

Creating Mediation Handler for WAS 8.5 using EJB 3.0

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Background:

For EJB 2.x, Rational Application Developer provided tooling for the inclusion of mediation handler via a “Mediation Handler” [Tab] in the EJB DD editor which would create WAS extensions that would be made use of at the runtime. However, for EJB 3.0 the EJB DD Editor extension is no longer provided by Rational Application Developer. This makes the task of developing mediation handler using EJB 3.0 using the Rational Application Developer difficult.

WAS 8.5 doesn't support EJB 2.x, whereas it was supported by earlier versions of WAS and hence EJB 2.x can't be used to create mediation handlers for WAS 8.5. Hence, this document details the procedure of creating mediation handler using EJB 3.0 (using Rational Application Developer) that can be deployed on WAS 8.5.

Versions of Products used in the sample described below:

- 1) WebSphere Application Server – version 8.5.0.1
- 2) Rational Application Developer – version 8.0.4
- 3) EJB – version 3.0

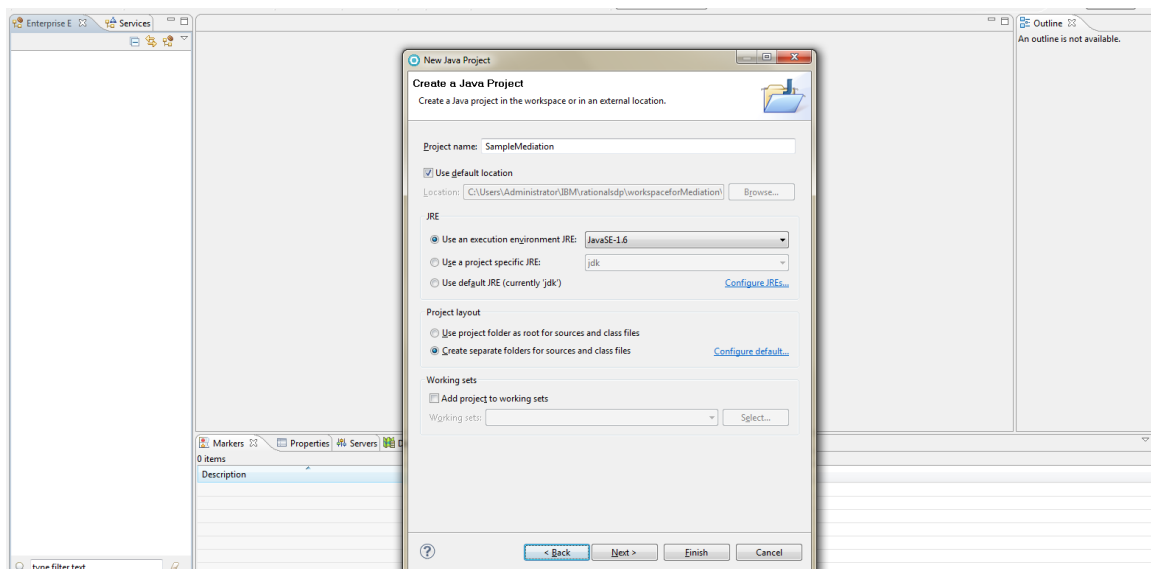
Developing a Mediation Handler:

A Mediation handler is a java class that implements the mediation handler interface “com.ibm.websphere.sib.mediation.handler.MediationHandler”

1) Creating a java project:

To create a mediation handler, first you need to create a java project (Here, we have used RAD 8.0.4 to develop the mediation handler).

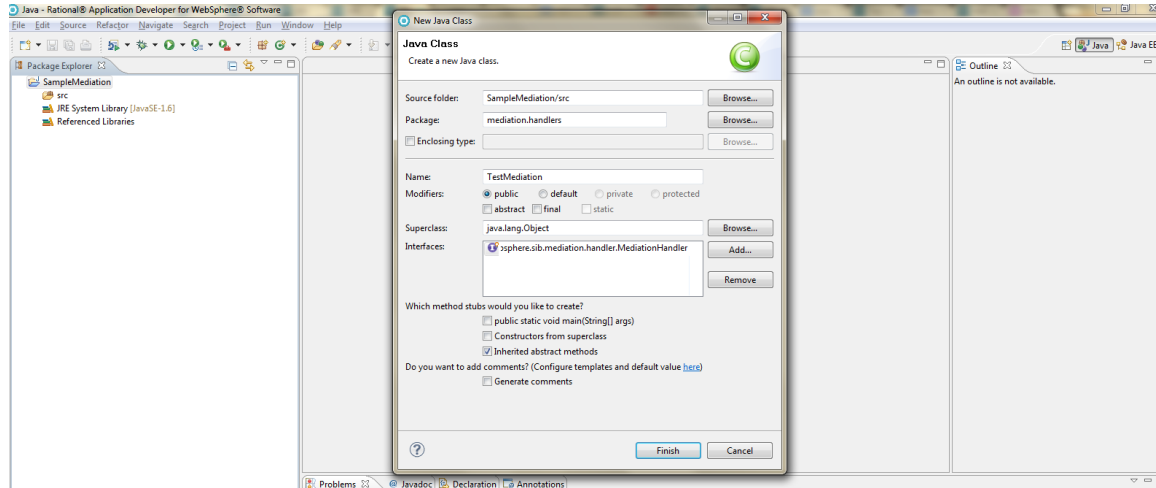
Create a java project called **SampleMediation** as shown below:



Click on **Finish**.

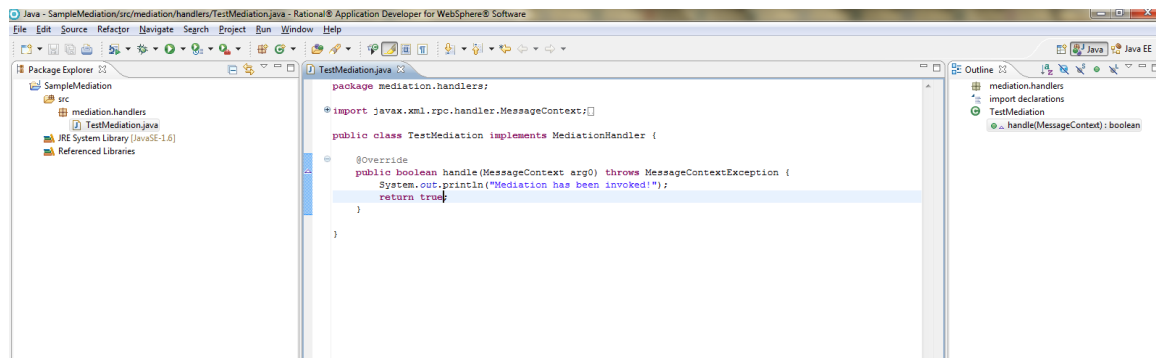
2) Creating the mediation handler class

By using the new Java class wizard, create a class `mediation.handlers.TestMediation` that implements the `com.ibm.websphere.sib.mediation.handler.MediationHandler` interface, as shown in the below figure:



Click on **Finish** to create the mediation handler class.

3) Add the necessary code in the handle method. Here, we are just printing to `SystemOut` which would indicate that mediation has been invoked and returning `true` in order to indicate mediation was successfully invoked.



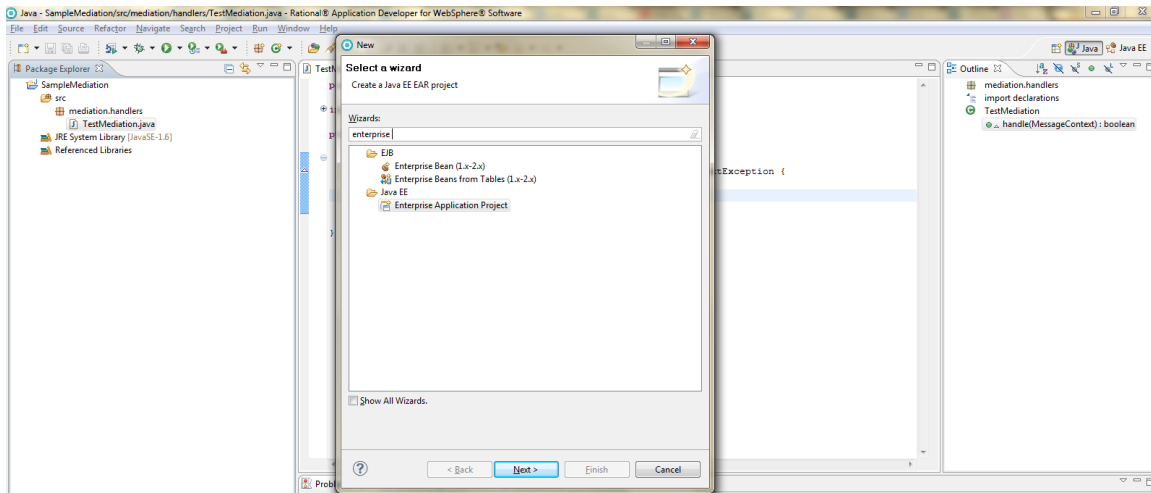
The Mediation Handler class is now ready. Next step is to package this into a deployable ear.

Assembling Mediation Handler into a deployable unit:

1) The mediation handler needs to be packaged into an EAR. The following section describes the steps to assemble the mediation into an EAR using EJB 3.0:

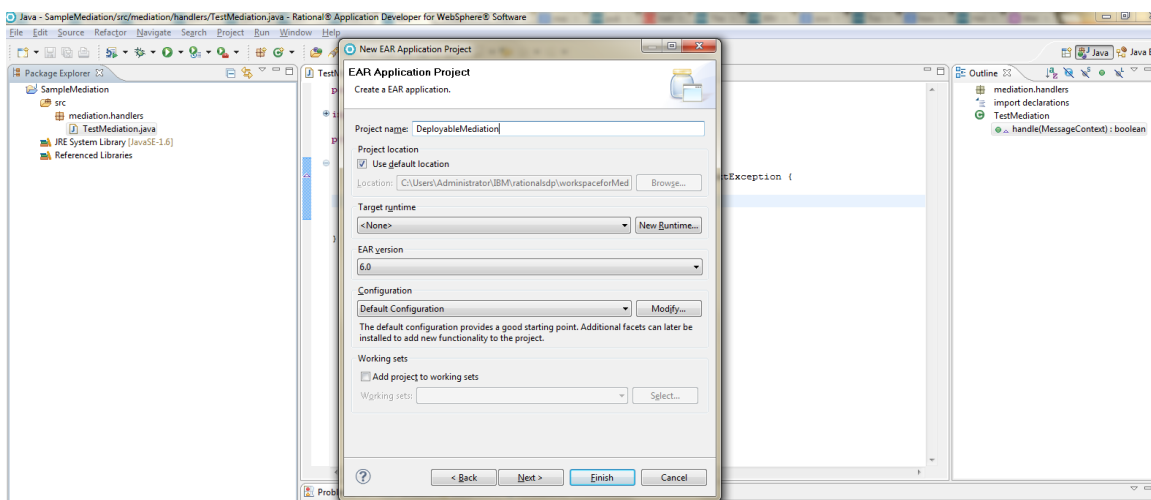
2) Create an Enterprise Application Project

In RAD, launch the **New** wizard by selecting **File => New => Other** as shown below :

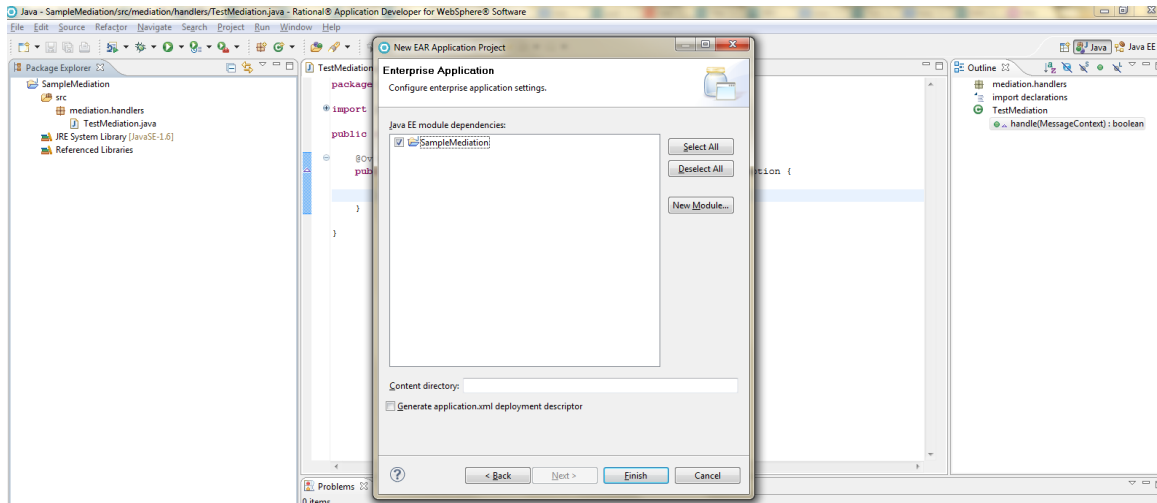


Select the **Enterprise Application Project** wizard and click on **Next**.

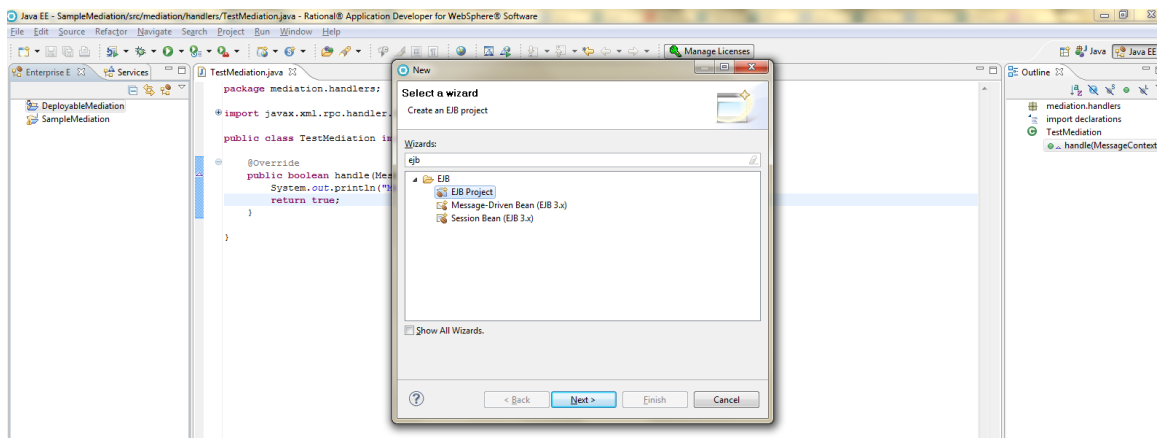
Provide the name of the project as “DeployableMediation” and click on **Next**



Select the “SampleMediation” module and click on **Finish**

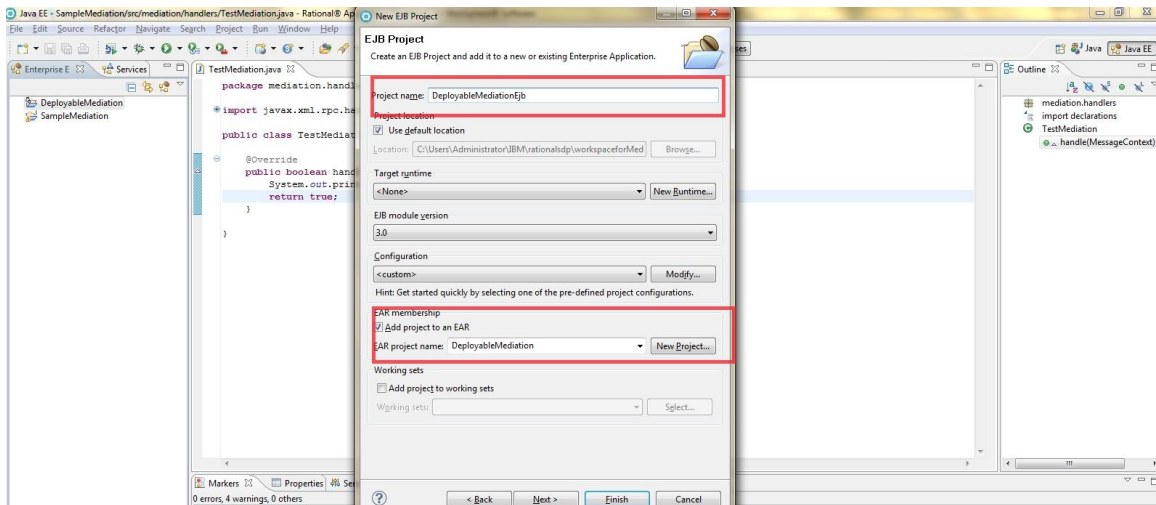


3) Now, create an EJB project by launching the new wizard from **File => New => Other** as shown below:

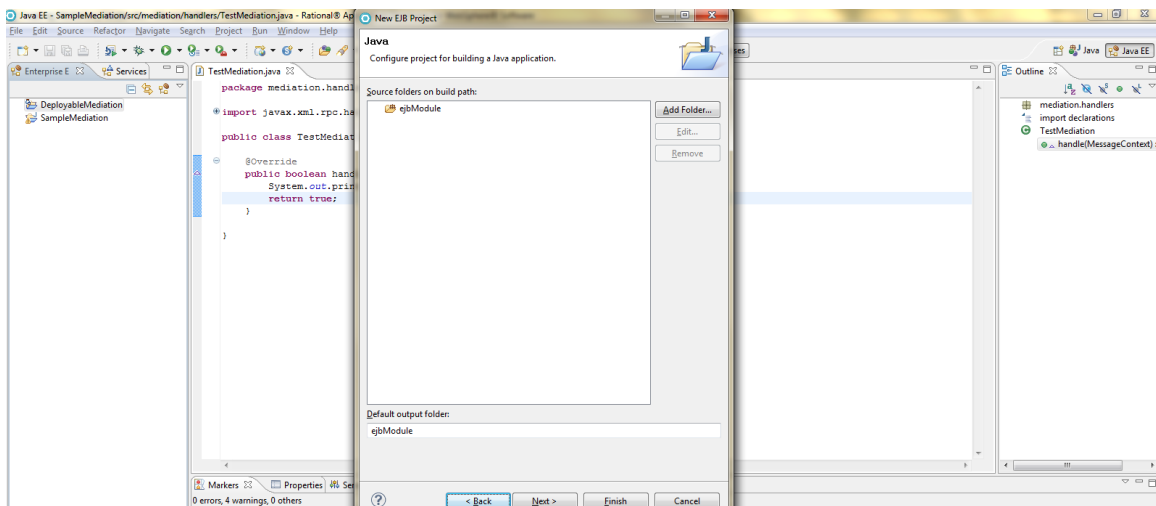


Select **EJB Project** and click on **Next**

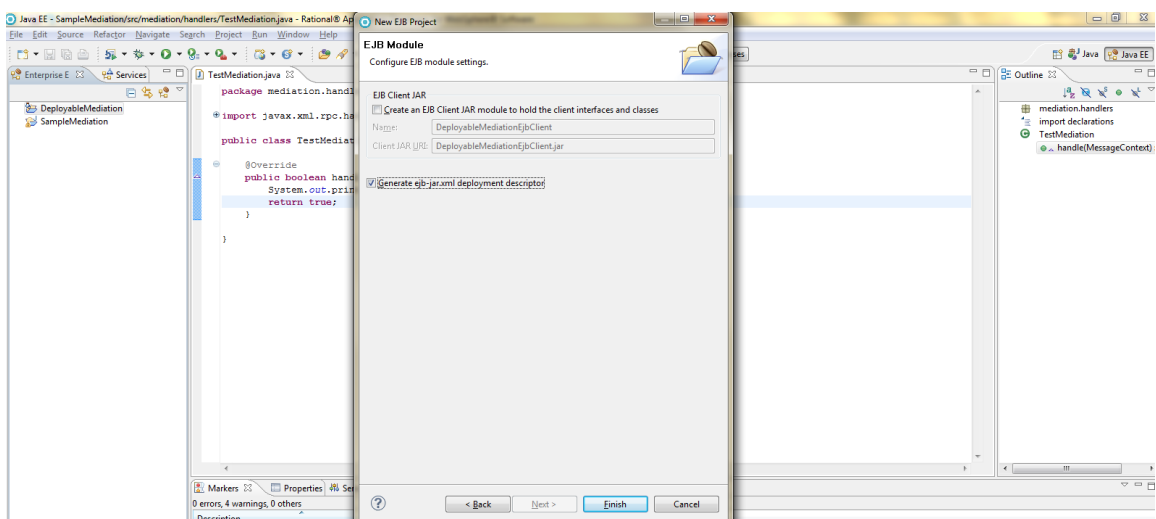
Name the project as “DeployableMediationEjb” and add this project to the created EAR “DeployableMediation” as shown below:



Click on Next



Click again on Next and you would get the following screen:



Uncheck the “Create an EJB Client JAR module to hold the client interfaces and classes” and check the “Generate ejb-jar.xml deployment descriptor” and then click on **Finish**

4) The ejb-jar.xml will not have any entries initially . Edit the ejb-jar.xml and add the following entries:

```
<enterprise-beans>
    <session id="TestMediationHandler">
        <ejb-name>TestMediationHandler</ejb-name>
        <local-
home>com.ibm.websphere.sib.mediation.handler.ejb.GenericEJBMediationHan
dlerLocalHome</local-home>

        <local>com.ibm.websphere.sib.mediation.handler.ejb.GenericEJBMedi
ationHandlerLocal</local>
        <ejb-
class>com.ibm.websphere.sib.mediation.handler.ejb.GenericEJBMediationHa
ndlerBean</ejb-class>
        <session-type>Stateless</session-type>
        <transaction-type>Container</transaction-type>
        <env-entry>
            <env-entry-
name>mediation/MediationHandlerClass</env-entry-name>
            <env-entry-type>java.lang.String</env-entry-
type>
            <env-entry-
value>mediation.handlers.TestMediation</env-entry-value>
        </env-entry>
        </session>
    </enterprise-beans>
```

```
<assembly-descriptor>
    <container-transaction>
        <method>
            <ejb-name>TestMediationHandler</ejb-name>
            <method-intf>Local</method-intf>
            <method-name>handle</method-name>
            <method-params>
                <method-
param>javax.xml.rpc.handler.MessageContext</method-param>
            </method-params>
        </method>
        <trans-attribute>Supports</trans-attribute>
    </container-transaction>
</assembly-descriptor>
```

5) After adding the above entries, the ejb-jar.xml will eventually be as below:

```
<?xml version="1.0" encoding="UTF-8"?>
```

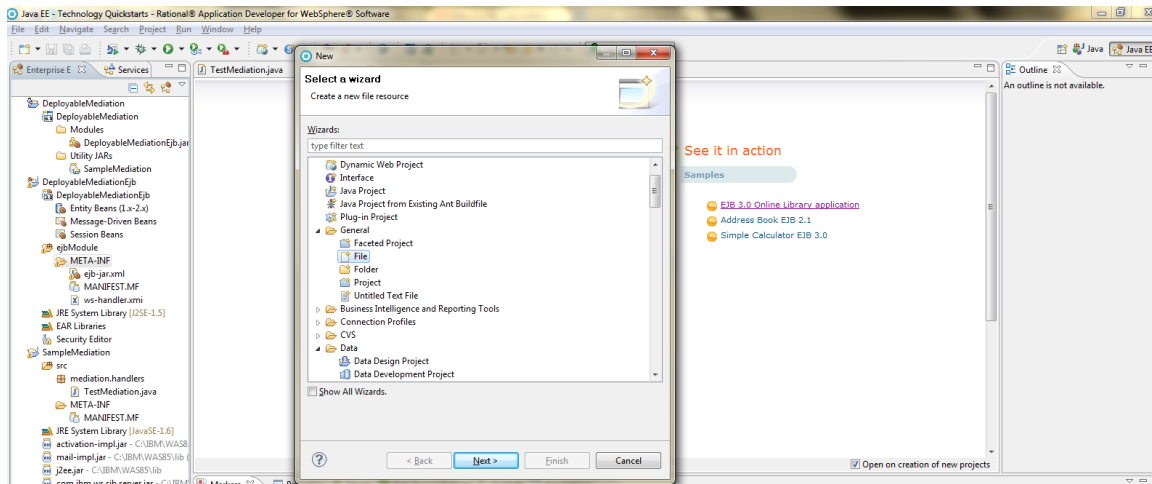
```

<ejb-jar version="3.0" xmlns="http://java.sun.com/xml/ns/javaee"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://java.sun.com/xml/ns/javaee
http://java.sun.com/xml/ns/javaee/ejb-jar_3_0.xsd">
  <display-name>DeployableMediationEjb </display-name>
  <enterprise-beans>
    <session id="TestMediationHandler">
      <ejb-name>TestMediationHandler</ejb-name>
      <local-
home>com.ibm.websphere.sib.mediation.handler.ejb.GenericEJBMediationHan
dlerLocalHome</local-home>

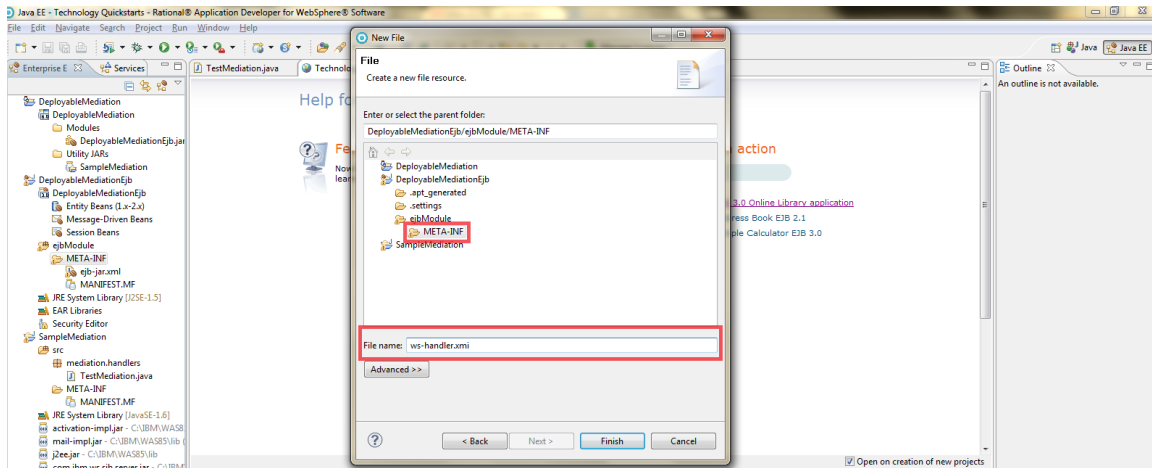
      <local>com.ibm.websphere.sib.mediation.handler.ejb.GenericEJBMedi
ationHandlerLocal</local>
      <ejb-
class>com.ibm.websphere.sib.mediation.handler.ejb.GenericEJBMediationHa
ndlerBean</ejb-class>
      <session-type>Stateless</session-type>
      <transaction-type>Container</transaction-type>
      <env-entry>
        <env-entry-
name>mediation/MediationHandlerClass</env-entry-name>
        <env-entry-type>java.lang.String</env-entry-
type>
        <env-entry-
value>mediation.handlers.TestMediation</env-entry-value>
      </env-entry>
    </session>
  </enterprise-beans>
  <assembly-descriptor>
    <container-transaction>
      <method>
        <ejb-name>TestMediationHandler</ejb-name>
        <method-intf>Local</method-intf>
        <method-name>handle</method-name>
        <method-params>
          <method-
param>javax.xml.rpc.handler.MessageContext</method-param>
        </method-params>
      </method>
      <trans-attribute>Supports</trans-attribute>
    </container-transaction>
  </assembly-descriptor>
</ejb-jar>

```

6) Next, we have to create the “ws-handler.xml” file . In order to create this file, right click on the “META-INF” folder of the “DeployableMediationEjb” project and select “New=>Other” and select “File”

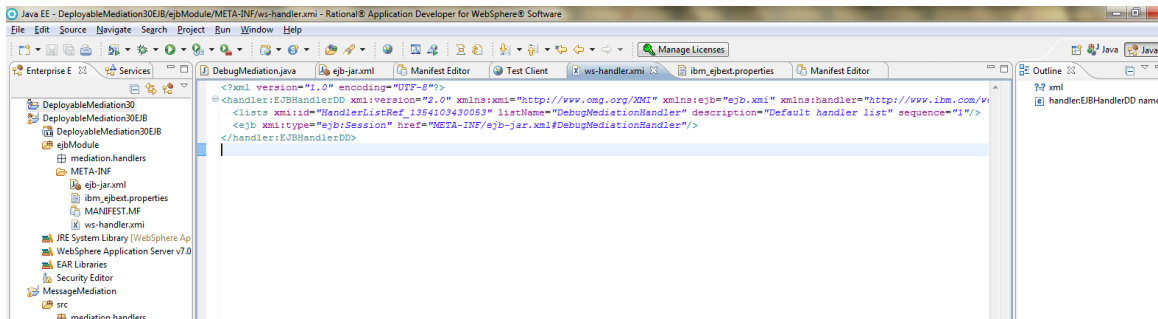


Click on **Next**. Select “META-INF” as the parent folder and the file name as “ws-handler.xml” and click on **Finish**

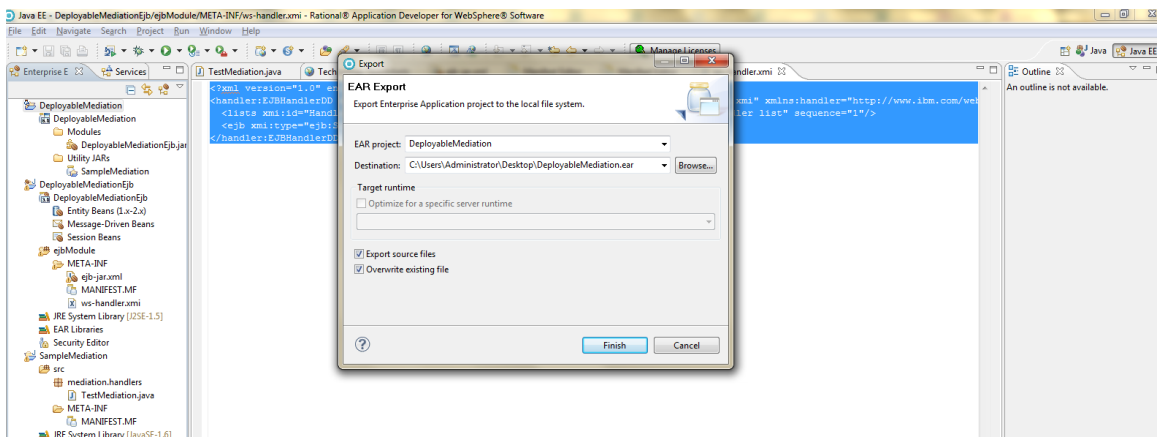
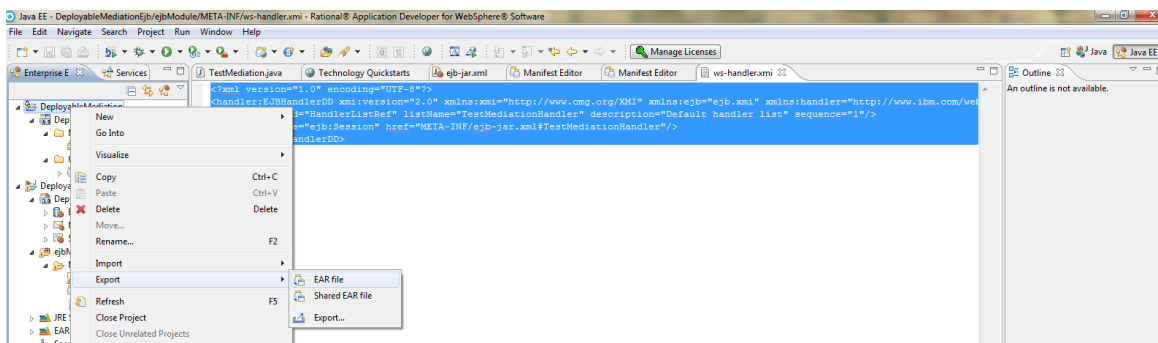


7) Now, add the following contents into the “ws-handler.xml” file that we just created:

```
<?xml version="1.0" encoding="UTF-8"?>
<handler:EJBHandlerDD xmi:version="2.0"
xmlns:xmi="http://www.omg.org/XMI" xmlns:ejb="ejb.xmi"
xmlns:handler="http://www.ibm.com/websphere/appserver/schemas/6.0/handler.xmi" xmi:id="EJBHandlerDD" name="TestMediationHandler"
description="Sample Mediation Handler" critical="true">
  <lists xmi:id="HandlerListRef" listName="TestMediationHandler"
description="Default handler list" sequence="1"/>
  <ejb xmi:type="ejb:Session" href="META-INF/ejb-jar.xml#TestMediationHandler"/>
</handler:EJBHandlerDD>
```

8) Now, export this “DeployableMediation” as an EAR by right clicking on the project and selecting **Export** and **EAR file** as shown below:



Browse to the destination where you want the EAR to be saved and click on **Finish**

9) Next step is to install the EAR and create a mediation and mediate the destination. You can follow the information provided in the info center for creating mediation and mediating a destination

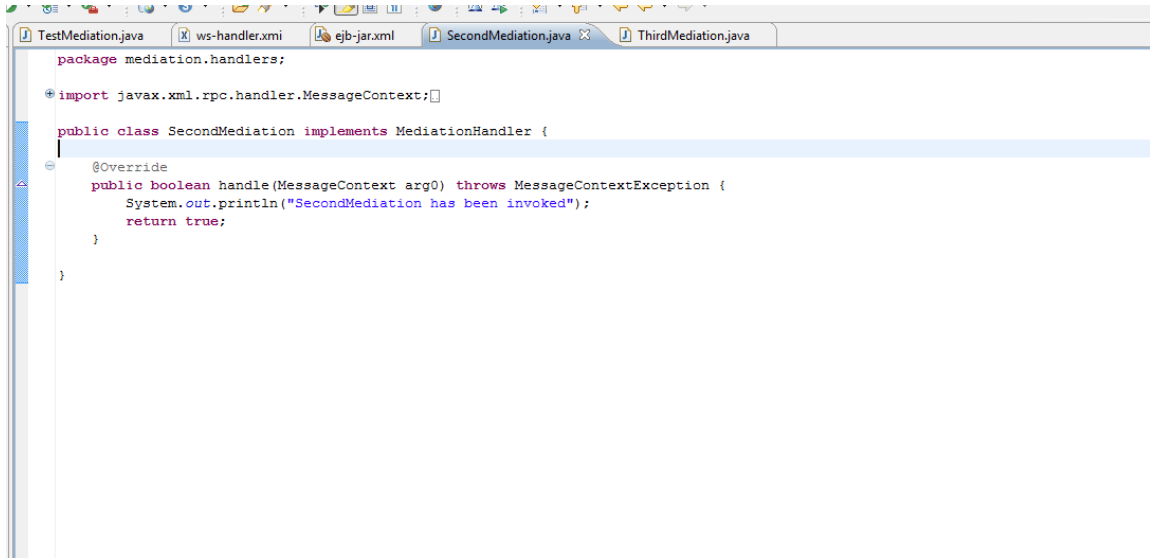
<http://pic.dhe.ibm.com/infocenter/wasinfo/v8r5/index.jsp?topic=%2Fcom.ibm.websphere.express.doc%2Fae%2Ftp0005.html>

Creating a mediation handler list:

In order to create a mediation handler list that includes more than one mediation class under it you need to follow the below indicated steps:

- 1) Just like the way the mediation handler class “mediation.handlers.TestMediation” was created, you can create other mediation handler classes and include all of them under a single mediation handler list and specify the order of sequence of their execution.

For example, lets say we create two other mediation classes “mediation.handlers.SecondMediation” and “mediation.handler.ThirdMediation”



```

package mediation.handlers;

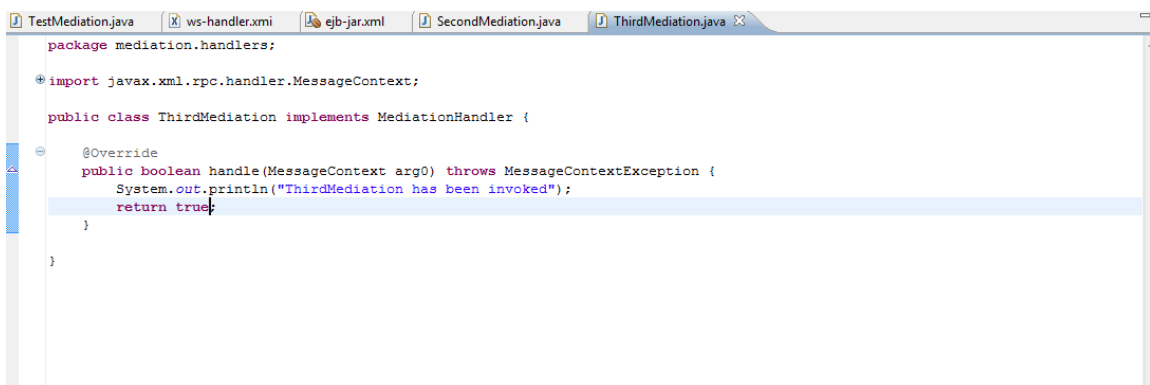
import javax.xml.rpc.handler.MessageContext;

public class SecondMediation implements MediationHandler {

    @Override
    public boolean handle(MessageContext arg0) throws MessageContextException {
        System.out.println("SecondMediation has been invoked");
        return true;
    }

}

```



```

package mediation.handlers;

import javax.xml.rpc.handler.MessageContext;

public class ThirdMediation implements MediationHandler {

    @Override
    public boolean handle(MessageContext arg0) throws MessageContextException {
        System.out.println("ThirdMediation has been invoked");
        return true;
    }

}

```

- 2) Now, you have to modify the ejb-jar.xml accordingly so as to include the “mediation.handlers.SecondMediation” and “mediation.handler.ThirdMediation” as shown below:

```
<?xml version="1.0" encoding="UTF-8"?>
```

```

<ejb-jar version="3.0" xmlns="http://java.sun.com/xml/ns/javaee"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://java.sun.com/xml/ns/javaee
http://java.sun.com/xml/ns/javaee/ejb-jar_3_0.xsd">
  <display-name>DeployableMediationEjb </display-name>
  <enterprise-beans>
    <session id="TestMediationHandler">
      <ejb-name>TestMediationHandler</ejb-name>
      <local-
home>com.ibm.websphere.sib.mediation.handler.ejb.GenericEJBMediationHan
dlerLocalHome</local-home>

      <local>com.ibm.websphere.sib.mediation.handler.ejb.GenericEJBMedi
ationHandlerLocal</local>
      <ejb-
class>com.ibm.websphere.sib.mediation.handler.ejb.GenericEJBMediationHa
ndlerBean</ejb-class>
      <session-type>Stateless</session-type>
      <transaction-type>Container</transaction-type>
      <env-entry>
        <env-entry-
name>mediation/MediationHandlerClass</env-entry-name>
        <env-entry-type>java.lang.String</env-entry-
type>
        <env-entry-
value>mediation.handlers.TestMediation</env-entry-value>
      </env-entry>
    </session>
    <session id="SecondMediation">
      <ejb-name>SecondMediation</ejb-name>
      <local-
home>com.ibm.websphere.sib.mediation.handler.ejb.GenericEJBMediationHan
dlerLocalHome</local-home>

      <local>com.ibm.websphere.sib.mediation.handler.ejb.GenericEJBMedi
ationHandlerLocal</local>
      <ejb-
class>com.ibm.websphere.sib.mediation.handler.ejb.GenericEJBMediationHa
ndlerBean</ejb-class>
      <session-type>Stateless</session-type>
      <transaction-type>Container</transaction-type>
      <env-entry>
        <env-entry-
name>mediation/MediationHandlerClass</env-entry-name>
        <env-entry-type>java.lang.String</env-entry-
type>
        <env-entry-
value>mediation.handlers.SecondMediation</env-entry-value>
      </env-entry>
    </session>
    <session id="ThirdMediation">
      <ejb-name>ThirdMediation</ejb-name>
      <local-
home>com.ibm.websphere.sib.mediation.handler.ejb.GenericEJBMediationHan
dlerLocalHome</local-home>

```

```

    <local>com.ibm.websphere.sib.mediation.handler.ejb.GenericEJBMedi
ationHandlerLocal</local>
    <ejb-
class>com.ibm.websphere.sib.mediation.handler.ejb.GenericEJBMediationHa
ndlerBean</ejb-class>
    <session-type>Stateless</session-type>
    <transaction-type>Container</transaction-type>
    <env-entry>
    <env-entry-
name>mediation/MediationHandlerClass</env-entry-name>
    <env-entry-type>java.lang.String</env-entry-
type>
    <env-entry-
value>mediation.handlers.ThirdMediation</env-entry-value>
    </env-entry>
    </session>
</enterprise-beans>

<assembly-descriptor>
    <container-transaction>
    <method>
    <ejb-name>TestMediationHandler</ejb-name>
    <method-intf>Local</method-intf>
    <method-name>handle</method-name>
    <method-params>
    <method-
param>javax.xml.rpc.handler.MessageContext</method-param>
    </method-params>
    </method>
    <trans-attribute>Supports</trans-attribute>
    </container-transaction>
</assembly-descriptor>
</ejb-jar>

```

- 3) The “ws-handler.xmi” file that we created also needs to be edited to include the two new mediation Handler classes that we created as shown below:

```

<?xml version="1.0" encoding="UTF-8"?>
<xmi:XMI xmi:version="2.0" xmlns:xmi="http://www.omg.org/XMI"
xmlns:ejb="ejb.xmi"
xmlns:handler="http://www.ibm.com/websphere/appserver/schemas/6.0/handl
er.xmi">
<handler:EJBHandlerDD xmi:id="EJBHandlerDD_1"
name="TestMediationHandler" description="Sample Mediation Handler"
critical="true">
    <lists xmi:id="HandlerListRef" listName="NewMediationHandlerList"
description="Default handler list" sequence="1"/>
    <ejb xmi:type="ejb:Session" href="META-INF/ejb-
jar.xml#TestMediationHandler"/>
</handler:EJBHandlerDD>

<handler:EJBHandlerDD xmi:id="EJBHandlerDD_2" name="SecondMediation"
description="Second Mediation Handler" critical="true">
    <lists xmi:id="HandlerListRef" listName="NewMediationHandlerList"
description="Default handler list" sequence="2"/>

```

```
<ejb xmi:type="ejb:Session" href="META-INF/ejb-
jar.xml#SecondMediation"/>
</handler:EJBHandlerDD>

<handler:EJBHandlerDD xmi:id="EJBHandlerDD_3" name="ThirdMediation"
description="Third Mediation Handler" critical="true">
  <lists xmi:id="HandlerListRef" listName="NewMediationHandlerList"
description="Default handler list" sequence="3"/>
  <ejb xmi:type="ejb:Session" href="META-INF/ejb-
jar.xml#ThirdMediation"/>
</handler:EJBHandlerDD>
</xmi:XMI>
```

4) The “sequence” number indicates the order in which the mediation handlers would be executed and all of the three mediation handler classes belong to one mediation handler list “NewMediationHandlerList”

5) After making the changes above, you need to export the EAR and deploy as mentioned in the step 8 under “*Assembling Mediation Handler into a deployable unit*”