



## Overview

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## 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 Fabric Extenders
- Cisco UCS C-Series Rack-Mount Servers
- Cisco UCS S-Series Storage 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 (Default)	Yes	No
Cisco UCS Director Express for Big Data	No	Yes

Personality Selection	Cisco UCS Director Features	Cisco UCS Director Express for Big Data Features
Cisco UCS Director and Cisco UCS Director Express for Big Data	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	—

Operations	Permissions	
	Read	Write
Virtual Storage	Yes	Yes
Virtual Network	Yes	Yes
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
Remote VM Access	—	Yes

Operations	Permissions	
	Read	Write
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
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
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	—

Operations	Permissions	
	Read	Write
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	—	—
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	—	—

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

## Installing Cisco UCS Director Express for Big Data on VMware vSphere

The Cisco UCS Director, Release 6.5 OVF file includes Cisco UCS Director Express for Big Data, Release 3.5.



**Note** We recommend that you use VMware vCenter for OVF deployment. VMware vCenter versions 5.x and above are supported. OVF deployment wizards support only IPv4 addresses. If you require IPv6, deploy the OVF with IPv4 addresses and then use the ShellAdmin to configure IPv6 addresses.

### Before you begin

You need administrator privileges to connect to VMware vCenter. Cisco UCS Director requires a user account with system administrator privileges to discover, manage and automate VMware vCenter configuration from Cisco UCS Director. These operations include creating, deleting and modifying VMs, ESXi hosts and clusters, datastores and datastore clusters, standard and DV switches, and virtual network port groups.



**Note** If you do not want to use DHCP, you need the following information: IPv4 address, subnet mask, and default gateway.

**Step 1** Log in to VMware vSphere Client.

**Step 2** In the **Navigation** pane, choose the **Data Center** where you want to deploy Cisco UCS Director.



See [Cisco UCS Director Installation on VMware vSphere](#).

**Step 3** Choose **File > Deploy OVF Template**.

**Step 4** In the **Source** pane, do one of the following to choose your OVF source location:

- Click **Browse**, navigate to the location where you downloaded the OVF, choose the file, and click **Open**.
- Replace *FQDN* (Fully Qualified Domain Name) with the path to the URL on your local area network where the OVF is stored, including the IP address or domain name, and click **Next**.

**Step 5** In the **OVF Template Details** pane, verify the details, and click **Next**.

**Step 6** In the **Name and Location** pane, do the following:

- a) In the **Name** field, edit the default VM name.
- b) From the **Inventory Location** area, choose the inventory location where Cisco UCS Director Express for Big Data is being deployed, and click **Next**.

**Note** If you chose a Data Center in Step 2, option b might not be available.

- c) Click **Next**.

**Step 7** In the **Resource Pool** pane, choose the required host, cluster, or resource pool, and click **Next**.

**Step 8** In the **Disk Format** pane, choose one of the following options and click **Next**:

- **Thick Provisioned (Lazy Zeroed)** format—To allocate storage immediately in thick format. This is the recommended format. All Cisco UCS Director Express for Big Data performance data is verified with this format.
- **Thick Provisioned (Eager Zeroed)** format—To allocate storage in thick format. It might take longer to create disks using this option.
- **Thin Provisioned** format—To allocate storage on demand as data is written to disk.

**Note** We recommend that you do not choose the **Thin Provisioned** format.

**Step 9** In the **Properties** pane, enter the following information and click **Next**:

- **Management IP Address**—The management IP address to be used for eth0. If your network uses DHCP, leave the default value of 0.0.0.0.
- **Management IP Subnet Mask**—The management IP subnet mask to be used for eth0. If your network uses DHCP, leave the default value of 0.0.0.0.
- **Gateway IP Address**

**Step 10** In the **Ready to Complete** pane, do the following:

- a) Verify the options that you chose in the previous panes.
- b) Check **Power on after deployment**.

If you do not check this box, you must power on the VM manually after deployment.

- c) Click **Finish**.

**Step 11** After the appliance has booted up, copy and paste the Cisco UCS Director Express for Big Data management IP address (from the IP address that is shown) into a supported web browser to access the **Login** page.

**Step 12** On the **Login** page, enter `admin` as the username and `admin` for the login password.

**Note** We recommend that you change the default admin password after this initial login.

- Step 13** Choose **Administration > License**.
- Step 14** On the **License** page, click **License Keys**.
- Step 15** Click **Manage Personalities**.
- Step 16** On the **Personality Configuration** screen, check the required personalities.  
You can check either **UCSD** or **Big Data** or both personalities if required.
- Step 17** Click **Submit**.
- Step 18** Log in to the Cisco UCS Director VM console with the default shelladmin credentials (for example, shelladmin/changeme) to apply the selected personalities.
- Follow the prompts to change the default password.
  - From the **Cisco UCS Director Shell Menu**, choose **Stop Services** and press **Enter**.
  - Press **Enter** to return to the main menu.
  - From the **Cisco UCS Director Shell Menu**, choose **Start Services** and press **Enter**.
  - Press **Enter** to return to the main menu.
  - To verify that all services have started, choose `Display services status`.
  - Choose **Quit**.
- 

## Installing Cisco UCS Director Express for Big Data Bare Metal Agent on VMware vSphere

### Before you begin

- You must have system administrator privileges for VMware vSphere or vCenter.
  - If you want to use a static IP address rather than DHCP, you must know the following information:
    - IP address
    - Subnet mask
    - Default gateway
- 

- Step 1** On the Cisco.com download site for Cisco UCS Director, download Cisco UCS Director Bare Metal Agent and unzip the OVF file.
- Step 2** Log in to VMware vSphere Client.
- Step 3** In the **Navigation** pane, click the vSphere host on which you want to deploy Cisco UCS Director Express for Big Data Bare Metal Agent.
- Step 4** Choose **File > Deploy OVF Template**.
- Step 5** On the **Source** screen of the **Deploy OVF Template** window, do one of the following to choose your OVF source location and then click **Next**:
- If the OVF file is stored on your local computer, browse to the location, choose the file, and click **Open**.

- If the OVF file is stored on a server on your local area network, enter the location of the file including the IP address or fully qualified domain name of the server.

- Step 6** On the **OVF Template Details** screen, verify the details and click **Next**.
- Step 7** On the **End User License Agreement** screen, review the license agreement and click **Accept**.
- Step 8** On the **Name and Location** screen, do the following:
- a) In the **Name** field, enter a unique name for the VM.
  - b) In the **Inventory Location** area, choose the location where you want the VM to reside.
  - c) Click **Next**.
- Step 9** On the **Storage** screen, choose the storage location for the VM and click **Next**.
- Step 10** On the **Disk Format** screen, click **Next** to accept the default radio button for **Thick Provision (Lazy Zeroed)** format.
- Step 11** On the **Network Mapping** screen, choose the network for the VM and click **Next**.
- Step 12** On the **Properties** screen, do the following:
- a) Configure the IP addresses for both the NICs (eth0 and eth1) that you want to assign, as follows:
    - To use DHCP to assign the IP addresses, leave the default of 0.0.0.0 in the IP address fields.
    - To use static IP addresses, enter the desired IP addresses in the IP address fields. If you only want to configure one NIC, only complete one set of IP addresses and leave the second set at the default.
  - b) Click **Next**.
- Step 13** On the **Ready to Complete** screen, verify the settings and click **Finish**.
- A message appears to indicate that Cisco UCS Director Express for Big Data Bare Metal Agent is being deployed.
- Step 14** Log in to the Cisco UCS Director Express for Big Data Bare Metal Agent server with root privileges, and check if you are able to ping the Cisco UCS Director Express for Big Data Bare Metal Agent server.
- Step 15** In the **Navigation** pane, right-click the Cisco UCS Director Express for Big Data Bare Metal Agent server and choose **Edit Settings**.
- a) Choose the **Resources** tab.
  - b) In the **Resource Allocation** window, set CPU and Memory **Reservation** settings to the maximum.
  - c) Click **OK**.
- Step 16** Power on the VM.

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## NTP Server Configuration on Cisco UCS Director Express for Big Data Bare Metal Agent

You can configure Cisco UCS Director Express for Big Data Bare Metal Agent to have its clock synchronized to an external NTP server. This ensures that the correct calendar time is maintained on the Bare Metal Agent.

Ensure that you synchronize Cisco UCS Director Express for Big Data and Cisco UCS Director Express for Big Data Bare Metal Agent before you deploy any Hadoop cluster. It is recommended that you also synchronize Cisco UCS Manager and Cisco UCS Director Express for Big Data on the configured NTP server.

Follow the steps to locate the `ntp_server_config.sh`:

- Locate `/opt/cnsaroot/bigdata_templates/ntp_server_config.sh`
- Add execute permissions (`chmod+x ntp_server_config.sh`)
- Execute (`./ntp_server_config.sh <ntp_server_ip or hostname>`) on the Cisco UCS Director Express for Big Data Bare Metal Agent server.

## Adding Oracle JDK Software Versions to Bare Metal Agent

You can upload Oracle JDK software and use Oracle JDK for all Hadoop distributions (Cloudera, MapR, and Hortonworks) through an instant Hadoop cluster and customized Hadoop cluster creation actions. You can also add new nodes to the existing cluster and support upgrading existing clusters.

- 
- Step 1** Log in to the Cisco UCS Director Bare Metal Agent server.
  - Step 2** Navigate to **Solutions > Big Data > Settings** and click the **Software Catalogs** tab to create JDK software version folder names for each version.
  - Step 3** Copy JDK files in .rpm or .gz format to the respective version folders.
  - Step 4** On the menu bar, choose **Administration > Integration** to track software uploads.
  - Step 5** Click the **Change Record** tab to track the software upload in progress and verify if completed, failed, or timeout.
- 

## Cisco Server Support for Hadoop Distribution Deployments

The table shows Cisco UCS Director Express for Big Data compatibility with Cisco UCS hardware and software. This table does not reflect the compatibility between Cisco UCS hardware and software.

For information regarding Cisco UCS compatibility, see the [Cisco UCS Hardware and Software interoperability Matrices](#) for the appropriate releases.



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**Note** All Cisco UCS Director Express for Big Data functionality may not be available across all supported Cisco UCS software versions. Certain features may not be available in older versions of Cisco UCS software.

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Components	Supported Models	Supported Software	
		From Version	To Version
Cisco UCS Manager	Software	Cisco UCS Infrastructure Bundle and Cisco UCS Manager Software Bundle, Release 2.2	<p>Cisco UCS Infrastructure Bundle and Cisco UCS Manager Software Bundle, Release 3.1(2b), Release 3.1(2f), and Release 3.2(0.204a) for M3 Rack servers</p> <p>Cisco UCS Infrastructure Bundle and Cisco UCS Manager Software Bundle, Release 3.1(2b), Release 3.1(2f), and Release 3.2(0.204a) for M4 Rack servers and Storage servers</p> <p>Cisco UCS Infrastructure Bundle and Cisco UCS Manager Software Bundle, Release 3.2(1) for M5 Rack servers</p>
Cisco UCS 6200 Series Fabric Interconnects	<ul style="list-style-type: none"> <li>• 6248UP</li> <li>• 6296UP</li> </ul>	Cisco UCS Infrastructure Bundle and Cisco UCS Manager Software Bundle, Release 2.2	Cisco UCS Infrastructure Bundle and Cisco UCS Manager Software Bundle, Release 3.1(2b)
Cisco UCS 2000 Series FEX Modules	2232PP 10GigE	Cisco UCS Infrastructure Bundle and Cisco UCS Manager Software Bundle, Release 2.2	Cisco UCS Infrastructure Bundle and Cisco UCS Manager Software Bundle, Release 3.1(2b)

Components	Supported Models	Supported Software	
		From Version	To Version
Cisco UCS C-Series Rack-Mount Servers (Managed by Cisco UCS Manager)	<ul style="list-style-type: none"> <li>• C240 M3 Rack Server</li> <li>• C240 M4 Rack Server</li> <li>• C240 M5 Rack Server</li> <li>• C220 M3 Rack Server</li> <li>• C220 M4 Rack Server</li> <li>• C220 M5 Rack Server</li> <li>• S3260 M4 Storage Server</li> </ul>	Cisco UCS C-Series Rack-Mount Server Software Bundle, Release 2.2	Cisco UCS C-Series Rack-Mount Server Software Bundle, Release 3.2(2d)  Cisco UCS Infrastructure Bundle and Cisco UCS Manager Software Bundle, Release 3.1(2b) for M4 Rack servers and Storage servers  Cisco UCS Infrastructure Bundle and Cisco UCS Manager Software Bundle, Release 3.2(1) for M5 Rack servers
Cisco UCS 6300 series Fabric interconnects	<ul style="list-style-type: none"> <li>• 6324</li> <li>• 6332</li> <li>• 6332-16UP</li> </ul>	Cisco UCS Infrastructure Bundle and Cisco UCS Manager Software Bundle, Release 3.1	Cisco UCS Infrastructure Bundle and Cisco UCS Manager Software Bundle, Release 3.1(3b)

## Cisco Server Support for Splunk Enterprise Deployments

The table shows Cisco UCS Director Express for Big Data compatibility with Cisco UCS hardware and software. This table does not reflect the compatibility between Cisco UCS hardware and software.

For information regarding Cisco UCS compatibility, see the [Cisco UCS Hardware and Software interoperability Matrices](#) for the appropriate releases.



### Note

All Cisco UCS Director Express for Big Data functionality may not be available across all supported Cisco UCS software versions. Certain features may not be available in older versions of Cisco UCS software.

Components	Supported Models	Supported Software	
		From Version	To Version
Cisco UCS Manager	Software	Cisco UCS Infrastructure Bundle and Cisco UCS Manager Software Bundle, Release 2.2	Cisco UCS Infrastructure Bundle and Cisco UCS Manager Software Bundle, Release 3.1(2b), Release 3.1(2f), and Release 3.2(0.204a) for M3 Rack servers  Cisco UCS Infrastructure Bundle and Cisco UCS Manager Software Bundle, Release 3.1(2b), Release 3.1(2f), and Release 3.2(0.204a) for M4 Rack servers
Cisco UCS 6200 Series Fabric Interconnects	6296UP 6248UP	Cisco UCS Infrastructure Bundle and Cisco UCS Manager Software Bundle, Release 2.2	Cisco UCS Infrastructure Bundle and Cisco UCS Manager Software Bundle, Release 3.2(2d)
Cisco UCS C-Series Rack-Mount Servers (Managed by Cisco UCS Manager)	<ul style="list-style-type: none"> <li>• C220 M4 Rack Server for the Master Node, Deployment Node, and the Search Heads.</li> <li>• C240 M4 Rack Server and S3260 M4 Storage Server for the Indexers.</li> <li>• C240 M5 Rack Server</li> <li>• C220 M5 Rack Server</li> </ul>	Cisco UCS C-Series Rack-Mount Server Software Bundle, Release 2.2	Cisco UCS C-Series Rack-Mount Server Software Bundle, Release 3.2(2d)  Cisco UCS Infrastructure Bundle and Cisco UCS Manager Software Bundle, Release 3.1(2b) for M4 Rack servers and Storage servers
Cisco UCS 6300 series Fabric interconnects	<ul style="list-style-type: none"> <li>• 6324</li> <li>• 6332</li> <li>• 6332-16UP</li> </ul>	Cisco UCS Infrastructure Bundle and Cisco UCS Manager Software Bundle, Release 3.1	Cisco UCS Infrastructure Bundle and Cisco UCS Manager Software Bundle, Release 3.1(3b)

## Adding a New Red Hat Version for Hadoop Cluster

For more information on uploading supported Red Hat Enterprise Linux versions, see Chapter 12, Managing Hadoop and Splunk Clusters in *Cisco UCS Director Express for Big Data Management Guide*.

- 
- Step 1** On the menu bar, choose **Solutions > Big Data > Settings**.
- Step 2** Click the **Software Catalogs** tab.
- Step 3** Click **Add**.
- Step 4** Click **Upload**.
- Step 5** Choose the target Cisco UCS Director Express for Big Data Bare Metal Agent from the **Target BMA** drop-down list.
- Step 6** Check the **Restart BMA Services** check box to restart Cisco UCS Director Express for Big Data Bare Metal Agent after uploading the required files.
- Step 7** To verify that the new Red Hat version (operating system software) is available in the Cisco UCS Director Express for Big Data server, perform the following:
- Log in to the Cisco UCS Director Express for Big Data user interface.
  - On the menu bar, choose **Administration > Physical Accounts**.
  - Click the **Bare Metal Agents** tab.

You can find the new Red Hat version listed in the **Image Catalogs** column of the **Bare Metal Agents** report.

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## New RHEL Version

### Red Hat Enterprise Linux 7.2

Download the following file:

- `rhel-server-7.2-x86_64-dvd.iso` from [Red Hat Enterprise Linux](#)

## Supported Hadoop Distributions

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

Hadoop Distribution	Supported Hadoop Distribution Version
Cloudera	5.4, 5.5, 5.6, 5.8, 5.10, 5.11, 5.13, 5.14, and 5.15
MapR	3.1, 4.0, 4.1, 5.0, 5.1, 5.2, and 6.0
Hortonworks	2.1, 2.2, 2.3, 2.4, 2.5.3, 2.6.3, and 2.6.4





**Note** For more information on the supported JDK versions and upgrade scenarios, see Cloudera, MapR, and Hortonworks sites.

## Supported Splunk Distribution

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

Splunk Distribution	Supported Splunk Distribution Version
Splunk	6.3.2, 6.4.0, 6.5.2, 6.6.1, and 7
Splunk Distribution Version to Upgrade	Supported Upgrade Version
Splunk 6.4	Splunk 6.5
Splunk 6.4	Splunk 6.6.1
Splunk 6.5.2	Splunk 7
Splunk 6.6.1	Splunk 7

## Supported Oracle JDK Software Versions

This section lists the supported Oracle JDK software versions:

### Supported Oracle JDK Versions for Cloudera and Upgrade Scenarios

Hadoop Distribution	Oracle JDK 1.7	Oracle JDK 1.8
Cloudera Enterprise 5.14.0	—	JDK 1.8.0_121
Cloudera Enterprise 5.13.1	—	JDK 1.8.0_121
Cloudera Enterprise 5.11.1	—	JDK 1.8.0_121
Cloudera Enterprise 5.10.0	—	JDK 1.8.0_121
Cloudera Enterprise 5.8.0	JDK 1.7.0_25	JDK 1.8.0_60
Cloudera Enterprise 5.6.x	JDK 1.7.0_25	JDK 1.8.0_60
Cloudera Enterprise 5.5.0	JDK 1.7.0_25	JDK 1.8.0_60
Cloudera Enterprise 5.4.x	JDK 1.7.0_25	JDK 1.8.0_60
Cloudera Enterprise 5.3.x	—	JDK 1.8.0_11

Hadoop Distribution Version to Upgrade	Supported Upgrade Version
Cloudera Enterprise 5.4.x, JDK 1.8	Cloudera Enterprise 5.5.0, JDK 1.8
Cloudera Enterprise 5.4.x, JDK 1.8	Cloudera Enterprise 5.6.x, JDK 1.8
Cloudera Enterprise 5.4.x, JDK 1.8	Cloudera Enterprise 5.8.x, JDK 1.8
Cloudera Enterprise 5.6.x, JDK 1.8	Cloudera Enterprise 5.8.x, JDK 1.8
Cloudera Enterprise 5.8.0, JDK 1.8	Cloudera Enterprise 5.10.0, JDK 1.8
Cloudera Enterprise 5.8.0, JDK 1.8	Cloudera Enterprise 5.11.1, JDK 1.8
Cloudera Enterprise 5.8.2, JDK 1.8	Cloudera Enterprise 5.13.1, JDK 1.8
Cloudera Enterprise 5.11.1, JDK 1.8	Cloudera Enterprise 5.13.1, JDK 1.8

## Supported Oracle JDK Versions for MapR and Upgrade Scenarios

Hadoop Distribution	JDK 1.7	JDK 1.8
MapR 6.0	—	Yes
MapR 5.2.2	—	Yes
MapR 5.2.1	—	Yes
MapR 5.2.0	Yes	Yes
MapR 5.1.0	Yes	Yes
MapR 5.0.0	Yes	Yes
MapR 4.1.0	—	Yes

Hadoop Distribution Version to Upgrade	Supported Upgrade Version
MapR 5.2.1, JDK 1.8	MapR 6.0.0, JDK 1.8
MapR 5.0.0, JDK 1.8	MapR 5.1.0, JDK 1.8
MapR 4.0.2, JDK 1.8	MapR 5.2.0, JDK 1.8

## Supported Oracle JDK Software Versions for Hortonworks and Upgrade Scenarios

Hadoop Distribution	JDK 1.7	JDK 1.8
Hortonworks 2.6.4	—	Yes

Hadoop Distribution	JDK 1.7	JDK 1.8
Hortonworks 2.6.3	—	Yes
Hortonworks 2.5.3	—	Yes
Hortonworks 2.4	—	Yes
Hortonworks 2.3	—	Yes
Hortonworks 2.2	Yes	Yes

Hadoop Distribution Version to Upgrade	Supported Upgrade Version
Hortonworks 2.2, JDK 1.7	Hortonworks 2.3, JDK 1.8
Hortonworks 2.2, JDK 1.7	Hortonworks 2.4, JDK 1.8

## Upgrade Hadoop Distribution Software

You can upgrade to the latest Hadoop distributions from the following Hadoop distributions:

**Table 2: Cloudera**

Hadoop Distribution Version to Upgrade	Supported Upgrade Version
Cloudera-5.0.1	Cloudera-5.4.1
Cloudera-5.0.6	Cloudera-5.4.1
Cloudera-5.2.0	Cloudera-5.4.1
Cloudera-5.2.1	Cloudera-5.4.1
Cloudera-5.3.0	Cloudera-5.4.1
Cloudera-5.4.x	Cloudera-5.6.x
Cloudera-5.8.0	Cloudera-5.10.0
Cloudera-5.8.0	Cloudera-5.11.1
Cloudera-5.8.2	Cloudera-5.13.1
Cloudera-5.8.2	Cloudera-5.14.0
Cloudera-5.11.1	Cloudera-5.13.1
Cloudera-5.11.1	Cloudera-5.14.0

Table 3: MapR

Hadoop Distribution Version to Upgrade	Supported Upgrade Version
MapR-4.0.2	MapR-4.1.0
MapR-4.0.2	MapR-5.0.0
MapR-4.1.0	MapR-5.0.0
MapR-5.2.0	MapR-6.0.0

Table 4: Hortonworks

Hadoop Distribution Version to Upgrade	Supported Upgrade Version
Hortonworks-2.2 (ambari-1.7.0-centos6.tar.gz)	Hortonworks-2.3  <b>Note</b> Download <code>ambari-2.1.1-centos6.tar.gz</code> from <a href="http://public-repo-1.hortonworks.com/ambari/centos6">http://public-repo-1.hortonworks.com/ambari/centos6</a>

## Digitally Signed Images

Cisco UCS Director Express for Big Data images are delivered in digitally signed zip files. These signed zip files are wrapped in a container zip file that includes the following:

- Digitally signed zip file—Contains the Cisco UCS Director Express for Big Data installation or upgrade image
- Verification program—Verifies the certificate chain and signature. During certificate chain validation, the program verifies the authenticity of the end-entity certificate using Cisco's SubCA and root CA certificates. Then, the authenticated end-entity certificate is used to verify the signature.
- Digital signature file—Contains the signature that you can verify before installation or upgrade.
- Certificate file—Enables you to verify the digital signature. This Cisco-signed x.509 end-entity certificate contains a public key that can be used to verify the signature. This certificate is chained to the Cisco root posted on <http://www.cisco.com/security/pki/certs/crcam2.cer>.
- ReadMe file—Provides the information and instructions required to verify the digitally signed zip file.

Verify the image offline. Once the image is verified, you can begin the installation or upgrade of Cisco UCS Director Express for Big Data.

## Requirements for Verifying Digitally Signed Images

Before you verify a Cisco UCS Director Express for Big Data digitally signed image, ensure that you have the following on your local machine:

- Connectivity to <https://www.cisco.com> during the verification process

- Python 2.7.4
- OpenSSL

## Verifying a Digitally Signed Image

### Before you begin

Download the Cisco UCS Director Express for Big Data image from [Cisco.com](http://Cisco.com).

**Step 1** Unzip the file you downloaded from [Cisco.com](http://Cisco.com) and verify that it contains the following files:

- ReadMe file
- Digitally signed zip file, for example CUCSD\_6\_6\_0\_0\_66365\_VMWARE\_GA.zip, CUCSD\_6\_6\_0\_0\_66717\_HYPERV\_GA.zip, or cucsd\_patch\_6\_6\_0\_0\_66365.zip
- Certificate file, for example UUCS\_GENERIC\_IMAGE\_SIGNING-CCO\_RELEASE.cer
- Digital signature generated for the image, for example CUCSD\_6\_6\_0\_0\_66365\_VMWARE\_GA.zip.signature, CUCSD\_6\_6\_0\_0\_66717\_HYPERV\_GA.zip.signature, or cucsd\_patch\_6\_6\_0\_0\_66365.zip.signature
- Signature verification program, for example cisco\_x509\_verify\_release.py

**Step 2** Review the instructions in the ReadMe file.

**Note** If there are any differences between these instructions and those in the ReadMe, follow the ones in the ReadMe.

**Step 3** Run the signature verification program from the directory where you have unzipped the downloaded content.

Example: Signature Verification for Upgrade Patch

```
python ./cisco_x509_verify_release.py -e UCS_GENERIC_IMAGE_SIGNING-CCO_RELEASE.cer
-i cucsd_patch_6_6_0_0_66365.zip -s cucsd_patch_6_6_0_0_66365.zip.signature -v dgst -sha512
```

Example: Signature Verification for VMware OVF Installation

```
python ./cisco_x509_verify_release.py -e UCS_GENERIC_IMAGE_SIGNING-CCO_RELEASE.cer
-i CUCSD_6_6_0_0_66365_VMWARE_GA.zip -s CUCSD_6_6_0_0_66365_VMWARE_GA.zip.signature -v dgst -sha512
```

Example: Signature Verification for Hyper-V VHD Installation

```
python ./cisco_x509_verify_release.py -e UCS_GENERIC_IMAGE_SIGNING-CCO_RELEASE.cer
-i CUCSD_6_6_0_0_66717_HYPERV_GA.zip -s CUCSD_6_6_0_0_66717_HYPERV_GA.zip.signature -v dgst -sha512
```

**Step 4** Review the output and ensure that the verification has succeeded.

Example: Expected Output for Upgrade

```
Downloading CA certificate from http://www.cisco.com/security/pki/certs/crcam2.cer ...
Successfully downloaded and verified crcam2.cer.
Downloading SubCA certificate from http://www.cisco.com/security/pki/certs/innerspace.cer ...
Successfully downloaded and verified innerspace.cer.
Successfully verified root, subca and end-entity certificate chain.
Successfully verified the signature of cucsd_patch_6_6_0_0_66365.zip using
UCS_GENERIC_IMAGE_SIGNING-CCO_RELEASE.cer
```

Example: Expected Output for VMware OVF Installation

```

Downloading CA certificate from http://www.cisco.com/security/pki/certs/crcam2.cer ...
Successfully downloaded and verified crcam2.cer.
Downloading SubCA certificate from http://www.cisco.com/security/pki/certs/innerspace.cer ...
Successfully downloaded and verified innerspace.cer.
Successfully verified root, subca and end-entity certificate chain.
Successfully verified the signature of CUCSD_6_6_0_0_66365_VMWARE_GA.zip using
UCS_GENERIC_IMAGE_SIGNING-CCO_RELEASE.cer

```

#### Example: Expected Output for Hyper-V VHD Installation

```

Downloading CA certificate from http://www.cisco.com/security/pki/certs/crcam2.cer ...
Successfully downloaded and verified crcam2.cer.
Downloading SubCA certificate from http://www.cisco.com/security/pki/certs/innerspace.cer ...
Successfully downloaded and verified innerspace.cer.
Successfully verified root, subca and end-entity certificate chain.
Successfully verified the signature of CUCSD_6_6_0_0_66717_HYPERV_GA.zip using
UCS_GENERIC_IMAGE_SIGNING-CCO_RELEASE.cer

```

#### What to do next

Install or upgrade Cisco UCS Director Express for Big Data.

## Upgrade of Bare Metal Agent

For detailed information on upgrading Bare Metal Agent, see the [Cisco UCS Director Upgrade Guide](#).

## Updating Bare Metal Agent

A new system task (Update BMA Appliance Task) is created within the account. Navigate to the Big Data Tasks folder here: **Administration** > **System** > **System Tasks**. The system scheduler connects to all Bare Metal Agents that are currently managed, performs a version check, stops services, pushes the required updates, and starts the services. This task is performed when

- the Cisco Big Data Express connector pack is upgraded.
- a BMA is added.



**Note** If any of the BMA goes down and update fails, you should add the BMA to kickstart the process again. You can use the system task history to check for any failures and add the BMA again to trigger the process.

## Configuring Cisco UCS Manager Accounts

Each Cisco UCS Manager account represents a single Cisco UCS domain that has to be managed by Cisco UCS Director Express for Big Data. See [Cisco UCS Director Management Guide for Cisco UCS Manager](#).

## High-level Workflow to Create an Instant Hadoop Cluster

---

- Step 1** Create a Cisco UCS Manager account. See [Cisco UCS Director Management Guide for Cisco UCS Manager](#).
  - Step 2** Configure Big Data IP pools. See [Adding a Big Data IP Pool](#).
  - Step 3** Create an Instant Hadoop Cluster. See [Creating an Instant Hadoop Cluster](#).
- 

## High-level Workflow to Create a Customized Hadoop Cluster

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- 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** Create a Hadoop cluster configuration parameters template. See [Create a Hadoop Cluster Configuration Parameters Template](#).
  - Step 3** Configure a Hadoop cluster profile template. See [Creating a Hadoop Cluster Template](#).
  - Step 4** Configure a Hadoop cluster deployment template. See [Creating a Hadoop Cluster Deploy Template](#).
  - Step 5** Create a customized Hadoop cluster. See [Creating a Customized Hadoop Cluster](#).
- 

## Device Connector

The device connector connects Cisco UCS Director Express for Big Data to Cisco Intersight, the cloud-hosted server management system. It enables Cisco UCS Director Express for Big Data to be managed and monitored through Cisco Intersight.

To register a device with Cisco Intersight in the cloud, you must do the following:

1. Configure the device connector proxy settings to connect with Cisco Intersight.  
This is required only if you have proxy configuration enabled.
2. Validate your access to the device from Cisco Intersight using the device serial number and the security code and claim the device.



---

**Note** After a system running Cisco UCS Director Express for Big Data is claimed in Cisco Intersight, you must refresh the information displayed on the **Device Connector** screen. Choose **Administration > Device Connector** to view the updated information.

---

## Configuring Device Connector

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**Step 1** Choose **Administration > Device Connector**.

**Step 2** Expand **All > Device Connector**.

**Step 3** (Optional) Click **HTTPS Proxy Settings**.

The **HTTPS Proxy Settings** window is displayed. By default, it is **Off**.

**Step 4** (Optional) To enable and configure HTTPS proxy settings, click **Manual**, and enter the following information:

- a) Enter the proxy hostname or IP address in the **Proxy Hostname/IP** field.
- b) Enter the proxy port number in the **Proxy Port** field.
- c) To authenticate access to the proxy server, turn the **Authentication** mode on and enter the **Username** and **Password**.
- d) Click **Save**.

Based on the connectivity to Cisco Intersight, the **Status** field displays one of the following messages:

- When the connection to Cisco Intersight is successful, the status messages could be one of the following:
  - **Unclaimed**—Implies that the connection is successful but the device is not claimed. You can claim an unclaimed connection through Cisco Intersight.  
  
For information on claiming a device, see the integrated guided walkthrough titled *Learn How to Claim a Device* available within the **Online Help** menu in the Cisco Intersight user interface.
  - **Claimed**—Implies that the connection to Cisco Intersight is successful and you have claimed the device.
- When the connection to Cisco Intersight is unsuccessful, the status messages could be one of the following:
  - **Administratively disabled**—Implies that the administrator has disabled managing the device from Cisco Intersight.
  - **Certification Validation Error**—Implies that an invalid certificate exists on the system.
  - **Not Claimed**—Indicates that the device is registered, but not claimed in Cisco Intersight.
  - **DNS is not configured** or **DNS is mis-configured**.
  - **Unable to resolve DNS name of the service**—Indicates that although DNS is configured, the DNS name of the Cisco Intersight platform cannot be resolved.
  - **NTP is not configured**
  - **Unable to establish a network connection**—Indicates that Cisco UCS Director cannot connect to Cisco Intersight.

---

## Viewing Device Connector Properties

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**Step 1** Choose **Administration > Device Connector**.

**Step 2** In the subsequent screen, review the following information:



Name	Description
<b>Intersight Management Area</b>	
Current Status Indicator	Displays if you have enabled connections to the Cisco Intersight management platform. It can be one of the following: <ul style="list-style-type: none"> <li>• <b>Enabled</b></li> <li>• <b>Disabled</b></li> </ul>
<b>Access Mode</b>	Displays the current access mode to connect to the Cisco Intersight management platform. It can be one of the following: <ul style="list-style-type: none"> <li>• <b>Read-only</b>—Permission to only view the reports.</li> <li>• <b>Allow Control</b>—Permission to perform all the operations as an administrator.</li> </ul>
<b>Connection Area</b>	
<b>HTTPS Proxy Settings</b> button	Whether HTTPS proxy settings are disabled or manually configured. This can be one of the following: <ul style="list-style-type: none"> <li>• <b>Off</b>—Select this option if you want to disable the HTTPS proxy settings configuration. This is the default HTTPS proxy setting.</li> <li>• <b>Manual</b>—Select this option if you want to enable the HTTPS proxy settings configuration.               <ul style="list-style-type: none"> <li>• <b>Proxy Hostname/IP</b>—Enter the proxy hostname or IP address.</li> <li>• <b>Proxy Port</b>— Enter the proxy port number.</li> <li>• <b>Authentication</b>—Enable this option to authenticate access to the proxy server. Enter the Username and Password to authenticate access.</li> </ul> </li> </ul>

Name	Description
Status	<p>The current status of the connection to the Cisco Intersight management platform. It can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>Administratively disabled</b>—Implies that the administrator has disabled managing the device from Cisco Intersight.</li> <li>• <b>Certification Validation Error</b>—Implies that an invalid certificate exists on the system.</li> <li>• <b>Claimed</b>—Indicates that the device is claimed in Cisco Intersight.</li> <li>• <b>Not Claimed</b>—Indicates that the device is registered, but not claimed in Cisco Intersight.</li> <li>• <b>DNS is not configured or DNS is mis-configured.</b></li> <li>• <b>Unable to resolve DNS name of the service</b>—Indicates that although DNS is configured, the DNS name of the Cisco Intersight platform cannot be resolved.</li> <li>• <b>NTP is not configured</b></li> <li>• <b>Unable to establish a network connection</b>—Indicates that Cisco UCS Director cannot connect to Cisco Intersight.</li> </ul> <p>To learn why the connection failed, click the <b>Details &amp; Recommendations</b> drop-down list and then click <b>Retry Connection</b>.</p>
Device ID	The unique identification number of the device.

## Launching Cisco UCS Director Express for Big Data from Cisco Intersight

After the device connector is configured and the device is claimed, you can launch the Cisco UCS Director Express for Big Data user interface from Cisco Intersight.



### Important

If any of the Cisco UCS Director Express for Big Data services are down, you cannot launch Cisco UCS Director Express for Big Data from Cisco Intersight.

A message stating that there is no service is displayed.

Although you can launch Cisco UCS Director Express for Big Data from Cisco Intersight, following are some of the restrictions that you need to be aware of:

- You cannot edit a user profile.
- You cannot perform any import and export actions.
- The main menu and the Dashboard are disabled.
- The **Device Connector** tab is not visible.
- You cannot perform any launch actions.
- You cannot upgrade connector packs.
- You cannot generate any summary reports.
- The user name is displayed as Cisco Intersight user when you launch Cisco UCS Director Express for Big Data.
- All service requests and audit log details are logged as Admin user.

---

**Step 1** Log into the Cisco Intersight user interface.

**Step 2** Choose **Devices**.

The **Devices** screen appears that displays a list of available Cisco UCS Director Express for Big Data systems.

**Step 3** Select a Cisco UCS Director Express for Big Data device from the list, and click ....

You must scroll to the far right of the list of devices to see the .... option.

**Note** The IP address displayed for the Cisco UCS Director Express for Big Data device in Cisco Intersight is determined by the IP address you entered for the **Server IP address** field while configuring the outgoing mail server for Cisco UCS Director Express for Big Data.

If you modify the server IP address after the Device Connector process is up, you must restart the Device Connector process. To do so, login to the Cisco UCS Director Express for Big Data device, and run the following commands:

```
/opt/infra/bin/stopdc.sh  
/opt/infra/bin/startdc.sh
```

Refresh the **Devices** screen in Cisco Intersight to view the updated server IP address.

**Step 4** Choose **Launch UCSD**.

Cisco Intersight is connected to the Cisco UCS Director Express for Big Data system and the Cisco UCS Director Express for Big Data user interface opens in a new tab.

**Note** Users with read-only permissions created in Cisco Intersight cannot perform any actions. These users can only view reports.

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# Connector Pack Management

Connector packs help you perform connector level upgrade in Cisco UCS DirectorCisco UCS Director Express for Big Data without impacting other connectors. After a system running Cisco UCS DirectorCisco UCS Director Express for Big Data is claimed in Cisco Intersight, as a system administrator, you can view information on new versions of connector packs that are available for upgrade. The top header pane of the user interface displays a notification indicating that new connector pack versions are available. You can select and upgrade the connector packs on the system. For more information, see [Upgrading Connector Packs, on page 29](#).

Following are the connectors that are available in this release:

- Cisco UCS which includes Cisco UCS Central and Cisco UCS Manager
- ACI APIC
- ACI Multi-Site Controller
- F5 Load Balancer
- Network Devices
- EMC Isilon
- EMC RecoverPoint
- EMC VMAX
- EMC VNX
- EMC VNXe
- EMC VPLEX
- EMC Unity
- EMC XtremIO
- IBM
- NetApp ONTAP
- VCE VisionIO
- Microsoft Hyper-V
- RedHat KVM
- Vmware
- Bare Metal Agent
- Cisco IMC
- Cisco BigData Express
- Cisco HyperFlex

**Important**

Latest versions of these connectors are made available to Cisco UCS DirectorCisco UCS Director Express for Big Data only through Cisco Intersight. So Cisco UCS DirectorCisco UCS Director Express for Big Data must be claimed in Cisco Intersight.

## Upgrading Connector Packs

As a system administrator, you can upgrade connector packs using the Cisco UCS Director Express for Big Data graphical user interface. When new connector pack versions are available, the header pane of the user interface displays an alert with a down arrow image and a number. This number indicates the number of connector packs that are available for upgrade. This notification in the header pane is visible only when Cisco UCS Director Express for Big Data has been claimed in Cisco Intersight. For information on establishing a connection with Cisco Intersight, see [Configuring Device Connector, on page 24](#).

**Note**

You can upgrade connector pack versions only in a standalone setup. You cannot upgrade connector pack versions in a multi-node setup.

**Before you begin**

- You have system administrator privileges.
- Cisco UCS Director Express for Big Data has been claimed in Cisco Intersight.
- Cisco UCS Director Express for Big Data is successfully connected to Cisco Intersight.

**Step 1** On the header, click **Available Connector Packs for Upgrade**.

The **Available Connector Packs for Upgrade** screen appears that displays a list of available connector packs for upgrade along with the version information.

**Note** The **Available Connector Packs for Upgrade** icon is visible on the header only when new versions of the current running connector packs are available for upgrade.

**Step 2** Check the check box of a connector pack from the list.

You can check the check boxes of multiple connector packs.

**Step 3** Click **Upgrade**.

**Step 4** In the **Confirm Upgrade** dialog box, click **Yes**.

After you confirm that the connector version must be upgraded, the validation process is initiated. If the validation process completes successfully, the upgrade process is initiated and the **Connector Pack Upgrade Status** screen displays the upgrade status. After the upgrade process is successful, the **Logout** option is enabled. Proceed to step 5.

Following are some of the possible outcomes of the validation and upgrade process:

- If the validation process fails due to issues in the connector pack, the **Connector Pack Validation** screen is displayed with error details and corrective measures.

Review the information and click **Close**.

- If the connector pack upgrade process fails, click **Logout**.

**Note** If any of the connector pack upgrade fails, the connector pack is rolled back to the earlier version.

- The validation process fails if other users have logged in to the system or if workflows are in progress. An upgrade failure error message with appropriate corrective action is displayed.

Review the corrective action, and click **Force Upgrade** to proceed with the connector pack upgrade.

The **Connector Pack Upgrade Status** screen is displayed with current status for the connector pack upgrade request. The other users are automatically logged out of the system with a system broadcast message about the upgrade and are redirected to the login page.

**Note** When a connector pack upgrade is in progress, and if another user with system administrator privileges logs in to the system, the **Connector Pack Upgrade Status** screen is displayed with the status of the upgrade process. When a connector pack upgrade is in progress, and if an end user logs in to the system, the system startup page is displayed.

#### Step 5 Click **Logout**.

You can login to Cisco UCS Director Express for Big Data after the upgrade process is complete.

#### What to do next

You can view the upgrade reports by choosing **Administration > System > Connector Pack Upgrades**. From this screen, you can double-click on a report, and view additional details on the upgrade process. For more information, see [Viewing Connector Pack Upgrade Information, on page 30](#).

## Viewing Connector Pack Upgrade Information

**Step 1** Choose **Administration > System**.

**Step 2** On the **System** page, click **Connector Pack Upgrades**.

Information such as upgrade request ID, user that initiated the upgrade, upgrade start time and end time, and the upgrade status are displayed.

**Step 3** Select a connector pack and choose **View Details** to view details such as connector pack name, upgraded version, and prior version.

**Step 4** Click **State History** to view the various states of the connector pack upgrade process. For example, upgrade request received, upgrade process initiated or upgrade process completed.

**Step 5** Click **Stages** to view the entire lifecycle of the connector pack upgrade request.