Oracle SOA Suite 11g R2 B2B
Quick HL7 v2 Delimited to HL7 v2 XML Conversion

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Introduction

In this article I discuss and illustrate a "SOA-less" solution which uses the Oracle SOA Suite 11g R2 B2B functionality to convert HL7 v2 delimited messages into their equivalent HL7 v2 XML messages. I say "SOA-less" because all the work is done entirely within the B2B part of the SOA Suite – no OSB or SOA Composites are involved.

Pre-requisites

It is assumed that a Windows XP SP3 platform with the Oracle SOA Suite 11g, installed and configured as discussed in "Installing Oracle SOA Suite for HL7 Exploration", published at http://blogs.czapski.id.au/wp-content/uploads/2010/06/01_Installing_Oracle_SOA_Suite_for_HL7_exploration_v1.1.pdf, is available and will be used for the work discussed in this article.

Prepare HL7 Data

Unzip the archive, A01s_A03s_individual_files_5099_of_each.zip to C:\hl7\adt\sources\. This archive is available from http://blogs.czapski.id.au/wp-content/uploads/2010/08/A01s_A03s_individual_files_5099_of_each.zip.

HL7 v2 Solution

Oracle uses the SOA Suite B2B component to provide HL7 v2 messaging support. It uses HL7 v2 message libraries and the B2B engine to provide message parsing and transformation between the native format (HL7 v2 delimited) and XML.

The solution we will be building will read v2 delimited ADT A01 messages from files in the file system and will write their XML equivalents to files in the file system. No SOA composite will be required. All work will be done entirely by the B2B runtime component.

This is the simplest HL7 solution possible.

Develop HL7 v2 Conversion Solution

To develop the HL7 v2 conversion solution we need to go through a number of steps. The steps are:

1. Extract HL7 message structures from the standard library
2. Configure Local side of the B2B Partnership
3. Create a File Listening Channel
4. Configure Remote side of the B2B Partnership
5. Create and deploy a Partnership Agreement

We have two trading partners, Self, which will "receive" documents by writing them to files in the file system and Remote2, which will "send" documents by reading them from the file system and passing them to the B2B infrastructure.
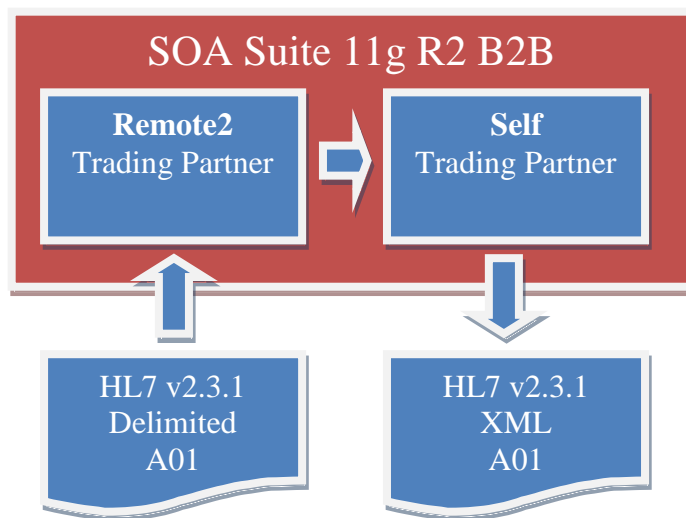
To allow the B2B infrastructure to identify the parties involved in document exchange, and to allow it to find the appropriate Trading Partnership Agreement, we will deposit files in a directory whose name is derived from the trading partner names – in this case "Remote2_Self", where "Remote2" is the name of the sending partner and "Self" is the name of the receiving partner. Literal "_" is the separator, used by the B2B infrastructure to tell apart the two partner names.

Create a directory structure "c:\hl7\adt\data\Remote2_Self", from which document will be "sent".
Create a directory structure "c:\hl7\adt\from_Remote2", into which "received" files will be written.

Extract HL7 Message Structures

As part of the B2B Document Editor installation we installed a number of standards libraries. One of these libraries was the HL7 v2 library.

Since we will be receiving the ADT A01 we must obtain the eternal representations of the ADT A01 from the Standards Library.
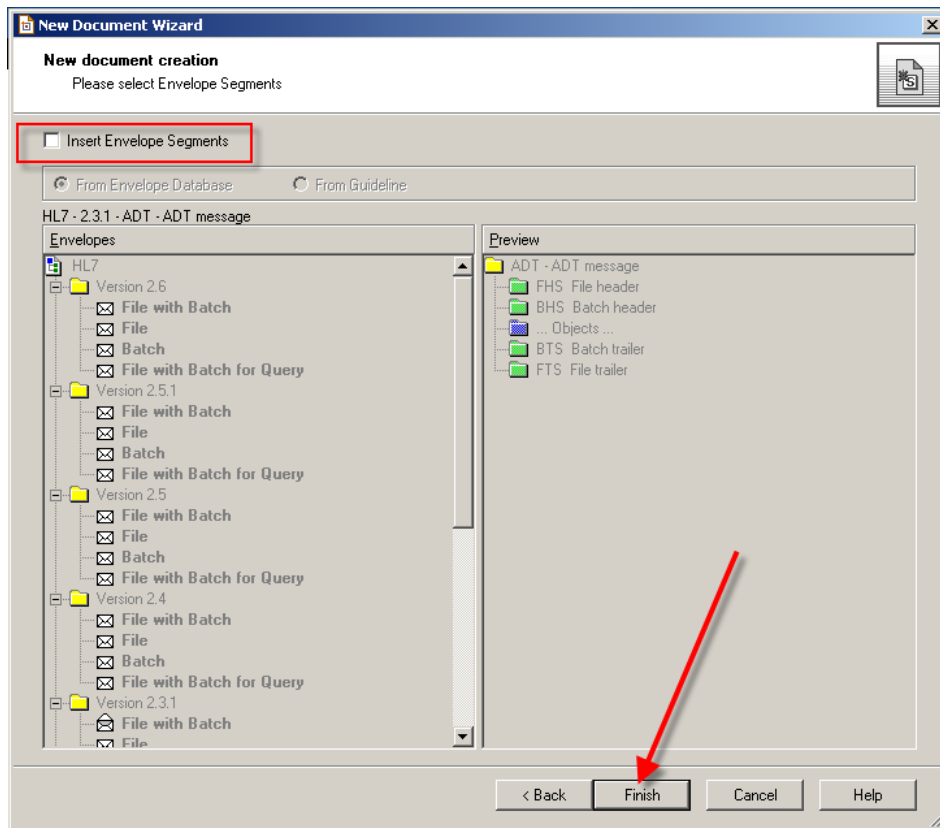
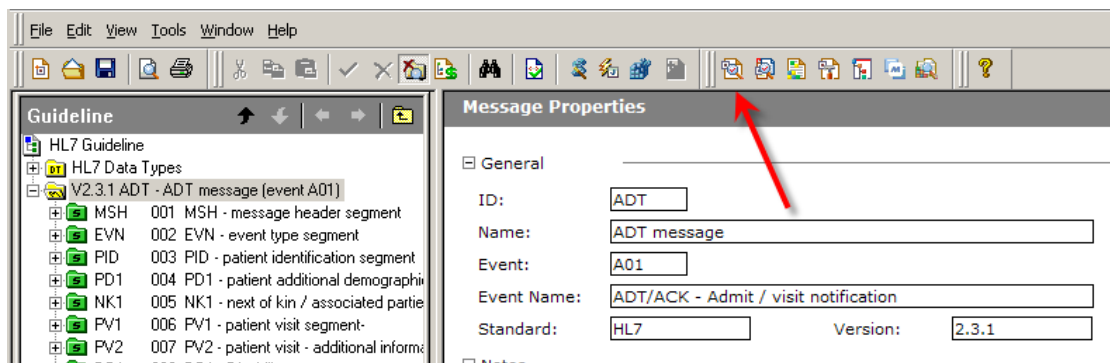Start the B2B Document Editor, which should be accessible through Start menu → Programs → Oracle as Oracle B2B.
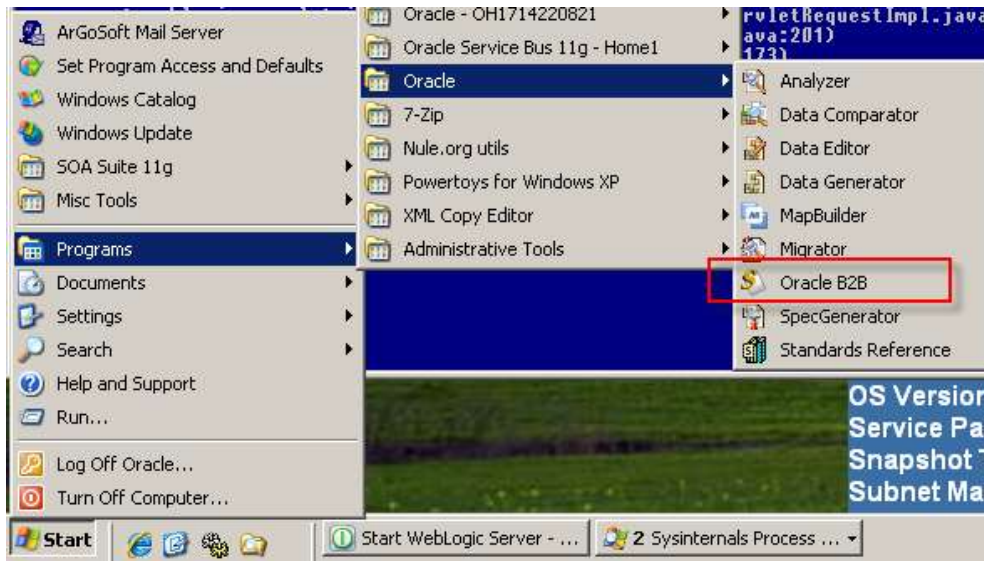
Click the "New Document" button, select HL7 from the list, expand 2.3.1, select Event A01and click Next.
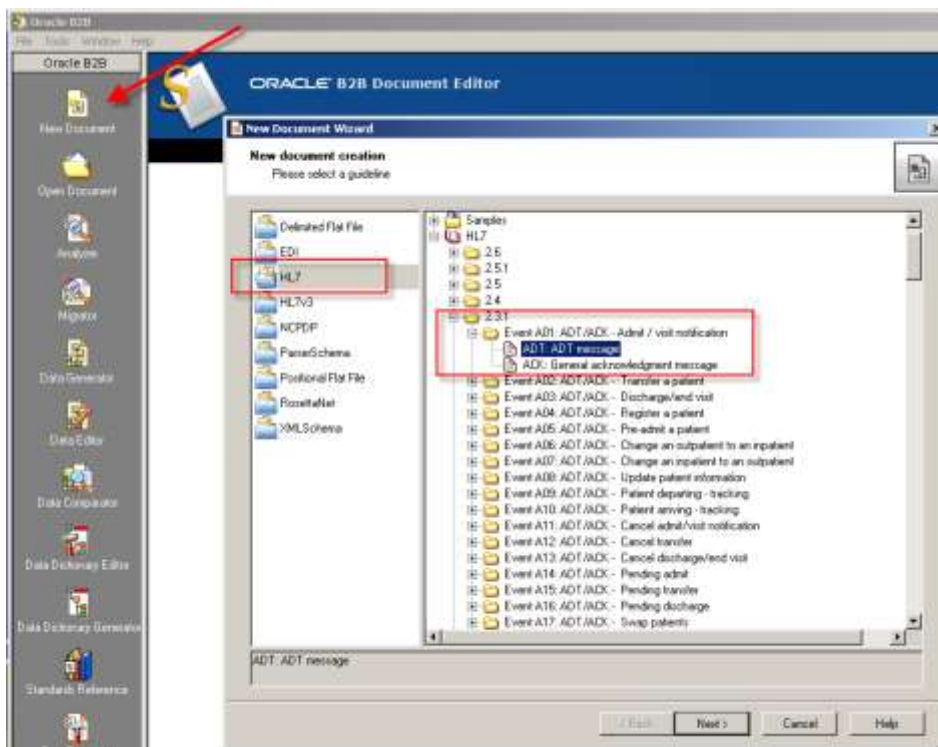
Leave the "Insert Envelope Segments" unchecked and click Finish.

The messages with which we will be dealing are not quite valid. Our HL7 Spec will not accept them as valid unless it is modified to fit the data. In the new window click the "Launch Analyzer" button.

Locate a sample file in c:\hl7\adt\sources\A01s and choose HL7 as the data file type.

Click Next, Next and OK. A new Analyzer window opens with data errors displayed in the bottom pane.

Follow the discussion in section "Data Analysis and Guideline Customization" in blog article "Oracle SOA Suite 11g HL7 Inbound – Customized HL7 Message Structure and Data Validation" at http://blogs.czapski.id.au/2010/06/oracle-soa-suite-11g-hl7-inbound-customized-hl7-message-structure-and-data-validation, to resolve data errors by modifying the guideline to fit the data. Once done, export the guideline in the ECS and XSD formats to c:\hl7\adt\guidelines as adt_a01_custom.ecs and adt_a01_custom.xsd.

Close B2B Document Editor windows. We are done with the B2B Document Editor for this exercise.

We exported the HL7 v2 ADT A01 definition in both the XML Schema form and the format used by the EDIFECS engine. The former can be used in the SOA Composite and the later is required to configure the B2B document for the trading partnership we will create shortly.

Configure B2B Partnership

Start the B2B Trading Partner Manager console by pointing the web browser at http://localhost:7001/b2b. Log in as weblogic/welcome1.


Click the Administration link, select the Document Tab, select HL7 in the node tree and click the large Plus sign to add a new document.
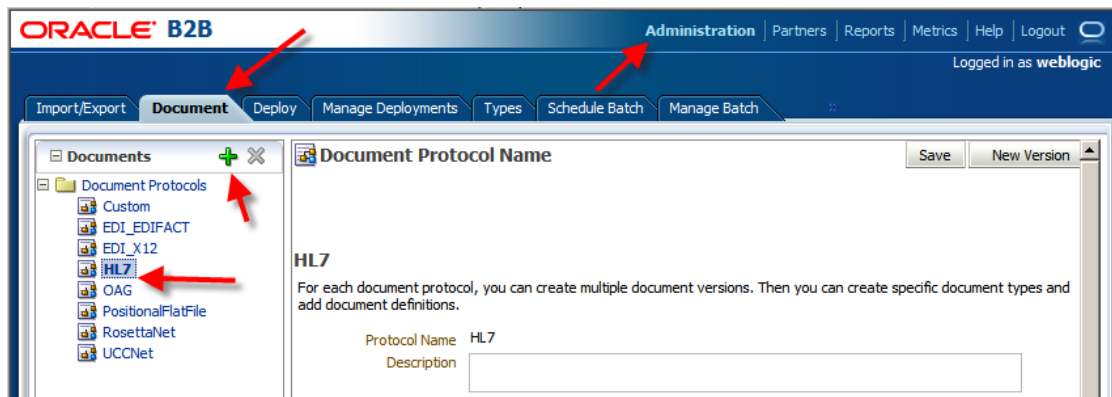
Enter 2.3.1 for Version Name and click Save. The screenshot shows the state after the Save button has been clicked.
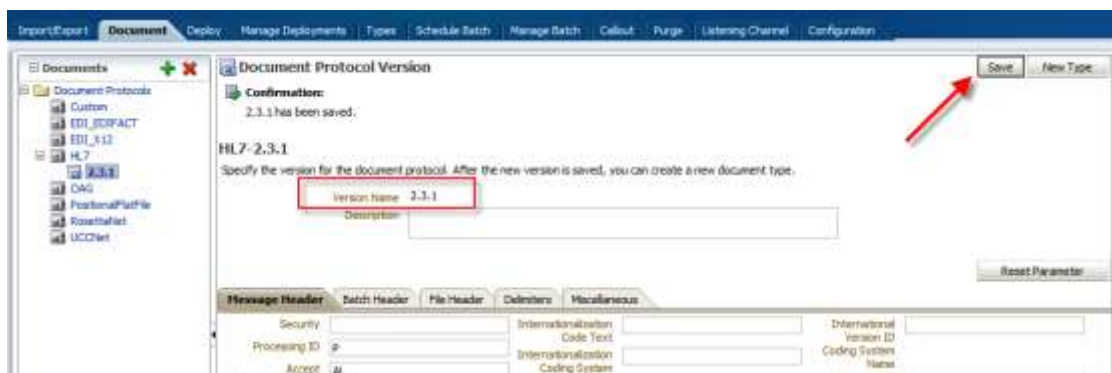

With the new node, 2.3.1, selected, click the large Plus sign to create a new document under that node, name if ADT_A01 and click Save.
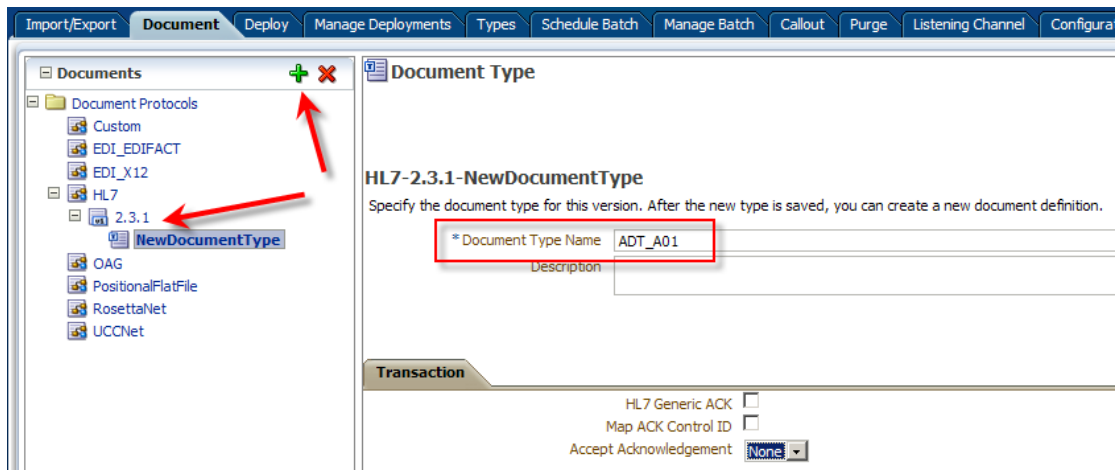
With the new node, ADT_A01, selected click the large Plus sign to add a new document under that node. Provide the name of ADT_A01_DocDef, locate and choose C:\hl7\adt\guidelines\ADT_A01_custom.xsd file for document definition and C:\hl7\adt\guidelines\ADT_A01_custom.ecs file for Transaction Set ecs File. Click Save to save the changes.
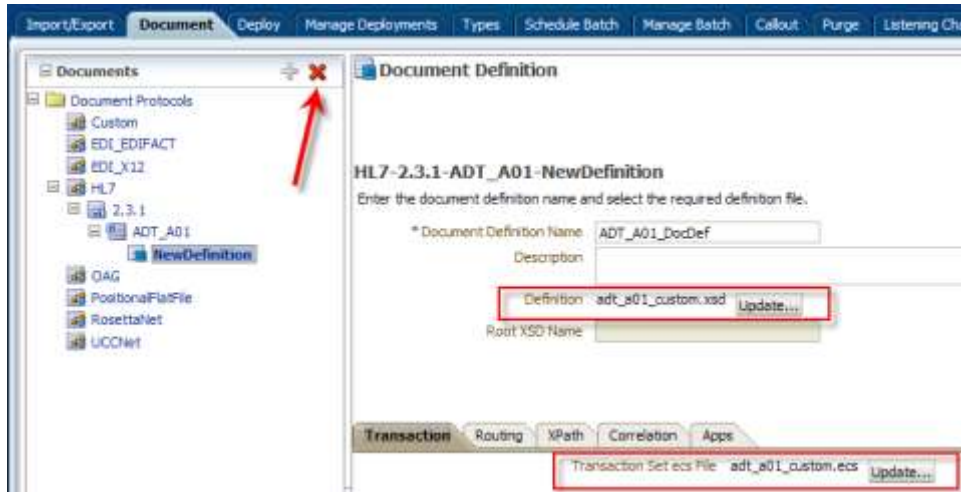
A hierarchy like that shown below should be now defined.
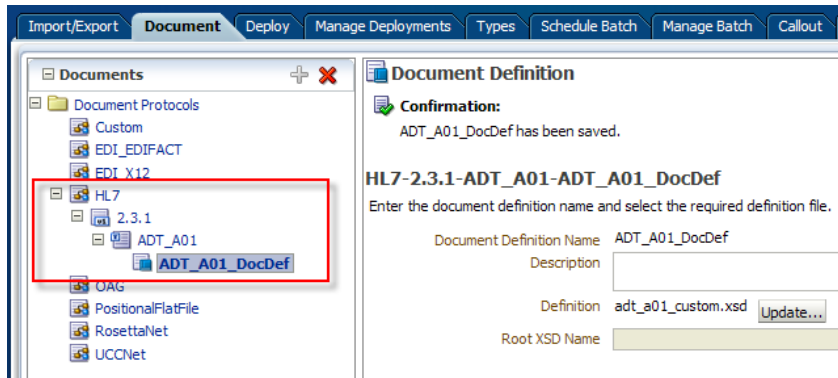
This defines the documents to be used in setting up message exchanges.

To accept documents as files from remote partners we need to create and configure a global listening channel. This channel will be used to poll the designated file system directory and submit any files found there to B2B for processing.

In B2B Console click Administration tab then Listening Channel tab.
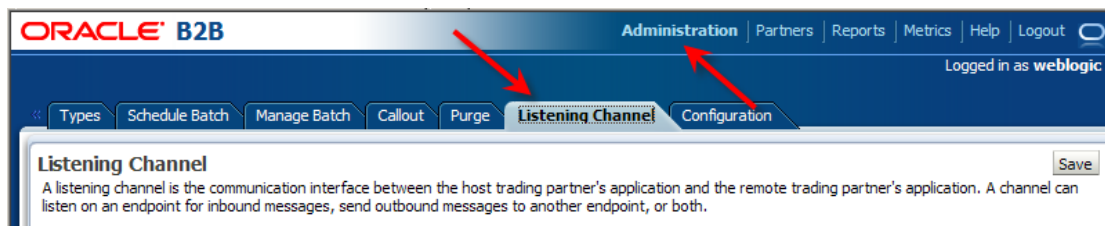
Click the large plus sign to add a new channel.
Change the name of the channel to Remote2_ListeningChannel.
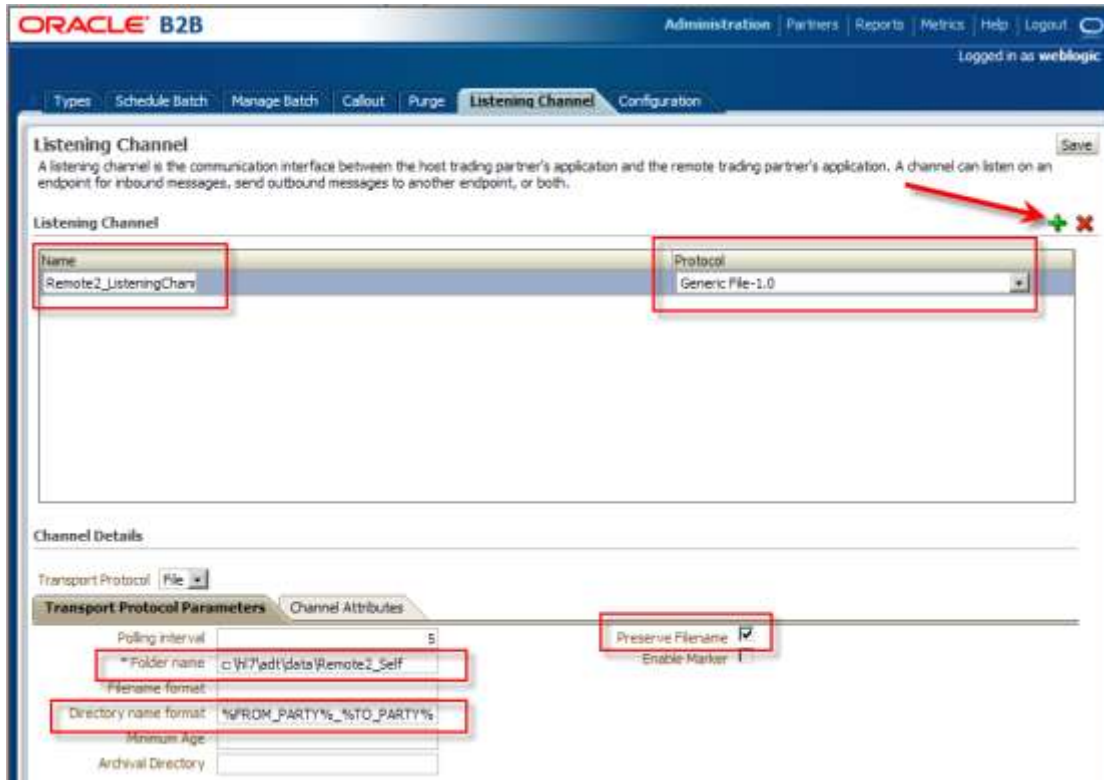Choose Generic File-1.0 protocol.
Set Folder Name to c:\hl7\adt\data\Remote2_Self.
Set Directory name Format to %FROM_PARTY%_%TO_PARTY%.
Make sure Preserve Filename checkbox is checked.
Finally, click Save.

This configures the file poller to poll for any files in the directory
c:\hl7\adt\data\Remote2_Self, recognize that Remote2 is the name of the "From"
partner, Self is the name of the "To" partner and that names of the files are to be
passed along. The ability to determine the names of the partners is critical for the B2B
infrastructure to be able to locate the trading partnership agreement.

Now we need to configure trading partners, the local partner "Self" and the remote
partner "Remote2".

Click the Partners navigational link, select the default pre-defined MyCompany
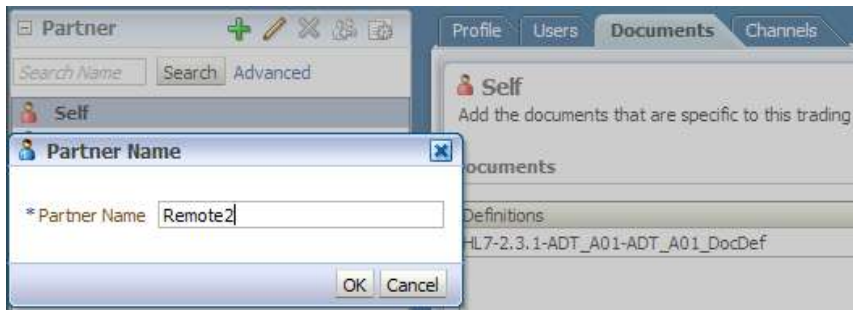partner and click the Edit button (Pencil icon).

Change the name to Self and click OK.

With the "Self" node selected click the Documents Tab, uncheck the Sender checkbox and click Save. We are configuring the HL7 inbound so the local role is that of a receiver of messages.
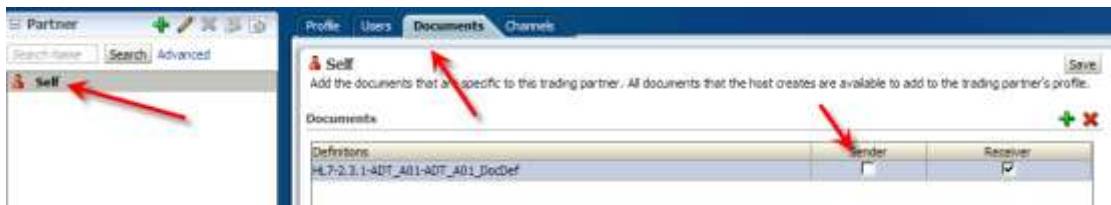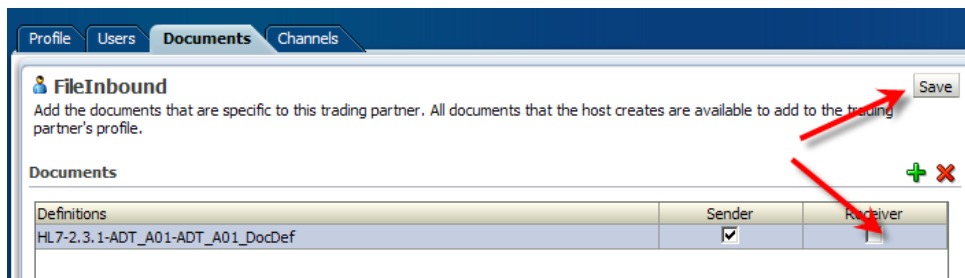

Click the large Plus sign to create a new trading partner, named Remote2, enter the name and click OK.

With the Remote2 selected, click the Documents Tab, click the large Plus sign to add a document, select HL7 → 2.3.1 → ADT_A01 → ADT_A01_DocDef and click Add.
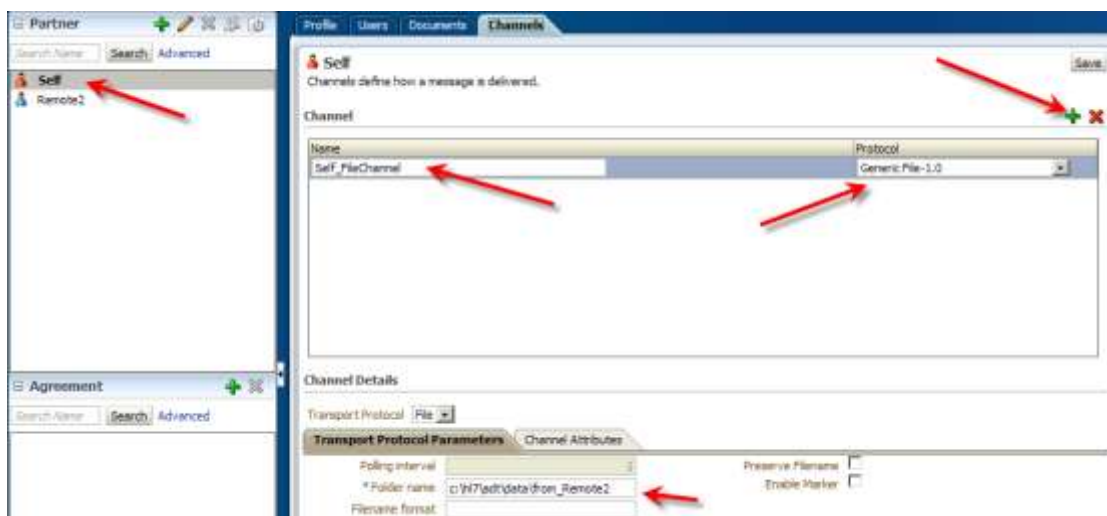
Uncheck the Receiver checkbox and click Save.

We defined document types the remote partner will be sending.

Select the Self partner and create a File channel to use for writing converted files.
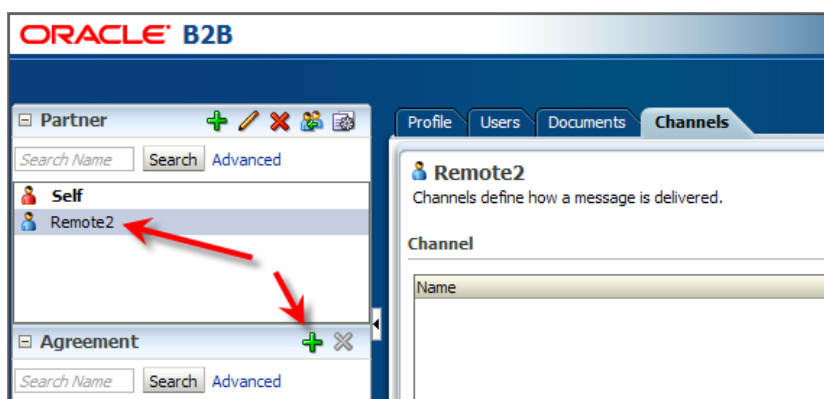Name the Channel Self_FileChannel. Choose Generic File-1.0 protocol.

Set Folder name to c:\hl7\adt\data\from_Remote2
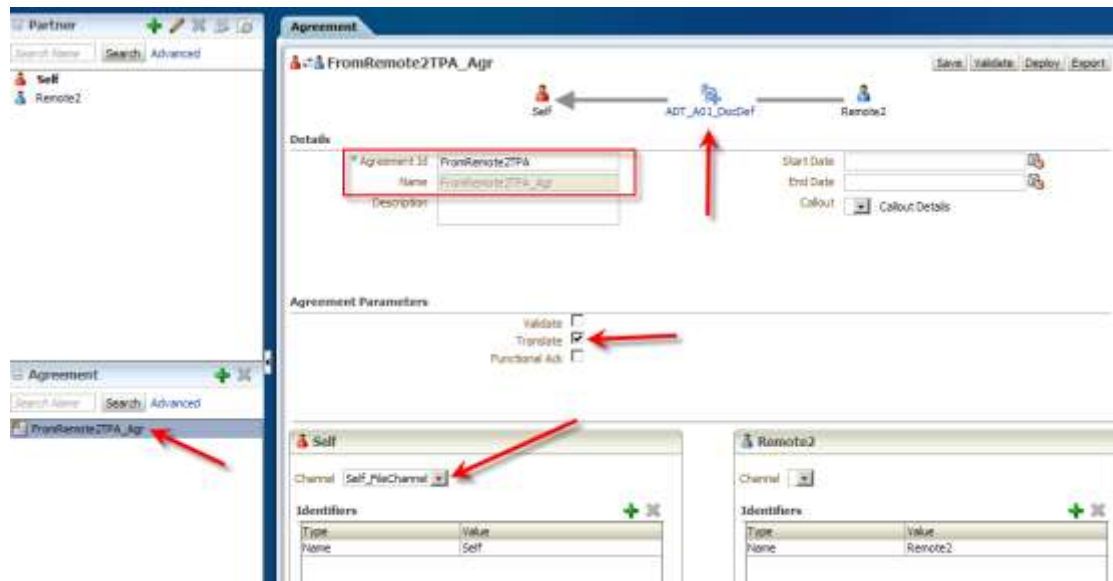Leave Filename format blank. We asked the Listening Channel to preserve file names
so we will have files named as they were.
Click Save.

Select the Remote2 partner. Click the large Plus sign in the Agreements section to add
a new trading partnership agreement.

Provide the Agreement ID of FromRemote2TPA and the Name of
FromRemote2TPA_Agr.

Click the "Select Document Definition" icon in the top centre of the panel, select the
definition of the document being sent from the remote sender to local receiver and
click OK.
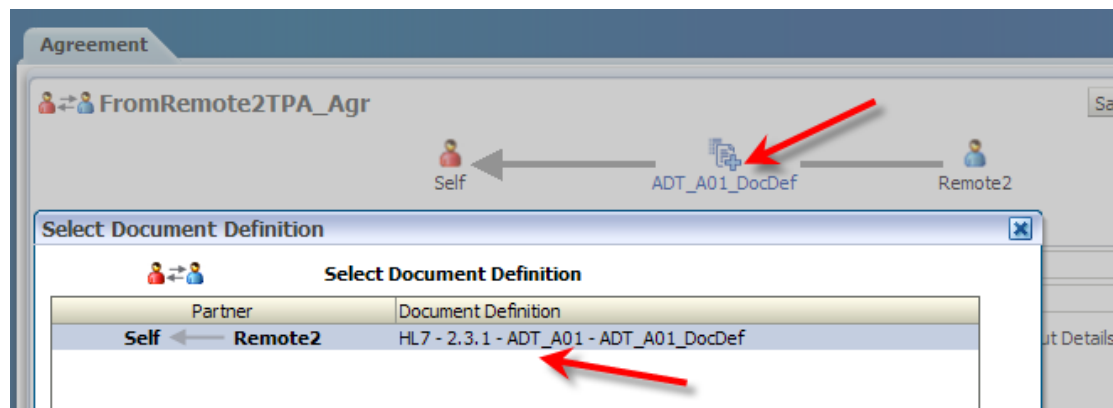
Choose the Self_FileChannel from the Channel drop-down on the Self panel in the
bottom left portion of the display, check the Translate checkbox.
Click Save to save the new trading partnership agreement.
Click Deploy to deploy the agreement.

We are finished with the trading partner management console. The partnership has
been defined and deployed.

There is nothing further do configure or develop in order to convert HL7 v2 Delimited
files to their XML "equivalents".

Exercise the Solution

Open a HL7 v2.3.1 ADT A01 delimited file, for example
000000_CTLID_2008090801529_ADTA01.hl7 in directory
"C:\hl7\adt\sources\A01s", to insect its content.

Copy this file to "C:\hl7\adt\data\Remote2_Self".
Notice that the file disappears within 5 seconds.

If all was configured correctly you will see a file with the same name deposited in
directory "C:\hl7\adt\data\from_Remote2".

This is the "equivalent" XML file. I say equivalent in quotes because the Oracle B2B
adds "Internal-Properties" tag before the MSH, which may cause issues if the XDS
used to parse this XML instance document is not the one which was generated when
we exported the Guideline document, early in this article.

This concludes the exercise. Drop as many HL7 v2.3.1 delimited ADT A01's into the
directory and see them converted to XML.