



Microsoft Dynamics CRM<sup>®</sup> 2011  
WCF Adapter for Microsoft BizTalk Server<sup>®</sup>  
**User manual**

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## Adapter mode of operation

The *R&P MS-CRM WCF Adapter for MS BizTalk* provides a seamless connection between the BizTalk Server 2009 & 2010 and Microsoft Dynamics CRM 2011. The adapter is required to be installed on the BizTalk Server, it is compatible with Microsoft BizTalk Server 2009 and 2010.

Due to the fact that *R&P MS-CRM WCF Adapter for MS BizTalk* communicates with Microsoft Dynamics CRM 2011 via the original WCF service, there are no further installations required on Microsoft Dynamics CRM system.

The *R&P MS-CRM WCF Adapter for MS BizTalk* is designed generically. This means that the adapter does not hold any explicit functionality for processing individual entities or request methods.

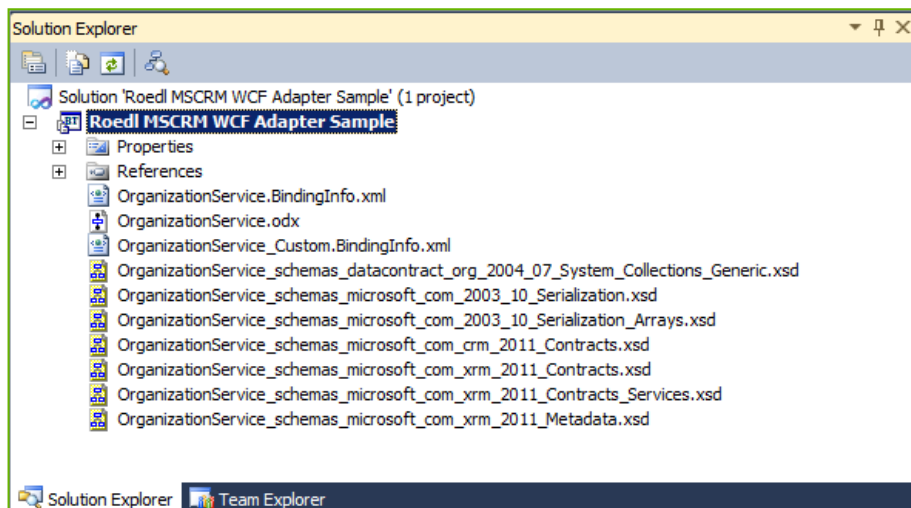
The advantage of the Adapter is the generic approach. Therefore, the individually customized entities and attributes created in Microsoft Dynamics CRM are also applicable.

There is no customization on the Microsoft Dynamics CRM system necessary.

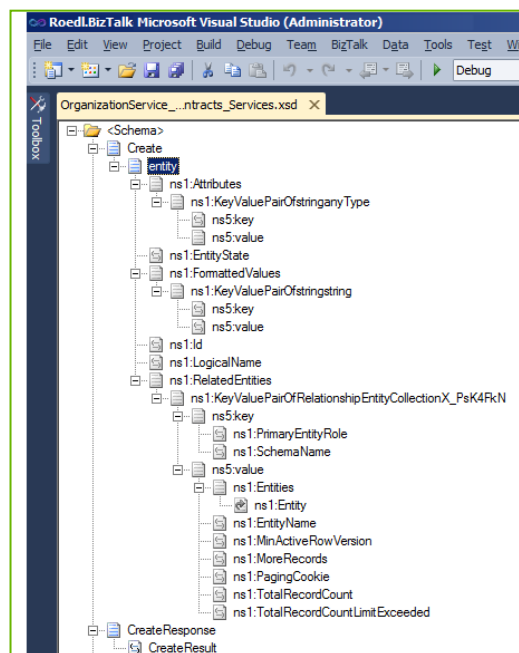
## Why does Roedl provide a separate WCF Adapter?

Unlike earlier versions, Microsoft Dynamics CRM 2011 provides a native WCF service that can be directly used in the Microsoft BizTalk Server. However, the use of the WCF Service brings a lot of complex configurations and adjustments.

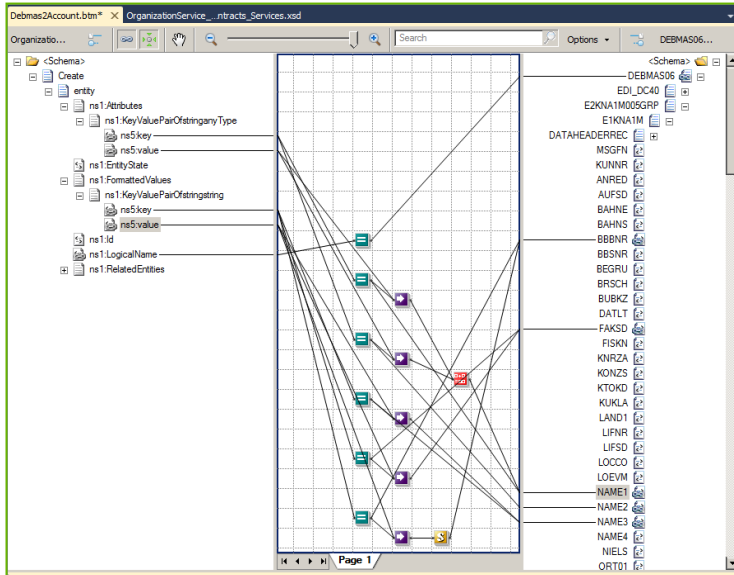
The creation of a service reference for this WCF service results in the following entries in the BizTalk solution:



The generated schema for the entities in BizTalk Server presents as follows:



The schema „Create“ is completely generic and independent from all entities. The name of the entity to be created has to be entered in the element „LogicalName“. The individual attributes are filled through key/value pairs (e.g. the elements KeyValuePairOfstringstring/key and KeyValuePairOfstringstring/value). Due to the generic approach, the individual attributes of the entities do not appear. This approach may be useful in managed codes, such as .Net assemblies for instance. The mapping scenario of such a schema is presented below.



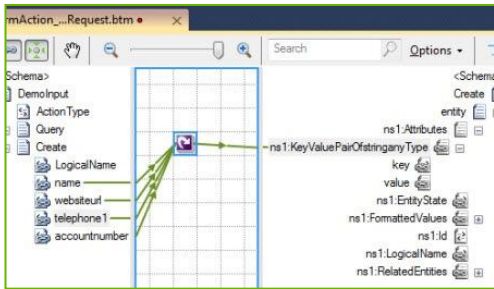
Since the individual attributes of an entity are no longer visible, all content from the key/value pairs has to be extracted. The BizTalk developer needs to know all the attributes and has to enter them into the appropriate functoids.

This approach is practicable when reading from the messages. However, if the messages need to be filled with the key/value pairs, the complexity of the process increases significantly.

According to Richard Seroter's blog, who has extensive experience with the MS CRM WCF service and its usability in MS BizTalk, the following key points can be concluded:

(more at: <http://seroter.wordpress.com/2011/02/10/the-good-bad-and-ugly-of-integrating-dynamics-crm-2011-and-biztalk-server-2010/>)

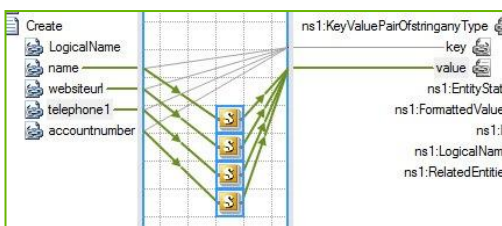
1. First a loop for each attribute needs to be created (property of an entity) on the KeyValuePairOfstringanyType node, as a node must be created for each field.



2. Then the fields can be mapped on the key element.



3. When trying to map the values directly, a serialization exception at runtime will be received, because the data type of the values is "xsd:anytype" and it is impossible to map values of this data type directly to an attribute. Therefore, a script functoid needs to be used, in order to convert the values to the appropriated data types.



4. The script code presents as follows:

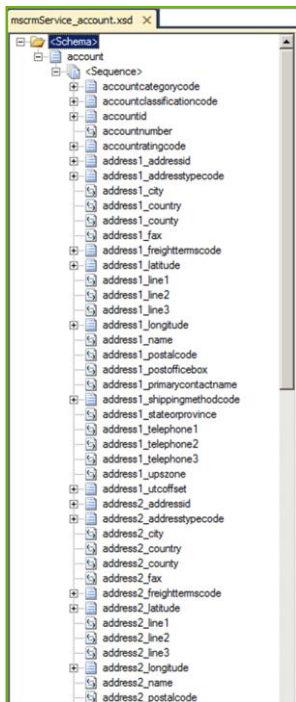
```
<xsl:template name="SetNameValue">
  <xsl:param name="param1" />
  <value xmlns="http://schemas.datacontract.org/2004/07/System.Collections.Generic">
    <xsl:attribute name="xsi:type">
      <xsl:value-of select="'xs:string'" />
    </xsl:attribute>
    <xsl:value-of select="$param1" />
  </value>
</xsl:template>
```

This procedure is highly inefficient. Therefore, the *R&P MS-CRM WCF Adapter for MS BizTalk* works like the *R&P MS-CRM WS Adapter for MS BizTalk*. Namely, the typed schemas where the attributes of the several entities are clearly defined and typed.

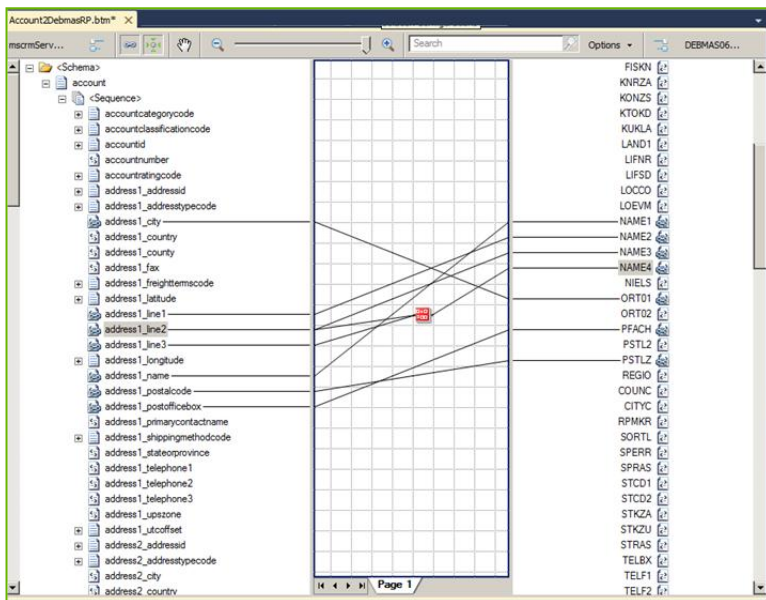
Another important aspect is the complete compatibility of the new adapter with the old adapter. In case the upgrade of BizTalk Server integration from Microsoft Dynamics CRM 3.0 or 4.0 to Microsoft Dynamics CRM 2011 takes place, the new adapter needs to be installed and the ports switched from the existing to the new version. The solution will run without any restrictions.

## Using the Roedl Microsoft Dynamics CRM WCF Adapter

When using the new Roedl adapter, a schema of an account may present as follows:



Accordingly, the mapping will take the following form:



Because the data types of the attributes are determined at design time, no problems occur during serialization at runtime.

The *R&P MS CRM WCF Adapter for MS BizTalk* will only create the schemas that are actually needed.

The project schemas can be easily added in Visual Studio, in the same way as it is realized in the WS adapter. This point will be discussed later in detail.

For each entity a schema will be created, containing only the attributes of the several entities. These individual schemas are well-arranged and fast. Furthermore, the communication with Microsoft Dynamics CRM has been simplified. There will be no special schemas for request and response required any more, nevertheless the process is fully focused on the entity worked with.



Example Account:

	Schema for Request	Schema for Response
Insert	Account	Account
Update	Account	Account
Delete	Account	Account
Retrieve	Account	Account
Fetch	Fetch	AccountList

## Security

The R&P MS CRM WCF Adapter for MS BizTalk communicates directly with the original Microsoft Dynamics CRM 2011 WCF service interface.

The same security rules take effect as if you were working with the WCF service itself.

Sample schema for an entity (Account):

The screenshot displays the XSD editor for the schema `mscrmService_1_account.xsd`. The left pane shows a tree view of the schema elements, including `accountcategorycode`, `accountclassificationcode`, `accountid`, `accountnumber`, `accountratingcode`, `address1_addressid`, `address1_addresstypecode`, `address1_city`, `address1_country`, `address1_latitude`, `address1_line1`, `address1_line2`, `address1_line3`, `address1_longitude`, `address1_name`, `address1_postalcode`, `address1_postofficebox`, `address1_primarycontactname`, `address1_shippingmethodcode`, `address1_stateorprovince`, `address1_telephone1`, `address1_telephone2`, `address1_telephone3`, `address1_upszone`, `address1_utcoffset`, `address2_addressid`, `address2_addresstypecode`, `address2_city`, `address2_country`, `address2_fax`, `address2_freighttermscode`, `address2_latitude`, `address2_line1`, `address2_line2`, `address2_line3`, `address2_longitude`, `address2_name`, `address2_postalcode`, `address2_postofficebox`, `address2_primarycontactname`, `address2_shippingmethodcode`, `address2_stateorprovince`, `address2_telephone1`, `address2_telephone2`, `address2_telephone3`, `address2_upszone`, `address2_utcoffset`, `aging30`, `aging30_base`, and `aging60`.

The right pane shows the XML code for the schema, including the `<?xml version="1.0" encoding="utf-16" ?>` declaration, the `xmlns:b="http://schemas.microsoft.com/BizTalk/2003"` namespace, the `targetNamespace="http://172.21.5.37:5555/mscrmservices/2006/CrmServiceWsdl.aspx/account"` namespace, and the `xmlns:xs="http://www.w3.org/2001/XMLSchema-instance"` namespace. The schema defines a complex type named `BusinessEntity` and a complex type named `account` that extends `BusinessEntity`. The `account` type is defined as a sequence of elements, including `accountcategorycode`, `accountclassificationcode`, `accountid`, `accountnumber`, `accountratingcode`, `address1_addressid`, `address1_addresstypecode`, `address1_city`, `address1_country`, `address1_latitude`, `address1_line1`, `address1_line2`, `address1_line3`, `address1_longitude`, `address1_name`, `address1_postalcode`, `address1_postofficebox`, `address1_primarycontactname`, `address1_shippingmethodcode`, `address1_stateorprovince`, `address1_telephone1`, `address1_telephone2`, `address1_telephone3`, `address1_upszone`, `address1_utcoffset`, `address2_addressid`, `address2_addresstypecode`, `address2_city`, `address2_country`, `address2_fax`, `address2_freighttermscode`, `address2_latitude`, `address2_line1`, `address2_line2`, `address2_line3`, `address2_longitude`, `address2_name`, `address2_postalcode`, `address2_postofficebox`, `address2_primarycontactname`, `address2_shippingmethodcode`, `address2_stateorprovince`, `address2_telephone1`, `address2_telephone2`, `address2_telephone3`, `address2_upszone`, and `address2_utcoffset`.

Sample schema for an entity collection (AccountList):

```

<?xml version="1.0" encoding="utf-16" ?>
<xs:schema xmlns:b="http://schemas.microsoft.com/BizTalk/2003" xmlns:tns="http://172.21.5.37:5555/mscsmessages/2006/CmServiceWsdll.aspx/accountList"
  elementFormDefault="qualified" targetNamespace="http://172.21.5.37:5555/mscsmessages/2006/CmServiceWsdll.aspx/accountList"
  xmlns:xs="http://www.w3.org/2001/XMLSchema"
  >
  <xs:import schemaLocation="..\mscsmService_1_account.xsd" namespace="http://172.21.5.37:5555/mscsmessages/2006/CmServiceWsdll.aspx/account" />
  <xs:annotation>
    <xs:appinfo>
      <references xmlns="http://schemas.microsoft.com/BizTalk/2003"
        <reference targetNamespace="http://172.21.5.37:5555/mscsmessages/2006/CmServiceWsdll.aspx/account" />
      </references>
    </xs:appinfo>
  </xs:annotation>
  <xs:element name="accountList">
    <xs:complexType>
      <xs:sequence>
        <xs:element name="count" type="xs:string" />
        <xs:element xmlns:q1="http://172.21.5.37:5555/mscsmessages/2006/CmServiceWsdll.aspx/account" ref="q1:account" />
      </xs:sequence>
    </xs:complexType>
  </xs:element>
</xs:schema>
  
```

Sample schema for an XRM function (CreateOptionSet):

```

<?xml version="1.0" encoding="utf-16" ?>
<xs:schema xmlns:b="http://schemas.microsoft.com/BizTalk/2003" xmlns:ns0="Microsoft.Xrm.Sdk.Messages.CreateOptionSet" elementFormDefault="qualified"
  targetNamespace="Microsoft.Xrm.Sdk.Messages.CreateOptionSet" version="1.0" xmlns:xs="http://www.w3.org/2001/XMLSchema"
  >
  <xs:annotation>
    <xs:appinfo>
      <file:NameHint xmlns="http://schemas.microsoft.com/servicemodel/adapters/metadata/xsd">CreateOptionSet_schema</file:NameHint>
    </xs:appinfo>
  </xs:annotation>
  <xs:element name="CreateOptionSet">
    <xs:annotation>
      <xs:documentation>
        <doc:action
          xmlns:doc="http://schemas.microsoft.com/servicemodel/adapters/metadata/documentation" Microsoft.Xrm.Sdk.Messages.CreateOptionSet</doc:action>
        </xs:documentation>
      </xs:annotation>
    </xs:complexType>
    <xs:sequence>
      <xs:element name="OptionSet" type="ns0:OptionSetMetadataBase" />
      <xs:element name="SolutionUniqueName" type="xs:string" />
    </xs:sequence>
  </xs:complexType>
</xs:element>
<xs:element name="CreateOptionSetResponse">
  <xs:annotation>
    <xs:documentation>
      <doc:action
        xmlns:doc="http://schemas.microsoft.com/servicemodel/adapters/metadata/documentation" Microsoft.Xrm.Sdk.Messages.CreateOptionSet/response</doc:action>
      </xs:documentation>
    </xs:annotation>
  </xs:complexType>
  <xs:sequence>
    <xs:element name="OptionSetId" type="ns0:Guid" />
  </xs:sequence>
</xs:complexType>
</xs:element>
<xs:complexType name="OptionSetMetadataBase">
  <xs:sequence>
    <xs:element name="Description" type="ns0:Label" />
    <xs:element name="DisplayName" type="ns0:Label" />
    <xs:element minOccurs="0" name="IsCustomOptionSet" type="xs:boolean" />
    <xs:element minOccurs="0" name="IsGlobal" type="xs:boolean" />
    <xs:element minOccurs="0" name="IsManaged" type="xs:boolean" />
    <xs:element name="IsCustomizable" type="ns0:BooleanManagedProperty" />
    <xs:element name="Name" type="xs:string" />
    <xs:element minOccurs="0" name="OptionSetType" type="ns0:OptionSetType" />
    <xs:element minOccurs="0" name="MetadataId" type="ns0:Guid" />
  </xs:sequence>
</xs:complexType>
<xs:complexType name="Label">
  <xs:sequence>
    <xs:element maxOccurs="unbounded" name="LocalizedLabels" type="ns0:LocalizedLabel" />
    <xs:element name="UserLocalizedLabel" type="ns0:LocalizedLabel" />
  </xs:sequence>
</xs:complexType>
  
```

Sample schema for a CRM function (ConvertQuoteToSalesOrder):

```

<?xml version="1.0" encoding="utf-16" ?>
<xs:schema xmlns:b="http://schemas.microsoft.com/BizTalk/2003" xmlns:ns0="Microsoft.Crm.Sdk.Messages.ConvertQuoteToSalesOrder" elementFormDefault="qualified"
  targetNamespace="Microsoft.Crm.Sdk.Messages.ConvertQuoteToSalesOrder" version="1.0" xmlns:xs="http://www.w3.org/2001/XMLSchema"
  >
  <xs:annotation>
    <xs:appinfo>
      <file:NameHint xmlns="http://schemas.microsoft.com/servicemodel/adapters/metadata/xsd">ConvertQuoteToSalesOrder_schema</file:NameHint>
    </xs:appinfo>
  </xs:annotation>
  <xs:element name="ConvertQuoteToSalesOrder">
    <xs:annotation>
      <xs:documentation>
        <doc:action
          xmlns:doc="http://schemas.microsoft.com/servicemodel/adapters/metadata/documentation" Microsoft.Crm.Sdk.Messages.ConvertQuoteToSalesOrder
        </xs:documentation>
      </xs:annotation>
    </xs:complexType>
  </xs:element>
  
```



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