# Overview

This chapter contains the following sections:

# Cisco UCS Director Express for Big Data

Cisco UCS Director Express for Big Data is a single-touch solution within Cisco UCS Director that automates deployment of Big Data infrastructure. Cisco UCS Director Express for Big Data provides a single management pane across physical infrastructure and across Hadoop and Splunk Enterprise software. It supports key Hadoop distributions, including Cloudera, MapR, and Hortonworks.

Cisco UCS Director Express for Big Data delivers end-to-end automation of Hadoop cluster deployment, allowing you to spin up and expand clusters on-demand. The physical infrastructure configuration is handled automatically, with minimal user input. The configuration includes compute, internal storage, network, and installation of operating system, Java packages, and Hadoop, along with the provisioning of Hadoop services. This is achieved through Cisco UCS service profiles wherein both the physical infrastructure and Hadoop configuration are incorporated into a Hadoop cluster deployment profile.

Cisco UCS Director Express for Big Data also delivers end-to-end automation of Splunk cluster deployment, with minimal user input. This is achieved through Cisco UCS service profiles wherein both the physical infrastructure and Splunk configuration are incorporated into a Splunk cluster deployment profile.

# Cisco UCS Integrated Infrastructure for Big Data

Cisco UCS Integrated Infrastructure for Big Data is an industry leading architecture designed to meet various Big Data workloads. It scales as processing and storage needs grow without increasing management challenges and delivers predictable performance along with reduced total cost of ownership (TCO).

Cisco UCS Integrated Infrastructure consists of the following components:

- Cisco UCS Fabric Interconnects
- Cisco UCS 2200 Series Fabric Extenders
- Cisco UCS C-Series Rack-Mount Servers
- Cisco UCS Virtual Interface Cards (VICs)
- Cisco UCS Manager

You can read more about the Cisco UCS Integrated Infrastructure for Big Data in the Data Center Designs Cloud Computing - Design Zone for Big Data .

# Managing Cisco UCS Director and Cisco UCS Director Express for Big Data Personalities

Cisco UCS Director is the default personality made available after deployment, but you can choose to use only Cisco UCS Director Express for Big Data, or use both Cisco UCS Director and Cisco UCS Director Express for Big Data.

You can manage personalities here: **Administration** > **License** > **License Keys** > **Manage Personalities**.

*Table 1: Personality Switch Behavior*

| Personality Selection | Cisco UCS Director Features | Cisco UCS Director Express for Big Data Features |
|---|---|---|
| Cisco UCS Director, Release 6.0 (Default) | Yes | No |
| Cisco UCS Director Express for Big Data, Release 3.0 | No | Yes |
| Cisco UCS Director, Release 6.0, and Cisco UCS Director Express for Big Data, Release 3.0 | Yes | Yes |

**Note** Depending on the personality, you start with and the personality selection, Cisco UCS Director and Cisco UCS Director Express for Big Data features are enabled or disabled with the restart of services on the appliance.

# Creating User Roles

You can create user roles that are specific to Cisco UCS Director Express for Big Data, and define menu settings and permissions for those users. Ensure that you create a group before you add users to any role.

**Note** You can determine the default roles only if the **Default Role** column on the **User Roles** page is marked with **Yes** in the system. Navigate to **Administration** > **System** > **User Roles**.

For example, you can create the following user roles, and then create users with those role:

- HadoopUser—A Hadoop user
- HadoopAdmin—A Hadoop administrator

For more information on Managing Users and Groups, see the latest *Cisco UCS Director Administration Guide*.

## Hadoop Administrator Permissions

A Hadoop administrator can:

- Read—Permission to only read a file.
- Write—Permission to read, write, and modify a file.
- Read/Write—Permission to read and/or write to a file

The following table shows a list of operations that a Hadoop administrator can do:

| Operations | Permissions | |
|---|---|---|
| | Read | Write |
| Virtual Computing | Yes | Yes (Only VM Management Actions) |
| VM Label | Yes | — |
| Assign VM to VDC | Yes | — |
| Virtual Storage | Yes | Yes |
| Virtual Network | Yes | Yes |

| Operations | Permissions | |
|---|---|---|
| | **Read** | **Write** |
| Physical Computing | Yes | Yes |
| Physical Storage | Yes | Yes |
| Physical Network | Yes | Yes |
| Group Service Request | Yes | Yes |
| Approver Service Request | Yes | Yes |
| Budgeting | Yes | Yes |
| Resource Accounting | Yes | — |
| Chargeback | Yes | — |
| System Admin | Yes | Yes |
| Users and Groups | Yes | Yes |
| Virtual Accounts | Yes | Yes |
| Catalogs | Yes | Yes |
| VDC | Yes | Yes |
| Computing Policy | Yes | Yes |
| Storage Policy | Yes | Yes |
| Network Policy | Yes | Yes |
| Service Delivery | Yes | Yes |
| Resource Limit Report | Yes | Yes |
| Group Users | Yes | Yes |
| Cloudsense Reports | Yes | Yes |
| Cloudsense Assessment Reports | Yes | Yes |
| Orchestration | Yes | Yes |
| Open Automation Modules | Yes | Yes |
| CS Shared Reports | Yes | Yes |

| Operations | Permissions | |
|---|---|---|
| | **Read** | **Write** |
| Remote VM Access | — | Yes |
| Mobile Access Settings | Yes | Yes |
| End User Chargeback | Yes | — |
| Resource Groups | Yes | Yes |
| Tag Library | Yes | Yes |
| Big Data Infra | Yes | — |
| Big Data Accounts | — | Yes |
| Big Data Cluster Management | — | Yes |
| Big Data Node Management | — | Yes |
| Big Data Performance Test | — | Yes |
| Big Data Service Management | — | Yes |
| Big Data Role Management | — | Yes |
| Big Data UCS SP Template | — | Yes |
| Big Data Hadoop Profile Template | — | Yes |
| Big Data Hadoop Deploy Template | — | Yes |
| Big Data Cluster Deployment | — | Yes |
| Big Data License Upload | — | Yes |
| Big Data Configuration Parameters Template | — | Yes |
| Big Data Faults | — | Yes |
| Big Data Settings - QoS | — | Yes |
| Big Data Settings - IP Pool | — | Yes |
| Big Data Settings - Pre_Cluster Sanity | — | Yes |

| Operations | Permissions | |
|---|---|---|
| | **Read** | **Write** |
| Big Data Settings - Hadoop Software Upload | — | Yes |
| Big Data Settings - Configuration Check Rules | — | Yes |
| REST API access | Yes | Yes |
| Allow Change Password - Users | Yes | Yes |

# Hadoop User Permissions

A Hadoop user can:

- Read—Permission to only read a file.

- Write—Permission to read, write, and modify a file.

- Read/Write—Permission to read and/or write to a file.

The following table shows a list of operations that a Hadoop user can do:

| Operations | Permissions | |
|---|---|---|
| | **Read** | **Write** |
| Virtual Computing | Yes | — |
| VM Label | Yes | — |
| Assign VM to VDC | Yes | — |
| Virtual Storage | Yes | — |
| Virtual Network | Yes | — |
| Physical Computing | Yes | — |
| Physical Storage | Yes | — |
| Physical Network | Yes | — |
| Group Service Request | Yes | Yes |
| Approver Service Request | Yes | Yes |

| Operations | Permissions | |
|---|---|---|
| | **Read** | **Write** |
| Budgeting | Yes | — |
| Resource Accounting | Yes | — |
| Chargeback | Yes | — |
| System Admin | Yes | — |
| Users and Groups | Yes | — |
| Virtual Accounts | Yes | — |
| Catalogs | Yes | — |
| VDC | Yes | — |
| Computing Policy | Yes | — |
| Storage Policy | Yes | — |
| Network Policy | Yes | — |
| Service Delivery | Yes | — |
| Resource Limit Report | Yes | — |
| Group Users | Yes | — |
| Cloudsense Reports | Yes | — |
| Cloudsense Assessment Reports | Yes | — |
| Orchestration | — | — |
| Open Automation Modules | — | — |
| CS Shared Reports | — | — |
| Remote VM Access | — | — |
| Mobile Access Settings | — | — |
| End User Chargeback | — | — |
| Resource Groups | — | — |

| Operations | Permissions | |
|---|---|---|
| | **Read** | **Write** |
| Tag Library | — | — |
| Big Data Infra | Yes | — |
| Big Data Accounts | — | — |
| Big Data Cluster Management | — | — |
| Big Data Node Management | — | — |
| Big Data Performance Test | — | — |
| Big Data Service Management | — | — |
| Big Data Role Management | — | — |
| Big Data UCS SP Template | — | — |
| Big Data Hadoop Profile Template | — | — |
| Big Data Hadoop Deploy Template | — | — |
| Big Data Cluster Deployment | — | — |
| Big Data License Upload | — | — |
| Big Data Configuration Parameters Template | — | — |
| Big Data Faults | — | — |
| Big Data Settings - QoS | — | — |
| Big Data Settings - IP Pool | — | — |
| Big Data Settings - Pre_Cluster Sanity | — | — |
| Big Data Settings - Hadoop Software Upload | — | — |
| Big Data Settings - Configuration Check Rules | — | — |
| REST API access | Yes | — |

| Operations | Permissions | |
|---|---|---|
| | **Read** | **Write** |
| Allow Change Password - Users | — | — |

# Supported Hadoop Distributions

Cisco UCS Director Express for Big Data supports the following Hadoop distributions:

- Cloudera 5.4, 5.5, 5.6, and 5.8

- MapR 3.1, 4.0, 4.1, 5.0, 5.1, and 5.2

- Hortonworks 2.1, 2.2, 2.3, 2.4, and 2.5

*Table 2: Java and JDK Software for Hadoop Distributions*

| Hadoop Distribution | Supported Hadoop Distribution Versions | Installed Java and JDK |
|---|---|---|
| Cloudera | 5.0.1, 5.0.6, 5.2.0, 5.2.1, 5.3.0, 5.4.1, 5.5.0, 5.6.0, and 5.8.0 | oracle-j2sdk1.7 |
| MapR | 3.1.1, 4.0.1, 4.0.2, 4.1.0, 5.0.0, 5.1.0, and 5.2.0 | java-1.7.0-openjdk |
| Hortonworks | 2.1, 2.2, 2.3, 2.4, and 2.5 | java-1.7.0-openjdk |

**Note** You can choose and install the required Oracle JDK version.

# Supported Splunk Distribution

Cisco UCS Director Express for Big Data supports the following Splunk distribution:

| Splunk Distribution | Supported Splunk Distribution Version |
|---|---|
| Splunk | 6.3.x and 6.4.x |

# High-level Workflow to Create an Instant Hadoop Cluster

**Step 1**    Create a Cisco UCS Manager  account. For more information, see Adding a Cisco UCS Manager Account.

**Step 2**    Configure Big Data IP pools. For more information, see Adding a Big Data IP Pool.

**Step 3**    Create an Instant Hadoop Cluster. For more information, see Creating an Instant Hadoop Cluster.

# High-level Workflow to Create a Customized Hadoop Cluster

**Step 1**    Configure a Cisco UCS Service Profile template for Big Data. For more information, see Creating a Cisco UCS Service Profile Template for Big Data.

**Step 2**    Configure a Hadoop cluster profile template. For more information see, Creating a Hadoop Cluster Template.

**Step 3**    Configure a Hadoop cluster deployment template. For more information, see Creating a Hadoop Cluster Deploy Template.

**Step 4**    Create a customized Hadoop cluster. For more information, see Creating a Customized Hadoop Cluster.