



# 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](#)

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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 **v02.0.0** and Cisco UCS Director version **6.5**.

## Document Conventions

This document uses the following typographic conventions:

Convention	Description
<b>Bold</b>	Indicates text on a window, other than the window title, including menus, menu options, buttons, fields, and labels. Example: Click <b>OK</b> .
<i>Italic</i>	Indicates the file name. Example: <b>copy source-file target-file</b>
<a href="#">Hyperlink</a>	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 v	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 v	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

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

- Pure Storage v4.6
- Pure Storage v4.7
- Pure Storage v4.8

### 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
- 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.
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
	Clone Snapshot	Copy the existing Snapshot

<b>Snapshot</b>	Delete Schedule Snapshot	Delete the existing Schedule Snapshot
	Delete Snapshot	Delete the existing Snapshot
	Schedule Volume Snapshot	Create and schedule snapshot of the volume
<b>Vlan</b>	Create Vlan	Create a new Vlan
	Delete Vlan	Delete the existing Vlan

## 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.
Deploy ESXi Host on UCS Blade FC SAN Boot with Pure Storage FlashArray and Service Profile Template	This workflow deploys ESXi host on UCS Blade server using FC SAN Boot with Pure FlashArray. And It will use Service Profile Template for creating Service Profile.
Deploy ESXi Host on UCS Blade iSCSI SAN Boot with Pure Storage FlashArray and Service Profile Template	This workflow deploys ESXi host on UCS Blade server using iSCSI SAN Boot with Pure FlashArray. And It will use Service Profile Template for creating Service Profile.
Provision VMware VM on Pure Storage Datastore	Provision a VMware VM in Pure Storage Datastore (Pure Storage Datastore must be selected in VMware Storage Policy in UCS Director).

## 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 6.5.0.0 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 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**.
4. Extract the files from **PureStorageUCSDirectorAdaptor**. Click **Open**.
5. Click **Upload**, and then click **Submit**.
6. 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).

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**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.

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### Create a FlashStack 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.

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

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1. In Cisco UCS Director, click on **Converged** in the menu. Click **Add**.
2. Complete the required fields.
3. Select **FlashStack** 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.
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
<b>Account Name</b>	Choose a name by which this for this account. We suggest a portion of the serial number to make identification easier	Required
<b>Description</b>	Description of the physical hardware	Optional
<b>Storage IP Address</b>	IPv4 address of the Pure Storage FlashArray	Required
<b>User</b>	Authorized user with storage administrator rights	Required
<b>Password</b>	User password (administrator privileges)	Required
<b>Contact</b>	Contact information for storage administrator	Optional
<b>Location</b>	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
<b>Add Host to Protection Group</b>	This task will add existing host to ProtectionGroup in selected Pure Storage FlashArray
<b>Add Target to Protection Group</b>	This task will add existing Target to Protection Group in selected Pure Storage FlashArray
<b>Add volume to Protection Group</b>	This task will add existing Volume to Protection Group in selected Pure Storage FlashArray
<b>Copy Snapshot</b>	This task will Copy an existing Snapshot in selected Pure Storage FlashArray
<b>Copy Volume</b>	This task will Copy an existing Volume in selected Pure Storage FlashArray
<b>Connect Host(s) to HostGroup</b>	This task will add an existing or new host to a Host Group in selected Pure Storage FlashArray
<b>Connect Volume(s) to HostGroup</b>	This task will connect the existing Volume(s) to the Host Group in selected Pure Storage FlashArray
<b>Connect Volume(s) to Host</b>	This task will Connect the existing Volume(s) to the Host in selected Pure Storage FlashArray.
<b>Connect wwn(s)/iqn(s) to Host</b>	This task will connect the WWN(s)/IQN(s) to the Host in selected Pure Storage FlashArray.
<b>Create HostGroup(s)-suffix range</b>	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.
<b>Create Host</b>	This task will create a new Host. Optionally, specify the HBA WWN/IQN manually in selected Pure Storage FlashArray.
<b>Create Volume(s)-suffix range</b>	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.
<b>Create HostGroup with ProtectionGroup</b>	This task will create a new Protection Group with the Host Group in selected Pure Storage FlashArray.
<b>Create vLan Interface</b>	This task will create a new vLan. Specify the vLan id, ip address manually in selected Pure Storage FlashArray.
<b>Delete HostGroup(s)-suffix range</b>	This task will delete a Host Group in selected Pure Storage FlashArray.
<b>Delete Host</b>	This task will delete a Host in selected Pure Storage FlashArray.
<b>Delete Protection Group</b>	This task will delete the protection group in selected Pure Storage FlashArray.
<b>Disable Scheduled Volume Snapshot</b>	This task will disable the scheduled Volume Snapshot in selected Pure Storage FlashArray.
<b>Delete vLan Interface</b>	This task will delete a vLan Interface in selected Pure Storage FlashArray.
<b>Destroy Snapshot</b>	This task will deletes an existing snapshot in selected Pure Storage FlashArray

<b>Destroy Volume(s)-suffix range</b>	This task will delete an existing volumes in selected Pure Storage FlashArray
<b>Disconnect Volumes with Host Group</b>	This task will disconnect an existing Volume(s) from the Host Group in selected Pure Storage FlashArray
<b>Disconnect Host(s) with Host Group</b>	This task will disconnect an existing Host(s) from the Host Group in selected Pure Storage FlashArray
<b>Disconnect Volumes with Host</b>	This task will disconnect an existing Volume(s) from the Host in selected Pure Storage FlashArray
<b>Remove Host from Protection Group</b>	This task will remove an existing Host from protection group in selected Pure Storage FlashArray.
<b>Remove Target from Protection Group</b>	This task will remove an existing Target from protection group in selected Pure Storage FlashArray.
<b>Remove Volume from Protection Group</b>	This task will remove an existing Volume from protection Group in selected Pure Storage FlashArray.
<b>Resize Volume</b>	This task will resize an existing Volume. Truncate option is also available in the task in selected Pure Storage FlashArray
<b>Restore Volume From Snapshot</b>	This task will restore the Volume from existing Snapshot in selected Pure Storage FlashArray
<b>RollBack Resize Volume Task</b>	This task will be used to reverse or rollback the resize of the Volume in selected Pure Storage FlashArray.
<b>Schedule Replication</b>	This task will create the schedule replication for specified duration in selected Pure Storage FlashArray.
<b>Schedule Volume Snapshot</b>	This task will create and schedule the snapshot of selected Volume for specified duration in 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
<b>Add Host</b>	This button will add a new host in selected Pure Storage FlashArray.
<b>Add HostGroup</b>	This button will add a new hostgroup in selected Pure Storage FlashArray.
<b>Add Host Protection Group</b>	This button will add existing host to ProtectionGroup in selected Pure Storage FlashArray.
<b>Add ProtectionGroup</b>	This button will add a new protectiongroup in selected Pure Storage FlashArray.
<b>Add Target Protection Group</b>	This button will add an existing target to the protectionGroup in selected Pure Storage FlashArray.
<b>Add Volume</b>	This button will add a new volume in selected Pure Storage FlashArray
<b>Add volume to Protection Group</b>	This button will add existing Volume to Protection Group in selected Pure Storage FlashArray.
<b>Clone Snapshot</b>	This button will Copy an existing Snapshot in selected Pure Storage FlashArray

<b>Copy Volume</b>	This button will Copy an existing Volume in selected Pure Storage FlashArray
<b>Connect Host to HostGroup</b>	This button will add an existing or new host to a Host Group in selected Pure Storage FlashArray
<b>Connect Volume to HostGroup</b>	This button will connect the existing Volume to the Host Group in selected Pure Storage FlashArray
<b>Connect Volume to Host</b>	This button will Connect the existing Volume to the Host in selected Pure Storage FlashArray.
<b>Destroy Volume</b>	This button will delete a volume in selected Pure Storage FlashArray.
<b>Disconnect Host with Host Group</b>	This button will disconnect the existing Host from the Host Group in selected Pure Storage FlashArray.
<b>Disconnect Volumes with Host</b>	This button will disconnect the existing Volume from the Host in selected Pure Storage FlashArray.
<b>Disconnect Volume with Host Group</b>	This button will disconnect the existing Volume from the Host Group in selected Pure Storage FlashArray.
<b>Remove Host from Protection Group</b>	This button will remove Host from protection group in selected Pure Storage FlashArray.
<b>Remove Target from Protection Group</b>	This button will remove target from protection group in selected Pure Storage FlashArray.
<b>Remove Volume from Protection Group</b>	This button will remove volume from protection group in selected Pure Storage FlashArray.
<b>Rename Host</b>	This button will rename host in selected Pure Storage FlashArray.
<b>Resize Volume</b>	This button will resize an existing volume in selected Pure Storage FlashArray.
<b>Schedule Volume Snapshot</b>	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
<b>Add Host to Protection Group</b>	The host must be added to protection Group and verified under the ProtectionGroup Report in UCSD as well as Pure Storage FlashArray.
<b>Add Target to Protection Group</b>	The target must be added to protection Group and verified under the ProtectionGroup Report in UCSD as well as Pure Storage FlashArray.
<b>Add volume to Protection Group</b>	The volume must be added to protection Group and verified under the ProtectionGroup Report in UCSD as well as Pure Storage FlashArray.
<b>Copy Snapshot</b>	The snapshot is copied and verified under the Snapshot Report in UCSD as well as Pure Storage FlashArray
<b>Copy Volume</b>	The volume is copied and verified under the Volume Report in UCSD as well as Pure Storage FlashArray

<b>Connect Host(s) to HostGroup</b>	The created host must be connected to hostGroup and verified under the Host Group Report in UCSD as well as Pure Storage FlashArray.
<b>Connect Volume(s) to HostGroup</b>	The created volume must be connected to hostGroup and verified under the Host Group Report in UCSD as well as Pure Storage FlashArray.
<b>Connect Volume(s) to Host</b>	The created volume must be connected to host and verified under the Host Report in UCSD as well as Pure Storage FlashArray.
<b>Connect wwn(s)/iqn(s) to Host</b>	The created wwn/iqn must be connected to host and verified under the Host Report in UCSD as well as Pure Storage FlashArray.
<b>Create HostGroup(s)-suffix range</b>	The HostGroup must be created and verified under the Host Group Report in UCSD as well as Pure Storage FlashArray.
<b>Create Host</b>	The Host must be created and verified under the Host Report in UCSD as well as Pure Storage FlashArray.
<b>Create Volume(s)-suffix range</b>	The Volume must be created and verified under the Volume Report in UCSD as well as Pure Storage FlashArray.
<b>Create HostGroup with ProtectionGroup</b>	The protectionGroup must be created with hostgroup and verified under the ProtectionGroup Report in UCSD as well as Pure Storage FlashArray.
<b>Delete HostGroup(s)-suffix range</b>	The created hostGroup must be deleted and verified under the HostGroup Report in UCSD as well as Pure Storage FlashArray.
<b>Delete Host</b>	The created host must be deleted and verified under the Host Report in UCSD as well as Pure Storage FlashArray.
<b>Delete Protection Group</b>	The created protectionGroup must be deleted and verified under the protectionGroup Report in UCSD as well as Pure Storage FlashArray.
<b>Destroy Snapshot</b>	The created snapshot is deleted and verified under the Snapshot Report in UCSD as well as Pure Storage FlashArray.
<b>Destroy Volume(s)-suffix range</b>	The created volume is created and verified under the volume report in UCSD as well as Pure Storage FlashArray.
<b>Disconnect Volumes with Host Group</b>	The created volume must be disconnected from host Group and verified under the Host Group report in UCSD as well as Pure Storage FlashArray.
<b>Disconnect Host(s) with Host Group</b>	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.
<b>Disconnect Volumes with Host</b>	The created volume must be disconnected from host and verified under the host report in UCSD as well as Pure Storage FlashArray.
<b>Remove Host from Protection Group</b>	The created host must be removed from protectionGroup and verified under the ProtectionGroup Report in UCSD as well as Pure Storage FlashArray.

<b>Remove Target from Protection Group</b>	The created target must be removed from protectionGroup and verified under the protectiongroup Report in UCSD as well as Pure Storage FlashArray.
<b>Remove Volume from Protection Group</b>	The created volume must be removed from protectionGroup and verified under Protectiongroup Report in UCSD as well as Pure Storage FlashArray.
<b>Resize Volume</b>	The created volume must be resize and verified under the volume Report in UCSD as well as Pure Storage FlashArray.
<b>Restore Volume From Snapshot</b>	The created snapshot must be restored and verified under the volume Report in UCSD as well as Pure Storage FlashArray.
<b>Schedule Volume Snapshot</b>	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 <b>psucs</b> module has been added, but no Pure	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.



Storage tasks are available.	The module is not enabled.	Highlight the module and click <b>Enable</b> . 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.