

# Quantrix Modeler

## DATA PUSH

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*Welcome to the Quantrix Modeler DataPush User Guide Supplement. This guide is written for people that are familiar with Quantrix Modeler and have a working knowledge of database functionality and structures.*

*To use DataPush you must have Quantrix Modeler Professional Plus Edition installed on your computer. You can download the latest installation files from: <http://www.quantrix.com/download.php>*

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## Introduction

Quantrix 2.0 introduced DataLink technology that allows you to bring data into Quantrix from outside data sources. Quantrix DataPush is a natural extension of this functionality. By establishing a DataPush between a Quantrix Model and an external database or data warehouse, you can easily update your enterprise systems with current Quantrix model data.



**TIP:** DataPush is a powerful feature with a number of options and settings. To make the most of this feature, practice configuring DataPushes with a test database so you can best understand how to apply a DataPush in your live database environment.



**PROFESSIONAL EDITION:** DataPush can only be used with Quantrix Modeler Professional Plus Edition.

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## Installing & Licensing DataPush

DataPush is included with the Quantrix Modeler Professional Plus installation package for Windows and OS X. All Trial Users of Quantrix get access to the Professional Plus edition. A purchased Professional Plus serial number will enable the DataPush functionality. If you need additional assistance with the Quantrix Modeler installation, you can email Quantrix support at [support@quantrix.com](mailto:support@quantrix.com).

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## Establishing a DataPush Configuration

### Setting up the Database Driver

Quantrix can connect to databases using JDBC or, on Windows operating systems, ODBC. JDBC and ODBC drivers are available that can connect to all major database technologies. These drivers are available from your database vendor or third party developers. Please contact your database administrator or database software vendor for information on driver availability. See “Setting Database Options” on page 69 of the *Quantrix Modeler User Guide* for more information on adding JDBC drivers to Quantrix.



**NOTE:** JDBC connections generally are faster and more robust than ODBC connections when used with Quantrix.



**NOTE:** To use an ODBC connection, you must first have configured an ODBC Data Source on your Windows based computer. Please contact your database administrator for more information on configuring an ODBC Data Source.



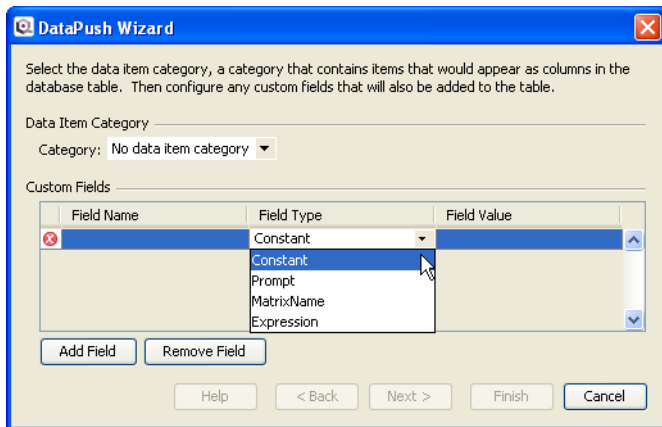
**TIP:** If a database driver has been setup for use with *DataNAV* or *DataLink*, there is no need to repeat this step.

## Select the Matrix to Push

Quantrix allows multiple “pushes” per model. This means that the DataPush configuration is setup on a per matrix basis and therefore, each matrix can be pushed to the same or various databases or database tables. Select the matrix to configure a DataPush for and complete the steps that follow.

## Select the Data Item Category & Custom Fields

Choose **Data > DataPush > Create DataPush...** to start the DataPush Wizard. The first panel prompts you to select a **Data Item Category**. The Category you select will create the database value columns. **No data item category** is a valid selection.



**TIP:** When configuring a DataPush, any missing or invalid names are signified by a red X warning (). When Quantrix detects a non-standard column name, the DataPush will automatically change the name to be SQL compliant and is indicated by a yellow caution indicator (). You can hover your mouse over any symbol to see a tool-tip showing the explanation for the warning.

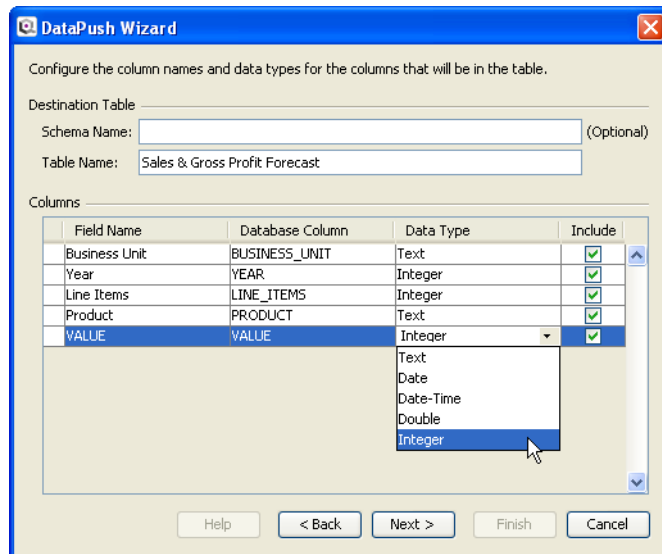
You can click the **Add Field** button to add a custom column to the table. Choose from the following custom field types.

- **Constant** - creates a column in the table with the specified field value for each row created in the DataPush
- **Prompt** - will ask you for the column value for each DataPush event
- **MatrixName** - inserts the name of the matrix for each row created in the table
- **Expression** - inserts the result of expression for each row created in the table. Expressions are entered in the Field Value box without curly braces. For more information on Expressions see “Expression Concepts” on page 200 of the *Quantrix Modeler User Guide*.

You can remove a custom field by selecting the field name and clicking the **Remove Field** button. Click the **Next >** button to continue.

## Establish Table and Column Names

Once successfully connected to the database, you can specify the destination schema name and table name for the DataPush as shown here:



- In the **Table Name:** text box, enter the desired name for the table that DataPush is going to create in the database.
- In the **Data Type** column, select from the following options: **Text**, **Date**, **Date-Time**, **Double**, or **Integer**.

- Select the columns to include in the DataPush by clicking to place a checkmark in the **Include** checkbox for each item.



**NOTE:** If you set the value column type to be integer or double, but there is non-numeric data in the column, this data will be pushed as empties. Text values cannot be stored in a database column specified as numeric.

You can use the **Database Column** field to set the column names for each category that you are using in the DataPush. If you have multiple categories with the same name in your model, you will see each similarly named category listed on separate lines. You can have all these categories populate the same column in the database by leaving all the column names identical or you can give each category a different column name to populate separate columns in the database.

Click the **Next >** button to continue.



**TIP:** Most databases will not accept spaces or leading numbers in a column name. Quantrix DataPush will automatically replace all spaces in a category name with the underscore character (“\_”).



**TIP:** The database column name cannot be the same name as any custom fields that you established in the previous wizard pane. Any conflicts detected will be signified by a red X symbol (⊗) next to the category.

## Connecting to the Database

Choose a database connection to use for the DataPush. The following panel allows you to connect to the database.

The screenshot shows a window titled "DataPush Wizard" with a close button in the top right corner. The main text reads "Setup your database connection using the fields below." The window is divided into two sections: "Connection Parameters" and "Connection Properties".

**Connection Parameters:**

- Driver: MySQL (dropdown menu)
- URL Type: MySQL JDBC URL (dropdown menu)

**Connection Properties:**

- Hostname / IP Address: server.serveraddress.com
- Server Port: 3306
- Database Name: sales

At the bottom of the window, there are several buttons: "Test Connection", "Check Schema", "Help", "< Back", "Next >", "Finish", and "Cancel".

You can follow these steps to configure the DataPush connection to the database:

- Select the Driver from the drop-down menu of available drivers. To add additional JDBC Drivers to the system, see “Setting Database Options” on page 69 of the *Quantrix Modeler User Guide*. To use an ODBC Data Source, select ODBC Database Connection.
- Once a driver is selected, the DataPush Wizard window shows parameters for that driver if Quantrix recognizes the driver. If Quantrix does not recognize the driver, you will be prompted to enter the JDBC URL for that driver. See the driver documentation for details on the URL format for your driver.

The Oracle connection using the Oracle JDBC driver is set up as shown below.

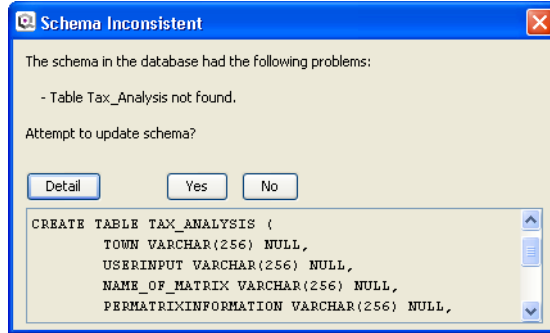
- You can elect to test the connection by clicking **Test Connection**. You will be prompted for the username / password to associate with this connection.
- Choose **Next >** to continue. If you did not test the database connection, you will now be prompted to enter the username / password for the database connection.



**NOTE:** If you place a check in the **Save password** check box, Quantrix will encrypt and save the password for this database connection on your machine. The password will not be in the model file and you will have the ability to edit the username and password for future connections.

- **Check Schema:** inspects the database to determine what SQL commands are needed to create the appropriate tables and columns.

If you choose to skip this step, Quantrix will automatically check the schema before pushing the data. If a schema change is needed, the following screen appears.

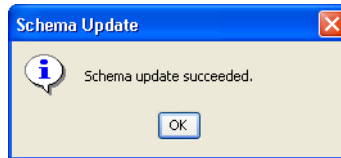


You can press the **Detail** button to see the proposed SQL command to create the necessary tables and columns for the DataPush. To update the schema, click the **Yes** button.



**TIP:** If you don't have administrative rights to create new tables or columns in the database, you can copy and paste the SQL commands into an email and send to your database administrator.

Upon successful update of the database schema, you will see the following confirmation panel. Click **OK** to continue.

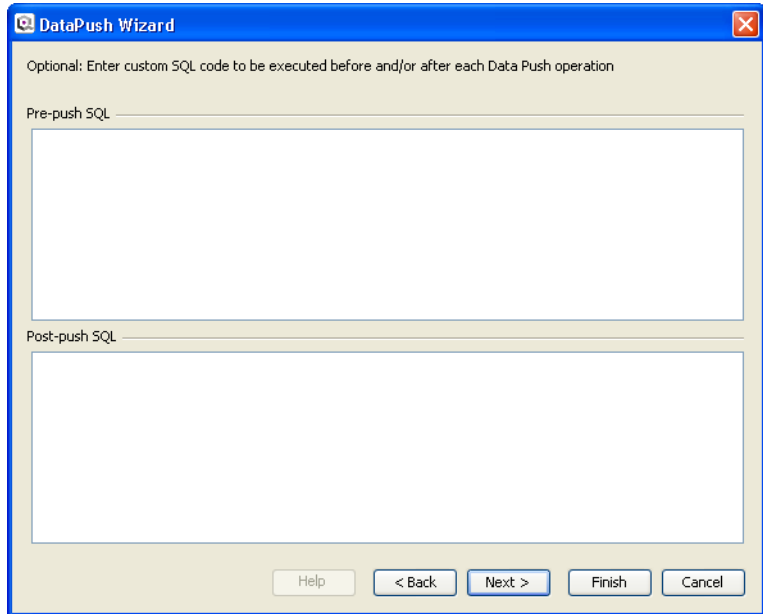


### *Embedded H2 Database*

Quantrix is equipped with an embedded H2 Database Driver. The H2 Database allows for DataPush, DataLink, and DataNAV interactions when no other database exists. To use the H2 Database, select the **H2 Driver** from the **Driver:** drop-down menu. The **URL Type:** is pre-populated with the **H2 Embedded Connection**. Enter the location for the H2 Database or press the **Browse...** button to select from the directory browser.

## Enter Pre and Post SQL

You can enter custom SQL statements that will be executed either before or after the DataPush event.



The screenshot shows a dialog box titled "DataPush Wizard". The main text inside the dialog reads: "Optional: Enter custom SQL code to be executed before and/or after each Data Push operation". Below this text, there are two text input fields. The first is labeled "Pre-push SQL" and the second is labeled "Post-push SQL". At the bottom of the dialog, there are five buttons: "Help", "< Back", "Next >", "Finish", and "Cancel".

After entering any needed SQL statements, click **Next >** to continue.

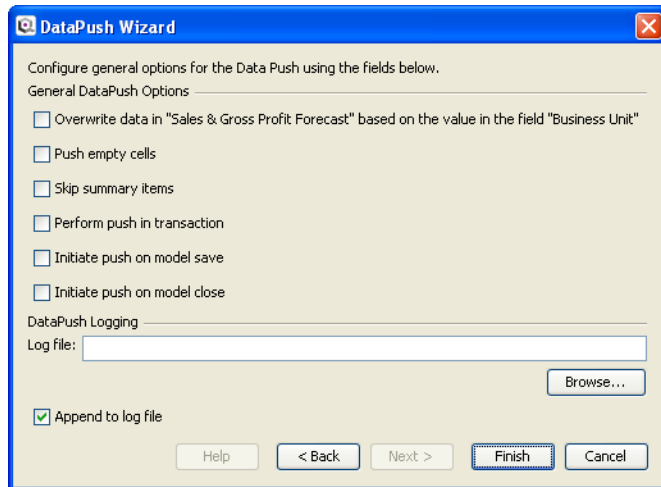


**NOTE:** Pre and Post SQL statements may be helpful for database administrators who need to perform certain routines to aid in database efficiencies or other operational matters.

# Configuring DataPush

## Configure General DataPush Options

The last wizard panel allows you to set the general options for the DataPush.



The General DataPush options are as follows.

- **Overwrite data in...** overwrites any existing data in the table that match the field information from a previous DataPush instead of appending the data to the end of the table. Any new fields brought in by the DataPush will create new rows in the database table.
- **Push empty cells** pushes empty cells into the database instead of skipping them.
- **Skip summary items** ensures that any item created using the **Sum Tool** will be skipped.
- **Perform push in transaction** waits until all the data has successfully entered the database before committing the entire transaction at once. This option uses more computer resources to process but allows for the database to roll back the entire transaction if there is a problem while Quantrix is communicating with the database.
- **Initiate push on model save** initiates a DataPush each time the model is saved.
- **Initiate push on model close** initiates a DataPush when the model is closed.

- **Log file:** sets the location of the log file. The log file has information on the success or failure of a DataPush transaction. A typical successful DataPush log file looks like this.

Status: SUCCESS

Date: Thu Apr 05 11:37:51 EDT 2007

Message: Completed Successfully

File: X:\Quantrix\pivotPropertyData.model

Matrices pushed: 1

Rows inserted: 88

Push took (seconds):0.062

Connection URL: jdbc:oracle:thin:@servername:1521:ORCL

Destination table: TAX\_ANALYSIS

User: JOHN DOE

Static Custom Fields:

Town: Smallville

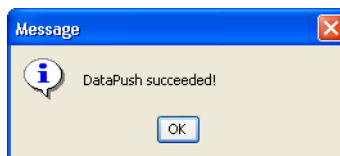
UserInput: foo

- **Append to log file:** adds log information to the file instead of replacing.

Select **Finish** and the DataPush will attempt to complete. If you specified a **Prompt** custom field during the DataPush configuration, you will a screen that looks like this.



Use the value column to set your defined value for this DataPush run. Click **OK** to initiate the DataPush. After a successful DataPush you will see a confirmation screen that looks like this.



A successful DataPush creates the tables and columns specified in the DataPush transaction. The screen below, taken from the Oracle Enterprise Management Console, shows an Oracle database table created by a Quantrix DataPush.

TOWN	NAME_OF...	PERMATRX...	ITEM	TAX_BUCKET	PROPERTY...	VALUE	VERSION
Smallville	Tax Level Analy...	2007_Tax_Info	Average	<\$1000	OTHER	106.91668564	1.0.0.1
Smallville	Tax Level Analy...	2007_Tax_Info	Tax Coverage	<\$1000	OTHER	3.3736833015	1.0.0.1
Smallville	Tax Level Analy...	2007_Tax_Info	Sum	\$1000-\$2500	OTHER	4467.0057407	1.0.0.1
Smallville	Tax Level Analy...	2007_Tax_Info	Count	\$1000-\$2500	OTHER	2	1.0.0.1
Smallville	Tax Level Analy...	2007_Tax_Info	Average	\$1000-\$2500	OTHER	2233.5028703	1.0.0.1
Smallville	Tax Level Analy...	2007_Tax_Info	Tax Coverage	\$1000-\$2500	OTHER	2.5527877844	1.0.0.1
Smallville	Tax Level Analy...	2007_Tax_Info	Sum	\$2500-\$5000	OTHER	2788.4290468	1.0.0.1
Smallville	Tax Level Analy...	2007_Tax_Info	Count	\$2500-\$5000	OTHER	1	1.0.0.1
Smallville	Tax Level Analy...	2007_Tax_Info	Average	\$2500-\$5000	OTHER	2788.4290468	1.0.0.1
Smallville	Tax Level Analy...	2007_Tax_Info	Tax Coverage	\$2500-\$5000	OTHER	1.5997633121	1.0.0.1
Smallville	Tax Level Analy...	2007_Tax_Info	Sum	\$5000-\$10000	OTHER	26328.630455	1.0.0.1
Smallville	Tax Level Analy...	2007_Tax_Info	Count	\$5000-\$10000	OTHER	4	1.0.0.1
Smallville	Tax Level Analy...	2007_Tax_Info	Average	\$5000-\$10000	OTHER	6332.1576139	1.0.0.1
Smallville	Tax Level Analy...	2007_Tax_Info	Tax Coverage	\$5000-\$10000	OTHER	0.0014531412	1.0.0.1
Smallville	Tax Level Analy...	2007_Tax_Info	Sum	>\$10000	OTHER	150272.80875	1.0.0.1
Smallville	Tax Level Analy...	2007_Tax_Info	Count	>\$10000	OTHER	5	1.0.0.1
Smallville	Tax Level Analy...	2007_Tax_Info	Average	>\$10000	OTHER	30054.561751	1.0.0.1
Smallville	Tax Level Analy...	2007_Tax_Info	Tax Coverage	>\$10000	OTHER	0.0086213760	1.0.0.1



The tables columns will comprise of:

- a text column, defined as VARCHAR(256) in SQL, for each user defined field. The contents of this column will contain the values as specified in the user defined field specification.
- a text column for each uniquely identified dimension in the matrices being pushed. The values in this column will be the full names of the items along that dimension specifying each cell being pushed.
- a column for the value of each cell which will be either a text or numeric, DOUBLE PRECISION in SQL, column. If you specify numeric type for the value column, Quantrix will treat cells with text values as if they were empty.

Now with the Quantrix information residing in the database, the data is available for your other enterprise applications or you can use the table in an incoming Quantrix DataLink.

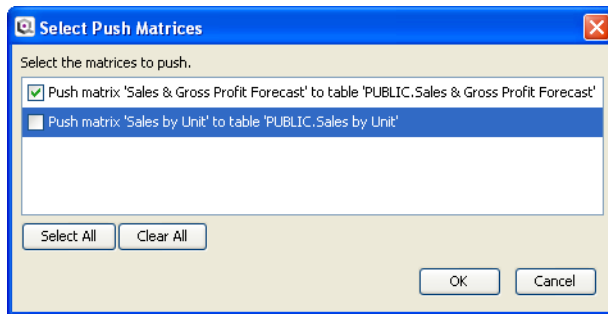
## Using an Existing DataPush

Once you have a DataPush established in your model, you can push new data to the database at any time using one of these methods:

1. Choose **Data > DataPush > Push Data** to push the current matrix or **Data > DataPush > Push All** to execute all pushes in the model
2. Press the **Push Current Matrix** (  ) button on the Model Toolbar to push the current matrix only
3. Open the **Push Current Matrix** (  ) drop-down menu to select the current matrix, select matrices, or all pushes in the model

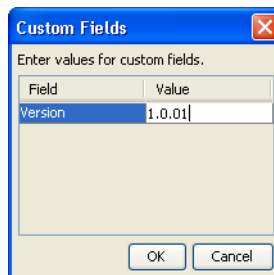
### Specify Matrices to Push

Specify which matrices to push into the database as shown below.



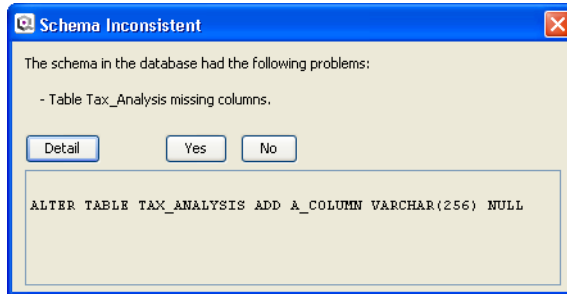
You can include a matrix in the DataPush by placing a checkmark in the box next the matrix name or exclude it by removing the checkmark. Once you have selected all matrices to be included, click **OK** to continue.

If you specified a prompt custom value field during the original DataPush configuration, you will see a panel that looks like this.



Use the value column to set your defined value for this DataPush run. Click **OK** to continue.

If you have added any new categories to a matrix, Quantrix DataPush will need to update the schema of the database. When this occurs, you will see a panel that looks like this.

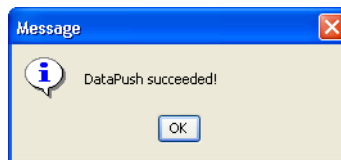


You can press the **Detail** button to see the proposed SQL command to create the necessary columns in the table for the DataPush. To update the schema, click the **Yes** button.



**TIP:** If you don't have administrative rights to create new tables or columns in the database, you can copy and paste the SQL commands into an email and send to your database administrator.

The DataPush will initiate and after a successful DataPush you will see a confirmation screen that looks like this.



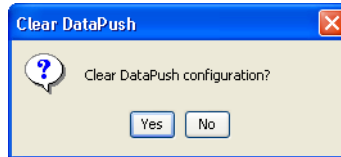
You can edit an existing DataPush by choosing **Data > DataPush > Edit DataPush...** Refer to “Establishing a DataPush Configuration” on page 2 for specific instructions.

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## Modifying a DataPush Configuration

### Remove a DataPush

A DataPush configuration can be cleared at anytime by choosing **Data > DataPush > Remove DataPush**. You will see a confirmation panel that looks like this.



Click the **Yes** button to clear the DataPush. Click the **No** button to leave the DataPush intact.



**TIP:** If you clear the DataPush and decide that is not what you wanted to do, choose **Edit > Undo** to reestablish the DataPush configuration in the model.

### Edit a DataPush

Once established, a DataPush configuration can be changed by choosing **Data > DataPush > Edit DataPush...** to run the DataPush Wizard.

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## Updating DataPush

### Automatically Checking for Updates to Quantrix

You can instruct Quantrix to use your internet connection to automatically check for and install updated versions. When you turn on this option, Quantrix checks for updates each time you exit Quantrix; it never attempts to perform an update while you are editing Quantrix models. For details, see “Setting Automatic Update Options” on page 66 of the *Quantrix Modeler User Guide*.

### Update Manually

To manually check for updates to DataPush, Quantrix Modeler and any other Quantrix add-on product, choose **Help > Update Quantrix**.

# DataPush Permissions

## Permissions

Quantrix allows you to grant specific permissions related to DataPush to each role to control how the model is used by others.

The following tables provide details on the additional settings at each level. For information on creating roles and all of the permissions available in Quantrix Modeler, see “Protecting a Model” on page 358 of the *Quantrix Modeler User Guide*.

### *Edit Structure Settings*

These role specific settings for DataPush apply to the currently active model.

Setting:	Description:
Configure DataPush	Allows the user to Create, Edit, and Remove DataPush configurations
Enable Push	Allows the user to push all or select matrices

