



Cisco UCS CPA Workflows

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Workflows for Big Data

Cisco UCS Director Express for Big Data defines a set of workflows in the **UCS CPA** folder under **Policies > Orchestration** for Big Data.

- **UCS CPA Multi-UCSM Hadoop Cluster WF**—This workflow is triggered if you use multiple UCSM accounts.
- **UCS CPA Single UCSM Server Configuration WF**—This workflow is triggered per UCSM account.
- **UCS CPA Node Baremetal**—This workflow is triggered per node in the cluster.
- **UCS CPA Delete Node**—This workflow is triggered if you delete a node from the Hadoop cluster.
- **UCS CPA Cloudera Add Live Node**—This workflow is triggered if you add a Live Node for Cloudera.
- **UCS CPA MapR Add Live Node**—This workflow is triggered if you add a Live Node for MapR.
- **UCS CPA Hortonworks Add Live Node**—This workflow is triggered if you add a Live Node for Hortonworks.
- **UCS CPA Instant Hadoop Cluster WF**—This workflow is triggered if you create an instant Hadoop cluster based on the node count and other mandatory inputs such as the IP address range, memory, and number of interfaces. Cisco UCS Director Express for Big Data automatically creates one UCS service profile and a Hadoop cluster profile template at the backend that are required to create an instant Hadoop cluster. This saves the time to manually create a service profile and a cluster profile.
- **UCS CPA Customized Hadoop Cluster WF**—This workflow is triggered if you choose to use a specific UCS service profile and a Hadoop cluster profile template with the specified number of nodes to be created in the Hadoop cluster.
- **UCS CPA Disable High Availability WF**—This workflow is triggered when you disable high availability.
- **UCS CPA Enable High Availability WF**—This workflow is triggered when you enable high availability.

- UCS CPA Shutdown Big Data Cluster WF—This workflow is triggered when you shutdown the Hadoop cluster.
- UCS CPA Start Big Data Cluster WF—This workflow is triggered when you start the Hadoop cluster.
- UCS CPA Upgrade Cluster WF—This workflow is triggered when you upgrade the Hadoop cluster.
- UCS CPA Add New Cloudera Service WF—This workflow is triggered when you add a new service for Cloudera.
- UCS CPA Hortonworks Add New Service WF—This workflow is triggered when you add a new service for Hortonworks.
- UCS CPA MapR Add New Service WF—This workflow is triggered when you add a new service for MapR.

About Service Requests for Big Data

Cisco UCS Director Express for Big Data leverages Cisco UCS Director service requests and workflow orchestration for the overall deployment of Hadoop clusters. Each service request is a provisioning workflow that is created during a cluster creation. For example, one UCS CPA Multi-UCSM Hadoop Cluster W/F, one Single UCSM Server Configuration W/F, and four UCS CPA Node Baremetal are created for a four node Hadoop cluster. When the workflows are complete, the cluster is created under **Solutions > Big Data Accounts** for that UCSM account.

A set of service requests is created under **Organizations > Service Requests** during a cluster creation.

- UCS CPA Multi-UCSM Hadoop Cluster WF—This workflow is triggered if you use multiple UCSM accounts. It also applies to when you create an instant or customized Hadoop cluster.
- UCS CPA Single UCSM Server Configuration WF—This workflow is triggered per UCSM account.
- UCS CPA Node Baremetal—This workflow is triggered per node in the cluster.

The following service requests are created when you add a BareMetal Node or a Live Node to the cluster.

- UCS CPA Cloudera Add Live Node—This workflow is triggered if you add a Live Node for Cloudera.
- UCS CPA MapR Add Live Node—This workflow is triggered if you add a Live Node for MapR.
- UCS CPA Hortonworks Add Live Node—This workflow is triggered if you add a Live Node for Hortonworks.

The following service requests are created when you do the following:

- UCS CPA Disable High Availability WF—This workflow is triggered when you disable high availability.
- UCS CPA Enable High Availability WF—This workflow is triggered when you enable high availability.
- UCS CPA Shutdown Big Data Cluster WF—This workflow is triggered when you shutdown the Hadoop cluster.
- UCS CPA Start Big Data Cluster WF—This workflow is triggered when you start the Hadoop cluster.
- UCS CPA Upgrade Cluster WF—This workflow is triggered when you upgrade the Hadoop cluster.

- UCS CPA Cloudera Add New Service WF—This workflow is triggered when you add a new service for Cloudera.
- UCS CPA Hortonworks Add New Service WF—This workflow is triggered when you add a new service for Hortonworks.
- UCS CPA MapR Add New Service WF—This workflow is triggered when you add a new service for MapR.

For more information on the service requests and workflows, see the following guides:

- *Cisco UCS Director Self-Service Portal Guide*
- *Cisco UCS Director Orchestration Guide*

Monitoring Service Requests for Big Data

Before You Begin

You must create and customize a Hadoop Cluster Deploy Template to trigger the following workflow.

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- Step 1** On the menu bar, choose **Organizations > Service Requests** .
- Step 2** Click the **Service Requests** tab.
- Step 3** Select the service request that you would like to monitor and click **View Details**.
The Request Status is one of the following:
- Complete
 - In Progress
 - Cancelled
 - Failed
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Viewing UCS CPA Workflow Tasks

From the **Service Request Status** dialog box, you can view the following:

- Workflow Status
- Log
- Objects Created and Modified
- Input/Output



Note You can only modify inputs for failed service requests.

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- Step 1** On the menu bar, choose **Organizations > Service Requests**.
You can see the list of service requests created for the user added to a specific group. For example, All User Groups.
- Step 2** Choose the **Service Request ID** you would like to explore the tasks associated with it.
- Step 3** Double-click the **Service Request ID** that opens the **Service Request Status** dialog box. (You can also choose the Service Request ID by the workflow name associated with it and click **View Details**. For example, choose the **UCS CPA Node BareMetal** workflow and click **View Details**).
In the **Service Request Status** dialog box, you can view the following tasks for the workflow:

UCS CPA Multi-UCSM Hadoop Cluster WF	Single UCSM Server Configuration WF	UCS CPA Node BareMetal
<p>The following tasks are associated with the UCS CPA Multi-UCSM Hadoop Cluster WF:</p> <ol style="list-style-type: none"> 1 Initiated by Admin 2 Multi-UCSM Hadoop Cluster profile 3 Setup Hadoop Cluster Env 4 Multi UCSM Configuration WF 5 Multi BareMetal WF Monitor 6 Synchronized Command Execution 7 Custom SSH Command 8 Provision Hadoop Cluster 9 Completed 	<p>The following tasks are associated with the Single UCSM Server Configuration WF:</p> <ol style="list-style-type: none"> 1 Initiated by Admin 2 Create UCS Service Profile Template 3 Muti BareMetal OS Install WF 4 Multi BareMetal WF Monitor 5 Completed 	<p>The following tasks are associated with the UCS CPA Node BareMetal:</p> <ol style="list-style-type: none"> 1 Initiated by Admin 2 Modify Workflow Priority (High) 3 Assign BareMetal SR ID 4 Create UCS Service Profile from Template 5 Service Profile unbind/rebind Action 6 Modify UCS Service Profile Boot Policy 7 Associate UCS Service Profile 8 Assign Server Identity 9 Bind/Unbind vNIC Template 10 Setup PXE Boot (OS Type : CentOS Live) 11 Setup RAID Commands 12 UCS Blade Reset Action 13 Monitor PXE Boot 14 Monitor RAID Configuration 15 UCS Blade Power OFF Action 16 Setup PXE Boot (OS Type: RHEL 6.5). 17 Setup RAID Commands 18 Wait for complete Association 19 UCS Blade Reset Action 20 Monitor PXE Boot 21 Modify UCS Service Profile Boot Policy 22 Service Profile unbind/rebind Action 23 Wait for complete Association 24 UCS Blade Reset Action 25 Assign IP Status 26 Custom SSH Command 27 Custom SSH Command 28 Synchronized Command Execution 29 UCS Blade Power OFF Action 30 UCS Blade Power ON Action 31 Synchronized Command Execution 32 Completed

Step 4 Click **Close**.

Workflow Customization to Deploy a Hadoop Cluster

You can customize the following UCS CPA workflows and use them to deploy an Hadoop cluster. You can add installation packages (RPMs) required for your cluster environment in the Cisco UCS Director Express for Big Data Baremetal Agent post any Hadoop distribution.

- Rename the UCS CPA Multi-UCSM Hadoop Cluster WF
- Rename the Single UCSM Server Configuration WF
- Rename the UCS CPA Node BareMetal

Deploying Hadoop Cluster Through Workflow Customization

Before You Begin

For more information on workflow orchestration, see the *Cisco UCS Director Orchestration Guide*.

- Customize UCS CPA Node BareMetal workflows that you want to use in the cloned Single UCSM Server Configuration WF.
- Customize the Single UCSM Server Configuration WF that you want to use in the UCS CPA Multi-UCSM Hadoop Cluster WF.

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- Step 1** On the menu bar, choose **Policies > Orchestration**.
- Step 2** Click the **UCS CPA** folder from the **Workflows** tab.
- Step 3** Double-click the workflow that you want to customize in the **Workflow Designer**. For instance, double-click the **UCS CPA Multi-UCSM Hadoop Cluster WF**.
- Step 4** Double-click the **Muti UCSM Configuration WF** task in the **Workflow Designer**.
- Step 5** Click **Next** on the **Workflow Task Basic Information** page.
- Step 6** On the **User Input Mappings to Task Input Attributes** page, you select the attributes in this page that you want to use values from the workflow input fields or provide values in the next step. If required, check the **Map to User Input**

check box to provide user inputs. If the **Map to User Input** check box is checked, inputs are prompted during workflow execution unless specified by the administrator in the workflow definition.

- Step 7** Click **Next** on the **User Input Mappings to Task Input Attributes** page.
- Step 8** Enter the task values for the task inputs which are not mapped to workflow inputs. For example, enter the name of the cloned Single UCSM Server Configuration WF in the **Workflow Name** field.
- Step 9** Click **Revalidate** to validate task input values.
- Step 10** Click **Next**.
- Step 11** On the **User Output mappings to Task Output Attributes** page, you select the attributes in this page that you want to use values from the workflow output fields.
- Step 12** Check the **Map to User Output** check box and choose the value from the **User Output** drop-down list.
- Step 13** Click **Submit**.

Cloning UCS CPA Workflows

To customize cluster deployment through baremetal workflows, you can clone the following workflows in the UCS CPA folder:

- Clone the UCS CPA Node BareMetal workflows.
- Rename the Single UCSM Server Configuration WF using the cloned UCS CPA Node BareMetal workflows.
- Rename the UCS CPA Multi-UCSM Hadoop Cluster WF using the cloned Single UCSM Server Configuration WF.

- Step 1** On the menu bar, choose **Policies > Orchestration** .
- Step 2** Choose the workflow that you want to clone in the **UCS CPA** folder from the **Workflows** tab.
- Step 3** Click **Clone Workflow**.
- Step 4** On the **Workflow Details** page of the **Clone Workflow** wizard, complete the following fields:

Name	Description
Workflow Name field	A unique name for the workflow.
Version field	Displays the current version of the workflow that you are cloning.
Description field	The description of the workflow.

Name	Description
Workflow Context drop-down list	<p>The workflow context. Workflow Orchestration supports the following options:</p> <ul style="list-style-type: none"> • Any—Enables you to use the workflow in any context. • Selected VM—Enables you to use the execute workflow only when you choose a VM. • Check the Save As Compound Task check box to define the workflow as a compound task. • Check the Place in New Folder check box, and enter the folder name in the Folder Name field to assign the workflow to a new folder other than the UCS CPA folder.
Select Folder drop down list	UCS CPA is the default folder for Big Data.
Notify status of execution to initiator User check box	Check the check box to notify the user through email. If checked, enter the additional email addresses in the Additional User(s) to send Email Notification field.

Step 5 Click **Next**.

Step 6 On the **Workflow User Inputs** page of the **Clone Workflow** wizard, complete the following fields:

Name	Description
Associate to Activity check box	Check the check box. If selected, existing workflow's user input(s) will be overridden by selected activities user input(s).
Activity drop-down list.	Choose an activity. The user input table is updated based on the selected activity.

Name	Description
Workflow User Inputs table	<p>On the Workflow User Inputs page:</p> <ol style="list-style-type: none"> 1 Click the + icon to add workflow input properties. 2 In the Add Entry to dialog box, complete the following fields: <ol style="list-style-type: none"> 1 Enter the name for the activity workflow input in the Input Label field. 2 Enter the description for the activity workflow input in the Input Description field. 3 Check the Optional check box to set the input as optional during workflow execution. 4 Click Select. In the Select dialog box, click Input Type. 5 Click Submit.

Step 7 Click **Next**.

Step 8 On the **Workflow User Outputs** page of the **Clone Workflow** wizard, do the following:

Name	Description
Workflow User Outputs table	<p>On the Workflow User Outputs page:</p> <ol style="list-style-type: none"> 1 Click the + icon to add workflow output properties. 2 In the Add Entry to dialog box, complete the following fields: <ol style="list-style-type: none"> 1 Enter the name for the activity workflow output in the Output Label field. 2 Enter the description for the activity workflow output in the Output Description field. 3 Check the Optional check box to set the output as optional during workflow execution. 4 Click Select. In the Select dialog box, click Output Type. 5 Click Submit.

Step 9 Click **Submit**.
