



Configuring and Deploying Hadoop Cluster Deployment Templates

This chapter contains the following sections:

- [Creating a Cluster Deployment Template, page 1](#)
- [Creating an Instant Hadoop Cluster, page 2](#)
- [Creating a Customized Hadoop Cluster, page 5](#)
- [Provisioning an Instant and Customized Hadoop Cluster, page 9](#)

Creating a Cluster Deployment Template

Before You Begin

- Create a Cisco UCS Service Profile Template for Big Data
- Create a Hadoop Cluster Profile Template

Step 1 On the menu bar, choose **Solutions > Big Data > Containers**.

Step 2 Click the **Cluster Deploy Templates** tab.

Step 3 Click **Add (+)**.

Step 4 In the **Add Cluster Deploy Template** dialog box, complete the following fields:

Name	Description
Template Name field	Enter a unique name for the Hadoop cluster deployment template.
Description field	Enter a short description of the template.
Container Type drop-down list	Choose the type of container for the cluster.

Name	Description
Select UCS Template drop-down list	Choose the UCS service profile template for Big Data that you want to use in the Hadoop cluster. Note If you choose Splunk as the container type, choose the UCS service profile template for Big Data with Splunk software to create a Splunk cluster.

Step 5 Click **Add**.

Creating an Instant Hadoop Cluster

Before You Begin

- Create a service profile template
- Create a server pool in the Cisco UCS Manager account that you plan to use for this cluster
- Create a MAC address pool

Step 1 On the menu bar, choose **Solutions > Big Data > Containers**.

Step 2 Click the **Cluster Deploy Templates** tab.

Step 3 Click **Instant Hadoop Cluster**.

Step 4 In the **Instant Hadoop Cluster Creation** dialog box, complete the following fields.

Name	Description
Big Data Account Name field	Enter the name of the Big Data account.
UCSM Policy Name Prefix field	Enter the UCSM Policy Name prefix.
Hadoop Cluster Name field	Enter a unique name for the Hadoop cluster.
Hadoop Node Count field	Enter the number of nodes in the Hadoop cluster.
SSH (root) Password field	Enter the SSH root password. Note The SSH username pertains to the root user.
Confirm SSH Password field	Enter the SSH root password.
Hadoop Manager Password field	Enter the management console password.

Name	Description
Confirm Hadoop Manager Password field	Enter the management console password.
Host Node Prefix field	Enter the Host Node prefix for the cluster.
OS Version drop-down list	Choose the operating system to be installed on the servers in this cluster.
Hadoop Distribution drop-down list	Choose the Hadoop distribution to be used for this cluster.
Hadoop Distribution Version drop-down list	Choose the Hadoop distribution version.
Oracle JDK drop-down list	Choose the Oracle JDK version.
External Database drop-down list	Choose an external database. You can also configure a new database from here.
Multi-UCSM check box	<p>Check the Multi-UCSM check box if you use multiple UCSM accounts.</p> <p>Note If you use the multiple UCSM accounts option, you can configure the Hadoop Server Roles as described in Step 5. You can add UCSM Specific Inputs in the Add Entry to UCSM Specific Inputs table.</p> <p>The following workflows are established during an Instant and Customized Hadoop Cluster creation:</p> <ul style="list-style-type: none"> • UCS CPA Multi-UCSM Hadoop Cluster WF • Single UCSM Server Configuration WF. (This WF is triggered per UCSM Account. For example, UCSM 120, UCSM121.) • UCS CPA Node Bare Metal. (This WF is triggered per Node.) <p>The UCSM Specific Input area is displayed when the Multi-UCSM check box is checked.</p>
UCS Manager Account drop-down list	Choose the Cisco UCS Manager account for this cluster.
Organization drop-down list	Choose the organization in which the servers for this cluster are located.
UCS SP Template table	Choose an existing UCS Service Profile Template for cluster creation.

Name	Description
SSD Boot Drives Available for OS check box	Check this check box if you do not want to validate the server disk availability for RAID level OS disks. Ensure that the servers contain Solid-State Drive (SSD). If the check box is not selected, the disk availability for both the OS disk and data disk are validated based on their RAID level.
PXE VLAN ID field	Enter the PXE VLAN ID.
UCS SP Template table	Choose an existing UCS Service Profile Template for Hadoop cluster creation.

Step 5 If you want to edit a Hadoop Server Role, select the row for that role, and click **Edit**.

Step 6 In the **Edit Hadoop Server Roles Entry** dialog box, complete the following fields and click **Submit**.

Name	Description
Node Type field	Displays the Hadoop node role.
Node Count field	The number of nodes in the Hadoop cluster for the selected node type.
SSD Boot Drives Available for OS check box	Check this check box if you do not want to validate the server disk availability for RAID level OS disks. Ensure that the servers contain SSD. If the check box is not selected, the disk availability for both the OS disk and data disk are validated based on their RAID level. Note This check box is not displayed when the UCSM version is greater than or equal to 3.
Server Pool table	Enter the server pool that you want to use for the cluster for the selected node type. The Cisco UCS Manager account and the organization that you choose determine which server pools are displayed in this area.

Step 7 In the **vNIC Template** table, review and, if necessary, edit the vNIC templates available for the cluster.

Step 8 If you want to edit a vNIC template, select the row for that template and click **Edit**.

Step 9 In the **Edit vNIC Template Entry** dialog box, complete the following fields and click **Submit**.

Name	Description
vNIC Name drop-down list	The vNIC name in the selected template. This field is for your information only.
IP Pool drop-down list	Choose the big data IP pool that you want to use for IP addresses assigned to this vNIC.
MAC Address Pool drop-down list	Choose the MAC address pool that you want to use for this cluster. (This drop-down list is disabled if an existing UCS SP Template is selected.)
First MAC Address field	Enter the MAC address pool that you want to use for this cluster.
Size field	Enter the size. (This field is disabled if an existing UCS SP Template is selected.)
VLAN ID field	Enter the VLAN ID for this cluster. (This field is disabled if an existing UCS SP Template is selected.)

Step 10 Click **Submit**.

What to Do Next

You can view and monitor the workflow that is triggered after you create an instant Hadoop cluster.

Creating a Customized Hadoop Cluster

Before You Begin

- Create a service profile template.
- Create a Hadoop cluster profile template.
- Setup the details for Hadoop Config Parameters.
- Create a Hadoop cluster deployment template that Cisco UCS Director Express for Big Data uses to create the Hadoop cluster.
- Create a server pool in the Cisco UCS Manager account you plan to use for this cluster.

- Create a MAC address pool.

Step 1 On the menu bar, choose **Solutions > Big Data > Containers**.

Step 2 Click the **Cluster Deploy Templates** tab.

Step 3 Select the template that you want to use for the Hadoop cluster and click **Customized Hadoop Cluster**.

Step 4 In the **Customized Hadoop Cluster Creation** dialog box, complete the following fields.

Name	Description
Big Data Account Name field	Enter the name of the Big Data account.
UCSM Policy Name Prefix field	Enter the UCSM Policy Name prefix.
Hadoop Cluster Name field	Enter a unique name for the Hadoop cluster.
Hadoop Node Count field	Enter the number of nodes in the Hadoop cluster.
SSH (root) Password field	Enter the SSH root password. Note The SSH username pertains to the root user.
Confirm SSH Password field	Enter the SSH root password.
Hadoop Manager Password field	Enter the management console password.
Confirm Hadoop Manager Password field	Enter the management console password.
Host Node Prefix field	Enter the Host Node prefix for the cluster.
OS Version drop-down list	Choose the operating system to be installed on the servers in this cluster.
Hadoop Distribution drop-down list	Choose the Hadoop distribution to be used for this cluster.
Hadoop Distribution Version drop-down list	Choose the Hadoop distribution version.
Oracle JDK drop-down list	Choose the Oracle JDK version.
External Database drop-down list	Choose an external database. You can also configure a new database from here.

Name	Description
<p>Multi-UCSM check box</p>	<p>Click the Multi-UCSM check box if you use multiple UCSM accounts.</p> <p>Note If you use the multiple UCSM accounts option, you can configure the Hadoop Server Roles as described in Step 5. You can add UCSM Specific Inputs in the Add Entry to UCSM Specific Inputs table.</p> <p>The following workflows are created during an Instant Hadoop cluster creation and Customized Hadoop cluster creation:</p> <ul style="list-style-type: none"> • UCS CPA Multi-UCSM Hadoop Cluster WF • Single UCSM Server Configuration WF. (This WF is triggered per UCSM Account. For example, UCSM 120, UCSM121.) • UCS CPA Node Bare Metal. (This WF is triggered per Node.) <p>The UCSM Specific Input area is displayed when the Multi-UCSM check box is checked.</p>
<p>UCS Manager Account drop-down list</p>	<p>Choose the Cisco UCS Manager account for this cluster.</p>
<p>Organization drop-down list</p>	<p>Choose the organization in which the servers for this cluster are located.</p>
<p>SSD Boot Drives Available for OS check box</p>	<p>Click this check box if you do not want to validate the server disk availability for RAID level OS disks. Ensure that the servers contain SSD.</p> <p>If the check box is not selected, the disk availability for both the OS disk and data disk are validated based on their RAID level.</p>
<p>PXE VLAN ID field</p>	<p>Enter the PXE VLAN ID.</p>
<p>UCS SP Template table</p>	<p>Choose an existing UCS Service Profile Template for Hadoop cluster creation.</p>

Step 5

If you want to edit a Hadoop Server Role, select the row for that role, and click **Edit**.

Step 6

In the **Edit Hadoop Server Roles Entry** dialog box, complete the following fields and click **Submit**.

Name	Description
<p>Node Type field</p>	<p>Displays the Hadoop node role.</p>

Name	Description
Node Count field	The number of nodes in the Hadoop cluster for the selected node type.
SSD Boot Drives Available for OS check box	<p>Check this check box if you do not want to validate the server disk availability for RAID level OS disks. Ensure that the servers contain SSD.</p> <p>If the check box is not selected, the disk availability for both the OS disk and data disk are validated based on their RAID level.</p> <p>Note This check box is not displayed when the UCSM version is greater than or equal to 3.</p>
Server Pool table	<p>Enter the server pool that you want to use for the cluster for the selected node type.</p> <p>The Cisco UCS Manager account and the organization that you choose determine which server pools are displayed in this area.</p>

Step 7 In the **vNIC Template** table, verify edit the vNIC templates available for the cluster.

Step 8 If you want to edit a vNIC template, select the row for that template and click **Edit**.

Step 9 In the **Edit vNIC Template Entry** dialog box, complete the following fields and click **Submit**.

Name	Description
vNIC Name drop-down list	The vNIC name in the selected template. This field is for your information only.
IP Pool field	Choose the big data IP pool that you want to use for IP addresses assigned to this vNIC.
MAC Address Pool drop-down list	Choose the MAC address pool that you want to use for this cluster. (This drop-down list is disabled if an existing UCS SP Template is selected.)
First MAC Address field	Enter the MAC address.
Size field	Enter the size.
VLAN ID field	The VLAN ID for this cluster. (This field is disabled if an existing UCS SP Template is selected.)

Step 10 Click **Submit**.

What to Do Next

You can view and monitor the workflow that gets triggered after creating a customized Hadoop cluster.

Provisioning an Instant and Customized Hadoop Cluster

Create and customize a Cluster Deploy Template to trigger the workflow.

Before You Begin

- Create a UCS Service Profile template for a Customized Hadoop Cluster
- Create a Hadoop Cluster Profile template for a Customized Hadoop Cluster

Step 1

On the menu bar, go to **Policies > Orchestration**.

Step 2

Click the **UCS CPA** folder from the **Workflows** tab.

Step 3

Double-click the workflow to open the workflow designer and execute the workflow.

- a) When you open the workflow designer for an instant Hadoop Cluster, you get the following tasks, which are processed sequentially.

Task Name	Description
Instant Hadoop Cluster UCS SP	Cisco UCS Director Express for Big Data automatically specifies parameters for installing the OS and Hadoop distribution software at the back end.
Instant Hadoop Cluster Profile	Cisco UCS Director Express for Big Data automatically configures Hadoop cluster services at the back end.
Setup Hadoop Cluster Env	Sets up the environment for cluster-specific scripts and software files.
Muti Bare Metal OS Install WF	Attaches the UCS profile and sets up all boot files required to boot the operating system (Linux). When the Power ON task is executed, the boot files are picked up, and the operating system is installed successfully.
Multi Bare Metal WF Monitor	Checks the status of bare metal OS install workflow.
Synchronized Command Execution	—
Custom SSH Command	Installs and configures the Hadoop distribution software.
Provision Hadoop Cluster	Sends the Hadoop cluster properties to the Web Console.

Task Name	Description
Completed	<p>The Hadoop cluster is provisioned successfully.</p> <p>Note If any of the tasks fail, you are informed that the provisioning has failed. For more information on how to monitor the workflow, see Monitoring Service Requests for Big Data.</p>

- b) When you open the workflow designer for a customized Hadoop Cluster, you get the following tasks that get processed sequentially.

Task Name	Description
Create UCS Service Profile Template	Specifies parameters for installing the OS and Hadoop distribution software.
Create Hadoop Cluster Profile	Configures Hadoop cluster services.
Setup Hadoop Cluster Env	Sets up the environment for cluster-specific scripts and software files.
Muti Bare Metal OS Install WF	Attaches the UCS profile and sets up all boot files required to boot the operating system (Linux). When the Power ON task is executed, the boot files are picked up, and the operating system is installed successfully.
Multi Bare Metal WF Monitor	Checks the status of bare metal OS install workflow.
Synchronized Command Execution	—
Custom SSH Command	Installs and configures the Hadoop distribution software.
Provision Hadoop Cluster	Sends the Hadoop cluster properties to the Web Console.
Completed	<p>The Hadoop cluster is provisioned successfully.</p> <p>Note If any of the tasks fail, you are informed that the provisioning has failed. For more information on how to monitor the workflow, see Monitoring Service Requests for Big Data.</p>