BPS 40 – ODA Data Source and Data Set Property Binding to BIRT Report

Design Specification
Version 1: Dec 21, 2005

Abstract

This is the design specification of BIRT 2.0 BPS 40 – ODA Data Source Property Binding to BIRT Report.

Document Revisions

Version	Author	Date	Description of Changes
Draft 1	Gary Xue	Dec 12, 2005	First draft
Version 1	Gary Xue	Dec 21, 2005	Minor updates per comments received

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1. Introduction

An ODA Data Source defines a list of data source properties ("connection properties") for which values must be furnished at runtime to establish a connection. In a common usage scenario, the values for these connection properties are not known at report design time. Rather their values are calculated at runtime based on user input or environment settings etc. In BIRT 1.x, runtime assignment of data source connection properties can be done only through scripting. There are two problems with this approach. Firstly it requires the report designer to write script code. Secondly the custom scripts are associated with the data source design. This makes it difficult to share the same data source design across multiple reports, since each report design may have its own logic for providing runtime values for these properties.

This project seeks to provide a solution for setting runtime values for ODA data source and data set properties in a user-friendly and portable way. This is achieved by introducing the concept of *Property Binding* to BIRT report design. Each report design contains a Property Binding root-level element, which defines optional bindings from any report element's property to a ROM expression. In BIRT 2.0, property bindings are enabled only for Data Source and Data Set elements.

As an example, the following sequence describes how property binding affects connection property values for a data source:

1. If a data source binding is defined in the report for that data source, and the binding associates the connection property with an expression, the expression is evaluated and its result used as the initial value for that property.

2. Otherwise, the value of that property as defined in the data source design is used as the initial value.

3. The *beforeOpen* script of the data source, if present, is evaluated, which can further modify the connection property value set in (1) or (2).

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2. ROM and DE API Changes

ROM will be extended to support binding all report element properties to expressions. Property binding expressions will have access to report parameters, configurations and static BIRT report objects. DE API will provide method to access the property binding expressions given a report element handle. It is the responsibility of the Engine to evaluate the binding expressions at runtime.

2.1 Rom.def Changes

ReportDesign element will be enhanced to support a new property called *PropertyBinding*:

```
<Property canInherit="false" detailType="propertyBinding"
        displayNameID="Element.Module.propertyBindings"
        isList="true" name="propertyBindings" type="structure"/>
```

A new ROM Data Type will be added:

```
<Structure name="propertyBinding">
   <Member name="name" since="2.0" type="name"/>
   <Member name="id" returnType="any" since="2.0" type="string"/>
   <Member name="value" returnType="string" since="2.0"
         type="expression"/>
</Structure>
```

2.2   DE API Changes

Class org.eclipse.birt.report.model.api.DesignElementHandle will support the following two methods:

```
/**
 * Gets a binding expression text for a property
 */
String GetPropertyBinding ( String propertyName );

/**
 * Sets a binding expression text for a property
 */
void SetPropertyBinding( String propertyName , String expression )
```

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3.   Engine and Data Engine Changes

In BIRT 2.0, Design Element property binding only takes effect for OdaDataSet and OdaDataSource. The Engine's ModelDteApiAdaptor class, which adapts DE API's data set and data source handles to Data Engine's data set and data source definition, will be responsible for evaluating binding expressions for data set and data source properties. Public methods in this class will include an additional Javascript scope parameter, which will be set to the report execution's shared scope, to allow the adaptor to evaluate expressions.

There is no change to the Data Engine API and its implementation.

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4.   Engine and Data Engine Changes

In BIRT 2.0, Report Designer UI will expose the ability to view/edit property binding expressions for ODA Data Set and ODA Data Source elements only. A generic property binding editor will be available in a future release.

4.1   Data Set Property Binding Editor

The Data Set editor will include an additional editing tab, "Property Binding", for ODA Data Sets. This tab lists the property bindings for the following ODA Data Set properties

(1) Query Text

(2) All Data Set properties defined by the ODA extension

The following is a mockup of what the editor looks like for a JDBC data set. Query Time Out is the data set property defined by the oda.jdbc extension.
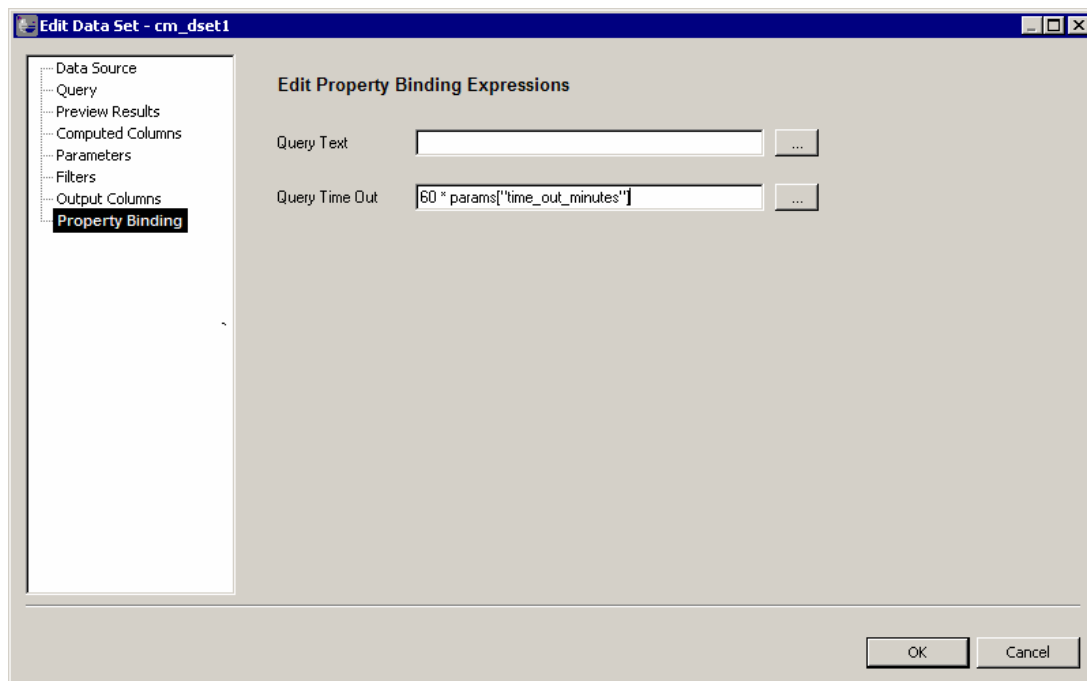
Clicking on the "…" button brings up the expression editor. The expression editor should only show the static global objects in its object browser.

4.2   Data Source Property Binding Editor

A similar change is made to the Data Source Editor to include an editor tab for ODA data source properties. The tab shows all data source properties defined by the extension. In the case of JDBC data sets for example, four properties are shown: Driver Class, URL, User Name and Password.