# DYNISTICS



ACTIVE DASHBOARDS SOFTWARE QUICK QUERY GUIDE v6.2

#### Active Dashboards Quick Query Guide

Date of issue	Brief Description
May 2017	Version 6.2

Dynistics Limited endeavours to ensure that the information in this document is correct and fairly stated but does not accept liability for any errors or omissions. The development of Dynistics products and services is continuous and published information may not be up-to-date. It is important to check the current position with Dynistics Limited. This document is not part of a contract or license save insofar as may be expressly agreed. © Dynistics Limited 2000 - 2017

Comments and suggested improvements to this publication are welcome. Please address comments to:

Product Development Dynistics Limited Blythe Valley Innovation Centre Blythe Valley Park Solihull B90 8AJ United Kingdom

Or via e-mail to:

development@dynistics.com

# **About This Guide**

### Purpose

This guide describes how to configure and use the Quick Query feature of Active Dashboards.

# Readership

The guide is intended for both end-users and designers of the Active Dashboards application.

This guide can be supplied in electronic format to enable organisations to customise its content to meet their specific operational requirements.

### **Recommended Use**

Chapter 1 provides a brief overview of Quick Query - you may find it helpful to read this first.

Chapter 2 is for Dashboard users and administrators and describes how to setup access to Quick Query.

Chapter 3 is for Dashboard users who will use the Quick Query feature.

Chapter 4 is for Dashboard Designer users and describes how to setup Data Models that can be queried.

# Other Recommended Reading

- Active Dashboards Dashboard Designer Guide
- Active Dashboards Dashboard User Guide

# Assumptions

The guide assumes the user is familiar with operating a keyboard and mouse and with the standard features of standard operating systems and web browser software.

This guide assumes Dashboard Designer users are familiar with the concept of *Data Connectors* as described in the Dashboard Designer Guide.

# Acknowledgements

All trademarks are the property of their respective owners.

# Contents

About This Guide	3
Purpose	3
Readership	3
Recommended Use	3
Other Recommended Reading	3
Assumptions	3
Acknowledgements	3
Contents	4
Chapter 1	5
Introduction	5
Overview	5
How it works	5
Chapter 2	6
Controlling User Access	6
Overview	6
Configuring Access	6
Examples	6
Chapter 3	8
Quick Query Page	8
Overview	8
Opening	8
Description	8
Chapter 41	9
Data Models 1	9
Overview1	9
Understanding the Data Model 1	9
Data Models Editor	20
Data Model Definition Editor	21
Example	4
Appendix A	8
Troubleshooting	8
Quick Query Page	8
Data Model Editor (Dashboard Designer Users)	8

# Chapter 1

# Introduction

# Overview

Active Dashboards Quick Query provides Dashboard users with a self-service facility for querying data relevant to their role. It can be used as an alternative to, or to compliment, existing pre-defined Dashboards.

# How it works

#### 1. Quick Query Data Models

Dashboard Designer users create Data Models, each describing a set of related data that is used to provide a user friendly view of the data to Quick Query users. See *Chapter 4* for details.

#### 2. Quick Query Access

Dashboard Web Application administrator users manage which groups of Dashboard users have access to Quick Query. This involves choosing whether Queries can be viewed, added, edited and deleted for each Data Model defined. See *Chapter 2* for details.

#### 3. Quick Query Page

Dashboard Web Application Users access their Dashboards in the usual way and then launch Quick Query which opens in a new browser page/tab. Each Data Model the user has access to is listed and the user can run/edit/copy/delete existing Queries or add new Queries - depending on the access granted to them. See *Chapter 3* for details.



Figure 1: Quick Query Page - listing available Data Models & Queries (left) and the selected Query result (right)

# Chapter 2

# **Controlling User Access**

# Overview

Access to the Quick Query page is configurable and different groups of Dashboard users can be assigned full, partial or no access to it.

For each Quick Query Data Model defined a user may have the following rights to query it:

No access

The Data Model and any associated Queries will not be displayed.

• Read-only access

The Data Model and any associated Queries will be viewable only.

Queries can be run and results viewed but Queries cannot be created, modified or deleted.

• Add/Edit/Delete access

The Data Model and any associated Queries will be viewable, new Queries can be created and existing ones modified or deleted. Different combinations of these are possible, e.g. being able to add/edit Queries but not being allowed to delete them.

# **Configuring Access**

Refer to the *Dashboard User Guide - Dashboard Administration* chapter for details of how to manage Quick Query access rights using the Dashboard Web Application Administration page.

# **Examples**

With three Quick Query Data Models defined:

- Customer data
- HR data
- Sales data

### Example 1

A Dashboard user with full Quick Query access will see all three Data Models and can view/add/edit/delete Queries in each one:

Data Models & Qu	eries
Customer data	
Customer Query 1	
HR data	
HR query 1	
HR Query 2	
Sales data	
Sales Query 1	
Sales Query 2	
Sales Query 3	
Add Edit	Copy Delete
Save	Cancel
Jure	Gallout

Figure 2: Quick Query Page – full access to all 3 Data Models and their Queries

### Example 2

A Dashboard user with no access to *Customer data*, full access to the *HR data* and read-only access to *Sales data*:

Data Models & Queries	Data Models & Queries
⊟ HR data	⊟ HR data
HR query 1	HR query 1
HR Query 2	HR Query 2
Sales data	⊟ Sales data
Sales Query 1	Sales Query 1
Sales Query 2	Sales Query 2
Sales Query 3	Sales Query 3
Add Edit Copy Delete	Add Edit Copy Delete
Save Cancel	Save Cancel

Figure 3: Quick Query Page - full access to HR data (left) and read-only access to Sales data (right)

**Note:** the *Add*, *Edit*, *Copy*, *Delete*, *Save* and *Cancel* buttons are only enabled when the user has access to these actions and if they are relevant to the current action being performed on the page.

# Chapter 3

# **Quick Query Page**

# Overview

The Quick Query page is displayed in your browser alongside your Dashboards. Different users may have different views of the page depending on the access granted to them.

# Opening

- 1. Access the Dashboards in your browser in the usual way.
- 2. Click the Quick Query link shown on the Dashboard header.

■	<b>Active</b> D	)ashl	ooar	ds	Galle	ery:	all cł	arts		Q	✿?	ሪ ኗ	2

Figure 4: Dashboard page header with Quick Query icon highlighted

Depending on you Dashboard configuration this link may be an icon or text link.

3. The Quick Query page will open and display in a new browser tab or window depending on your browser's configuration. You can at any time switch back to the Dashboard page in your browser.

**Note:** This Quick Query link will only display if you have access rights to it. See *Chapter 2* for details of setting up user access.

# Description

Each area of the Quick Query page is described below, with the relevant area being discussed highlighted.

# Message area / Page options

ActiveDashboards	Quick Query	Query selected: Sales Que Description: Last modified: user01 01/0	ery 1 04/2016 11:45:17		? 3
Data Models & Queries	Query Resu	ilts			0
	Category ID	Category Name	Product Name	Product Sale	s '
Customer Guopy 1	1	Beverages	Côte de Blaye	49198.0900	
Customer Query 1	4	Dairy Products	Raclette Courdavault	35775.3000	
B R Guerri 1	6	Meat/Poultry	Thüringer Rostbratwurst	34755.9200	
HR Query 2	5	Grains/Cereals	Gnocchi di nonna Alice	32604.0000	
R Query 2	7	Produce	Manjimup Dried Apples	24570.8000	
Sales data	3	Confections	Tarte au sucre	21638.2900	
Sales Query 1	4	Dairy Products	Camembert Pierrot	20505.4000	
Sales Query 2	6	Meat/Poultry	Alice Mutton	17604.6000	
Sales Query 5	8	Seafood	Carnarvon Tigers	15950.0000	
	7	Produce	Rössle Sauerkraut	13948.6800	
	2		Sales Query 1		0
Add Edit Copy Delete	Côte de Thùringer R Manjimup Dr Camembert Carnarvon Gudbrandse Ipoh	Blaye	21.6 K 21.5 K 17.6 K 13.9 K 13.1 K 13	35.8K 34.6K 32.6K	49.2K J
Save Cancel	Gumbar Gumm	0 10K	20K 3	0К 40К	50K

Figure 5: Quick Query Page - Message area (left) and Page options (right)

#### Message area

Information relevant to the last action you performed on the page are displayed in this area. For example:

Query selected: Sales Query 1 Description: Shows some interesting sales data! Last modified: user01 01/04/2016 16:01:30

Figure 6: Message showing details of the Query selected including who last modified it

Query saved: Sales Query 1

Figure 7: Message showing a Query was successfully saved after editing

If your dashboard session expires then the following message is displayed. You can continue where you left of on the Quick Query page after starting another session, e.g. by returning to the Dashboard page and logging-in again.

YOUR DASHBOARD SESSION HAS EXPIRED. START ANOTHER SESSION AND THEN REFRESH THIS PAGE TO CONTINUE.

Figure 8: Session expiry message

If an action cannot be performed then details are displayed in red text.

Cannot edit or delete the selected Query because it is currently locked for editing by another user. Locked by admin at 04/04/2016 10:10:52

Figure 9: Message detailing why an action cannot be performed

#### Page options

- View help click to open the Dashboard Quick Query Guide.
- Refresh page click to refresh the whole Quick Query page and rerun any loaded Query.

#### **Data Model & Queries**

Data Models you have access to along with any pre-defined Queries for each one are listed in this area.

ActiveDashboards	Quick Query	Query selected: Sales Que Description: Last modified: user01 01/0	ery 1 04/2016 11:45:17	? 0
Data Models & Queries	Query Resu	ults		Ø
Customor data	Category ID	Category Name	Product Name	Product Sales
Customer Guon 1	1	Beverages	Côte de Blaye	49198.0900
Customer Query 1	4	Dairy Products	Raclette Courdavault	35775.3000
HR guon 1	6	Meat/Poultry	Thüringer Rostbratwurst	34755.9200
HR Query 2	5	Grains/Cereals	Gnocchi di nonna Alice	32604.0000
	7	Produce	Manjimup Dried Apples	24570.8000
Sales Quary 1	3	Confections	Tarte au sucre	21638.2900
Sales Query 2	4	Dairy Products	Camembert Pierrot	20505.4000
Sales Query 2	6	Meat/Poultry	Alice Mutton	17604.6000
Sales Query 5	8	Seafood	Carnarvon Tigers	15950.0000
	7	Produce	Rössle Sauerkraut	13948.6800
	\$		Sales Query 1	© Ø
Add Edit Copy Delete	Côte de Thùringer R Manjimup D Camambert Camarvon Gudbrands Ipoh Gumbšr Gumn	Blaye Iostb Pierrot Tigers Coffee Disr 1	21.64 20.64 154.64	35.8K 34.8K 32.6K
Save Cancel	<u>Full size</u>	0 10К	20K 30K	40K 50K

Figure 10: Quick Query Page – Data Models & Queries

You can select a Data Model or Query by clicking on it. The page will then update to show information relevant to the selected Model/Query.

Data Models & Queries	Data Models & Queries
Customer data	Customer data
Customer Query 1	Customer Query 1
⊟ HR data	⊟ HR data
HR query 1	HR query 1
HR Query 2	HR Query 2
🖃 Sales data	Sales data
Sales Query 1	Sales Query 1
Sales Query 2	Sales Query 2
Sales Query 3	Sales Query 3

Figure 11: Data Model highlighted (left) and its Queries highlighted (right)

Action buttons relevant to the selected Data Model or Query are shown. When these buttons are enabled you can carry out the relevant action on the selected Data Model or Query.

Add	Edit	Сору	Delete
	Save	Cance	I

Figure 12: Action buttons - enabled (top row) and disabled (bottom row)

- Add Creates a new Query for the selected Data Model. The new Query is only visible to other users after you save it.
- Edit Reserves or "locks" the selected Query for you to edit. Any changes made are only visible to other users after you save it.

- **Copy** Creates a new Query based on the selected Query. The new Query is only visible to other users after you save it.
- **Delete** Permanently deletes the selected Query.
- Save Saves changes made during Adding/Editing/Copying.
- Cancel Cancel any Adding/Editing/Copying any changes made whilst editing will be lost.

#### Locking of Queries

When you start editing an existing Query then it is "locked" so other Dashboard users cannot edit or delete the Query whilst you are working on it. Locked Queries are indicated by a padlock icon displayed next to them.

Data Models & Queries	Data Models & Queries
□ Customer data	Customer data
Customer Query 1	🔒 Customer Query 1
⊟ HR data	□ HR d Locked by admin at 01/04/2016 17:19:02
R query 1	HR query 1
Locked by me at 01/04/2016 17:20:12	HR Query 2
Sales data	Sales data
Sales Query 1	Sales Query 1
Sales Query 2	Sales Query 2
Sales Query 3	Sales Query 3

Figure 13: Locked Queries - locked by you (left) and locked by another user (right)

#### **Unlocking of Queries**

When you Save or Cancel a Query that you are editing then the lock is removed, freeing it up for other users to edit.

If you exit Quick Query whilst editing a Query then it will remain locked to you. You can (depending on how you logged onto the Dashboards) re-edit the Query and Save or Cancel to release the lock.

**Note:** Quick Query locks can also be released by Dashboard Designer users using the Designer *Lock Maintenance* facility.

### **Query Results**

Selecting a Query will run it and display the results in this area.

Active Dashboards	Quick Query	Query selected: Sales Que Description: Last modified: user01 01/0	ery 1 04/2016 11:45:17		? C
Data Models & Queries	Query Resu	ilts			Ö
Customer data Customer Query 1 HR data HR query 1 HR Query 2 Sales data Sales Query 2 Sales Query 2 Sales Query 3	Category ID 1 4 6 5 7 3 4 6 8 7 7	Category Name Beverages Dairy Products MeatPoulty Grains/Cereals Produce Confections Dairy Products MeatPoulty Seafood Produce	Product Name Côte de Blaye Raclette Courdavauit Thúringer Rostbratvurst Gnocchi di nonna Alice Manjimup Dred Apples Tarte au sucre Camembert Pierrot Alice Mutton Carnarvon Tigers Rossie Sauerkraut	Product Sales           49198.0900           33775.3000           34755.5200           32604.0000           24570.8000           21638.2900           20505.4000           17604.6000           15950.0000           13948.6800	
Add Edit Copy Delet	Côte de Thùringer R Maninup D Camarono Gudbrands Ipoh B Gumbăr Gum Full size	Blaye ostb Tiefel Tigers Jaliost Coffee Jaliost O 10K	Sales Query 1 13.4.6K 13.4.6K 13.5K 13.5K 13.5K 13.5K 13.5K 13.5K 20.5K 20.5K 20.5K 3.5K	35.8K 34.8K 32.0K	© 😵

Figure 14: Quick Query Page – Query Results

Depending on how the Query has be defined, the results are displayed in a table with an optional chart displaying the same results underneath.

To re-run the Query and refresh the results either use the Refresh page button, reselect the Query in the Data Models & Queries area or use the following buttons:

Refresh the tabular results

Refresh the chart results

If no Query is selected then the Query Results area will be blank.

Query Results		0
	Figure 15: Results when no Query selected	

If running the Query results in no data being returned then this is displayed as follows:

Query Results	0
No data to display	

Figure 16: Results when Query returns no data

If the Query cannot be run for any reason then details why are displayed in the results table. This usually indicates that your system administrator needs to rectify an error connecting to the data or a Dashboard Designer user needs to correct the relevant Quick Query Data Model.

Query Results	0
Error running Query	
Error running Data Model Query: Invalid Data Connector defined for SQL Data Source: Temp DataSource for runnin DataModelQuery	9

Figure 17: Example of results when error running Query

### **Query Builder**

When you add, edit or copy a Query then the Query Builder is displayed. This allows you to setup the Query based on the chosen Data Model.

ActiveDashboards	Quick Query	Editing Query: Sales (	Duery 1		? 0
Data Models & Queries	Query name Sale	es Query 1	Description		
<ul> <li>Customer data Customer Query 1</li> <li>■ HR data HR query 1 HR Query 2</li> <li>Sales data</li> <li>Sales Query 2 Sales Query 2 Sales Query 3</li> </ul>	Available CC Alphabetic Categories Cate	Alumns R al list of pro sales for 191 oduct List and Supplie Demographi Customeraphi Customeraphi	Expression Expression Sales by Category CategoryID Sales by Category CategoryName Sales by Category ProductSales Expression Sales by Category ProductSales Sales by Category ProductSales	Title Category ID Category Name Product Name Product Sales	Sorting Not sorted Not sorted Descending • ()
	Category ID	Category Name	Product Name	Product	Sales
	1	Beverages Dairy Products	Cote de Blaye Raclette Courdavault	49198.09	00
	6	Meat/Poultry	Thüringer Rostbratwurst	34755.92	:00
Add Edit Copy Delete	5	Grains/Cereals	Gnocchi di nonna Alice	32604.00	• • • • • •

Figure 18: Quick Query Page – Query Builder

The Query Builder is divided into 4 areas:

- Query Name and Description enter the name of the Query and an optional Description.
- Available Columns Choose multiple columns to query or filter by.
- **Result Columns** Lists the columns that will be shown in the Query result.
- Filters Optional filters to restrict the data returned in the Query result.

Query name Sales Query 1		Description Sh	ows some interesting sales	data!	
Available Columns	Resul	t Columns		×	Ŧ
		Expression		Title	Sorting
▷ □ Alphabetical list of products		Sales by Category	CategoryID	Category ID	Not sorted
▷ □ Categories		Sales by Category	CategoryName	Category Name	Not sorted
Category Sales for 1997	<u> </u>	Sales by Category	ProductName	Product Name	Not sorted
Current Product List		Sales by Category	ProductSales	Product Sales	Descending
Customer and Suppliers by City					
CustomerCustomerDemo					
CustomerDemographics					
▷ □ Customers					
▷ □ Employees	Filters	5		×	<b>{+</b> }
EmployeeTerritories		oct records where	all of the following apply		
Invoices		ectrecords where			
▷		Sales by Category	ProductSales is greater the	an 10000.00	
▷ □ Order Details Extended					
▷ □ Order Subtotals	,				

Figure 19: Query Builder

#### **Query Builder - Name and Description**

Enter a name and optional description to describe the Query. Names don't have to be unique but it worth carefully naming Queries to avoid potential confusion.

Query name Sales Query 1	Description Shows some interesting sales data!

Figure 20: Query Builder - Name and Description

#### **Query Builder - Available Columns**

This lists all the Data Model's tables and columns available for querying. It is a convenient way of adding multiple columns to the Query in one go.

Available Columns	
V X	+ {+}
🖂 📼 FIGUULIS ADOVE AVELAGE FIILE	
Products by Category	
Quarterly Orders	
Region	
Sales by Category	
CategoryID	
CategoryName	
ProductName	
ProductSales	
Sales Totals by Amount	
Shippers	
Summary of Sales by Quarter	
Summary of Sales by Year	
Suppliers	
Territories	-

Figure 21: Query Builder Available Columns - with one Table expanded showing its Columns

To include columns in the Query, select the required columns by ticking the boxes next to them and use the following buttons:

$\checkmark$	Selects all listed tables and columns.
×	Deselects all listed tables and columns.
+	Add the selected data columns to the Query Results list – if not already present.

\_

- Add the selected data columns to the Filters list if not already present.
- $\square \square$  Expand/collapse a data table to show/hide its columns.

**Note**: The *Available Columns* area is only used to select data columns, the ticked columns don't necessarily reflect the Columns currently listed in the Result Columns or Filters area.

Note: The Data Model may restrict which columns can be used in the *Result Columns* or *Filters* area, in which case trying to add columns these will have no effect.

### **Query Builder - Result Columns**

This lists all the Data Model columns to include in the Query Results.

Result Columns				Ð
	Expression		Title	Sorting
1	Sales by Category CategoryID		Category ID	Not sorted
1	Sales by Category CategoryName		Category Name	Not sorted
1	Sales by Category ProductName		Product Name	Not sorted
1	Sales by Category ProductSales		Product Sales	Descending

Figure 22: Query Builder Result Columns – listing 4 columns

Use the following buttons to manage the list:

- Clears the columns currently listed.
- + Add a single column to the list.

#### Each line in the list represents one column:

	Expression	Title	Sorting
1	Sales by Category CategoryID	Category ID	Not sorted

Figure 23: Query Builder Result Columns – a single column

#### Each element is described below

1	Select to display a list of options relevant to the column:
	Sorting
	Move to top
	Move up
	Move down
	Move to bottom
	Delete column
	Simple column
	Aggregate function
	Sorting
	An alternative way of changing the sorting order of this column – see <i>Sorting</i> below.

	Move to top Move up Move down Move to bottom			
	These change the display order of the column in the Query Results. Columns listed top to bottom are outputted left to right in the Query Results.			
	Delete column			
	Removes the column from the Result Columns list.			
	Simple column			
	Output the data values from this column of data in the Query Results (this is the default behaviour).			
	Aggregate column			
	Output a calculated value based on the data values held in this column of data in the Query Results.			
	When this is selected an extra option appear in the column's <i>Expression</i> showing the aggregate calculation type, in this case "Sum". Select this to see other aggregation options available:			
	Expression			
	Sum Of Sales by Category ProductSales			
	Sum			
	Count			
	Distinct count			
	Average			
	Minimum			
	Maximum			
	Choose the aggregation required from the list.			
	<b>Note:</b> The list of available aggregations varies depending on the type of data held in the column – as defined in the Data Model.			
Expression	Displays the table/column chosen.			
	Select the <i>Expression</i> to choose an alternative column:			
	Expression Title			
	Invoices Discount Discou			
	Alphabetical list of products Product			
	Categories			
	Category Sales for 1997     CategoryName			
	Current Product List CategorySales			
Title	The display name of the column to use in the Query Results.			
	Select the <i>Title</i> to edit it:			
	Title			
	þiscount			
Sorting	How the data returned in this columns in the Query Results affects the ordering of the results.			

Select to change the sorting:
Sorting       Not sorted       Not sorted       Ascending       Descending
<b>Note:</b> The Data Model may restrict which columns can be sorted, in which case Sorting options will not be displayed for those columns.

### **Query Builder - Filters**

This lists all the Data Model columns conditions to filter the data by - so the Query Results will include only the data that satisfy those conditions.

Filters	×	<del>{+</del> }
Select records where all of the	following apply	
Sales by Category ProductSale	es is greater than 10000.00	

Figure 24: Query Builder Filters – listing 1 filter condition

Use the following buttons to manage the filter list:

- Clears all the current filters conditions.
  - Add a single new filter condition.

Select the 💌 buttons and blue text to display various options that allow the filters to be modified.

**Note:** The list of available options varies depending on the type of column being filtered – as defined in the Data Model.

#### **Tips:**

- To disable a filter condition without deleting it, untick the box to the left of it.
- You can create a condition with field-to-field comparison (e.g. "Order Date is less then Ship Date"). To do this add a condition as usual and then click on the value element (at the right side of condition) while pressing CTRL button. Then select "Attribute" from the menu that appears.

#### **Query Builder – Updating Query Results**

Whilst editing the Query, select the Query Results refresh button to see the latest results based on the currently defined Query.

Query Results	0

Figure 25: Query Results – Refresh button

Note: After you Save or Cancel the editing of a Query the Results will automatically update.

### **Chart Builder**

When you add, edit or copy a Query then the Chart Builder area is displayed. This allows you to define an optional chart to display the Query results in a graphical format.

)ata Models & Queries	Query name Sa	les Query 1	Description	
Customer data Customer Query 1 HR data HR query 1 HR Query 2 Sales data A Sales Cuary 1	Available Co	cal list of pro	esult Columns Expression Sales by Category CategoryName Sales by Category ProductName Sales by Category ProductName	Title Sorting Category ID Not sorted Category Name Not sorted Product Name Not sorted Product Sales Descending
Sales Query 2 Sales Query 3	Customer Cu	and Supplie CustomerDe Demographi s	ters Select records where all of the fo Sales by Category ProductSales	X Slowing apply s is greater than 10000.00
	Category ID	Category Name	Product Name	Product Sales
	1	Beverages	Côte de Blaye	49198.0900
	4	Dairy Products	Raclette Courdavault	35775.3000
	6	Meat/Poultry	Thüringer Rostbratwurst	34755.9200
	5	Grains/Cereals	Gnocchi di nonna Alice	32604.0000

Figure 26: Quick Query Page – Chart Builder

Select the chart type required from the dropdown and then select the relevant Query result columns to display on the chart using the *field* dropdowns.

Chart type	Bar	~
Value field	ProductSales Sum 🗸	
Category field	ProductName 🗸	
Series field	ProductID 🗸	

Figure 27: Chart Builder for a Multi-series chart

**Tip:** Depending on the display device, you can also select the chart columns by dragging column headings from the *Query Results* onto the chart *field* dropdowns.

Note: The Chart Results are only updated after saving any changes to the Query.

# Chapter 4

# **Data Models**

## Overview

This chapter is intended for Dashboard Designer users. It describes how to build Data Models for use in the Quick Query page.

Data Model editing requires some understanding of the relational databases handling. Designer users totally unfamiliar with database management should better leave this dialog for a database Operator or another experienced user.

# Understanding the Data Model

A Data Model is a user-friendly representation of a database for use by Quick Query. It defines the following main parameters:

- what tables can be used in queries and the links between these tables;
- which fields are shown to the Quick Query users and how they are presented;
- what filters can be applied and how they are presented;

#### **Tables and Links**

Each Table in a Data Model represents one table in a database but one table in the database can be represented several times in a Data Model through the use of table aliases.

Tables are not shown to the end-user, they are necessary only for the internal working of Quick Query as it needs to know which tables can be used and how they should be linked to each other.

Usually you start building a Data Model definition by adding of tables and specifying the links between them.

#### **Entities and their Attributes**

Each Entity in a Data Model represents for the end-user some object from the real word (e.g. Customer, Order, Employee, etc.).

Each Entity can contains several Attributes, for example "Customer name", "Number of orders", "Company address", "Tax fee", etc.

In most cases an Attribute corresponds to some field in database table. Alternatively, you can define "virtual" Attributes which will be calculated by an expression, e.g. concatenation of two data fields: FirstName + ' ' + LastName.

Each Attribute can be configured with Operators and a Value Editor which control how the end-user can apply Filter conditions to the Query results.

#### **Operators**

Operator represents and some logical comparison or other predicate (e.g. LIKE, IN, BETWEEN, etc) used to define Query conditions. For example: "is equal to", "is less than", "starts with", etc.

# **Data Models Editor**

To define and manage Data Models select the *Quick Query Data Models* option from the Dashboard Designer *File* menu.

The editor works in the standard Dashboard Designer way - allowing you to add, edit, copy and delete Data Models and group them logically.

AD Quick Query Data Models	-		×
Data Models	Selected Data Model		
Demo (0 items) Demo Broadbean (0 items) Demo Google Analytics Standard (0 items) Demo Maps (0 items) Demo Salesforce (0 items) Demo Wallboard Example (0 items) Cuick Query (3 items) Cuick Query (3 items) Cuick Query (3 items) Sales data	Data Model           Title         Customer data           Description	4d7d	
Add Edit Copy Delete	Build a user-friendly Data Model based on the chosen Data Connector. (Click the icon to define)		
Help	Save Cancel	Clos	e

Figure 28: Quick Query Data Models editor

#### Title / Description

Enter a unique name for the Data Model and an optional description.

#### Group

The Management Group to which this Data Model belongs. Models in the same group are listed together to aid identification. Note that this is only used for grouping Data Models in the Dashboard Designer, not the Dashboard Web Application.

#### **Data Connector**

Choose a Data Connector that connects to the data you wish to model.

#### SQL format

Only applicable if an ODBC or OLEDB based Data Connector is chosen.

Choose the most applicable format of the SQL Select statement that should be generated when Quick Queries are run using this the Data Model.

#### Model

Click the '...' button to launch the Data Model Definition editor, described in the next section.

Note: Each Data Model defined is exposed in the Dashboard Web Application as follows:

- In the Dashboard Administration page allowing user access rights for each Data Model to be defined. See *Chapter 2* for details.
- In the Quick Query page where users with access to the Data Model will be able to query it. See *Chapter 3* for details.

**Tip:** Right-clicking on one of the Data Models listed displays a context menu from where the *View in browser* option can be selected. This opens a web browser showing the selected Data Model on the Quick Query page. You will require a valid Dashboard session in the same browser (e.g. login to the Dashboards) and access rights to view the selected Data Model first for this to work.

#### Save / Cancel

Press Save to keep any changes or Cancel to lose any changes made.

**Tip:** After altering an existing Data Model it is recommended you review any existing Queries that are using the model to ensure they still function as intended.

# Data Model Definition Editor

This editor allows a Data Model to be defined against the chosen Data Connector.

Data Model defin	ition: New Data Model (3)	-	- 🗆	$\times$
Data Connector	Northwind			
Connection String	Data Source=localhost\SQL2008R2E	KPRESS;Initial Catalog=Northwind;Integrated Security=True		
Tables and Links	Entities Operators			
Category: <an< td=""><td>iy category&gt; ~</td><td>Table properties</td><td></td><td></td></an<>	iy category> ~	Table properties		
Filter:	x	Name: dbo.Alphabetical list of products (Alphabetical list of products)		
dbo.Alphabetica	I list of products (Alphabetical list of prod	Alias: Alphabetical list of pro Category:		
dbo.Categories ( dbo.Category Sa	(Categories) ales for 1997 (Category Sales for 1997)			
dbo.Current Prod	duct List (Current Product List)	Hints:		
dbo.CustomerCu	ustomerDemo (CustomerCustomerDemo)	Extra		
dbo.Customers (	(Customers)	condition:		
dbo.Employees dbo.EmployeeTe	(Employees) emitories (EmployeeTemitories)			
dbo.Invoices (In dbo.Order Detail	voices) Is (Order Details)	Quote table name		
dbo.Order Detail dbo.Order Subto	ls Extended (Order Details Extended) otals (Order Subtotals)			
dbo.Orders (Orders Orders	ers) (Orders (Orv)			
dbo.Product Sal	les for 1997 (Product Sales for 1997)	links		
dbo.Products Ab	pove Average Price (Products Above Av	dbo.Alphabetical list of products (Alphabetical list of products).CategoryName - dbo.Categor		
dbo.Products by dbo.Quarterly Or	r Category (Products by Category) rders (Quarterly Orders)	dbo.Alphabetical list of products (Alphabetical list of products).CategoryName - dbo.Categor dbo.Alphabetical list of products (Alphabetical list of products).ProductID - dbo.Current Prod	Add	
dbo.Region (Reg dbo.Sales by Ca	gion) itegory (Sales by Category)	dbo.Alphabetical list of products (Alphabetical list of products).ProductID - dbo.Invoices (Inv dbo.Alphabetical list of products (Alphabetical list of products).ProductID - dbo.Order Details	Edit	
dbo.Sales Totals	s by Amount (Sales Totals by Amount)	dbo.Alphabetical list of products (Alphabetical list of products).ProductID - dbo.Order Details dbo.Alphabetical list of products (Alphabetical list of products).Category/lame. dbo.Product		
dbo.Summary of	Sales by Quarter (Summary of Sales by	dbo.Aphabetical list of products (Aphabetical list of products).CategoryName - dbo.Products (Pr dbo.Aphabetical list of products (Alphabetical list of products).ProductID - dbo.Products (Pr	Delete	
dbo.Suppliers (S	Sales by rear (Summary of Sales by re Suppliers)	dbo.Alphabetical list of products (Alphabetical list of products).CategoryName - dbo.Product dbo.Alphabetical list of products (Alphabetical list of products).CategoryName - dbo.Sales by		
dbo.Territories (	Territories)	dbo.Alphabetical list of products (Alphabetical list of products).SupplierID - dbo.Suppliers (Si		
Clear Model	Add Tables Add Links	OK Cancel		

Figure 29: Data Models Definition editor

The editor is split into 3 main tabs:

- **Tables and Links** describing data tables taking part in the Data Model and how they relate to each another.
- **Entities** describing the Entities and Attributes (i.e. tables and columns) which Quick Query users can operate with to build queries.

• **Operators** - describing the available filter operations (like comparisons) available for each Attribute.

Other elements of the editor are:

- **Data Connector** (read-only) The name of the Data Connector you are building the Data Model against.
- **Connection String** (read-only) The connection string of the Data Connector.
- Clear Model This button resets the Data Model back to its original state.
- Add Tables This button launches the *Add table(s)* dialog, described later, which allows data tables and columns to be added to the Data Model automatically tables by querying the source data's schema.
- Add Links This button attempts to automatically add links between the Data Model's tables by querying the source data's schema.

#### **Data Model Definition - Tables and Links tab**

This tab is used to describe data tables taking part in the Data Model.

It consists of a list of Tables (displayed on the left) and details of selected table (displayed on the right), including a list of the table's Links.

and goily. Charly categoly?	Table prope	rties
ter:	Name:	dbo.Region (Region)
on Alphabetical list of products (Alphabetical list of prod	Alias:	Region Category:
oo.Categories (Categories) oo.Category Sales for 1997 (Category Sales for 1997) oo.Current Product List (Current Product List)	Hints:	✓
o.Customer and Suppliers by City (Customer and Supp		
o.CustomerCustomerDemo (CustomerCustomerDemo)	Extra	
o.CustomerDemographics (CustomerDemographics)	condition:	
o Employees (Employees)		
c.Employees (Employees)		
nvoices (Invoices)		
o.Order Details (Order Details)		Quote table name
o.Order Details Extended (Order Details Extended)		
o.Order Subtotals (Order Subtotals)		
n Orders (Orders On)		
p. Product Sales for 1997 (Product Sales for 1997)		
p.Products (Products)	Links	
p.Products Above Average Price (Products Above Av	dbo.Region	(Region).RegionID - dbo.Territories (Territories).RegionID
Products by Category (Products by Category)		Add
Quarterly Orders (Quarterly Orders)		
Sales by Category (Sales by Category)		Edit
Jaies by Caledoly (Jaies by Caledoly)		Edit
Sales Totals by Amount (Sales Totals by Amount)		
<ul> <li>Sales Totals by Amount (Sales Totals by Amount)</li> <li>Shippers (Shippers)</li> </ul>		
<ul> <li>Sales Totals by Amount (Sales Totals by Amount)</li> <li>Shippers (Shippers)</li> <li>Summary of Sales by Quarter (Summary of Sales by Summary Summar</li></ul>		Delete
p.Sales Totals by Ámount (Sales Totals by Amount) D.Shippers (Shippers) D.Summary of Sales by Quarter (Summary of Sales by 'D.Summary of Sales by Year (Summary of Sales by Year)		Delete

Figure 30: Data Models Definition – Tables and Links tab

The *Category* dropdown and *Filter* text box can be used to filter the list with matching entries. This does not alter the Data Model but can be useful when working with large lists of Tables.

**Important:** When defining a Data Model it is important to define all required Links between the Tables, as these are used when Quick Query generates SQL statements to query the underlying database when the end-user runs a Query.

#### Adding Tables

Add Tables to the Data Model by clicking the *Add Tables* button or right-clicking the list and selecting the *Add table(s)* option. This opens the *Add table(s)* dialog.

Add table(s)		x
Type text here to filter the data:		ОК
dbo.Alphabetical list of products	^	Cancel
dbo.Categories		
dbo.Category Sales for 1997		
dbo.Customer and Suppliers by City		
dbo.CustomerCustomerDemo		
dbo.CustomerDemographics		Coloct all
dbo.Customers		Select all
		Decale at all
dbo.Invoices		Deselect all
dbo.Order Details		1 1 1 1
dbo.Order Details Extended		Invert selection
dbo.Order Subtotals		
dbo.Product Sales for 1997	~	
Automatically add entities		
Son tields by original position		

Figure 31: Add table(s) dialog

Select the required Tables from the list and any options, described below, then click OK to add them.

- Automatically add entities Select to also add the selected Tables (and their columns) as corresponding Entities and Attributes in the Data Model.
- Sort fields by ordinal position If automatically adding Entities to the Data Model then selecting this adds their Attributes in the order the columns are defined in the tables added.

#### Adding Virtual Tables

Add Virtual Tables to the Data Model by right-clicking the list and selecting the Add virtual table option.

Virtual Tables do not correspond to a table in the database but are defined through a SQL SELECT statement instead.

#### **Removing Tables**

Remove Tables from the Data Model by right-clicking the relevant table and selecting the *Delete selected* option.

#### Table properties

Properties of the selected Table can be configured here.

<ul> <li>Table prope</li> </ul>	rties
Name:	dbo.Region (Region)
Alias:	Region Category: V
Hints:	×
Extra condition:	
	Quote table name

Figure 32: Table properties

• **Name** – Read-only name of Table.

• Alias – Alias for the Table in generated SQL statements. If a Table is added to the Data Model multiple times then they required different aliases.

Don't confuse this with the name of the Entity displayed to the end-user – this can be defined in the on the *Entities* tab – see the *Data Model Definition – Entities* section below.

- **Category** Optional way of managing Tables in the editor. Enter a new category name or select an existing one to group the tables. Then use the *Category* dropdown to filter the Tables listed.
- **Hints** Optional comma separated Table hint(s) to specify locking method used in Microsoft SQL Server syntax (like NOLOCK, ROWLOCK or READCOMMITED).
- **Extra condition** Optional SQL expression for extra condition. This condition will be added automatically into the generated SQL when this Table is used in Queries.
- **Quote table name** Tick if the Table name should be put in double quotes in SQL statements it is useful for Table names including spaces and national characters.

#### Virtual Table properties

Properties of the selected virtual table can be configured here.

Table propert Name:	ies MyVirtualTable
Alias:	MyVirtualTable Category: V
Expression:	SELECT * FROM Customers INNER JOIN Orders ON Customers.CustomerID = Orders.CustomerID

Figure 33: Virtual Table properties

- Name Read-only name of the Virtual Table.
- Alias See definition in *Table properties* above.
- Category See definition in *Table properties* above.
- **Expression** SQL SELECT statement defining the Virtual Table.

#### Table Links

Links between the selected Table and any other Tables in the Data Model are listed here.

dbo.Region (Region).RegionID - dbo.Territories (Territories).RegionID	Add
	Edit
	Delete

Figure 34: Table Links list showing a link between 2 Tables

Use the *Add/Edit/Delete* buttons to manually define links between the selected Table and other Tables in the Data Model.

Link: dbo.Region (Region).RegionID -	dbo.Territories (Territories).Regi	onID	×
Table1 dbo.Region (Region)	Table2 dbo.Tenitories (Tenitories)		ОК
Join type: Inner Join	✓ Quote field	s	Cancel
Join Conditions			
Conditions builder	) SQL expression		
RegionID = RegionID		Clear Delete	
Condition left part		Operator	
Field ~	~	= ~	
Condition right part		Add Condition	
	~		

Figure 35: Table Link editor

### **Data Model Definition – Entities tab**

This tab is used to describe Entities and their Attributes participating in the Data Model.

These are what the end-user will see and can choose from when building queries using this Data Model.

It consists of a list of Attributes grouped by Entity (displayed on the left) and details of selected Entity/Attribute (displayed on the right).

Tables and Links Entities Operators	
- Alphabetical list of products	Entity / attribute properties
ProductID	
ProductName	Entity Name
Discontinued	Alphabetical list of products
CategoryName	
SupplierID	Description
CategoryID	
···· QuantityPerUnit	
Unit Price	
UnitsInStock	User Data
UnitsOnOrder	
ReorderLevel	
Categories	
Current Product List	Other options
Customer and Suppliers by City	
. CustomerCustomerDemo	
	Use in result
Order Subtotals	
H-Orders	
Orders Qry	
H- Product Sales for 1997	
· Products	
E. Producte Ahove Average Price	

Figure 36: Data Models Definition – Entities tab

The Entities and its Attributes defined here are displayed on the Quick Query page in the same order. You can drag Entities or Attributes to re-order them.

Available Columns	
×	+ {+}
Alphabetical list of products	
ProductID	
ProductName	
Discontinued	
CategoryName	
SupplierID	
CategoryID	
QuantityPerUnit	
UnitPrice	
UnitsInStock	
UnitsOnOrder	
ReorderLevel	
Categories	
Category Sales for 1997	
Current Product List	-

Figure 37: The same Entities and Attributes displayed in Quick Query page

Entities are intended to hide data storage details from the end-user. Instead of operating with tables, views and fields (such as Orders.CustNo, Customers.Addr1) users see some Entities from the real world (Order, Customer, Vendor, etc.) and their Attributes (Customer Name, Order Ship Date, Vendor Country, etc.).

For large Data Models, Entities can be organized in a hierarchy for easier manipulation.

There are two main types of Attributes:

- Data Attribute corresponds to particular field in a database table (e.g. Attribute Order Ship Date corresponds to database field Orders.ShipDate);
- Virtual Attribute a calculated Attribute which is defined by an expression containing several fields, operators (+, -, ||, etc.), constants and even functions or storage procedure calls;

#### Main operations

- To add a data Attribute right-click the Entity node you would like to add it to and then choose *Add data attribute...* from the context menu. Select the table and its field in the dialog that appear and click OK button.
- To add a Virtual Attribute (i.e., calculated value), right-click the Entity node you would like to add it to and then choose *Add virtual attribute*... from the context menu.
- To delete an Attribute or Entity right-click it and choose *Delete selected* from the context menu
- To edit an Attribute, select it in the tree and change its properties in the editor appearing in the dialog's right part.
- To move the Attribute from one Entity to another (or to change its appearance order within the Entity) just drag it to the appropriate place.

#### **Entity properties**

The select Entity can be configured here.

Entity / attribute properties	
Entity Name	1
Alphabetical list of products	
Description	
User Data	
	1
Other options	
Use in conditions	
Use in result	
Use in sorting	

Figure 38: Entity properties

- Entity Name The name displayed to the end-user.
- **Description** Optional description of the Entity. Anything entered is only viewable in the above form and is not exposed to the end-user.
- User Data This is reserved for future use and should not be used.
- Use in conditions Specify if the end-user can filter a Query using Attributes of this Entity.
- Use in result Specify if the end-user can use the Attributes of this Entity in Query results.
- Use in sorting Specify if the end-user can sort the Query results using the Attributes of this Entity.

#### **Attribute Properties**

The Attribute's property editor has General, Operators and Value Editors sub-tabs, each described below.

#### General sub-tab

ieneral	Operators	Value Ed	litors			
Caption						
Produc	tID					
Express	ion					
Table: Field: P	dbo.Alphabe ProductID	tical list of	products (a	8888888	iaa)	
Used	tables				Other options	
dbo./	Aphabetical I	list of pro	Add		Use in conditions	
			Delete		Use in result	
			Delete		Use in sorting	
Data typ	be		Size	-1	Quote field name in SQL	
Int		$\sim$	0	-		
Custom	function					
					Aggregate	
Lookur	attribute					
Loonap	Gunbaro					
Descrip	tion			Curd	iom data	
Descrip	uon					

Figure 39: Data Attribute – General properties

Entity / attribute properties			
General Operators Value Editors			
Caption			
My virtual column			
Expression			
CustomerID + ' - ' + CompanyName + ' - ' + Cit	ty		
Used tables	Other options		
MyVirtualTable Add	Use in conditions		
Delete	Use in result		
Delete	Use in sorting		
Data type Size	Quote field name in SQL		
String v 20			
Custom function			
	Aggregate		
Lookup attribute			
Description	Custom data		

Figure 40: Virtual Attribute – General properties

- Caption The name of the Column that will be displayed to end-user.
- **Expression** Contains table and field names for data Attributes and full SQL expression for virtual ones. For data Attributes this field is read-only.
- Used tables panel Contains the list of all tables used in the selected Attribute. For data Attributes this field is read-only. For virtual Attributes select the table(s) to use.
- **Data type** and **Size** Contain type of Attribute and its size. These values are taken from corresponding field definition for data Attributes. For Virtual attributes these should be set manually.
- **Custom function** Optional SQL function to be applied to the Attribute in all SQL statements that it is used. For example: LOWER({expr}) will result in the Attribute being wrapped in the LOWER function when the SQL statement for a Query is run.
- **Lookup attribute** Optionally link two Attributes in the Data Model together so they are exposed to the end-user as a single Attribute but behind the scenes applied to the query in different ways

For example:

1. You have a foreign key field, CityID, in a table called Customers. This field references a Cities table containing a list of all cities in CityID and CityName fields.

2. In the Data Model, you expose the CityID field in an Attribute called City, set so the enduser can only use it to filter results and not display it in the results. The Attribute is setup to use a *SQL LIST* value editor so the end-user can pick from a list of city names when filtering.

e.g. The end-user will see a filter that looks like "Customer City is equal to London" but in the query SQL statement generated it will be something like: Customers.CityID = 234

3. Now you also need to show the city name in a column in the query result.

To achieve this you add another City attribute to the Data Model that corresponds to the CityName field of the Cities table. You set it so the end-user can only use it in the query results and not filter with it.

4. You now set the *Lookup attribute* property to link these fields and the end-user will only see one City Attribute. The end-user can then use this Attribute in the query results and to filter with - behind the scenes the CityID field will be used when filtering and the CityName field will be used when displaying it in the query results.

- Use in conditions Specify if the end-user can filter a Query using this Attribute.
- Use in result Specify if the end-user can use this Attribute in Query results.
- Use in sorting Specify if the end-user can sort the Query results using this Attribute.
- **Quote field name in SQL** Specify if the field name should be put in quotes in SQL statements. Useful for field names which includes some reserved words. Field names with spaces will be quoted automatically.
- Use alias Specifies if the Query builder will generate an alias for the result column where this Attribute is used.
- Aggregate This option is used for Virtual Attributes to indicate that the Attribute is aggregate so it contains some of aggregate function (SUM, COUNT, etc.).
- **Description** Optional textual description to be associated with the Attribute. Anything entered is currently exposed in the Data Model editor only and does not affect the Quick Query page.
- Custom Data This is reserved for future use and should not be used.

#### **Operators sub-tab**

This tab lists all filter operations applicable to the Attribute, the first one listed is the default one presented to the Quick Query user, you can drag Operators to re-order them.

- Entity / attribute prope	ties	
General Operators	Value Editors	
StartsWith Contains Equal InList NotStartsWith NotContains NotEqual		Add Delete
NotInList InSubQuery IsNull		Defaults
IsNotNull		Clear

Figure 41: An Attribute's Operators

Filters	×	<del>{+</del> }
Select records where all of the	ne following apply	
Categories CategoryName	starts with [enter value]	
	starts with	
	contains	
	is equal to	
	is in list	Ð
	does not start with	
on	does not contain	<u> </u>
s, coffees, teas, beers, and ales	is not equal to	
d savory sauces, relishes, spreads, and	is not in list	
candies, and sweet breads	is not null	

Figure 42: The same Operators displayed on the Quick Query page

- Add button add a new Operator to the Attribute.
- **Delete** button remove the selected Operator
- **Defaults** button resets the list of Operators for the Attribute to the default state. The default Operator list contains the most appropriate Operators for Attribute's data type.
- Clear button remove all Operators from the list.

See the Data Model Definition - Operators tab section for more details on Operators.

#### Value Editors sub-tab

This tab allows you to define how end-users will edit the parameters which the selected Attribute is compared to in Query filter conditions. To specify editor parameters click on *Settings* button.

Entity / attribute properties				
General	Operators	Value Editors		
Default	value editor	:: Auto	~	Settings
,				

Figure 43: Attribute - Value Editors

You can select one of the following editors:

- Auto The most appropriate value editor will be used depending on the Attribute's data type and Operator which used in condition. For example for date Attribute a Data/Time picker control will be shown, for Boolean the user will get an ability to select the value from the list of two items: False and True.
- **Text editor** Values will be edited in a text box field. You can specify a default value and type of edited data for this editor.
- **Date/time editor** A date/time picker value editor will be used.
- List of constants Prompt the user to select one (or more in case of using "is in list" Operator) value from a list of available values when filtering a Query.

The *Value* column contains values to filter by and the *Text* column contains the corresponding text label to display to the user.

Value editor settings	×
Value     Text       Beverages     Beverages       Condiments     Condiments       Confections     Confections	OK

Figure 44: Defining a List of constants for a dropdown filter

Filters	×	<b>{+</b> }
Select records where all of the following	apply	
Categories CategoryName is equal to	Confections	
	Beverages	
	Condiments	
	Confections	

Figure 45: The same filter options displayed on the Quick Query page

- **Custom list** This editor is reserved for future use and should not be used.
- **SQL list** Prompt the user to select one (or more in case of using "is in list" Operator) value from a list of available values when filtering a Query.

Define a SQL Select statement to populate the values. This SQL is run against the same Data Connector used by the Data Model.

Value editor settings	×
SQL statement	
Select DISTINCT Region From Customers Order by Region	OK Cancel

Figure 46: Defining a SQL statement to populate a dropdown filter

The 1<sup>st</sup> column returned by the SQL should contain the values to filter by and 2<sup>nd</sup> column should contain the corresponding text label to display to the user. If only 1 column of data is returned by the SQL (as in the above example) then this is used for both value and text.



Figure 47: The same filter options displayed on the Quick Query page

• Custom (user defined) - This editor is reserved for future use and should not be used.

### **Data Model Definition – Operators tab**

This tab defines default Operators which can be used in Attribute conditions (Filters), such as 'is equal to', 'less than', etc.

Note: In most cases no changes are required to the values on this tab – it is for advanced use only.

It consists of a list of defined operations (displayed on the left) and details of selected Operator (displayed on the right).

Tables and Links Entities Operators	
Group: [Any group] V General	Operands
Equal       ID         NotEqual       Equal         LessThan       Equal         LessOrEqual       Display         GreaterOrEqual       IsNull         IsNull       Isnull         IsNull       Express         NotTrue       InList         NotTrue       InList         NotStartsWith       Group         Contains       InSubCuery         DateWithinToday       DateWithinThisVeek         DateWithinThisYear       Applied         DateWithinThisYear       DatePeroidPrecise         TimeAfterPrecise       Int         TimeAfterPrecise       Int         MaximumOfAttr       NewOp	Caption         format         [Is equal to]] {expr2}         ion         = {expr2}         n operators            Case insensitive         types         19       Bool         Ploat       Autoinc         rd       Currency         BCD       Blob         12       Date         Pate       FixedChar         24       Time

Figure 48: Data Models Definition – Operators tab

Add or delete an Operator by right-clicking the list and choosing the relevant option from the context menu. To edit an Operation choose it from the list and modify its properties displayed on the right.

#### **Operator - General Properties:**

- **ID** The internal identifier for the Operator.
- **Caption** Allows to specify how this Operator will be presented to the end-user when they select it.
- **Display format** A template which describes how the Operator will be shown on the Quick Query page.

The most usual value of this field is:

{expr1} [[operator text]] {expr2}

Here  $\{exprl\}$  and  $\{exprl\}$  will be substituted by corresponding expression in condition (an Entity Attribute or constant).

The text in [[]] brackets will be shown as link for Operator selection.

For "between" Operators the *Display format* property will also contain 'and' word between second and third expression:

{expr1} [[is between]] {expr2} and {expr3}

• **Expression** - A template for condition expression in generated SQL query. It may contain any correct SQL expressions (operators such as =, >,<, functions or even names of stored procedures) and the following special variables:

{expr1} - is substituted with the Entity Attribute selected by user;

{expr2}, {expr3}, ... - are substituted by constant values typed or selected by user or Entity Attributes selected at the right part of condition;

Additionally you can use the following constructions:

 $\{exprN.table\}$  - will be replaced by table name of N expression if this expression represents an Entity Attribute or by empty string in other case.

 $\{exprN.field\}$  - will be replaced by field name of N expression if this expression represents an Entity Attribute or by empty string in other case.

Examples:

```
For the simple "is equal to" Operator the format string is: {expr1} = {expr2}
```

The "starts with" Operator has the following format: {expr1} LIKE {expr2}

You can define more complex Operators even with sub-queries. For example here is an expression for "more than average" Operator:

```
{expr1} > (SELECT AVG({expr2.field}) FROM {expr2.table})
```

- **Group** Allows to select the group which Operators belongs to.
- Applied types A list of check boxes defining data types to which the operation is applicable.

**Operator – Operands properties:** 

General Operands	
Defaults	Kind
	Scalar ~
	Data type
	Auto ~
	Value editor
	Auto Settings
	Default value
Add Delete	

Figure 49: Selected Operator – Operands sub-tab

• Kind - Defines the kind of data which has the parameters of this Operator.

"Scalar" - means simple single value is needed: one string, one number, etc. This kind allows also to specify Entity Attribute.

"Const" - the same as previous one but allows to specify only constant value (Entity Attributes are not allowed);

"Attribute" - the same as the first one but allows to specify only Entity Attribute (constant values are not allowed);

"List" type requires list of scalar values separated by comma. E.g., having this option checked, when the user enters a, b, c as parameter value, it's treated as 'a', 'b', 'c' instead of 'a, b, c' in the generated SQL text.

"Query" type means that the Operator requires a SQL SELECT statement as a value in the right part of condition. To build this statement a query panel opens separate dialog.

- **Data type** Represents expected type of Operator parameters used in condition expression. "Auto" value means the same type as the type of Entity Attribute used at the left part of condition, other values are correspond to particular data types.
- Value editor The default value editor for Operator's parameters.

The value editor chosen here has higher priority in a condition than the editor defined for Entity Attribute used at the left part of this condition.

The available value editors are described in the Attribute Properties section above.

• **Default value** – Optional value that is compatible with operand's data type. This value will be used automatically when the end-user selects this Operator in a Query Filter.

### Example

In this example we show how to build a Data Model from a relational database in the Dashboard Designer and view it in the Quick Query web page

#### **Dashboard Designer**

- 1. Login to the Dashboard Designer.
- 2. On the Data Connector tab setup and test a new Data Connector to a relational database.

In this example the Microsoft SQL Server sample database AdventureWorks is used:

Sel	ected Data Connector	
~	Data Connector	
	Title	AdventureWorks
	Description	
	Group	Demo - Global Group
	Data provider	SQL Server
	Connection string	Data Source=localhost\SQL2008R2EXPRESS;Initial Catalog=AdventureWorks
	Encrypt connection string	Тгие

- 3. Launch the *Quick Query Data Models* editor from the Designer *File* menu.
- 4. Click the *Add* button to create a new Data Model titled "Adventure Works" and chose the above Data Connector.

Sel	ected Data Model	
~	Data Model	
	Title	Adventure Works
	Description	
	Group	Demo - Global Group
	Data Model Id	233f1582-8983-4a67-ab49-47b56db8753e
	Last modified	user01 05/04/2016 15:12:39
~	Definition	
	Data Connector	AdventureWorks
	Model	(Click the icon to define)

- 5. On the *Model* property click the '...' button to launch the Data Model Definition editor.
- 6. This should prompt you to add the database Tables and Links into the Data Model:



7. Click *Yes* and the *Add table(s)* dialog appears:



- 8. Select all the tables from the list and ensure the *Automatically add entities* option is selected.
- **9.** Click *OK* after the tables have been added to the Data Model. You will then be prompted to automatically add any links between the tables to the Data Model:

Data Model Editor	$\times$					
Automatically add Links between the Data Model Tables if possible?						
<u>Y</u> es <u>N</u> o						

10. Click Yes and wait for the links to be added.

Data Model Editor	×
0 existing Links. 1096 Links added.	
ОК	

11. Click *OK* and the Tables and Links added to the Data Model are displayed:

Data Model	definition: Adventure Works			_		×
Data Connec	tor AdventureWorks					
Connection	Data Saura Jacollard SOL2	atalan - Advantum Wada 2000 Duba amtad Casuditu Taua				
Connection :		UUONZEAF NE33,ITIILIAI C	alaiog=Auventurevvoiks2000h2,integrated Security=The			
Tables and	Links Entities Operators					
Category:	<any category=""></any>	✓ Table prop	erties			
Elter		Name:	HumanResources.Department (Department)			
Filler.		Alias	Department Category:			
dbo.AWB dbo.Datab	uildVersion (AWBuildVersion) baseLog (DatabaseLog)	^				
dbo.ErrorL	.og (ErrorLog)	Hints:				
HumanRe	sources.Employee (Employee)					
Human Re Human Re	sources.EmployeeDepartmentHistory sources.EmployeePayHistory (Employ	(Empl Extra eePa condition				
Human Re Human Re	sources.JobCandidate (JobCandidate	)				
HumanRe	sources.vEmployee (vEmployee)					
Human Re	sources.vEmployeeDepartment (vEmployeeDepartment History	v (vEn	Quote table name			
Human Re Human Re	sources.vJobCandidate (vJobCandida sources vJobCandidateEducation (vJ	ste) obCar				
Human Re	sources.vJobCandidateEmployment (	/JobC				
Person.Ad Person.Ad	laress (Aaaress) IdressType (AddressType)					
Person.BusinessEntity (BusinessEntity) Person.BusinessEntityAddress (BusinessEntityAddress Person.BusinessEntityContact (BusinessEntityContact		ddres:				
		ontact Human Re	sources.Department (Department).DepartmentID - HumanResources.Employee[	)e	Add	
Person.Co	ountryRegion (CountryRegion)					
Person.En Person.Pa	nailAddress (EmailAddress) assword (Password)				Edit	
Person Pe	erson (Person)					
Person.Ph	oneNumberType (PhoneNumberType	.)			Delete	
Person.St Person.vA	ateProvince (StateProvince) \dditionalContactInfo (vAdditionalCont	actInf				
Person.vS Production	tateProvinceCountryRegion (vStateP) BillOfMaterials (BillOfMaterials)	rovinc				
Troduction	namentatendie (billermatendie)					
Clear Mode	Add Tables Add Links		OK Cancel			

**12.** Select the *Entities* tab to see the corresponding Entities and Attributes added to the Data Model that the end-user will see when building Queries based on this Data Model:

Tables and Links	Entities	Operators					
	on			~			
SystemInformationID							
Database Version							
VersionDate							
Modified D	ModifiedDate						
🗄 - DatabaseLog							
🗄 ·· ErrorLog							
Department							
Employee							
EmployeeDep	artmentHi	story					
EmployeePay	History						
. JobCandidate							
⊡ ·· Shift							
	epartment						
⊕ vEmployeeDe	epartment	listory					
vJobCandidat	e						
⊕ vJobCandidat	eEducatio	n					
vJobCandidat	eEmployn	ient					
Address							
Address Type							
BusinessEntity	y						
BusinessEntity	VAddress						
	ycontact						
Countact Type							
Email Address							
Pageword							
Person							
Person Phone							
				4			

**13.** Click *OK* to keep your changes and exit the Data Model Definition editor.

14. Click Save on the Quick Query Data Models editor.

### Dashboard Web Application – Quick Query page

- 1. Open the Dashboards in your browser and launch Quick Query.
- 2. You should see the "Adventure Works" Data Model listed, select it and click the *Add* button to create a new Query of it.



If you don't see this Data Model listed or cannot create a new Query for it then check you Quick Query access to resolve this. See *Chapter 2* for details.

**3.** The Query Builder displays, allowing you to query the data exposed through this Data Model. For example:

Query name New Query		Descriptio	n			
Available Columns	Result	Colum	ns	×		Ð
		Expression	Expression		e Sorting	
▷ □ PurchaseOrderDetail	ShipMethod	ShipMethodID	ShipMethodID	Not sorted		
PurchaseOrderHeader	1	ShipMethod	Name	Name	Not sorted	
⊿ 🗹 ShipMethod	1	ShipMethod ShipBase ShipBase			Not sorted	
ShipMethodID	1	ShipMethod	ShipRate	ShipRate	Not sorted	
Name	1	ShipMethod	rowguid	rowguid	Not sorted	
ShipBase	1	ShipMethod	ModifiedDate	ModifiedDate	Not sorted	
ShipRate						
rowguid						
ModifiedDate	T 11			-		
Vendor Filte				×		( <del>1</del> )
VvendorwithAddresses	🔰 Sele	ct records whe	ere all of the following apply			
Currency -						
Query Results						0
ShipMethodID Name	ShipBase	ShipRate	rowguid		ModifiedDate	
1 XRQ - TRUCK GROUND	3.9500	0.9900	6be756d9-d7be-4463-8f2c-ae6	50c710d606	01/06/2002 00:00:00	
2 ZY - EXPRESS	9.9500	1.9900	3455079b-f773-4dc6-8f1e-2a5	8649c4ab8	01/06/2002 00:00:00	
3 OVERSEAS - DELUXE	29.9500	2.9900	22f4e461-28cf-4ace-a980-f686	icf112ec8	01/06/2002 00:00:00	
4 OVERNIGHT J-FAST	21.9500	1.2900	107e8356-e7a8-463d-b60c-07	9fff467f3f	01/06/2002 00:00:00	
5 CARGO TRANSPORT 5	8.9900	1.4900	b166019a-b134-4e76-b957-2b	0490c610ed	01/06/2002 00:00:00	

Click Save to store the new Query.

# Appendix A

# Troubleshooting

### **Quick Query Page**

#### 1. Why don't I see any Data Models or Queries listed?

This may be because you have been granted full access to Quick Query but no Data Models have been defined by Dashboard Designer users yet.

#### 2. I know a Data Model exists so why can't I see it listed?

Probably because a Dashboard Administrator user has not granted you access to the Data Model. You can also try refreshing the page to update the list.

#### 3. Why do I see "Error running query" in the Query Results?

This could be for a variety of reasons such as:

- The Data Model used by the Query is no longer correct or has been altered.
- There is an issue connecting to the underlying data being queried

Report the issue to your system administrator or Dashboard Designer user.

#### 4. Why do I get an "Error saving..." or "Error deleting..." or similar message?

This indicates an issue with the Dashboard installation – probably related to file permissions. Contact your system administrator with details.

# 5. Why do I see messages such as "You no longer have permission to view this page." or "You no longer have permission to perform this action"?

Probably because your Quick Query access rights have recently changed by a Dashboard Administrator user.

#### 6. Why can't I edit or delete a particular Query – I have been granted access to do this?

Probably because another user has started editing the Query since your page last updated and they have a lock on the Query meaning no one else can edit it.

# 7. I'm sure I saw a particular Data Model or Query listed a moment ago but it has disappeared - why?

Probably because another user has recently renamed or deleted the Query or Data Model. It could also be because your Quick Query access rights have recently changed by a Dashboard Administrator user.

# 8. Why is the Query Results not displaying a particular Column any more – the Query hasn't changed recently?

This is probably because the Query's Data Model has been altered since the Query was last edited, with Tables or Columns removed from the Data Model. These changes to the Data Model are reflected in the results.

# Data Model Editor (Dashboard Designer Users)

1. Why do users report they are seeing "Error running Data Model Query: Error building SQL statement from Query: Cannot find a path between tables "x" and "y" messages or similar?

Check the Data Model they are using is fully defined, i.e. all Tables exposed to Quick Query users should have the relevant Links defined so Quick Query knows how to construct the SQL Statement to perform the query.

2. Why do users report they are seeing the following message when trying to add a new Query "The selected Data Model is not fully defined - it cannot be queried yet."

The Data Model they are using is either not fully setup yet or a dependency such as its Data Connector has been deleted.

#### 3. Users are complaining that Queries are locked by other users – so they cannot be edited.

Quick Query implements a locking mechanism to prevent multiple users editing the same Query simultaneously. Locks should be released automatically but if users forget to save or cancel the editing of a Query then locks will persist. "Web App - Quick Query" locks can be managed using the *Lock Maintenance* facility available from the *Maintenance* menu of the Dashboard Designer.