

Introduction to BIRT (Business Intelligence Reporting Tools)

A handout for the ERP system course at Aalborg University

(This introduction document is mainly based on the report by *Leon Torres and Si Chen*, but is adapted to the Aalborg University Students' needs, such as using the embedded database Derby, integration of reports into OFBiz, etc. For the original document see <http://www.opensourcestrategies.com/ofbiz/ofbiz-birt.pdf>)

Installation and first steps

The Business Intelligence Reporting Tools (BIRT) is a suite of tools for generating professional-looking reports from a database. BIRT can be integrated into a web application server framework to render reports in HTML or PDF on the fly. Alternatively, BIRT can run standalone using the Rich Client Platform (RCP) Designer application, which is installed on a client machine and connects to an OFBiz database remotely.

This tutorial describes in detail how to set up the BIRT RCP Designer application on a Windows machine and how to connect to the embedded database Derby of OFBiz. It also presents a brief tutorial on how to generate reports using sample students and their progress in our studentProgress application from last week.

The database used in this tutorial is Derby 10.2.1.6. However, it is easy to use any other database with the appropriate drivers.

Prerequisites

You will need the standalone BIRT RCP Designer, see <http://download.eclipse.org/birt/downloads/>. It comes either with the entire Eclipse SDK and all necessary plug-ins, or just with the BIRT plug-ins (you will need Eclipse SDK 3.3, EMF 2.3, DTP 1.5, and WTP 2.0). It will be easier to use the All-in-one package and adapt it to your needs.

Next, you will need to download the JDBC driver for your database onto the Windows client machine so that BIRT can connect. The Derby 10.2.1.6 JDBC driver is already distributed with OFBiz at the following location: `ofbiz/framework/entity/lib/jdbc/derby-10.2.1.6.jar`. In order to avoid problems, copy this jar file over the `derby.jar` file located in the `Eclipse/plugins/org.apache.derby.core_` folder. Otherwise the BIRT RCP Designer will use a driver not suited for the version of the OFBiz Derby database.

A better useable database viewer might be Quantum DB (<http://quantum.sourceforge.net/>), which is also an Eclipse plug-in and helps a lot with testing SQL statements before creating a report. You can download the Quantum DB plug-in at [Sourceforge](http://sourceforge.net).

Running BIRT

Start Eclipse and create your first BIRT report project by selecting `File > New > Other... > Folder "Business Intelligent and Reporting Tool" > Report Project`. Second, create a new BIRT report (either via context

menu or File menu), name it like myFirstReport.rptdesign and choose to switch to the Report Design perspective. New views such as Palet, Data, and Property Editor open. In the middle is a view window where you will construct the report by dragging and dropping elements from the Palet view.

Let's begin by constructing a title for the report. Drag a Label object from the Palet onto the view window. You'll be prompted to enter the label text. Type in the title of the first report and press Enter. To change the text again, double click on the label.

Underneath the view is a Property Editor which displays options for the Label. You can change the font, colors, and general appearance. Make the Label looks like a title by changing the background color, increasing the font size, centering the text and making it bold.

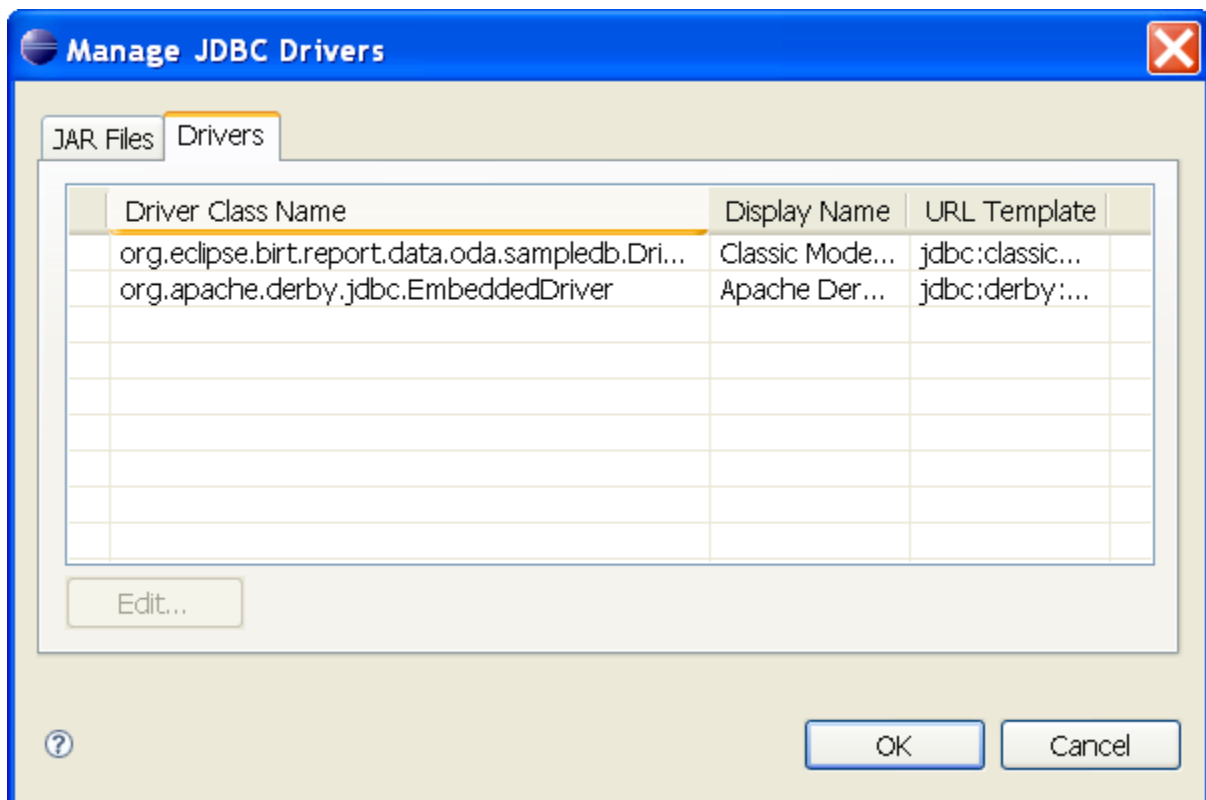
Now add a text object underneath the title to describe the first report. To do this, drag a Text from the Palet and a box should pop up prompting for input. Enter a description such as, "This is a report that shows the sales breakdown by product." The text should appear as the illustration above.

Connecting to the database

Databases are represented as Data Sources in BIRT. Find the Data Explorer tab next to the Palet and click on it. You should see a Data Sources folder. To create a Data Source, right click on the Data Sources folder and select New Data Source.

You'll be prompted to select a Data Source type. Select JDBC Data Source and click on Next.

The next dialog requests the connection information. First we will need to add our JDBC driver to the list named Driver Class. To do this, select **Manage Drivers**.

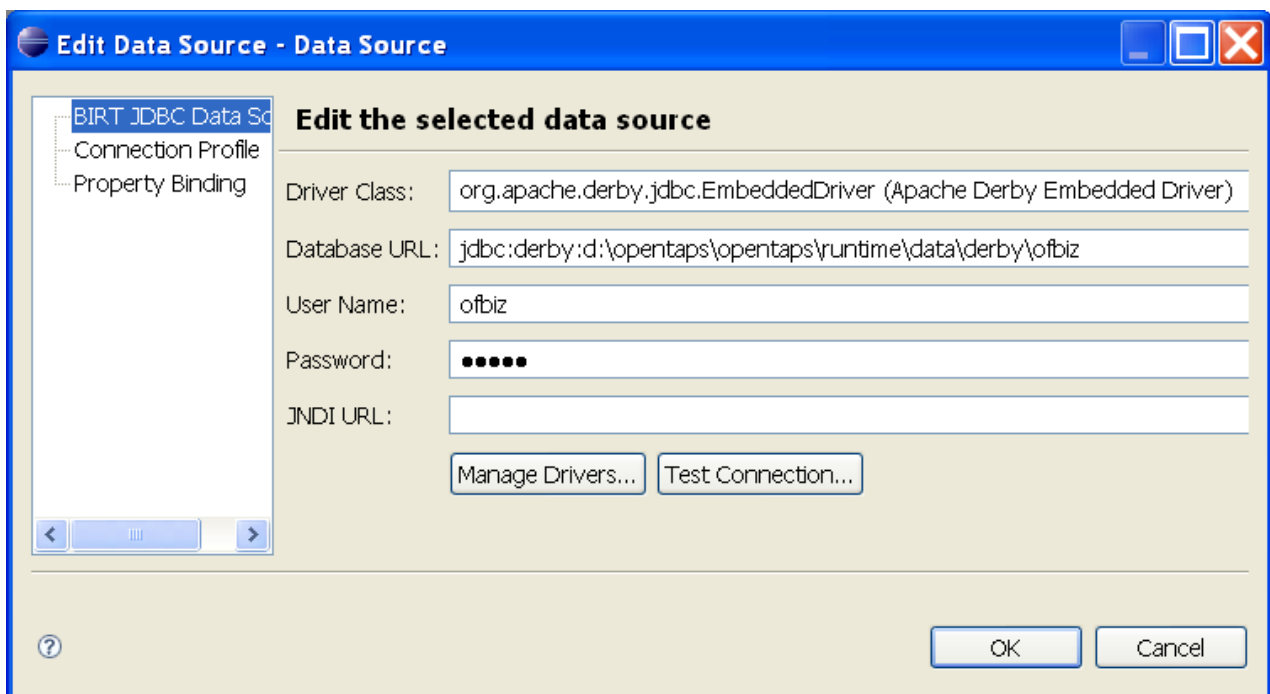


In the Manage JDBC Drivers dialog, use the **Add** button to add the JDBC jar file which you copied over to this machine. It will show up in the list of JAR Files.

Once the driver is listed, click **OK** to return to the dialog asking for connection information.

Now you can select your driver from the Driver Class list. The remaining connection information should be the same as that described in your OFBiz entityengine.xml configuration file. Enter the information and then click on **Test Connection** to see if you can connect. Then click **OK** to return to the main view.

If an error message occurs, several problems may have occurred: either you use the wrong driver for your embedded Derby database, or the database is already used by another instance (Derby databases only accept one connection!).

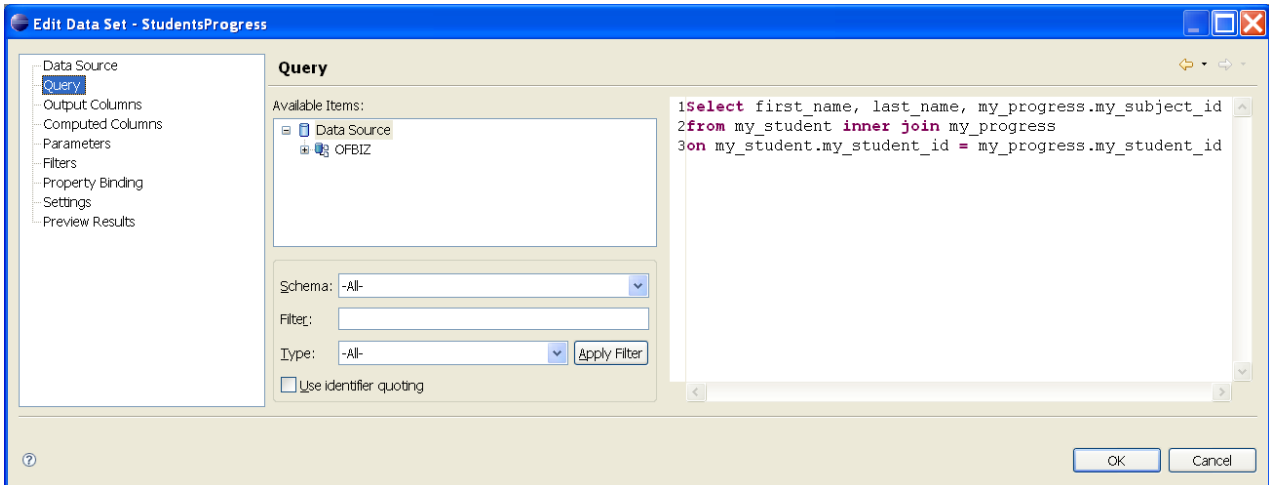


Creating Report Queries

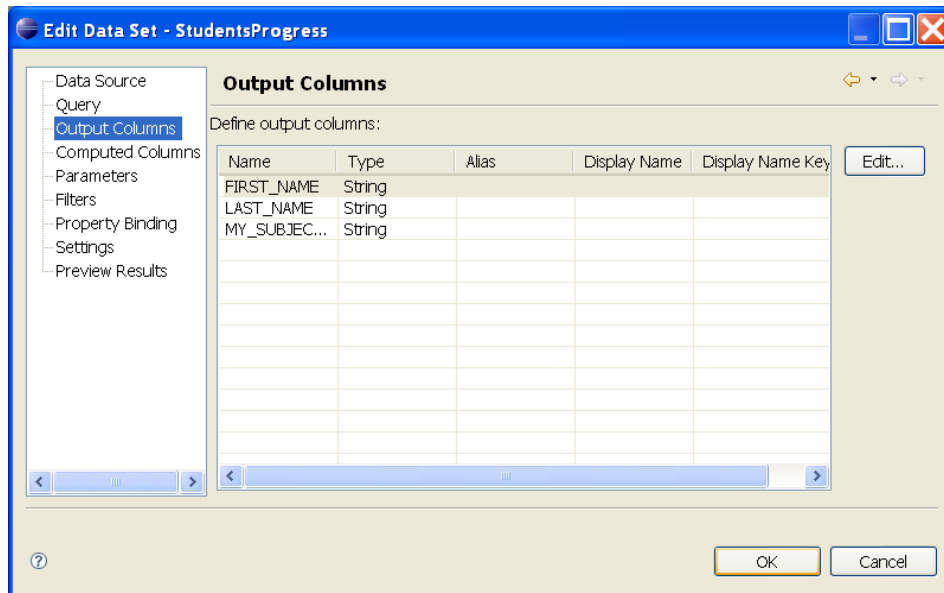
Assuming the connection was successful, we can proceed to define queries that our report will use. These queries are called Data Sets. They are located in the Data Explorer under the Data Sources.

To create a new Data Set, right click on the Data Set folder and select New Data Set from the context menu. This dialog asks for basic information about the Data Set. Give it a name, such as “Students and their progress”. There is only one data source. The Data Set Type is SQL Select Query.

The next dialog allows you to construct a SQL query and navigate the database and all of its objects, including tables, sequences, foreign keys, etc. (there might be some problems with the data table previewer, so that only the first n tables are shown). For testing your SQL queries better use the Quantum DB Eclipse plug-in as mentioned above.



Go ahead and type the query as shown in the illustration above. Alternatively, you can drag the names of the objects from the tree onto the query to save some typing. The query could be more sophisticated, but this is sufficient for the purpose of the tutorial.



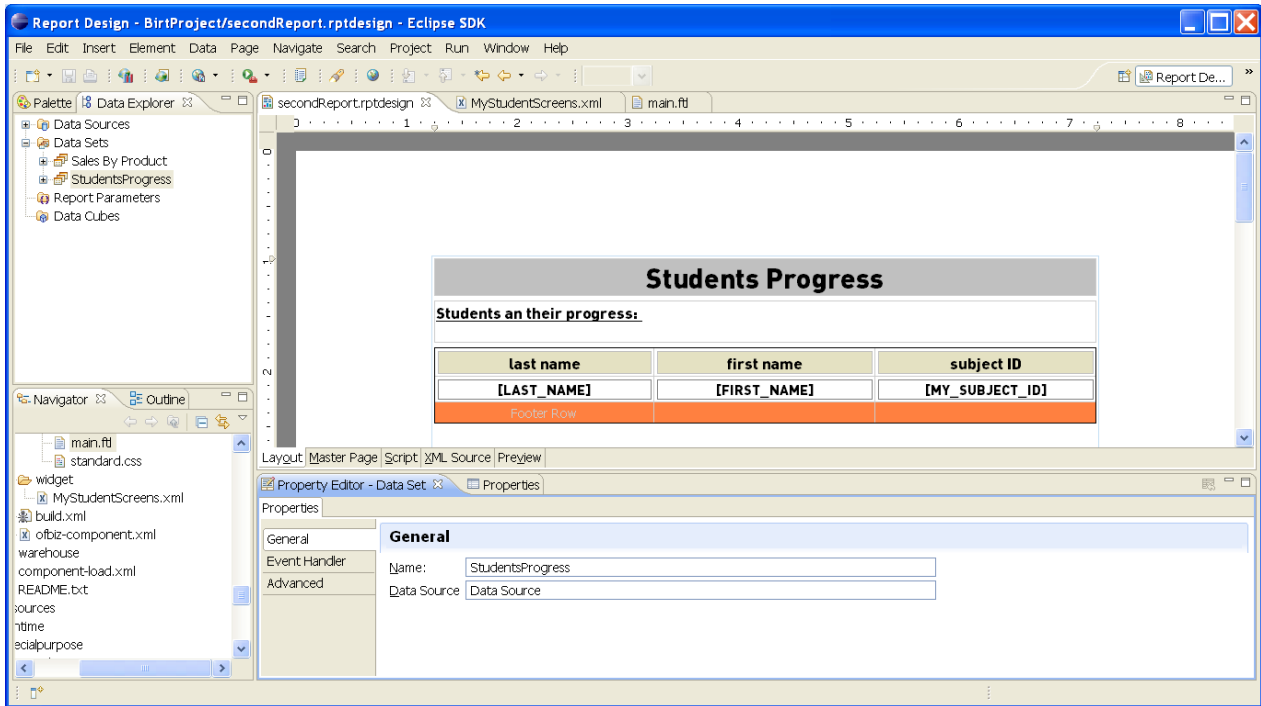
When you're finished, the Data Set should look like the illustration above. Notice that the result columns are part of the list. This is important because we can drag these columns onto objects in the view to create an association between a view object and the result column.

Presenting the Data Set in a Table

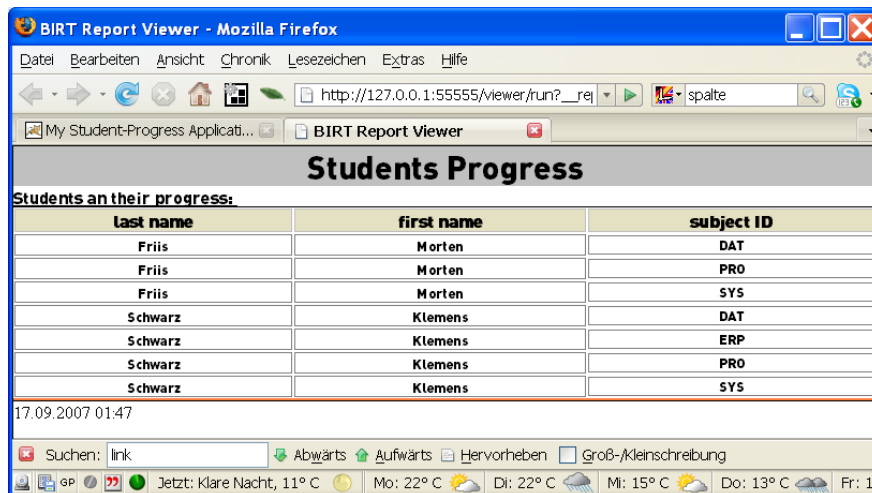
The next step is to display the results in a table. Go to the Palet and drag a Table object onto the view. You will be presented with a dialog requesting the number of columns and details. There are three result columns, so the default of three should be fine. Details is where our data would be displayed. Think of Details as a union of Data Sets. Since there is only one Data Set, the default of one detail is good.

The table appears on the view showing three kinds of rows, a Header row for the column title, a Detail row for our data, and a Footer row.

In order to link the table columns with the result set columns, all you need to do is drag the desired column from our Data Set in the Data Explorer onto the cell in the Detail row where you want the data to display. BIRT fills in the Header for you.



To format the table, click on each object to be formatted and edit their properties as you did with the Label and Text objects. You can format individual cells or whole rows and columns. Finally, our report is finished. Preview the results by clicking on the Preview tab, which is located along the bottom of the view.



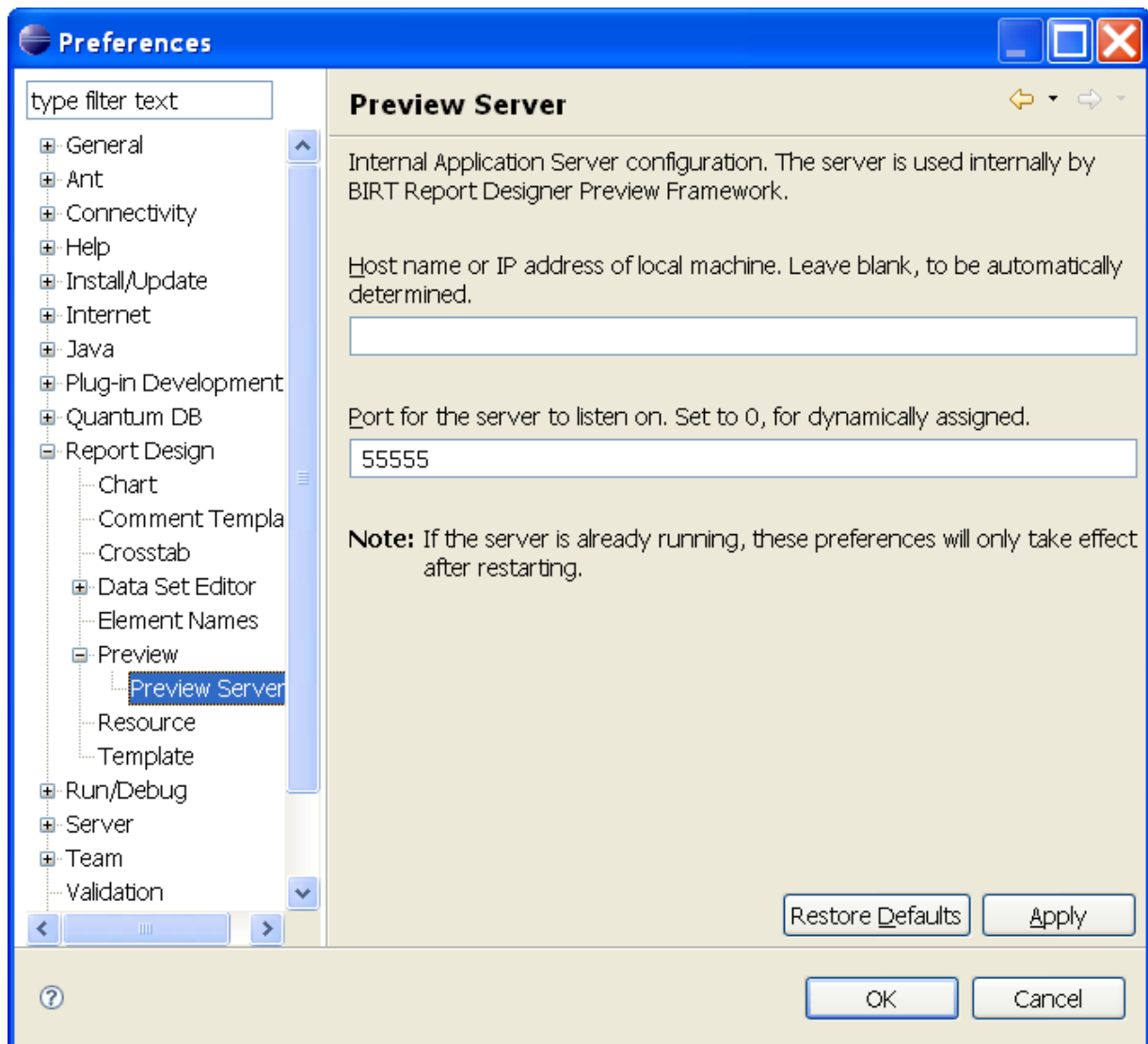
Saving the Report

To save the report, select **Save** from the **File** menu. This preserves all the work you've done up to this point as a .rptdesign file and allows you to resume the report creation at a later time. The .rptdesign file is also used to generate a report to the user dynamically as will be described in the next section.

Presenting the Report Dynamically within OFBiz

Once you've saved your report as an .rptdesign file, you can use the report as HTML or PDF by using a web browser. In Preview mode, right click on the window and select **Create Shortcut** from the context menu. BIRT will place a URL shortcut on your desktop that contains the .rptdesign file.

The .rptdesign files that you create can be incorporated into an OFBiz by just creating an a-href link on a FTL file or a XML screen file, either with the HTML or PDF result by choosing `__format=html` or `__format=pdf` as a parameter. The report will be updated every time the link is refreshed. As long as the BIRT RCP Designer is running, your .rptdesign report will be rendered. You may have seen, that the reports are always available from different ports everytime you start the BIRT Report Designer (so the generated links are always different). To avoid this, just go to Window > Preferences > Report Design > Preview > Preview Server, leave the IP address empty, but choose a random port, where the reports should be available, e.g. 55555 (see next figure).



Integrating the report into your application

You can integrate the link to your report either in Freemarker files (*.ftl) or Screen files (*YourApplication-Screens.xml*).

Integration into Main.ftl:

```
<h1>HELLO</h1>
<h3>Hye - this is your first ofbiz application, the Student-Progress application</h3>
<p />
<a href="http://127.0.0.1:55555/viewer/run?__report=C:\secondReport.rptdesign&
__format=pdf&__svg=false&__locale=de_AT&__designer=true&__masterpage=true&
__rtl=false&__maxrows=500&__resourceFolder=C:\BirtProject&1440341526"
target= "_blank">Bericht</a>
```

Intagration into MyStudentScreens.xml:

```
<link target="http://www.google.at" text="Link to extern website (example)" url-
mode="raw" style="buttontext" />
```

For a correct report appearance within a multi-user environment you will need to install the Derby Server Framework instead of the embedded Derby database. See the [Derby administration documentation site](#) for further details.

Conclusions

In this tutorial you learned how to set up BIRT RCP Designer on a client machine, how to connect BIRT to the Derby embedded database, how to generate a report, and how to present the report as HTML or PDF dynamically. I hope you will not have big problems with the setup and usage of BIRT created HTML/PDF documents.

References

Websites used for creating this document:

- BIRT documentation page: <http://www.eclipse.org/birt/phoenix/>
- BIRT download page: <http://download.eclipse.org/birt/downloads/>
- Demo Video (BIRT Features Overview):
<http://download.eclipse.org/birt/downloads/examples/misc/BIRT2.1Demo/EclipseDemo.html>
- Demo Video (My first BIRT report):
<http://download.eclipse.org/birt/downloads/examples/reports/2.1/tutorial/tutorial.html>
- Derby Administration Documentation site: <http://db.apache.org/derby/docs/dev/adminguide/>