



# Cisco UCS CPA Workflows

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This chapter contains the following sections:

- [Workflows for Big Data, page 1](#)
- [About Service Requests for Big Data, page 2](#)

## 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 Hadoop accounts.
- **UCS CPA Multi-UCSM Splunk Cluster WF**—This workflow is triggered if you use multiple UCSM Splunk accounts.
- **UCS CPA Single UCSM Server Configuration WF**—This workflow is triggered for every 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 Hortonworks Add New Service WF**—This workflow is triggered when you add a new service 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 back end that are required to create an instant Hadoop cluster. This saves you the effort of manually creating 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. 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 shut down the Hadoop cluster.
- UCS CPA Start Big Data Cluster WF—This workflow is triggered when you power up 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.
- UCS CPA Wait For Complete UCS SP Association WF—This workflow is triggered .

## 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 W/Fs 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 Hadoop accounts. It also applies when you create an instant or customized Hadoop cluster.
- UCS CPA Multi-UCSM Splunk Cluster WF—This workflow is triggered if you use multiple UCSM Splunk accounts. It also applies to when you create an instant or customized Splunk cluster.
- UCS CPA Single UCSM Server Configuration WF—This workflow is triggered for every 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 as explained, below:

- 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 shut down the Hadoop cluster.
- UCS CPA Start Big Data Cluster WF—This workflow is triggered when you power up 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

Create and customize a Cluster Deploy Template to monitor a service request.

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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 want to monitor and click **View Details**. One of the following Request Status is displayed:
- 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



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**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 user-specific service requests added to a specific group. For example, All User Groups.
- Step 2** Choose the **Service Request ID** that you want to view.
- 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:

<b>UCS CPA Multi-UCSM Hadoop Cluster WF/UCS CPA Multi-UCSM Splunk Cluster WF</b>	<b>UCS CPA Single UCSM Server Configuration WF</b>	<b>UCS CPA Node BareMetal</b>
<p>The following tasks are associated with the <b>UCS CPA Multi-UCSM Hadoop Cluster WF/UCS CPA Multi-UCSM Splunk Cluster WF</b>:</p> <ol style="list-style-type: none"> <li>1 Initiated by Admin</li> <li>2 Multi-UCSM Hadoop Cluster profile/Multi-UCSM Splunk Cluster profile</li> <li>3 Setup Big Data Cluster Env</li> <li>4 User (Compute) Approval Required</li> <li>5 User (OS) Approval Required</li> <li>6 Approval by Admin</li> <li>7 Multi-UCSM Configuration WF</li> <li>8 Multi BareMetal WF Monitor</li> <li>9 Synchronized Command Execution</li> <li>10 User (Hadoop) Approval Required</li> <li>11 Custom SSH Command</li> <li>12 Monitor Shell Script Status</li> <li>13 Provision Hadoop Cluster/Provision Splunk Cluster</li> <li>14 Complete</li> </ol>	<p>The following tasks are associated with the <b>Single UCSM Server Configuration WF</b>:</p> <ol style="list-style-type: none"> <li>1 Initiated by Admin</li> <li>2 Create UCS Service Profile Template</li> <li>3 Change Maintenance Policy UCS SP Template</li> <li>4 Muti-BareMetal OS Install WF</li> <li>5 Multi-BareMetal WF Monitor</li> <li>6 Change Maintenance Policy for UCS SP Template</li> <li>7 Complete</li> </ol>	

UCS CPA Multi-UCSM Hadoop Cluster WF/UCS CPA Multi-UCSM Splunk Cluster WF	UCS CPA Single UCSM Server Configuration WF	UCS CPA Node BareMetal
		<p>The following tasks are associated with the <b>UCS CPA Node BareMetal</b>:</p> <ol style="list-style-type: none"> <li>1 Initiated by Admin</li> <li>2 Modify Workflow Priority (High)</li> <li>3 Assign BareMetal SR ID</li> <li>4 Create UCS Service Profile from Template</li> <li>5 Unbind UCS Service Profile from Template</li> <li>6 Modify UCS Service Profile Boot Policy</li> <li>7 Unbind UCS Service Profile vNIC from Template</li> <li>8 Bind UCS vNIC to Template</li> <li>9 Associate UCS Service Profile</li> <li>10 Assign Server Identity</li> <li>11 Setup PXE Boot (OS Type: CentOS Live)</li> <li>12 Setup RAID Commands</li> <li>13 UCS Blade Reset Action</li> <li>14 Monitor PXE Boot</li> <li>15 Remove PXE Boot Setup</li> <li>16 Monitor RAID Configuration</li> <li>17 UCS Blade Power OFF Action</li> <li>18 Setup PXE Boot (OS Type: RHEL 6.6).</li> <li>19 Setup RAID Commands</li> <li>20 Wait for complete Association</li> <li>21 UCS Blade Reset Action</li> <li>22 Monitor PXE Boot</li> <li>23 Modify UCS Service Profile Boot Policy</li> <li>24 Bind UCS Service Profile to Template</li> <li>25 Wait For Complete Association</li> <li>26 UCS Blade Reset Action</li> <li>27 Assign IP Status</li> <li>28 Custom SSH Command</li> <li>29 Custom SSH Command</li> <li>30 Synchronized Command Execution</li> <li>31 Linux Shell Script Execution</li> </ol>

UCS CPA Multi-UCSM Hadoop Cluster WF/UCS CPA Multi-UCSM Splunk Cluster WF	UCS CPA Single UCSM Server Configuration WF	UCS CPA Node BareMetal
		<b>32</b> UCS Blade Power OFF Action <b>33</b> UCS Blade Power ON Action <b>34</b> Synchronized Command Execution <b>35</b> Complete

**Step 4** Click Close.

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## Workflow Customization to Deploy a Hadoop or Splunk Cluster

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

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

## Deploying a Hadoop or Splunk 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 or UCS CPA Multi-UCSM Splunk 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, select the attributes that you want to map to the workflow input fields or provide values in the next step. If necessary, check the **Map to User Input** check box to provide user inputs.
- Step 7** Click **Next** on the **User Input Mappings to Task Input Attributes** page.
- Step 8** Enter the task values 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, select the attributes that you want to map to 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**.
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## 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.

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



Name	Description
<b>Workflow Name</b> field	A unique name for the workflow.
<b>Version</b> field	The current version of the workflow that you are cloning. This is a display-only field.
<b>Description</b> field	The description of the workflow.
<b>Workflow Context</b> drop-down list	The workflow context. Workflow Orchestration supports the following options: <ul style="list-style-type: none"> <li>• <b>Any</b>—Enables you to use the workflow in any context.</li> <li>• <b>Selected VM</b>—Enables you to use the execute workflow. This option can be selected only when you choose a VM.</li> <li>• Check the <b>Save As Compound Task</b> check box to define the workflow as a compound task.</li> <li>• Check the <b>Place in New Folder</b> check box, and enter the folder name in the <b>Folder Name</b> field, to assign the workflow to a new folder other than the UCS CPA folder.</li> </ul>
<b>Select Folder</b> drop-down list	Choose a folder. UCS CPA is the default folder for Big Data.
<b>Notify status of execution to initiator User</b> check box	Check the check box to notify the user through email, then enter appropriate email addresses in the <b>Additional User(s) to send Email Notification</b> field.

**Step 5** Click **Next**.

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

Name	Description
<b>Associate to Activity</b> check box	If the check box is checked then any existing workflow's user input is overridden by any selected activity user input.
<b>Activity</b> 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 <b>Workflow User Inputs</b> page:</p> <ol style="list-style-type: none"> <li>1 Click the + icon to add workflow input properties.</li> <li>2 In the <b>Add Entry to</b> dialog box, complete the following fields: <ol style="list-style-type: none"> <li>1 Enter the name for the activity workflow input in the <b>Input Label</b> field.</li> <li>2 Enter the description for the activity workflow input in the <b>Input Description</b> field.</li> <li>3 Check the <b>Optional</b> check box to set the input as optional during workflow execution.</li> <li>4 Click <b>Select</b>. In the <b>Select</b> dialog box, click <b>Input Type</b>.</li> <li>5 Click <b>Submit</b>.</li> </ol> </li> </ol>

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

**Step 9** Click **Submit**.

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