

mod08_ex03: Configuring the Shell Interpreter

The purpose of this exercise is to configure Zeppelin interpreters for Shell. Zeppelin is a notebook used as a data engineering tool. It has a number of connectors, called interpreters, to allow notebook paragraphs to connect to the shell, RDBMS, Hive/Impala, etc. This exercise will configure the interpreters for the shell. You must complete the following:

- Load the jar files for the Zeppelin shell interpreter
- Set HDFS proxy groups and hosts for Zeppelin
- Restart Zeppelin
- Configure Zeppelin to use the shell interpreter

Reference Information

- TBD

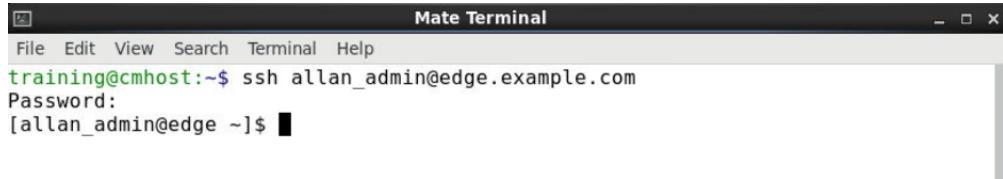
1. Log into the host edge.example.com as the administrative user, allan_admin.

1.1 Open a Mate terminal to the user training.



```
Mate Terminal
File Edit View Search Terminal Help
training@cmhost:~$
```

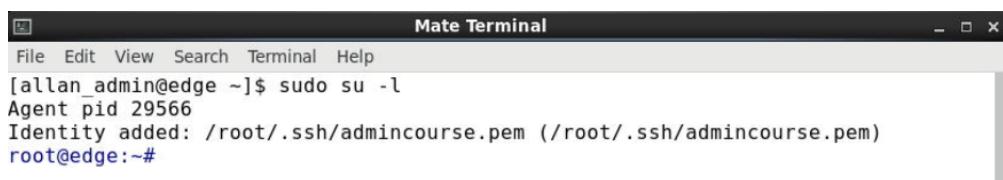
1.2 Change to the user allan_admin on the host edge.example.com.



```
Mate Terminal
File Edit View Search Terminal Help
training@cmhost:~$ ssh allan_admin@edge.example.com
Password:
[allan_admin@edge ~]$
```

```
$ ssh allan_admin@edge.example.com
```

1.3 Become the root user.

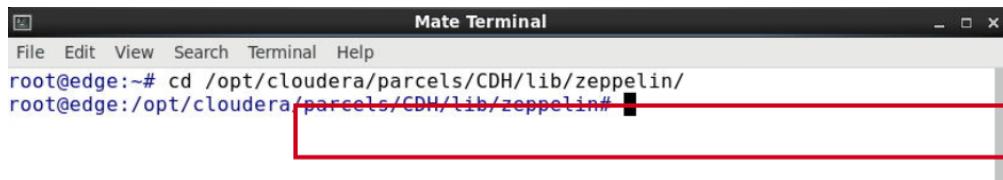


```
Mate Terminal
File Edit View Search Terminal Help
[allan_admin@edge ~]$ sudo su -l
Agent pid 29566
Identity added: /root/.ssh/admincourse.pem (/root/.ssh/admincourse.pem)
root@edge:~#
```

```
$ sudo su -l
```

2. Install the shell interpreter jar file.

2.1 Use the cd command to change directory to /opt/cloudera/parcels/CDH/lib/zeppelin. Use ls to list the directory. Notice there is a directory for bin and one for interpreter.



```
Mate Terminal
File Edit View Search Terminal Help
root@edge:~# cd /opt/cloudera/parcels/CDH/lib/zeppelin/
root@edge:/opt/cloudera/parcels/CDH/lib/zeppelin#
```

```
# cd /opt/cloudera/parcels/CDH/lib/zeppelin
```

2.2 Use ls to list the directory for interpreter/sh. This will show a list of jar files used to support the shell interpreter. For further information consult the Apache Zeppelin documentation. Find the jar file for zeppelin-shell-<version>.jar

```

mate-terminal
File Edit View Search Terminal Help
aether-connector-wagon-1.12.jar    maven-aether-provider-3.0.3.jar
aether-impl-1.12.jar               maven-artifact-3.0.jar
aether-spi-1.12.jar                maven-model-3.0.3.jar
aether-util-1.12.jar               maven-model-builder-3.0.3.jar
bcpkix-jdk15on-1.60.jar            maven-plugin-api-3.0.jar
bcprov-jdk15on-1.60.jar             maven-repository-metadata-3.0.3.jar
commons-codec-1.5.jar              META-INF
commons-configuration-1.9.jar      plexus-classworlds-2.4.jar
commons-exec-1.3.jar               plexus-component-annotations-1.5.5.jar
commons-httpclient-3.1.jar          plexus-interpolation-1.14.jar
commons-io-2.4.jar                 plexus-utils-3.3.0.jar
commons-lang-2.5.jar                sisu-guice-3.0.2-no_aop.jar
commons-lang3-3.4.jar               sisu-inject-bean-2.2.2.jar
commons-logging-1.1.1.jar            sisu-inject-plexus-2.2.2.jar
commons-pool2-2.3.jar               slf4j-api-1.7.30.jar
gson-2.2.jar                      slf4j-log4j12-1.7.30.jar
gson-extras-0.2.1.jar               wagon-http-3.4.1.jar
httpclient-4.5.13.jar               wagon-http-lightweight-3.4.1.jar
httpcore-4.4.13.jar                wagon-http-shared-3.4.1.jar
interpreter-setting.json            wagon-provider-api-3.4.1.jar
jcl-over-slf4j-1.7.30.jar           zeppelin-interpreter-0.8.2.7.1.7.0-551.jar
jline-2.14.3.jar                   zeppelin-shell-0.8.2.7.1.7.0-551.jar
jsoup-1.12.1.jar
root@edge:/opt/cloudera/parcels/CDH/lib/zeppelin#

```

```
# ls interpreter/sh
```

2.3 Use ./bin/install-interpreter.sh to install the shell interpreter package.

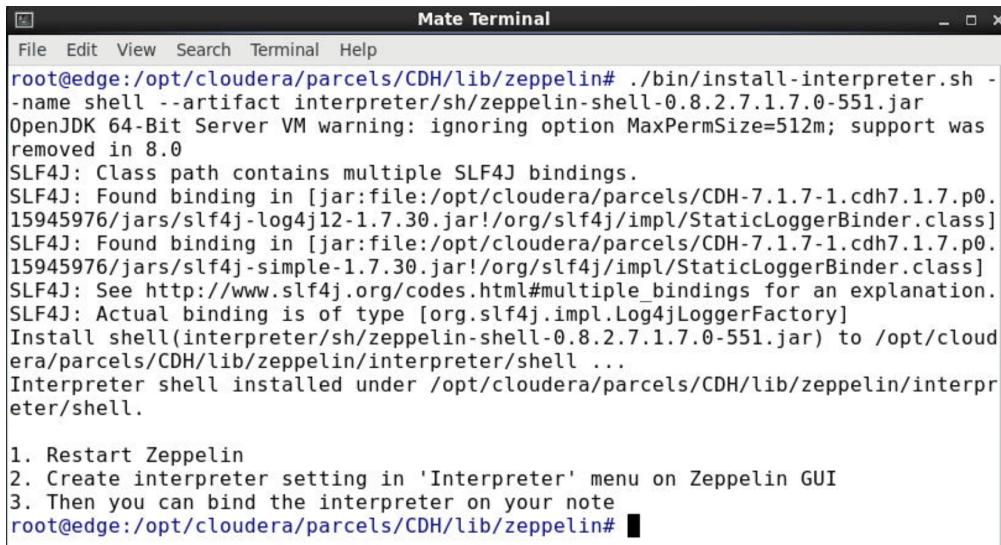
```

mate-terminal
File Edit View Search Terminal Help
root@edge:/opt/cloudera/parcels/CDH/lib/zeppelin# ./bin/install-interpreter.sh - -name shell --artifact interpreter/sh/zeppelin-shell-0.8.2.7.1.7.0-551.jar

```

```
./bin/install-interpreter.sh --name shell --artifact interpreter/sh/zeppelin- shell-<current_version>
```

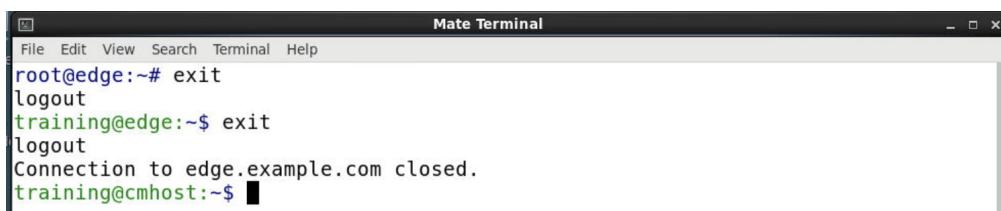
2.4 Review the output.



```
Mate Terminal
File Edit View Search Terminal Help
root@edge:/opt/cloudera/parcels/CDH/lib/zeppelin# ./bin/install-interpreter.sh -name shell --artifact interpreter/sh/zeppelin-shell-0.8.2.7.1.7.0-551.jar
OpenJDK 64-Bit Server VM warning: ignoring option MaxPermSize=512m; support was removed in 8.0
SLF4J: Class path contains multiple SLF4J bindings.
SLF4J: Found binding in [jar:file:/opt/cloudera/parcels/CDH-7.1.7-1.cdh7.1.7.p0.15945976/jars/slf4j-log4j12-1.7.30.jar!/org/slf4j/impl/StaticLoggerBinder.class]
SLF4J: Found binding in [jar:file:/opt/cloudera/parcels/CDH-7.1.7-1.cdh7.1.7.p0.15945976/jars/slf4j-simple-1.7.30.jar!/org/slf4j/impl/StaticLoggerBinder.class]
SLF4J: See http://www.slf4j.org/codes.html#multiple_bindings for an explanation.
SLF4J: Actual binding is of type [org.slf4j.impl.Log4jLoggerFactory]
Install shell(interpreter/sh/zeppelin-shell-0.8.2.7.1.7.0-551.jar) to /opt/cloudera/parcels/CDH/lib/zeppelin/interpreter/shell ...
Interpreter shell installed under /opt/cloudera/parcels/CDH/lib/zeppelin/interpreter/shell.

1. Restart Zeppelin
2. Create interpreter setting in 'Interpreter' menu on Zeppelin GUI
3. Then you can bind the interpreter on your note
root@edge:/opt/cloudera/parcels/CDH/lib/zeppelin#
```

2.5 Exit from root and from host, edge.example.com. Return to cmhost.

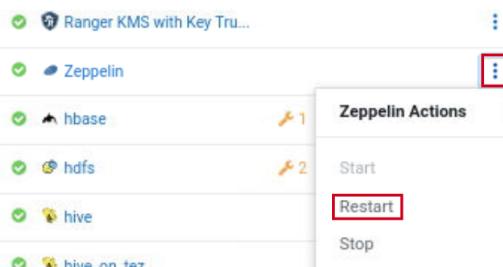


```
Mate Terminal
File Edit View Search Terminal Help
root@edge:~# exit
logout
training@edge:~$ exit
logout
Connection to edge.example.com closed.
training@cmhost:~$
```

```
# exit
$ exit
```

3. Log into Zeppelin as the administrative user, allan_admin.

3.1 On Cloudera Manager Home select Zeppelin Actions. Select Restart. Click Restart. When Finished click Close.



3.2 From Cloudera Manager Home select Zeppelin. Select Zeppelin Server Web UI.

The screenshot shows the Cloudera Manager interface with the Zeppelin service selected. The top navigation bar includes 'Actions' and a timestamp '30 minutes preceding Mar 21'. Below the service name are tabs for 'Status', 'Instances', 'Configuration', 'Commands', 'Charts Library', 'Audits', 'Web UI', and 'Quick Links'. The 'Status' tab is currently active.

3.3 Log in as the administrative user, allan_admin. This user is a member of the group admins. This user has administrative privileges for Zeppelin.

The screenshot shows the Zeppelin Server Web UI. The top navigation bar includes 'Notebook' and 'Job'. The search bar contains 'allan_admin'. The main content area displays a 'Welcome to Zeppelin!' message, a brief introduction about Zeppelin's capabilities, and links for 'Import note', 'Create new note', 'Help', 'Community', 'Mailing list', 'Issues tracking', and 'Github'. A large blue leaf graphic is on the right. The bottom left shows a sidebar with 'Notebook' and 'Interpreter' sections.

4. Configure the shell interpreter for Zeppelin.

4.1 Select allan_admin. Select Interpreter.

The screenshot shows the Zeppelin Server Web UI with the 'Interpreter' option highlighted in a red box in the user dropdown menu. The menu also includes 'About Zeppelin', 'Notebook Repos', 'Credential', 'Helium', 'Configuration', and 'Logout'. The rest of the page content is identical to the previous screenshot.

4.2 The Interpreter page is used to manage and configure interpreters.

The screenshot shows the Zeppelin Interpreter management interface. At the top, there are tabs for 'Notebook' and 'Job'. On the right, there's a search bar, a user dropdown ('allan_admin'), and buttons for 'Repository' and '+ Create'. Below these, a section titled 'Interpreters' displays two entries:

- angular**: Instantiated Globally in shared process. Options: Connect to existing process, Set permission. Buttons: edit, restart, remove.
- livy**: Instantiated Per User in scoped process. Options: Connect to existing process, Set permission. Buttons: edit, restart, remove.

A note at the bottom of the list states: "Currently there are no properties and dependencies set for this interpreter".

Three interpreters are currently installed.

- * angular is a data visualization tool
- * livy is used to connect to a Livy server for submitting a Spark job.
- * md is used for MarkDown language within a paragraph

4.3 On the Interpreter page click + Create.

The screenshot shows the 'Create new interpreter' form on the Zeppelin Interpreter page. It includes fields for 'Interpreter Name' (with a placeholder 'sh') and 'Interpreter group' (with a dropdown menu showing options like 'sh', 'angular', 'jdbc', 'livy', and 'md'). Below these are 'Option' settings for instantiation (Globally, shared, process) and checkboxes for 'Connect to existing process' and 'Set permission'. There are also 'edit', 'restart', and 'remove' buttons.

4.4 For Interpreter Name enter "sh". From Interpreter group pull down select sh.

The screenshot shows the 'Create new interpreter' form again. The 'Interpreter Name' field now contains 'sh'. The 'Interpreter group' dropdown is open, showing a list of groups: 'sh', 'angular', 'jdbc', 'livy', and 'md'. The 'sh' option is highlighted with a red box. The rest of the form and interface are identical to the previous screenshot.

4.5 Scroll to the shell Interpreter. You can edit, restart, or remove the shell interpreter.

sh %sh

Option

The interpreter will be instantiated in process [?](#)

Connect to existing process
 Set permission

Properties

name	value
shell.command.timeout.millisecs	60000
shell.working.directory.user.home	false
zeppelin.shell.auth.type	
zeppelin.shell.interpolation	false
zeppelin.shell.keytab.location	
zeppelin.shell.principal	

4.6 Click Save.

Properties

name	value	action	description
shell.command.timeout.millisecs	60000	<input type="button" value="x"/>	Shell command time out in millisecs. Default = 60000
shell.working.directory.user.home	<input type="checkbox"/>	<input type="button" value="x"/>	If this set to true, the shell's working directory will be set to user home
zeppelin.shell.auth.type	<input type="text"/>	<input type="button" value="x"/>	If auth type is needed, Example: KERBEROS
zeppelin.shell.interpolation	<input type="checkbox"/>	<input type="button" value="x"/>	Enable ZeppelinContext variable interpolation into paragraph text
zeppelin.shell.keytab.location	<input type="text"/>	<input type="button" value="x"/>	Kerberos keytab location
zeppelin.shell.principal	<input type="text"/>	<input type="button" value="x"/>	Kerberos principal

Dependencies

artifact	exclude	action
<input type="text"/> groupId:artifactId:version or local file path	<input type="text"/> (Optional) comma separated groupId:artifactId list	<input type="button" value="+"/>

5. Continue to the next exercise.