



Data Diagram Quick Start



APPLICATION NOTE

June 2017

Description: A guide to configuring a Data Diagram to visualize information from databases.

General Requirement: Basic understanding of GENESIS64, AnalytiX-BI Server and/or GridWorX Server.

Introduction

The Data Diagram is a new control for your BI/SCADA application that visualizes arbitrary data in a form of a colored table. The data source can be a data set defined in GridWorX server or in BI server. It is available for all products and all platforms, including WebHMI, MobileHMI and KPIWorX.

How to set up a Data Diagram

Before you set up a Data Diagram, you want to make sure that you have an existing data source defined in either AnalytiX-BI server or GridWorX server. In this example, we will use a sample data source from GridWorX server database.

1. Open GraphWorX64.
2. Select the Controls Tab and pick Data Diagram.
3. Click on the empty display to add the Data Diagram control.
4. A new ribbon (see Figure 2) for configuring the Data Diagram should be available, if not, select the Data Diagram first



Figure 1 - Data Diagram configuration ribbon

5. Click on the Data Source image (top part of the split button) to open data browser
6. Browse for My Computer → Data Connectivity → Databases → SQL Server → Northwind → Data Sources → Trends and click OK.
7. Now, expand the Data Source list and pick the Time column for Horizontal binding, Date column for Vertical binding and Value column for Value binding (see Figure 2)

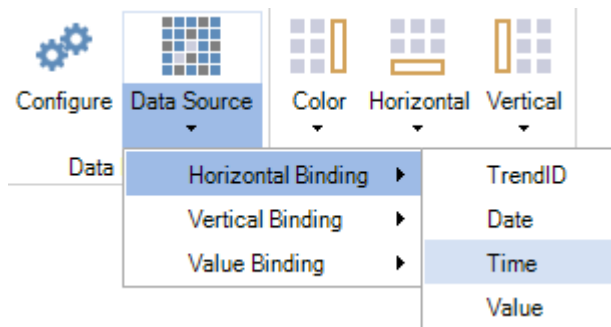


Figure 2 - Configuring bindings

8. You can modify visibility and position of Color, Horizontal and Vertical axes and pick from a predefined set of color styles.
9. Go runtime to see the data from database (see Figure 3)

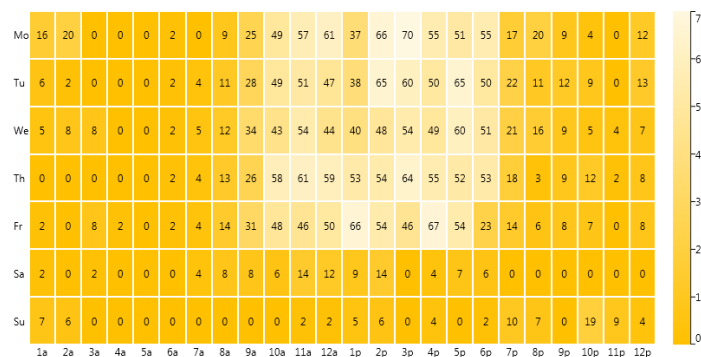


Figure 3 – Data Diagram in runtime

Advanced configuration

To open the advanced configuration, click on the Configure button in the ribbon or double-click on the Data Diagram in configuration mode (see Figure 4).

In addition to ribbon configuration, in the Data section (see Figure 4), you can define an aggregate used to calculate samples values. If the server supports runtime updates, enable Auto-Refresh to process them. You can choose to keep Horizontal or Vertical binding empty, in which case the Data Diagram will show a single row or column of samples.

DATA

Data Source

db:Northwind.Trends

Horizontal Binding

Time

Vertical Binding

Date

Value Binding

Value

Aggregate

Sum

Auto-Refresh

☐

Figure 4 - Data configuration

Under the Samples section you can define a custom number format for sample values. Hiding sample labels in Data Diagram can significantly improve performance and is highly recommended when the actual sample value is not as important as the sample color (see Figure 5).

SAMPLES

Visibility

☒

Format

Figure 5 - Sample labels configuration

In the Style section, you can configure your sample style. It is recommended to set the Sample Border Thickness to zero if you are requesting a large number of samples (see Figure 6).

SAMPLES

Border Brush



Border Thickness

1

Corner Radius

0

Figure 6 - Sample style configuration

For all three axes, you can choose to hide labels and/or tick marks and set visibility and position. For the Color axis, you can also define its minimum and maximum values, either as a static number or as a dynamic data source (see Figure 7).

COLOR AXIS

Visibility

☒

Position

Right

Labels Visibility

☒

Tick Marks

☒

Color Scale

lg(#FFFC000,#FFF8E0)

Brush Rules

+

-

↑

↓

Autoscale

☒

Minimum

0

Maximum

100

Figure 7 - Color axis configuration

The color of each sample is calculated from the color scale configured in the Color Axis section. Alternatively, you can define custom rules to determine the sample colors. You can even combine both methods. Custom rules have precedence over the color scale. For example, you can add following rules to our Data Diagram (see Figure 8).

Brush Rules

Name

value is lower then 20

Condition

x={{@value}}<20

Brush

 #FFCC0000

+

-

↑

↓

Figure 8 - Custom rules

Now, in runtime all samples with value below 20 will turn red (see Figure 9). To add sample rules, click on the small rectangle right to the rules list and pick one from the menu.

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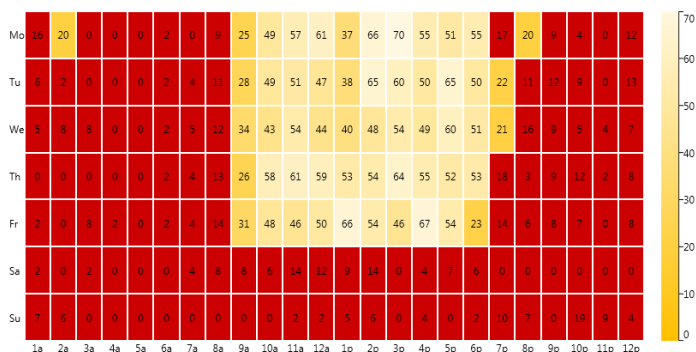


Figure 9 - Custom rules applied

If your axis labels on the Horizontal axis overlap, you can use the Labels Angle property to define rotation angle in degrees (see Figure 10).

▲ HORIZONTAL AXIS

- Visibility ☒
- Alternative Placement ☐
- Labels Visibility ☒
- Labels Angle
- Tick Marks ☐

▲ VERTICAL AXIS

- Visibility ☒
- Alternative Placement ☐
- Labels Visibility ☒
- Tick Marks ☐

Figure 10 - Horizontal and Vertical axes configuration

Though the main purpose of Data Diagram is to visualize categorized and aggregated samples (similar to contingency table or crosstab), you can customize it for a number of different creative uses. See Figure 11, Figure 12, and Figure 13 for examples.

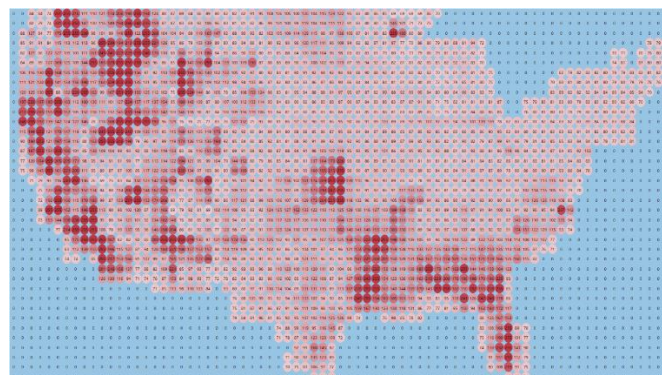


Figure 11 - Map of the USA with distribution of a measured value

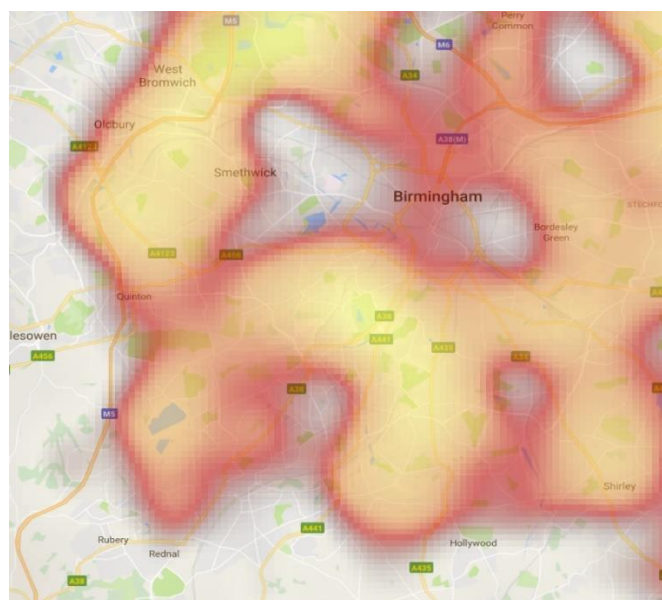


Figure 12 - Data Diagram used as overlay on top of a static map

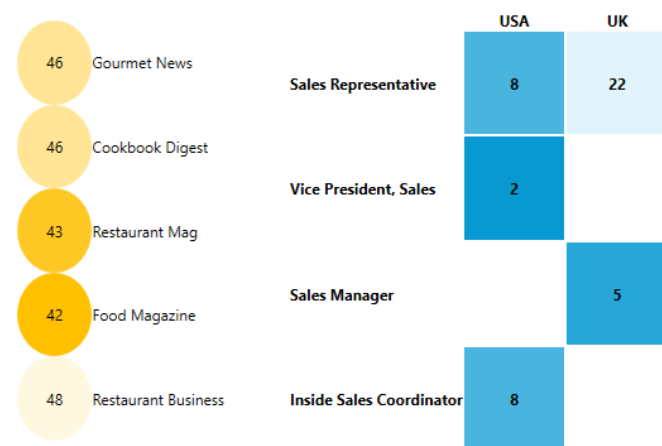


Figure 13 - Data Diagram used as as dynamic legend or statistical tool