



DASHBOARD BUILDER™ FOR MICROSOFT®

ACCESS™

PROFESSIONAL EDITION

Application Guide

Version 3.7

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1 General Concepts

Dashboard Builder™ allows users to create an unlimited number of dashboards and business metrics. A conceptual model of how Dashboard Builder operates is outlined in the following diagram.

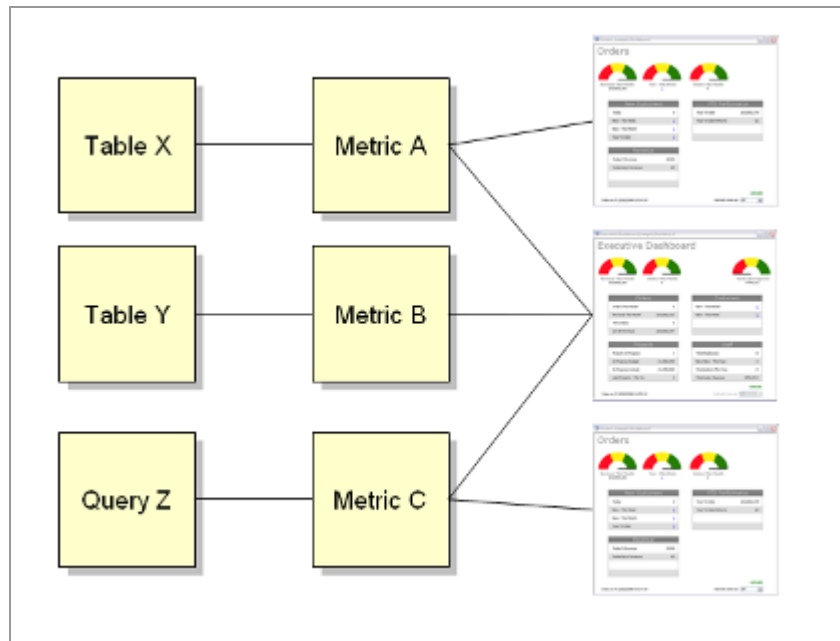


Figure 1: Conceptual Model

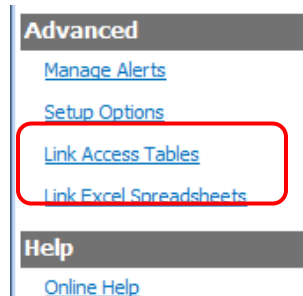
As shown above, note that each metric is associated with a single data source. That data source may be a table or query. Each metric can be associated with one or more dashboards, as shown at right.

2 Deployment Options

2.1 USING DASHBOARD BUILDER AS A STAND-ALONE APPLICATION

As a stand-alone database, you will need to link tables from other databases to your Dashboard Builder database. You may link tables from one or more different databases, which may be other Microsoft Access, Microsoft SQL Server, or MySQL Server databases.

To link tables from another Microsoft Access database, click "Link..." from the welcome screen.





2.2 USING DASHBOARD BUILDER WITHIN AN EXISTING DATABASE

When Dashboard Builder first starts, it will ask you if you would like to add Dashboard Builder to an existing database, an existing database with UI Builder, or link to another database.

If you are using another OpenGate product such as UI Builder, click the "Add/Upgrade Dashboard Builder to a UI Builder database." If you are not using UI Builder, choose the first option in the menu.

The application will then add/upgrade your database to include Dashboard Builder.

Important!

We always recommend making a copy of your existing database before running this step in case you need to restore your database.

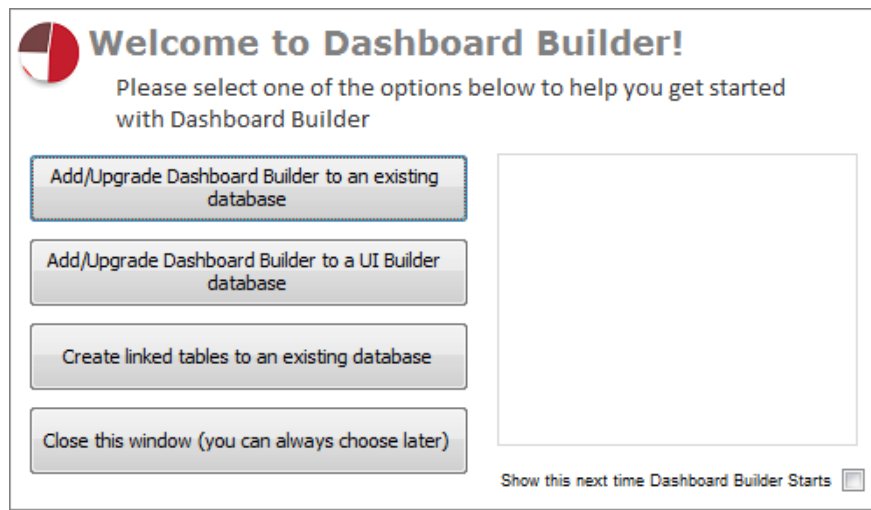


Figure 2: First Welcome Screen

2.3 USING DASHBOARD BUILDER WITH MICROSOFT® SQL SERVER™

To use Dashboard Builder with Microsoft SQL Server, you will need to establish an ODBC database connection to your desired database and create links to the desired tables on the SQL Server. OpenGate Software recommends you follow the instructions provided by Microsoft to link SQL Server tables to an Access database. The instructions can be found here:

Access 2000-2003



<http://office.microsoft.com/en-us/access/HP052730091033.aspx>

Access 2007

<http://office.microsoft.com/en-us/access/HP052730091033.aspx>

2.4 USING DASHBOARD BUILDER WITH MYSQL® SERVER

To use Dashboard Builder with MySQL Server, you will need to establish an ODBC database connection to your desired database and create links to the desired tables on the MySQL Server. OpenGate Software recommends you follow the instructions provided by MySQL to link MySQL Server tables to an Access database. The instructions can be found here:

<http://dev.mysql.com/tech-resources/articles/migrating-from-microsoft.html>

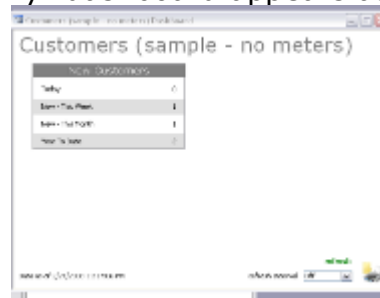
3 Managing Dashboards

3.1 CREATING A DASHBOARD

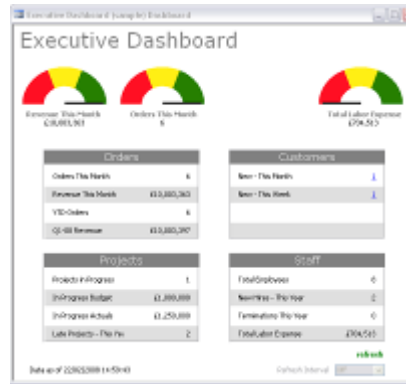
To create a new dashboard, simply select the “Create a New Dashboard” button from the Dashboard Builder Main Menu screen. Supply a name for your dashboard, and you are ready to begin assigning metrics to the dashboard.

3.1.1 DASHBOARD LAYOUTS

Dashboard Builder supports two layouts: “Data Only” and “Data and Meters.” The “Data Only” dashboard appears as follows:



Whereas the “Data and Meters” dashboard will appear as follows:



3.1.2 MANAGING GROUPS

All Dashboard Builder dashboards support up to four groups of separate metrics. A dashboard group is only displayed if you provide a name for the group. You can change the name of any group by simply selecting the text and typing your desired name. To hide a group, simply click the red 'x' beside the name. When a group has no name, it will not be displayed on the dashboard.

3.1.3 ASSIGNING METRICS

To assign a metric, simply select the metric name from the dropdown box. There are no restrictions to which metrics you assign to which groups. For example, you may choose to assign metrics associated with four different tables to the four metric spaces contained within one group. Note that only metrics that have been validated will appear in the dropdown selection boxes on screen. Refer to section 3.2 for more information about creating metrics.

When assigning metrics for the dashboard meters, note that only those metrics with a defined "Green Limit" and "Red Limit" will appear in the dropdown list. Refer to section 3.2.2 of this document for information about creating metrics for meter dashboards.

3.1.4 DASHBOARD FILTERS

In some cases, you may want your users to refine their data selection at the time they launch a dashboard. For example, where you have multiple offices or facilities in your database, and do not want to create separate dashboards and metrics for each facility. In this case, you can configure Dashboard Builder to prompt the user to choose a specific filter value from a pre-defined list prior to launching the dashboard.

3.1.4.1 Creating Filter Values

Option 1: Filter values are stored in the table tblLookups. You can create multiple "Lookup-Types" which are essentially categories of lookup values the user can select from. For example, if one



dashboard will prompt a user to choose a facility, you would enter "Facility" in the "Lookup-Type" field in tblLookups for each value stored in the "Lookup-Value" field.

LookupID	Lookup-Type	Lookup-Value
110	Date-Range	All Time
111	Calculations	Sum
112	Calculations	Count
113	Calculations	Average
116	Date-Range	Exact Dates:
117	Field-Format	Currency (no decimals)
118	Field-Format	Number (no decimals)
119	Field-Format	Currency (2 decimals)
122	Field-Format	Number (2 decimals)
123	Field-Format	Number (all decimals)
124	Facility	West Division
125	Facility	East Division
126	Facility	Corporate
*	(New)	

Figure 3: Lookup Table Example

In the example shown in Figure 2 above, there are three facilities that a user can choose from. You might also have a dashboard that prompts the user to choose a Sales Manager's name, in which case you would group all the sales manager names by a different lookup type, like "Manager."

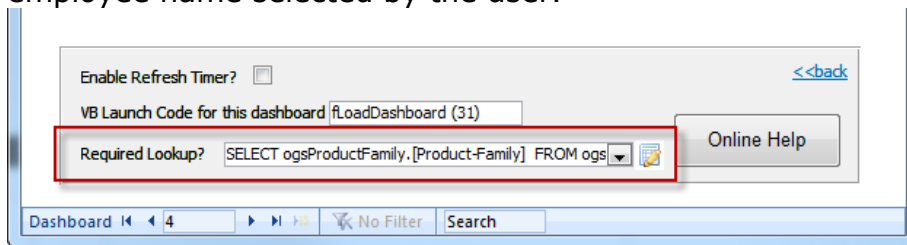
Option 2: You can enter an SQL string into the Required Lookup dropdown which uses data from a specific source to present to your user. For example, entering the following in the Required Lookup dropdown (show in Figure 4 below) will return a list of employee names in the filter prompt:

```
SELECT DISTINCT [EMPLOYEE NAME] FROM [tblEmployee]
```

When the filter prompt is presented to the user, they will see the list of unique employees in the table "tblEmployee" to choose from. For any metric in your dashboard that contains a SQL-Where clause like

```
WHERE [Employee Name] = "[GLOBALFILTER]"
```

that metric will be filtered to only show the values matching the employee name selected by the user.





3.1.4.2 Associating Lookup Filters with Dashboards

The next step is to associate your chosen lookup filter with a dashboard. As shown in Figure 3 below, you select a “Lookup-Type” value in the “Required Lookup?” field within the Dashboard Administration form for a specific dashboard.

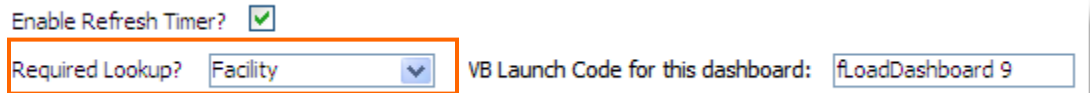


Figure 4: Dashboard Administration Screen

In the case above, it contains “Facility,” which means any time a user opens this dashboard, they need to choose one of the available facilities.

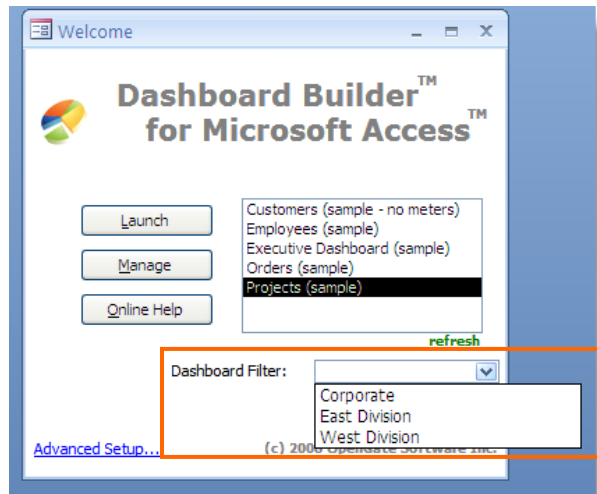


Figure 5: Dashboard Filter Example

Important!
Please read section 4.2.1.8 of this document regarding how to set up a metric to use the lookup filter a user selects.

3.2 CREATING METRICS

To open the Metric Administration form, select “Edit Metrics” from the bottom of the Dashboard Administration screen. Or, to edit a specific metric shown on screen, double click the name in the Dashboard Administration screen.

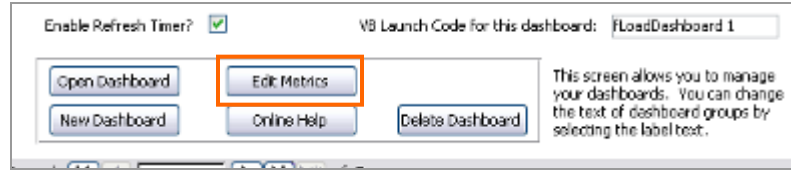


Figure 6: Dashboard Administration Screen

3.2.1 BASIC METRIC SETUP

Creating or modifying a metric is done in the Metric Definition Setup screen, as shown in Figure 6 below.

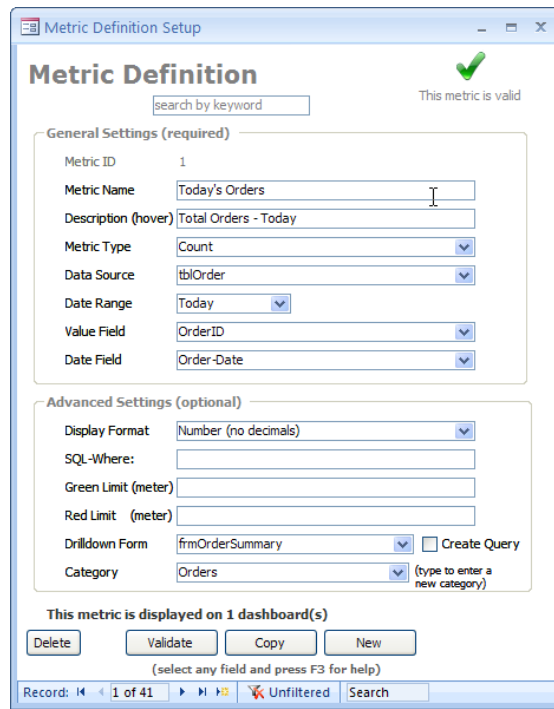


Figure 7: Metric Definition Screen

3.2.1.1 Metric Types

Dashboard Builder supports six metric types, described below:

- Average** Dashboard Builder will average all values contained in the Value Field specified for the Data Source and Date Range you provide.

- Count** Dashboard Builder will count the number of records that match the Date Range you provide in the Data Source.

- Sum** Dashboard Builder will sum all values contained



- in the Value Field specified for the Data Source and Date Range you provide.
- Maximum** Dashboard Builder will obtain the maximum value contains in the Value Field specified for the Data Source and Date Range you provide.
- Minimum** Dashboard Builder will obtain the minimum value contains in the Value Field specified for the Data Source and Date Range you provide.
- Compound** Compound metrics allow you to evaluate the results of one or more existing metrics. For example, you may wish to calculate a percent of orders greater than \$100,000 by dividing a metric of total orders for the month by a metric that counts the number of orders greater than \$100,000.

3.2.1.2 Data Sources

Select the source of the data you want to use for the metric. Dashboard Builder supports Access tables and queries that reside in your database, or are linked from another Access database, Microsoft® SQL Server™ linked tables, and MySQL® server linked tables.

For Compound Metrics, the data source will be the Metric ID of each metric enclosed in square brackets. For example, to divide Metric ID 8 by Metric ID 99, you would specify: **[8]/[99]**.

Note that you may also use the Format() command to format the result, such as **Format([8]/[99], "Percent")**

3.2.1.3 Date Ranges

Select from one of the predefined date ranges, use the "All Time" setting to collect all data regardless of date, or "Exact Dates:" to input From and To Dates. If you do not specify a "To" date value, Dashboard Builder will collect all data from the "From Date" value forward.

3.2.1.4 Value Field

The value field is the database field that contains the values you want to average or sum. For example, if you are averaging sales price, you may need to input "Total_Sales_Price" in the value field. For Metric Type "count" you simply need to provide the name of any field in the table.



3.2.1.5 Date Field

The date field is the database field that contains the date values you want to use when collecting your data. For example, you may choose to specify “Order-Date” for one metric, and “Ship Date” for another.

3.2.1.6 Validation

Before a metric can be chosen in the Dashboard Administration form, you must validate the setup. Valid metrics will appear with a green check in the upper right hand corner of the form, while invalid metrics will display a yellow warning box. When you validate a metric, it will display the current value that would be returned if the metric is valid. If the metric is invalid, Dashboard Builder will attempt to point out where the setup needs to be corrected.

3.2.2 ADVANCED SETTINGS

3.2.2.1 Display Formats

Choose from one of several different ways to display your data, including currency and numbers with or without decimals.

You can also optionally type your own custom format to display the returned value. The formats should follow Microsoft Access conventions as follows:

Value you enter	How the number 1210.6 would be displayed
#,##0.00	1,210.60
###0.0#	1210.6
#.00000	1210.60000
\$\$,##0;(\$\$,##0)	\$1,210 (if negative, the number would be displayed in parenthesis)
\$\$,##0;;\Z\e\r\o	\$1,210 (if 0, 'Zero' would be displayed)

Additional information on the format function can be found here: <http://office.microsoft.com/en-us/access/HA012327401033.aspx>

3.2.2.2 SQL-Where Statement

Provide a valid SQL string beginning with “WHERE...” Leave the field blank to select all records that meet the basic criteria you define. To employ the Dashboard Filter feature discussed in section 3.1.4 of this document, you will need to include the keyword “[GLOBALFILTER]” in your SQL statement where you want the user’s chosen filter value to replace the keyword. For example, the SQL-Where statement:

WHERE [Status] = 'Complete' AND [Facility] = '[GLOBALFILTER]'

Will attempt to replace [GLOBALFILTER] with the value the user chooses when launching the dashboard. The available values were defined at the time the dashboard is set up as shown below:

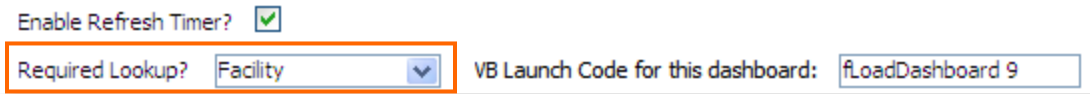


Figure 8: Dashboard Administration Screen

3.2.2.3 Meter Dashboard Settings

If you plan to display a metric in the meter format, you must supply both the Red and Green Limit values. The Red Limit value will represent the red end of the meter (typically an undesirable value), and the Green Value will represent the green end the meter. Depending on the metric, the Green metric may be greater or less than the Red metric. For example:

Metric	Red Limit	Green Limit
Orders This Month	5	100
Product Returns YTD	20	0
Revenue This Month	\$100	\$5,000
Expense This Month	\$5,000	\$100

Note that only metrics that have a defined Red and Green Limit will be available to select in the meter section of the Dashboard Administration form.

You can also choose to use another metric value (calculated when the dashboard launches) as the basis for a Green or Red Limit. To do so, click the icon to the right of the text box for the Green or Red Limit. You can then choose which metric to use when the dashboard displays that limit on the dashboard meter.

3.2.2.4 Drilldown Forms/Queries

You can optionally allow users to drill down into further detail for a given metric by specifying a form that Dashboard Builder should open when the user clicks on a metric. For example, you may have a form, "Orders" that you want a user to be able to open to display only those records that match the criteria used to return the metric. Perhaps you have a metric "Orders – Year to Date" which, when clicked, will show the user only orders for the current year.

Selecting the "Create Query" check box will cause Dashboard Builder to dynamically create a query based on your metric's specified criteria when the user clicks on the drill-down link. The naming convention for the saved query will be "d_qry_" and the name of the metric.

If no drilldown form is specified, the metric will not be clickable by the user.



3.3 LAUNCHING DASHBOARDS FROM MACROS OR CODE

To launch a dashboard from VB code or a macro, you will need to call the function **fLoadDashboard()**. You can copy the necessary VB code supplied in the field “VB Launch Code for this dashboard:” at the bottom of the Dashboard Administration form. This field will contain the appropriate dashboard identifier that is used to launch a particular dashboard.

3.3.1 EMBEDDING DASHBOARDS IN A SUBFORM

Dashboard Builder 2.1 and higher allow you to embed a dashboard within another form. To do so, create a new subform object in your main form, then associate the subform object with either frmDashboard1 or frmDashboard2a. In the form’s Form_Load event, place the following VB code:

```
fLoadDashboard lngDashboard, True, objForm
```

<i>lngDashboard</i>	The dashboard ID you want to load (found in the Dashboard Administration form).
<i>objForm</i>	The form object in which your dashboard is embedded.

4 Managing Graph Dashboards

The Professional Edition of Dashboard Builder™ extends the capability of the Standard Edition to include the ability to create numerous graphs and graphic dashboards with your Microsoft Access data.

4.1 CREATING A DASHBOARD

To create a new graph dashboard, simply select the “Create a New Dashboard” button from the Dashboard Administration screen as shown in Figure 8 below.

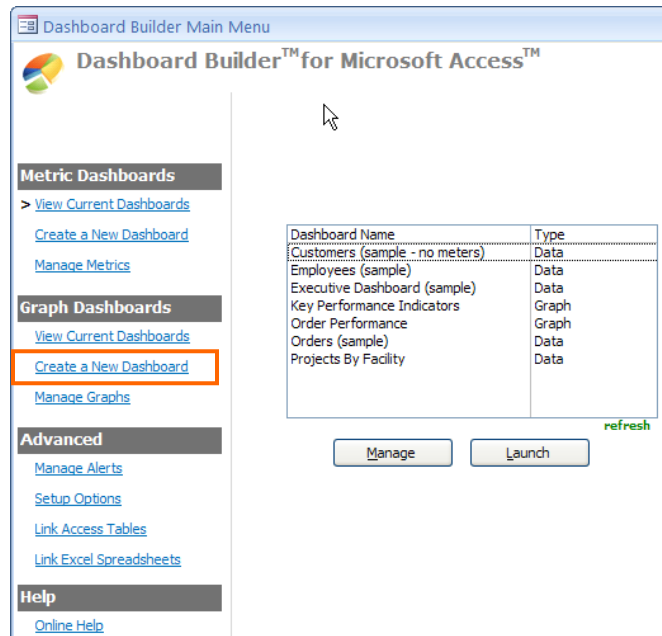


Figure 9: Welcome Screen

In the Graph Dashboard Administration screen, you can enter the name of your new dashboard by typing over the default text. Select the “Edit Graphs” icon as shown in Figure 9 to create and manage individual graphs.

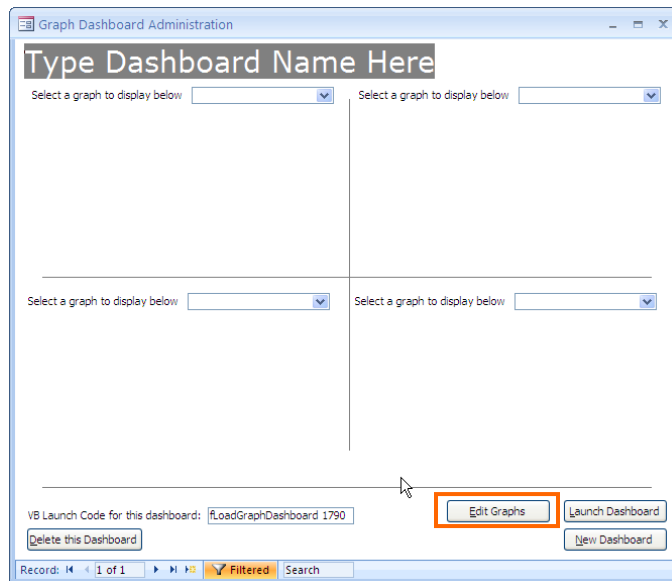


Figure 10: Graph Dashboard Administration

Once you have created the graphs you want as explained in section 4.2 below, simply select them from the drop down boxes shown in Figure 9 above.



4.1.1 DASHBOARD FILTERS

In some cases, you may want your users to refine their data selection at the time they launch a dashboard. For example, where you have multiple offices or facilities in your database, and do not want to create separate dashboards and metrics for each facility. In this case, you can configure Dashboard Builder to prompt the user to choose a specific filter value from a pre-defined list prior to launching the dashboard.

4.1.1.1 Creating Filter Values

Option 1: Filter values are stored in the table tblLookups. You can create multiple “Lookup-Types” which are essentially categories of lookup values the user can select from. For example, if one dashboard will prompt a user to choose a facility, you would enter “Facility” in the “Lookup-Type” field in tblLookups for each value stored in the “Lookup-Value” field.

LookupID	Lookup-Type	Lookup-Value
110	Date-Range	All Time
111	Calculations	Sum
112	Calculations	Count
113	Calculations	Average
116	Date-Range	Exact Dates:
117	Field-Format	Currency (no decimals)
118	Field-Format	Number (no decimals)
119	Field-Format	Currency (2 decimals)
122	Field-Format	Number (2 decimals)
123	Field-Format	Number (all decimals)
124	Facility	West Division
125	Facility	East Division
126	Facility	Corporate
*	(New)	

Figure 11: Lookup Table Example

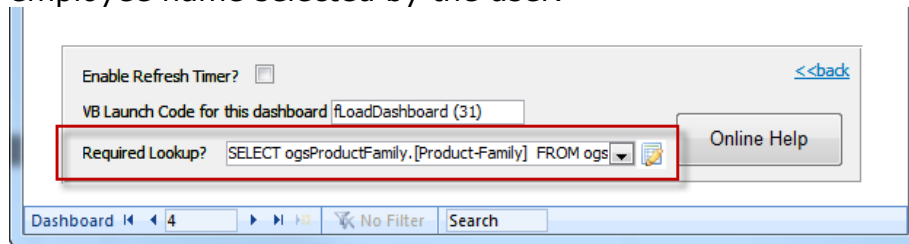
In the example shown in Figure 2 above, there are three facilities that a user can choose from. You might also have a dashboard that prompts the user to choose a Sales Manager’s name, in which case you would group all the sales manager names by a different lookup type, like “Manager.”

Option 2: You can enter an SQL string into the Required Lookup dropdown which uses data from a specific source to present to your user. For example, entering the following in the Required Lookup dropdown (show in Figure 4 below) will return a list of employee names in the filter prompt:

```
SELECT DISTINCT [EMPLOYEE NAME] FROM [tblEmployee]
```



When the filter prompt is presented to the user, they will see the list of unique employees in the table "tblEmployee" to choose from. For any metric in your dashboard that contains a SQL-Where clause like `WHERE [Employee Name] = "[GLOBALFILTER]"` that metric will be filtered to only show the values matching the employee name selected by the user.



4.1.1.2 Associating Lookup Filters with Dashboards

The next step is to associate your chosen lookup filter with a dashboard. As shown in Figure 3 below, you select a "Lookup-Type" value in the "Required Lookup?" field within the Dashboard Administration form for a specific dashboard.

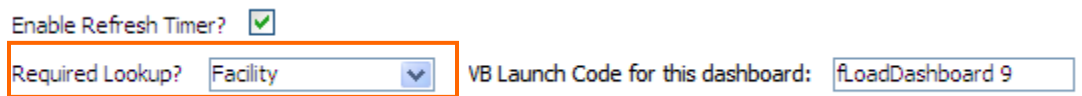


Figure 12: Dashboard Administration Screen

4.2 CREATING GRAPHS

From the Main Menu form, select "Manage Graphs" from the left menu page.

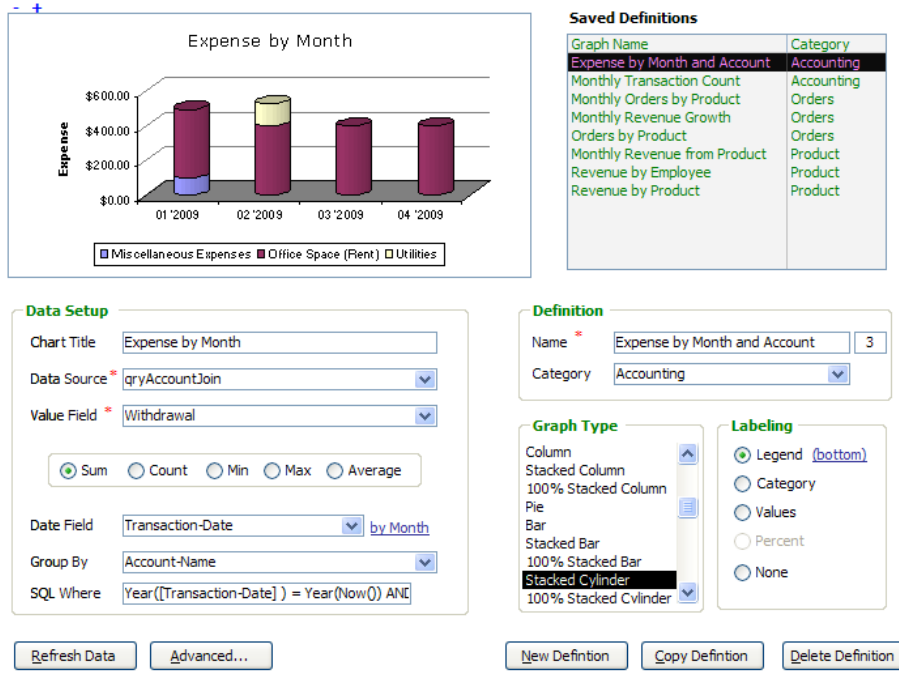


Figure 13: Graph Definition

4.2.1 DATA SETUP

4.2.1.1 Chart Title

You may optionally specify a chart title to appear at the top of the graph. Leave this field blank to hide the chart title text.

4.2.1.2 Data Source

Select the source of the data you want to use for the metric. Dashboard Builder supports Access tables and queries that reside in your database, or are linked from another Access database, Microsoft® SQL Server™ linked tables, and MySQL® server linked tables. You can double click this field to open the actual data source object in Microsoft Access.

4.2.1.3 Value Field

The value field is the database field that contains the values you want to count, average, sum, or obtain the minimum or maximum values. For example, if you are building a graph of total sales, you may need to select "Revenue" in the value field. For the count operation, you simply need to provide the name of any field in the table.

4.2.1.4 Operations

Dashboard Builder supports five operations, described below:

Average Dashboard Builder will average all values



contained in the Value Field specified for the Data Source and Date Range you provide.

Count	Dashboard Builder will count the number of records that match the Date Range you provide in the Data Source.
Sum	Dashboard Builder will sum all values contained in the Value Field specified for the Data Source and Date Range you provide.
Maximum	Dashboard Builder will obtain the maximum value contains in the Value Field specified for the Data Source and Date Range you provide.
Minimum	Dashboard Builder will obtain the minimum value contains in the Value Field specified for the Data Source and Date Range you provide.

4.2.1.5 Date Field

The date field is the database field that contains the date values you want to use when displaying your data. For example, you may choose to select "Order-Date" for one graph, and "Ship Date" for another. If you leave the date field blank, the graphs will not display dates in the X-axis of the graph. Note that this field is ignored if you select the Pie graph type.

4.2.1.6 Date Grouping

The date grouping selection is directly to the right of the Date Field dropdown box. You may choose from one of the following way to summarize dates in your graph: Year, Month, Quarter, or Week. Simply select the hyperlink to change the grouping option.

4.2.1.7 Group By Field

The group by field is used to group the data from your data source. This field is optional, and along with the Date Field, determines how your graph will appear. For example, if you want to show a line graph with total sales without showing separate lines for each product, you would leave the Group By field blank.

4.2.1.8 SQL-Where Statement

You may optionally provide a valid SQL string beginning with "WHERE..." to further refine the results of your graph. Leave the field blank to select all records that meet the basic criteria you define.



To employ the Dashboard Filter feature discussed in section 4.1.1 of this document, you will need to include the keyword ["GLOBALFILTER]" in your SQL statement where you want the user's chosen filter value to replace the keyword. For example, the SQL-Where statement:

```
WHERE [Status] = 'Complete' AND [Facility] = '[GLOBALFILTER]'
```

Will attempt to replace [GLOBALFILTER] with the value the user chooses when launching the dashboard.

4.2.2 DEFINITION

4.2.2.1 Name

Specify the name of the graph. This name will appear in the list of graphs at the top right of the Graph Administration form.

4.2.2.2 Category

You may optionally specify a category for your graphs to simplify locating a specific graph among many different graph definitions.

4.2.3 GRAPH TYPE

Choose from one of the eleven available graph types.

4.2.4 LABELING

Choose which type of labeling, if any, you wish to display on your graph. You may also select where the legend is shown, if at all, by selecting the hyperlink directly to the right of the Legend radio button.

4.2.5 ADVANCED SETTINGS

To manage the Advanced settings, select "Advanced Settings..." from the bottom of the Graph Definition screen shown in Figure 11.

4.2.5.1 X Axis Label

You may optionally choose to specify a label to appear in the X Axis of your graph. The label will appear horizontally below the graph.

4.2.5.2 X Axis Format

You may optionally choose to format the X Axis to display as a number with or without decimals, a percent, or your default currency. If you have selected a graph which displays the X Axis with dates, this field is ignored.

4.2.5.3 Y Axis Title

You may optionally choose to specify a label to appear in the Y Axis of your graph. The label will appear vertically to the left of the graph.



4.2.5.4 Y Axis Format

You may optionally choose to format the Y Axis to display as a number with or without decimals, a percent, or your default currency.

4.2.5.5 Title Font Size

You may optionally choose to increase or decrease the font size for the title of your graph. We recommend you use a size between 8 and 12 depending upon the amount of data on your graph.

4.2.5.6 Font Size

You may optionally choose to increase or decrease the font size for all text in your graph. We recommend you use a small size, between 6 and 9 depending upon the amount of data on your graph.

4.2.5.7 Grid Lines

You may optionally choose to include gridlines for your X and/or Y axes. The default is no gridlines.

4.2.5.8 Color Scheme

Optionally choose from one of several color schemes for your graph.

Saved Definitions

Graph Name	Category
Monthly Expenses	Accounting
Monthly Orders by Product	Orders
Monthly revenue (product filter)	Orders
Monthly Revenue Growth	Orders
Orders by Product	Orders
Monthly Revenue from Product	Product
Revenue by Employee	Product

Advanced Options

	Label	Format	Minimum	Maximum	Grid Interval
X Axis	<input type="text"/>	Default	<input type="text"/>	<input type="text"/>	<input type="text"/>
Y Axis	<input type="text"/>	Currency	1,000.00	5,000.00	1,000.00

Grid Lines: Y-axis only

Font Size: 7

Title Font Size:

Color Scheme: Yellow to White (apply to all graphs)

Buttons: Refresh Graph, Basic..., New Graph, Copy Graph, Delete Graph

Figure 14: Graph Definition - Advanced View



4.3 COPYING GRAPHS TO ANOTHER OFFICE APPLICATION

Dashboard Builder enables you to copy a graph displayed to another Office application, such as Excel, Word, or Power Point by selecting the graph, then Ctrl+C to copy. Open the desired Office application, and select Ctrl+V to paste the graph into the document. You can then double-click the graph and work with the formatting and appearance as you would with any Microsoft Office graph.

4.4 INCREASING GRAPH SIZES

To increase the size of a graph you are viewing, double click the graph. The largest graph size (frmGraphWidget_large) also includes a date slider control which you can use to dynamically change the date range of displayed graph.

4.5 LAUNCHING DASHBOARDS FROM MACROS OR CODE

To launch a dashboard from VB code or a macro, you will need to call the function **fLoadGraphDashboard ()**. You can copy the necessary VB code supplied in the field "VB Launch Code for this dashboard:" at the bottom of the Graph Dashboard Administration form. This field will contain the appropriate dashboard identifier that is used to launch a particular dashboard.

5 Alerts

Beginning with Dashboard Builder 2.0, you can use Dashboard Builder to alert a group of individuals when a specific metric meets a specific condition. For example, when the Red limit is exceeded for a particular metric. This section describes how to set up and understand Dashboard Builder's alerting capability.



5.1 CONFIGURING ALERTS



Figure 15: Alert Administration Screen

5.1.1 ALERT ACTIVATION AND POLLING INTERVALS

Dashboard Builder is able to automatically run when your database first starts up, and run at specific intervals you define. At the top right you may choose to activate or pause alerts by selecting the text (shown in Figure 12 in red).

The Polling Interval defines how often Dashboard Builder will attempt to evaluate your alert metrics. You can choose a frequency from the dropdown box. Note that you can further define whether an alert is evaluated at each polling interval, once session, day, or week in section 5.1.4 of this document.

Important
The trigger to launch the alerts is done via the form "frmWelcomeDashboard." If you incorporate Dashboard Builder into an existing database, but choose not to have "frmWelcomeDashboard" be your opening form, be sure to open "frmAlertAdministration" if you want to automatically create alerts when your database opens.

5.1.2 METRICS AND ALERT RULES

The metrics available in the alerts screen are those metrics where the Red and Green limits have been defined in the Metric Definition screen. You can select from available metrics in the Metric column as shown in Figure 12. For each alert you create, you must also specify an Alert Rule, which indicates when Dashboard Builder should generate an alert email. Valid options are:

Disabled Alerts will not be processed for this metric. Use this to temporarily disable a specific alert.



Outside Red Limit

Dashboard Builder will generate an alert only if the value of the metric is outside the defined Red limit. For example, if you have your Red limit set to 10, and your Green limit set to 100, an alert would be generated for any value below 10. Conversely, if the Red limit is 200, and the Green limit is 50, an alert would be generated for any value above 200.

Outside Green Limit

Dashboard Builder will generate an alert only if the value of the metric is outside the defined Green limit. For example, if you have your Red limit set to 10, and your Green limit set to 100, an alert would be generated for any value above 100. Conversely, if the Red limit is 200, and the Green limit is 50, an alert would be generated for any value below 50.

Outside Either Limit

Dashboard Builder will generate an alert if the value of the metric is outside the defined Red and Green limits. If the Red limit is 2, and the Green limit is 10, then any value less than 2, or greater than 10 will generate an alert.

5.1.3 RESET FLAG

When the Reset flag is checked, the alert is not active until the Reset flag is unchecked. This can be caused by several conditions:

1. A user checks the Reset flag to disable an alert.
2. An alert is configured to be generated only once (see Advanced Settings in section 5.1.4 below).
3. An error occurred attempting to evaluate or generate an alert. For example, an email could not be sent, or the metric is no longer valid because the data source is missing.

5.1.4 ADVANCED SETTINGS

The Advanced Settings button reveals additional settings available for each metric.

oup*	Status	Last Update	Reset	Priority	Alert Frequency	Last Sent
	OK	1/28/2009 8:25:25 PM	<input type="checkbox"/>	Normal	Every run	1/21/2009 11:39:35 PM
	Alert	1/28/2009 8:25:25 PM	<input type="checkbox"/>	Normal	Every run	1/28/2009 8:04:12 PM
	Alert	1/28/2009 8:25:25 PM	<input type="checkbox"/>	Normal	Every run	1/28/2009 8:04:12 PM
	Alert	1/28/2009 8:25:25 PM	<input type="checkbox"/>	Normal	Every run	1/21/2009 11:39:28 PM
			<input type="checkbox"/>	Normal	Every run	

Figure 16: Advanced Settings



The Priority dropdown allows you to indicate whether a specific alert is considered Normal or Critical priority. Setting an alert to Critical priority will cause emails to be delivered with the message set to High Importance.

The Alert Frequency dropdown allows you to indicate how often a specific alert should be generated. Valid options are:

- | | |
|-------------------------------|--|
| Every Run
(default) | An email alert will be generated at every polling interval if the metric is outside the defined Alert Rule. |
| Once per Hour | An email alert will be generated only once per hour if the metric is outside the defined Alert Rule. |
| Once per Day | An email alert will be generated only once per calendar day if the metric is outside the defined Alert Rule. |
| Every 7 Days | An email alert will be generated only once every seven days if the metric is outside the defined Alert Rule. |
| One Time Only | An email alert will be generated only once if the metric is outside the defined Alert Rule. The Reset flag will be set after an alert email is sent. |

5.2 RECIPIENT GROUPS

A recipient group is simply one or more email addresses (“group members”) to which alert emails should be sent. You establish recipient groups, then assign them to alerts in the Alert Administration screen.

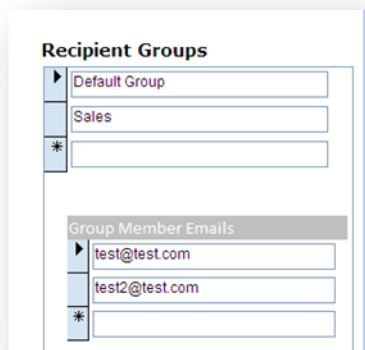


Figure 17: Recipient Groups



5.3 CUSTOM MESSAGE TEXT

If desired, custom message text can be included in the footer of alert email messages. The custom message text will be included in all alerts. To add custom message text, select the “Custom Message Text” button at the bottom of the Alert Administration form.

5.4 ERROR CONDITIONS

The following error messages may appear in the “Status” column of the Alert Administration window in cases where Dashboard Builder is unable to process an alert.

- | | |
|--------------------|---|
| 100 | The alert metric’s Red and Green limits are not set. Make sure the Red and Green limits are not blank. |
| 101 | The alert metric’s value could not be calculated. Verify that the metric is correctly set up and the data source is available. |
| Email Error | Email alerts could not be sent. Either no Outlook client is installed, or an error occurred attempting to send an alert emails. |

6 Advanced Setup and Use

6.1 PROVIDING LIMITED ACCESS TO USERS

Dashboard Builder includes a special end-user friendly menu form, frmUserDashboardMenu. You can use this menu to present dashboard choices to users without allowing them to edit the dashboards, only launch them.

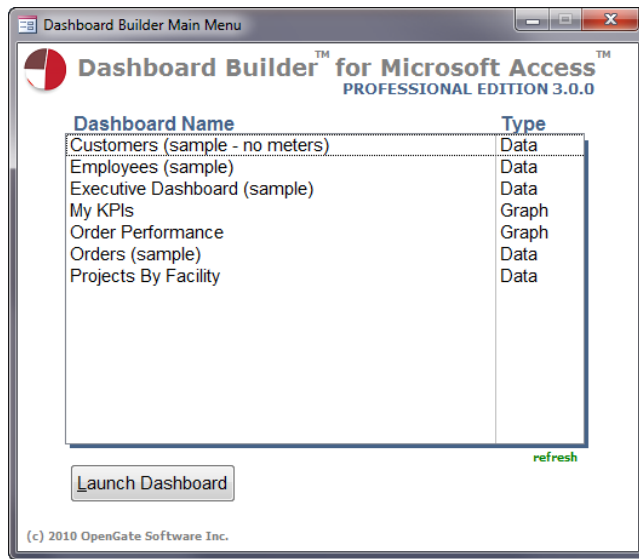


Figure 18: User Dashboard Menu

6.2 LAUNCH A DASHBOARD ON STARTUP

You may select a dashboard to automatically load when Dashboard Builder starts up as shown in Figure 15 below. Note that only dashboards that do not require a user to select a value from the Dashboard Filter field at startup will be available in the dropdown list.

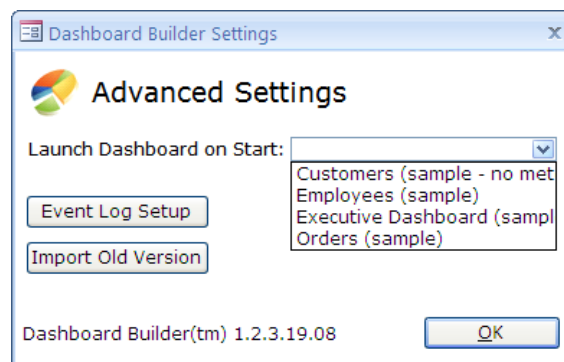


Figure 19: Advanced Setup Screen

6.3 CONFIGURING THE LOG

To configure the log, click on the Event Log Setup button, or open the form "frmLoggingAdmin" from the database window.



Administer Logging

Administer Logging

Logging-On

Log Method Table

Log Location: tblEventLog

Logging Level: Debug

Event Emails: Never

Email Admin: test@test.com

OK

Figure 20: Logging Administration Form

You can choose to turn logging on or off for the current Access database, specify if log events should be written to the event log table, or a file location you specify. Note that if you specify a file name, you will need to provide a fully qualified path name and file name in the "Log Location" field. The file format will be XML (without header/footer), and will not depend upon the file name extension you supply in the "Log Location" field.

The logging level will dictate whether certain events are written to the log or not. When you define a log event you can indicate if it is a Normal or Debug event. If you have the Logging Level set to "Debug," all events will be written to the log. If set to "Normal," only normal events will be written to the log, Debug events will be ignored.

Finally, you can send an email to a designated administrator when certain events occur. There are three values for the "Event Emails" setting:

Never – Events will never be emailed to the Administrator.

Defined Events – Only events where the parameter "blnEmailAdmin" is set to True in the fLogEvent() function.

Critical Errors – Any event where the fLogEvent() function parameter "intEventType" is set to "auCriticalError" will be emailed to the designated administrator.

7 Advanced Customization

While Dashboard Builder is primarily intended to function out of the box for users, experienced VB developers may be interested to leverage Dashboard Builder capabilities in their own customizations. This section describes how you can use Dashboard Builder functions to include dashboard components in your own forms.



7.1 ADDING METERS TO YOUR OWN FORMS

7.1.1 CREATE THE METER GROUP

To add one or more new meters to your own form, we recommend you copy four controls from either the form 'frmDashboard2a', or 'frmExamples'. The four controls, as shown in Figure 17 below, consist of the meter graphic, vertical black line, label 'Metric Name,' and unbound text box directly below the label.

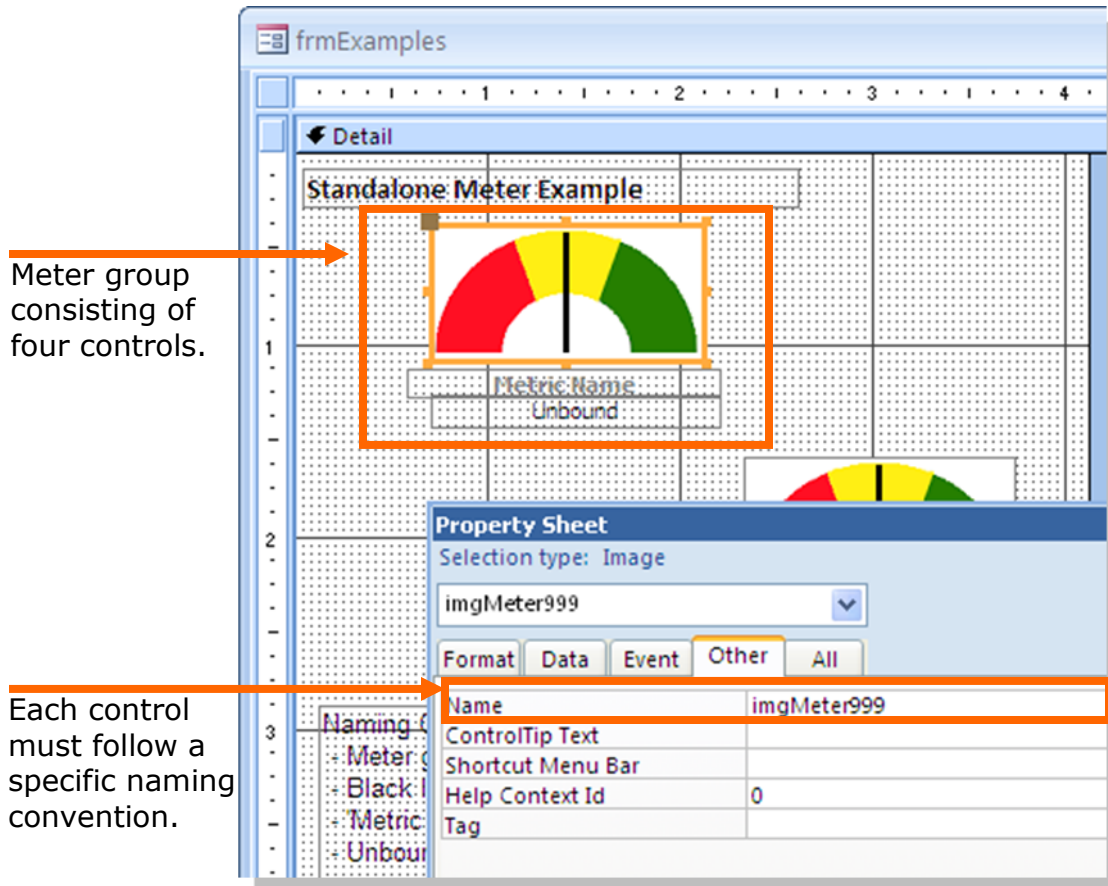


Figure 21: Access Form in Design Mode

Copy the four controls together as a group to your own form. If you are creating multiple meters on the same form, ensure they follow this naming convention:

Control	Naming Convention
Meter graphic	imgMeter###
Black line	Meter###
'Metric Name' label	lblGOM###
Unbound text field below 'Metric Name'	'valGOM###



Where ### is any numeric value from 0 to 32,767, and the same number should be used for each control in the group.

7.1.2 MODIFY THE FORM_LOAD EVENT

To set the meter to the appropriate value, and populate the labels, you must add a line of code to the Form_Load event on your form for each meter:

fSingleMeter iMetricID, iMeter, objForm, blnRefresh

iMetricID – The metric ID from the table tblMetric that should be loaded for the current meter.

iMeter – The numeric value of the meter that is assigned to each control in the meter group.

objForm – The form object where the meter is located. Use "Me" to indicate the current form (without quotes).

blnRefresh– Optional. Set to False (default) if you do not want the meter to "spin-up" from 0 the value. Setting this value to False will speed up the meter display, and your form load.

In the following example, metric ID 53 will be loaded for meter 3 on the current form, and will display immediately (as opposed to "spinning-up" from zero):

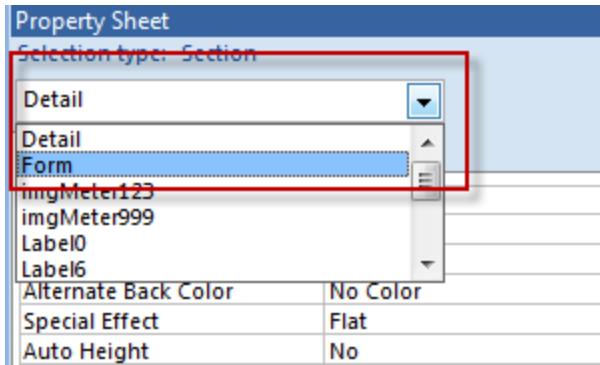
fSingleMeter 53, 3, Me

To add this line to your form's On_Load event:

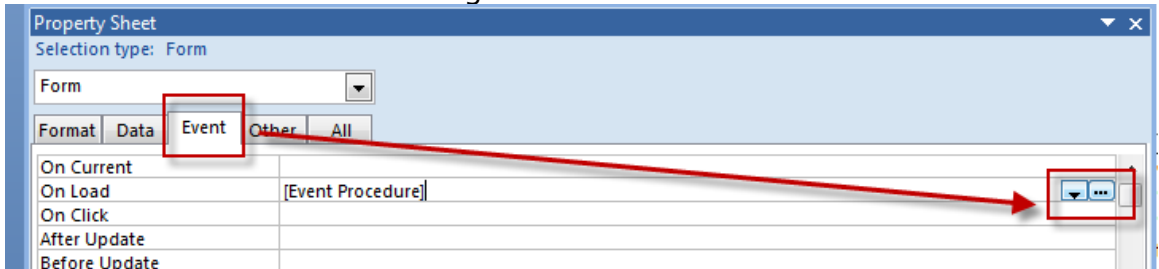
1. Select the Property Sheet icon from the Design ribbon or Access toolbar:



2. Select the name "Form" from the dropdown:



3. Select the "Event" tab.
4. Click on the button at the far right of the line "On Load":



5. If prompted, choose "Code"
6. Add the line fSingleMeter... *between* the lines shown in blue below:

```

Form | Load
-----|-----
Private Sub Form_Load()
|   'the lines below are used to load each meter you place of the form
|   fSingleMeter 5, 999, Me
|   fSingleMeter 49, 123, Me
|   '   the metric id, the number of the meter, Me.Name
|
|   'if you want more meters, you would simple repeat the lines above, but replace the
|   'variables, for example:
|
|   ' fSingleMeter 1, 1, Me.Name
|   ' fSingleMeter 2, 2, Me.Name
|   ' fSingleMeter 99, 3, Me.Name
|   ' fSingleMeter 54, 4, Me.Name
|   ' fSingleMeter 21, 5, Me.Name
|
|   ' the lines above would load meters 1-5 on the form using the metrics identified in
|   ' passed to the fSingleMeter function
|
End Sub
  
```

7. Click "Save" in the toolbar. You are now ready to load your custom meter on the form.

7.1.3 ENABLE DRILLDOWN AND MOUSE-OVER EFFECTS

To enable the ability for a user to drill-down into a form associated with a metric, you will need to two form events for each meter, and one subroutine.



- 1) Copy and paste the entire subroutine 'sMouseCursor' to your form, which can be found in the frmExamples form.
- 2) Add a '_MouseMove' event to each unbound text field 'valGOM###' with the following line:

```
sMouseCursor 0, ###
```

Where ### is the same number as the one you assigned to the meter group.

- 3) Add a '_Click' event to each unbound text field 'valGOM###' with the following line:

```
fDrillDown 0, 0, ###, Me, 49
```

Where ### is the same number as the one you assigned to the meter group, and replace 49 with the metric ID associated with the meter.

7.2 OBTAINING A METRIC VALUE FROM CODE

In some cases you may want to obtain the formatted value of a metric from code, without displaying that value on a dashboard. To do so, call the function fGetMetricValue in the following manner:

```
fGetMetricValue iMetricID, blnJustSQLStatement, lngDashboardID
```

iMetricID –The metric ID from the table tblMetric that should be returned.

blnJustSQLStatement – Optional. If this value is set to True, the function will return the constructed SQL where statement used by this metric, and not the value.

lngDashboardID – Optional. This value is needed only if the metric's SQL-Where statement includes the [GLOBALFILTER] keyword. The Dashboard ID identifies to fGetMetricValue which lookup value to prompt the user to provide if it is needed.

In the following example, metric ID 97 will be returned to the variable varReturnValue:

```
varReturnValue = fGetMetricValue(97)
```



7.3 ADDING GRAPHS TO YOUR OWN FORMS

This section describes how you can implement Dashboard Builder graphs in your own forms. The best place to start is to see an example by opening the sample form “frmExampleGraphs.” This sample form demonstrates a continuous form with a single instance of the graph form “frmGraphWidget_small.”


7.3.1 GRAPH SIZES

Dashboard Builder comes with four different sizes of graph forms to use, each of which functions the same. All of the forms begin with “frmGraphWidget_” You may also create your own graph widget form and size it as needed.

Note

The sparkline graph (frmGraphWidget_sparkline) will not display the chart title, axis labels, or axis values as they would on other graph layouts. This is to conserve space, and follow minimalistic intentions of the sparkline graph style.

7.3.2 EMBEDDING THE GRAPH

Select the insert subform icon  and select the desired “frmGraphWidget” size. Note the name of the object as shown in orange below.

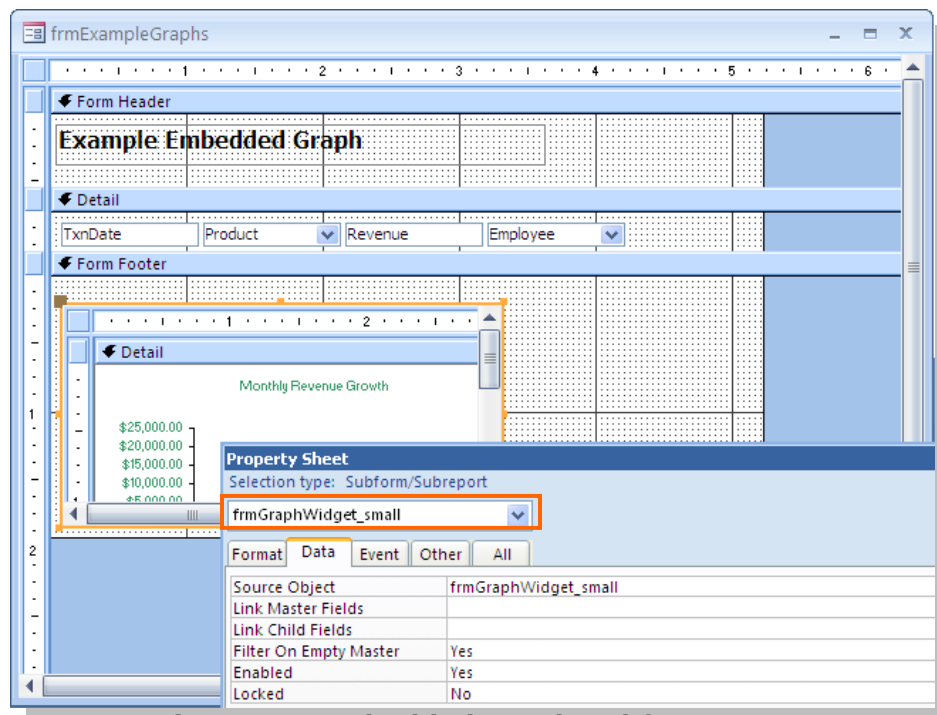


Figure 22: Embedded Graph Subform



7.3.3 DEFINING THE GRAPH TO LOAD

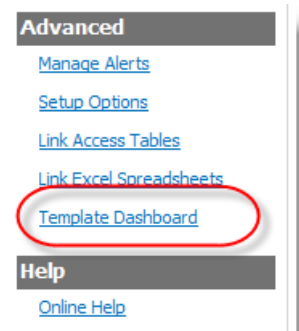
To load a specific graph in the embedded subform, place the following Visual Basic code in the Form Load event of your main form:

```
Private Sub Form_Load()  
  
    Me.frmGraphWidget_small.Form.RecordSource = "SELECT * FROM  
        [tblGraphDefinition] WHERE [GraphID] = 12"  
  
End Sub
```

Where the number in black represents the GraphID from tblGraphDefinition that you wish to display. You can also locate the GraphID number next to the Graph Name in the Graph Widget Setup form (frmGraphWidgetAdmin).

7.4 WORKING WITH THE DASHBOARD TEMPLATE

Dashboard Builder supplies a template dashboard which combines several graphs and meters into a single dashboard. The template can be resized and re-organized to fit your specific needs. The template dashboard can be located under the "Advanced" section of the welcome dashboard screen, or directly as the form "frmDashboardTemplate1."



7.4.1 HOW THE TEMPLATE WORKS

The template contains a set of graph and meter objects, each of which can be configured to display a different graph or metric by selecting the "Edit Mode" button at the top right of the template. You or your users can select the specific meter or graph to be displayed in the relevant area. The setup information is then stored in the table tblAppInfo_advanced where it can be collected each time the dashboard is opened. The setup information is identified in tblAppInfo_advanced with the dashboard form's name, so that you can create multiple version of the template and each can have a different set of graphs and meters.

7.4.2 CREATING YOUR OWN VERSION OF THE TEMPLATE

1. Create a copy of the form "frmDashboardTemplate1."
2. Name the new copy as desired.
3. Open the new dashboard copy.
4. You will notice that the meters and graphs do not appear. Select "Edit Mode" at the top right to set up which graphs and meters you want to display on the dashboard.



Important Notes

- A) If you set up a dashboard and then rename it, the graph and meter configuration will not be found. This is because the configuration in tblAppInfo_advanced is associated with the form name. You will need to reconfigure the meters/graphs on the dashboard, or change the form name references in tblAppInfo_advanced.
- B) You may choose to remove some of the graphs or meters, or add more. Removing an object will cause a few VBA errors, simply delete the line(s) in the form's VB module that cause errors when you open the form. If you add a graph or meter, follow the example of existing graphs/meters in the form's VB module. We have also added extensive comments to the code to help guide you.

8 Upgrading Dashboard Builder

If you have incorporated Dashboard Builder into an existing database, or linked numerous tables from other databases into your current version, you may wish to upgrade to the newest versions of the Dashboard Builder forms and VB modules.

8.1 METHOD 1: AUTOMATIC UPGRADE

Follow the instructions provided in Section 2.22.2 of this document.

8.2 METHOD 2: MANUAL UPGRADE

Delete the following objects from your existing database, then import the same object from the newest version of Dashboard Builder you have downloaded:

Forms

- frmAlertAdmin_subform
- frmAlertAdministration
- frmDashboard1
- frmDashboard2a
- frmDashboard3b
- frmDashboardAdmin
- frmDashboardAdminGraph
- frmDashboardTemplate1
- frmDBSetup
- frmDeleteDashboard
- frmEditDashboardGraph
- frmEditDashboardMeter
- frmGraphWidget
- frmGraphWidgetAdmin
- frmGraphWidget_small
- frmGraphWidget_large
- frmGraphWidget_sparkline
- frmHelp
- frmLoggingAdmin
- frmLookupPrompt
- frmMetricAdmin
- frmMetricList
- frmMetricSelection
- frmOGSSQLHelper
- frmOutputOptions
- frmPopup
- frmProcessing
- frmProgress
- frmWelcomeDashboard
- frmRecipient
- frmRecipientGroup

VB Modules

- All VB code modules in the newest version





Release History

Dashboard Builder 1.8

- Initial release of the Professional Edition

Dashboard Builder 2.0

- Ability to search in the Metric Definition screen.
- Compound Metrics now support Red/Green Limits and formatting.
- New Alerts functionality

Dashboard Builder 2.1

- Ability to embed a Standard Edition dashboard as a subform.
- New 'frmExampleEmbeddedDashboards' to provide examples for embedding multiple dashboards in a form
- Fix: If no dashboards existed, incorrectly raised error when creating a new one
- Fix: If graph definitions were deleted, incorrectly raised error when viewing the graphs
- Set all graph widget forms to Autocenter
- Removed Dialog property from opening a drilldown form. For continuous forms, this would cause problems.

Dashboard Builder 2.2

- New main menu screen
- Added five new chart types to choose from
- Minor usability enhancements to the graph administration form
- New advanced graph properties: Axes labels, title font size, gridlines
- Moved all graph rendering VB to modDashboardBuilderPro module
- Added a new sparkline graph form, frmGraphWidget_sparkline
- Fix: Graphs appeared with green text when it should be black

Dashboard Builder 2.3

- Ability to show a single decimal in advanced graph setup
- New date slider in the large graph form (frmGraphWidget_large)
- frmGraphWidget_large now allows users to expand the form, which increases the size of the graph with it.
- New template dashboard (frmDashboardTemplate1) which can be copied and rearranged.

Dashboard Builder 2.4

- New search capability in the graph administration screen
- Support for more display X and Y axis display formats.
- Changes to work around issues with Access 2003 graphs displaying in Vista and Windows Server 2008. Microsoft has not released a hotfix for this issue, and results may vary for some users.
- Support for more display formats and user-[entered formats](#) on data dashboards.
- Ability to base a [Green or Red meter limit on another metric value](#).
- If [Global Filters](#) are used, they are displayed on the data dashboards.

Dashboard Builder 2.6

- Graphs now support color schemes (available in the advanced settings area).
- Graphs now support both a legend and other labeling at the same time.
- Additional dashboard refresh intervals.
- Ability to define an SQL selection query for the advanced filtering feature. Instead of simply using the lookup table (tblLookups) you can now specify other data sources to use for the [GLOBALFILTER] lookup lists.
- Hidden refresh interval available on frmDashboard3b.



Dashboard Builder 2.7

- Data dashboards now use the simpler "Me" form object reference instead of requiring a specific form and subform name. If you have created custom dashboards, or embedded meters in your forms, you will simply need to change your single lines of code to use the object reference instead of form name (e.g., "Me" instead of "Me.Name").

Dashboard Builder 3.0

- New SQL Where Statement helper assists with creating any SQL Where statements in Graph and Metric definitions.
- New frmUserDashboardMenu form allows end users limited access to just launch dashboards.
- Final version of frmMetricList provides the full list of metrics in your database in a list format.
- New deployment/upgrade utility helps you add/update Dashboard Builder in an existing database.
- Additional formatting options for Graphs, including axis minimum, maximum, and grid line interval.
- The data labels on graphs did not display the formatting specified for the Y-axis in earlier versions of Dashboard Builder.

Dashboard Builder 3.7

- Graph dashboards now support the [GLOBALFILTER] feature.
- Graph and Data dashboards support the ability to change the filter prompt value while remaining open.
- Graphs that do not use a date value for their X-axis can be sorted either by the Value or Group-By fields.
- Removed all unnecessary tables from the Data Source dropdown lists.