCP) Select.

Note: A pod may contain more than one storage account, but a single storage account may not be added to multiple pods.

1. In Cisco UCS Director, click on **Converged** in the menu. Click **Add**.
2. Complete the required fields.
3. Select **FlashStack/Generic** from the menu. Click **Add**.

Add Pure FlashArray Accounts to the Pod

For each storage system to be used, add a Pure storage account to your pod. Accounts are available for generic pods or UCP Select pods.

Do the following to add a Pure storage account:

1. In Cisco UCS Director, from the **Administration** menu, select the **Physical Accounts** tab. Click **Add**.
2. Select the pod you created or default pod.
3. Under **Category**, select **Storage**.
4. Select the **FlashArray**. Click **Submit**.
5. Complete the form as required. See the following table for a description of the fields.

Label	Description	Optional/ Required
Account Name	Choose a name by which this for this account. We suggest a portion of the serial number to make identification easier	Required
Description	Description of the physical hardware	Optional
Storage IP Address	IPv4 address of the Pure Storage FlashArray	Required
User	Authorized user with storage administrator rights	Required
Password	User password (administrator privileges)	Required
Contact	Contact information for storage administrator	Optional
Location	Physical location of storage	Optional

6. Click **Submit**.

The time required to add the account depends on the size of the storage system and network speed.

Test Connection to the Pure Storage Account

Find out about connection problems in a few ways:

- After the Storage Connector for Cisco UCS Director is added to Cisco UCS Director, the connector warns about connection problems.
- Use the Test Connection action within Cisco UCS Director:
 - From the Administration menu, click Physical Accounts

- In the Physical Accounts tab, highlight the account to be tested
- Click Test Connection

Chapter 3. Workflows and Tasks

Pure provides storage workflows and tasks for use with the Storage Connector for Cisco UCS Connector.

This chapter gives an overview about Import workflows, set task inputs, and validate workflows.

Workflows

Import and Validate Pure Storage Workflows

For each workflow that you import, you must set inputs for all tasks and validate each workflow.

1. Download the **Pure Storage FlashArray End to End Workflows.wfdx** file from the Cisco Solution Partners site or Other Sources.
2. In Cisco UCS Director, under the **Policies** menu, select **Orchestration**.
3. Under the **Workflows** tab, click the **Import** button, and then browse to where you have download **Pure Storage FlashArray End to End Workflows.wfdx**.
4. On the **Workflows** tab, open the folder **Pure Storage FlashArray** to view the imported workflows.
5. Double-click on a workflow to open it in the Workflow Designer. The Workflow Designer displays all tasks contained in the workflow, which you can be use as is or modify to fit the environment.

Run Pure Storage Workflows

1. In Cisco UCS Director, open the **Workflows** tab.
2. Do one of the following:
 - In the **Workflows** tab, click **Execute Now**.
 - Open the **Workflow Designer** for the desired workflow. Click **Execute Now**.
 - A dialog box appears and requests workflow inputs.
3. Enter workflow inputs as appropriate, and click **Submit**.

Note: All fields marked with * are required.

The workflow service request is executed. A message indicates whether the service request was successful.

4. Click **Show Detail Status** for more information about the service request.

Tasks

Listed below are the tasks added to Cisco UCS Director after installing the Pure Storage Connector.

Task	Description
Add Host to Protection Group	This task will add existing host to ProtectionGroup in selected Pure Storage FlashArray
Add Target to Protection Group	This task will add existing Target to Protection Group in selected Pure Storage FlashArray
Add volume to Protection Group	This task will add existing Volume to Protection Group in selected Pure Storage FlashArray
Copy Snapshot	This task will Copy an existing Snapshot in selected Pure Storage FlashArray
Copy Volume	This task will Copy an existing Volume in selected Pure Storage FlashArray
Connect Host(s) to HostGroup	This task will add an existing or new host to a Host Group in selected Pure Storage FlashArray
Connect Volume(s) to HostGroup	This task will connect the existing Volume(s) to the Host Group in selected Pure Storage FlashArray
Connect Volume(s) to Host	This task will Connect the existing Volume(s) to the Host in selected Pure Storage FlashArray.
Connect wwn(s)/iqn(s) to Host	This task will connect the WWN(s)/IQN(s) to the Host in selected Pure Storage FlashArray.
Create HostGroup(s)-suffix range	This task will create a new Host Group. Optionally, a start number and end number can be provided to create multiple Host Group in selected Pure Storage FlashArray.
Create Host	This task will create a new Host. Optionally, specify the HBA WWN/IQN manually in selected Pure Storage FlashArray.
Create Volume(s)-suffix range	This task will create a new Volume or multiple volumes by provide start number and end number and size of the volume in selected Pure Storage FlashArray.
Create HostGroup with ProtectionGroup	This task will create a new Protection Group with the Host Group in selected Pure Storage FlashArray.
Create vLan Interface	This task will create a new vLan. Specify the vLan id, ip address manually in selected Pure Storage FlashArray.
Delete HostGroup(s)-suffix range	This task will delete a Host Group in selected Pure Storage FlashArray.
Delete Host	This task will delete a Host in selected Pure Storage FlashArray.
Delete Protection Group	This task will delete the protection group in selected Pure Storage FlashArray.
Disable Scheduled Volume Snapshot	This task will disable the scheduled Volume Snapshot in selected Pure Storage FlashArray.

Delete vLan Interface	This task will delete a vLan Interface in selected Pure Storage FlashArray.
Destroy Snapshot	This task will deletes an existing snapshot in selected Pure Storage FlashArray
Destroy Volume(s)-suffix range	This task will delete an existing volumes in selected Pure Storage FlashArray
Disconnect Volumes with Host Group	This task will disconnect an existing Volume(s) from the Host Group in selected Pure Storage FlashArray
Disconnect Host(s) with Host Group	This task will disconnect an existing Host(s) from the Host Group in selected Pure Storage FlashArray
Disconnect Volumes with Host	This task will disconnect an existing Volume(s) from the Host in selected Pure Storage FlashArray
Remove Host from Protection Group	This task will remove an existing Host from protection group in selected Pure Storage FlashArray.
Remove Target from Protection Group	This task will remove an existing Target from protection group in selected Pure Storage FlashArray.
Remove Volume from Protection Group	This task will remove an existing Volume from protection Group in selected Pure Storage FlashArray.
Resize Volume	This task will resize an existing Volume. Truncate option is also available in the task in selected Pure Storage FlashArray
Restore Volume From Snapshot	This task will restore the Volume from existing Snapshot in selected Pure Storage FlashArray
RollBack Resize Volume Task	This task will be used to reverse or rollback the resize of the Volume in selected Pure Storage FlashArray.
Schedule Replication	This task will create the schedule replication for specified duration in selected Pure Storage FlashArray.
Schedule Volume Snapshot	This task will create and schedule the snapshot of selected Volume for specified duration in selected Pure Storage FlashArray.
Create Pod	This task will create Pod in selected Pure Storage FlashArray.
Delete Pod	This task will delete Pod in selected Pure Storage FlashArray.
Move Volume into Pod	This task will move selected volume into Pod in selected Pure Storage FlashArray.
Move Volume Out from Pod	This task will move selected volume out from Pod in selected Pure Storage FlashArray.
Add Array to Pod	This task will add Array into Pod in selected Pure Storage FlashArray.
Connect Array	This task will connect different FlashArray into selected Pure Storage FlashArray.

Action Button

Listed below are the action buttons added to Cisco UCS Director after installing the Pure Storage Connector.

Action Button	Description
Add Host	This button will add a new host in selected Pure Storage FlashArray.
Add HostGroup	This button will add a new hostgroup in selected Pure Storage FlashArray.
Add Host Protection Group	This button will add existing host to ProtectionGroup in selected Pure Storage FlashArray.
Add ProtectionGroup	This button will add a new protectiongroup in selected Pure Storage FlashArray.
Add Target Protection Group	This button will add an existing target to the protectionGroup in selected Pure Storage FlashArray.
Add Volume	This button will add a new volume in selected Pure Storage FlashArray
Add volume to Protection Group	This button will add existing Volume to Protection Group in selected Pure Storage FlashArray.
Clone Snapshot	This button will Copy an existing Snapshot in selected Pure Storage FlashArray
Copy Volume	This button will Copy an existing Volume in selected Pure Storage FlashArray
Connect Host to HostGroup	This button will add an existing or new host to a Host Group in selected Pure Storage FlashArray
Connect Volume to HostGroup	This button will connect the existing Volume to the Host Group in selected Pure Storage FlashArray
Connect Volume to Host	This button will Connect the existing Volume to the Host in selected Pure Storage FlashArray.
Destroy Volume	This button will delete a volume in selected Pure Storage FlashArray.
Disconnect Host with Host Group	This button will disconnect the existing Host from the Host Group in selected Pure Storage FlashArray.
Disconnect Volumes with Host	This button will disconnect the existing Volume from the Host in selected Pure Storage FlashArray.
Disconnect Volume with Host Group	This button will disconnect the existing Volume from the Host Group in selected Pure Storage FlashArray.
Remove Host from Protection Group	This button will remove Host from protection group in selected Pure Storage FlashArray.
Remove Target from Protection Group	This button will remove target from protection group in selected Pure Storage FlashArray.
Remove Volume from Protection Group	This button will remove volume from protection group in selected Pure Storage FlashArray.
Rename Host	This button will rename host in selected Pure Storage FlashArray.
Resize Volume	This button will resize an existing volume in selected Pure Storage FlashArray.
Schedule Volume Snapshot	This button will create and schedule the snapshot of selected Volume for specified duration in selected Pure Storage FlashArray.

REST API

Listed below are the Rest API added to Cisco UCS Director after installing the Pure Storage Connector.

Task	Description
Add Host to Protection Group	The host must be added to protection Group and verified under the ProtectionGroup Report in UCSD as well as Pure Storage FlashArray.
Add Target to Protection Group	The target must be added to protection Group and verified under the ProtectionGroup Report in UCSD as well as Pure Storage FlashArray.
Add volume to Protection Group	The volume must be added to protection Group and verified under the ProtectionGroup Report in UCSD as well as Pure Storage FlashArray.
Copy Snapshot	The snapshot is copied and verified under the Snapshot Report in UCSD as well as Pure Storage FlashArray
Copy Volume	The volume is copied and verified under the Volume Report in UCSD as well as Pure Storage FlashArray
Connect Host(s) to HostGroup	The created host must be connected to hostGroup and verified under the Host Group Report in UCSD as well as Pure Storage FlashArray.
Connect Volume(s) to HostGroup	The created volume must be connected to hostGroup and verified under the Host Group Report in UCSD as well as Pure Storage FlashArray.
Connect Volume(s) to Host	The created volume must be connected to host and verified under the Host Report in UCSD as well as Pure Storage FlashArray.
Connect wwn(s)/iqn(s) to Host	The created wwn/iqn must be connected to host and verified under the Host Report in UCSD as well as Pure Storage FlashArray.
Create HostGroup(s)-suffix range	The HostGroup must be created and verified under the Host Group Report in UCSD as well as Pure Storage FlashArray.
Create Host	The Host must be created and verified under the Host Report in UCSD as well as Pure Storage FlashArray.
Create Volume(s)-suffix range	The Volume must be created and verified under the Volume Report in UCSD as well as Pure Storage FlashArray.
Create HostGroup with ProtectionGroup	The protectionGroup must be created with hostgroup and verified under the ProtectionGroup Report in UCSD as well as Pure Storage FlashArray.
Delete HostGroup(s)-suffix range	The created hostGroup must be deleted and verified under the HostGroup Report in UCSD as well as Pure Storage FlashArray.
Delete Host	The created host must be deleted and verified under the Host Report in UCSD as well as Pure Storage FlashArray.

Delete Protection Group	The created protectionGroup must be deleted and verified under the protectionGroup Report in UCSD as well as Pure Storage FlashArray.
Destroy Snapshot	The created snapshot is deleted and verified under the Snapshot Report in UCSD as well as Pure Storage FlashArray
Destroy Volume(s)-suffix range	The created volume is created and verified under the volume report in UCSD as well as Pure Storage FlashArray
Disconnect Volumes with Host Group	The created volume must be disconnected from host Group and verified under the Host Group report in UCSD as well as Pure Storage FlashArray.
Disconnect Host(s) with Host Group	The created host must be disconnected from the hostGroup must be deleted and verified under the hostGroup report in UCSD as well as Pure Storage FlashArray.
Disconnect Volumes with Host	The created volume must be disconnected from host and verified under the host report in UCSD as well as Pure Storage FlashArray.
Remove Host from Protection Group	The created host must be removed from protectionGroup and verified under the ProtectionGroup Report in UCSD as well as Pure Storage FlashArray.
Remove Target from Protection Group	The created target must be removed from protectionGroup and verified under the protectiongroup Report in UCSD as well as Pure Storage FlashArray.
Remove Volume from Protection Group	The created volume must be removed from protectionGroup and verified under Protectiongroup Report in UCSD as well as Pure Storage FlashArray.
Resize Volume	The created volume must be resize and verified under the volume Report in UCSD as well as Pure Storage FlashArray.
Restore Volume From Snapshot	The created snapshot must be restored and verified under the volume Report in UCSD as well as Pure Storage FlashArray.
Schedule Volume Snapshot	The created volume must be scheduled for snapshot and verified under the Snapshot Report in UCSD as well as Pure Storage FlashArray

Chapter 4. Logging and Troubleshooting

This chapter gives an overview on how to view the logs and troubleshooting information for Storage Connector for Cisco UCS Director

Logging

The Cisco UCS Director handles logging for the Connector.

View Logs

1. Within Cisco UCS Director, select **Administration** from the menu, and select **Support Information**.
2. Within the Support Information drop down, select **Show Log > Infra Manager> Show Logs**.
3. A browser page displays all recent activity. The page can be saved and shared with the Pure Data Systems Support Center is desired.

Troubleshooting

Storage Connector for Cisco UCS Director

Symptom	Possible Cause	Resolution
The psucs module has been added, but no Pure Storage tasks are available.	Cisco UCS Director services have not been restarted after adding the module.	Connect via SSH to the Cisco UCS Director instance. Stop all Director-related services, and then restart.
	The module is not enabled.	Highlight the module and click Enable . Restart Cisco UCS Director.
Unable to add the Pure Storage FlashArray physical account.	FlashArray accounts are only available for FlashStack Pod.	Ensure that the pod type is FlashStack.
	The user does not have sufficient rights.	Ensure that the user has Administrator rights.
	The IP address of Pure Storage FlashArray is unreachable.	Ensure that IP address is reachable from Cisco UCS Director network.
After updating /modifying the latest connector, all the existing FlashArray account connection are getting failed/lost and throwing error.	Due to addition of Credential Policy feature in this release. Certain modification are done in FlashArray account creation form which is causing this error.	Go to the FlashArray account's edit/modify button and provide the correct FlashArray IP Address or delete the FlashArray account and readd the account again.