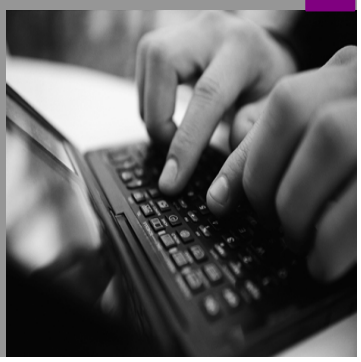


How-to Guide
SAP NetWeaver '04

How to… Push Data into BW from XI

Version 1.15 – December 2004

Applicable Releases:
SAP NetWeaver '04
(SAP BW 3.5, SAP XI 3.0)

1 Business Scenario

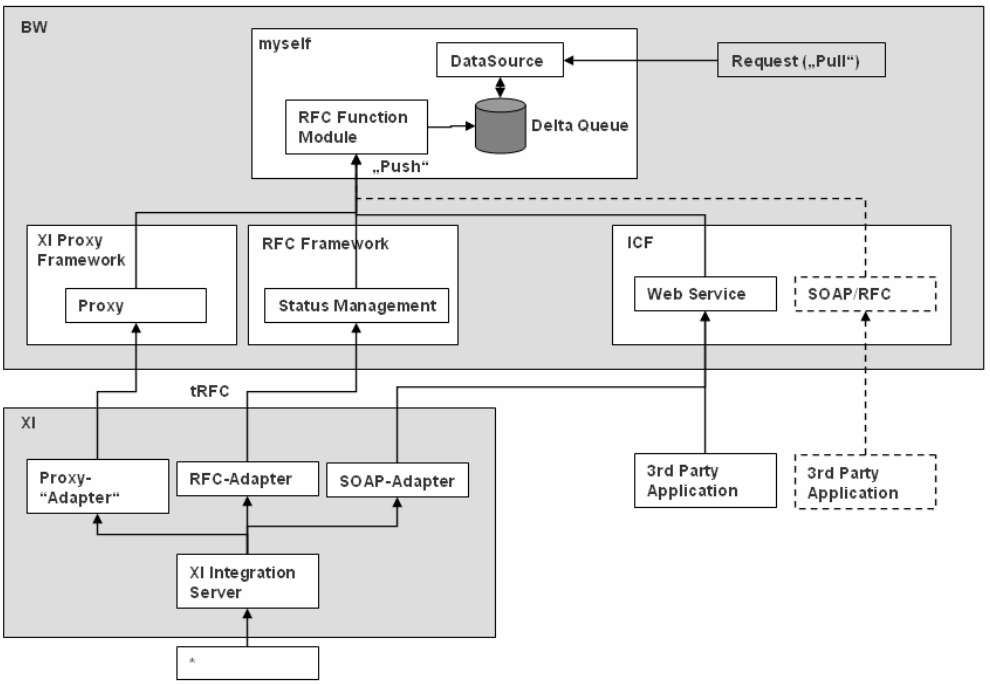
This document describes how to send data from XI to BW with full Quality of Service (Exactly Once In Order). The solution is based on BW 3.5 and XI 3.0 which are both part of SAP NetWeaver '04.

2 Introduction

Since the BW release 3.0B data can be transferred to the BW via "Push" into the BW Delta Queue. From there it is requested with the same mechanisms that are used for the extraction from R/3 source systems.

However, the Web Service and the generic SOAP/RFC Service do not support "Exactly Once" transfer of data as no transaction ID is handled in the framework. Therefore data might be transferred several times which is not valid for all delta options that can be used in BW.

The following picture shows different options of the data flow.



XI 3.0 provides a variety of ways to access data from different sources. There are adapters to connect files, databases, messaging systems, Web Services. With R/3 systems (3.1h and higher), IDoc and RFC can be used.

The standard communication channel for SAP systems is the ABAP Proxy which is available for Web AS 6.20 and higher.

The Proxy communication supports the full Quality of Service ("Exactly Once In Order") between XI and BW which other adapters do not:

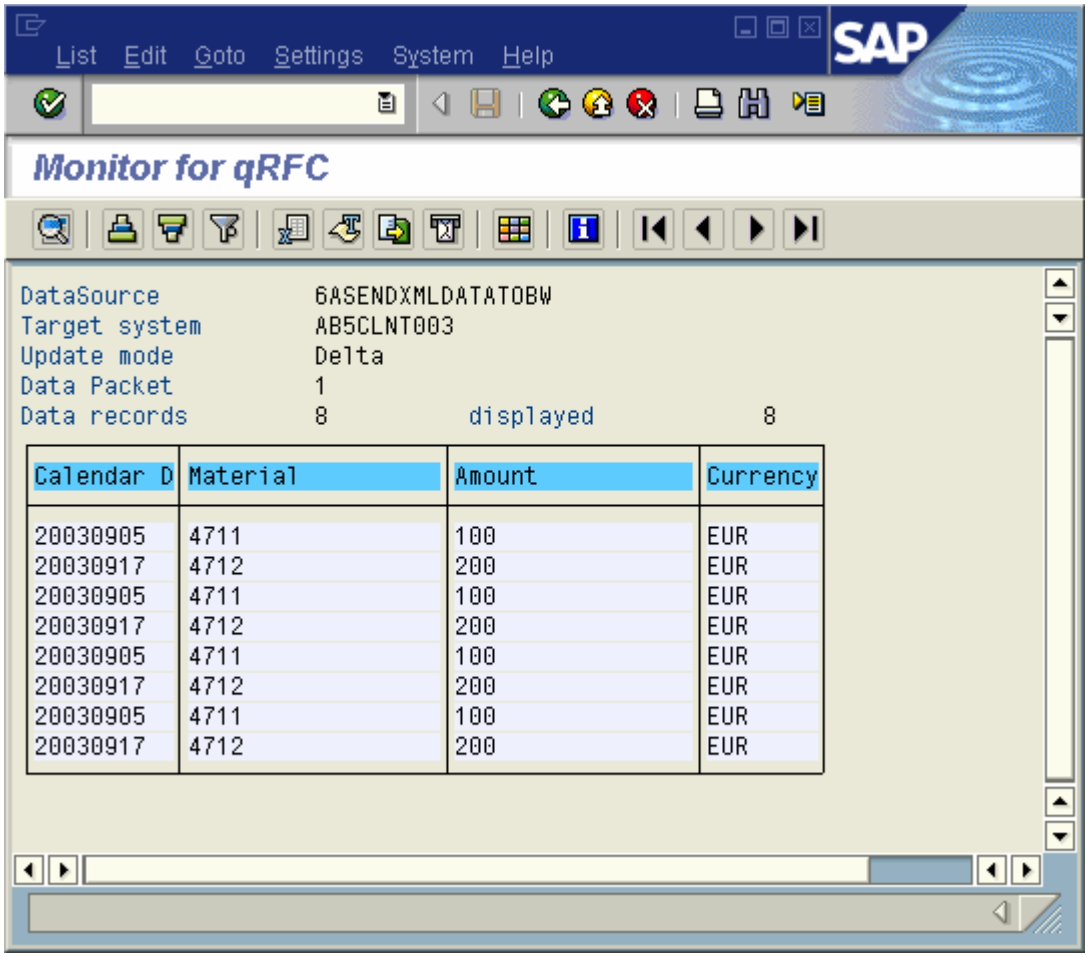
- The RFC-Adapter does not support "In Order" but only "Exactly Once" (so-called tRFC)
- The SOAP-Adapter supports "In Order", i.e. the order of the messages of the sender is kept during the processing. However "Exactly Once" cannot be implemented in this scenario in conjunction with the receiver (see above).

Hence, SAP recommends to use the ABAP Proxy communication. Only the ABAP Proxy implementation is described in this paper.

Further information and the prerequisites to enable the full Quality of Service are described in note 717162.

3 The Result

The XML data is stored in the delta queue of the BW myself system (transaction RSA7 in the BW) and, consequently, integrated into the BW staging process.



4 The Step By Step Solution

4.1 Remarks and Prerequisites in the BW system

1.	Remarks	The proposed solution is based on the SOAP DataSource which is a feature since BW 30B. The usage is described in a different How-To Paper "Send XML Data to BW" which you find under http://service.sap.com/~sapidb/011000358700011142902001E/HOWTOSENDXMLDATATOBW.DOC .
2.	Prerequisites	The BW is integrated to the XI landscape. If this is not yet the case, follow the configuration guide of XI which you find here: SAP Service Marketplace (http://service.sap.com/instguides) Hint: As only the proxy communication is used, there is no configuration of IDOC or RFC communication necessary.
3.	Perform the steps 1 to 20 ("…create a new InfoPackage …") from the BW 3.0 How-To Guide "Send XML Data to BW"	Results: 1: A DataSource in the myself system has been generated Name: 6ASENDXMLDATATOBW (in general: 6A<File-DataSource>) 2: You find an RFC-enabled function module which will be used to perform the inbound processing of data like explained in the following steps. Name: /BI0/QI6ASENDXMLDATATOBW_RFC (in general: /BI0/QI<datasource>_RFC)

4.2 Tasks in the Integration Builder (XI) and BW Proxy Framework

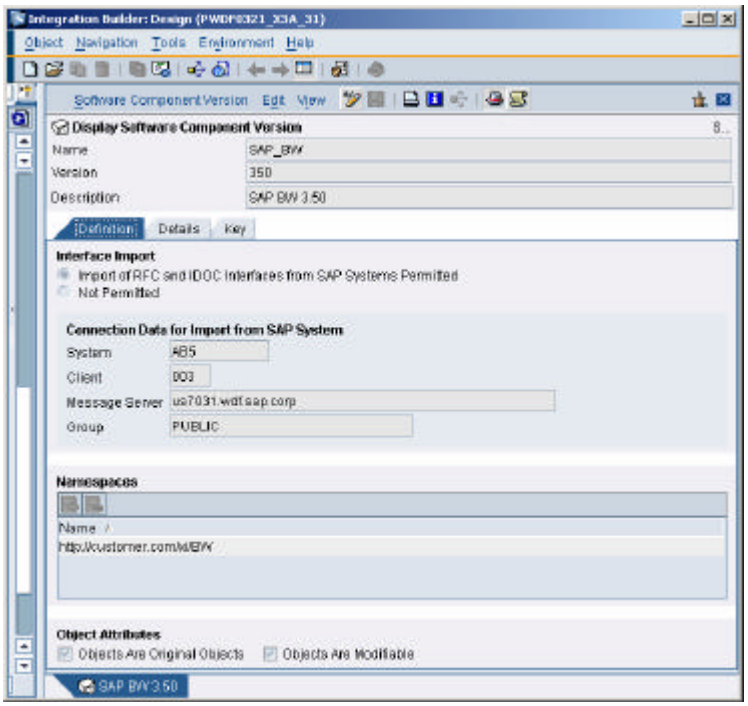
Repository and Proxy Framework

4. Open the Repository (Design) of the XI Integration Builder. You may start the application by executing transaction SXMB_IFR in the BW system. (Further information can be found in the XI documentation -> Design and Configuration Time -> Design).)

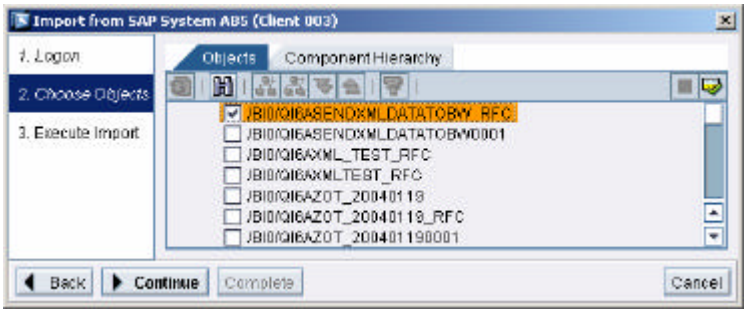
   Choose your Software Component in the tree and open it with double-click: here we use: XITestComponent

   Enter the system data of the BW system that you want to connect.

   Note: If any problems occur when executing the Integration Builder check the client software installation (follow note 580351)



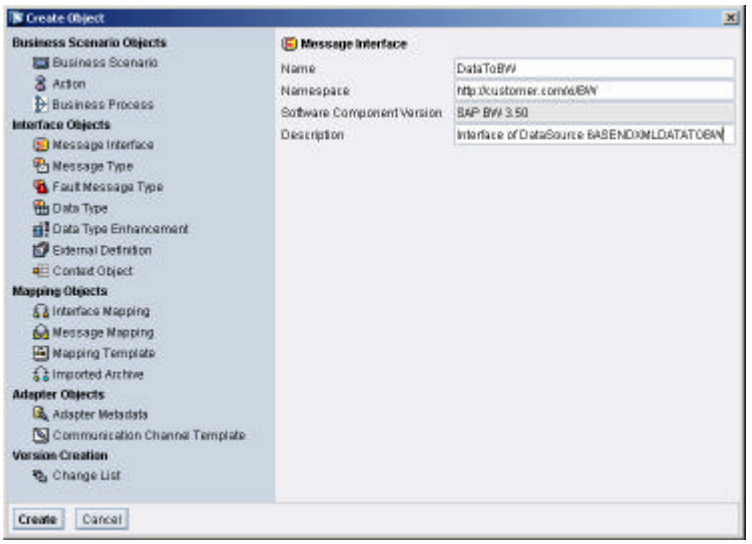
5. Choose “Import RFC/IDOC” in the context menu of “Imported Objects” and enter your user data to logon to the BW system.
   Select the function module /BI0/QI6ASENDXMLDATATOBW_RFC
   Press “Continue”
   Press “Start”



6. Select your namespace, here: “http://customer.com/xi/BW” is used

   Choose “Interface Objects” and then “Message Interface”
   Create a Message Interface there by choosing “New” from the context menu

   Press “Create”

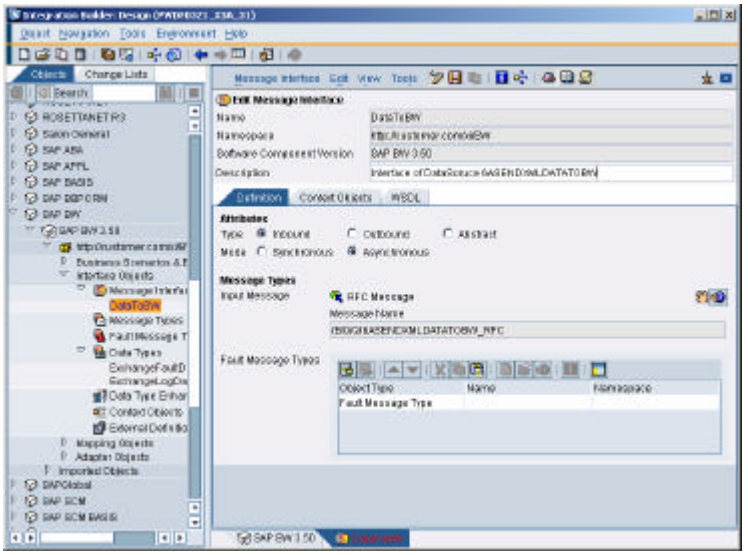


7. Choose the settings like this:

   Direction: Inbound

   Mode: Asynchronous

   Select the imported RFC Message and by executing the value help /BI0/QI6ASENDXMLDATATOBW_RFC for Input Message Name

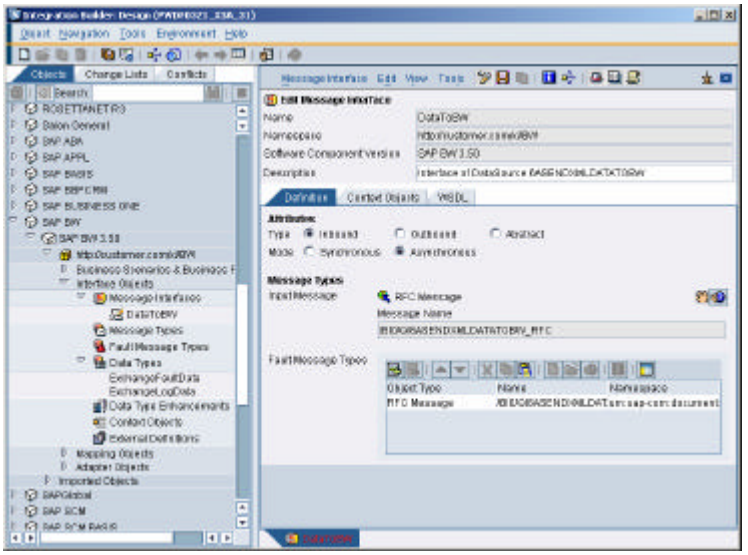


8. Select the Fault Message:

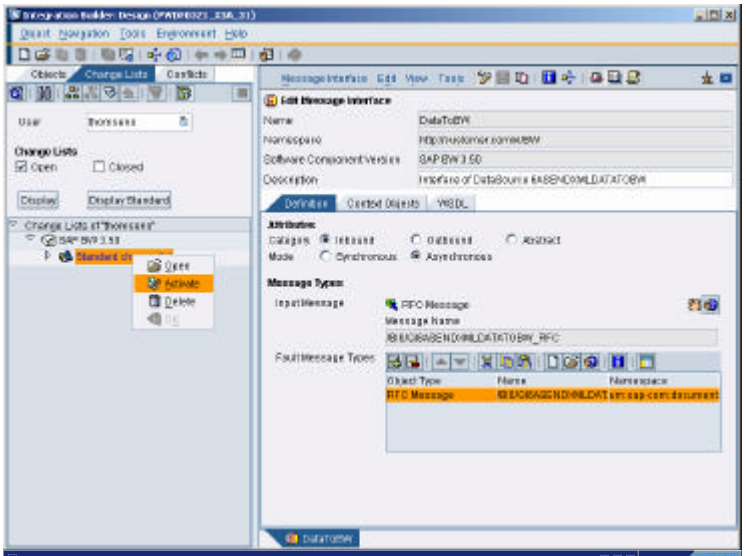
   Object Type: “RFC Message”

   Choose the Name via value help, here: “/BI0/QI6ASENDXMLDATATOBW_RFC.Exception” in the namespace “urn:sap-com:document:sap:rfc:functions”

   Save the Message Interface.



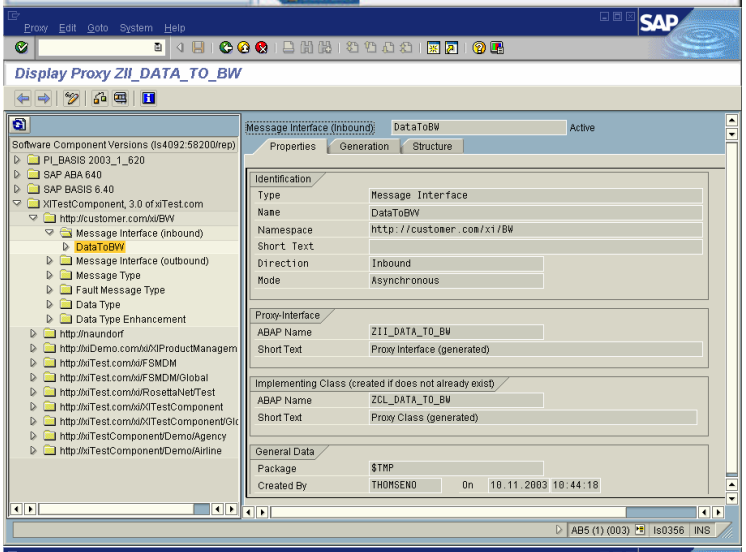
9. Activate the Change List
which you find on the Tab “Changelist”



10. Create the proxy in the BW system:
Start transaction SPROXY and Refresh the tree
Double-click on the Message Interface “DataToBW” in your Software Component in your namespace (here: “http://customer.com/xi/BW”)

Choose a package (e.g. $tmp)
Choose a prefix (we use “Z” here)

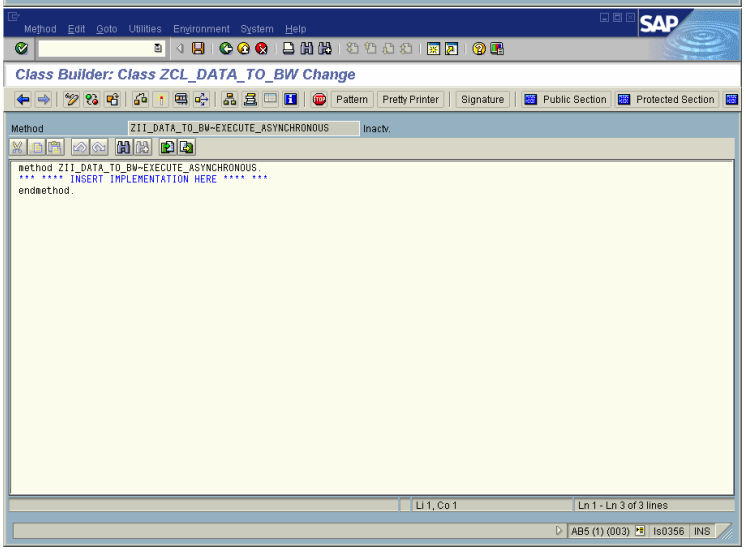
Activate the Proxy



11. Navigate to the implementing class ZCL_DATA_TO_BW by double clicking

Navigate to the method “EXECUTE_ASYNCHRONOUS” by double-clicking.

Choose the change mode.



12. Insert the implementation of the method based on this sample coding and change the highlighted elements.
You find a sample in the ZIP-file "coding_01.zip" attached to note 717162.

l_t_data: tables parameter for data transfer to the function module (can be looked up the type in the tables parameter of the function module)
l_s_data: structure with the same structure as l_t_data.
Enter the name of the function module to the one you use (here: '/BI0/QI6ASENDXMLDATATOBW_RFC')
Enter the literal for the parameter "datasource" which is here: '6ASENDXMLDATATOBW' – Doing so value of the element "datasource " may be omitted in the payload of the XML data (Note: the element still has to occur in the payload!).
Enter the name of the exception class which can be found in the signature of the method (Press the button "Hide/show signature" to make the signature visible). Here it is zcx___bi0__qi6asendxmldatatobw.

```
METHOD zii_data_to_bw~execute_asynchronous.
  DATA: l_text TYPE string,
        l_s_data TYPE zoxab50111,
        l_t_data TYPE TABLE OF zoxab50111.
  FIELD-SYMBOLS <l_line> LIKE LINE OF input-data-
item.

  LOOP AT input-data-item ASSIGNING <l_line>.
    MOVE-CORRESPONDING <l_line> TO l_s_data.
    APPEND l_s_data TO l_t_data.
  ENDLOOP.

  CALL FUNCTION '/BI0/QI6ASENDXMLDATATOBW_RFC'
    EXPORTING
      datasource = '6ASENDXMLDATATOBW'
    TABLES
      data       = l_t_data
    EXCEPTIONS
      OTHERS     = 1.
  IF sy-subrc NE 0.
    MESSAGE ID sy-msgid TYPE sy-msgty NUMBER sy-
msgno WITH sy-msgv1 sy-msgv2 sy-msgv3 sy-msgv4 INTO
l_text.
    RAISE EXCEPTION TYPE
zcx___bi0__qi6asendxmldatatobw
          EXPORTING text = l_text.
  ENDIF.
ENDMETHOD.
```

13. Save and activate the method and all class and interface components

14. Result

The BW is now ready to receive data from the Integration Server via the Proxy Framework and the implemented Proxy. Data which is running through XI may now be transferred to the BW system according to routings and mappings that still have to be created.

Verification Szenario

XI Configuration

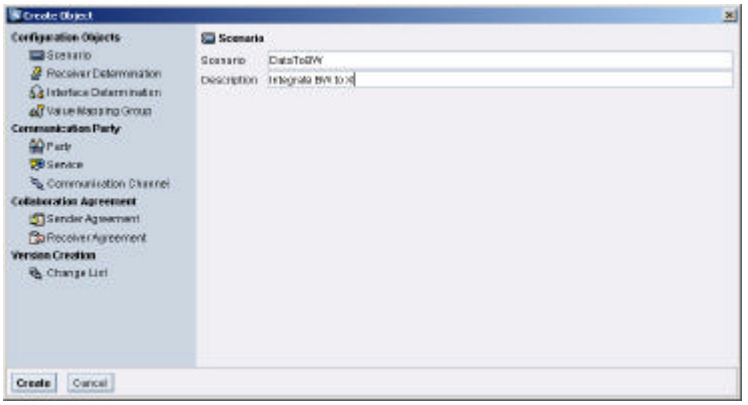
15. Open the Directory (Configuration):
    Execute transaction SXMB_IFR (in the BW or XI system) and select “Directory” under SAP Integration Builder

16. Select the tab “Scenarios” and choose “New” from the context menu

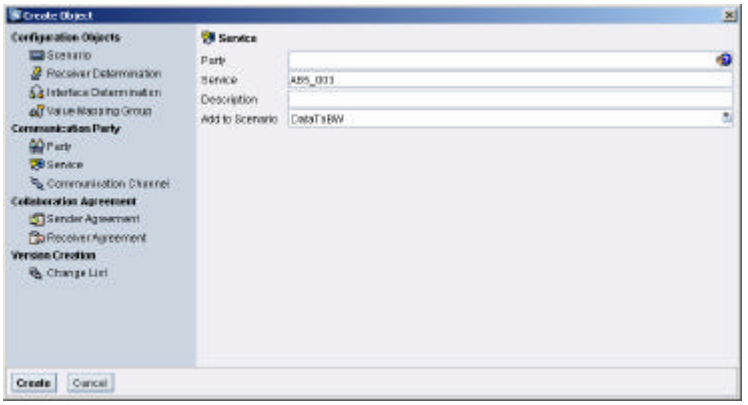
    Enter “DataToBW” and a description

    Press Create

    Save the Scenario

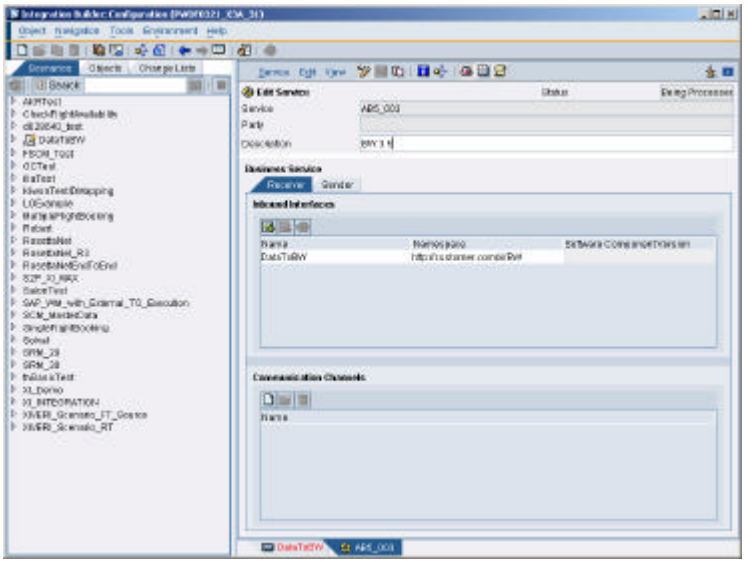


17. Press “Create New Object” under Collaboration Profile Objects (tab Scenario Objects)
    Choose Service and enter the name of your BW system (Business System which is maintained in the System Landscape Directory)
    Here the BW system is: AB5_003
    Press “Create”



18. Add the inbound interface “DataToBW” in the namespace you use (here: “http://customer.com/xi/BW”) on the tab Receiver

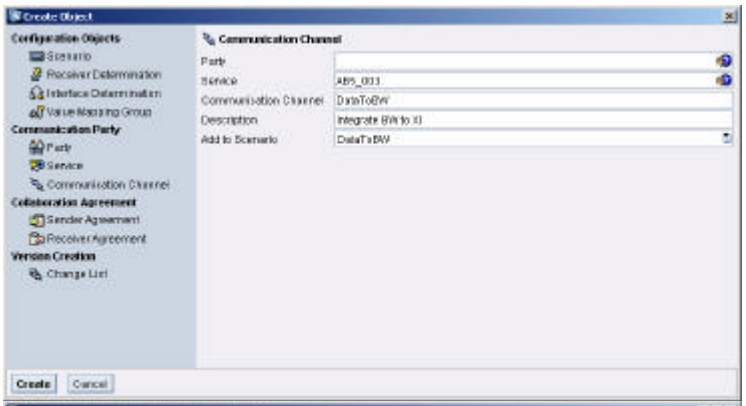
    Press Save



19. Create a communication channel for the BW system
Press “Create New Object” which you find under “Communication Channels” of the Service

Enter the name “DataToBW” and a description

Press “Create”

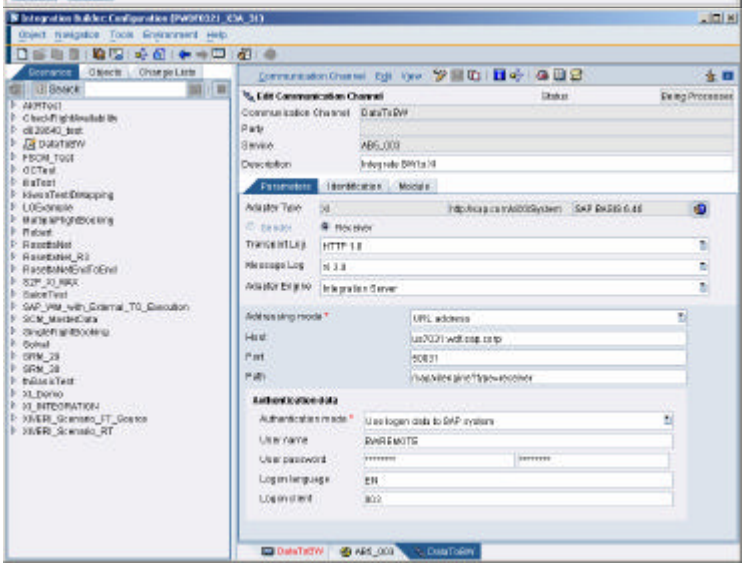


20. Maintain the communication data (Further information and explanations can be found in the XI documentation.):

Enter (or choose respectively)
Adapter type: XI
Message Log: XI 3.0
Adressing Mode: URL address
Host and Port (or Service Number resp.) of the BW system which can be obtained using transaction SMICM, the Path which is usually “/sap/xi/engine?type=receiver”

Add the Authentication data

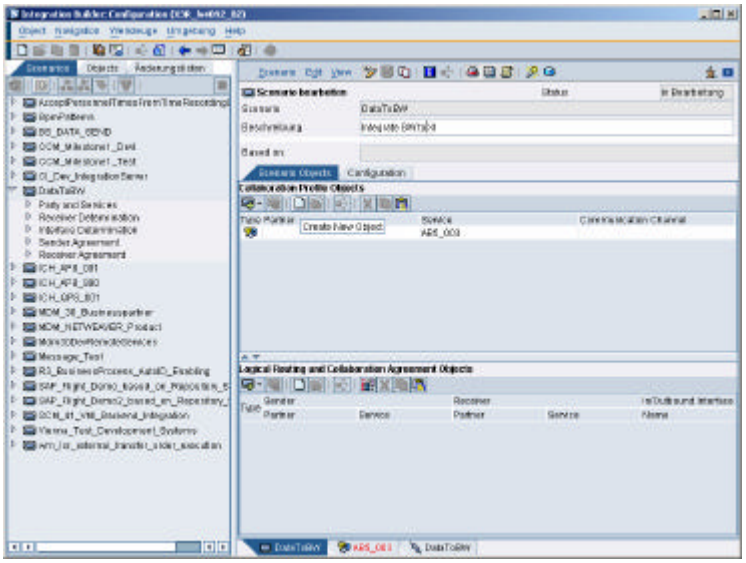
Save the Communication Channel



21. Create a “virtual” sender for which is used later in the verification

Press “Create New Object” on the Scenario object under Collaboration Profile Objects (tab Scenario Objects)

Select: “Service”

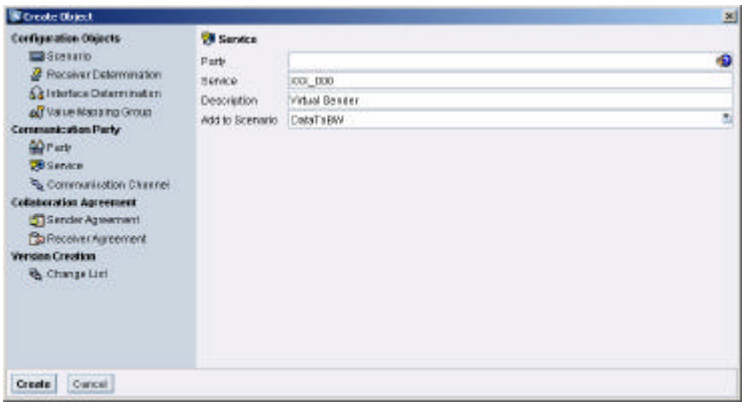


22. Specify the Service name and add a description

    Here: “XXX_000”

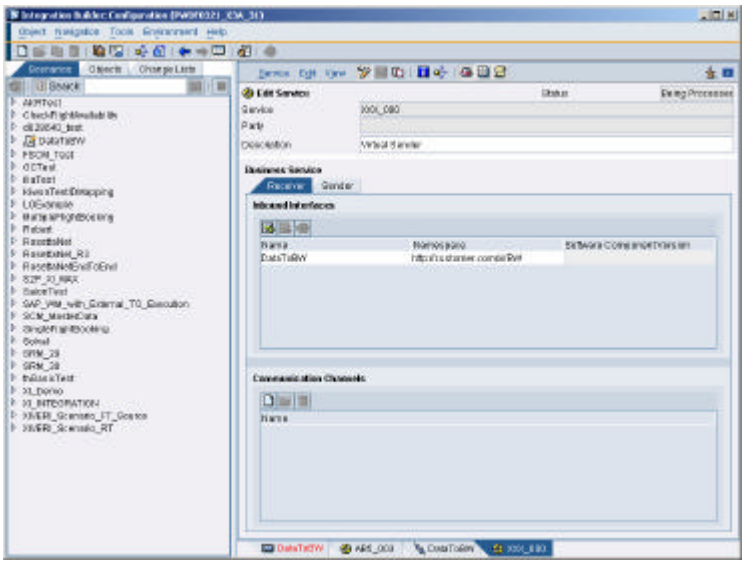
    Press “Create”

    Save the service



23. Add the outbound interface “DataToBW” in your namespace (here: “http://customer.com/xi/BW”) on the tab “Sender”

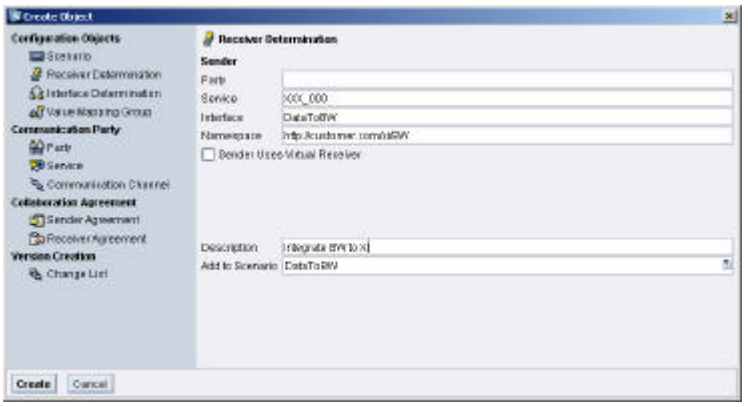
    There is no “Communication Channel” required



24. Create the “Receiver Determination” from the Scenario Tab (under “Logical Routing and Collaboration Agreement Objects”)

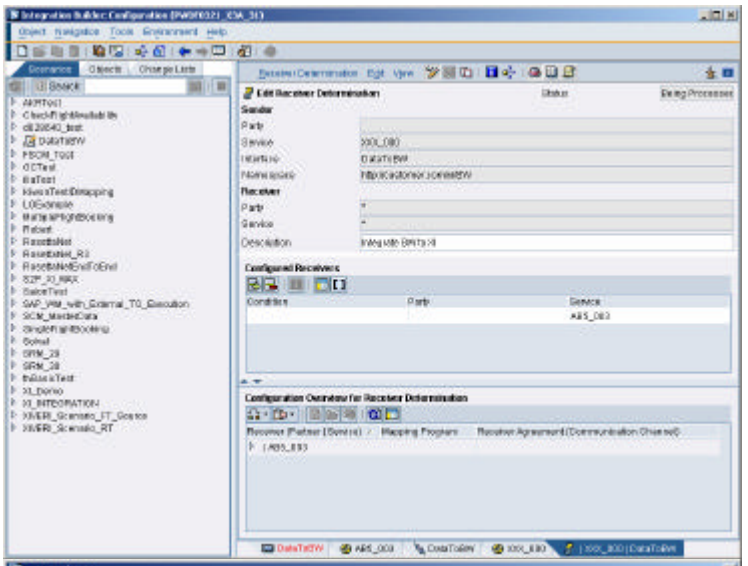
    Enter the Sender, Interface and Namespace and add a description

    Press “Create”



25. Enter the BW system under “Configured Receivers”, here AB5_003

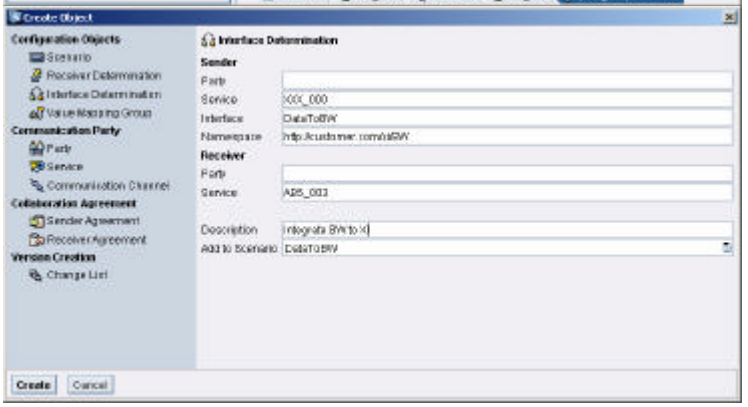
    Press “Save”



26. Create an ”Interface Determination” from the Scenario Tab

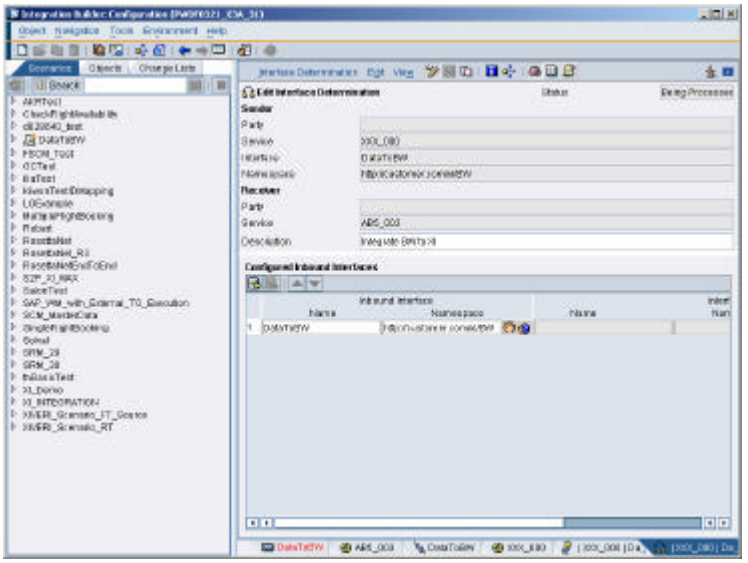
    Enter the sender service, the interface the namespace and the receiver system

    Press “Create” and save



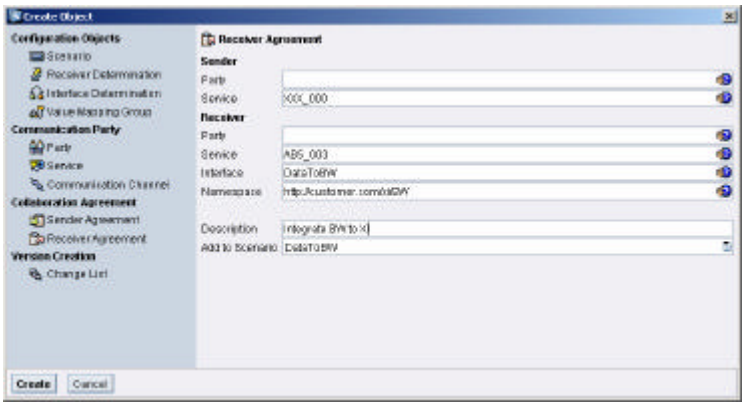
27. Enter the Interface name under “Configured Inbound Interfaces”

    Press Save



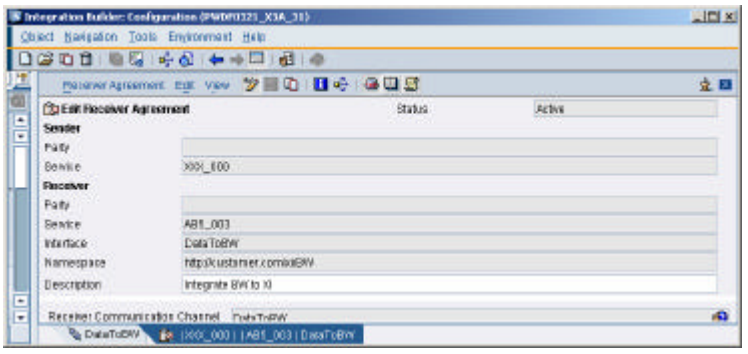
28. Create a “Receiver Agreement” from the Scenario Tab

    Enter the Sender Service, the Receiver Service, the interface, the namespace and add a description



29. Choose the Receiver Communication Channel, here: “DataToBW”

    Save the Receiver Agreement



30. Activate your Change list

    Hint: You may check the Scenario element on the Scenario Tab by executing “Check Scenario” in the menu “Scenario”.

Result: Messages can now been sent from the system XXX_000 via the XI system to the BW system

Runtime: Send Data and transfer it to the BW

31. In order to verify the processing of the messages we will use the native http adapter of the integration server and send an XML file to the integration server. (It is the fastest and easiest way to verify the load with the http adapter.)

32. Activate the plain http adapter (/sap/xi/adapter_plain) on your XI Integration Server in transaction SICF if not yet active

33. Save the following source code of a verification program to your PC (e.g. to the file name sender.htm). You find a sample in the ZIP-file “coding_01.zip” attached to note 717162.

```
<html>
<head>
<title>Send XML Data to BW System</title>
<script language="javascript">
<!--

function SendData() {

var mypath = document.myform.filename.value;
var myescns = escape(document.myform.mynamespace.value);
```

Remark:
You may also use a different client written in Java or VBA if available.

Note: This coding is for demonstration purposes only. It is not meant to be a delivered SAP product. Therefore SAP cannot give any OSS support concerning problems that might occur when using it.

```
var mycall = 'http://'
+ document.myform.myhost.value  + ':'
+ document.myform.myport.value +
'/sap/xi/adapter_plain?bs='
+ document.myform.mysystem.value + '&namespace='
+ myescns + '&interface='
+ document.myform.myinterface.value + '&qos='
+ document.myform.myqos.value;

var xmlstream = new ActiveXObject("ADODB.Stream");
xmlstream.Mode = 3; // 1=read  3=read/write
xmlstream.Open();
xmlstream.Type = 1; // 1=adTypeBinary  2=adTypeText
xmlstream.LoadFromFile(mypath);
var xmlhttp = new ActiveXObject("Microsoft.XMLHTTP");
xmlhttp.Open("POST",mycall,false);
xmlhttp.setRequestHeader("Content-
Length",xmlstream.Size);
xmlhttp.setRequestHeader("Content-Type","text/xml");
xmlhttp.send(xmlstream.Read(xmlstream.Size));
XICall.innerText = mycall;
XIAnswer.innerHTML = xmlhttp.responseText;
}

//-->
</script>
</head>

<body>
<form name="myform">
<p>Path to file: </p>
<input type="file" name="filename" size=50 maxlength=80
value="c:\temp\demo.xml">
<p>XI adapter parameters: </p>
<table border=0>
<tr><td>hostname:</td><td>
<input type="text" name="myhost" size=50 maxlength=100
value="PWDF0321.wdf.sap.corp"><br/></td></tr>
<tr><td>port:</td><td>
<input type="text" name="myport" size=50 maxlength=100
value="50031"><br/></td></tr>
<tr><td>own business system:</td><td>
<input type="text" name="mysystem" size=50 maxlength=100
value="XXX_000"><br/></td></tr>
<tr><td>namespace:</td><td>
<input type="text" name="mynamespace" size=50
maxlength=100
value="http://customer.com/xi/BW"><br/></td></tr>
<tr><td>interface:</td><td>
<input type="text" name="myinterface" size=50
maxlength=100
value="DataToBW"><br/></td></tr>
<tr><td>quality of service (EO/BE):</td><td>
<input type="text" name="myqos" size=50 maxlength=10
value="EO"><br/></td></tr></table>
<input type="button" value="Send Records" onclick="return
SendData()">
<p>XI call:</p>
<div id=XICall></div>
<p>Answer:</p>
<div id=XIAnswer></div>
</form>
</body>
</html>
```

34. Save the following xml data to a file on your PC (e.g. to the filename sample.xml).
You find a sample in the ZIP-file "coding_01.zip" attached to note 717162.

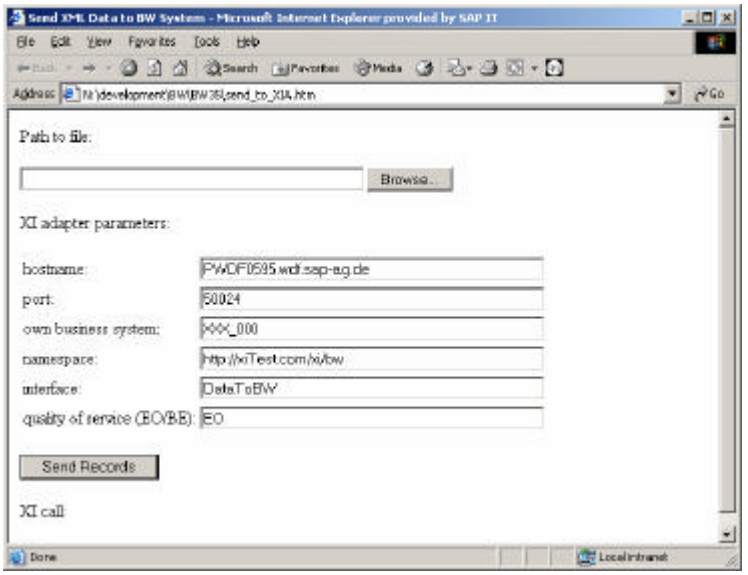
Change the highlighted elements to the actual names:
The interface name of the Sender Interface has to be edited in the start and end tag, here "DataToBW" is used.
The namespace (after "ns1:") has to be edited to the one you use. (here "http://customer.com/xi/BW" ist used)
The mandatory element "DATASOURCE" can be left empty.

Note: The elements within the "item" node must correspond to the field structure of your DataSource.

```
<?xml version="1.0" encoding="utf-8"?>
<ns1:DataToBW xmlns:ns1="http://customer.com/xi/BW"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
<DATA>
        <item>
                <CALDAY>20030905</CALDAY>
                <MATERIAL>4711</MATERIAL>
                <AMOUNT>100</AMOUNT>
                <CURRENCY>EUR</CURRENCY>
        </item>
        <item>
                <CALDAY>20030917</CALDAY>
                <MATERIAL>4712</MATERIAL>
                <AMOUNT>200</AMOUNT>
                <CURRENCY>EUR</CURRENCY>
        </item>
</DATA>
<DATASOURCE></DATASOURCE>
</ns1:DataToBW>
```

35. Open the file Sender.htm in an Internet Explorer 5.5 or higher (The ActiveX Objects used in the code will probably not work in different or older web browsers).

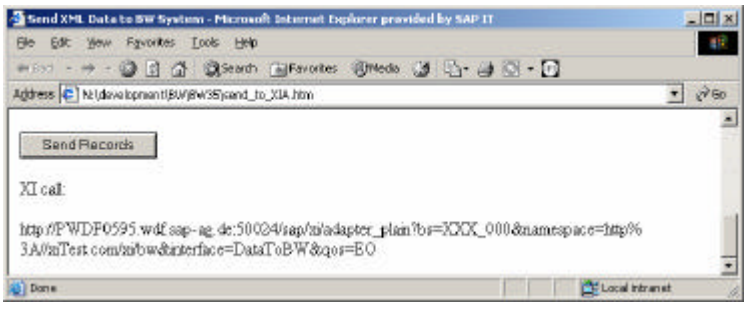
Enter
the server name of your Integration Server,
the port of the http services,
the name of the business system maintained above,
the namespace you are working in,
the interface name "DataToBW"
the quality of service "EO" (for asynchronous processing)



The XI documentation (Runtime -> Adapters -> Plain http adapter) provides more detailed information about the adapter.

36. Browse to your XML file (e.g. "sample.xml") containing the demo records
Send the records by pushing the "Send Records" button.

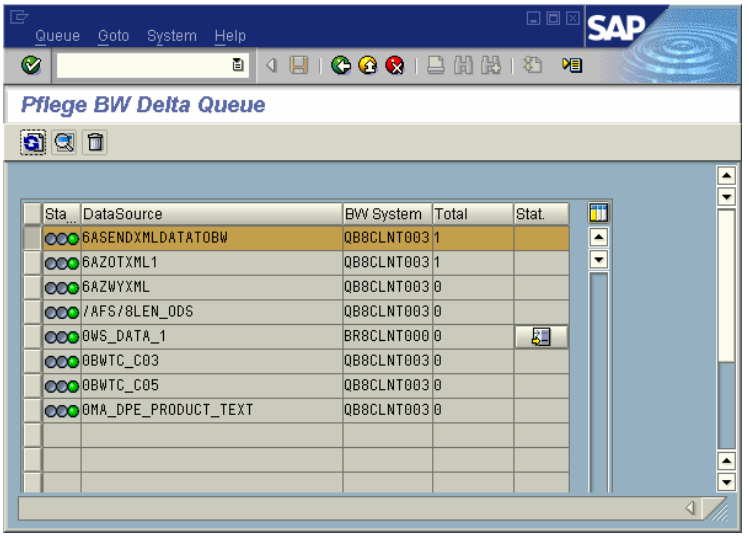
You find the call to the XI plain http adapter below the button.



Check result (error search)

37. Open the transaction RSA7 in the BW system.
Use “Display Data Entries” to check the data has been transferred correctly.

The data can now be loaded with the standard BW staging process.



38. Error Search:
If the data does not occur in the delta queue you may examine the message flow in the transaction SXMB_MONI on the XI system and on the BW system. Further details in the XI documentation under “Runtime”

5 Comments

- In general it can be assumed that data is sent from a different SAP or JAVA system in a productive scenario. In this case the mapping (design) and the configuration part in XI has to be implemented in a different way: messages that are sent from a sender to a receiver would be duplicated in a "message split", converted to a flat structure and sent to the BW system.
- The proposed method of loading data from XML files could be enhanced for scenarios where files of different kinds (based on different XML Schema Definitions) are transferred to a BW system using an interface mapping. However, it is in any case mandatory to transform it to a format which corresponds to the interface of the generated RFC function module. This always contains a "tables parameter" with flat structure (no deep parameters possible).
- With the latest delivered Internet Explorer Patches the ActiveX functionality "ADOBD.Stream" has been disabled. Therefore the runtime cannot be used like described above. It is possible to enable the "ADODB.Stream" object by changing the registry entry like it is explained in the Microsoft Knowledge Base Article 870669 (Link: http://support.microsoft.com/default.aspx?scid=kb;en-us;870669).
  Please make sure that this is conform to your company's security policy. Otherwise a different method for send the XML message has to be used.

6 Summary

This instruction is based on the How-to "…Send XML Data to BW" which enables a BW system to receive data records via the generic SOAP/RFC Service. There the XML DataSource is used to read data from an XML file and send it to a BW.
After performing the first 20 steps of the How To "…Send XML Data to BW" there is a generated DataSource within the BW source system ("MySelf" system) which is intended for uploading delta records, and has an RFC function module for supplying the delta queue.
In this paper it is shown how to use the function module to enable a communication via a Proxy from XI to BW for inbound messaging. Proxy communication is used as this supports the full Quality of Service (Exactly Once in Order) between XI and BW for the processed data messages.
In the Design Area of the Integration Builder a message interface is defined which is then used to create the Proxy in the BW system. The a template for the implementation has to be copied and changed according to the actual Function Module which is used.
After that in the Configuration Area of the Integration Builder the system specific settings are done. As this paper should be used separated from other scenarios a Virtual System is defined in the Configuriation.
For verification purpose an XML file is used to create a message which is sent to the Integration Service through the HTTP-Adapter by means of the Internet Explorer. The data occurs in the Delta Queue of the BW.

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