Cisco UCS Central Plug-in User Guide, Release 1.x for VMWare vRealize Orchestrator

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Introduction

This chapter contains the following sections:

About the Cisco UCS Central Plug-in for the VMware vRealize Orchestrator

vRealize Orchestrator (vRO) is a development and process-automation platform that provides a library of extensible workflows. These workflows allow you to create and run automated, configurable processes to manage the VMware vSphere infrastructure. vRealize Orchestrator uses its open plug-in architecture which allows to integrate with other management and administration solutions.

Cisco UCS Central plug-in leverages the open plug-in architecture of the vRealize Orchestrator to integrate vRealize Orchestrator with the UCS Central. After integration, the plug-in utilizes the capabilities of vRealize Orchestrator enabling you to create tasks and define workflows on the UCS Central Servers.

System Requirements

VMware vRealize Orchestrator

This version of the plug-in is supported on the following VMware vRealize Orchestrator releases:

- vRealize Orchestrator 7.x

Cisco UCS Central

This version of the plug-in supports the following major release of UCS Central:

- Release 2.0.x
- Release 1.4.x
- Release 1.5.x

Memory and CPU Utilization

The memory and CPU utilization is based on JVM process of the vRealize Orchestrator Server memory and CPU usage. On executing the Cisco UCS Central plug-in, in the vRealize Orchestrator environment has negligible memory and CPU impact. The memory and CPU utilization of JVM has been monitored at different stages of Plug-in usage.

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Installing the Plug-in and Registering UCS Central Instances

This chapter contains the following sections:

- Installing the UCS Central Plug-in for vRealize Orchestrator 7.x , page 3
- Registering a UCS Central Instance, page 4

Installing the UCS Central Plug-in for vRealize Orchestrator 7.x

Before You Begin

Install VMware vRealize Orchestrator 7.x. For installing or upgrading to vRealize Orchestrator 7.x, see Installing and Configuring VMware vRealize Orchestrator

Step 1	Download the installable vmoapp file for UCS Central plug-in for vRealize Orchestrator.
Step 2	Open vRealize Orchestrator welcome page.
Step 3	Click **Orchestrator Control Center**.
Step 4	Enter the login credentials as provided during installation of the appliance.
Step 5	Scroll down to **Plug-Ins** and, click **Manage Plug-Ins**.
Step 6	On the **Manage Plug-Ins** page, click **Browse** to navigate to the folder where the distributable `.vmoapp` file is saved, and click **Open**.
Step 7	Select **Accept EULA**, and click **Install**. The installed plug-in is displayed in the Plug-in list. Once the installation is complete, restart the Orchestrator for the changes to take effect.
Step 8	Click **Startup Options** to restart the Orchestrator. You can also restart the Orchestrator from the home page.
Step 9	On the **Startup Options** page, click **Restart**. After the restart, it takes few minutes for the plug-in to load in the vRO server.

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Registering a UCS Central Instance

You can register UCS Central instances for the VMware vRealize Orchestrator by running the configuration workflows.

Before You Begin

Install Java 8 or higher

Step 1 Log in to the vRealize Orchestrator client.

Step 2 On the toolbar, click **Workflows**.

Step 3 Navigate to **Cisco UCS Central** > **Configuration** > **Add a UCS Central Instance**.

Step 4 Click the **Start Workflow** icon, and enter the following:

Name	Description
UCS Central Host/IP field	IP address or hostname of the UCS Central server.
User ID field	UCS Central user id
Password field	UCS Central password
Connection Port field	Secure connection port number

Step 5 Click **Submit**.

Step 6 Accept the certificate for the UCS Central server
UCS Central instance is registered and appears in the vRealize Orchestrator Inventory.

Using the Plug-in

This chapter contains the following sections:

Cisco UCS Central Inventory

vRealize Orchestrator Inventory is available in all three perspectives. It displays the objects of the plug-ins which are enabled on the vRealize Orchestrator. You can use the inventory view to run the workflows on an inventory object.

Cisco UCS Central inventory is subdivided further in the following categories:

- Registered UCS—Displays collection of the inventory elements representing physical components of the registered Cisco UCS Manager instances with current Cisco UCS Central instance.

- Global Policies—Displays collection of inventory elements representing global policies available with current Cisco UCS Central instance

- Domain Groups—Displays collection of inventory elements representing domain groups and VLAN or VSAN components available with current Cisco UCS Central instance

Utility Actions

The plug-in provides utility actions that provide various functionalities. The following sections describe these actions.

addUcsCentral

You can use this action to register Cisco UCS Central instance in vRealize Orchestrator inventory.

Inputs:

- ucsHost—string: UCS Central Host/IP

- userId—string: User ID of UCS Central instance

- password—SecureString: Password of UCS Central instance

- noSsl—boolean: Use Unsecure Connection

> **Note** Currently, UCS Central supports secure connection only.

- port—string: Secure connection port

Output:

UcsCentral: Registered UCS Central connection handle.

modifyUcsCentral

You can use this action to modify a registered UCS Central instance in vRealize Orchestrator inventory.

Inputs:

- ucsCentral—UcsCentral: UCS Central instance which is to be modified

- userId—string: User ID of UCS Central instance

- password—SecureString: Password of UCS Central instance

- noSsl—boolean: Use unsecure connection

> **Note** Currently, UCS Central supports secure connection only.

- port—String: Secure connection port

Output:

UcsCentral: Modified registered UCS Central connection handle.

removeUcsCentral

You can use this action to remove a registered UCS Central instance from vRealize Orchestrator inventory.

Input:

ucsCentral—UcsCentral: UCS Central instance which you want to remove.

Output:

UcsCentral: Removed registered UCS Central connection handle.

getAllUcsCentral

You can use this action to retrieve an array of all registered UCS Central instances in vRealize Orchestrator inventory.

No inputs required.

Output:

Array/UcsCentral: List of all registered UCS Central connection handles.

cloneServiceProfile

You can use this action to create a clone of a service profile in the selected organization

Inputs:

- serviceProfile - ServiceProfile: Service profile that you want to clone

- newName - string: New name of the cloned service profile

- destOrg - OrganizationHierarchy: Destination organization where cloned service profile must be placed

Output:

ServiceProfile: Cloned service profile.

createServiceProfileFromTemplate

You can use this action to create service profiles from a service profile template. The name of the service profile can be either array of names, or a prefix, and number of service profiles to be created.

Inputs:

- template—ServiceProfileTemplate: Service profile template to refer for creating new service profiles

- newName—Array/string: New names of service profiles that you want to create

- destOrg—OrganizationHierarchy: Destination organization where created service profiles must be placed

- prefix—string: Prefix of the name of service profile that you want to add.

  Use prefix with the number of service profiles created for example, prefix+count#

- count—number: Number of service profiles that you want to add

Output:

Array/ServiceProfile: List of created service profiles.

renameServiceProfile

You can use this action to rename the existing service profile.

Inputs:

- sp—ServiceProfile: Service profile that you want to rename

- newName—string: New name of a service profile

Output:

ServiceProfile: Renamed service profile.

associateServiceProfile

You can use this action to associate a service profile with a compute object, such as a blade or rack server.

Inputs:

- serviceProfile—ServiceProfile: Service profile which you want to associate

- computeObj—Any: Blade or RackUnit object to which service profile is associated

- restrictMigration—boolean: Restrict migration while associating

Output:

void: No object is returned

disassociateServiceProfile

You can use this action to disassociate specified service profile from any compute object, such as a blade or rack server.

Input:

sp - ServiceProfile: Service profile that you want to disassociate

Output:

void: No object is returned

addOrgPermissionToVlan

You can use this action to add organization permission to a VLAN.

Inputs:

- orgList—Array/OrganizationHierarchy: List of organizations to add permission

- vlan—Vlan: VLAN to add permission

Output:

string: Success/Failure message

removeOrgPermissionFromVlan

You can use this action to remove organization permission from a VLAN.

Inputs:

- orgList—Array/OrganizationHierarchy: List of organizations to remove permission

- vlan—Vlan: VLAN to remove permission

Output:

string: Success/Failure message

getOrgPermissionForVlan

You can use this action to get all organization permission for a VLAN.

Inputs:

vlan - Vlan: VLAN to get permissions.

Output:

Array/OrganizationHierarchy: List of OrganizationHierarchy. This VLAN has permissions.

getMoFieldOptions

You can use this action to get an array of field values of any Managed Object (MO) in UCS Central. You can use this action to fill drop-down lists for a MO field that can contain limited set of values only.

Inputs:

- classId - string: ClassId of MO

- fieldName - string: property name of MO for which set of field values are to be extracted

Output:

Array/string: List of a field values for a specified MO field.

sortMoListByDn

You can use this action to sort a list of UCS Central MO by Distinguished Name (DN) property.

Input:

moList—Array/Any: List of any UCS Central MO

Output:

Array/Any: Sorted List (by dn) of any UCS Central MO

Search UCS Central Managed Object Actions

You can use these actions to retrieve any existing MO from the UCS Central. These actions return a list of managed objects matching the selected criteria. For example, getServiceProfile, getOrg, getBlade, getChassis, and so on.

Inputs:

- ucsCentral—UcsCentral: UCS Central connection handle

- parentMos—Array/<Type of ParentMo>: List of UCS Central MOs which are a parent of UCS Central managed objects that you want to search

  ◦ This property is valid, if the searched MOs have any parent defined

  ◦ If the searched MO have a single parent type exposed in the inventory, then parentMos type is the array of that type, else array of Any

  ◦ If parentMos is specified, search the parent or the child MOs only. ucsCentral is extracted from the parentMos, so ucsCentral input is not required.

- Managed Object Properties—<type of property>: Multiple properties of managed object that you want to search

- limitScope—boolean: Limits the scope search to a parent only, child MOs are not searched

  This property is valid, if a parentMos property type has multiple levels of search. For example OrganizationHierarchy or DomainGroupHierarchy, only then this property exists

- showMos—boolean: Prints the searched UCS Central MOs to System.log

Output:

Array/<Type of Searched MO>: List of searched UCS Central MO. If searched MO type is exposed in inventory, then return type is an array of that type, else array of Any.

Modify UCS Central Managed Object Actions

You can use these actions to retrieve any modified existing MO in UCS Central. For example, setServiceProfile, setOrg, setBlade, setChassis, and so on.

Inputs:

- ucsCentral—UcsCentral: UCS Central connection handle

- mosToModify—Array/<Type of mosToModify>: List of UCS Central Managed Objects which you want to modify

    ◦ If a mosToModify type is exposed in inventory, then the type is array of that type, else array of Any.

    ◦ If mosToModify is selected, then ucsCentral input is not required, as ucsCentral is extracted from mosToModify.

    ◦ If ucsCentral and dn are specified then, do not specify mosToModify, as mosToModify is extracted based on the DN and ucsCentral.

- Managed Object Properties—<type of property>: Multiple properties of MO that you want to modify

    ◦ Dn property is not modified. You can use this property with the ucsCentral to modify the MOs

    ◦ Enter #EMPTY# if you wan to pass an empty string as value for any property

- showMos—boolean: Prints the modified UCS Central MOs to System.log.

Output:

Array/<Type of modified MO>: List of modified UCS Central MO. If modified, MO type is exposed in inventory then return type is an array of that type, else array of Any.

Add UCS Central Managed Object Actions

You can use these actions to retrieve a list of MOs added to UCS Central. For example, are addServiceProfile, addOrg, addVnic, addVhba, and so on.

Inputs:

- ucsCentral—UcsCentral: UCS Central connection handle

- parentMos—Array/<Type of ParentMo>: List of UCS Central MO which are a parent of UCS Central MOs that you want to add

    ◦ This property is valid, if added MOs has a parent defined

    ◦ If added MO have a single parent type exposed in inventory, then parentMos type is an array of that type, else array of Any

    ◦ If parentMos is specified, then MO is added in those parents. The ucsCentral is extracted from parentMos, so ucsCentral as input is not required

- Managed Object Properties—<type of property>: Multiple properties of MO that you want to add

- modifyPresent—boolean: If UCS Central MO that you want to add exists on UCS Central, then modify the existing UCS Central MO

- showMos—boolean: Prints the added UCS Central MO to System.log

Output:

Array/<Type of added MO> : List of added UCS Central MO. If added, MO type is exposed in inventory then return type is an array of that type, else array of Any.

Delete UCS Central Managed Object Actions

You can use these actions to retrieve the list of removed MOs from UCS Central. For example, removeServiceProfile, removeOrg, removeVnic, removeVhba, and so on.

Inputs:

- ucsCentral—UcsCentral: UCS Central connection handle

- mosToRemove—Array/<Type of mosToRemove>: List of UCS Central MOs that you want to remove

    ◦ If mosToRemove type, is exposed in inventory, then the type is the array of that type, else array of Any

    ◦ If you select mosToRemove, then ucsCentral is extracted from mosToRemove. So, ucsCentral as input is not required

    ◦ If ucsCentral and dn are specified, then mosToRemove is extracted based on the dn and ucsCentral. So, mosToRemove as input is not required

- dn—string: DN of MO that you want to remove. You can use the DN with the ucsCentral

- showMos—boolean: Prints the removed UCS Central MO to System.log

Cisco UCS Central Workflows

Cisco UCS Central workflows combine actions, decisions, and results that when performed in a specific order, complete a specific task or a specific process in a virtual environment.

Workflows comprise a schema, attributes, and parameters. The workflow schema is the main component of a workflow as it defines all the workflow elements and the logical connections between them. The workflow attributes and parameters are the variables that workflows use to transfer data. The vRealize Orchestrator saves a workflow token every time a workflow runs, recording the details of that specific run of the workflow. For more details, see Using the VMware vRealize Orchestrator Client.

Cisco UCS Central plug-in provides a set of generic workflows which can be used to manage Cisco UCS Central from vRealize Orchestrator. It includes get, set, add, remove, rename, clone service profile, and associate or disassociate service profile to blade, and so on.

Configuration Workflows

The configuration workflows enable you to register UCS Central instance in vRealize Orchestrator.

- Add a UCS Central Instance—Registers a UCS Central instance in vRealize Orchestrator inventory

- Modify a UCS Central Instance—Modifies a UCS Central instance in vRealize Orchestrator inventory

- Remove a UCS Central Instance—Removes a UCS Central instance from vRealize Orchestrator inventory

Domain Group Workflows

The domain group workflows enable you to work with UCS Central domain groups.

- Create Domain Group—Creates a UCS Central domain group

- Modify Domain Group—Modifies a UCS Central domain group

- Remove Domain Group—Removes a UCS Central domain group

- Set Domain Group for Registered UCSM—Assigns or changes the domain group of a registered UCS Manager with UCS Central

Organization Workflows

The organization workflows enable you to work with UCS Central organizations.

- Create Organization—Creates a UCS Central organization

- Modify Organization—Modifies a UCS Central organization

- Remove Organization—Removes a UCS Central organization

Server Workflows

The server workflows enable you to search blade and rack servers.

- Find Available Blades/Racks—Searches blade or rack servers available for association in the selected UCS Central instance or UCS Central domain group

- Get UCS Server by UUID—Searches blade or rack server with specified UUID

Service Profile Workflows

The service profile workflows enable you to work with UCS Central service profiles.

- Associate Service Profile—Associates a service profile with specified blade or rack server

- Disassociate Service Profile—Disassociates a service profile

- Create Service Profile / Template—Creates a service profile or service profile template

- Create Service Profile From Template—Creates service profile from service profile template
  Multiple service profiles can be created by specifying a list of names, or a name prefix and count

- Clone Service Profile—Creates an exact copy of an existing service profile

- Modify Service Profile—Modifies an existing service profile

- Modify Service Profile Template—Modifies an existing service profile template

- Rename Service Profile—Renames an existing service profile

- Remove Service Profile—Removes an existing service profile

- Remove Service Profile Template—Removes an existing service profile template

- Find Available Service Profiles—Searches service profiles available for association in specified UCS Central instance or UCS Central organization

- Get ESX Host from UCS Service Profile—Searches an ESX host which is installed on a blade or rack server associated with selected service profile

- Get UCS Service Profile from ESX Host—Searches a service profile which is associated to a blade or rack server having the selected ESX host installed

vNIC Workflows

The vNIC workflows enable you to work with UCS Central vNICs and vNIC interfaces.

- Create VNIC—Creates a vNIC in selected service profile

- Modify VNIC—Modifies an existing vNIC

- Remove VNIC—Removes an existing vNIC

- Add VLAN to VNIC—Creates a vNIC Interface on the selected vLAN and in selected vNIC

- Modify VNIC Interface—Modifies an existing vNIC interface

- Remove VLAN from a VNIC—This workflow removes a vNIC interface which is on selected vLAN and in selected VNIC

VLAN Workflows

The VLAN workflows enable you to work with UCS Central VLANs.

- Create VLAN—Creates a VLAN in a selected domain group

- Modify VLAN—Modifies an existing VLAN

- Remove VLAN—Removes an existing VLAN

- Add Org Permissions to VLAN—Adds a selected list of organization permissions to a selected VLAN

- Get Org Permissions for VLAN—Searches organization permissions for a selected VLAN

- Remove Org Permissions from VLAN—Removes selected organization permissions from a selected VLAN

Running or Scheduling a Workflow

You can run a workflow on demand, or you can schedule a workflow to run at specific time.

Step 1   Select the workflow view.

Step 2   Select the workflow that you want to run.

Step 3   Click the **Run** button.

Step 4   Enter the required inputs and click **Submit**.
You can also schedule a workflow by clicking the **Schedule** button.

Whenever a workflow is run, a new workflow token is created displaying the progress and the output of the workflow.

For more details, see Using the VMware vRealize Orchestrator Client.

Uninstalling the Plug-in

This chapter contains the following sections:

Uninstalling the Cisco UCS Central Plug-in

For vRealize Orchestrator 7.x, you can disable the plug-in from the **vRealize Orchestrator Control Center** page. However, this does not remove the plug-in file from the file system.

If you want to disable the plug-in, click the **Plug-ins** tab, uncheck the **UCS Central plug-in** check box, and click **Apply Changes**.

If you want to remove the plug-in, follow these steps:

Before You Begin

You must have admin permissions to log in to the machine on which the vRealize Orchestrator server is installed.

Step 1 Log in to the Orchestrator appliance through any SSH client and navigate to the path `/var/lib/vco/app-server`.

Step 2 Delete the plug-in.dar file from the following path `plugins > ucscentralplugin_x_x_x_x.dar`, where x_x_x_x is the version number.

Step 3 Open the configuration file from the `- conf > plugins > _VSOPluginInstallationVersion.xml` path, and if the line `<entry key="UCSC">x.x.x.x</entry>` exists in the file, delete it. The x.x.x.x is the version number. Save and close the file after change.

Step 4 Log in to the vRealize Orchestrator client.

Step 5 From the drop-down list, select **Design** on the top left edge of the client.

Step 6 Click the **Workflows** view.

Step 7 Expand **UCS Central** > **Configuration** > **Remove a UCS Central Instance**.

Step 8 Right-click **Remove a UCS Central Instance** and select **Start Workflow**.

Step 9 From the list of installed UCS Central instances, select the instance which you want to remove, and click **Submit**.

Step 10 Click the **Packages** view. Right-click the package **com.cisco.ucs.central** and select **Delete**.

Step 11 On the confirmation dialog box, click **Delete Package**.

Step 12 To delete an element with the content, follow these steps:

   a) Expand **Tool** > **User Preferences**.
   b) Check the **Delete non empty folder permitted** check box.
   c) From the **Workflows** view, right-click the **UCS Central** folder and click **Delete**.
   d) Click the **Actions** view. Right-click the modules which you want to remove and click **Delete**.

Step 13 Restart the plug-in.
To restart, follow these steps:

   a) Log in to vRealize Orchestrator Control Center
   b) Click the **Startup Options** tab, and click **Restart**.

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Collecting Logs from vRealize Orchestrator

This chapter contains the following sections:

Collecting Logs

For vRealize Orchestrator 7.x, you can collect the logs from the **vRealize Orchestrator Control Center** page.

Step 1	Open vRealize Orchestrator welcome page.
Step 2	Click **Orchestrator Control Center**.
Step 3	Enter the login credentials as provided during installation of the appliance.
Step 4	Scroll down to **Log** and click, **Export Logs**.
Step 5	A zip file with all log files is downloaded to local machine.

Note vRealize Orchestraor client also maintains logs for the workflow tokens. Whenever any workflow is run, a workflow token is created. Click the log tab at bottom of the window, the workflow token logs is displayed.