

SAP Business One integration for SAP NetWeaver 2005 – Business Integration Units Customization

Applies to:

SAP Business One Integration for SAP Netweaver

Summary

This document will explain how to customize a Business Integration Unit (BIU) for the integration of data between SAP Business One and SAP R/3 systems. A BIU is the smallest granular unit of an integration scenario. In this example, the BIU transforms a Purchase Order from one Business One system and converts it into a Sales Order in an R/3 system.

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Overview and document structure

This document will explain how to customize a Business Integration Unit (BIU) for the integration of data between SAP Business One and SAP R/3 systems. A BIU is the smallest granular unit of an integration scenario. In this example, the BIU transforms a Purchase Order from one Business One system and converts it into a Sales Order in an R/3 system.

The introduction begins with an existing current BIU “biu.B1PO2R3SO”. We will focus on how to customize this existing BIU to extend functionalities that could better fit customers’ requirement.

Please notice that the BIU concept is explained in another document which you can download from the SDN website. In this document, we will cover:

1. Data Enrichment
2. Value Mapping Enhancement
3. Message Filter Creation

As a result of this exercise, a zip file will be created and this updated BIU can be imported into B1i via the B1i Control Center to start exchanging information between two SAP Business One subsidiaries. We will not discuss BIU deployment in this article. For details on deployment, please refer to the Creating a new BIU sample document that is located on SDN.

BIU Introduction

biu.B1PO2R3SO

All BIUs contain the following structure as shown in Diagram 1, so does B1PO2R3SO.

Diagram1 – BIU Architecture

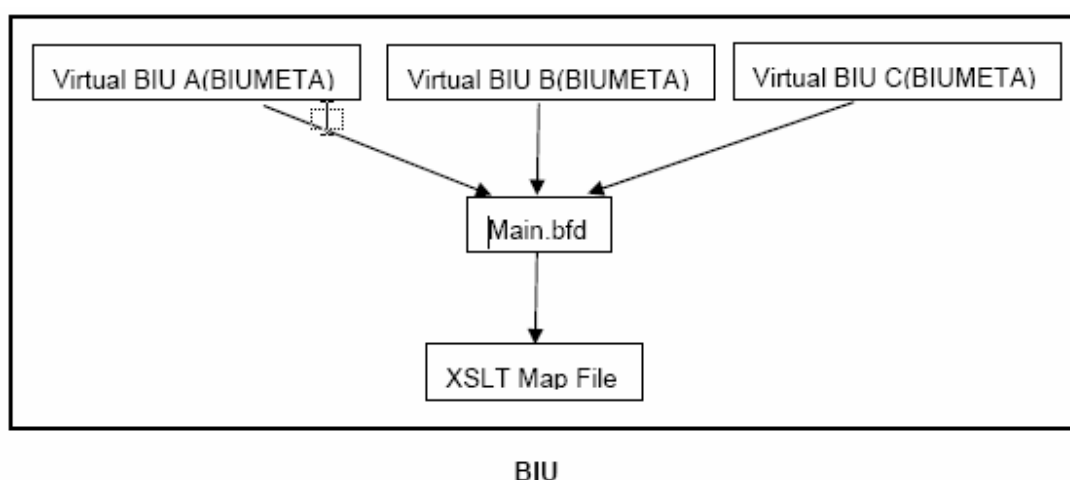
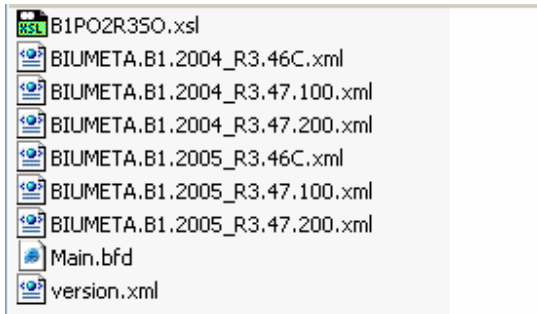


Diagram 2 – BIU Content



If you analyze Diagram 1 and Diagram 2, it is not difficult to understand the structure of B1PO2R3SO. The "B1PO2R3SO.xsl" file maps to the XSLT Map File, and will transform the Purchase Order from SAP Business One to a Sales Order in the R/3 system. The "Main.bfd" file is the control center of the whole BIU. It contains only one biz-atom Xform, which will call the xsl file. There are different system combinations which are reflected by the BIUMETA data file.

Data Enrichment

The scenario in which you may want to customize and enhance BIUs will probably involve more sophisticated data transformation requirements from the customer. Creating a more complex XSL file may not be the correct approach when more data is needed. To solve the problem, we have two approaches – Key Expansion and Property Lists. In the following session, we will discuss what is meant by Key Expansion and Property Lists and how to use them to retrieve more data from SAP Business One.

Key Expansion

Key expansion is the main method to enrich data within a BIU. Please refer to Diagram 3. The diagram shows the content of a BIUMETA data file. The xml within the blue block is the code for Key Expansion.

Diagram 3 – BIUMETA data file

```

<?xml version="1.0" encoding="UTF-8" ?>
- <BIU xmlns="urn:com.sap.b1i.sim:entity" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="urn:com.sap.b1i.sim:entity ../../com.sap.b1i.repository/General.xsd/SemanticIntegrationModel.xsd"
  SenderSysTypeId="B1.2004" ReceiverSysTypeId="R3.46C" SenderCountryCode="*" ReceiverCountryCode="*"
  SenderMainObjectType="B1.2004_PO" ReceiverMainObjectType="ORDERS05" MainBizflow="Main.bfd" Name="B1PO2R3SO"
  TaskFilter="I">
- <KeyExpansionRule>
  - <TargetObjectType ObjectNameSpace="xmlns='urn:sap-com:document:sap:rfc:functions'" ObjectTypeId="B1.2004_SO"
    RequestGenerationRuleLink="">
    - <ObjectKeyList>
      <ObjectKey FieldName="DocEntry" SelectionPath="//BOM/BO/Document_Lines/row/BaseEntry"/>
    </ObjectKeyList>
  - <TargetObjectType ObjectNameSpace="xmlns='urn:sap-com:document:sap:rfc:functions'" ObjectTypeId="B1.2004_BP"
    RequestGenerationRuleLink="">
    - <ObjectKeyList>
      <ObjectKey FieldName="CardCode" SelectionPath="//BOM/BO/Documents/row/CardCode"/>
    </ObjectKeyList>
  </TargetObjectType>
</TargetObjectType>
</KeyExpansionRule>
- <PropertyList>
  <Property Key="IC Sales Organization" Value="" />
  <Property Key="IC Distribution Channel" Value="" />
  <Property Key="IC Division" Value="" />
  <Property Key="Partner Role" Value="ZH" />
  <Property Key="Order Type" Value="OR" />
  <Property Key="Text ID" Value="0003" />
</PropertyList>
</BIU>

```

Expansion. In the original version of the BIU, you can see there are two existing objects of information; Sale Order and Business Partner, noted by "DocEntry" and "CardCode". Note for each object, there is a TargetObjectType tab and in this case there are two TargetObjectTypes. In case you need to add more objects, for example getting item master data information, you would need to add a new TargetObjectType tab and fill in the new properties.

ObjectTypeId is the object ID defined in B1i. FieldName is the key of the Business One business object, in our example, we are using the item master data. SelectionPath is the path for fetching the value from a B1iMessage. As shown in Diagram 4, we added a new Key Expansion, which is getting the Item Code from the item master information in SAP Business One. Please note that this is only an example, ObjectTypeId and SelectionPath might not reflect a real business case.

Diagram 4 – BIUMETA data file

```

<?xml version="1.0" encoding="UTF-8" ?>
- <BIU xmlns="urn:com.sap.b1i.sim.entity" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="urn:com.sap.b1i.sim.entity ../../com.sap.b1i.repository/General.xsd/SemanticIntegrationModel.xsd"
  SenderSysTypeId="B1.2004" ReceiverSysTypeId="R3.46C" SenderCountryCode="*" ReceiverCountryCode="*"
  SenderMainObjectType="B1.2004_PO" ReceiverMainObjectType="ORDERS05" MainBizflow="Main.bfd" Name="B1PO2R3SO"
  TaskFilter="I">
- <KeyExpansionRule>
  - <TargetObjectType ObjectNameSpace="xmlns='urn:sap-com:document:sap:rfc:functions'" ObjectTypeId="B1.2004_SO"
    RequestGenerationRuleLink="">
    - <ObjectKeyList>
      <ObjectKey FieldName="DocEntry" SelectionPath="//BOM/BO/Document_Lines/row/BaseEntry" />
    </ObjectKeyList>
  - <TargetObjectType ObjectNameSpace="xmlns='urn:sap-com:document:sap:rfc:functions'" ObjectTypeId="B1.2004_BP"
    RequestGenerationRuleLink="">
    - <ObjectKeyList>
      <ObjectKey FieldName="CardCode" SelectionPath="//BOM/BO/Documents/row/CardCode" />
    </ObjectKeyList>
  - <TargetObjectType ObjectNameSpace="xmlns='urn:sap-com:document:sap:rfc:functions'"
    ObjectTypeId="B1.2004_ITEM" RequestGenerationRuleLink="">
    - <ObjectKeyList>
      <ObjectKey FieldName="ItemCode" SelectionPath="//BOM/BO/Documents/row/ItemCode" />
    </ObjectKeyList>
  </TargetObjectType>
</TargetObjectType>
</KeyExpansionRule>

```

Property List

In the event that there are some data elements that cannot be retrieved from the SAP Business One database, using the property list is a good alternative. The example is where the information is exclusive to R/3 and not contained at all in the SAP Business One Db such as "IC Sales Organization". To add more properties, please add your data between the <PropertyList> tags which are highlighted in the blue block in Diagram 5.

Diagram 5 – BIUMETA data file

```

<?xml version="1.0" encoding="UTF-8" ?>
- <BIU xmlns="urn:com.sap.b1i.sim.entity" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="urn:com.sap.b1i.sim.entity ../../com.sap.b1i.repository/General.xsd/SemanticIntegrationModel.xsd"
  SenderSysTypeId="B1.2004" ReceiverSysTypeId="R3.46C" SenderCountryCode="*" ReceiverCountryCode="*"
  SenderMainObjectType="B1.2004_PO" ReceiverMainObjectType="ORDERS05" MainBizflow="Main.bfd" Name="B1PO2R3SO"
  TaskFilter="I">
- <KeyExpansionRule>
  - <TargetObjectType ObjectNameSpace="xmlns='urn:sap-com:document:sap:rfc:functions'" ObjectTypeId="B1.2004_SO"
    RequestGenerationRuleLink="">
    - <ObjectKeyList>
      <ObjectKey FieldName="DocEntry" SelectionPath="//BOM/BO/Document_Lines/row/BaseEntry" />
    </ObjectKeyList>
    - <TargetObjectType ObjectNameSpace="xmlns='urn:sap-com:document:sap:rfc:functions'" ObjectTypeId="B1.2004_BP"
      RequestGenerationRuleLink="">
      - <ObjectKeyList>
        <ObjectKey FieldName="CardCode" SelectionPath="//BOM/BO/Documents/row/CardCode" />
      </ObjectKeyList>
    </TargetObjectType>
  </TargetObjectType>
</KeyExpansionRule>
= <PropertyList>
  <Property Key="IC Sales Organization" Value="" />
  <Property Key="IC Distribution Channel" Value="" />
  <Property Key="IC Division" Value="" />
  <Property Key="Partner Role" Value="ZH" />
  <Property Key="Order Type" Value="OR" />
  <Property Key="Text ID" Value="0003" />
</PropertyList>
</BIU>

```

Diagram 6 – Main BFD

```

<?xml version="1.0" encoding="UTF-8" ?>
- <bizflow xmlns="urn:com.sap.b1i.bizprocessor:bfdefinition" xmlns:b1im="urn:com.sap.b1i.sim:b1imessage"
  xmlns:sim="urn:com.sap.b1i.sim.entity" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="urn:com.sap.b1i.bizprocessor:bfdefinition ../../com.sap.b1i.system/xsd/bizflow.xsd" active="true"
  name="MAIN1" schemaversion="1.0">
- <interface>
  <description>Use XSLT to convert from inbound object to outbound object</description>
= <inbound>
  <propertylist />
</inbound>
- <outbound>
  <propertylist />
</outbound>
</interface>
- <bizatoms>
  - <xform name="BIUConvert" nslist="xmlns:b1im='urn:com.sap.b1i.sim:b1imessage'xmlns:">
    <description>Invoke XSLT file to convert import object to result object</description>
    <inpath id="0" />
    <outpath id="1" />
    - <rule optional="false">
      <intended bfxp_href="#B1PO2R3SO.xsl" />
    </rule>
  </xform>
</bizatoms>
</bizflow>

```

After adding to the BIUMETA data file, the field will be added to the B1i control center. To use a new property, please add a new tab under the PropertyList tag as shown in Diagram 6 in the highlighted blue block.

Value Mapping Enhancement

Value Mapping is one of the most important parts in a BIU. It is highly possible that partners may need to add more value mappings according to customers' requirements. B1i's flexible architecture makes it possible to add new fields to the Value Mapping module in the B1i Control Center without modifying the user interface manually. The only modification required is to two XML files which are stored in biz-store.

To modify the Value Mapping, logon to B1i Control Center, navigate to the Extra pane, and click Download. Select "com.sap.b1i.repository" as dataset. Select "ValueMapping.xml" as Group. Select "Id" as Alias, and select one item in the document combo box, such as "CreditCardType". Click Select, and then click Download. Save the file to your local disk as an XML file (refer to Diagram 7).

Diagram 7 – Value Mapping

```
<?xml version="1.0" encoding="UTF-8" ?>
<?bpc.pltype.out bpm.pltype=xml?>
- <ValueMapping xmlns="urn:com.sap.b1i.sim:entity" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="urn:com.sap.b1i.sim:entity ../General.xsd/SemanticIntegrationModel.xsd" Id="CreditCardTypes">
  <Field Name="creditcardtypes" />
</ValueMapping>
```

Change the Id and FieldName in the XML, please refer to Diagram 8. In the example, the Id is changed to "test", so is Field Name.

Diagram 8 – Modified Value Mapping

```
<?xml version="1.0" encoding="UTF-8" ?>
<?bpc.pltype.out bpm.pltype=xml?>
- <ValueMapping xmlns="urn:com.sap.b1i.sim:entity" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="urn:com.sap.b1i.sim:entity ../General.xsd/SemanticIntegrationModel.xsd" Id="test">
  <Field Name="test" />
</ValueMapping>
```

The next step is to upload the new value mapping to the biz-store. Please login to the B1i Control Center again, navigate to the Extra pane, and click Execute. Browse to your modified file as the Input Message. Click Browse on the row of BizFlow to execute. Select "com.sap.b1i.repository" as dataset. Select "General.bfd" as group. Select "unified" as alias and select "ValueMapping_save.bfd" as document. Click Select, and then click Execute. You can view the result and it should appear as what is shown in Diagram 9.

Diagram 9 – Value Mapping Result

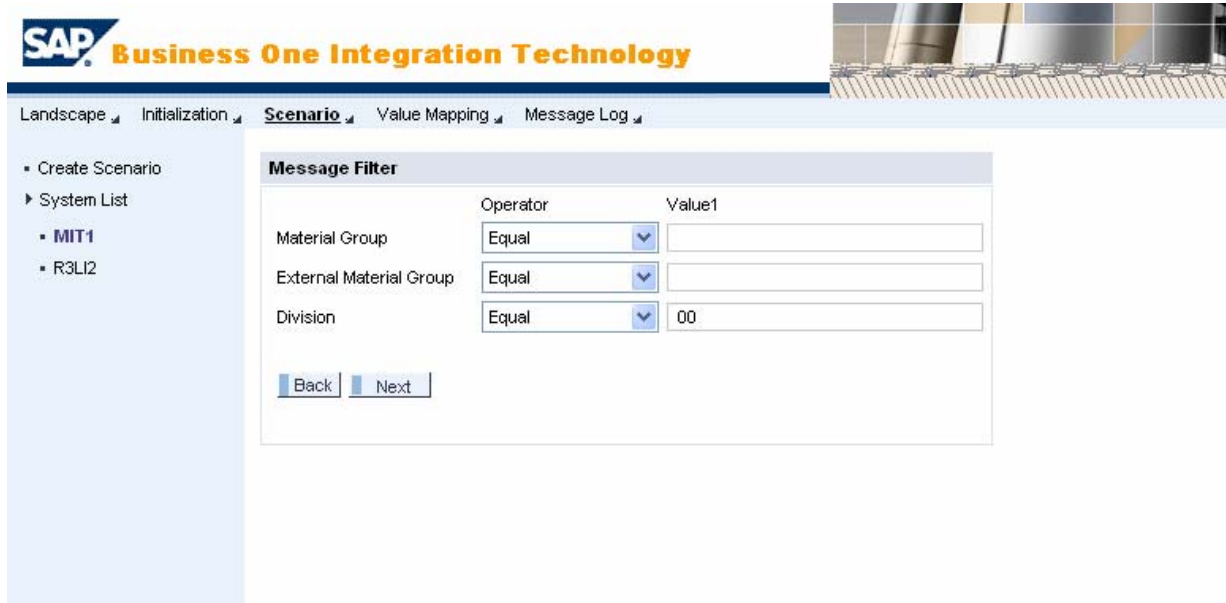


Please perform the same actions to the ValueMappingKey.xml file.

Message Filter Creation

Message filtering enables B1i to filter those messages that are not part of or reside inside the BIU process. If partners create new Message filters, they will be added to the user interface when creating new scenarios. Please refer to Diagram 10.

Diagram 10 – Message Filter



In order to create more filters, the partner needs to update two files – PublicationObjectType.xml and ObjectType.xml.

Please logon to the B1i Control Center and navigate to Extra pane and click Download. Select "com.sap.b1i.repository" as dataset. Select "ObjectType.xml" as Group. Select "Id" as Alias, and select one item in the document combo box, such as "B1.2004_PO". Click Select, and then click Download. Please save the file to your local disk as an XML file (refer to Diagram 11).

Diagram 11 – ObjectType.xml

```

<?xml version="1.0" encoding="UTF-8" ?>
<?bpc.pltype.out bpm.pltype=xml?>
- <ObjectType xmlns="urn:com.sap.b1i.sim:entity" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="urn:com.sap.b1i.sim:entity ../com.sap.b1i.system.sld.repository/General.xsd/SemanticIntegr
  Id="B1.2004_PO" Name="Purchase Order" SysTypeId="B1.2004" LocalObjectType="22" ValueMappingKeyTableLink="B1.2004
- <KeyMapping KeyPolicy="4">
  - <LocalKeySelectionList>
    <LocalKeySelection SelectionPath="BOM/BO/Documents/row/DocEntry" FieldName="DocEntry" />
    </LocalKeySelectionList>
    <UniqueKeySelection>BOM/BO/Documents/row/DocNum</UniqueKeySelection>
  </KeyMapping>
- <ConnectivityList>
  <Connectivity ConnectivityTypeId="B1DI" PreferredType="true" />
</ConnectivityList>
- <PublicationObjectTypeRepresent PublicationObjectTypeId="PurchaseOrder">
- <CriteriaFieldSelection>
  <CriteriaFieldName>Vendor Number</CriteriaFieldName>
  <SelectionNSList />
  <SelectionPath>../Documents/row/CardCode</SelectionPath>
</CriteriaFieldSelection>
</PublicationObjectTypeRepresent>
<Schema>/com.sap.b1i.datasync.repository/ObjectType.xsd/B1.2004_PurchaseOrders.xsd</Schema>
<TaskSelectionList />
</ObjectType>

```

Please add an additional CriteriaFieldSelection tab to create a new message filter. Please also perform the same steps for the corresponding PublicObjectType.xml.

BIU Deployment

Please use the same BIU Deployment method as mentioned in the Creating anew BIU document that is located on the SAP Software Developer Network Portal (sdn.sap.com).

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