

**Integration Lab – MuleSoft Developer
Setup Guide
DRAFT**

Table of Contents

1. INTRODUCTION	3
2. ENVIRONMENT SETUP	3
3. CIF SETUP	4
3.1 TOMCAT	4
3.2 MYSQL	7
3.3 VALIDATING CIF LOCAL ENVIRONMENT	8
3.4 TROUBLESHOOTING	8
3.5 CIF SECURITY	9
4. ANYPOINT STUDIO 7	9
4.1 INSTALLING JARS IN M2 REPO	10
4.2 USING JARS IN MULE PROJECT	12
5. CONFIGURING CIF WEB APPLICATION	13
6. MULE APPLICATION WITH CIF	13

1. Introduction

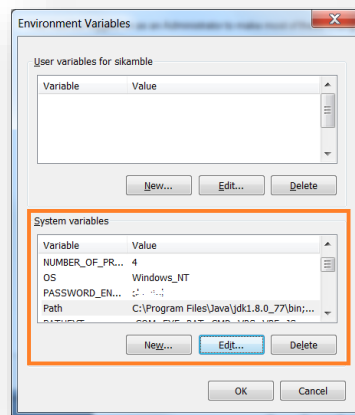
Document describes the steps to be followed for setting up environment for MuleSoft code Development on local workstation.

Make sure you have admin privileges before beginning the setup instructions in this document.

2. Environment Setup

Following steps needs to be done on the Windows instance:

1. Download and install JDK1.8
2. Navigate to <https://maven.apache.org/download.cgi> and download Maven 3.5.4
3. Open the Environment variables window
 - Right Click on “My Computer” and click on “Properties”
 - In the navigation pane click on “Advance System Settings”
 - In the System Properties window go to the “Advanced tab” and click on “Environment Variables”, below window will be show.



- Only highlighted area is something that needs to be worked on when executing the next steps
4. Click on new and add below variables
 - JAVA_HOME - jdk installation directory
 - MAVEN_HOME - Maven installation directory
 - M2_HOME - Maven installation directory
 5. Add JAVA (JDK Installation) to the Windows path variable
 - Select “path” System variable and click “Edit”
 - Add “<jdk installation directory>\bin;” at the start of the Variable Value and click Ok to save the changes.
 - Open command window and run the command “java -version” to verify the path is set correctly. Output should be something like below with the version installed

```
C:\Users\sikamble>java -version
java version "1.8.0_111"
Java(TM) SE Runtime Environment (build 1.8.0_111-b14)
Java HotSpot(TM) Client VM (build 25.111-b14, mixed mode)
```

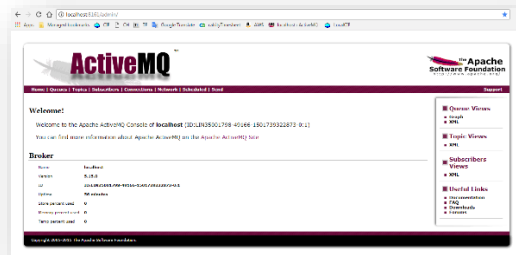
6. Add Maven to the Windows path variable

- Select “path” System variable and click “Edit”
- Add “<maven installation directory>\bin;” and click ok to save the changes
- Open command window and run command “mvn -version” to verify the path is set correctly. Output should be something like below with the version installed.

```
C:\Users\vbhalia>mvn -version
Apache Maven 3.5.4 (1edded0938998edf8bf061f1ceb3cfdeccf443fe; 2018-06-18T00:03:14+05:30)
Maven home: C:\Users\vbhalia\Documents\apache-maven-3.5.4\bin\..
Java version: 1.8.0_171, vendor: Oracle Corporation, runtime: C:\Program Files\Java\jdk1.8.0_171\jre
Default locale: en_US, platform encoding: Cp1252
OS name: "windows 10", version: "10.0", arch: "amd64", family: "windows"
```

7. Active MQ – “apache-activemq-5.15.0”

- From a browser, navigate to activemq.apache.org/.
- Click the [Download](#) link in the navigation pane (the left pane).
- Select the latest distribution (for older releases, click the link to the archives). For a source distribution, the filename will be similar to: activemq-x.x-src.zip.
- Extract ActiveMQ from the ZIP file into a directory of your choice.
- Open command prompt and navigate to the activemq “bin” directory
- Run the command “activemq start”.
- From a browser, hit URL: localhost:8161/admin/
- Default credentials are username: “admin”, password: “admin”, Following window should show up

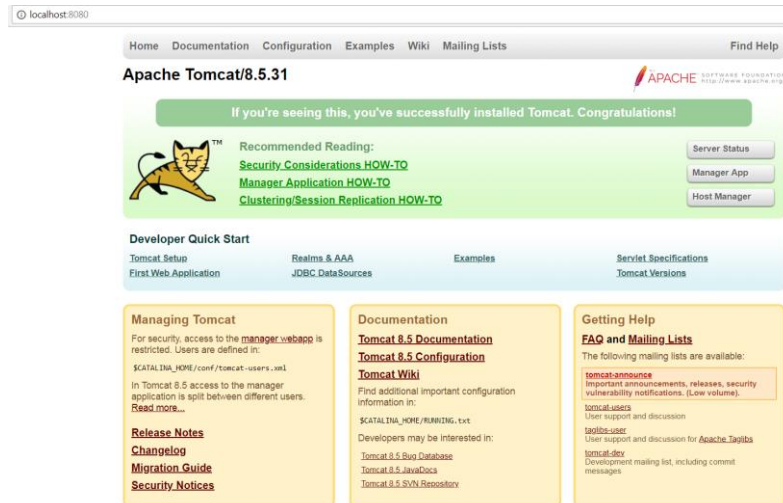


3. CIF Setup

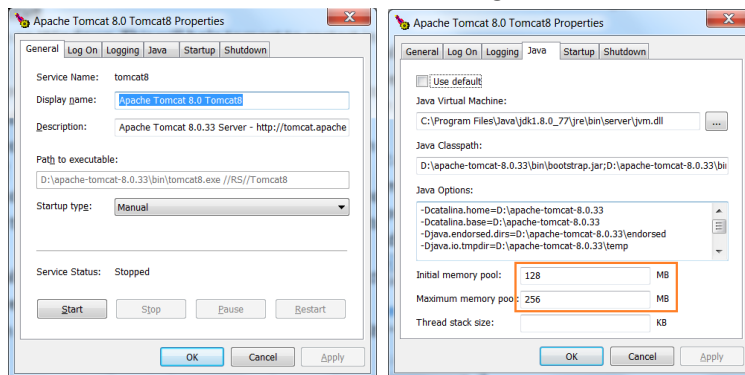
3.1 Tomcat

1. Tomcat v8.0 Windows service Installer

- Download Tomcat windows service installer executable.
- Run Apache Tomcat executable keep on selecting ‘Next’ button.
- Select the type of install as ‘Full’ and select ‘Next’ button.
- Set the username and password and if required modify other configures shown below and select ‘Next’ button.



2. Post installing tomcat as a service for windows we need to set the min and max memory which will be devoted to tomcat. Please follow steps below to set the memory
 - a. Open command prompt and navigate to the tomcat “bin” directory. Ensure you are running as admin while doing this step.
 - b. Run the command “tomcat8w”. Following window should show up



- c. Click on the Java tab and update the “Initial memory pool” and “Maximum memory pool”
 - d. **Set Initial memory pool=4096** and **Maximum memory pool=8192**
 - e. Click on Ok to save the changes
3. Create a new file and set the APP_ENV value inside that file, as follows:

```
SET APP_ENV=dev
echo "%APP_ENV%"
```

Save the file as **setenv.bat** under **Tomcat “\bin”** folder.

4. In services.msc Tomcat service can be kept as Manual and stopped state. Running through windows service would not take the APP_ENV properly, hence it is recommended to start from CMD only with command “catalina jpda start”
5. Navigate to the tomcat “conf” directory and open the “tomcat-users.xml” file. Add the following to the file as show below example:-

```
<role rolename="manager"/>
<role rolename="manager-gui"/>
<role rolename="admin-gui"/>
<user username="admin" password="admin123" roles="admin-gui,manager-gui,manager"/>
```

This configuration will give you access to the tomcat manager console which can be used to Start/Stop hot deployment of WAR.

6. Navigate to the tomcat "conf" directory and open the "context.xml" file and add the following. This is for connecting to the local MySQL DB with MySQL root password you configured earlier.

```
<Resource name="jdbc/sqlserver2008cif" auth="Container"
    type="javax.sql.DataSource" username="root" password="root"
    driverClassName="com.mysql.jdbc.Driver"
    url="jdbc:mysql://localhost:3306/cif"
    maxActive="10" maxIdle="4" minIdle="5" maxWait="10000"
    defaultTransactionIsolation="READ_UNCOMMITTED" />
```

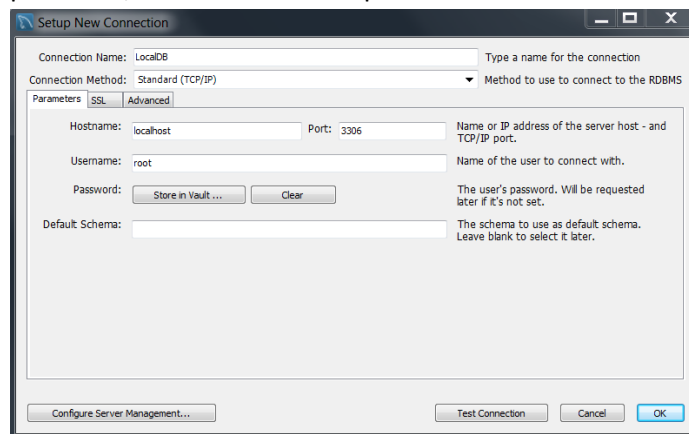
7. Navigate to the tomcat "webapps" directory and paste the "cif.war" file which copied from <https://amgen.app.box.com>. File path – Mulesoft Migration Project -> Project Artifacts -> CIF
8. Copy below jar file into ~/ apache-tomcat-8.0.9/lib.



mysql-connector-java
-5.1.45-bin.jar

3.2MySQL

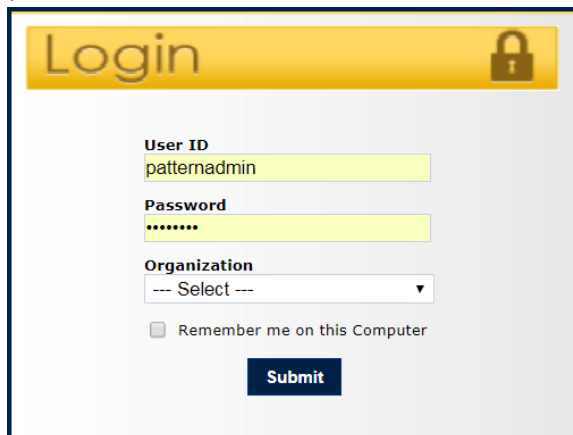
- Download MySQL executable (prefer version mentioned above)
- Run MySQL executable keep on selecting 'Next' tab finally select 'Finish'. **Make sure you take a note of root password**, as it will be asked further.
- To verify installation select Windows Start button and type 'mysql' and open workbench to create a local DB connection as in below screenshot. If it works after providing password, the local DB is setup.



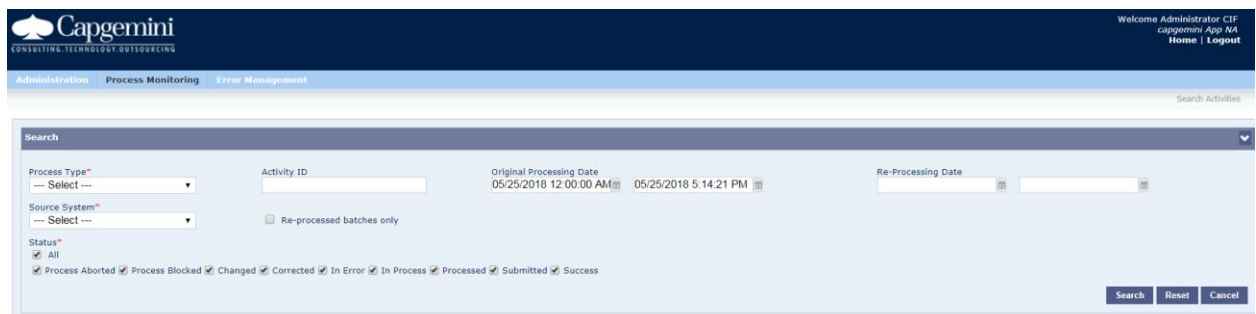
3.3 Validating CIF Local Environment

Below steps will help you to validate if CIF is setup properly on your local machine, before running applications from Mule studio.

1. Login to <http://localhost:<port>/cif> and login with corresponding CIF credentials, which are setup in above DB scripts for user – “patternadmin”
2. The login screen looks as below, which means CIF WAR file is properly setup and up running on your local machine.



3. After you login the screen looks as below related to process monitoring and error management.



3.4 Troubleshooting

While executing the above steps there might be some issues that you may notice. Please refer to the below section for some preliminary troubleshooting

1. Error building using maven or command not recognized errors
 - a. Check if the command syntax is correct
 - b. Verify that installation of JDK and Maven. Make sure those are correctly updated as Windows environment variables
 - c. Make sure the dependencies are specified correctly and nothing is missed
2. Tomcat does not startup
 - a. Make sure the tomcat XML files (tomcat-user and context) are properly formatted and the correct information, directory information is mentioned
 - b. Check the tomcat logs for specific error messages to further identify the cause of the issue

- c. If the issue is caused because of a new WAR that is deployed, check the application configuration and make sure any newly added dependencies are available in the tomcat dependency-jar directory.

3.5CIF Security

For configuring additional security while accessing CIF, please refer to the attached document.



CIF_Tomcat_Security
_Reference.docx

4. Anypoint Studio 7

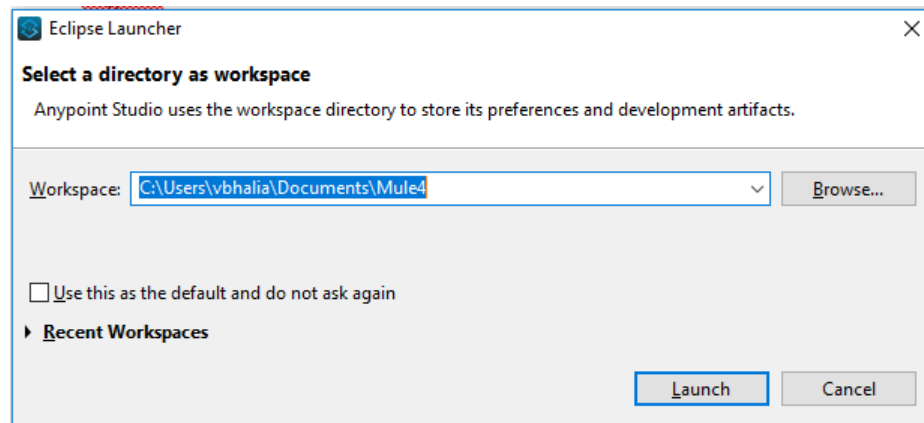
- Navigate to <https://www.mulesoft.com/lp/dl/studio>
- Download Anypoint Studio 7.
- Extract the zip file and add java path in AnypointStudio.ini

```

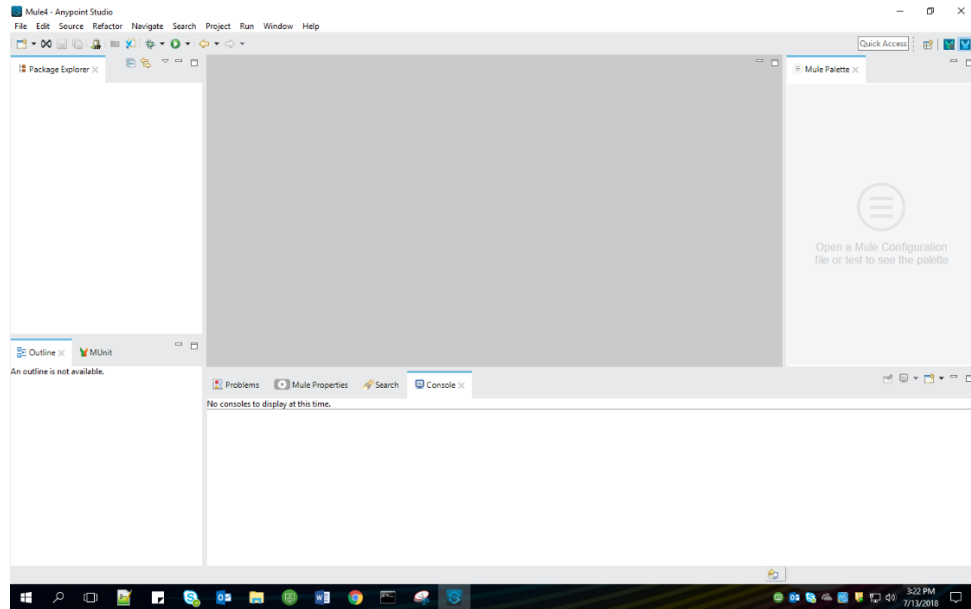
1 -startup
2 plugins/org.eclipse.equinox.launcher_1.4.0.v20161219-1356.jar
3 --launcher.library
4 plugins/org.eclipse.equinox.launcher.win32.win32.x86_64_1.1.551.v20171108-1834
5
6 -vm
7 C:\Program Files\Java\jdk1.8.0_171\bin\javaw.exe
8
9 -Xms512m
10 -Xmx1024m
11
12 -XX:MaxPermSize=512m
13
14 -Dorg.eclipse.equinox.area.default=@user.home/AnypointStudio/studio-workspace
15
16 -Dhttps.protocol=TLSv1,TLSv1.1,TLSv1.2
17
18 -Dsun.zip.disableMemoryMapping=true
19
20 -Dequinox.resolver.revision.batch.size=1
21
22 -Dmule.testingMode=true
23
24 -Dorg.mule.tooling.runtime.args=-XX:-UseBiasedLocking
25
26 -Dorg.mule.tooling.runtime.proxyVmArgs=-Dcom.ning.http.client.AsyncHttpClientConfig.useProxyProperties=true
27
28 -Djdk.http.auth.tunneling.disabledSchemes=
29
30 -XX:ErrorFile=./studio_crash_report.log
31
32 -Dorg.mule.tooling.client.usecache=true
33
34 -Dtooling.concurrent.local.repository.enabled=false

```

- Now open AnypointStudio.exe and select workspace



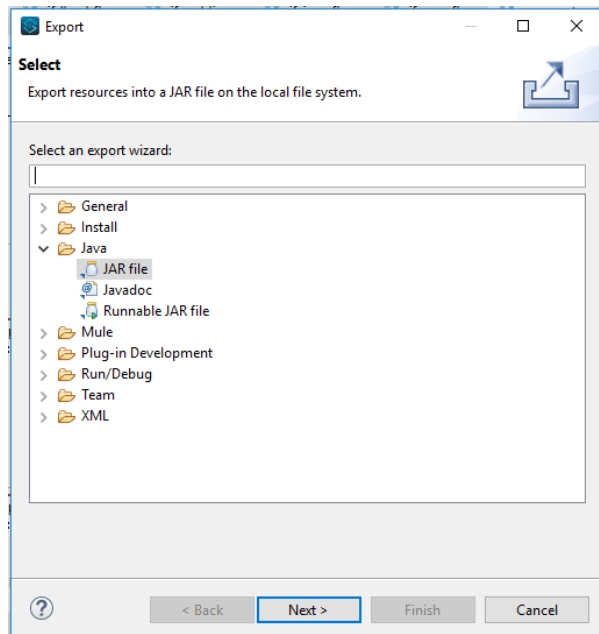
- Click on launch.



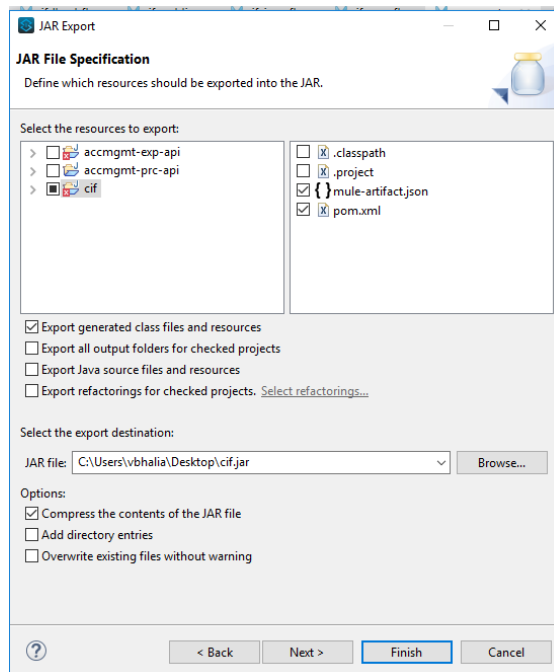
4.1 Installing Jars in M2 repo

1. Steps to create jar files in Mule 4:

- Create/import Mule project in Anypoint Studio 7.
- Maven clean your project before exporting it as Jar file. Otherwise you will end up in creating big size Jar file.
- Right click on the project and click on Export option, below window will pop-up:



Click on Java and select JAR file and hit Next. Below window will pop-up.



Make sure you uncheck .classpath and .project and hit Finish.

2. Installing the Jars created in above step:




- Open command prompt and navigate to the directory where you have kept the Jar file.
- Execute below command to install Jar file in M2 repo:

```
mvn install:install-file -Dfile=mcommon.jar -DgroupId=com.capgemini.appsna -DartifactId=mcommon -Dversion=1.0.0 -Dpackaging=jar
```

```
Administrator: C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.16299.492]
(c) 2017 Microsoft Corporation. All rights reserved.

C:\Users\vbhalia\Downloads>mvn install:install-file -Dfile=mcommon.jar -DgroupId=com.capgemini.appsna -DartifactId=mcommon -Dversion=1.0.0 -Dpackaging=jar
[WARNING]
[WARNING] Some problems were encountered while building the effective settings
[WARNING] Unrecognised tag: 'repositories' (position: START_TAG seen ...<profiles>\n <repositories>... @191:17) @ C:\Users\vbhalia\Documents\apache-maven-3.5.4\bin\..\conf\settings.xml, line 191, column 17
[WARNING]
[INFO] Scanning for projects...
[INFO] -----< org.apache.maven:standalone-pom >-----
[INFO] Building Maven Stub Project (No POM) 1
[INFO] -----[ pom ]-----
[INFO] --- maven-install-plugin:2.4:install-file (default-cli) @ standalone-pom ---
[INFO] Installing C:\Users\vbhalia\Downloads\mcommon.jar to C:\Users\vbhalia\.m2\repository\com\capgemini\appsna\mcommon\1.0.0\mcommon-1.0.0.jar
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 0.584 s
[INFO] Finished at: 2018-07-20T14:46:37+05:30
[INFO] -----
```

Verify same in .m2 repository :

s PC > System (C:) > Users > vbhalia > .m2 > repository > com > capgemini > appsna > mcommon > 1.0.0				
Name	Date modified	Type	Size	
 _remote.repositories	7/20/2018 2:46 PM	REPOSITORIES File	1 KB	
 mcommon-1.0.0.jar	7/18/2018 12:40 PM	Executable Jar File	7 KB	
 mcommon-1.0.0.pom	7/18/2018 12:44 PM	POM File	1 KB	

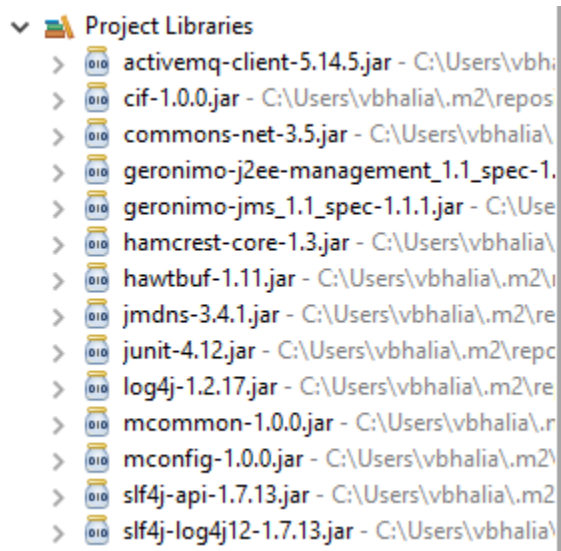
4.2 Using Jars in Mule Project

Follow below steps to above created Jar file in Mule project.

1. Add the dependency of Jar file in pom file of your project and save it.

```
<dependency>
  <groupId>com.capgemini.appsna</groupId>
  <artifactId>mcommon</artifactId>
  <version>1.0.0</version>
</dependency>
```

2. Now you can see the jar file in your project libraries



3. Create a global element to import xml files which you need in you project:

```
<import doc:name="Import" doc:id="917753ab-c9ee-414b-a646-8e5b622b0900" file="mcommon.xml" />
```

4. You need to define global element to use property file defined inside Jar file.

5. Configuring CIF Web application

Follow the steps mentioned in below document to configure CIF web application.



Configure CIF
Web.docx

6. Mule Application with CIF

In order to run Mule Application with CIF follow below steps:

1. Import CIF jars in project
 - mcommon
 - cif
 - mconfig
2. Make sure cfinbound project and tomcat (with required configuration mentioned above) are up and running.
3. Run you application and hit your API.
4. On successful run you will be able to see that particular transaction in CIF web application.
5. In order to check transaction in CIF web application, follow steps in mentioned in attached document



Check Message
CIF.docx