

## Installation

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# Contents

<b>Installing CSD and parcel.....</b>	<b>4</b>
<b>Adding Flink as a Service.....</b>	<b>5</b>
Setting up your HDFS Home directory.....	8
Setting the Java executable for the Flink client.....	8
<b>Configuring databases for SSB.....</b>	<b>9</b>
Configuring MySQL/MariaDB for SSB.....	9
Creating MySQL/MariaDB database for SSB.....	9
Installing the MySQL Python Connector.....	10
Configuring PostgreSQL for SSB.....	10
Creating PostgreSQL database for SSB.....	11
Installing the PostgreSQL Python connector.....	11
<b>Adding SSB as a service.....</b>	<b>12</b>

## Installing CSD and parcel

For installing Cloudera Streaming Analytics (CSA), you need to upload the downloaded Flink and SQL Stream Builder (SSB) Custom Service Descriptor (CSD) files to the default CSD directory, and add the CSA parcel to your cluster using Cloudera Manager.

### Before you begin

- Download the Flink and SSB CSD and parcel files.
- Install CDP Private Cloud Base.



**Note:** For more information about installing CDP Private Cloud Base and Cloudera Manager, see the [CDP Private Cloud Base documentation](#).

### Procedure

1. Place the CSD files in the `/opt/cloudera/csd/` folder (default CSD directory).  
This way Cloudera Manager will automatically detect the CSD files.
2. Change the ownership of the CSD files.

```
> chown cloudera-scm:cloudera-scm FLINK-1.12-csa1.3.0.0-cdh7.1.6.0-297-11607198.jar
```

```
> chown cloudera-scm:cloudera-scm SQL_STREAM_BUILDER-1.12-csa1.3.0.0-cdh7.1.6.0-297-11607198.jar
```

3. Restart Cloudera Manager and CMS services for the changes to take effect.

```
> systemctl restart cloudera-scm-server
```

4. Log into Cloudera Manager.
5. Select Parcels on the Home > Hosts tab in the main navigation bar.
6. Click the Parcel Repositories & Network Settings tab.
7. Check that Cloudera Manager successfully auto-detected the Remote Parcel Repository URL for CSA.



**Note:** Make sure that the Remote Parcel Repository URL uses HTTPS link. In case you need to install a different version of the parcel, you can change the URL as needed.

8. Enter your download credentials to HTTP authentication username override for Cloudera Repositories and HTTP authentication password override for Cloudera Repositories.
9. Click Save & Verify Configuration to commit the change.
10. Click Close.  
You will be redirected to the Parcels page.
11. Search for Flink and click Download to download the parcel to the local repository.
12. After the download is completed, click Distribute to distribute the parcel to all clusters.
13. After the parcel is distributed, click Activate to activate the parcel.
14. Click OK when confirmation is required.

For more details, follow the standard [procedure](#) from the GUI or the API.

### Results

You have added Flink and SSB CSD files, and the parcel to your cluster.

**What to do next**

Add Flink as a service in Cloudera Manager. After adding Flink as a service, you are able to add SSB service to your cluster.

**Related Information**

[Installing CDP Private Cloud Base](#)

[Add Flink as a Service](#)

## Adding Flink as a Service

You need to use the Add Service wizard in Cloudera Manager to include the Flink service on your cluster. When assigning roles, you must install Flink, HDFS, and YARN roles on the same node from where the Flink jobs are submitted.

**Before you begin**

- Make sure that the Flink CSD file is in the `/opt/cloudera/csd` folder.
- Make sure that the CSA parcel is added to Cloudera Manager.
- Check that the following components are installed on your cluster:

Mandatory components	Optional components
YARN	Kafka
HDFS	HBase
Zookeeper	Schema Registry
	Streams Messaging Manager
	Kudu
	Hive
	Atlas

**Procedure**

1. Open Cloudera Manager.
2. On the Home screen, select the drop-down menu to the right of your cluster.
3. Select Add Service.
4. From the list, select Flink as the type of service, then click Continue.  
The Add Service wizard will launch.
5. Choose HBase and Hive as Optional dependency if needed for the source and sink solution, then click Continue.
6. Assign the Flink Dashboard role to one of the hosts, and the Flink Gateway role to every host.

**Note:**

Make sure that you installed Flink, HDFS, and YARN Gateway roles on the same machine that will be used to submit Flink jobs. The Flink Dashboard role also depends on having HDFS client configurations on the same machine. The HDFS client configurations can either be provided by an HDFS daemon role implicitly or can be deployed by an HDFS Gateway role explicitly.

7. Click Continue.
8. Review the changes needed for your service.  
You can leave this page blank as the settings can be configured after the Flink service is added. You can configure the security settings at `Flink > Configuration > Security`.
9. Click Continue and wait until the first run of the Flink service is completed.

**10.** Click Continue and then Finish.



## Add Service to Clus

**Results**

You have added Flink as a service in Cloudera Manager.

**Related Information**

[Installing CSD and parcel](#)

[Add SSB as a Service](#)

## Setting up your HDFS Home directory

You need an HDFS Home directory to store temporary logs and data of your application to run a Flink job. You must set up the HDFS home directory for your user to avoid error when using Flink.

**About this task**

To run a Flink job, your HDFS Home Directory has to exist. If it does not exist, you receive an error message similar to:

```
Permission denied: user=$USER_NAME, access=WRITE, inode="/user".
```

**Procedure**

Create HDFS Home directory. Ask your HDFS administrator to perform the following (or obtain [HDFS administrator role](#)).

**Options****Command****Kerberos enabled**

```
> kinit hdfs
> hdfs dfs -mkdir /user/$USER_NAME
> hdfs dfs -chown $USER_NAME:$USER_NAME /user/$USER_NAME
```

**Kerberos disabled**

```
> HADOOP_USER_NAME=hdfs hdfs dfs -mkdir /user/$USER_NAME
> HADOOP_USER_NAME=hdfs hdfs dfs -chown $USER_NAME:$USER_NAME /user/$USER_NAME
```

In case of an enterprise environment, you can use Hue to set up the Home directory by enabling automatic synchronization for users. For more information see, the Cloudera Runtime [documentation](#).

## Setting the Java executable for the Flink client

You must set the Java\_home environment through the command line for the Flink clients manually to avoid error when using Flink. The configuration in Cloudera Manager only applies to services, and not to clients.

**About this task**

Cloudera Manager offers a configuration for the JAVA\_HOME environment variable under **Hosts > All Hosts > Configuration**. However, this only applies to services (for example YARN NodeManager or Flink HistoryServer) and does not propagate to clients such as the JVM created locally by the Flink executable. JVM uses the Bigtop utility under `/usr/bin/bigtop-detect-javahome` to automatically detect the JAVA\_HOME.



### Procedure

Set JAVA\_HOME to a fixed value:

```
> cat /etc/default/bigtop-utils
export JAVA_HOME=/usr/java/default
```



#### Note:

Cloudera strongly recommends setting this to the same value as set in Cloudera Manager. It is also recommended to set it uniformly on all the nodes to avoid unnecessary confusion. This is a known issue in the [Cloudera Community](#).

## Configuring databases for SSB

Before adding SQL Stream Builder (SSB) as a service to your cluster, you need to manually configure the databases to use SSB. The databases are used to store the metadata information of the Streaming SQL Console and the Materialized Views.

SSB supports the following databases:

	Streaming SQL Console	Materialized View Engine
MySQL/MariaDB	Supported	Not supported
PostgreSQL	Supported	Supported

For more information about the supported versions of the databases, see the CSA specific [System Requirements](#).

## Configuring MySQL/MariaDB for SSB

After installing MySQL/MariaDB server, you must create a database and credentials for SQL Stream Builder (SSB) to be able to install the service on your cluster.

Before you begin

You need to install and configure MySQL or MariaDB based on which one you plan to use, before setting up the databases for SSB.

The following configuration only details the SSB specific steps. To install and configure MySQL or MariaDB, you must complete the basic steps in the Private Cloud Base documentation.

- [Install and configure MySQL for Cloudera Software](#)
- [Install and configure MariaDB for Cloudera Software](#)



**Important:** If you are connecting to an external database make sure that you have installed the matching JDBC drivers from the install instructions above.

## Creating MySQL/MariaDB database for SSB

You need to create the MySQL/MariaDB database that will be used for the Streaming SQL Console.

1. Log in as the root user to MySQL:

```
mysql -u root -p
Enter password:
```

2. Create databases for the Streaming SQL Console:

```
CREATE DATABASE ssb_admin DEFAULT CHARACTER SET utf8 DEFAULT COLLATE utf8_general_ci;
```

3. Grant all privileges for the created database:

```
GRANT ALL ON ssb_admin.* TO 'ssb_admin'@'%' IDENTIFIED BY '<password>';
```

4. Confirm that you have created the Streaming SQL Console database:

```
SHOW DATABASES;
```

## Installing the MySQL Python Connector

You need to install the 8.0.23 version of the MySQL python connector for SSB to connect to the MySQL database.

Use the following sample commands to install the correct version for MySQL:

### RHEL

1. Install the python-pip package:

```
sudo yum install python3-pip
```

2. Create a directory where you install the package:

```
mkdir -p /usr/share/python3
```

3. Install mysql connector 8.0.23 using pip:

```
sudo pip3 install mysql-connector-python==8.0.23 -t /usr/share/python3
```

### Ubuntu

1. Install the python-pip package:

```
sudo apt-get install python3-pip
```

2. Create a directory where you install the package:

```
mkdir -p /usr/share/python3
```

3. Install mysql connector 8.0.23 using pip:

```
sudo pip3 install mysql-connector-python==8.0.23 -t /usr/share/python3
```

## Configuring PostgreSQL for SSB

After installing PostgreSQL server, you must create a database and credentials for SQL Stream Builder (SSB) to be able to install the service on your cluster.

Before you begin

You need to install and configure PostgreSQL based on which one you plan to use, before setting up the databases for SSB.

The following configuration only details the SSB specific steps. To install and configure MySQL or MariaDB, you must complete the basic steps in the Private Cloud Base documentation.

- [Install and configure PostgreSQL for Cloudera Software](#)



**Important:** If you are connecting to an external database make sure that you have installed the matching JDBC drivers from the install instructions above.

## Creating PostgreSQL database for SSB

You need to create the PostgreSQL database that will be used for the Streaming SQL Console and the Materialized View Engine.

1. Connect to PostgreSQL:

```
sudo -u postgres psql
```

2. Create databases for the Streaming SQL Console:

```
CREATE ROLE ssb_admin LOGIN PASSWORD '<password>';  
CREATE DATABASE ssb_admin OWNER ssb_admin ENCODING 'UTF8';
```

3. Create databases for the Materialized View Engine:

```
CREATE ROLE ssb_mve LOGIN PASSWORD '<password>';  
CREATE DATABASE ssb_mve OWNER ssb_mve ENCODING 'UTF8';
```

4. Confirm that you have created the Streaming SQL Console and Materialized View Engine database using the \l command.

## Installing the PostgreSQL Python connector

You need to install the 2.8.5. version of the psycopg2 Python package for SSB to connect to the PostgreSQL database.

Use the following sample commands to install the correct version for PostgreSQL:

### RHEL

1. Install the python-pip package:

```
sudo yum install python3-pip
```

2. Create a directory where you install the package:

```
mkdir -p /usr/share/python3
```

3. Install mysql connector 8.0.23 using pip:

```
sudo pip3 install psycopg2-binary==2.8.5 -t /usr/share/python3
```

### Ubuntu

1. Install the python-pip package:

```
sudo apt-get install python3-pip
```

2. Create a directory where you install the package:

```
mkdir -p /usr/share/python3
```

3. Install psycopg2 2.8.5 using pip:

```
sudo pip3 install psycopg2-binary==2.8.5 -t /usr/share/python3
```

## Adding SSB as a service

You need to use the Add Service wizard in Cloudera Manager to have the SQL Stream Builder (SSB) service on your cluster.

### Before you begin

- Make sure that the SSB CSD file is in the `/opt/cloudera/csd` folder.
- Make sure that the CSA parcel is added to Cloudera Manager.
- Make sure that you have installed and configured the SSB databases correctly, and installed the required Python and Java drivers as well.
- Check that the following components are installed on your cluster:

Mandatory components	Optional components
Flink	Schema Registry
Kafka	Streams Messaging Manager

### Procedure

1. Open Cloudera Manager.
2. On the Home screen, select the drop-down menu to the right of your cluster.
3. Select Add Service.
4. From the list, select SQL Stream Builder as the type of service, then click Continue.  
The Add Service wizard will launch.
5. Assign the SQL Stream Engine, Materialized View Engine, and SQL Stream Console service roles to hosts, then click Continue.

You need to assign the service roles based on where you have created the databases, and where you have assigned the Flink and Kafka roles.

## 6. Connect the SSB service to a database.



**Important:** You must install and configure MySQL/MariaDB or PostgreSQL database before adding SSB as a service. In case you did not set up any database for your cluster, see the [Configuring databases for SSB documentation](#).

- Select MySQL or PostgreSQL as the type of database.
- Choose the host on which you want to add the database.

You must add the databases to the same host where you have assigned the service roles.

- Provide a name to the database.
- Provide the user and password of the created database.
- Click Test connection.

### Setup Database

Configure and test database connections. If using custom databases, create the databases first according to the **Installing and Configuring an External Database** section of the [Installation Guide](#).

#### SQL Stream Builder

✓ Successful

Type	Database Hostname	Database Name
PostgreSQL	docs-test-1.vpc.cloudera.com	ssb_admin
Username	Password	
ssb_admin	*****	
		<input type="checkbox"/> Show Password <input type="button" value="Test Connection"/>



**Important:** If you plan to use Materialized Views in SSB, you must install PostgreSQL database.

## 7. Review the changes needed for your service.

In case you are using MySQL for Streaming SQL Console, and PostgreSQL for Materialized Views, you will be prompted to provide information about the database for Materialized View Engine. Provide the database hostname with the default port, your user and password to the Materialized View Engine fields.

<b>DB Connector Jar Directory</b> db_connector_jar_dir <a href="#">db_connector_jar_dir</a>	<b>SQL Stream Builder (Service-Wide)</b> <input type="text" value="/usr/share/java/"/>	ⓘ
<b>Database URL (JDBC)</b> ssb.mve.datasource.url <a href="#">ssb.mve.datasource.url</a>	<b>Materialized View Engine Default Group</b> <a href="#">Undo</a> <input type="text" value="jdbc:postgresql://docs-test-1.vpc.cloudera.com:5432/ssb_mve"/>	ⓘ
<b>Database User</b> ssb.mve.datasource.username <a href="#">ssb.mve.datasource.username</a>	<b>Materialized View Engine Default Group</b> <a href="#">Undo</a> <input type="text" value="ssb_mve"/>	ⓘ
<b>Database Password</b> ssb.mve.datasource.password <a href="#">ssb.mve.datasource.password</a>	<b>Materialized View Engine Default Group</b> <a href="#">Undo</a> <input type="password" value="*****"/>	ⓘ
<b>Streaming SQL Console External Lib Path</b> console.external.python.lib.path <a href="#">console.external.python.lib.path</a>	<b>Streaming SQL Console Default Group</b> <input type="text" value="/usr/share/python3"/>	ⓘ



**Note:** You can configure the security properties for SQL Stream Builder at this step, or after adding the service in the Configuration page. For more information about configuring security, see the [Manage security documentation for SQL Stream](#).

8. Click Continue and wait until the first run of the SSB service is completed.
9. Click Continue and then Finish.

**Related Information**[Installing CSD and parcel](#)[Add Flink as a Service](#)[Install and configure MySQL for Cloudera Software](#)[Install and configure MariaDB for Cloudera Software](#)[Install and configure PostgreSQL for Cloudera Software](#)[Configuring MySQL/MariaDB for SSB](#)[Configuring PostgreSQL for SSB](#)