

Migration and Integration of other databases into Firebird using Cold Fusion

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About Transfertex www.tfx.de

Claus Heeg CIO, Transfertex, Germany
Textile Printing Company

- Interbase since 1993
- own written ERP System based on FB1.0.3
- 40+ FB database installations
HP-UX, LINUX, MAC OS10.30,WINXP
- 250 employees, 100+ Users (ERP),24/7,
doing all kind of DP including image processing
- programming C emb.SQL, ColdFusion, PowerHouse 4GL

The situation

- ◆ Firebird is the main database system (of course !)
- ◆ A lot of other 3 party DBMS and data systems around
- ◆ Replication or online access needed by users
- ◆ Ascii data export/import is not the answer of todays software facilities
- ◆ Also image processing - web services – from Mac OS X server

Customer Wishes

- ◆ No heavy multi-platform programming wanted
- ◆ Solution in short time
- ◆ Reporting should be nice and handy
- ◆ Less or null license costs – budget friendly
- ◆ Automatisations of routine tasks
- ◆ Quite a challenge !

How to get it done ?

- ◆ Look for a tool that can easily and versatile access all kind of data(-bases)
- ◆ Look for an easy coding tool
- ◆ Look for a tool that can do transaction-processing, reporting (webservices), scheduled tasks ... platform independend
- ◆ Look for a tool that is free or nice-priced

Cold Fusion was the choice

- ◆ MacroMedia:CFserver is 10 years on the market
- ◆ Huge installation base
- ◆ Easy to code, clear structured language
- ◆ Object oriented, too (Cf Components)
- ◆ “Came to live” as database manipulating language as a add-on to HTML pages --> “dbml”
- ◆ Fine reporting and presenting features
- ◆ (as a backbone of our IntraNet)

Why not ...C++, Delphi ?

- ◆ Platform independent Linux, MAC OSX, HP-UX, Solaris
- ◆ Easy “coder”
- ◆ Progressive Learncurve
- ◆ Nice to budget CF is free f. development
- ◆ Editor Eclipse and plugin CFEclipse

The basic concept

- ◆ ColdFusion Webapplication server as a “plugin” for webrowsers : IIS, Apache etc.
- ◆ simple html files including CFML tags
- ◆ Runs in the browser or background scheduler of the Coldfusion server

- ◆ Example:

```
<cfquery name="query1"  
datasource="employees" user="sysdba"  
password="wellknown">  
        select * from projects  
</cfquery>
```


In detail..

- ◆ **Cfquery** tag prepares the query for all kind of data-sources (by odbc , jdbc , native or proprietary drivers)
- ◆ Datasource= name of defined datasource in the CF Administrator (Options password)
- ◆ JDBCUrl: **jdbc:firebirdsql:127.0.0.1/3050:c:/db/my.fdb**
- ◆ Driver Class: **org.firebirdsql.jdbc.FBDriver**
- ◆ Driver Name: **org.firebirdsql.jdbc.FBDriver**
- ◆ name of the query
- ◆ **CFquery** attaches db, prepares and runs the query, fetches data in a result structure

Output?

- ◆ CF tag `<cfoutput> </cfoutput>` lists the data
- ◆ `<cfoutput query="query1" >`
 `#emp_no# #name# #projectid#
`
- ◆ `</cfoutput>` prints...
 1 Heeg 100
 2 John 101
 3 Smith 102
- ◆ The pound sign refers to all kind of variables in an output clause **`#anyvariable#`**
- ◆ More useful tags ...

More useful cftags

- ◆ `<cfloop [...]></cfloop>`
- ◆ `<ctransaction [...]> </ctransaction>`
- ◆ Transaction modes
READ_COMMITTED SERIALIZABLE
READ_UNCOMMITTED more...
- ◆ Action `<ctransaction
action="commit/rollback"/>`
- ◆ `<Cftry> <cfcatch type="database"> </cftry>`
- ◆ Example (nesting)...

Example1: “JOIN ” 2 datasources !

```
<cfquery name="q_FB" datasource="fb1">
  select * from employees
</cfquery>
<cfloop query="q_FB">
  <cfquery name="q_MS" datasource="mysql1">
    select * from employees
      where name=#q_FB.name#
  </cfquery>
  <cfloop query="q_MS">
    <cfoutput>
      #empFb.projectid#, #empFb.name#,
      #emp_MS.projectid# ...
    </cfoutput>
  </cfloop>
</cfloop>
```

Let`s repeat what we 've seen so far

- ◆ CF works with datasources by using all kind of ODBC,JDBC,Txt,even Webpages!
- ◆ CF has tags for attaching datasources and querying them
- ◆ CF has 2 tags for retrieving data
- ◆ cfoutput and cfloop
- ◆ **Cfloop can be nested!** It is generally more powerful then the listing tag cfoutput
- ◆ almost all kind of **SQL statements** are supported --> **DML and DDL** statements
- ◆ **Cftransaction** controls transaction handles
- ◆ **Cftry** controls Exception handling

Migration Oracle data to Firebird

- ◆ Get the ThinClient JDBC driver from Oracle website: **classes12.jar** and unpack the stuff in the java class path of Coldfusion server
- ◆ Go CF Admin page and define a datasource for it
- ◆ Datasource: **ora1**
- ◆ JDBC Url **jdbc:oracle:thin:@oraserver:1521:oracle1**
- ◆ Driver Class: **oracle.jdbc.OracleDriver**
- ◆ Driver Name: **oracle.jdbc.OracleDriver**
- ◆ Set UserName and Password
- ◆ Check: Maintain Database Connection=true
- ◆ Allow select,update,delete,procedures etc for that datasource to database objects
- ◆ We already set up a Firebird datasource a few slides before

Example 2

- ◆ Live Demo Oracle_to_Firebird data
- ◆
- ◆ Using nested / cfloop
- ◆ Prepare dateformat delivery from Oracle
dateformat(delivery,"dd.mm.yyyy")
- ◆ URL:
- ◆ <http://127.0.0.1/cf/intranet/orainegration1.cfm>

Example 3

- ◆ same Demo Oracle_to_Firebird
- ◆ Adding Exception Handler CFTRY
- ◆ Using Oracle's
to_char(delivery,'dd.mm.yyyy') for date!

<cftry>

<cfquery>... </cfquery>

<!--- CATCH EXCEPTION FROM DATABASE --->

<cfcatch type="Database">

<cfabort showerror="Database Error - ABORT!">

<!--- STOP on any DB Error --->

</cfcatch>

</cftry>



...Example 3

- ◆ And adding TRANSACTIONHANDLE:
- ◆
- ◆

```
<cftransaction isolation = "read_committed">  
... <cftransaction action="commit"  
      ("rollback") /> ...  
    </cftransaction>
```
- ◆ URL:
- ◆ http://127.0.0.1/cf/intranet/orainegration1_b.cfm

Example 4: UNION with Oracle and FB

- ◆ feature “Query of Query”
- ◆ `<cfquery dbtype=”query”>`
`select * from q_oracle`
- ◆ `union`
- ◆ `select * from q_fb </cfquery>`
- ◆ 2 query results are merged by new query
- ◆ and simply output the merged rowsets...
- ◆ URL
- ◆ <http://127.0.0.1/cf/intranet/oraintegration2.cfm>

More DB Processing tags

- ◆ CFQuery with caching !
...**cachedwithin=(0,0,1,0)**: keeps query-rowsets 1 Minute in **cachescope** of CFserver for all identical sql-statements
- ◆ **Cfstoredproc** : special for stored procedures
- ◆ **Cfquery, Cfinsert, cfupdate & cfqueryparam** which allows blocking vulnerable SQL injection attacks like known from MS SQL driven websites.
- ◆ **Cfoutput query=""**, maxrow/startrow/group
- ◆ **Cfloop query=""**, startrow/endrow...

DDL statements Oracle to FB

- ◆ Get table description from ORACLE systemtables (view: “all_tab_columns”)
- ◆ “Puzzle” a create table statement for FB
- ◆ Datatypes number gets numeric, date gets timestamp (incompatible types!)
- ◆ Run that statement !
- ◆ Then stuff the data as shown before
- ◆ Example: <http://127.0.0.1/cf/intranet/orainegration3.cfm>

Some hints...

- ◆ Firebird Query prefer “varchar” for columns instead type char; “char” get a trailing blank
#name#
- ◆ Example for compares use: #trim(name)#
“Claus” this is for Jaybird JDBC and ODBC connections (not for Oracle varchar2 types)!

Costs...CFML

- ◆ **Cold Fusion** develop. lic. limited 3 IP : free
- ◆ Eclipse and Cfeclipse plugin : free
- ◆ Cold Fusion STD 1400 \$ ENT 6000 \$
- ◆ **Blue Dragon** CFML Clone : free edition
odbc driver for Firebird
- ◆ **SnappMX**: flash-animated Website Tool
GUI : 500\$ discount for Firebird Conference -100\$
- ◆ **Railo**: CFML clone compiler for JSP/J2EE

End of Session

- ◆ Sorry I cd only show about 5% CFML features
- ◆ Any questions...?
- ◆ Related websites:
- ◆ www.coldfusion.com
- ◆ www.marcomedia.com,
- ◆ www.newatlanta.com,
- ◆ www.snappmx.com
- ◆ www.railo.ch
- ◆ www.cfml.de
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