**Yugandhar Open MDM Hub for Embedded Web Server (EWS)**

**Development Environment Setup Guide**

Yugandhar Open MDM Hub - EWS Release - V1.0.0

Date – 11/06/2018

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# About Yugandhar Open MDM Hub

Master Data Management came a long way in last decade or so. There are currently more than 20 MDM solutions catering to various specializations of MDM like Customer Data Integration (CDI), Product Information Management (PIM), vendor and supplier management etc. However most of these solutions come with licensing costs amounting to thousands of dollar. To offer a completely free solution which would be made available through Apache 2.0 license, A Project is started in 2017 under the name ‘Yugandhar Open MDM Project’ to build Open Source MDM solutions catering to CDI, PIM and Data Governance Capabilities. Yugandhar in Sanskrit means Ever Lasting and the strongest of its time. Our vision is to build the strongest, Open Source, Multi Domain, Cross Industry and completely free MDM Solution.

We are happy to announce that the first release of the Yugandhar MDM Hub catering to CDI solution is built with Open source technologies like Spring and Hibernate etc, inbuilt data Model, 400+ ready to use services and having incredible Out of the Box capabilities is currently being distributed. We aim to make the current CDI offering the strongest and Planning to bring Data Stewardship and PIM solutions in upcoming years.

# About this document

This document covers the system requirements for Yugandhar Open MDM Hub.

# System Requirements

Below are the System Requirements for setting up Development Environment

1. OS – Windows 7 enterprise addition, Service Pack 1 or later
2. 8GB RAM and 100 GB Storage
3. Eclipse Java EE IDE for Web Developers. Oxygen.3a Release (4.7.3a) or later
4. apache-maven-3.5.0 or later
5. Java jdk 1.8 (jdk1.8.0\_121) or later
6. Spring Boot 2.0.2.RELEASE
7. Jboss (Hibernate) Tools
8. Databases
   1. Oracle Database 11g Release 11.2.0.2.0 or later OR
   2. Oracle 12c OR
   3. MariaDB v10.3.x
9. Oracle SQL Developer/HeidiSQL
10. SOAPUI /postman or any other tool to test REST services

**Note** - Internet connectivity is needed to setup workspace. If internet is not available because of any reason then all the software and Maven jars needs to be manually downloaded which would be tedious task.

IMPORTANT NOTICE - Please read the licensing terms of all the above listed software before using for commercial as well as non-commercial purpose. Yugandhar team would not be responsible for licensing violations if any.

# Software Download links

## Eclipse

Eclipse Java EE IDE for Web Developers.

**Version** - Oxygen.3a Release (4.7.3a) or later

**Download page** - <http://www.eclipse.org/downloads/>

## Apache maven

Apache Maven comes integrated with Eclipse Neon but if you want to install standalone maven then you may download it from below path

**Version** - apache-maven-3.5.0 or later

**Download Page** - <https://maven.apache.org/download.cgi>

## Database

Download the database as per your choice

### Oracle

Download Oracle from Oracle download site

**Version** - Oracle Database 11g Enterprise Edition Release 11.2.0.3.0 - 64bit OR Oracle Database 12c

**Download link** - <https://www.oracle.com/database>

### MariaDB

Version: MariaDB v10.3 or later

<https://mariadb.org/>

## Java JDK

Download Java jdk 1.8 (jdk1.8.0\_121) or later from below link

<http://www.oracle.com/technetwork/java/javase/downloads/jdk8-downloads-2133151.html>

## Hibernate Tools

You may choose to download the Hibernate Tools (Now renamed as JBoss Tools) from the link below. To install the plugin from eclipse market place using eclipse Menu 🡪 Help > Eclipse Marketplace... option.

<http://tools.jboss.org/downloads/jbosstools/oxygen/4.5.1.Final.html#marketplace>

## Oracle SQL Developer

Download SQL developer to connect to database

<http://www.oracle.com/technetwork/developer-tools/sql-developer/downloads/index.html>

## Heidi SQL

Heidi SQL comes packaged along with Maria DB installable; you may use the same to explore maria db.

## Database drivers

* Oralce JDBC drivers: download ojdbc14.jar from below link

<http://www.oracle.com/technetwork/apps-tech/jdbc-10201-088211.html>

* Oralce JDBC drivers**:** Oracle 11g and 12c driver for JDK7 and JDK8 [ojdbc7.jar](http://www.oracle.com/technetwork/database/features/jdbc/jdbc-drivers-12c-download-1958347.html) <http://www.oracle.com/technetwork/database/features/jdbc/jdbc-drivers-12c-download-1958347.html>
* **MariaDB drivers:** Download mariadb-java-client-2.2.3.jar from below location <https://mariadb.com/downloads/connector>

<https://downloads.mariadb.com/Connectors/java/connector-java-2.2.3/mariadb-java-client-2.2.3.jar>

# Setup Database

Install either Oracle or mariaDB database as per requirement. Oracle 11g/12c/MariaDB 5.5.3 are supported. The step by step installation instructions for installing the Oracle 11g, 12c database and Oracle SQL Developer is out of scope of this document.

By Default Yugandhar Open MDM Hub uses the schema YUG\_OWNER. If different user name (schema name) is needed then modify all the scripts with required schema name.

## Oracle setup:

### Oracle Install

Install the Oracle database using the instructions mentioned below.

**Oracle 11g**: <https://docs.oracle.com/cd/E11882_01/nav/portal_11.htm>

**Oracle 12c:** <http://www.oracle.com/webfolder/technetwork/tutorials/obe/db/12c/r1/Windows_DB_Install_OBE/Installing_Oracle_Db12c_Windows.html>

### Yugandhar MDM HUB schema setup for oracle

Github repository link - <https://github.com/yugandharproject/yugandhar-open-mdmhub>

Download the scripts from ‘<gitrepo>/resources/yugmdm-dbsetupscripts-oracle’

1. CreateTablespaces.sql – create YUG\_OWNER user as the tables. Needs DBA access
2. FullSchema.sql – creates the full schema. Can be executed with YUG\_OWNER user access
3. CreateSequence.sql – Can be executed with YUG\_OWNER user access
4. LoadTableDataWrapper.sql – Can be executed with YUG\_OWNER user access

Verify the logs and check that all the steps are executed correctly and REF\_xxx as well as CONFIG\_xxx tables are loaded with sample data. In Summary, below mentioned objects are created in database

#### Table spaces –

MDM\_DATATS – used for data and reference tables

MDM\_INDXTS – used for Indexes

#### Profile:

MDM\_PROFILE - Used to create YUG\_OWNER user

#### User Schema:

YUG\_OWNER – Default user Schema used by Yugandhar Open MDM Hub.

## MariaDB setup:

### MariaDB Install

Install MariaDB as per instructions mentioned in below links

<https://mariadb.com/kb/en/library/getting-installing-and-upgrading-mariadb/>

<https://mariadb.com/products/get-started>

### Yugandhar MDM HUB schema setup for MariaDB

Download the scripts from github repository resources\dbsetupscripts location and execute the below scripts in sequence

Github repository link - <https://github.com/yugandharproject/yugandhar-open-mdmhub>

Download the sqls from ‘<gitrepo>/resources/yugmdm-dbsetupscripts-mariadb’

* “1.yugmdm\_mariadb\_createuser-and-database.sql” – login through root or DBA

Verify the logs and check that all the steps are executed correctly. Also verify that REF\_xxx as well as CONFIG\_xxx tables are loaded with sample data. In Summary, below mentioned objects to the TABLES, Sequence and INDEXES are created in database

#### Table spaces:

MDM HUB\_DATATS – used for data tables as well as reference tables

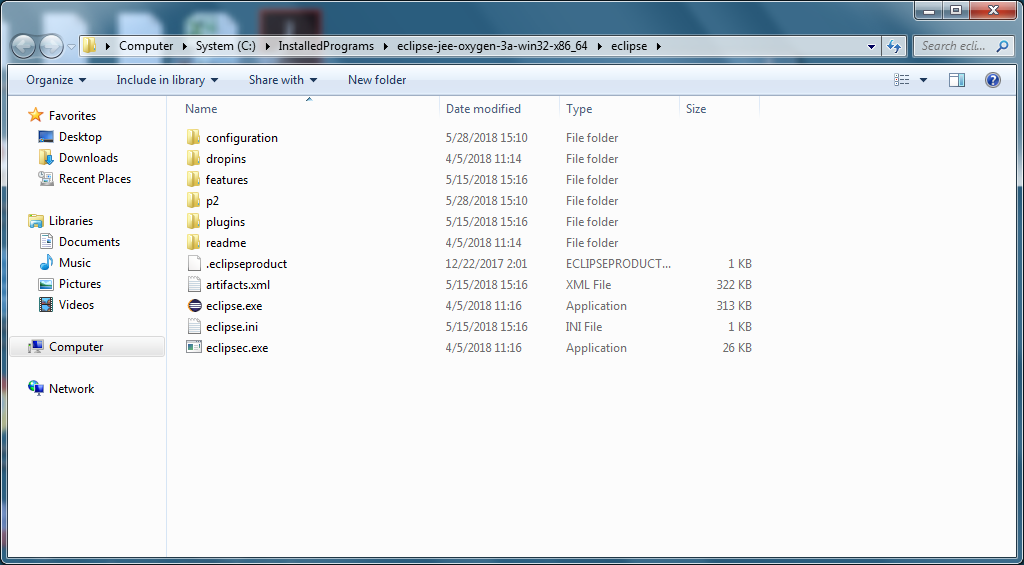
MDM HUB\_INDXTS – used for Indexes

#### DB User YUG\_OWNER: Default user used by Yugandhar Open MDM Hub to connect to database.

#### Database: YUG\_OWNER database is created.

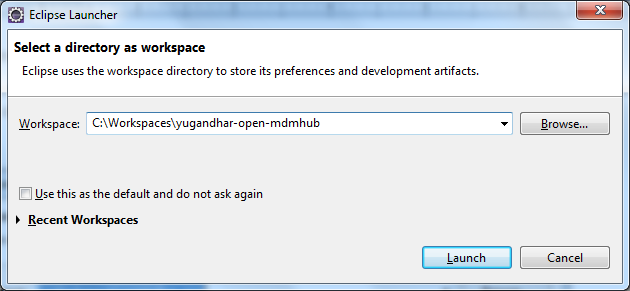
# Setup Workspace

Extract the downloaded eclipse archive in any of the folder of your choice.

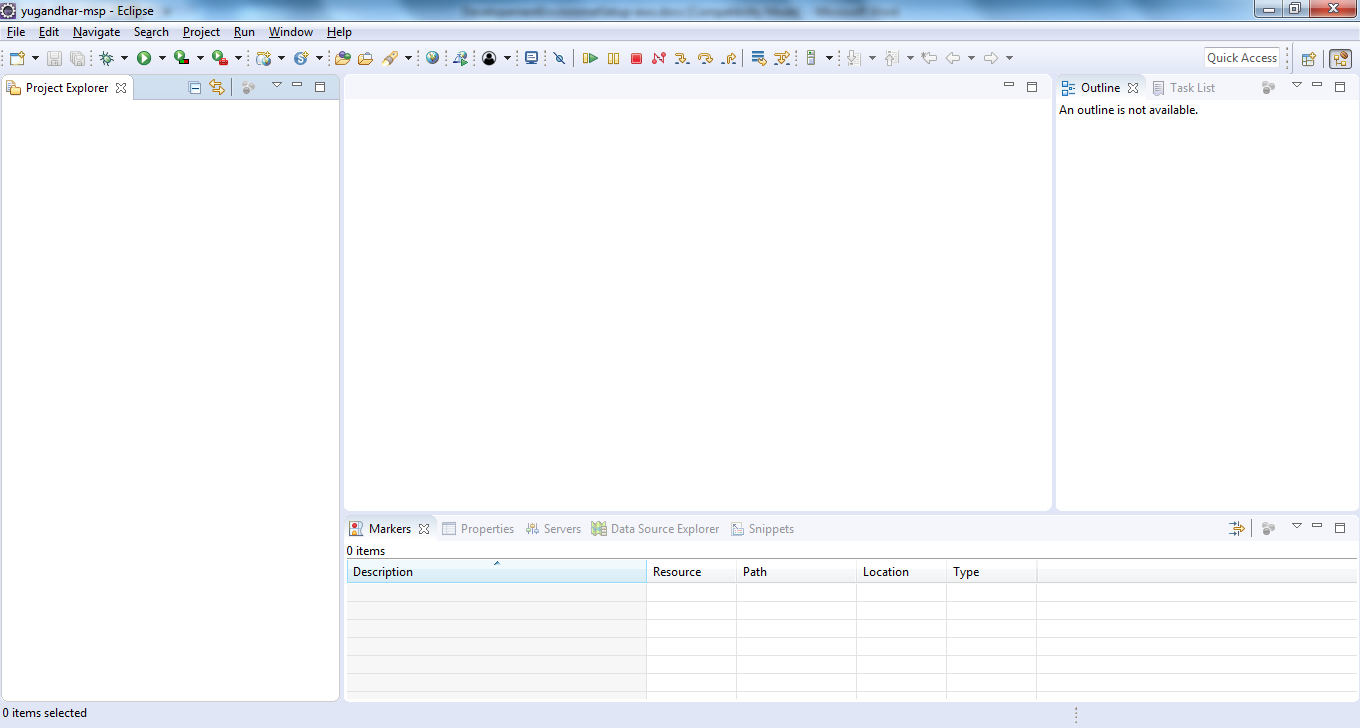


The extracted folder would have above files, click on eclipse.exe to start the eclipse IDE.

The next window would ask you for the workspace location, provide the location as per your choice, for this documentation purpose we are creating workspace in C:\workspaces\yugandhar-MDM Hub folder.



Your workspace is ready to be configured now.



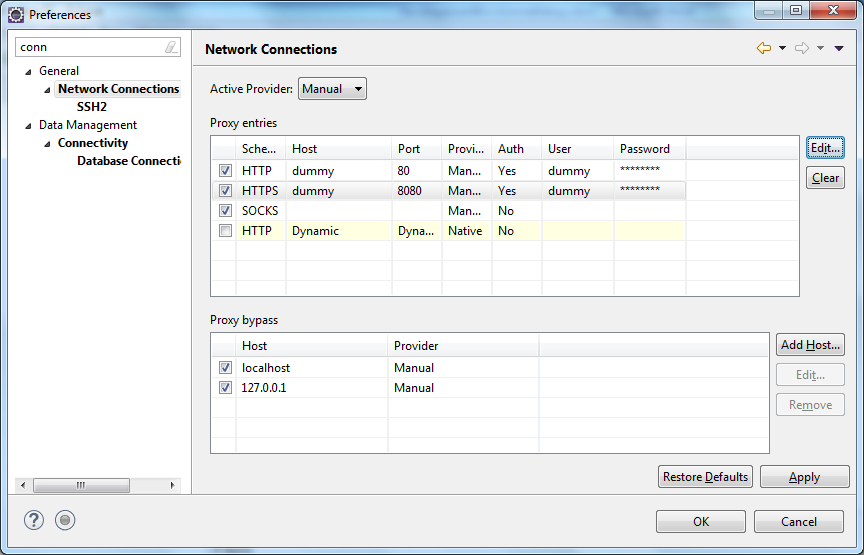
## Setup up Network Connections

If you are behind firewall then you need to perform below steps. Those who have direct internet connection (without proxy) can skip the eclipse Network and Maven Settings step.

### Eclipse network

Go to Windows -- > preferences 🡪 General 🡪 Network Connections

Change the Active Provider to manual and set the proxy host, port and user credentials as per your firewall settings. The below settings are dummy so should not be copied as-is. Click on apply and click OK.



### Maven Settings

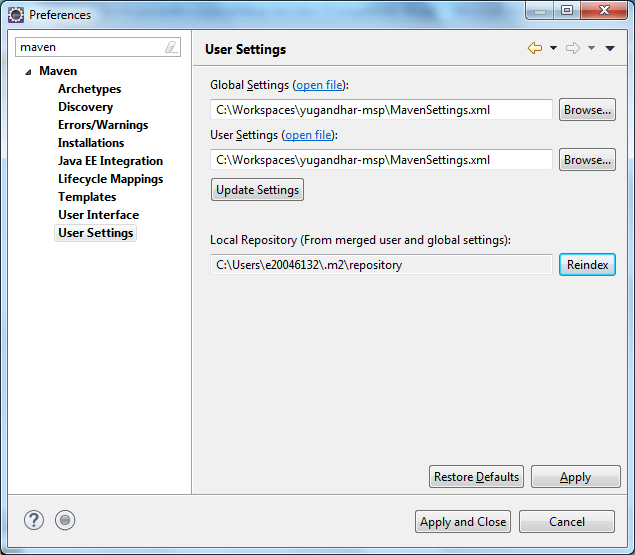
Create a simple text file named MavenSettings.xml in workspace having below content.

You may also download sample MavenSettings.xml from git hub resources/mavensettings folder.

|  |
| --- |
| <settings xmlns="http://maven.apache.org/SETTINGS/1.0.0"  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"  xsi:schemaLocation="http://maven.apache.org/SETTINGS/1.0.0  http://maven.apache.org/xsd/settings-1.0.0.xsd">  <localRepository>C:\Users\<UserName>\.m2\repository</localRepository>  <interactiveMode/>  <usePluginRegistry/>  <offline/>  <pluginGroups/>  <servers/>  <mirrors/>  <proxies>  <proxy>  <id>myproxy</id>  <active>true</active>  <protocol>http</protocol>  <host>dummy</host>  <port> dummy </port>  <username>dummy</username>  <password>dummy</password>  <nonProxyHosts>localhost,127.0.0.1</nonProxyHosts>  </proxy>  </proxies>  <profiles/>  <activeProfiles/>  </settings> |

Note – Make sure to change the host, port, username and password as per your firewall settings. Also change the localRepository to users folder.

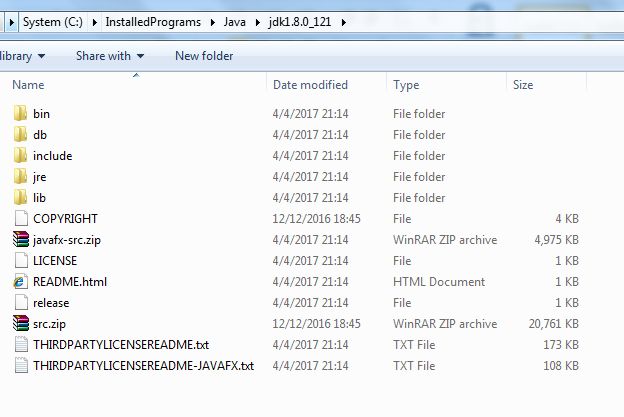
Now go to Eclipse Menu 🡪 windows 🡪 preferences 🡪 maven 🡪 User Settings 🡪 provide path of the file MavenSettings.xml in the local and global settings as shown in screenshot below



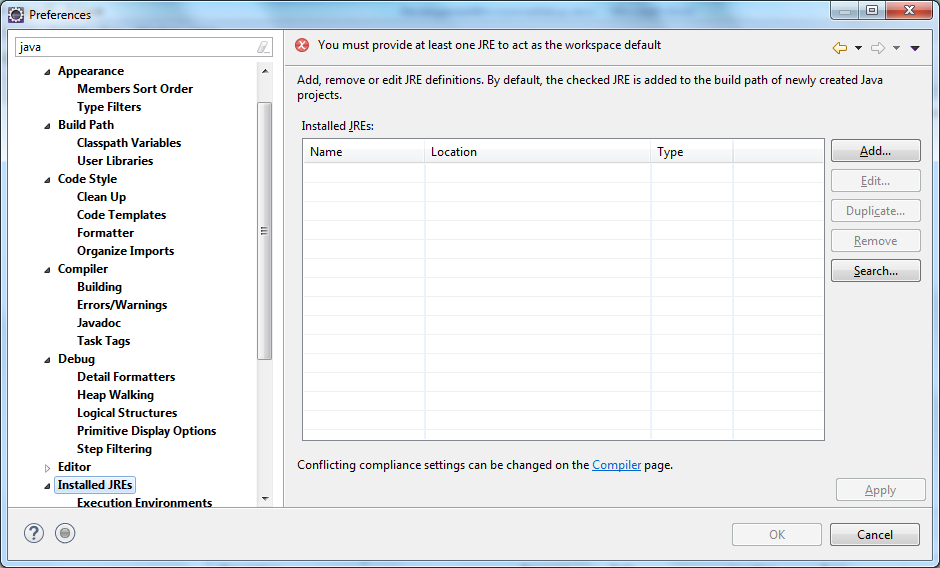
## Set JDK Path

Extract the JDK in a folder of your choice, for the document purpose the jdk directory is

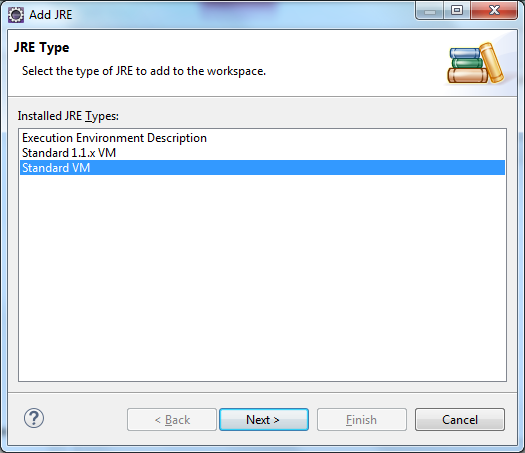
C:\InstalledPrograms\Java\jdk1.8.0\_121. The directory should look something like below



Go to eclipse Menu 🡪 Windows 🡪 Preferences 🡪 Java 🡪 Installed JREs

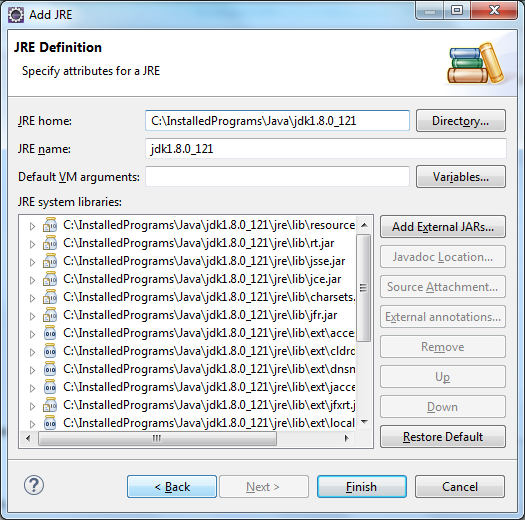


Click Add

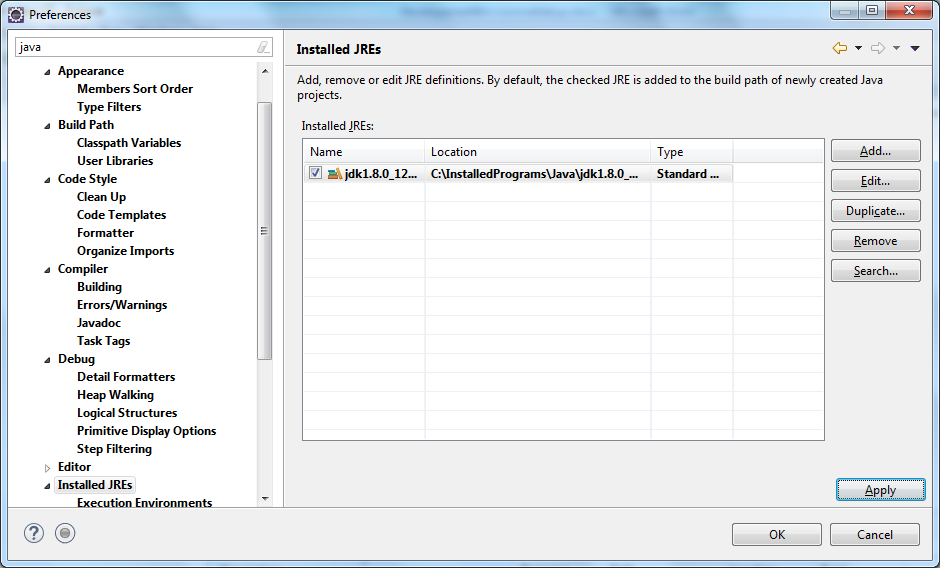


Click Next

Provide the JDK folder name where JDK is extracted



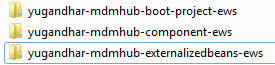
Click finish



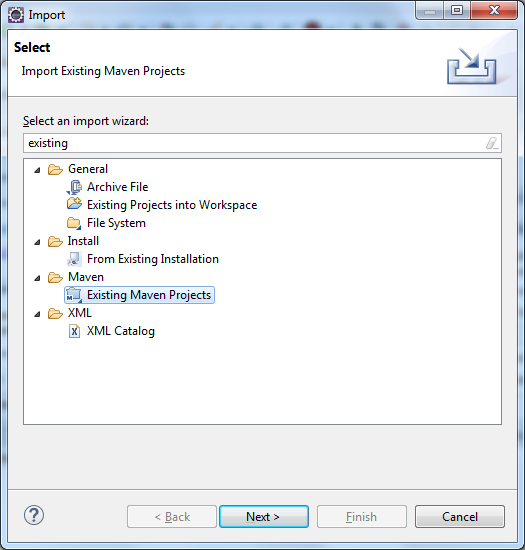
Check the textbox against recently added JDK, click Apply and OK.

## Import Yugandhar MDM Hub java projects in the workspace

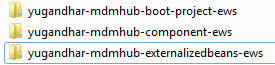
Download the yugandhar-open-mdmhub repository, go to the yugandhar-open-mdmhub-ews directory and copy the below three projects in the workspace directory (e.g. C:\Workspaces\yugandhar-open-mdmhub) and import in Workspace



Go to File 🡪 Import Menu 🡪 Existing Maven Projects 🡪

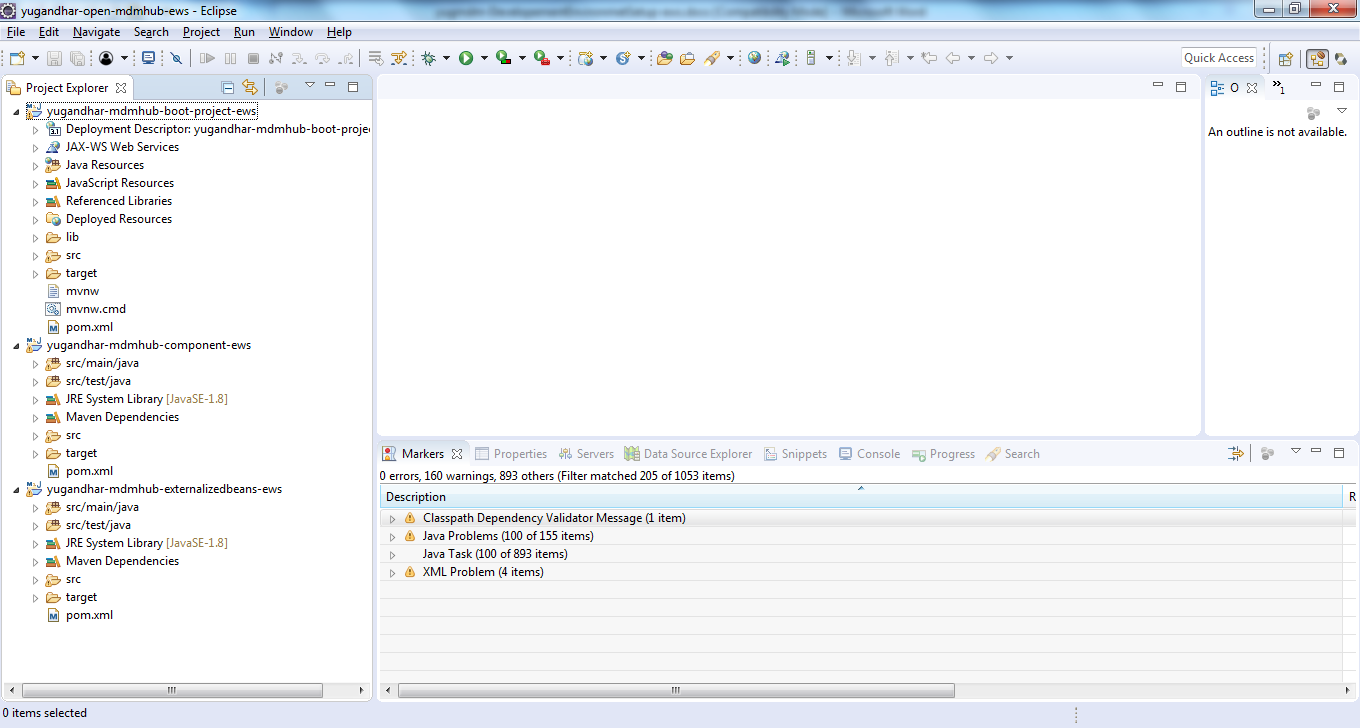


Select the below three projects which must be visible on the next screen and click Finish

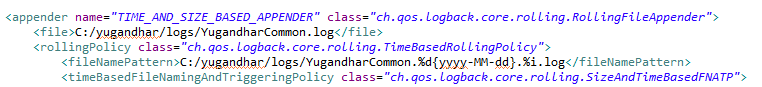


It may take some time as eclipse will download the maven jars automatically and build the project. You may track the progress in ‘Progress’ tab.

Make sure that your workspace is error free



Open MDM Hub does the logging to default folder C:/Yugandhar/logs so create this folder or change the log directory to the directory of your choice in /yugandhar-mdmhub-boot-project-ews/src/main/resources/yugandhar\_logback.xml



## Properties file changes

There are below two properties files in the Microservice platform

### application.properties

The application properties file covers the below properties

* **Springboot trace:** enable/disable the trace
* **Server port:** set the port number for the tomcat server
* **JPA:** If the generated ddl needs to be logged the enable the property spring.jpa.show-sql. By default this is enabled.
* **mariaDB specific settings:**

#Enable both the below properties for mysql/MariaDB, if you are using oracle then comment both the properties.

#spring.jpa.properties.hibernate.globally\_quoted\_identifiers=true

#spring.jpa.database-platform=org.hibernate.dialect.MariaDB53Dialect

Note- “spring.jpa.properties.hibernate.globally\_quoted\_identifiers= true” with Oracle database may result in errors.

* **Oracle specific settings:**

Oracle Specifc configuration, use 10g dialect for Oracle 11g database else use 12c

#spring.jpa.database-platform=org.hibernate.dialect.Oracle10gDialect

#spring.jpa.database-platform=org.hibernate.dialect.Oracle12cDialect

* **Logging:** Logback configuration
* **JTA:** Atomikos is the default JTA provider being used by Yugandhar MDM Hub, change the properties as needed.
* **Ehcache:** ehcache properties
* **Json:** json parser related properties
* **Active mq:** active MQ properties
* **Actuator:** spring boot actuator properties
* **Eureka integration:** Eureka integration properties, by default it’s disabled.

### yugandhar-mdmhub-app.properties

The yugandhar-mdmhub-app.properties file is custom properties file having below properties

* **mariaDB specific settings:**

enable the below properties for mariaDB else comment the same

|  |
| --- |
| # Datasource for Maria DB  yugandhar.mdm.datasource.url= jdbc:mariadb://localhost:3306/YUG\_OWNER?pinGlobalTxToPhysicalConnection=true  yugandhar.mdm.datasource.driver-class-name=org.mariadb.jdbc.Driver  yugandhar.mdm.datasource.xa.data-source-class-name=org.mariadb.jdbc.MariaDbDataSource |

* **Oracle specific settings:**

Enable the below properties for Oracle else comment the same

|  |
| --- |
| # Datasource for Oracle  yugandhar.mdm.datasource.url= jdbc:oracle:thin:@localhost:1521/MDMDB  yugandhar.mdm.datasource.driver-class-name=oracle.jdbc.driver.OracleDriver  yugandhar.mdm.datasource.xa.data-source-class-name=oracle.jdbc.xa.client.OracleXADataSource |

* **Common Properties:**

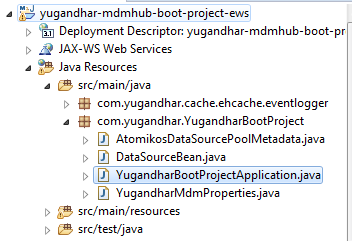
Use either of plain text properties or encrypted properties, if plain text properties provided then encrypted properties will be ignored. Use YugandharEncoderDecoder utility class to encode/decode a given string, refer Encryption Utility section of Development and Customization Guide to understand more.

|  |
| --- |
| yugandhar.mdm.datasource.username.plaintext=user name e.g. YUG\_OWNER  yugandhar.mdm.datasource.password.plaintext=user name e.g. YUG\_OWNER  #yugandhar.mdm.datasource.username.encrypted=WVVHX01TUF9PV05FUg  #yugandhar.mdm.datasource.password.encrypted=WVVHX01TUF9PV05FUg |

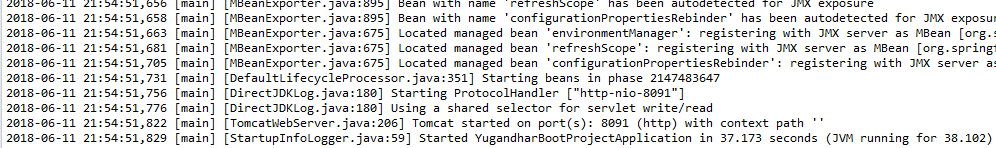
## Running the application

Once all the configuration is finished then running the application is fairly simple

Go to /yugandhar-mdmhub-boot-project-ews/src/main/java/com/yugandhar/YugandharBootProject/YugandharBootProjectApplication.java



Right click and select ‘Run As..”🡪 java application. It will start the Yugandhar MDM Hub application with embedded Tomcat server. Check the logs lines below to verify the application is started.



## TEST With SOAPUI

### Test JSON message

The rest url is as below.

<http://localhost:8091/rest/YugandharRequestProcessor>

Yugandhar MDM HUB uses the port 8091 as default; you may change it through application.properties file.

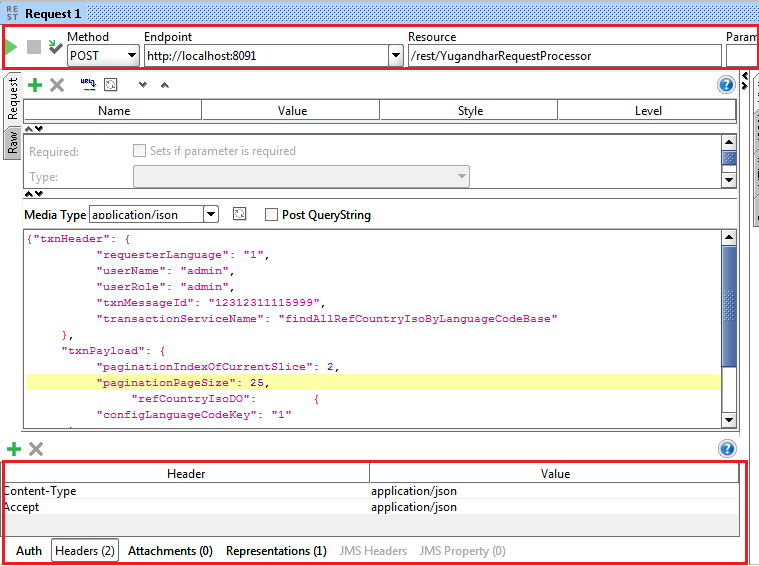
Sample json message

|  |
| --- |
| {"txnHeader": {  "requesterLanguage": "1",  "userName": "admin",  "userRole": "admin",  "txnMessageId": "12312311115999",  "transactionServiceName": "findAllRefCountryIsoByLanguageCodeBase"  },  "txnPayload": {  "paginationIndexOfCurrentSlice": 2,  "paginationPageSize": 25,  "refCountryIsoDO": {  "configLanguageCodeKey": "1"  }    }    } |

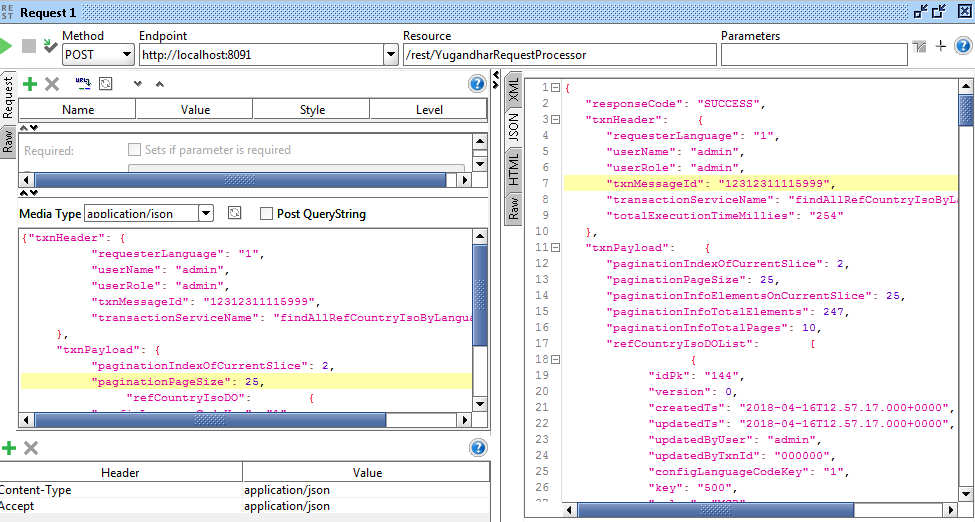
For the soap xml message, add the below headers for the request xmls

|  |  |  |
| --- | --- | --- |
| Header | Value | use |
| Accept | application/json | This header tells yugandhar rest controller that the response must be sent in json format. |
| Content-Type | application/json | This header tells yugandhar rest controller that the request message is of type json |

Create ‘New REST service from URI’ in the soapui project, and execute it with attached json message



Check the response as SUCCESS



### Test XML message

The rest url is as below.

<http://localhost:8091/rest/YugandharRequestProcessor>

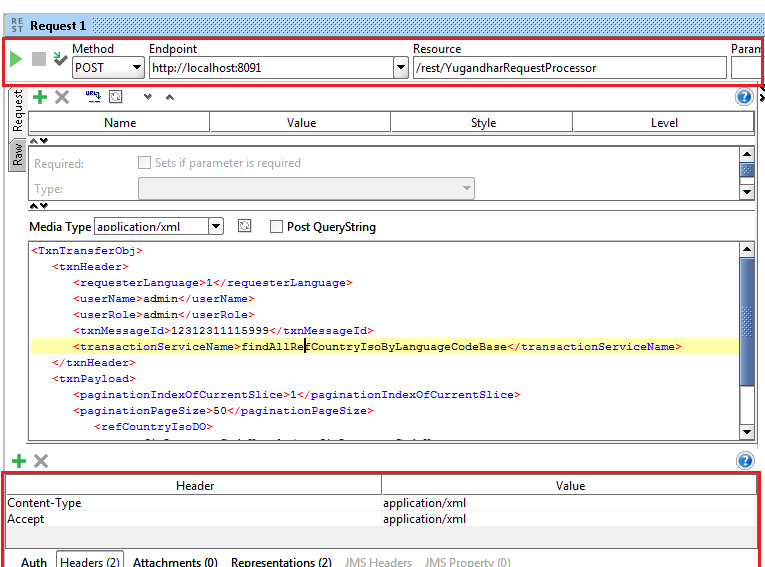
Yugandhar MDM HUB uses the port 8091 as default; you may change it through application.properties file.

For the soap xml message, add the below headers for the request xmls

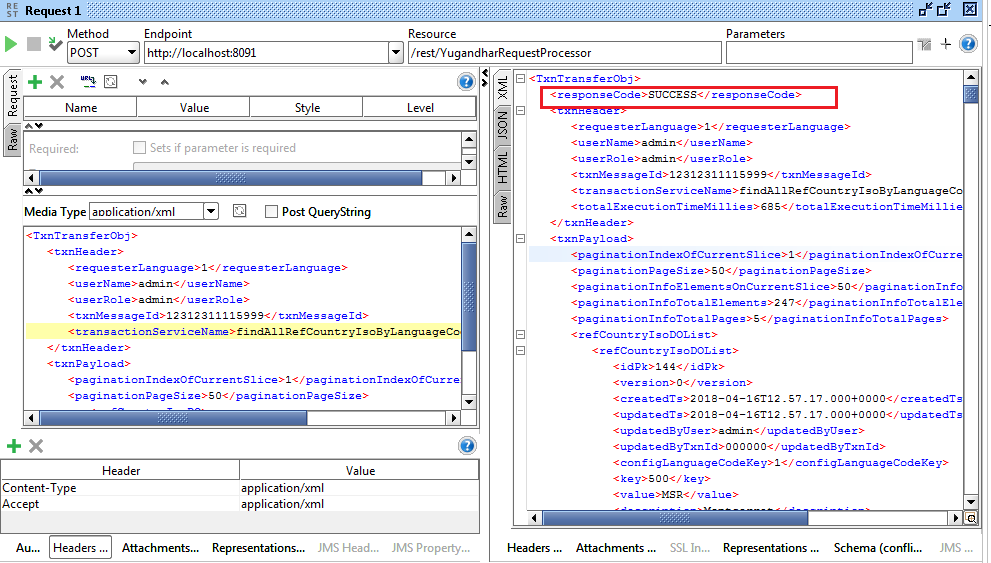
|  |  |  |
| --- | --- | --- |
| Header | Value | use |
| Accept | application/xml | This header tells yugandhar rest controller that the response must be sent in xml format. |
| Content-Type | application/xml | This header tells yugandhar rest controller that the request message is of type xml |

Sample XML message:

|  |
| --- |
| <TxnTransferObj>  <txnHeader>  <requesterLanguage>1</requesterLanguage>  <userName>admin</userName>  <userRole>admin</userRole>  <txnMessageId>12312311115999</txnMessageId>  <transactionServiceName>findAllRefCountryIsoByLanguageCodeBase</transactionServiceName>  </txnHeader>  <txnPayload>  <paginationIndexOfCurrentSlice>1</paginationIndexOfCurrentSlice>  <paginationPageSize>50</paginationPageSize>  <refCountryIsoDO>  <configLanguageCodeKey>1</configLanguageCodeKey>  </refCountryIsoDO>  </txnPayload>  </TxnTransferObj> |



Check the success response.



This certifies your workspace.

You may test a few more transactions like createLegalentity, createLeAccount etc for which sample messages are provided in the resources/Testing folder.

Go ahead with Development and customization guide, API Transaction reference guide and Code generation guide to understand more.