

CASSANDRA - INSTALLATION

Cassandra can be accessed using cqlsh as well as drivers of different languages. This chapter explains how to set up both cqlsh and java environments to work with Cassandra.

Pre-Installation Setup

Before installing Cassandra in Linux environment, we require to set up Linux using **ssh SecureShell**. Follow the steps given below for setting up Linux environment.

Create a User

At the beginning, it is recommended to create a separate user for Hadoop to isolate Hadoop file system from Unix file system. Follow the steps given below to create a user.

- Open root using the command “**su**”.
- Create a user from the root account using the command “**useradd username**”.
- Now you can open an existing user account using the command “**su username**”.

Open the Linux terminal and type the following commands to create a user.

```
$ su  
password:  
# useradd hadoop  
# passwd hadoop  
New passwd:  
Retype new passwd
```

SSH Setup and Key Generation

SSH setup is required to perform different operations on a cluster such as starting, stopping, and distributed daemon shell operations. To authenticate different users of Hadoop, it is required to provide public/private key pair for a Hadoop user and share it with different users.

The following commands are used for generating a key value pair using SSH:

- copy the public keys form id_rsa.pub to authorized_keys,
- and provide owner,
- read and write permissions to authorized_keys file respectively.

```
$ ssh-keygen -t rsa  
$ cat ~/.ssh/id_rsa.pub >> ~/.ssh/authorized_keys  
$ chmod 0600 ~/.ssh/authorized_keys
```

- Verify ssh:

```
ssh localhost
```

Installing Java

Java is the main prerequisite for Cassandra. First of all, you should verify the existence of Java in your system using the following command:

```
$ java -version
```

If everything works fine it will give you the following output.

```
java version "1.7.0_71"
Java(TM) SE Runtime Environment (build 1.7.0_71-b13)
Java HotSpot(TM) Client VM (build 25.0-b02, mixed mode)
```

If you don't have Java in your system, then follow the steps given below for installing Java.

Step 1

Download java *JDK < latestversion > - X64.tar.gz* from the following [link](#):

Then jdk-7u71-linux-x64.tar.gz will be downloaded onto your system.

Step 2

Generally you will find the downloaded java file in the Downloads folder. Verify it and extract the **jdk-7u71-linux-x64.gz** file using the following commands.

```
$ cd Downloads/
$ ls
jdk-7u71-linux-x64.gz
$ tar zxf jdk-7u71-linux-x64.gz
$ ls
jdk1.7.0_71 jdk-7u71-linux-x64.gz
```

Step 3

To make Java available to all users, you have to move it to the location “/usr/local/”. Open root, and type the following commands.

```
$ su
password:
# mv jdk1.7.0_71 /usr/local/
# exit
```

Step 4

For setting up **PATH** and **JAVA_HOME** variables, add the following commands to **~/.bashrc** file.

```
export JAVA_HOME = /usr/local/jdk1.7.0_71
export PATH = $PATH:$JAVA_HOME/bin
```

Now apply all the changes into the current running system.

```
$ source ~/.bashrc
```

Step 5

Use the following commands to configure java alternatives.

```
# alternatives --install /usr/bin/java java usr/local/java/bin/java 2
# alternatives --install /usr/bin/javac javac usr/local/java/bin/javac 2
# alternatives --install /usr/bin/jar jar usr/local/java/bin/jar 2

# alternatives --set java usr/local/java/bin/java
# alternatives --set javac usr/local/java/bin/javac
# alternatives --set jar usr/local/java/bin/jar
```

Now use the **java -version** command from the terminal as explained above.

Setting the Path

Set the path of Cassandra path in “**~/.bahrc**” as shown below.

```
[hadoop@linux ~]$ gedit ~/.bashrc  
export CASSANDRA_HOME = ~/cassandra  
export PATH = $PATH:$CASSANDRA_HOME/bin
```

Download Cassandra

Apache Cassandra is available at [Download Link](#) Cassandra using the following command.

```
$ wget http://supergsego.com/apache/cassandra/2.1.2/apache-cassandra-2.1.2-bin.tar.gz
```

Unzip Cassandra using the command **zxvf** as shown below.

```
$ tar zxvf apache-cassandra-2.1.2-bin.tar.gz.
```

Create a new directory named **cassandra** and move the contents of the downloaded file to it as shown below.

```
$ mkdir Cassandra  
$ mv apache-cassandra-2.1.2/* cassandra.
```

Configure Cassandra

Open the **cassandra.yaml**: file, which will be available in the **bin** directory of Cassandra.

```
$ gedit cassandra.yaml
```

Note: If you have installed Cassandra from a deb or rpm package, the configuration files will be located in **/etc/cassandra** directory of Cassandra.

The above command opens the **cassandra.yaml** file. Verify the following configurations. By default, these values will be set to the specified directories.

- data_file_directories “**/var/lib/cassandra/data**”
- commitlog_directory “**/var/lib/cassandra/commitlog**”
- saved_caches_directory “**/var/lib/cassandra/saved_caches**”

Make sure these directories exist and can be written to, as shown below.

Create Directories

As super-user, create the two directories **/var/lib/cassandra** and **/var./lib/cassandra** into which Cassandra writes its data.

```
[root@linux cassandra]# mkdir /var/lib/cassandra  
[root@linux cassandra]# mkdir /var/log/cassandra
```

Give Permissions to Folders

Give read-write permissions to the newly created folders as shown below.

```
[root@linux /]# chmod 777 /var/lib/cassandra  
[root@linux /]# chmod 777 /var/log/cassandra
```

Start Cassandra

To start Cassandra, open the terminal window, navigate to Cassandra home directory/home, where you unpacked Cassandra, and run the following command to start your Cassandra server.

```
$ cd $CASSANDRA_HOME  
$./bin/cassandra -f
```

Using the `-f` option tells Cassandra to stay in the foreground instead of running as a background process. If everything goes fine, you can see the Cassandra server starting.

Programming Environment

To set up Cassandra programmatically, download the following jar files:

- slf4j-api-1.7.5.jar
- cassandra-driver-core-2.0.2.jar
- guava-16.0.1.jar
- metrics-core-3.0.2.jar
- netty-3.9.0.Final.jar

Place them in a separate folder. For example, we are downloading these jars to a folder named **“Cassandra_jars”**.

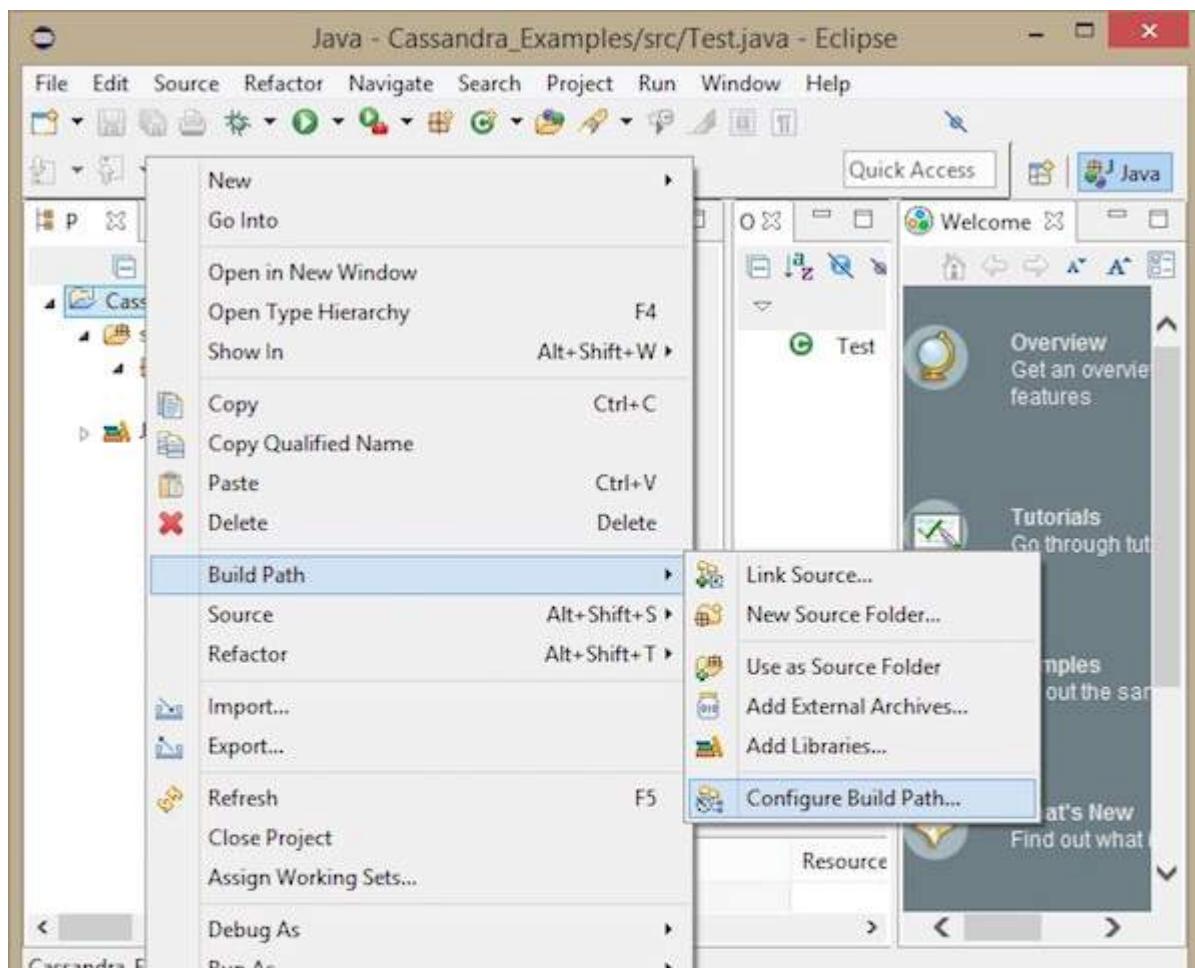
Set the classpath for this folder in **“.bashrc”** file as shown below.

```
[hadoop@linux ~]$ gedit ~/.bashrc  
  
//Set the following class path in the .bashrc file.  
  
export CLASSPATH = $CLASSPATH:/home/hadoop/Cassandra_jars/*
```

Eclipse Environment

Open Eclipse and create a new project called **Cassandra _Examples**.

Right click on the project, select **Build Path→Configure Build Path** as shown below.



Validate

Team

Compare With

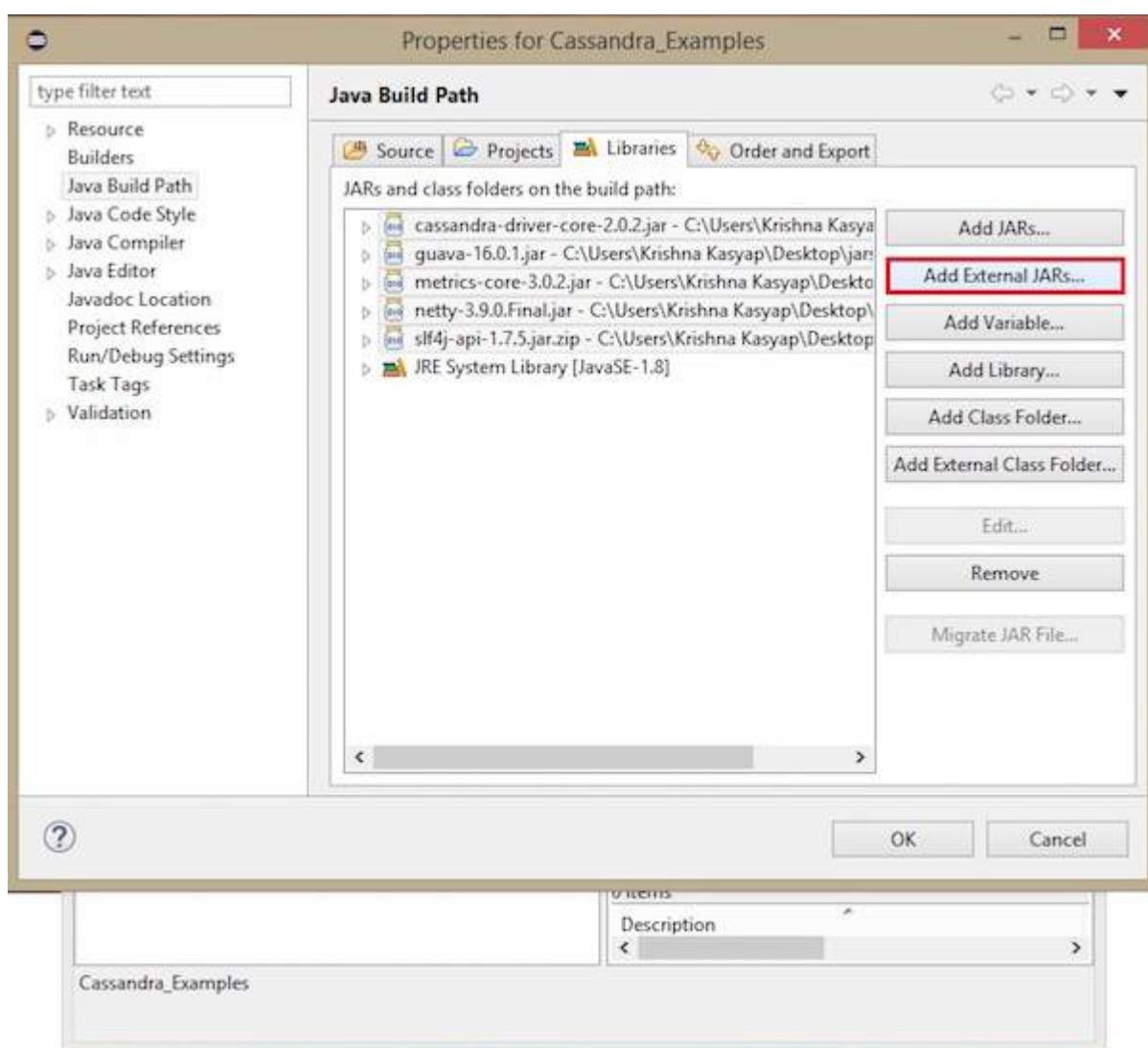
Restore from Local History...

Configure

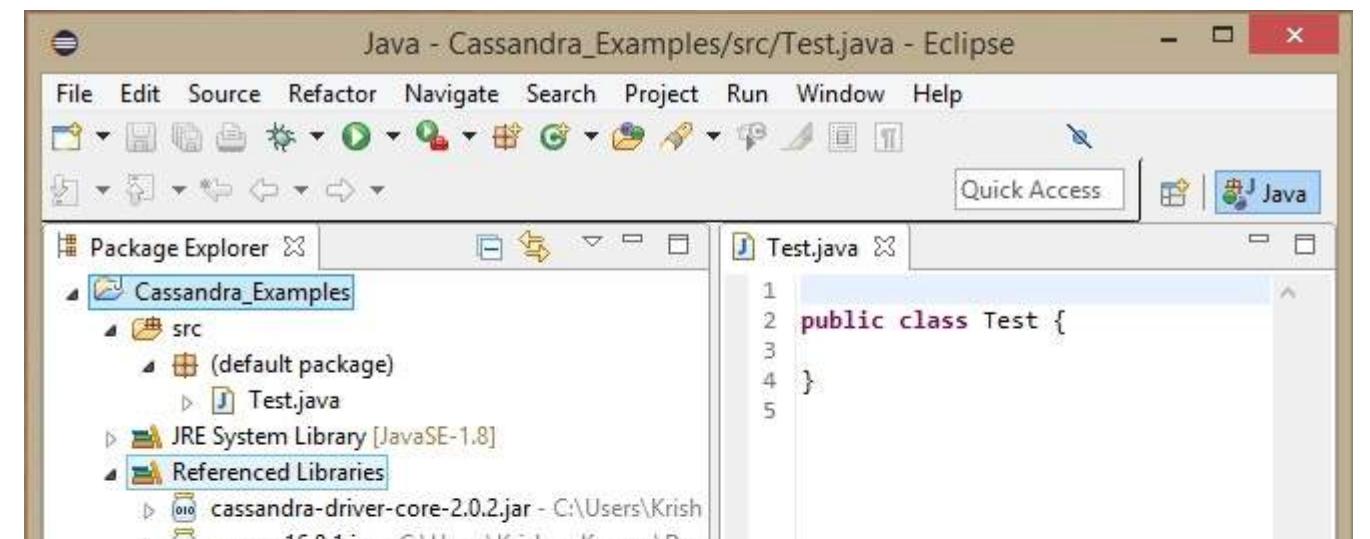
Properties

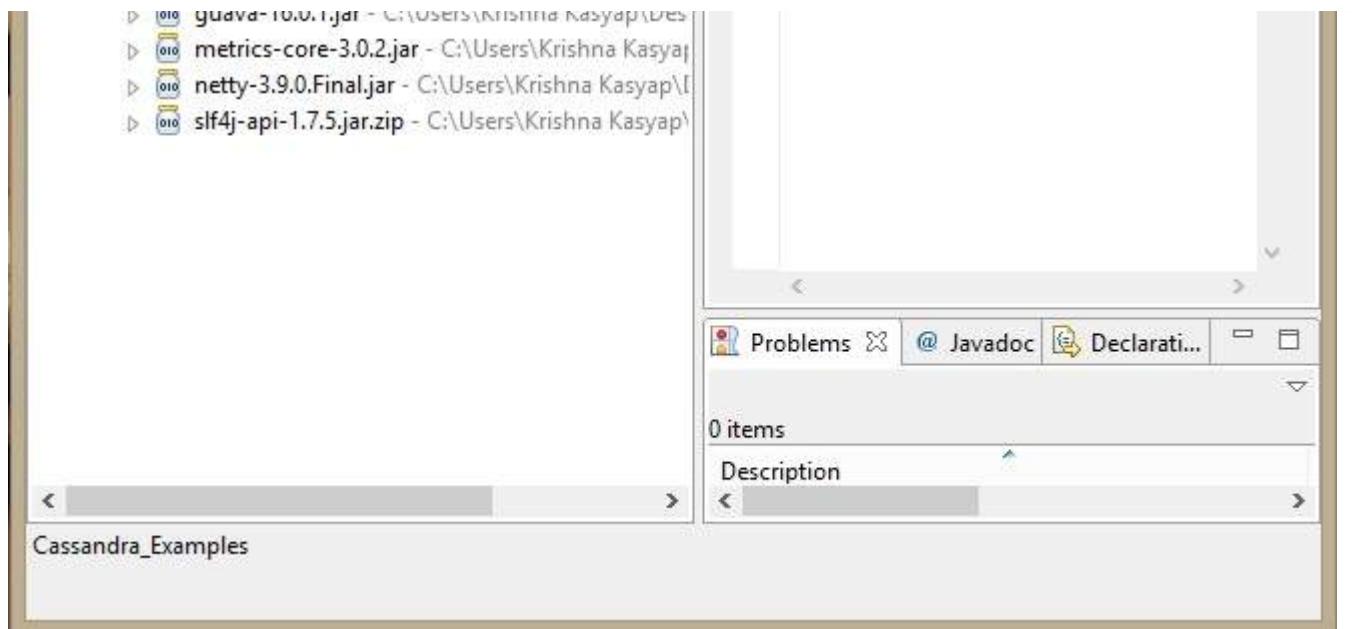
Alt+Enter

It will open the properties window. Under Libraries tab, select **Add External JARs**. Navigate to the directory where you saved your jar files. Select all the five jar files and click OK as shown below.



Under Referenced Libraries, you can see all the required jars added as shown below:





Maven Dependencies

Given below is the pom.xml for building a Cassandra project using maven.

```
<project xmlns = "http://maven.apache.org/POM/4.0.0"
  xmlns:xsi = "http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation = "http://maven.apache.org/POM/4.0.0
http://maven.apache.org/xsd/maven-4.0.0.xsd">
  <build>
    <sourceDirectory>src</sourceDirectory>
    <plugins>
      <plugin>
        <artifactId>maven-compiler-plugin</artifactId>
        <version>3.1</version>

        <configuration>
          <source>1.7</source>
          <target>1.7</target>
        </configuration>

      </plugin>
    </plugins>
  </build>

  <dependencies>
    <dependency>
      <groupId>org.slf4j</groupId>
      <artifactId>slf4j-api</artifactId>
      <version>1.7.5</version>
    </dependency>

    <dependency>
      <groupId>com.datastax.cassandra</groupId>
      <artifactId>cassandra-driver-core</artifactId>
      <version>2.0.2</version>
    </dependency>

    <dependency>
      <groupId>com.google.guava</groupId>
      <artifactId>guava</artifactId>
      <version>16.0.1</version>
    </dependency>

    <dependency>
      <groupId>com.codahale.metrics</groupId>
      <artifactId>metrics-core</artifactId>
      <version>3.0.2</version>
    </dependency>
  </dependencies>

```

```
</dependency>

<dependency>
    <groupId>io.netty</groupId>
    <artifactId>netty</artifactId>
    <version>3.9.0.Final</version>
</dependency>
</dependencies>
```

```
</nroject>
```

Loading [MathJax]/jax/output/HTML-CSS/jax.js