

A Case Study on SAP XI - webMethods Integration

Applies to:

SAP Exchange Infrastructure (SAP NetWeaver Process Integration 7.0)

Summary

Recently I had an opportunity to work on a project where came a need to integrate two middleware's SAP Exchange Infrastructure (SAP XI) and webMethods. I see a high probability of such requirements coming up with the development of the webMethods XI Adapter, for communication between SAP XI and webMethods. In this article, we will see in detail the Installation and Configurations of the webMethods XI Adapter and also the configurations required in SAP XI for such Integrations.

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Author Bio



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Introduction

Execution Plan

The objective is to successfully send and receive a MessageObject to and from SAP XI server via the webMethods XI Adapter. The plan was executed in two phases:

Outbound Processing

- A flat file/XML is picked up from a specified location (host of the Integration Server is preferred) by wM Flat file adapter;
- The contents of the flat/XML file are processed and transformed into message object for consumption to SAP XI adapter.
- Process the messages in SAP XI and convert them into IDOC and route it to the appropriate Business system (SAP R/3).
- Check in SAP for the successful processing of the message

Inbound Processing

- Trigger a message from with SAP for inbound processing.
- SAP XI interface receives the IDOC from SAP R/3 converts it into message object and passes it onto wM SAP XI adapter.
- Receive the message object via SAP XI adapter
- Process and transform the contents of the message to a flat/XML file.
- Write file to a specified location. (Host of the Integration Server is preferred).

Installation and Configuration of webMethods XI Adapter

webMethods XI adapter installation is described here. It is expected that SAP XI and its associated environment exists and is configured properly.

wM XI Adapter Installation

1. Obtain wM XI Adapter 4.6 SP1 Fix7 from webMethods.
2. Shut down the Integration Server if running.
3. Copy the zip file WmXI-4-6_SP1.zip file to the Integration Server_directory\replicate\inbound directory.
4. Restart Integration Server and open Integration Server Administrator.
5. Go to Packages menu, click Management.
6. In Management screen click Install Inbound Releases.
7. Select WmXI-4-6_SP1.zip file in the Release file name.
8. Select option 'Activate upon Installation' and click Install Release.
9. Copy the jar files mentioned above into../IntegrationServer/packages/WmXI/code/jars/static directory. Obtain these jar files from SAP XI installation.
 - i. httpclient.jar
 - ii. jARM.jar
 - iii. lcrclient.jar
 - iv. logging.jar
 - v. sldclient.jar
10. set the IS server extended properties watt.xi.sld.access=on (to turn off set to something other than "on")
11. Restart the Integration Server.
12. After restart, open the wM Admin page and navigate to Adapters->wM XI->About. The page should display the correct version of XI and other details of the adapter installed.

wM XI Adapter Configuration

The prerequisites for configuration of webMethods XI Adapter are:

- webMethods XI Adapter should be installed.
- SAP XI v2.0 or greater should have been installed.
- All the necessary configurations should have been done properly on SAP XI side.
- SLD Server details should be provided.
- UID/pass to connect to SLD and XI Server should be known.
- Business System names, Message Types and Interface details configured on SAP XI server should be known.

The steps to configure the Wm XI Adapter are:

1. SLD Server:

Configure the SLD server by selecting the Environment option from the XI Adapter screen. This will require an account with the SAP_SLD_ADMINISTRATOR role to log into the SLD server. This is the WM_XI_SVCACT account.

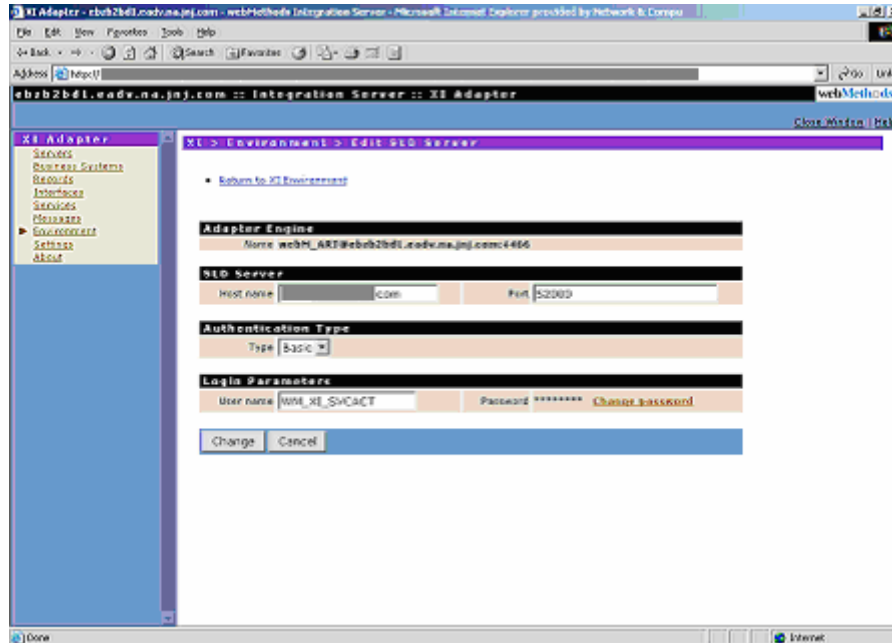


Figure 1a -Scenario1-wM Adapter Config

2. XI Server:

Configure the XI server by selecting the Servers option from the XI Adapter screen. This will require an account with the SAP_XI_IS_SERV_USER role to login into that particular XI server. This is the WM_XI_IS_USR account.

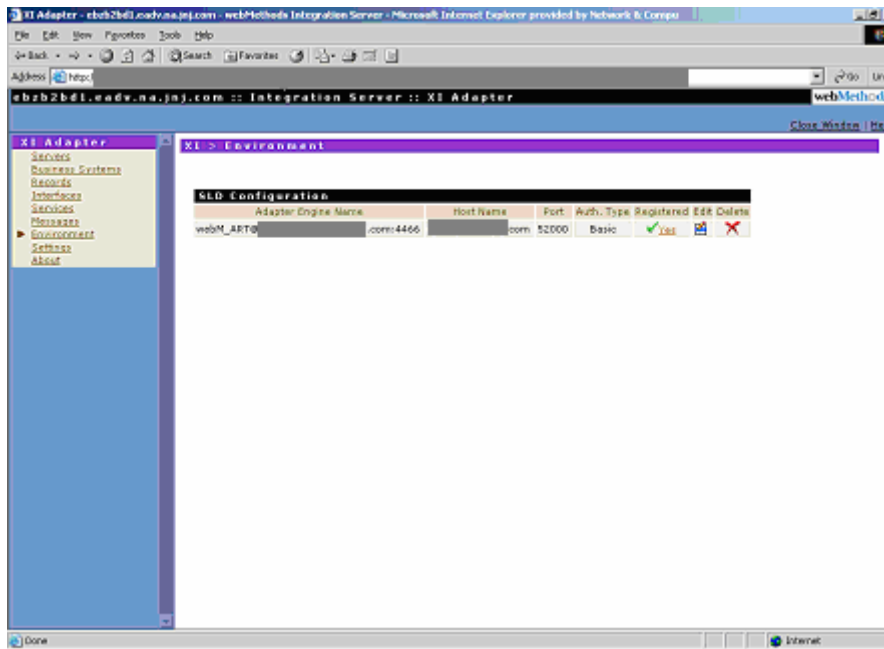


Figure 1b - Scenario1- wM Adapter Config

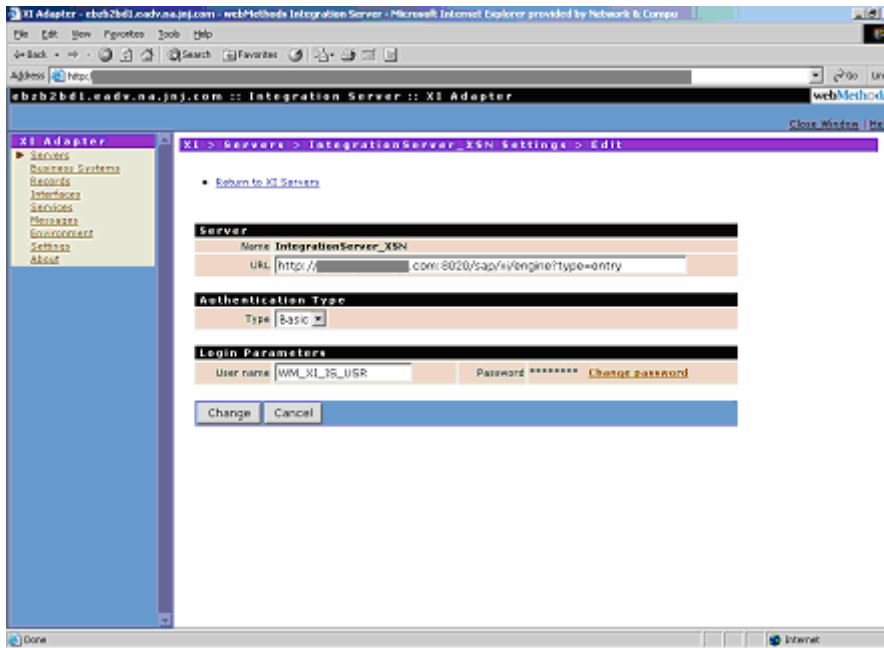


Figure 1c - Scenario1-wM Adapter Config

3. Business System:

Configure the Business System by selecting the Business Systems option from XI adapter Menu.

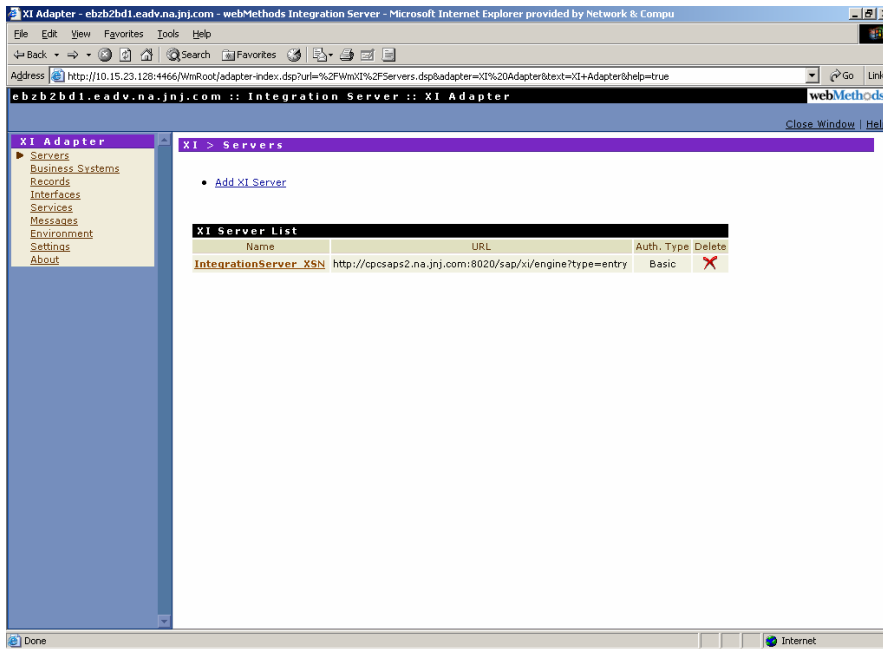


Figure 1d -Scenario1-wM Adapter Config

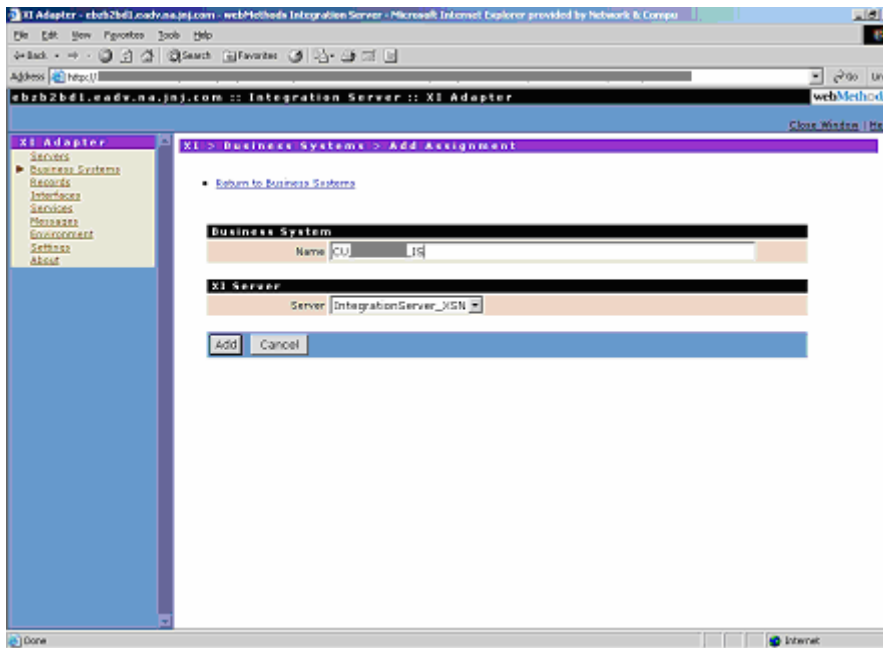
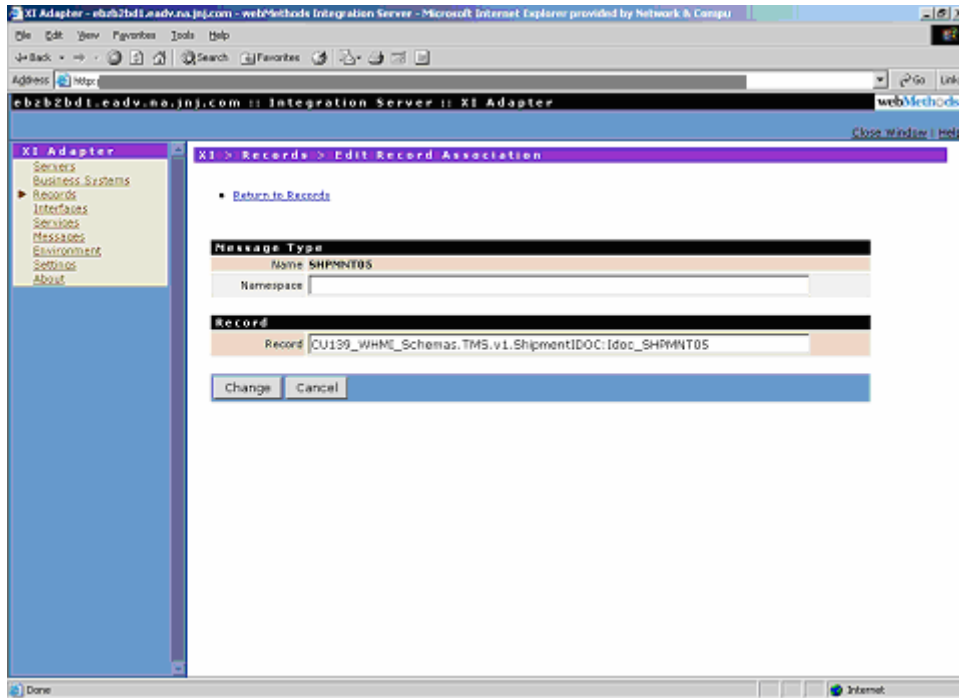


Figure 1e -Scenario1-wM Adapter Config

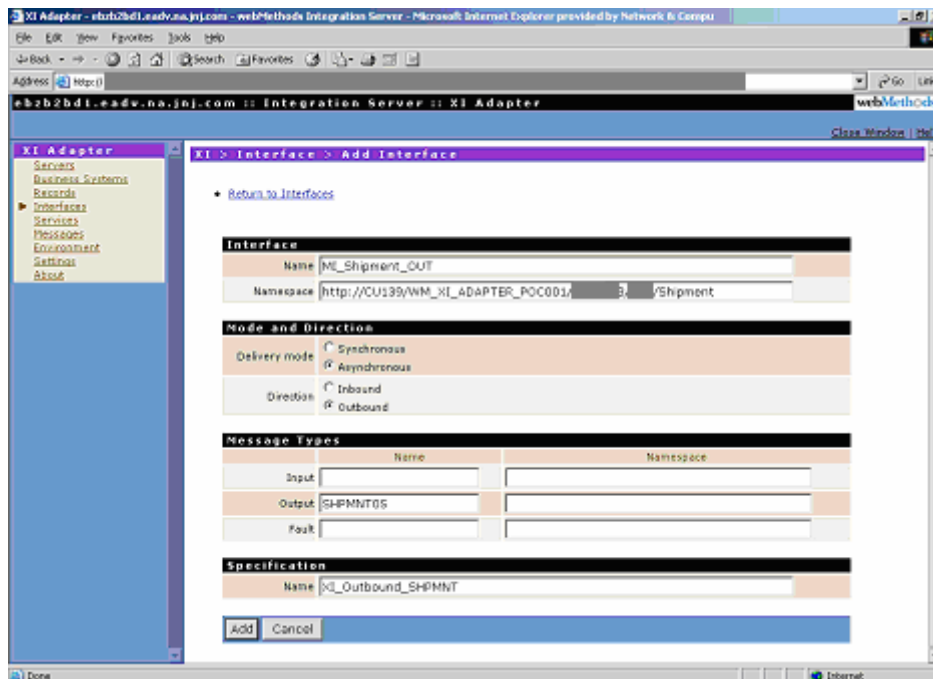
4. Records:

Configure Records by selecting the Records option from XI Adapter menu. Associate it with a document defined in IS.



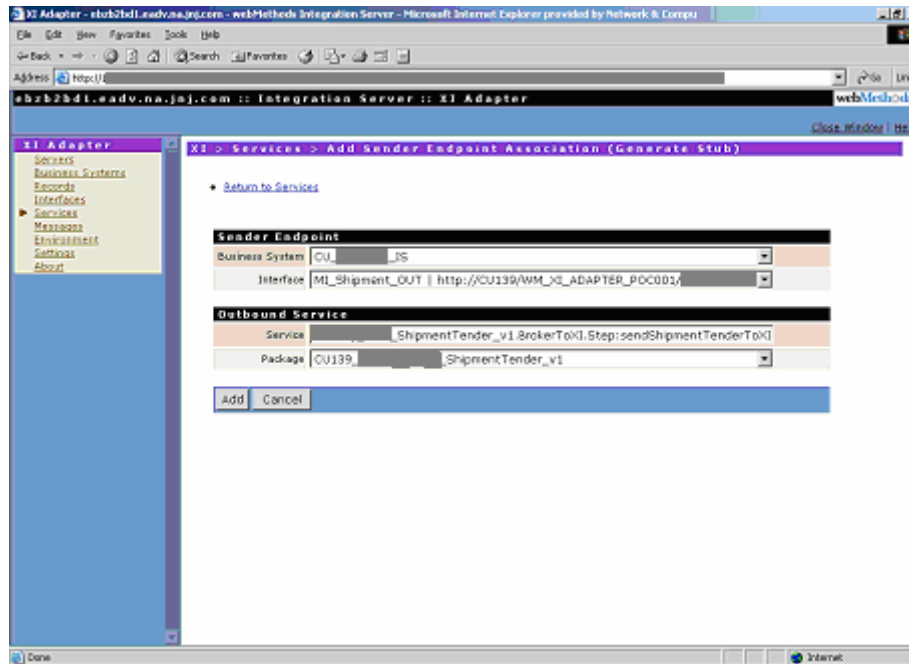
5. Interfaces:

Configure Interfaces by selecting the Interfaces option from XI Adapter menu. The Interface should be exactly defined as in SAP XI Server.

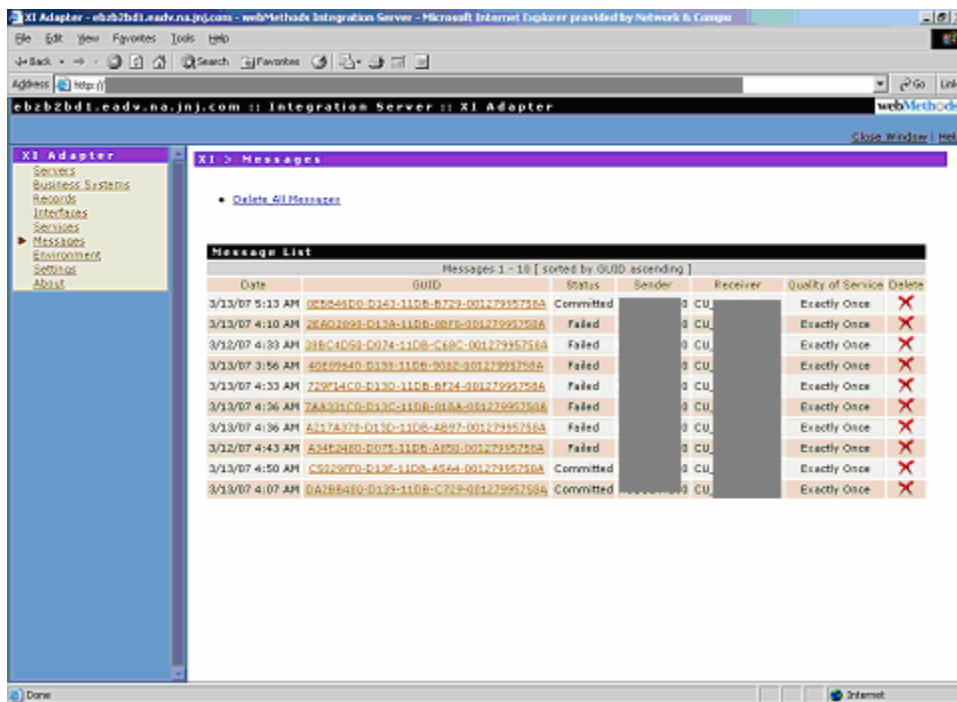


6. Services:

Configure Services by selecting the Services option from XI Adapter menu.



To view incoming and outgoing messages in the XI Adapter, click on the Messages option in XI Adapter screen.



8. To change the settings for incoming and outgoing messages, click on the Settings option.

Scenario1 Execution Details

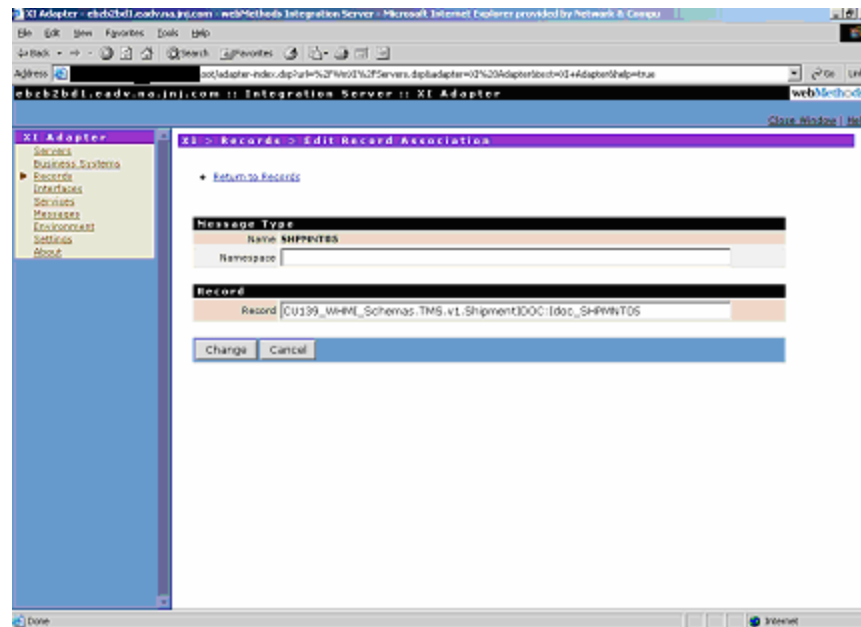
Scenario 1 (Inbound to SAP)

webMethods Flow Description

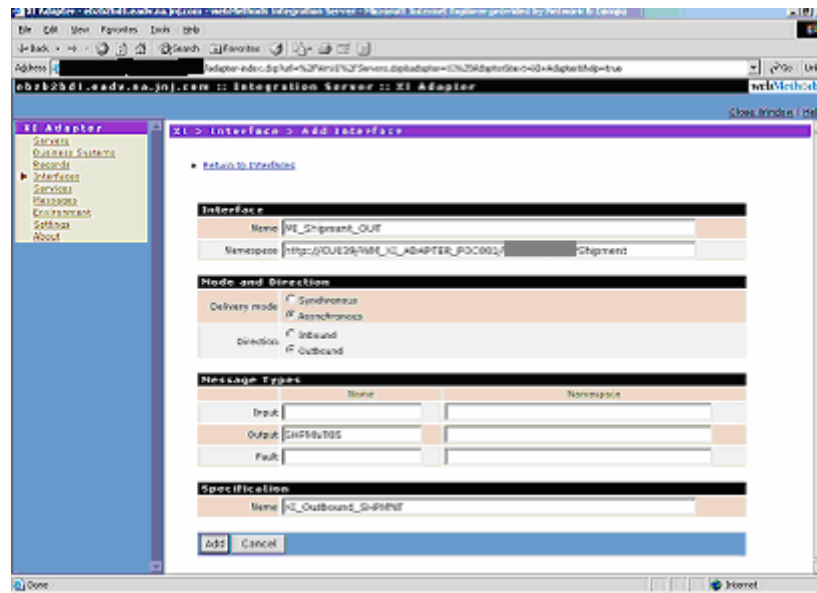
- A new package (CU139_Source_ShipmentTender_v1) is created to handle the outbound ShipmentTender from webMethods to SAP XI.
- A trigger, CU139_Source_ShipmentTender_v1.BrokerToXI.trigger: triggerSendShipmentTender will subscribe to the document published from the Broker. The document published is CU139_WHMI_Schemas.TMS.v1.ShipmentTender: ShipmentTender. The publish side code is already existing on the server in the package CU139_WHMI_ShipmentTender.
- After subscribing to the document , main service CU139_Source_ShipmentTender_v1.BrokerToXI.Main:updateXIwithShipmentTender is invoked.
- The main service calls the mapping service CU139_Source_ShipmentTender_v1.BrokerToXI.Step:mapShipmentTenderToIDOC which maps the ShipmentTender document to SHPMNT IDOC.
- The main service calls the P_Source_ShipmentTender_v1.BrokerToXI.Step:sendShipmentTenderToXI service which maps the IDOC to payload in pub.xi.Router:outboundMessageObject service and sends the payload to SAP XI server.

webMethods Adapter Configuration

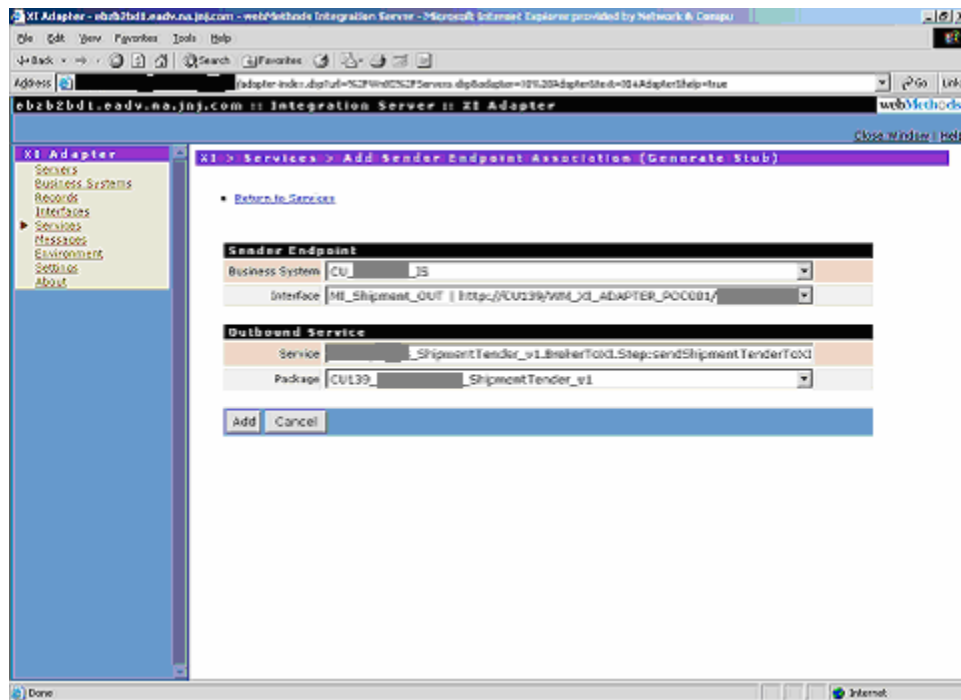
- Create a new record definition SHPMNT05 in the XI Adapter Records Menu. This record should refer to already existing Document on webMethods.



- Create an interface in XI Adapter. This interface should exactly match the one defined in SAP XI server.



- Create a service using the "Associate Sender Endpoint with Outbound Service(Generate Stub)" option



SAP XI Flow Description



Figure 1: Web Methods to ECC 6.0 via SAP XI

Processing Logic

- WebMethods pushes the required data in the specified Xml structure to SAP XI.
- Mapping is performed for converting the Legacy structure coming from WebMethods to the IDOC structure.
- The required IDOC is then triggered in ECC 6.0 System from SAP XI.

System Landscape Directory

System Landscape Directory configurations involve the creation of the following objects:

Product

Software Component

Third Party Technical System for webMethods System and Web As ABAP Technical System for ECC System.

Third Party Business System for webMethods System and Web As ABAP Business System for ECC System.

Integration Scenario

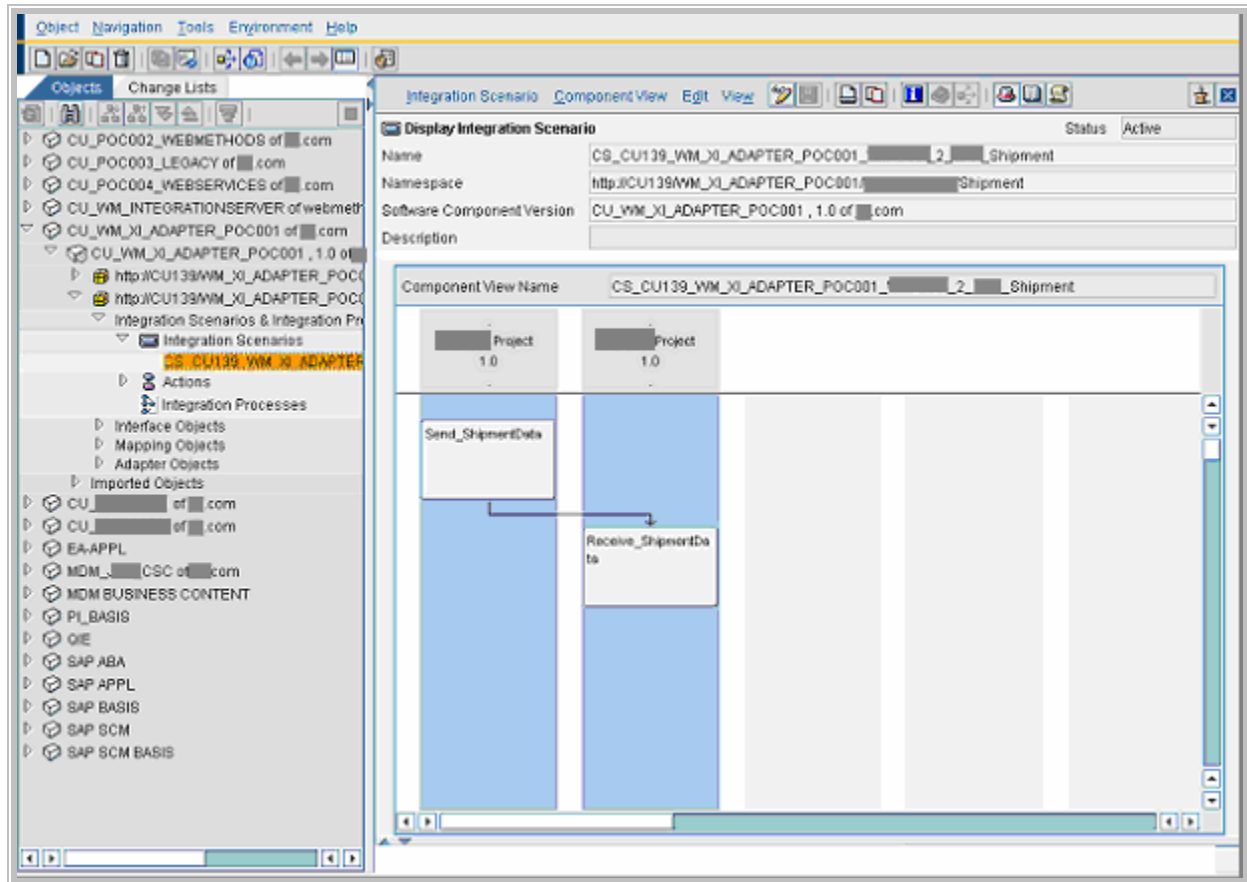


Figure 2: Integration Scenario CS_CU139_WM_XI_ADAPTER_POC001_WEBMETHODS_2_SAP_Shipment"

Integration Repository - Interface Objects:

The following Integration Objects are created:

Namespace

External Definition (*Representing the Legacy Structure*)

Message Interface (*Outbound, Asynchronous Interface representing the Legacy Structure*)

Message Mappings

Interface Mapping

Integration Directory – Adapter Configurations

Sender Adapter:

No Sender Adapter is required as the Messages are directly posted into the Integration Engine Pipeline of SAP XI by the webMethods XI Adapter.

Receiver Adapter:

A Receiver Idoc Adapter is configured in SAP XI to post the required SHPMNT IDoc in the ECC System.

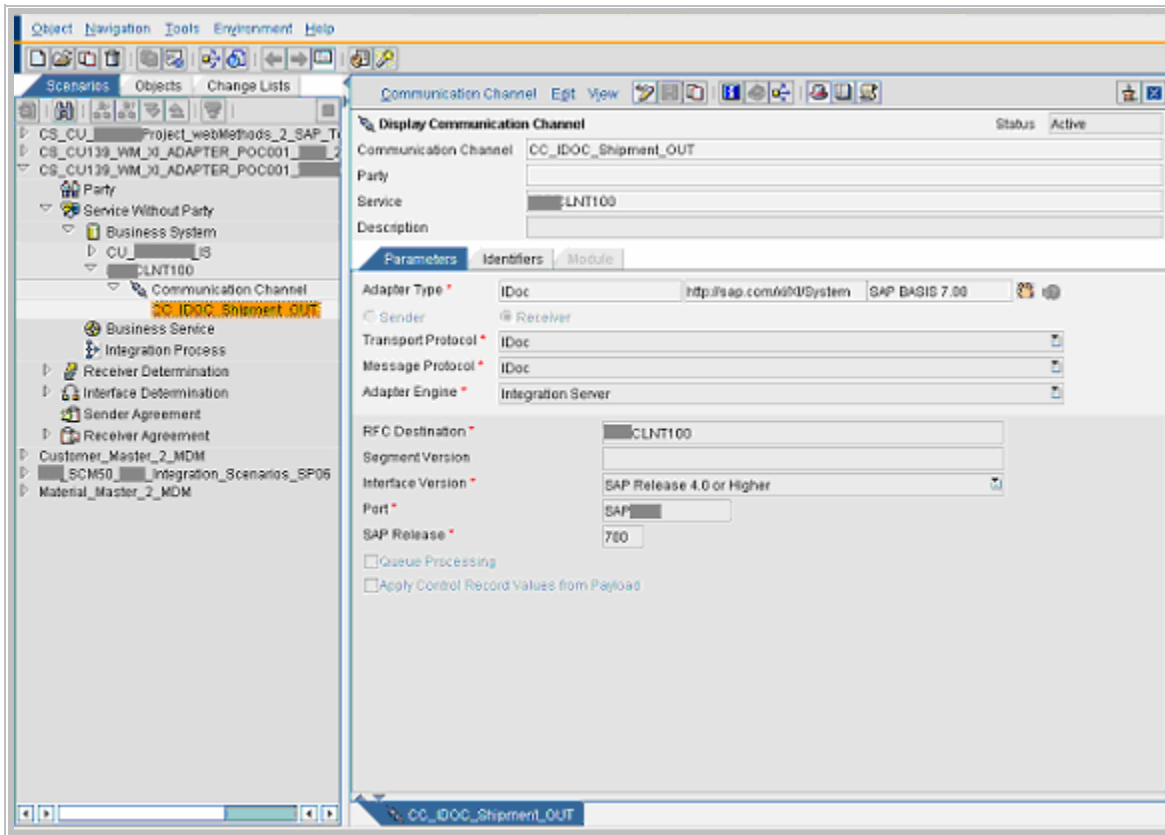


Figure 3: IDoc Receiver Service

Receiver Determination:

A receiver determination is used to specify to which receiver/s (ECC System) a message is to be sent. It also has the option of defining conditions for forwarding the message to the receiver/s.

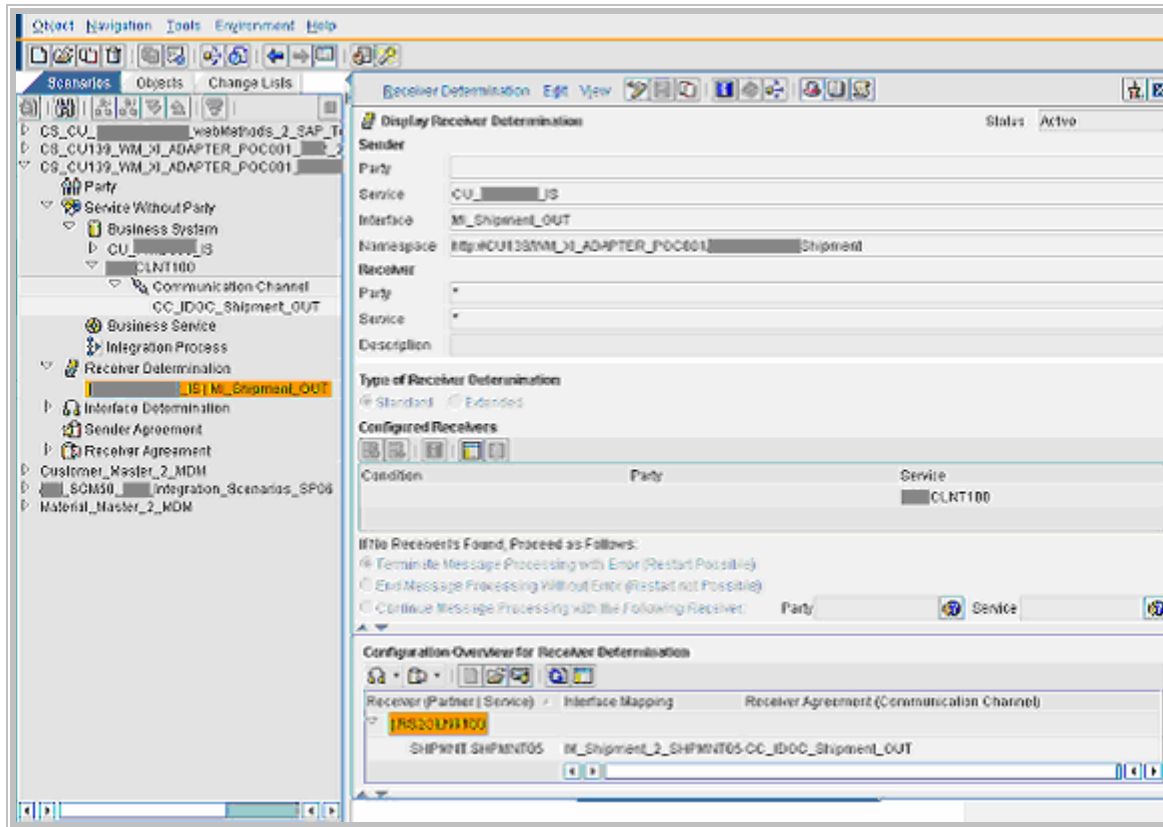


Figure 4: IDoc Receiver Determination

Test Procedure

Push the Data from webMethods in the required XML format to SAP XI.

The Data should be pushed with the correct Interface details for SAP XI to process it further.

The required Mapping is performed in SAP XI.

All the configurations required in SAP R/3 should be present to process the IDoc sent by SAP XI.

Scenario2 Execution Details

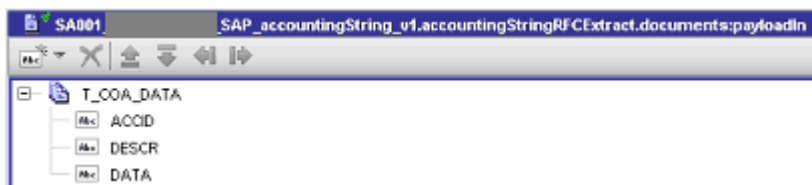
Scenario 2 (Outbound from SAP)

wM XI Adapter Installation

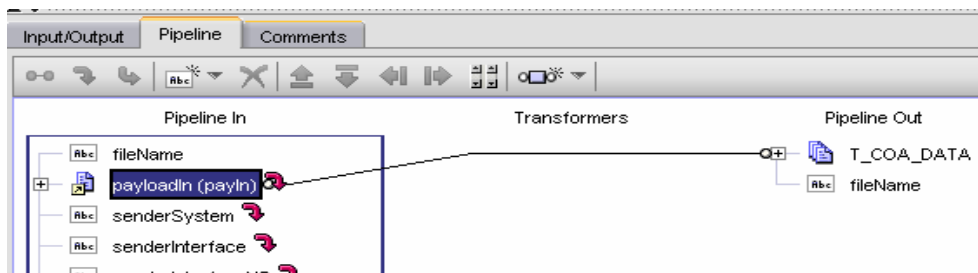
An already existing package SA001_TARGET_SAP_accountingString_v1 is being reused for this POC here. New document type conforming to the message published by SAPXI is added to this package.

Note: From SAP XI, the service to be called to send data to webMethods will always be `pub.xi.Router/inboundMessageObject` service.

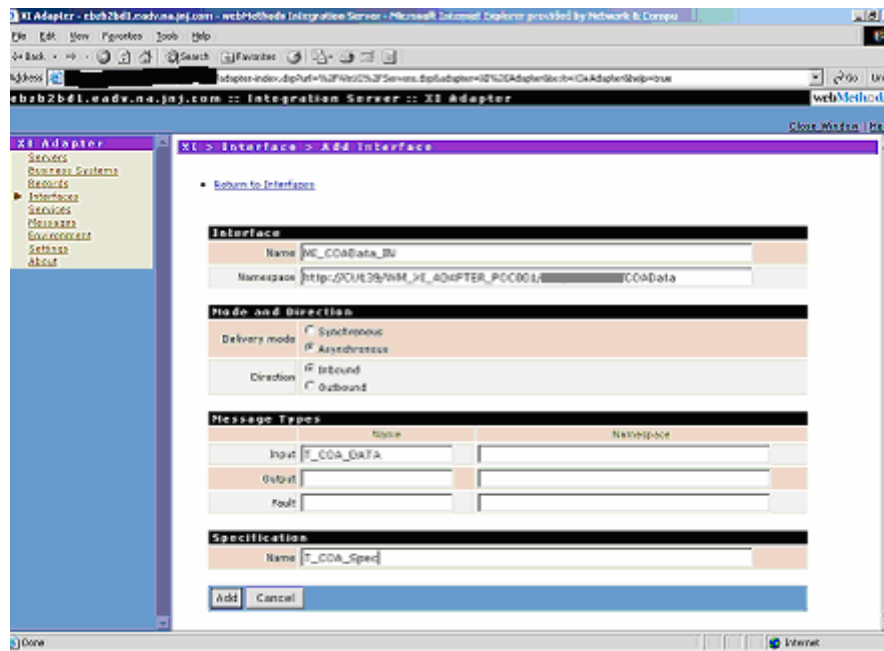
1. A new document payloadIn is created which contains the T_COA_DATA.



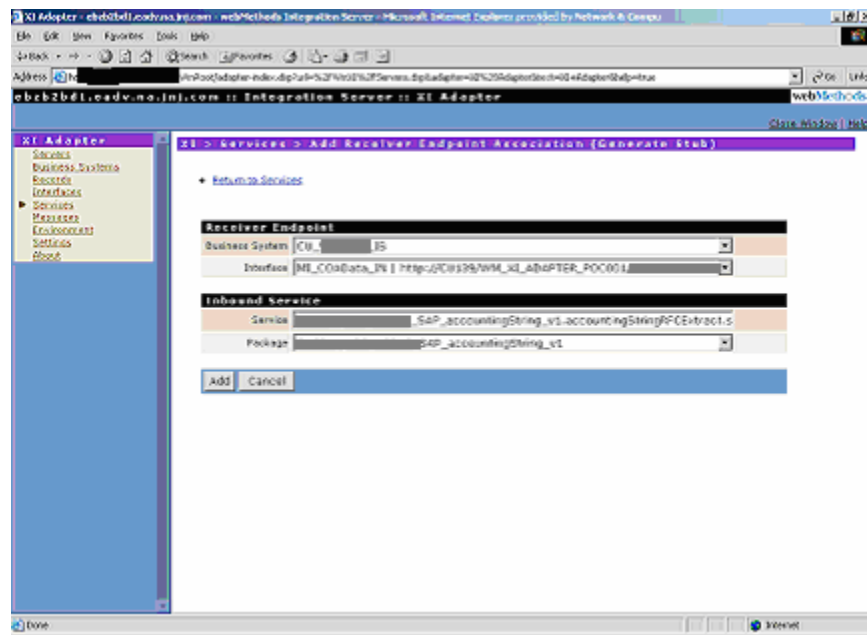
2. The `pub.xi.Router/inboundMessageObject` service, `SA001_TARGET_ASAPAC_SAP_accountingString_v1.accountingStringRFCExtract.services:receiveCOAData`, is modified which is created using the XI Adapter Services. In this service extract the T_COA_DATA from payloadIn is extracted.



3. After this `SA001_TARGET_ASAPAC_SAP_accountingString_v1.accountingStringRFCExtract.maps:mapAccountingStringUDM` service is called to map the T_COA_DATA values to SyncAccountingString UDM
4. Publish the SyncAccountingStringUDM to Broker.



- Create a service using the "Associate Receiver Endpoint with Inbound Service(Generate Stub)" option



SAP XI Flow Description

Process Flow Diagram



Figure 1: ECC 6.0 to Web Methods via SAP XI

Processing Logic

- A batch program is run in the ECC 6.0 System that makes the required BAPI Call and pushes the data into SAP XI.
- Mapping is performed for converting the RFC structure coming from ECC 6.0 System to the Legacy structure provided from web Methods.
- The required data is then passed in the required XML format to the web Methods System from SAP XI.
- web Methods System in turn passes the data to the Target System in the required format.

System Landscape Directory

System Landscape Directory configurations involve the creation of the following objects:

Product

Software Component

Third Party Technical System for webMethods System and Web As ABAP Technical System for ECC System.

Third Party Business System for webMethods System and Web As ABAP Business System for ECC System.

Integration Scenario

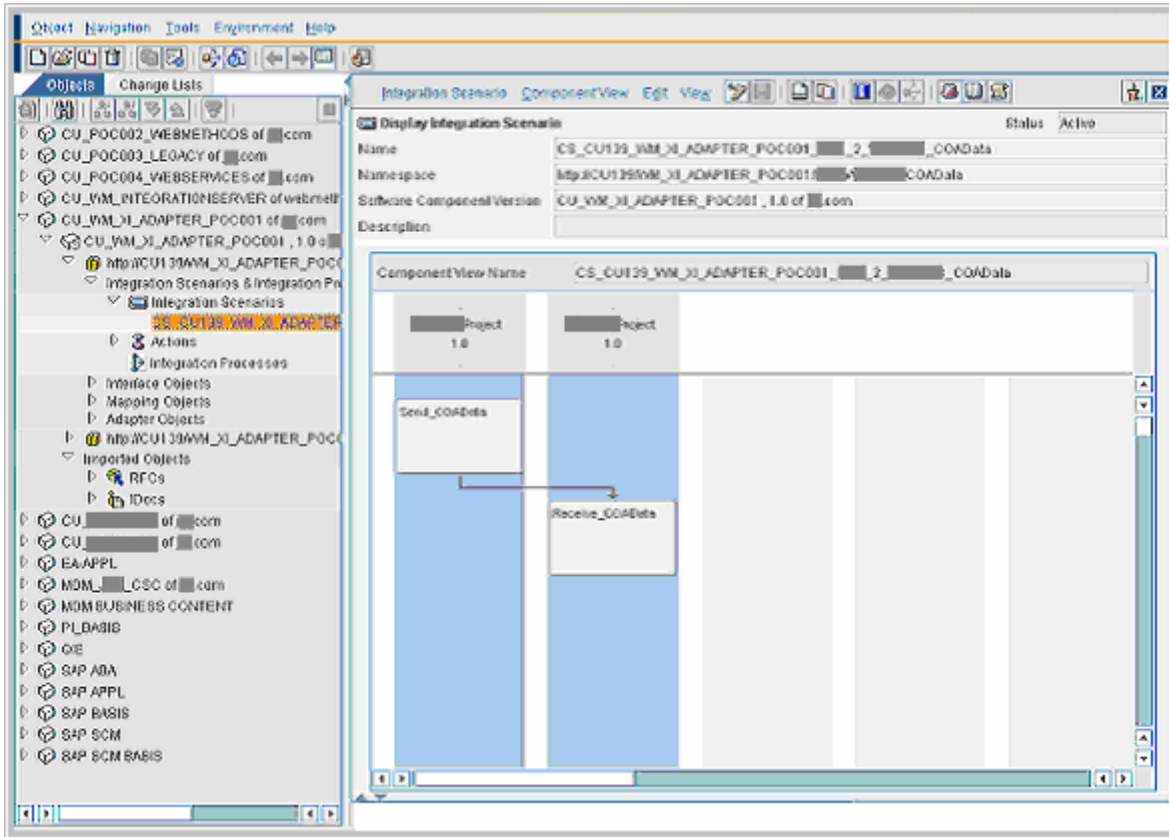


Figure 2: Integration Scenario "CS_CU139_WM_XI_ADAPTER_POC001_SAP_2_WEBMETHODS_COADData"

Integration Repository - Interface Objects:

The following Integration Objects are created:

Namespace

External Definition (*Representing the Legacy Structure*)

Message Interface (*Inbound, Asynchronous Interface representing the Legacy Structure*)

Message Mappings

Interface Mapping

Integration Directory – Adapter Configurations

Sender Adapter:

A Sender RFC Adapter is configured in SAP XI to Pass the RFC Request (COA Data) message from the ECC System to SAP XI.

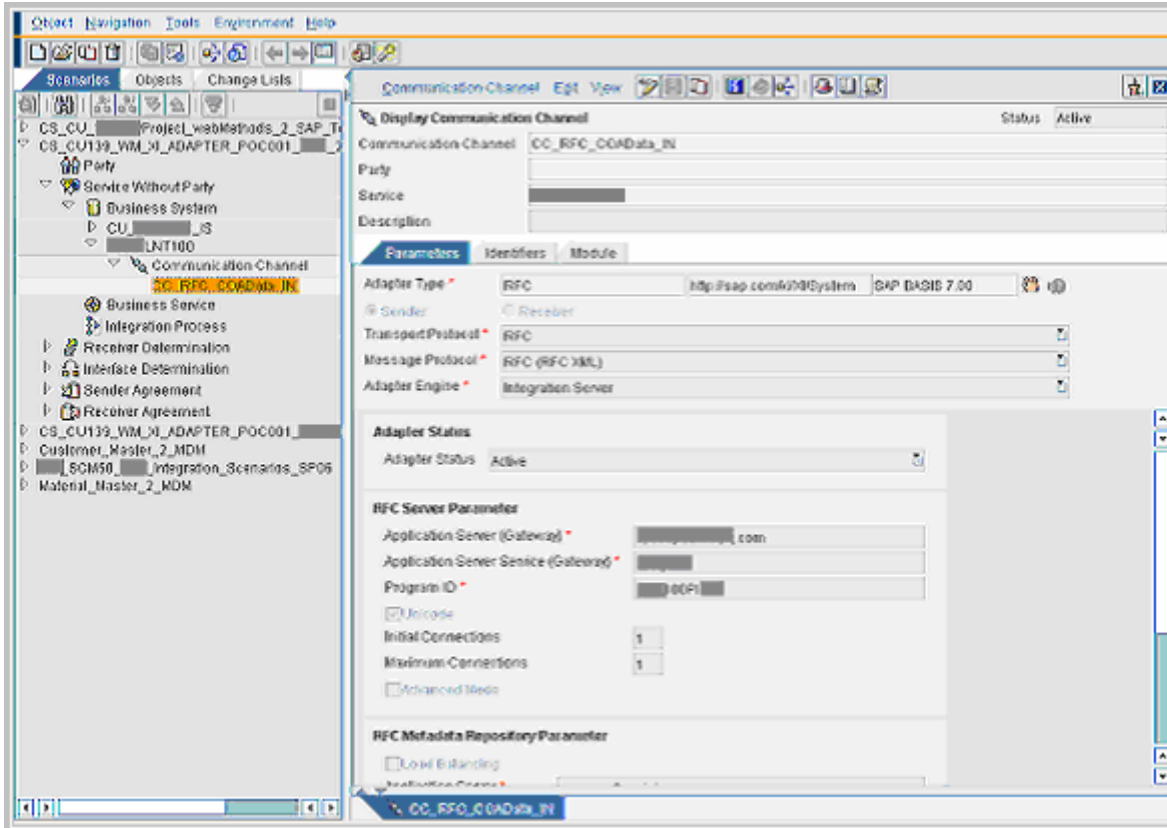


Figure 3(a): RFC Sender Service

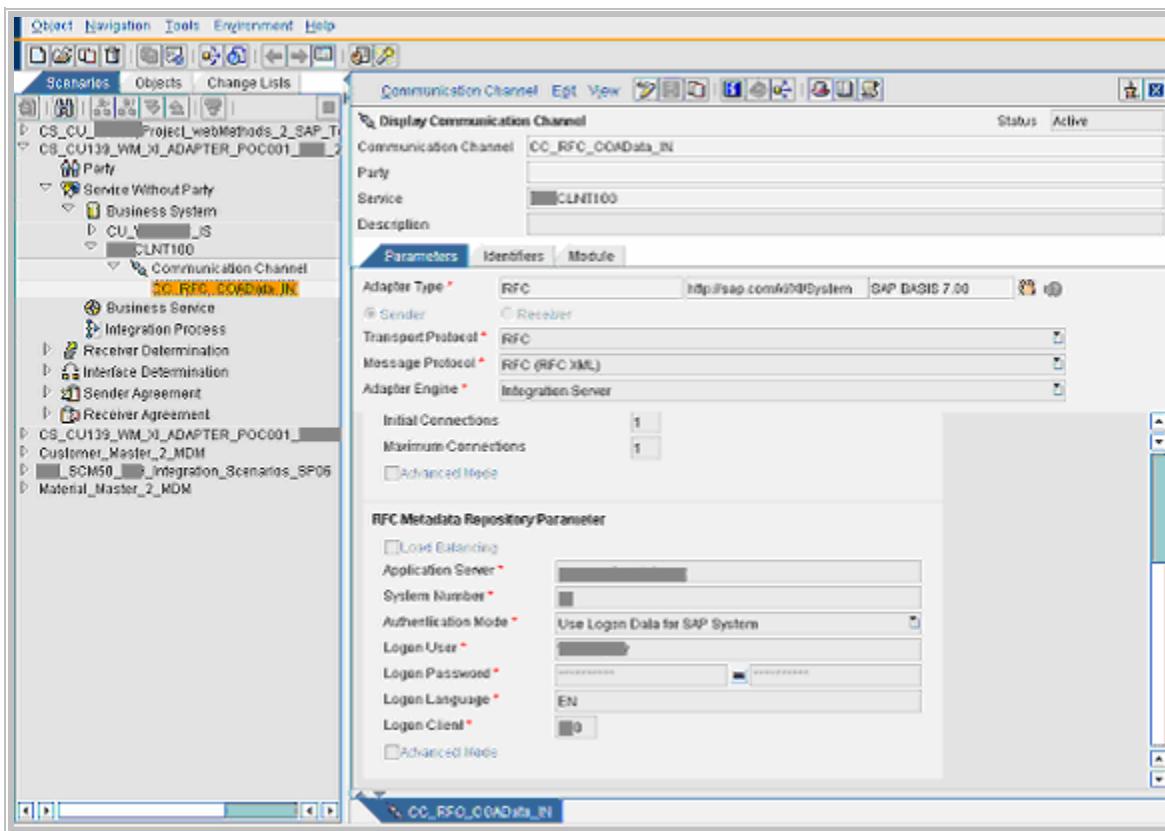


Figure 3(b): RFC Sender Service

Receiver Adapter:

A Receiver XI Adapter is configured in SAP XI to pass the COA DATA (RFC Request) coming from the ECC System to SAP XI, to the webMethods XI Adapter pipeline.

The receiver communication channel is created under the Business System CU_WEBMETHODS_IS.

The path for any outbound Interface from SAP XI to webMethods will be “/invoke/pub.xi.Router/inboundMessageObject” and the user Name provided in the Authentication Data must be a part of the XI User Group in webMethods.

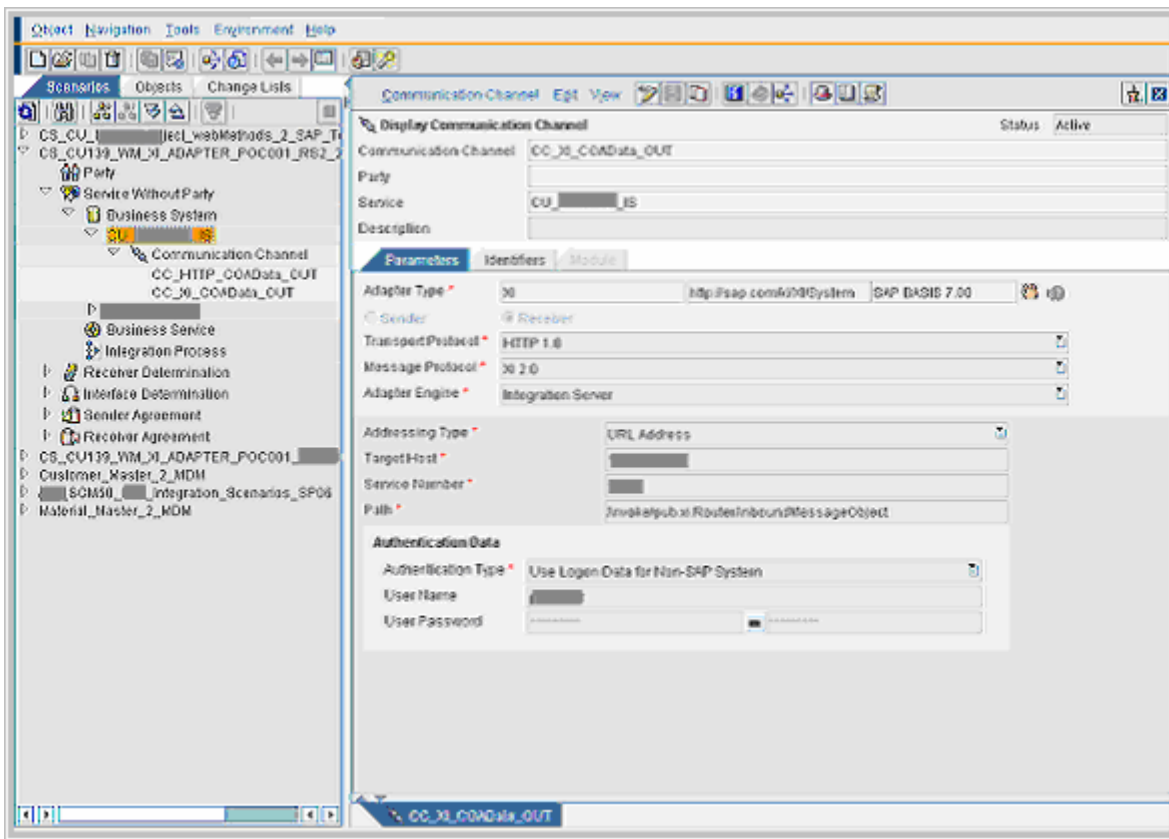


Figure 4: XI Receiver Service

Receiver Determination

A receiver determination is used to specify to which receiver/s (webMethods System) a message is to be sent. It also has the option of defining conditions for forwarding the message to the receiver/s.

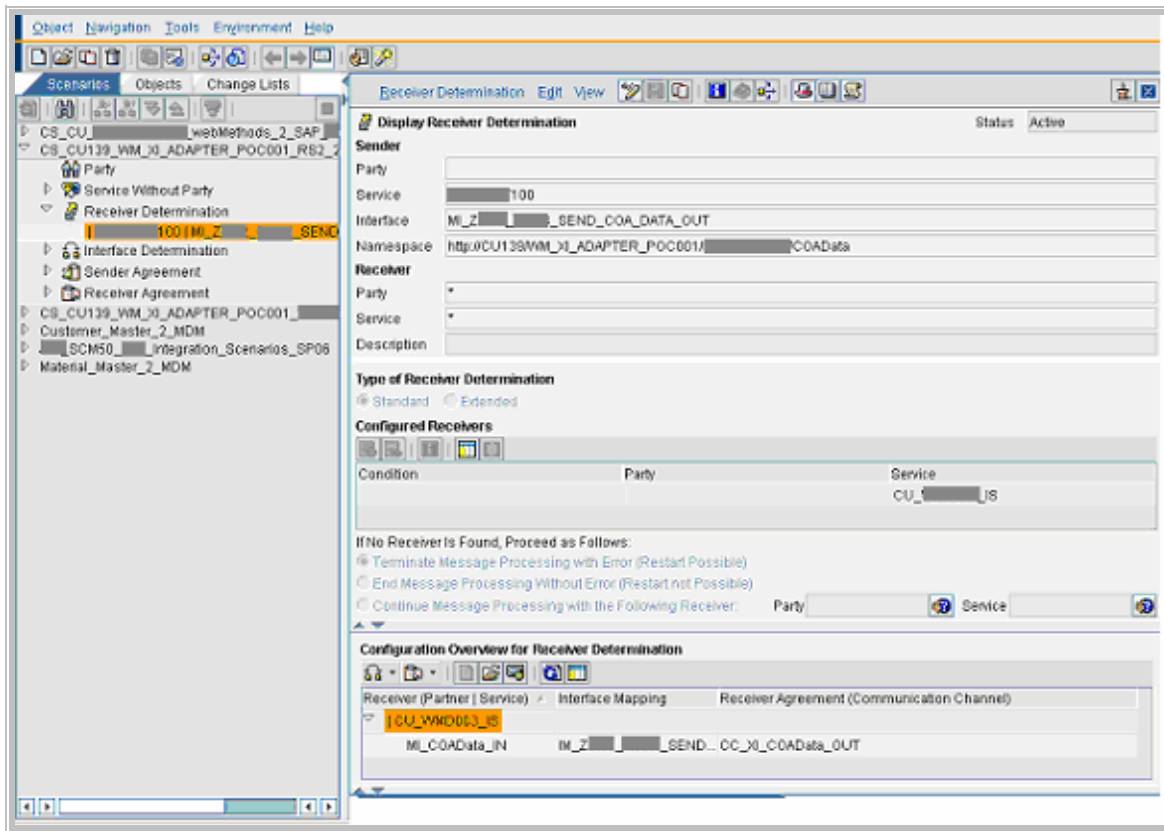


Figure 5: Receiver Determination

Test Procedure

A batch program makes the required BAPI Call and pushes the data into SAP XI in the required XML format. Mapping is performed for converting the RFC structure coming from ECC 6.0 System to the Legacy structure provided from web Methods.

The required data is then passed in the required XML format to the web Methods System from SAP XI. webMethods System in turn passes the data to the Target System in the required format.

Related Content

[SAP XI - webMethods Integration – Challenges and Migration Strategies](#)

[webMethods for SAP - Beyond SAP Business Connector 4.7](#)

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