

2012

Intellect Integration: External Data Sources User's Manual

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External data sources

This feature allows external data sources such as databases, Excel files, Salesforce, etc. to be accessed as if they were created in Intellect.

Viewing external data sources

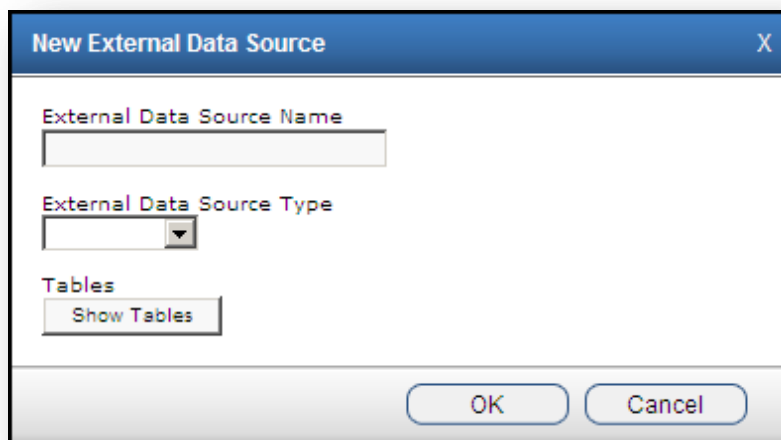
To view all external data sources:

1. Go to *Administrative Tools*.
2. Go to *External Data Sources*.

No.	External Data Source	External Data Source Type
1	Interneer Salesforce Demo	SalesForce
2	Leads Excel	Excel
3	Leads Excel 2	Excel
4	Northwind	Access
5	Northwind 2	Access
6	Northwind 3	Access
7	SalesForce 2	SalesForce

Adding/changing external data sources

1. To add an external data source, click the *Insert External Data Source* button. To edit an existing external data source, click the external data source's name.
2. The following page appears:



The image shows a dialog box titled "New External Data Source" with a close button (X) in the top right corner. The dialog contains three main sections: "External Data Source Name" with a text input field, "External Data Source Type" with a dropdown menu, and "Tables" with a "Show Tables" button. At the bottom of the dialog are "OK" and "Cancel" buttons.

New External Data Source	
External Data Source Name	<input type="text"/>
External Data Source Type	<input type="text"/>
Tables	<input type="button" value="Show Tables"/>
<input type="button" value="OK"/> <input type="button" value="Cancel"/>	

3. Fill out these fields:

Field	Description
External Data Source Name	A unique name you give describing the data source.
External Data Source Type	<p>The type of data source, such as a database, Excel file, Salesforce, etc.</p> <p>If the type of data source isn't listed, then you must add a new external data source type (see <i>External Data Source Types</i> below.)</p>
Additional Parameters	<p>Additional pieces of information needed to access this data source, such as username, password, etc.</p> <p>The additional parameters vary depending on the type of data source.</p>
Tables	<p>The data tables that this data source contains. Check off any data tables that you want to access in Intellect.</p> <p>Some data tables may ask for a unique ID field. This is the field that uniquely identifies an instance within the data table.</p>

4. Click *OK* or *Show Tables*.

If the data source can be accessed successfully, one table is created in Intellect under the *Administrative Tools/External Tables* category for each table checked off in the *Tables* field. For example, if you checked off the *Payroll* and *Employees* tables, then *Payroll* and *Employees* tables would be created in the *External Tables* category.

Since tables in Intellect require an associated template, a template is also created to match each new table. A template category with the external data source's name is created under the *Administrative Tools\Templates\External Templates* category. For example, if you created an external data source called *Accounting*, then a template category called *Accounting* is created.

Then one template is created in the new template category for each table that was checked off. For example, if you checked off the tables *Payroll* and *Employees* in the *Accounting* external data

source, then *Payroll* and *Employees* templates are created under the *Accounting* template category.

Troubleshooting

If the external data source cannot be accessed successfully, then an error message appears in red. If the message doesn't clearly indicate the problem, here are some troubleshooting tips:

- If the data source requires a username and password, double-check these to make sure they are correct and not expired.
- If the data source accesses a file make sure the file path can be recognized by the web server. Also make sure that the file can be accessed by *Everyone* in the file security. Finally, if it is an Excel or Access file, make sure that it is in either Excel 2000 or Access 2000 format.

Deleting an external data source

To delete an external data source:

1. Go to *Administrative Tools*.
2. Go to *External Data Sources*.
3. Right-click the external data source you want to delete.
4. Click the *Delete* option and confirm the deletion.

Using external data sources

External tables and templates can be used just like any other table or template. They can even be accessed from the properties of internal fields. For example, you can set the *Data List* property of an internally-created drop-down to an external table.

Restrictions

- External data is read-only. You cannot add, edit or delete instances.
- You can move fields and set most field properties, but you cannot add or delete fields.

External data source types

These are the types of external data sources. The most-often used types are already included in Intellect, however if a new type of web service or database is being accessed, then a new external data source type will need to be created.

Viewing external data source types

To view all external data sources:

1. Go to *Administrative Tools*.
2. Go to *External Data Source Types*.
3. The following page appears:

No.	External Data Source Type	Web Service?
1	<u>Access</u>	No
2	<u>Excel</u>	No
3	<u>Oracle</u>	No
4	<u>SalesForce</u>	Yes
5	<u>SQL Server</u>	No

Adding/changing external data source types

1. To add an external data source type, click the *Insert External Data Source Type* button. To edit an existing external data source type, click the external data source type's name.
2. The following page appears:

New External Data Source Type

External Data Source Type Name

Web Service?

☐ Yes
☒ No

Provider

	Not needed	Same for all data sources of this type	Different for each data source of this type
Product Name	<input checked="" type="radio"/>	<input type="radio"/> Value: <input type="text"/>	<input type="radio"/> Label: <input type="text"/>
Data Source	<input checked="" type="radio"/>	<input type="radio"/> Value: <input type="text"/>	<input type="radio"/> Label: <input type="text"/>
Provider String	<input checked="" type="radio"/>	<input type="radio"/> Value: <input type="text"/>	<input type="radio"/> Label: <input type="text"/>
Location	<input checked="" type="radio"/>	<input type="radio"/> Value: <input type="text"/>	<input type="radio"/> Label: <input type="text"/>
Catalog	<input checked="" type="radio"/>	<input type="radio"/> Value: <input type="text"/>	<input type="radio"/> Label: <input type="text"/>
Use Self	<input checked="" type="radio"/>	<input type="radio"/> Value: <input type="text"/>	<input type="radio"/> Label: <input type="text"/>
Local Login	<input checked="" type="radio"/>	<input type="radio"/> Value: <input type="text"/>	<input type="radio"/> Label: <input type="text"/>
Remote User	<input checked="" type="radio"/>	<input type="radio"/> Value: <input type="text"/>	<input type="radio"/> Label: <input type="text"/>
Remote Password	<input checked="" type="radio"/>	<input type="radio"/> Value: <input type="text"/>	<input type="radio"/> Label: <input type="text"/>

OK

Cancel

3. Fill out these fields:

Field	Description
External Data Source Type Name	A unique name you give describing the data source type.
Web Service?	<p>Is the data source accessed using a web service?</p> <ul style="list-style-type: none"> • Yes. It is accessed using a web service. • No. It is either a direct database access or access through a linked server (e.g. Excel).
Provider	<p>The unique programmatic identifier of the OLE DB provider that corresponds to this data source.</p> <p>This field only appears if the external data source is not a web service.</p>
Product Name	<p>The product name of the OLE DB data source to add as a linked server.</p> <p>If the product name is not needed for this data source type, then select the <i>Not Needed</i> radio button.</p> <p>If the product name is the same for all data sources of this type, then select the <i>Same for all data sources of this type</i> radio button. Then indicate the product name in the <i>Value</i> text box.</p> <p>If the product name is different for each data source of this type, then select the <i>Different for each data source of this type</i> radio button. When a new external data source is created for this type, the configurator will be asked for a product name. In the <i>Label</i> text box, indicate a more appropriate label that the configurator will understand when specifying the product name.</p> <p>This field only appears if the external data source is not a web service.</p>
Data source	<p>The name of the data source as interpreted by the OLE DB provider.</p> <p>For instructions on how to fill out this field, see</p>

	<p>the <i>Product Name</i> field instructions. This field only appears if the external data source is not a web service.</p>
Provider string	<p>The OLE DB provider-specific connection string that identifies a unique data source.</p> <p>For instructions on how to fill out this field, see the <i>Product Name</i> field instructions. This field only appears if the external data source is not a web service.</p>
Location	<p>The location of the database as interpreted by the OLE DB provider.</p> <p>For instructions on how to fill out this field, see the <i>Product Name</i> field instructions. This field only appears if the external data source is not a web service.</p>
Catalog	<p>The catalog to be used when a connection is made to the OLE DB provider.</p> <p>For instructions on how to fill out this field, see the <i>Product Name</i> field instructions. This field only appears if the external data source is not a web service.</p>
Use Self	<p>A value of true specifies that logins use their own credentials to connect to the remote server, with the Remote User and Remote Password fields being ignored. A value of false specifies that the Remote User and Remote Password fields are used to connect to the remote server for the specified Local Login. If the Remote User field is blank, no login or password is used to connect to the remote server.</p> <p>For instructions on how to fill out this field, see the <i>Product Name</i> field instructions. This field only appears if the external data source is not a web service.</p>
Local Login	<p>A login on the local server. If not blank, the Local Login can be a SQL Server login or a Windows login. The Windows login must have been granted access to SQL Server either directly, or through its membership in a</p>

	<p>Windows group granted access.</p> <p>For instructions on how to fill out this field, see the <i>Product Name</i> field instructions. This field only appears if the external data source is not a web service.</p>
Remote User	<p>The user name used to connect to the remote server when the Use Self field is false.</p> <p>For instructions on how to fill out this field, see the <i>Product Name</i> field instructions. This field only appears if the external data source is not a web service.</p>
Remote Password	<p>The password associated with the remote user.</p> <p>For instructions on how to fill out this field, see the <i>Product Name</i> field instructions. This field only appears if the external data source is not a web service.</p>
Web Service URL	<p>The URL of the web service that accesses the external data source. This web service will have to be specially programmed to work with Intellect and use the methods outlined in the <i>Web Service Methods</i> section below.</p> <p>This option only appears if the external data source type is a web service.</p>
Additional Parameter Labels	<p>These are all the additional parameters needed to access any external data sources for this type.</p> <p>At this point, just specify the labels indicating what additional parameters are needed. For example, if the additional parameters are a username and password, then specify <i>Username</i> and <i>Password</i> as two additional parameter labels.</p> <p>The actual parameter values will be supplied when any external data sources are created of this type. In the example above, when someone creates this type of external data source, he will be asked for a username and password.</p> <p>This option only appears if the external data source type is a web service.</p>

4. Click the *OK* button to save the external data source type.

Web service methods

This section is for software developers only. This section shows how to create a web service to access a type of external data source.

There are four methods:

- ReadTables
- ReadColumns
- ReadIndexes
- ReadData

ReadTables method

This method reads the available tables from the external data source.

Parameters

This method has one parameter called *AdditionalParametersXML*, which indicates all the additional parameters to be passed to the web service. This parameter is a string which contains XML. The XML contains a main tag called *AdditionalParameters*.

Each sub-tag represents one parameter. The tag's name is the additional parameter's label without any punctuation or spaces. The text inside the tag is the additional parameter's value. For example, assume there are two additional parameters: *User Name* (which is *jsmith*) and *Password* (which is *abcde*). The XML would be:

```
<AdditionalParameters>
  <UserName>jsmith</UserName>
  <Password>abcde</Password>
</AdditionalParameters>
```

Returns

This method returns a string of XML which contains general information about all the external data source's tables.

The XML contains one sub-tag for each table in the external data source. For each table tag, there are three sub-tags:

Tag Name	Tag Value
Label	The table's label.
VariableName	The table's name as recognized by the external data source.
UniqueIDColumn	The name (as recognized by the external data source) of the Unique ID field within the table.

ReadColumns method

This method reads the available columns of an external table.

Parameters

This method has two parameters:

Parameter	Description
AdditionalParametersXML	See the description for <i>AdditionalParametersXML</i> in the <i>Parameters</i> section of the <i>ReadTables</i> method.
TableName	A string containing the table's name as recognized by the external data source.

Returns

This method returns a string of XML which contains general information about all the external table's columns.

The XML contains one sub-tag for each column in the external table. For each table tag, there are three sub-tags:

Tag Name	Tag Value
Label	The column's label.
VariableName	The column's name as recognized the external data source.
Type	The type of column. This type matches the name Intellect uses in its toolbox. For example, a number field would be <i>Number</i> and a date/time field would be <i>Date / Time</i> .
Additional properties	Depending on the type of column, additional properties can be set. These property names are the same as the internal names that Intellect uses for its properties.

ReadIndexes method

This method reads the available indexes of an external table. Currently this method is not needed for web services but will eventually be used to determine which queries will run quickly.

ReadData method

This method reads data from an external table.

Parameters

This method has three parameters:

Parameter	Description
AdditionalParametersXML	See the description for <i>AdditionalParametersXML</i> in the <i>Parameters</i> section of the <i>ReadTables</i> method.
TableName	A string containing the table's name as recognized by the external data source.
Query	A string containing the query for accessing the data. For the format of a query, refer to the <i>Query format</i> section below.

Query format

For the Query parameter listed above, XML is passed. There are four possible types of tags in this XML:

- **<Sort ID="[Column Name]">**
where *Column Name* is the name of the column to sort. If multiple *Sort* tags are specified, the resulting data set should be sorted by all the columns specified in the order that the tags appear.
- **<Column ID="[Column Name]">**
where *Column Name* is the name of the column to return. If multiple *Column* tags are specified, the resulting data set should return all the columns specified in the order that the tags appear.
- **<Select ID="[Column Name]" Comparison="Comparison" AndOr="AndOr">**
 <Value>Expression1</Value>
 <Value>Expression2</Value>
 <Value>Expression3</Value>
 <Value>Expression4</Value>
 </Select>

Each Select tag specifies a comparison between a database column and one or more values. Multiple Select tags can be specified in a query. This tag contains the following attributes:

- **ID="[Column Name]"**
Column Name is the name of the column to compare.
- **Comparison="Comparison"**

Comparison is the type of comparison to make such as “is”, “is not”, “is between”, “is greater”, etc. The column specified in the ID attribute will be compared to the columns, value and/or expressions specified in the *Value* sub-tags.

The possible values for *Comparison* are:

- **“is...”**
The column’s value must be equal to one of the values specified in the *Value* sub-tags.
- **“is not...”**
The column’s value may not be equal to any of the values specified in the *Value* sub-tags.
- **“is less than...”**
The column’s value is less than or equal to the value specified in the *Value* sub-tag. (Only one *Value* tag is specified. This comparison applies only to numbers.)
- **“is greater than...”**
The column’s value is greater than or equal to the value specified in the *Value* sub-tag. (Only one *Value* tag is specified. This comparison applies only to numbers.)
- **“is between...”**
The column’s value is between the value specified in the first *Value* sub-tag and the second *Value* sub-tag. (Two *Value* tags are specified. This comparison applies only to numbers and date/times.)
- **“is earlier than...”**
The column’s value is earlier than or same as the date/time specified in the *Value* sub-tag. (Only one *Value* tag is specified. This comparison applies only to date/times.)
- **“is later than...”**
The column’s value is later than or same as the date/time specified in the *Value* sub-tag. (Only one *Value* tag is specified. This comparison applies only to date/times.)
- **“starts with...”**
The column’s value starts with the text specified in the *Value* sub-tag. (Only one *Value* tag is specified. This comparison applies only to text and memo fields.)
- **“ends with...”**
The column’s value ends with the text specified in the *Value* sub-tag. (Only one *Value* tag is specified. This comparison applies only to text and memo fields.)
- **“contains...”**

The column's value contains the text specified in the *Value* sub-tag. (Only one *Value* tag is specified. This comparison applies only to text and memo fields.)

- **AndOr="AndOr"**

This parameter is ignored for the first Select tag. Subsequent Select tag comparisons are appended to the previous Select tag's comparison with an "And" or an "Or", which is specified in this parameter.

- **<Parenthesis AndOr="AndOr">**

```
<Select>
...
</Select>
<Select>
...
</Select>
<Parenthesis>
...
</Parenthesis>
</Parenthesis>
```

This tag allows parenthesis to be specified in the query. Parenthesis tags can contain Select tags and/or other Parenthesis tags. The Parenthesis tag contains the following attribute:

- **AndOr="AndOr"**

This parameter is ignored for the first Parenthesis tag. Subsequent Parenthesis tag conditions are appended to the previous Parenthesis tag's condition with an "And" or an "Or", which is specified in this parameter.

Returns

This method returns a string of XML which contains the data results from the query.

The XML contains one sub-tag for each instance returned. For each instance tag, there is one sub-tag for each data column returned. The column's tag name is the same as the column's name as recognized by the external data source and stripped of spaces and punctuation.

The following sample XML shows the first and last name of two employees returned as a data result:

```
<Employees>
  <Employee>
    <FirstName>John</FirstName>
    <LastName>John</LastName>
  </Employee>
  <Employee>
    <FirstName>Jane</FirstName>
```

```
        <LastName>Doe</LastName>
    </Employee>
</Employees>
```

Deleting an external data source type

To delete an external data source type:

1. Go to *Administrative Tools*.
2. Go to *External Data Sources*.
3. Right-click the external data source you want to delete.
4. Click the *Delete* option and confirm the deletion.