Interbase DataPump Tour

Step 1 - Select your databases and set up properties

You need to select source and destination databases first.

For ADO/BDE source you also may specify how to handle boolean fields (which do not exists in Interbase/Firebird and you may want to convert them into char 'Y'/'N' or integer 1/0 presentation for example). Interbase v 7.0 has special native boolean data type supported by Interbase DataPump starting from version 3.4.

Please pay extra attention to **'Select Option'** and **'Quote Field Names'** options. Different SQL servers/database engines use different options and you should set the right one. If you keep getting error messages during obtaining databases structures or SQL script generation it may means that you set this options incorrectly. Please refer to your SQL servers/database engine documentation or write us for help

Here is some information for common cases:

Source	Select Option	Quote Field Names
Most SQL servers and flat file databases	select * from table	unchecked
Flat file databases (Paradox or dBase etc.) thru BDE connection	select * from "A table"	checked
Some SQL servers (Oracle) and some flat file databases	select * from "A table"	unchecked
Microsoft SQL Server, Microsoft Access	select * from [A table]	checked

To be sure that databases selected properly use **'Test Connection'** buttons
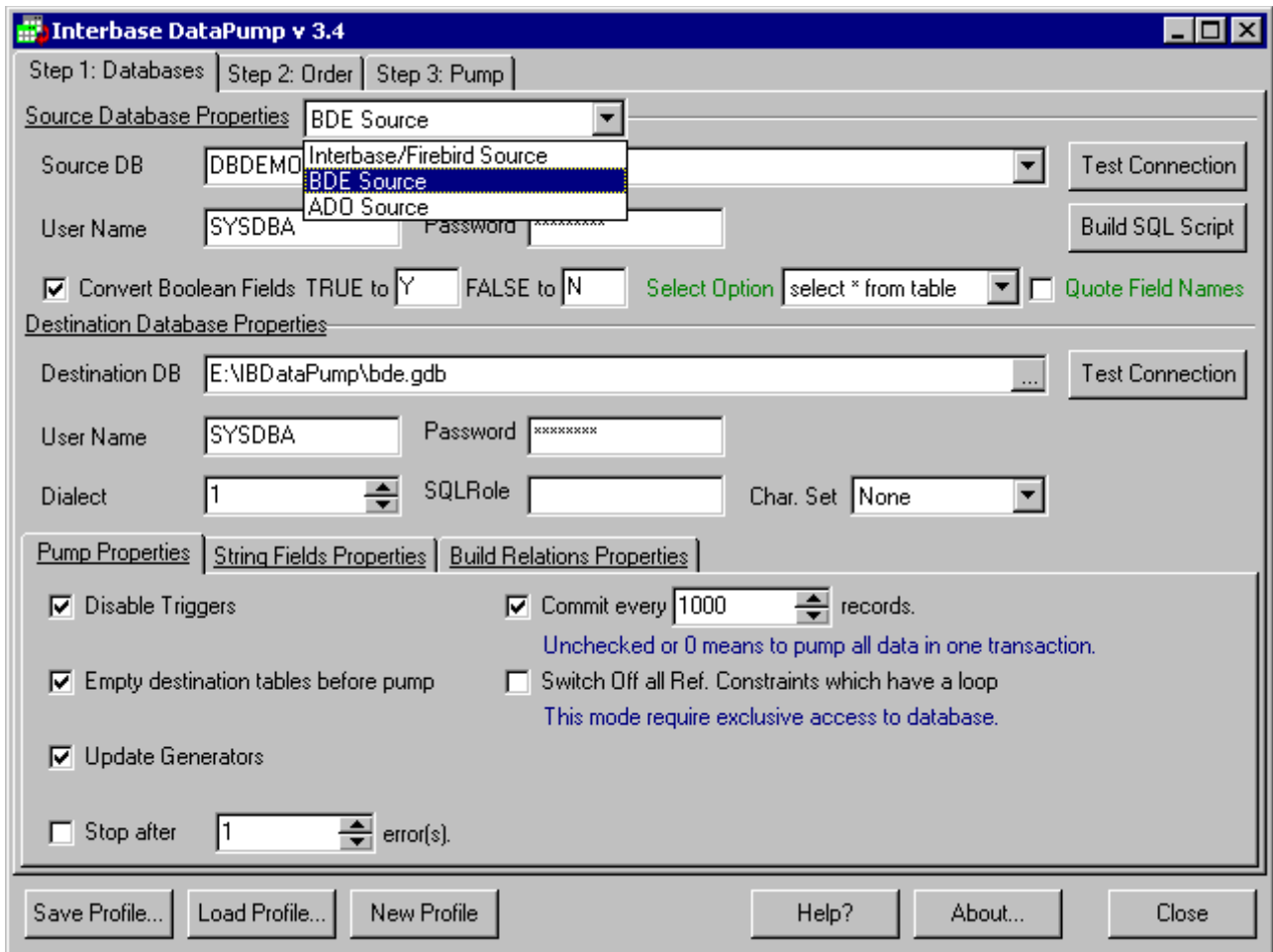
Pump Properties

**Disable Triggers** - turn off triggers for pumping time.
Empty destination tables before pump - delete all data from selected destination tables.
Update generators - set values of source database to destination database generators.
Stop after xxx error(s) - allow you to decide how many errors may happen during pump process.
Commit every xxx records - determine how to commit data. Very large or very small number can significant decrease speed of pump process.
Switch Off all Ref. Constrains which have a loop - some Interbase/Firebird destination tables can have loops (table have link to itself or cycle loops). In such cases it is possible to have a problem during pump process or attempts to empty this tables so you need to use this option to avoid conflicts
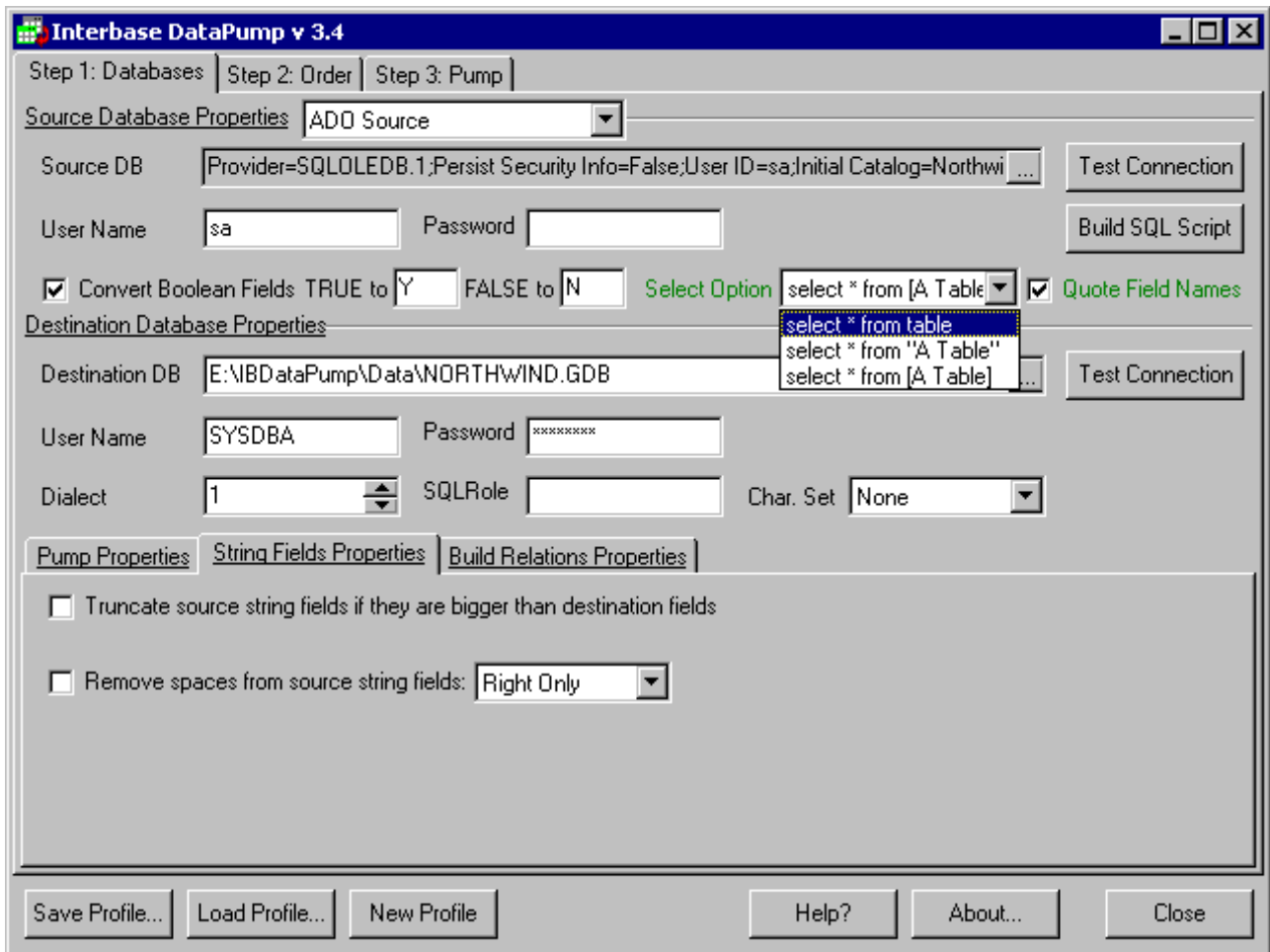
Build Relations Properties

Case-insensitive fields/tables comparison - convert table/field names to upper case when compare (see Step 2).

Remove non-sql symbols (space,/,# etc.) on fields/tables comparison - use it to make comparison even more flexible (see Step 2).

Step 1 - Generate Interbase/Firebird SQL script based on your ADO/BDE source

Hit **'Build SQL Script'** to display generation script dialog.

You will find here all necessary settings to build proper Interbase SQL script for your ADO/BDE/ODBC source.

Generate SQL Script

**Main Options**

Save script to file	E:\IBDataPump\convbde.sql
Database file name	E:\IBDataPump\convbde.gdb
Dialect	3
Default Char. Set	None
Duplicated Index Names	add number INDEX3
Case of field/table names	convert to upper case
Convert field/table names	to classic format (remove all symbols except 'A'..'Z', 'a'..'z', '1

Create Generators For AutoInc Fields ☑ **Define...**
Copy Indexes and Primary Constraints ☑
Copy Defaults and Validity Checks (Paradox, dBase) ☑
Copy Referential Integrity (Paradox, dBase only) ☑

Convert Field Options (from given field class to SQL data type)

StringField then CHAR
if length < 5 else VARCHAR

BooleanField select option Create Domain
Create Domain
Use Plain Datatype
CREATE DOMAIN T_YESNO AS CH/

IntegerField	INTEGER	CurrencyField	NUMERIC(15,4)	MemoField	BLOB SUB_TYPE 1
FloatField	FLOAT	AutoIncField	INTEGER	BlobField	BLOB
BCDField	NUMERIC(15,Decimals)	DateTimeField	TIMESTAMP		
LargeintField	NUMERIC(18)	DateField	DATE		
SmallintField	SMALLINT	TimeField	TIME		
BinaryField	BLOB	GraphicField	BLOB		

Save Profile... | Load Profile... | New Profile | Help? | Start! | Close

You can select how different data types from original database will be mirrored into Interbase/Firebird data types.

Application will recognize autoincremental fields and build for them appropriate triggers and generators if you will select **'Create Generators For AutoInc Fields'.**

To define autoincremental fields manually please use special dialog.
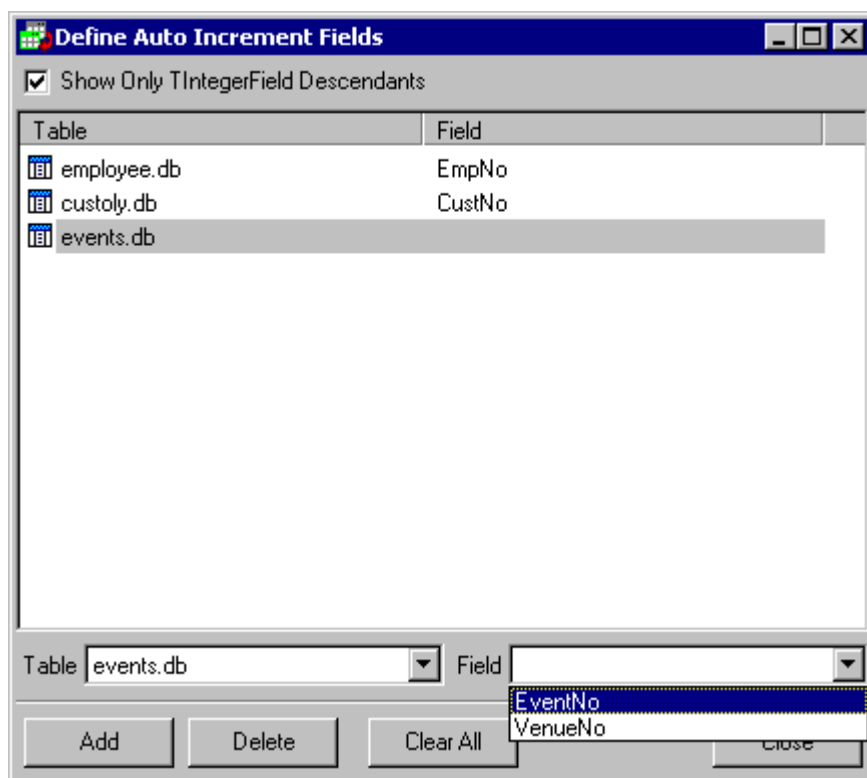
Select tables and fields which should be treated as AutoInc fields.
You can save your settings now to use them later if you want.

Interbase DataPump will build script which will totally identical to you original database structure.
All original referential integrity constraints, default field values and check will be copied into this script as well.
Detailed warnings will be created for every situation when original source can not be translated to Interbase/Firebird completely (properly).

After script generated you can execute it from IBConsole or any other admin tool to build actual Interbase or Firebird database.

See examples of BDE(dBase and Paradox) to Interbase BDEtoIB.sql (**BDEtoIB.zip**) and ADO (MSSQL) to Interbase MSSQLtoIB.sql (**MSSQLtoIB.zip)** conversions.

Step 2 - Obtain databases structures

Once all databases are selected and all properties are set up you need to get databases structures.

After you click on **'Get Definitions',** Interbase DataPump will fetch structure of source and destination databases.

Source tables will be sorted in alphabetical order and destination tables will be sorted in order which they depend from each other (this is based on analysis of the referential constraints between tables - if there's no referential constraints in database then tables will be in alphabetical order too).

For source database tables information about fields and field types will be displayed.
For destination database information about referential constraints and field relations also will be available.

In case if you getting any error messages during this process this most likely means that your ADO/BDE **'Select Option'** and/or **'Quote Field Names'** option is wrong or Interbase Dialect or User Name/Password incorrect. Go back to Step 1 and set proper value.

Step 2 - Set relations between source and destination databases

Now then you have all information it is time to set relations between tables and fields for source and destination databases.

Click on **'Build Relations'** to build relations in automatic mode. In this case relation will be build based on name comparison.

Tables which do not have all relations between fields will be highlighted in **red**.
Source and destination fields which have relations will be underlined.
Destination tables where all fields have relations will be marked as ready to pump automatically.
If you will mark tables with no field relations as ready to pump such tables will be used in empty process only.

Of course, you always can set up relations in manual mode using drag&drop:
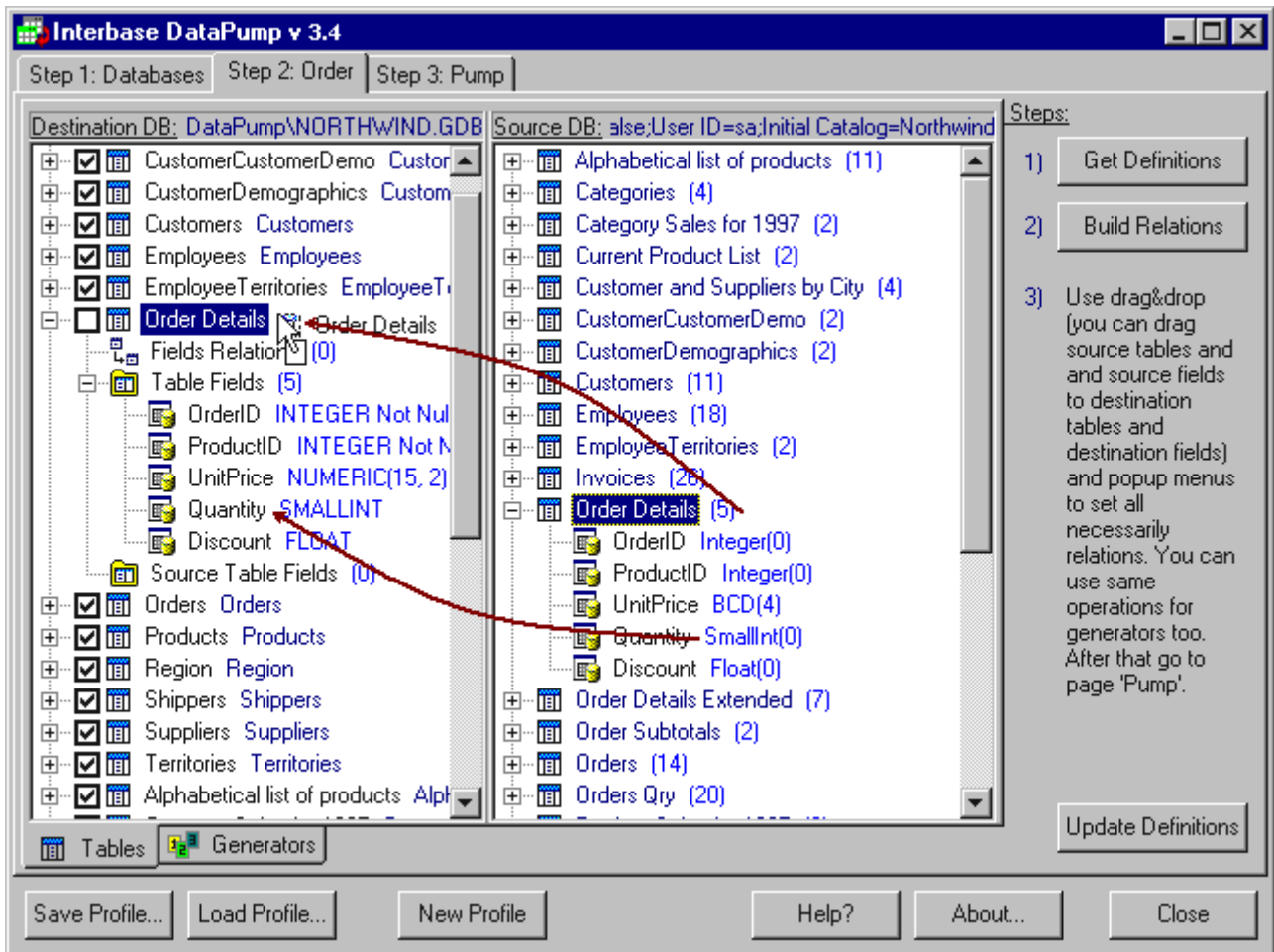
Use mouse drag&drop to link tables, fields and generators which weren't liked automatically (see images above and below for example).

You can drop:

- source table to destination table to make relation between tables.
- source field to destination field to make relation between fields.
- source generator to destination generator to make relation between generators.
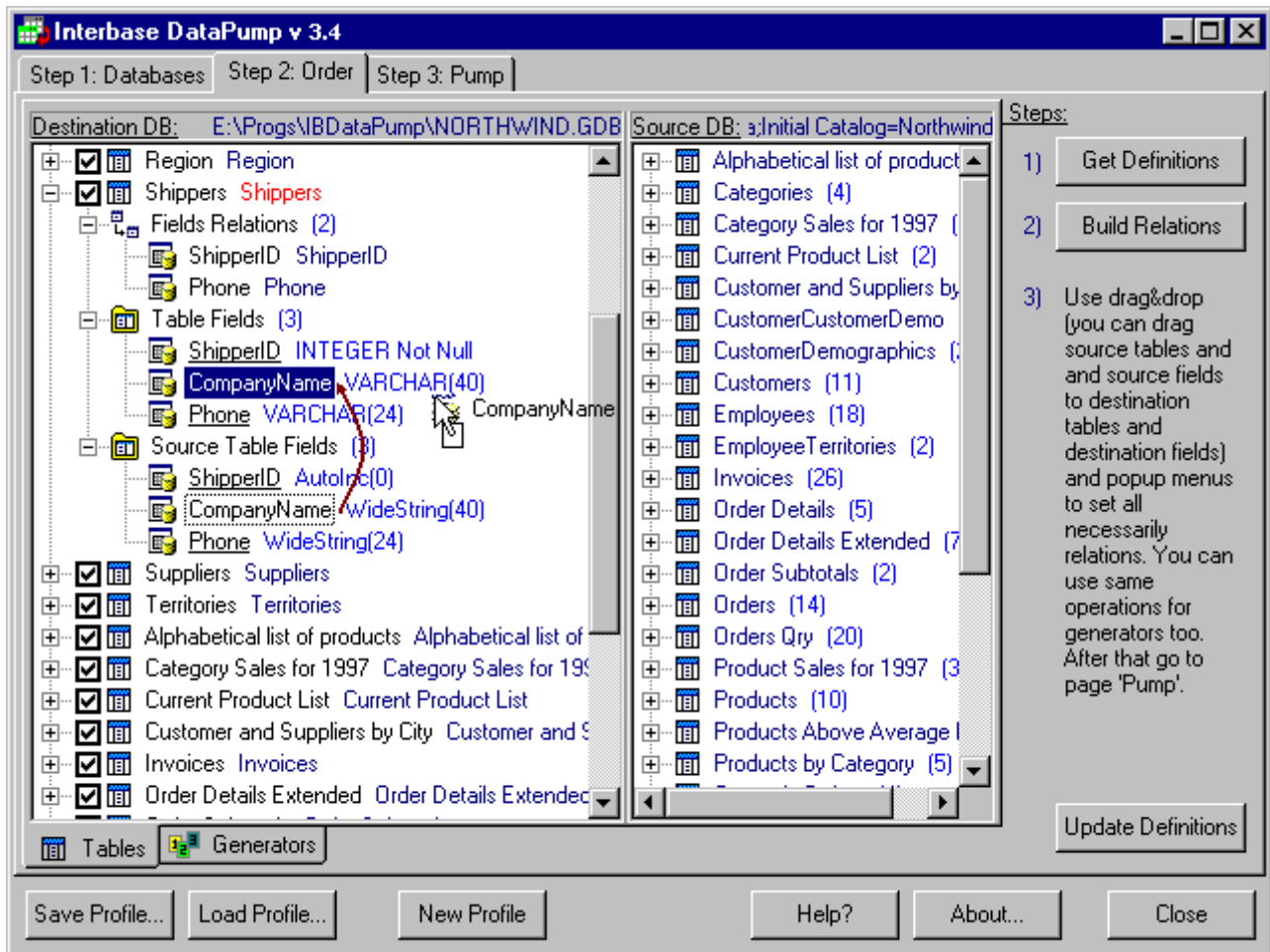
In case if you want to define constant expression for field/generator use popup menu. Such constant expressions will be highlighted with **green color**.
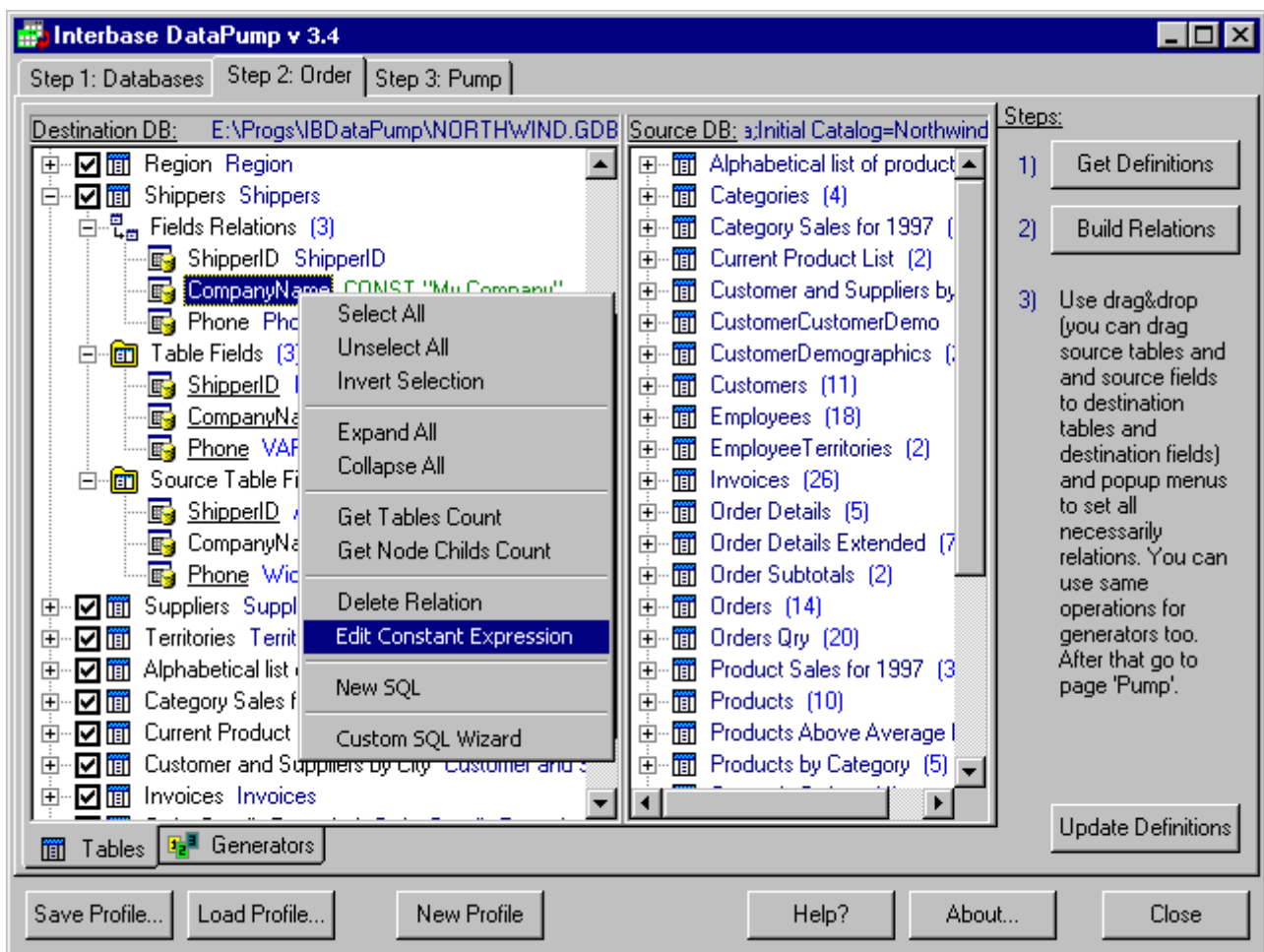
To navigate on destination and source trees use mouse:

- double click on source field - go to the relation with this field (if one exists).
- double click on destination field - go to the relation with this field (if one exists).
- double click on relation between fields - go to the destination field or show **'Edit Expression'** dialog in case of constant expression.
- double click on relation between fields while holding Ctrl - go to the source field.
- double click on destination table - show the source table in source window.
- double click on source table - show the destination table which linked with selected in destination window.

Please note that all above applies for **'Generators'** tab too.

Step 2 - Specify destination and source custom SQL. Destination Custom SQL Wizard

To define custom SQL statement on source database use popup menu item **'New SQL'.**
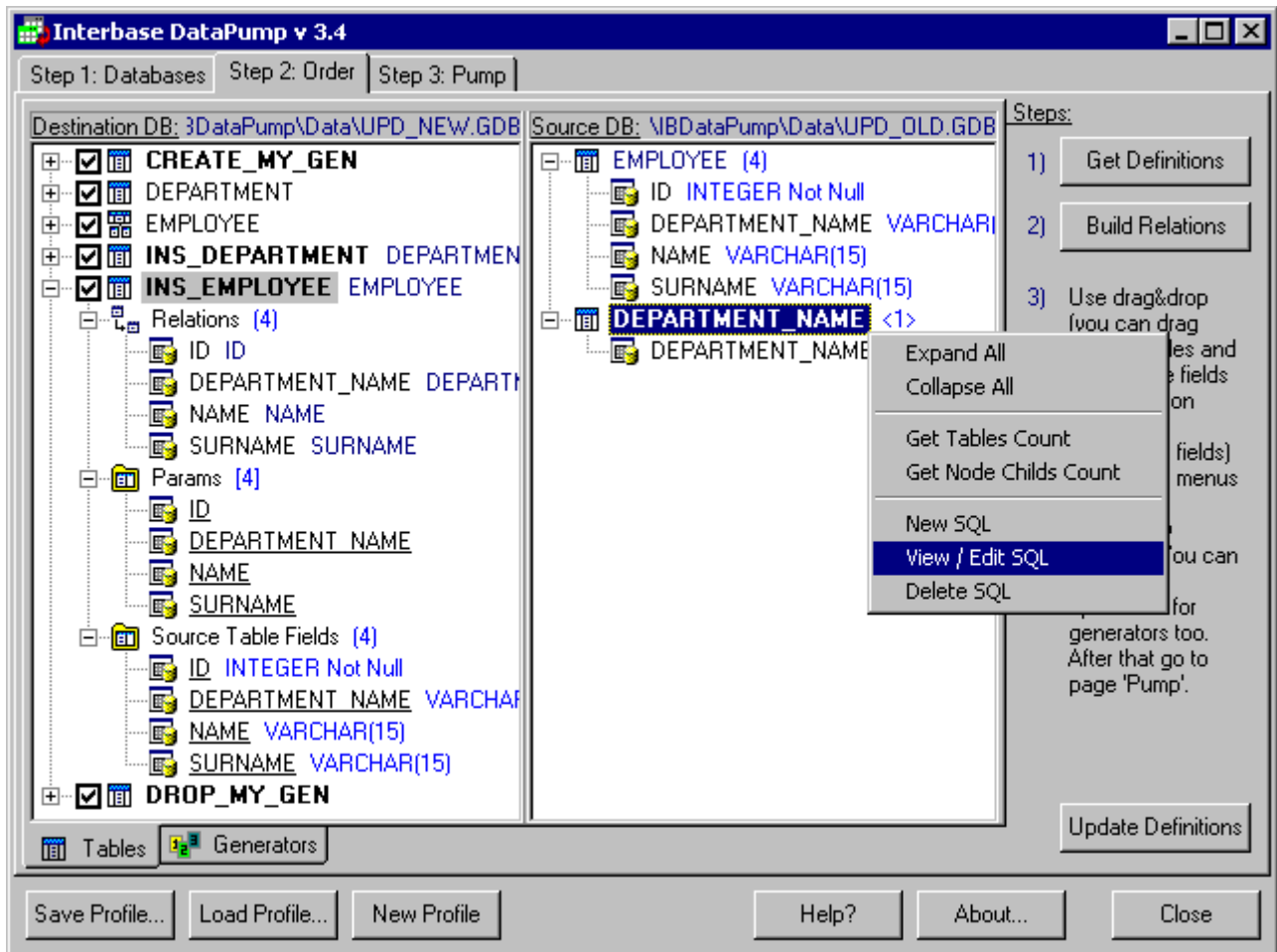
Advanced SQL editor will help you to build and test SQL statements.
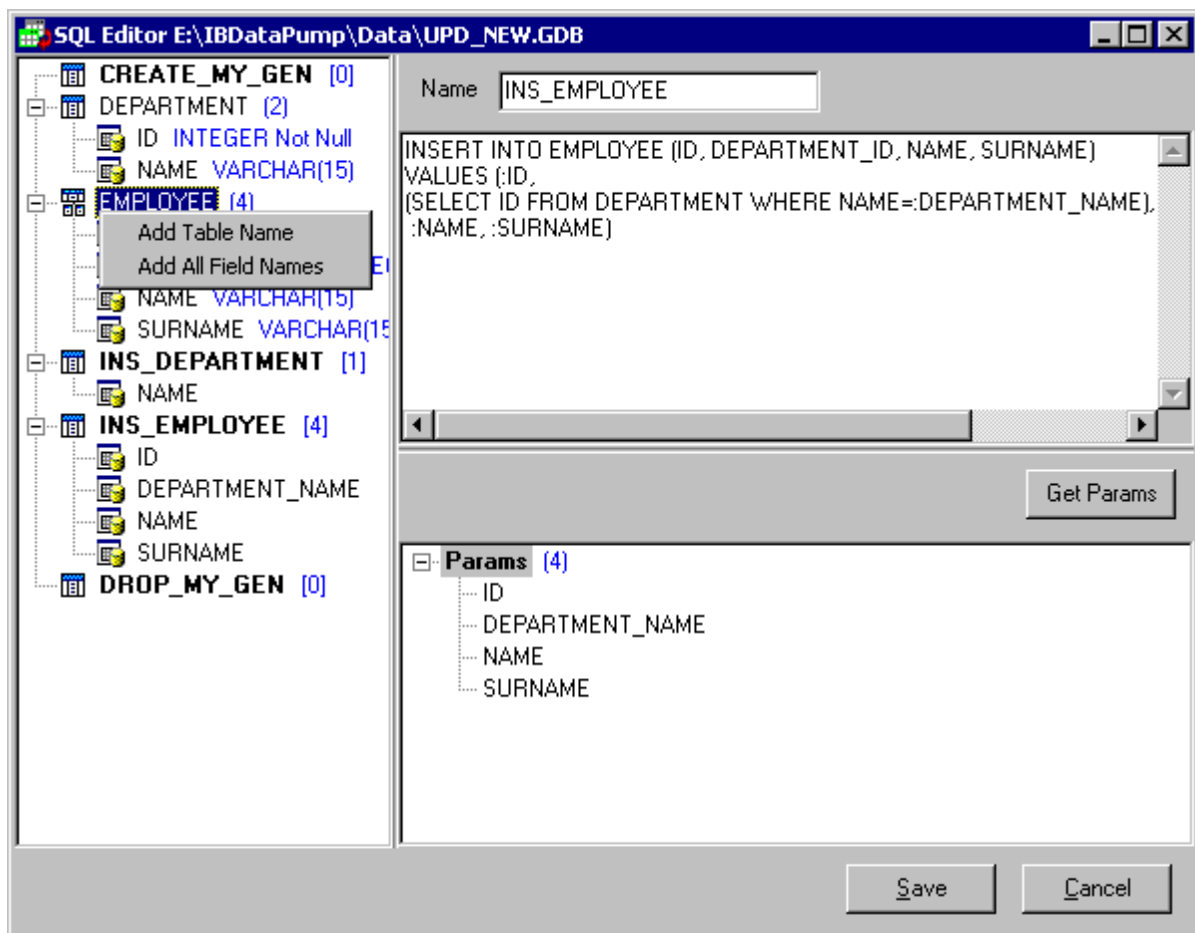After you done with editing click **'Save'** button and newly created SQL statement will appear as a table in source panel.

Custom SQL source/destination names will be highlighted with **bold font.**
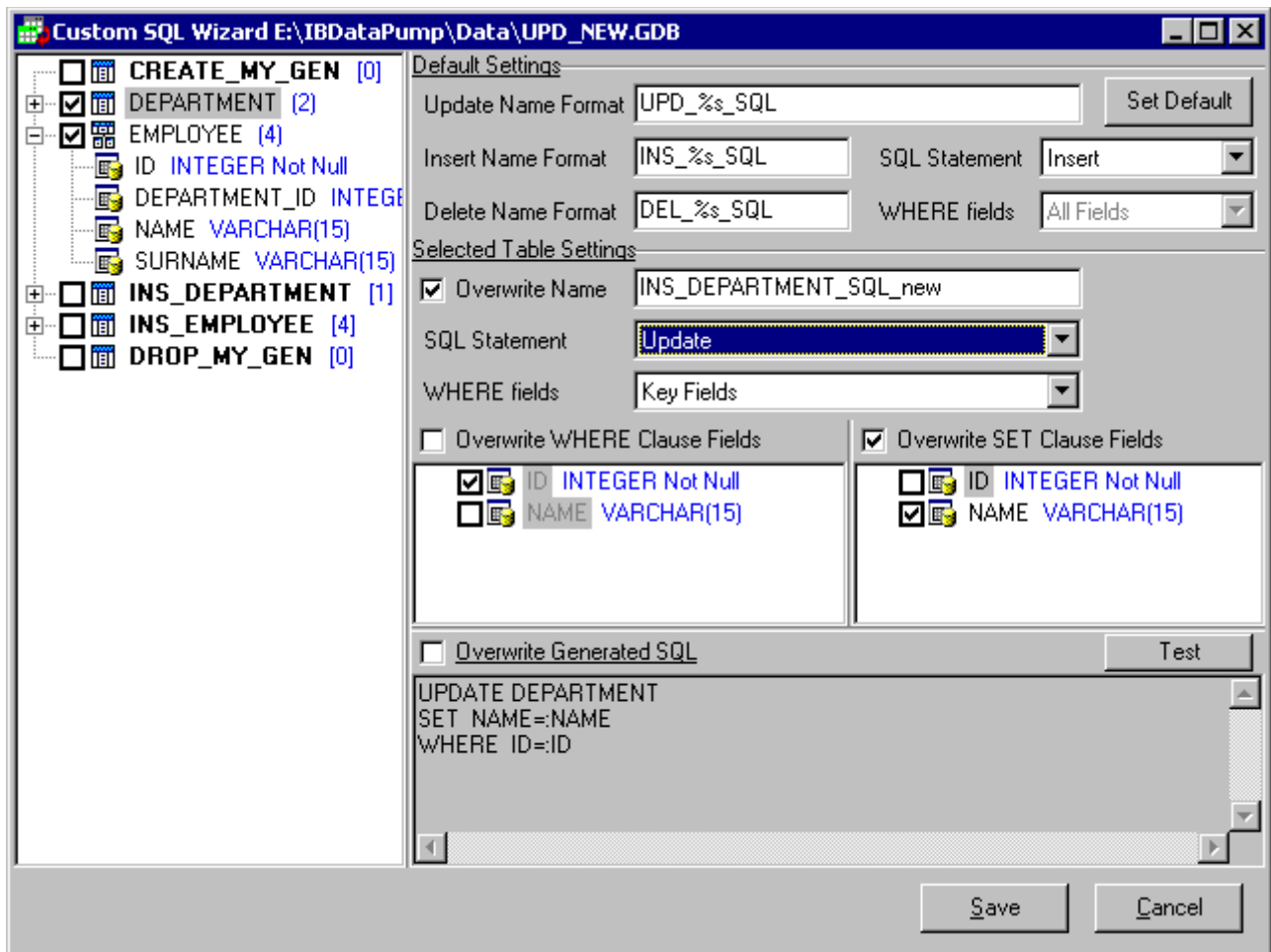
You can write SQL statements and test the results.
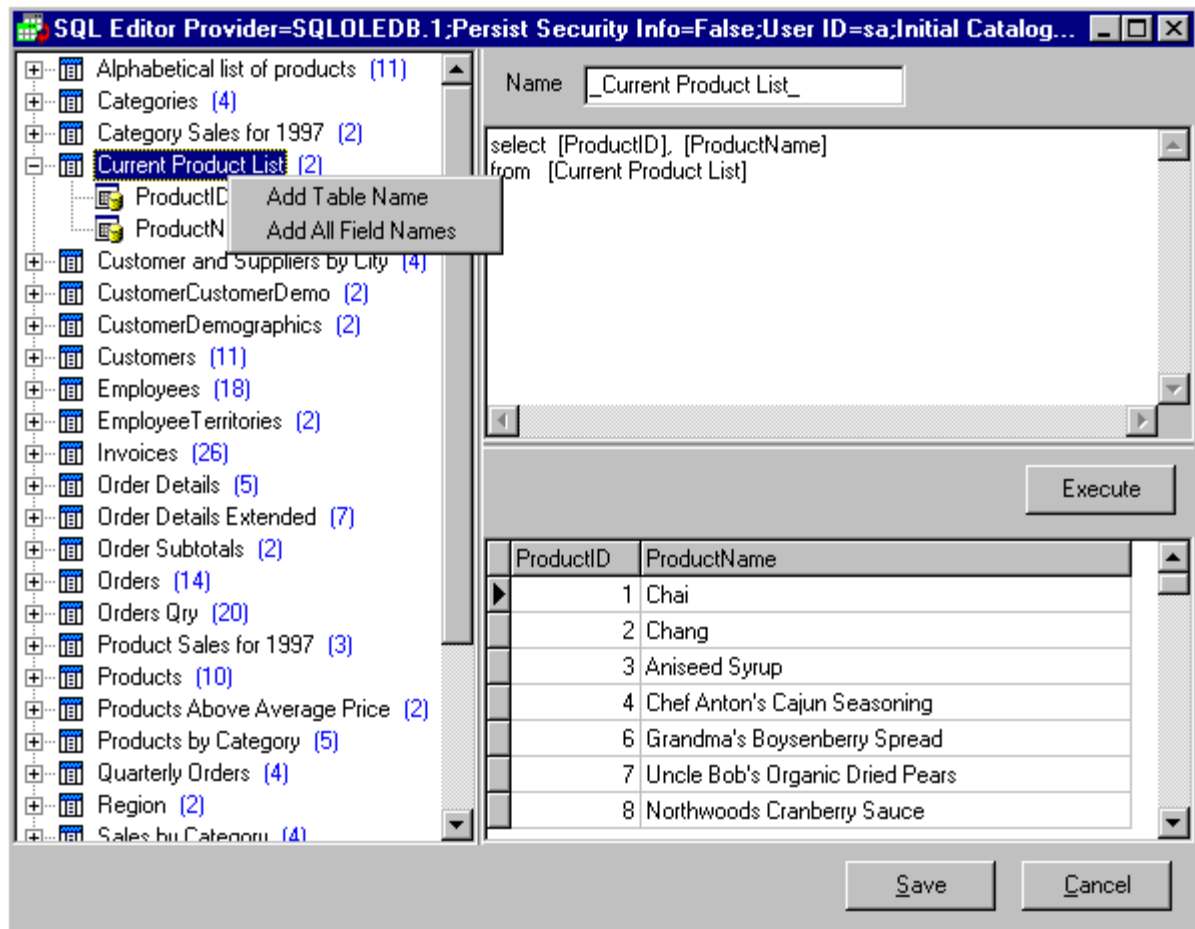
For destination database custom SQL can be created as well. You can specify delete, update, insert SQL statements with params.

Special Custom SQL Wizard will help you to write quickly desired SQL for destination database.

After you specified link between destination custom SQL and source table/custom SQL then during pump process destination params will be filled with source values and executed.

Checked destination custom SQL without source link will be executed as well - you can create tables etc. using such custom SQL.

You can change order of destination custom SQL items using mouse drag&drop.

Exactly same rules and functionality available for **'Generators'** tab.

If destination generator linked to custom SQL source then after custom SQL executed value of result field with the same as the generator name will be assigned to destination generator. If there is no filed with same as generator name then value of the first field will be used.
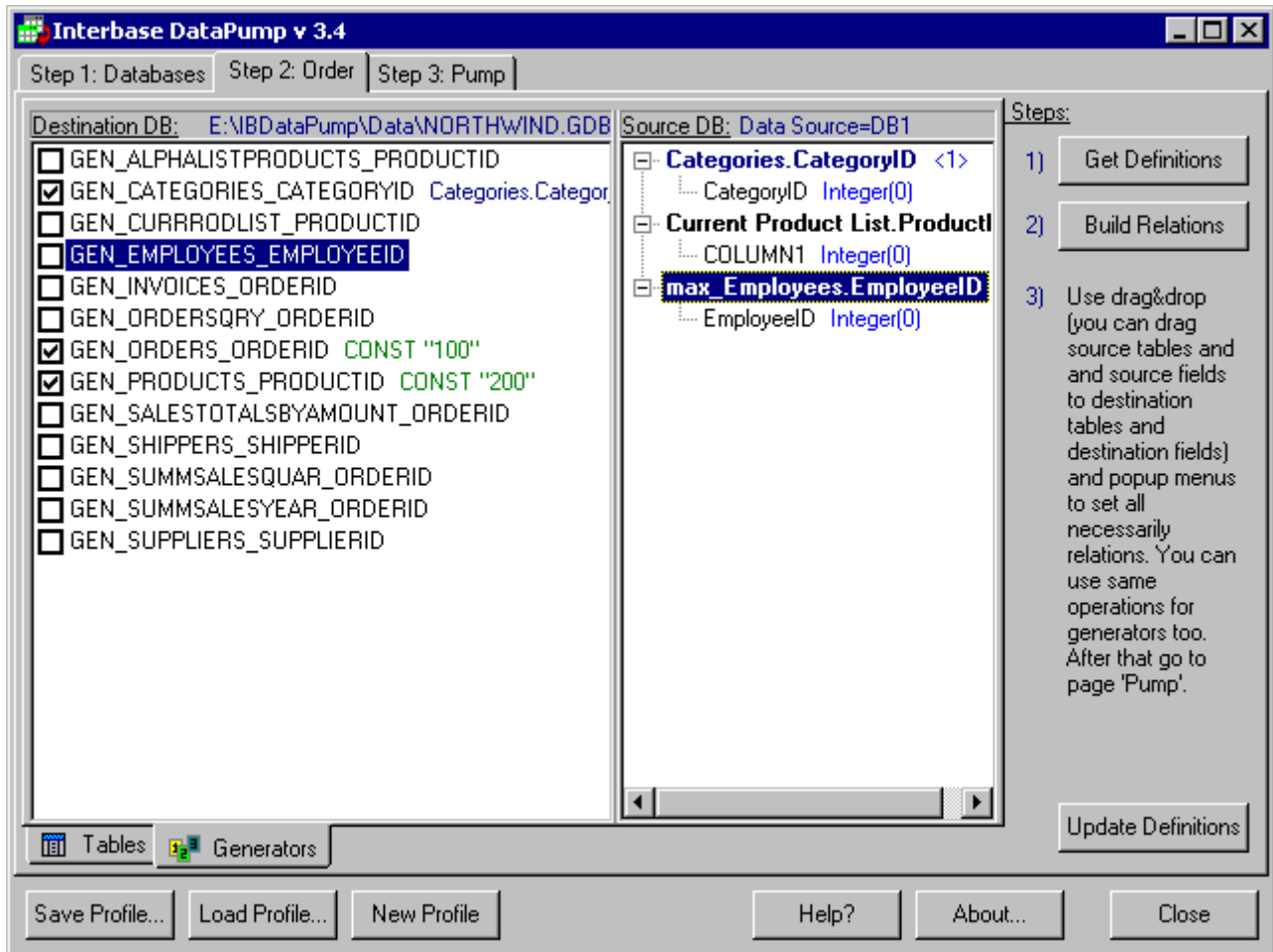
Custom SQL feature gives you great power - updating data from one database with data from another, simple replication and many other things now possible.

You can use not only data manipulation SQL but also data definitions statements (such as create/drop tables, fields etc.) inside custom SQL and save/send Interbase DataPump profile to your customers where it will be executed - this way you can supply your customers with reliable and proved technology to update or upgrade database.

Please read this article **Interbase DataPump Frequently Asked Questions** for details and examples of using custom SQL.

Step 3 - Pump data

Simply go to **'Pump'** tab and press **'Start'** button. Data will be processed according made settings. All details about whole process will be logged and displayed.
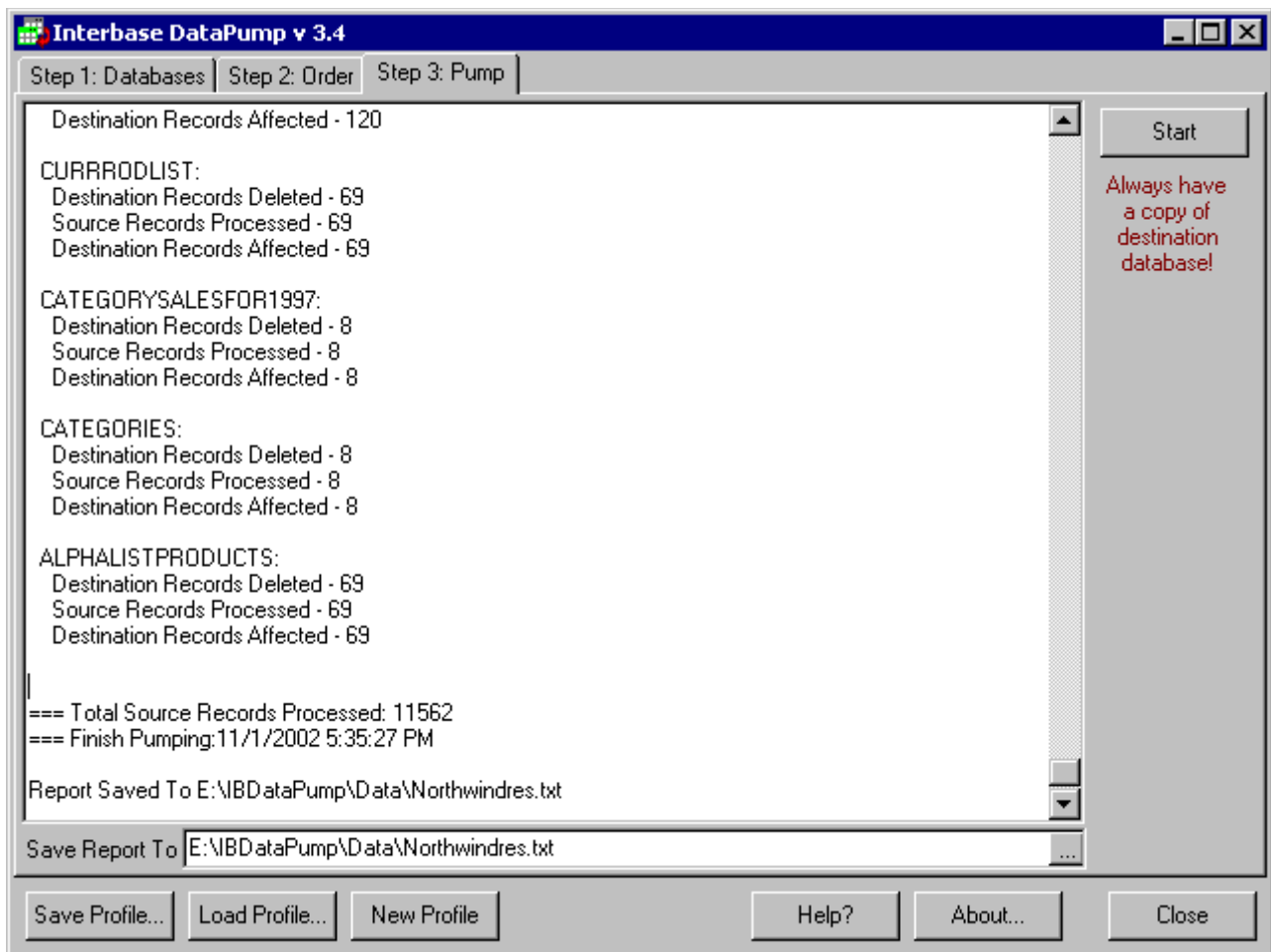
See example of pump report here **Northwindres.txt** or **UpdateDataExample.txt**

Calling Interbase DataPump from command line and command line options

Usage:

IBPump.exe "IBDataPump Profile.ibp" [/s="Source File/Alias/Connection String"] [/d="Destion File/Alias/Connection String"] [/o="Output Results File"]
Examples:

IBPump.exe "d:\MSSQLtoIB.ibp"
IBPump.exe "e:\ACCESStoIB.ibp" /s="Provider=Microsoft.Jet.OLEDB.4.0;Data Source=e:\GALLERY.MDB"
IBPump.exe "c:\BDEtoIB.ibp" /s="BDEDEMO" /d="c:\BDEDEMO.gdb" /o="c:\results.txt"

Using Interbase DataPump DLL. Silent Mode

Interbase DataPump also available as a plug-in DLL for popular Interbase administration tool IBExpert **www.ibexpert.com**.

You can download IBDataPump DLL from **Downloads** page.

This DLL also can be used from your applications to perform updates of your clients databases in silent mode.

Please see Delphi and Borland C++ Builder examples (available on **Downloads** page) for more details.

Brief dll functions info (Delphi).

```
/*
  Run Interbase DataPump in silent mode:
  AProfile - file name of profile to proceed
  ASourceFile - source database path and name or connection string, if empty use original value
from profile
  ADestFile - destination database, if empty use original value from profile
  ACallBack - optional callback function to receive output information during pumping process
Returns:
  0 if succeed,
  -1 if any errors happen before actual pump process (such as wrong paths and so on)
  > 0 if any errors happen inside pump process, in this case result = count of errors
Please not that all messages/exceptions will be received via AcallBack function.
*/
function IBPumpExec(AProfile, ASourceFile, ADestFile: PChar; ACallBack:
TIBDataPumpCallBack): integer; stdcall; external 'IBPumpPlug.dll';
/*
Run Interbase DataPump in normal mode
*/
procedure IBPumpShow; stdcall; external 'IBPumpPlug.dll';
```

Sources

Full sources of Interbase DataPump available as a part of one-year sources subscription.

With one-year sources subscription you will always have latest sources and supreme support from our team.

You also will get set of components (ccTreeView, ccSpinEdit and ccButtonEdit) which is used in Interbase DataPump project.

Sources are available for all versions of Delphi 5, 6 and Delphi 7.

Interbase DataPump using InterbaseExpress components to access Interbase/Firebird, ADOExpress to access ADO sources and standard BDE components to work with BDE sources.

Please visit **Order** page to get Interbase DataPump sources.

Tips&Trics

- Always have backup copies of database.
- To increase speed up to 4 times switch off **'Forced Writes'** option from IB server manager or IB Console.
- Option **'Switch Off all Ref. Constraints which have a loop.'** require exclusive access to database.
- **'COMPUTED BY'** fields are not listed under destination fields list due to no reason to pump such fields.
- If you are using Interbase 4.xx or older version you might need to install IBClient from Interbase 6.0 to work with Interbase DataPump.

Coming Soon

We created special **Interbase DataPump Development** page where you can read more about ongoing development and future plans.