

Data Mining ActiveX

Smarter
First in Fieldbus

MAY / 06
Data Mining
ActiveX
VERSION 8



Data Mining ActiveX											
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2	ANATR	Ananas Traders	Antonio	1000	London	UK		UK	(5) 555	(5) 55	
3	ANTON	Anton's	Antonio	1000	London	UK		UK	(5) 555		
4	AROUT	Arden	Antonio	1000	London	UK		UK	(171) 5	(171)	
5	BERGS	Bergs	Berg	1000	London	UK		UK	0921-1	0921-	
6	BLAUS	Blauer	Blaug	1000	London	UK		UK	0621-0	0621-	
7	BLONP	Blond	Blaug	1000	London	UK		UK	88 60.1	88 60.	
8	BOLID	Bolid	Bolid	1000	London	UK		UK	(91) 55	(91) 5	
9	BONAP	Bonaparte	Bonaparte	1000	London	UK		UK	91 24.4	91 24.	
10	BOTTM	Bottom	Bottom	1000	London	UK		UK	(604) 5	(604)	
11	BSBEV	Bev	Bev	1000	London	UK		UK	(171) 5		
12	CACTU	Cactus	Cactus	1000	London	UK		UK	(1) 135	(1) 13	
13	CENTC	Cent	Cent	1000	London	UK		UK	(5) 555	(5) 55	
14	CHOPS	Chops	Chops	1000	London	UK		UK	0452-0		
15	COMMI	Comm	Comm	1000	London	UK		UK	(11) 55		
16	CONSH	Consh	Consh	1000	London	UK		UK	(171) 5	(171)	
17	DRACD	Drac	Drac	1000	London	UK		UK	0241-0	0241-	
18	DUMON	Dumon	Dumon	1000	London	UK		UK	40 67.8	40 67.	
19	EASTC	East	East	1000	London	UK		UK	(171) 5	(171)	
20	ERNSH	Erns	Erns	1000	London	UK		UK	7675-3	7675-	
21	FAMIA	Familia Arquibal	Aria Cruz	Marketing A	Rua Oró	São	SP	Brazil	05442-030		





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Up-to-date address information is available on our website.

web: www.smar.com/contactus.asp

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DATA MINING ACTIVEX

Introduction

The Data Mining ActiveX is included in the ProcessView installation, and it can be inserted into any container that has the capability to embed ActiveX objects, including GraphWorX, Visual Basic forms, Microsoft Word, and Microsoft Excel.

The basic purpose of the Data Mining ActiveX is to read data from a specified data source (e.g. Microsoft Access, Microsoft SQL Server, and ODBC databases) and display the chosen data set in a data grid during runtime mode.

Data Mining ActiveX Features

Key features of the Data Mining ActiveX include:

- Data Mining Grid for displaying data during runtime
- Support for open database connections, including Microsoft Access, Microsoft SQL Server, Microsoft Excel, Oracle, and ODBC databases.
- TraceWorX support
- Global aliasing support
- Column aliasing for data items
- Column hiding
- Auto/manual grid refresh/updates
- View the Data Mining ActiveX via WebHMI

Inserting the ActiveX Into a Display

To insert the Data Mining ActiveX choose **Insert Object** from the **Edit** menu in GraphWorX, or click the **Data Mining ActiveX** button on the **ActiveX** toolbar. The **Data Mining ActiveX** will appear as shown below.

EventTime	Tag	Message
1/12/2002 2:54:58 AM	Temperature	Rate of change too big
1/12/2002 2:54:57 AM	Temperature	Normal Condition
1/12/2002 2:54:56 AM	Coolant Level	Coolant level detected
1/12/2002 2:54:55 AM	Belt Speed	Belt Speed is normal
1/12/2002 2:54:55 AM	Compressor	Compressor gauge is reading normal
1/12/2002 2:54:55 AM	Humidity	Humidity is normal
1/12/2002 2:54:55 AM	Level Gauge	Level gauge is normal
1/12/2002 2:54:55 AM	Tank PSI	Tank PSI is normal

Data Mining ActiveX

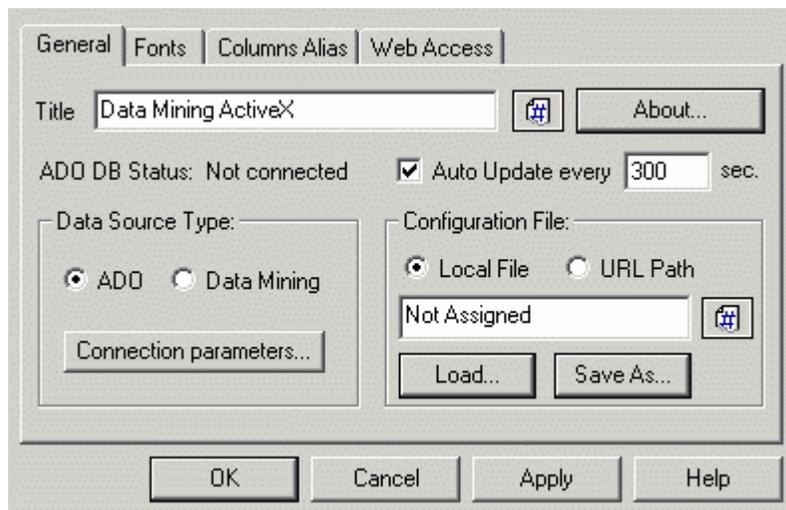
Data Mining ActiveX Properties

Double-clicking the Data Mining ActiveX opens the **Data Mining ActiveX Properties** dialog box, which contains the following property pages:

- **General**
- **Fonts**
- **Columns Alias**
- **Web Access**

General

The **General** tab of the **Data Mining ActiveX Properties** dialog box, shown below, allows you to connect to the desired data source.



Data Mining ActiveX Properties: General Tab

Configure the following **General** tab settings:

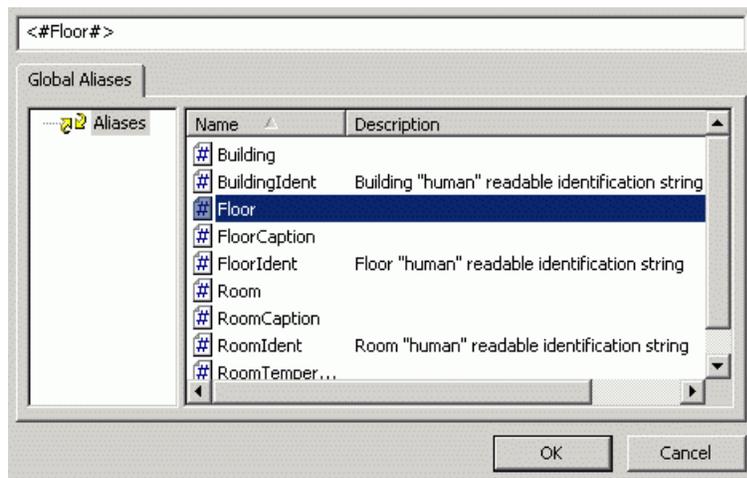
- **Title:** Enter a title for the ActiveX.
- **About:** Clicking the **About** button displays both technical support information and the About Box, which contains registration and serial number information as well as system resource information, such as memory and disk space available.
- **Auto Update (Used only for ADO Data Source type):** Specifies the frequency (in seconds) at which the Data Mining ActiveX updates data from the connected database.
- **Configuration File:** By default, information is stored as part of the container application's document file. You can also store information as part of a separate (.dbm) file. To save the .dbm file, under **Configuration File** click **Save As** to open the **Save Configuration Info** dialog box. Enter a name for the .dbm file in the **File Name** field, and then click **Save**.

You can also open an existing configuration file by clicking the **Load** button on the **General** tab and browsing for the file. The ActiveX will attempt to load the configuration file. If **URL Path** is selected, the ActiveX will use the specified network URL path upon loading the file.

NOTE

The ActiveX cannot be saved to a URL path. To create a URL file, save a configuration to a local file and copy the file to the desired network location. When the **URL Path** option is selected, you can also enable the **Use Local Settings** option, which, if checked, stores runtime changes to a local copy of the remote configuration file. It will use this local file every time the HTML page that hosts the Viewer is loaded inside the Web browser.

You can also select aliases to use for the configuration file. Clicking the # button and selecting **Insert Global Alias** from the pop-up menu opens the Global Aliases tab of the Unified Data Browser, as shown in the figure below. Select a global alias from the Unified Browser, which includes all global aliases in the global alias database. This eliminates the need to manually type in the alias name. All global aliases that are configured in the Global Alias Engine Configurator are conveniently available to choose from inside the browser. The tree control of the Global Alias Engine Configurator is mimicked in the tree control of the Global Alias Browser. Select a global alias by double-clicking the alias name (e.g. "Floor" in the figure below). The alias name appears at the top of the browser, which automatically adds the <# and #> delimiters to the alias name. Click the **OK** button.



Selecting an Alias From the Global Alias Browser

- **Data Source Type:** The Data Mining ActiveX allows you to connect to two types of data sources: **ADO** and **Data Mining**. An **Active Data Object (ADO)** connection is a direct connection to a data source. A data mining connection is a connection to a data source through a preconfigured data mining tag (i.e. a data tag that was configured using the Data Mining Configurator). To define your database connections, clicking the **Connection Parameters** button. ADO and Data Mining data source connections are described in detail in the sections below.

Connecting to an ADO Data Source

An **Active Data Object (ADO)** connection is a direct connection to a data source. To connect to an ADO data source:

1. Select the **ADO** radio button on the **General** tab of the **Data Mining ActiveX Properties** dialog box.
2. Click the **Connection parameters** button. This opens the **Database Connection** dialog box, as shown below.
3. Under **Data Provider**, select from Microsoft Access, Microsoft SQL Server, or ODBC (Open Data Base Connectivity), as shown in the figure below. In this example, we will select Microsoft Access.

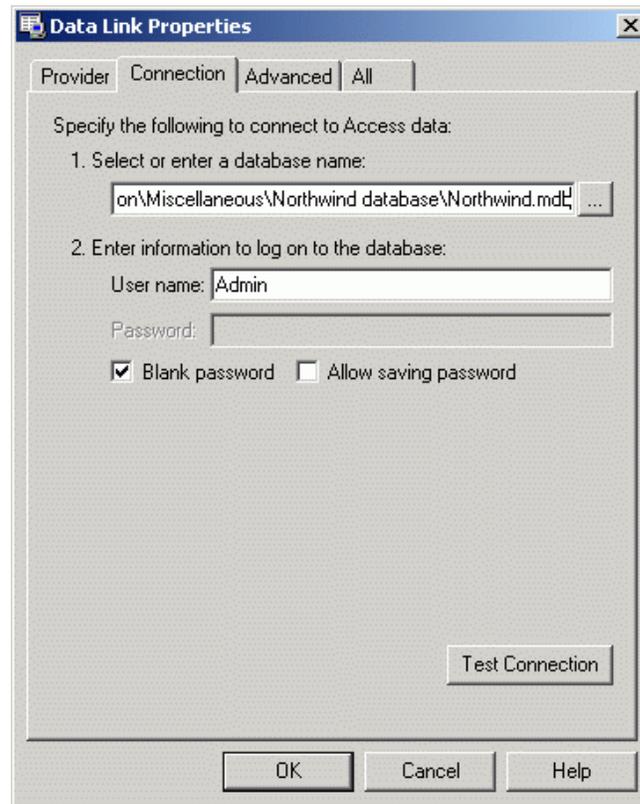


Connecting to a Database

4. Click the Build Connection String button. This opens the Microsoft Data Link Properties dialog box, as shown in the figure below. In the Connection tab specify the data source and then click OK. In this example, we will use the Northwind.mdb Microsoft Access database, which is included in the ProcessView installation in the Program Files\SmAr\ProcessView\Examples\Database Mining Examples directory. For more information about database mining examples, please refer to the Database Mining Configurator help documentation.

NOTE

All data source connections are made through the Data Link Properties dialog box. The Connection tab settings may vary depending on which data provider you selected. Click the OK button. Click the Help button at any time to view the Microsoft Data Link help documentation.



Specifying a Data Source

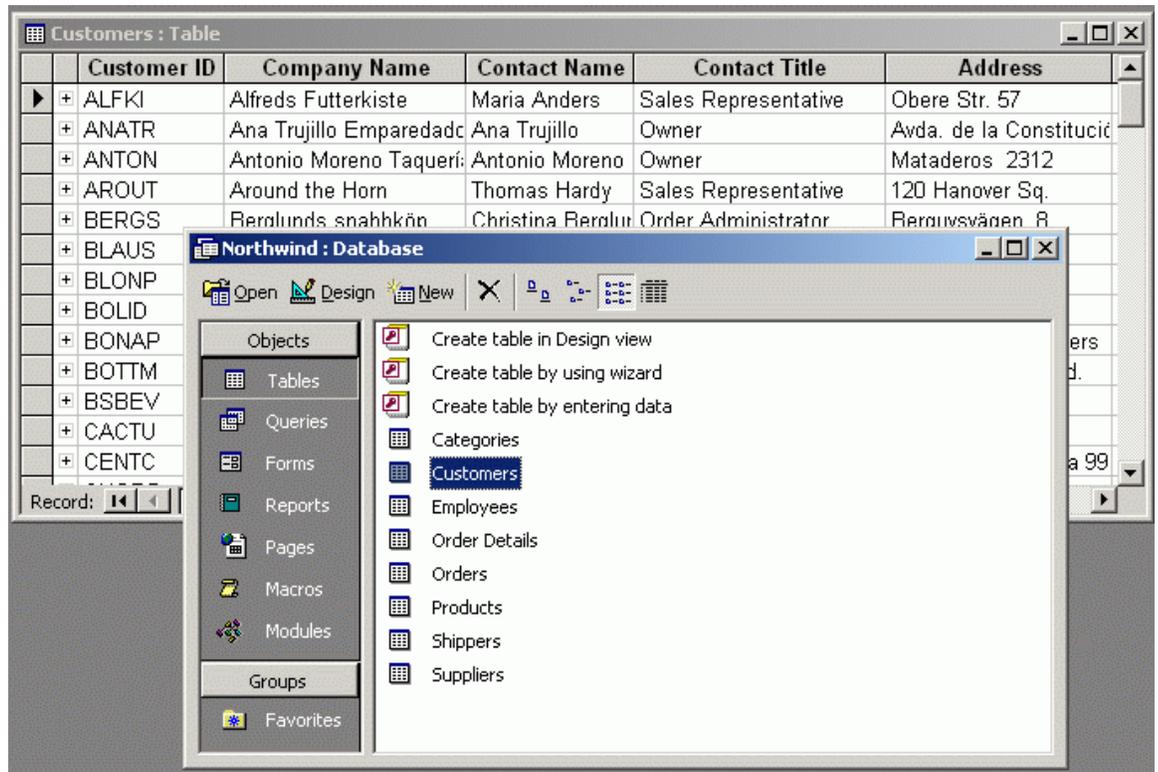
The data source reference appears in the Database Connection dialog box in the OLE DB Connection String field, as shown below. In the Query field, you must type in a database query to define which recordset will be read from the connected data source. In this example, we will use the following query:

Select * From [Customers];

This query will read all data from the Customers table in the Northwind.mdb database. The figure below shows this table as viewed in Microsoft Access. As you can see, it has several columns of data (e.g. Customer ID, Company Name, Contact Name, Contact Title, etc.).

NOTE

For more information about writing database queries, please refer to the Microsoft SQL server or Oracle help documentation



Customers Table in Northwind Database

5. Click the **Connect** button to connect to the database. The traffic light icon changes to green when the connection is successful, as shown in the figure below. Click **OK** to return to the **General** tab. Then click **OK** again.



Database Connection

6. When you enter the display into runtime mode, you will see the data items from the **Customers** table displayed in the Data Mining Grid, as shown in the figure below. The columns of data (e.g. Customer ID, Company Name, Contact Name, Contact Title, etc.) match the columns in the connected Northwind.mdb database.

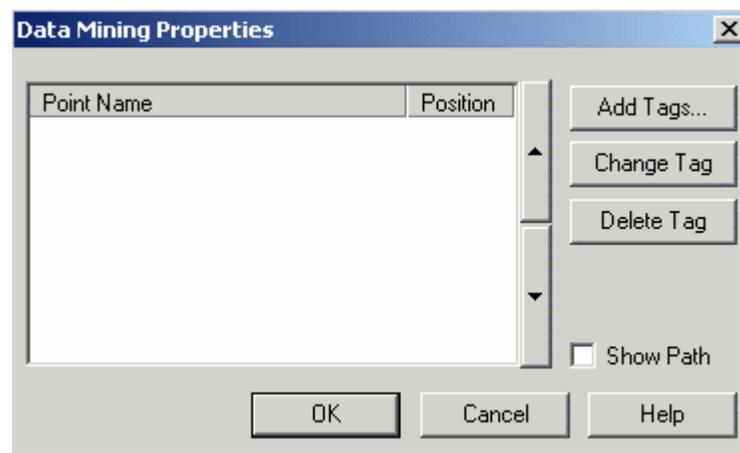
Data Mining ActiveX											
	CustomerID	CompanyName	ContactName	ContactTitle	Address	City	Region	PostalCode	Country	Phone	Fax
1	ALFKI	Alfreds Futterk	Maria Anders	Sales Repre	Obere St	Berli		12209	German	030-00	030-0
2	ANATR	Ana Trujillo Emp	Ana Trujillo	Owner	Avda. de Méxi			05021	Mexico	(5) 555	(5) 55
3	ANTON	Antonio Moreno	Antonio Moren	Owner	Matader	Méxi		05023	Mexico	(5) 555	
4	AROUT	Around the Hor	Thomas Hardy	Sales Repre	120 Han	Lon		WA1 1DP	UK	(171) 5	(171)
5	BERGS	Berglunds snab	Christina Bergl	Order Admini	Berguvsy	Lule		S-958 22	Sweden	0921-1	0921-
6	BLAUS	Blauer See Deli	Hanna Moos	Sales Repre	Forsterst	Man		68306	German	0621-0	0621-
7	BLONP	Blondel père et f	Frédérique Cit	Marketing M	24. place	Stra		67000	France	88.60.1	88.60.
8	BOLID	Bólido Comidas	Martín Somme	Owner	C/ Araqui	Mad		28023	Spain	(91) 55	(91) 5
9	BONAP	Bon app'	Laurence Lebi	Owner	12. rue d	Mar		13008	France	91 24 4	91 24.
10	BOTTM	Bottom-Dollar M	Elizabeth Linc	Accounting	23 Tsaw	Tsa	BC	T2F 8M4	Canada	(604) 5	(604)
11	BSBEV	B's Beverages	Victoria Ashwo	Sales Repre	Fauntler	Lon		EC2 5NT	UK	(171) 5	
12	CACTU	Cactus Comidas	Patricio Simps	Sales Agent	Cerrito 3	Bue		1010	Argentina	(1) 135	(1) 13
13	CENTC	Centro comercia	Francisco Cha	Marketing M	Sierras d	Méxi		05022	Mexico	(5) 555	(5) 55
14	CHOPS	Chop-suey Chin	Yang Wang	Owner	Hauptstr	Ber		3012	Switzerl	0452-0	
15	COMMI	Comércio Mineir	Pedro Afonso	Sales Associ	Av. dos L	São	SP	05432-043	Brazil	(11) 55	
16	CONSH	Consolidated H	Elizabeth Bro	Sales Repre	Berkeley	Lon		WX1 6LT	UK	(171) 5	(171)
17	DRACD	Drachenblut Del	Sven Otflied	Order Admini	Walsersw	Aac		52066	German	0241-0	0241-
18	DUMON	Du monde entie	Janine Labrun	Owner	67. rue d	Nan		44000	France	40.67.8	40.67.
19	EASTC	Eastern Connec	Ann Devon	Sales Agent	35 King	Lon		WX3 6FW	UK	(171) 5	(171)
20	ERNSH	Ernst Handel	Roland Mende	Sales Mana	Kirchgass	Gra		8010	Austria	7675-3	7675-
21	FAMIA	Familia Arquibal	Aria Cruz	Marketing A	Rua Oró	São	SP	05442-030	Brazil	(11) 55	

Table Column Displayed in Data Mining ActiveX Grid

Connecting to a Multidimensional Data Mining Data Source

A data mining connection is a connection to a data source through a preconfigured data mining tag (i.e. a data tag that was configured using the Data Mining Configurator). To connect to a Data Mining data source:

1. Select the **Data Mining** radio button on the **General** tab of the **Data Mining ActiveX Properties** dialog box.
2. Click the **Connection parameters** button. This opens the **Data Mining Properties** dialog box, as shown below.
3. To create a connection, click the **Add Tags** button, as shown in the figure below.

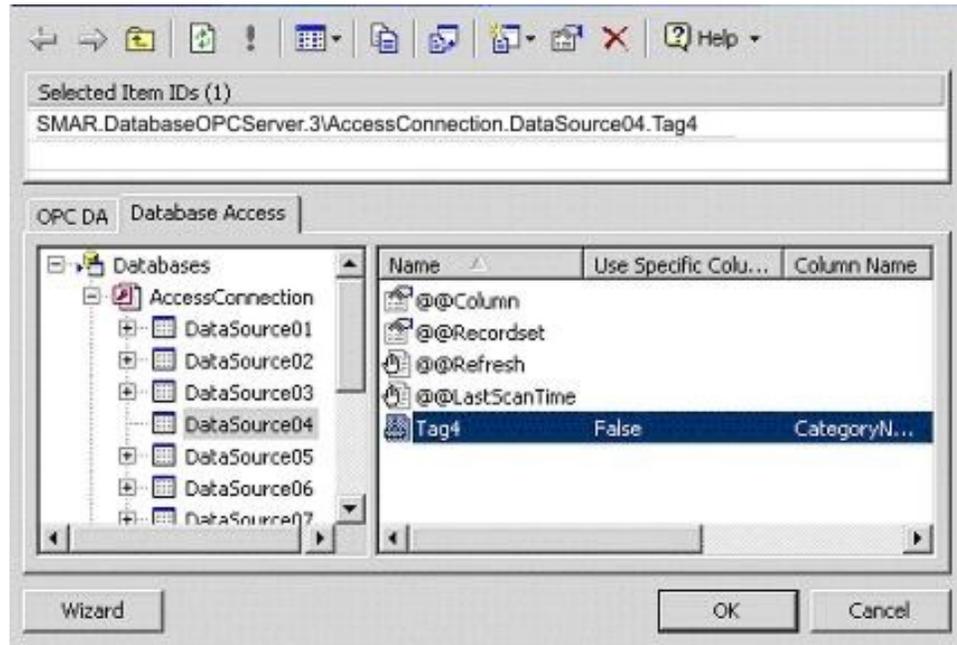


Data Mining Properties

4. This opens the Unified Data Browser. Select one or more data tags from the Unified Data Browser, as shown in the figure below. In this example, we will use the following multidimensional database mining tag:

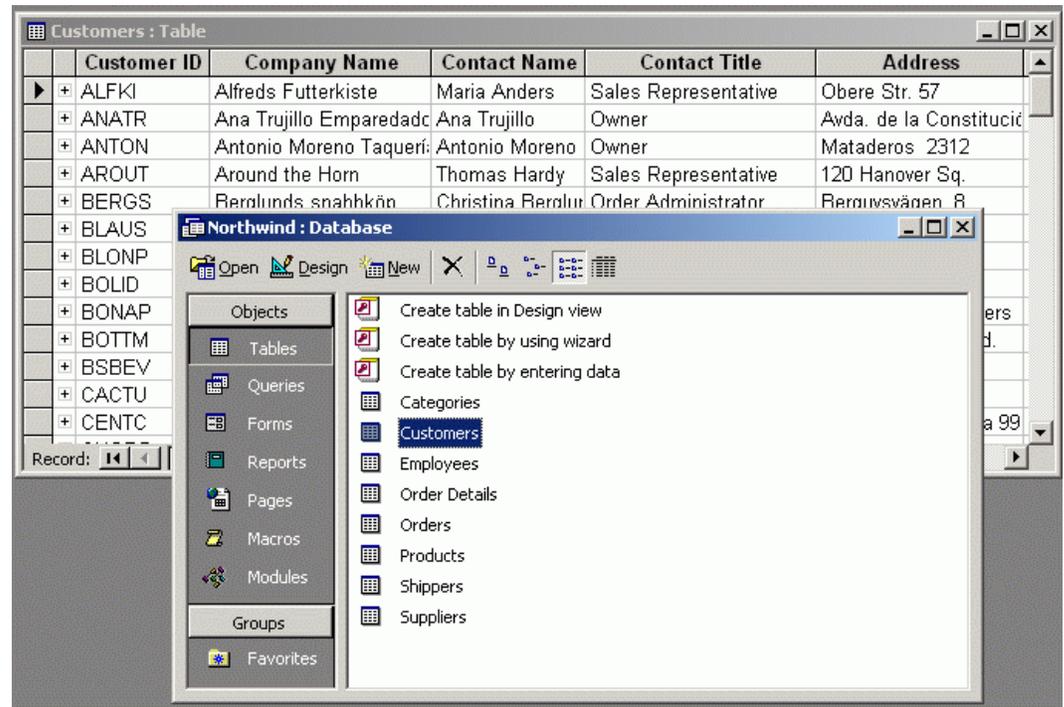
SMAR.DatabaseOPCServer.3\AccessConnection.DataSource04.Tag4

This tag is defined in the **DBOPCServerExample.mdb** example data mining configuration database, which is included in the ProcessView installation in the **Program Files\SmarterProcessView\Examples\Database Mining Examples** directory. This configuration database connects to the **Northwind.mdb** Microsoft Access database. For more information about database mining examples, configuring database access items and how to load the **DBOPCServerExample.mdb** configuration database, please refer to the Database Mining Configurator help documentation. For an example of how to use global aliasing in the Data Mining ActiveX, please refer to the **DBOPC_GlobalAlias.gdf** file in the **Program Files\SmarterProcessView\Examples\Database Mining Examples** directory in the ProcessView installation.



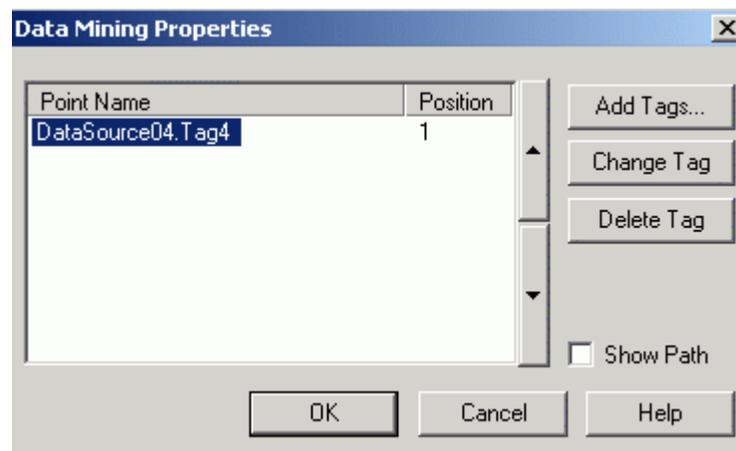
Selecting a Data Tag From the Unified Data Browser

5. This example data access tag, **AccessConnection.DataSource04.Tag4**, is a multidimensional array (i.e. reads data from multiple columns in the specified database table) that reads data from the **Customers** table in the Northwind.mdb database. The figure below shows this table as viewed in Microsoft Access. As you can see, it has several columns of data (e.g. Customer ID, Company Name, Contact Name, Contact Title, etc.). Click **OK**.



Customers Table in Northwind Database

6. The selected data tag appears in the **Data Mining Properties** dialog box under the **Point Name** list, as shown in the figure below. You have the following additional options:
 - **Add Tags:** You can choose additional data items to add to the list. When multiple data items are selected, click the up and down arrow buttons to change the order in which the data items are displayed in the Data Mining ActiveX Grid. The **Position** number indicates the position of each data item in the grid display.
 - **Change Tag:** Opens the Unified Browser, enabling you to replace the currently selected data item with a different data item.
 - **Delete Tag:** Removes the selected data item from the list.
 - **Show Path:** Displays the full path (i.e. server name and location) of the selected data item(s).



Data Mining List of Tags Present Inside the Grid

7. Click **OK** to return to the **General** tab. Then click **OK** again. When you enter the display into runtime mode, you will see the multidimensional array of data items from the **Customers** table displayed in the Data Mining Grid, as shown in the figure below. The columns of data (e.g. Customer ID, Company Name, Contact Name, Contact Title, etc.) match the columns in the

connected Northwind.mdb database as defined by the connected AccessConnection.DataSource04.Tag4 data tag.

Data Mining ActiveX											
	CustomerID	CompanyName	ContactName	ContactTitle	Address	City	Region	PostalCode	Country	Phone	Fax
1	ALFKI	Alfreds Futterk	Maria Anders	Sales Repre	Obere St	Berli		12209	German	030-00	030-0
2	ANATR	Ana Trujillo Emp	Ana Trujillo	Owner	Avda. de	Méxi		05021	Mexico	(5) 555	(5) 55
3	ANTON	Antonio Moreno	Antonio Moren	Owner	Matader	Méxi		05023	Mexico	(5) 555	
4	AROUT	Around the Hor	Thomas Hardy	Sales Repre	120 Han	Lon		WA1 1DP	UK	(171) 5	(171)
5	BERGS	Berglunds snab	Christina Bergl	Order Admini	Berguysv	Lule		S-958 22	Sweden	0921-1	0921-
6	BLAUS	Blauer See Deli	Hanna Moos	Sales Repre	Forsterst	Man		68306	German	0621-0	0621-
7	BLONP	Blondel père et f	Frédérique Cit	Marketing M	24, place	Stra		67000	France	88.60.1	88.60.
8	BOLID	Bólido Comidas	Marfin Somme	Owner	C/ Araqui	Mad		28023	Spain	(91) 55	(91) 5
9	BONAP	Bon app'	Laurence Lebi	Owner	12, rue d	Mar		13008	France	91.24.4	91.24.
10	BOTTM	Bottom-Dollar M	Elizabeth Linc	Accounting	23 Tsaw	Tsa	BC	T2F 8M4	Canada	(604) 5	(604)
11	BSBEV	B's Beverages	Victoria Ashwo	Sales Repre	Fauntler	Lon		EC2 5NT	UK	(171) 5	
12	CACTU	Cactus Comidas	Patricio Simps	Sales Agent	Cerrito 3	Bue		1010	Argentin	(1) 135	(1) 13
13	CENTC	Centro comercia	Francisco Cha	Marketing M	Sierras d	Méxi		05022	Mexico	(5) 555	(5) 55
14	CHOPS	Chop-suey Chin	Yang Wang	Owner	Hauptstr	Ber		3012	Switzerl	0452-0	
15	COMMI	Comércio Mineir	Pedro Afonso	Sales Associ	Av. dos L	São	SP	05432-043	Brazil	(11) 55	
16	CONSH	Consolidated H	Elizabeth Bro	Sales Repre	Berkeley	Lon		WX1 6LT	UK	(171) 5	(171)
17	DRACD	Drachenblut Del	Sven Ottlieb	Order Admini	Walserv	Aac		52066	German	0241-0	0241-
18	DUMON	Du monde entie	Janine Labrun	Owner	67, rue d	Nan		44000	France	40.67.8	40.67.
19	EASTC	Eastern Connec	Ann Devon	Sales Agent	35 King	Lon		WX3 6FW	UK	(171) 5	(171)
20	ERNSH	Ernst Handel	Roland Mende	Sales Mana	Kirchgas	Gra		8010	Austria	7675-3	7675-
21	FAMIA	Familia Arquibal	Aria Cruz	Marketing A	Rua Oró	São	SP	05442-030	Brazil	(11) 55	

Viewing Data Items in Runtime Mode: Multidimensional Array

NOTE

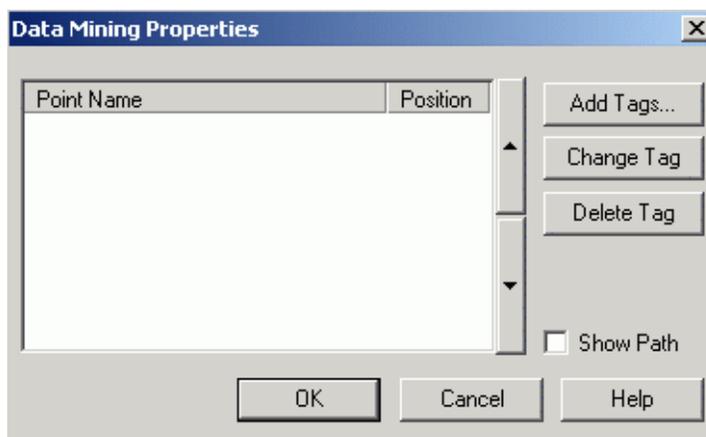
If you want to browse for data mining tags on a remote computer, go to the **OPC DA** tab of the Unified Data Browser and browse to the computer in the **Network Neighborhood** tree.

Connecting to a One-Dimensional Data Mining Data Source

A data mining connection is a connection to a data source through a preconfigured data mining tag (i.e. a data tag that was configured using the Data Mining Configurator).

To connect to a Data Mining data source:

1. Select the **Data Mining** radio button on the **General** tab of the **Data Mining ActiveX Properties** dialog box.
2. Click the **Connection parameters** button. This opens the **Data Mining Properties** dialog box, as shown below.
3. To create a connection, click the **Add Tags** button, as shown in the figure below.



Data Mining Properties

- This opens the Unified Data Browser. Select one or more data tags from the Unified Data Browser, as shown in the figure below. In this example, we will use the following one-dimensional database mining tag:

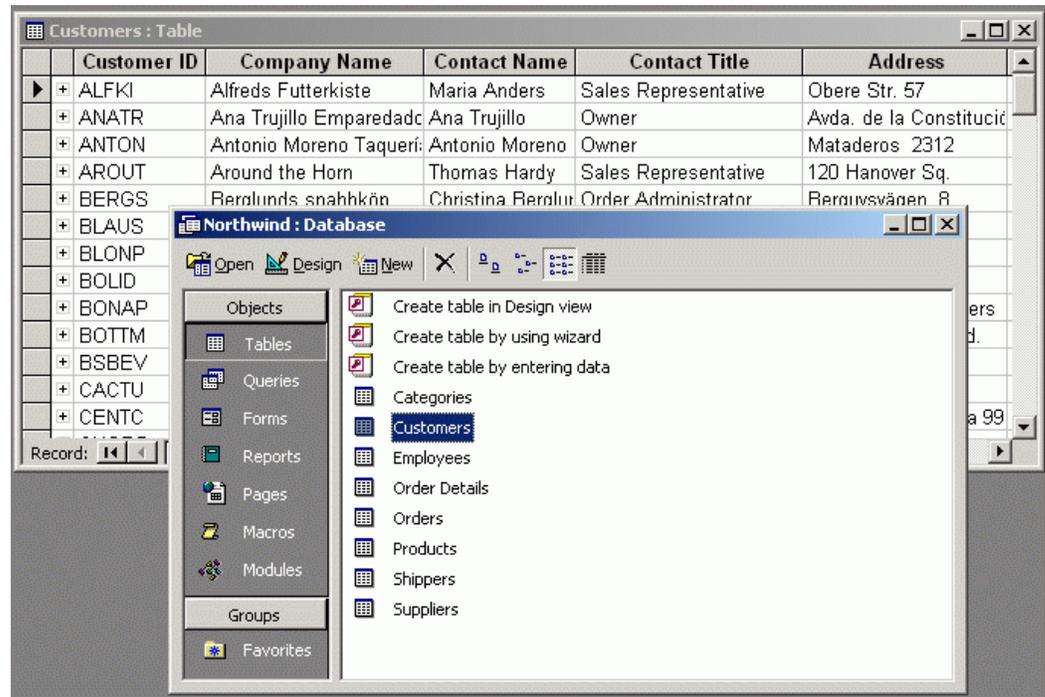
SMAR.DatabaseOPCServer.3\AccessConnection.DataSource02.Tag2

This tag is defined in the **DBOPCServerExample.mdb** example data mining configuration database, which is included in the ProcessView installation in the **Program Files\Smarter\ProcessView\Examples\Database Mining Examples** directory. This configuration database connects to the **Northwind.mdb** Microsoft Access database. For more information about database mining examples, configuring database access items and how to load the **DBOPCServerExample.mdb** configuration database, please refer to the Database Mining Configurator help documentation. For an example of how to use global aliasing in the Data Mining ActiveX, please refer to the **DBOPC_GlobalAlias.gdf** file in the **Program Files\Smarter\ProcessView\Examples\Database Mining Examples** directory in the ProcessView installation.



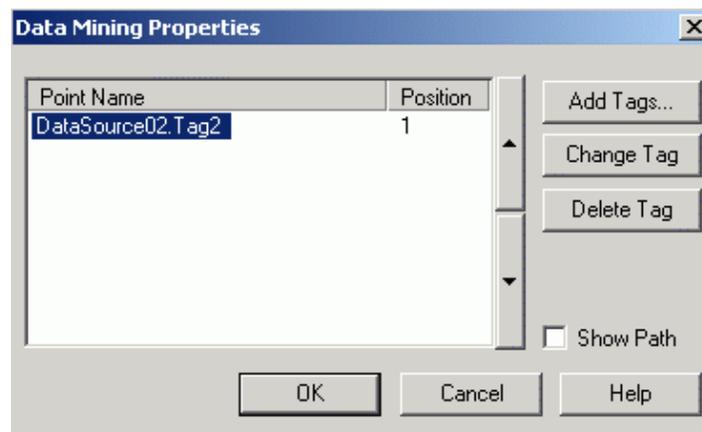
Selecting a Data Tag From the Unified Data Browser

- This example data access tag, **AccessConnection.DataSource02.Tag2**, is a one-dimensional array (i.e. reads data from a single column in the specified database table) that reads data from the **Customers** table in the **Northwind.mdb** database. The figure below shows this table as viewed in Microsoft Access. As you can see, it has several columns of data (e.g. Customer ID, Company Name, Contact Name, Contact Title, etc.). This particular tag reads data only from the **ANTON** rowset in the **Customer ID** column. Click **OK**.



Customers Table in Northwind Database

6. The selected data tag appears in the **Data Mining Properties** dialog box under the **Point Name** list, as shown in the figure below. You have the following additional options:
 - **Add Tags:** You can choose additional data items to add to the list. When multiple data items are selected, click the up and down arrow buttons to change the order in which the data items are displayed in the Data Mining ActiveX Grid. The **Position** number indicates the position of each data item in the Grid display.
 - **Change Tag:** Opens the Unified Browser, enabling you to replace the currently selected data item with a different data item.
 - **Delete Tag:** Removes the selected data item from the list.
 - **Show Path:** Displays the full path (i.e. server name and location) of the selected data item(s).



Data Mining List of Tags Present Inside the Grid

7. Click OK to return to the General tab. Then click OK again. When you enter the display into runtime mode, you will see the one-dimensional array of data items from the Customers table displayed in the Data Mining Grid, as shown in the figure below. The grid displays the entire rowset ANTON in the Customer ID column in the connected Northwind.mdb database as defined by the connected AccessConnection.DataSource02.Tag2 data tag.

NOTE

The array can be a horizontal array (i.e. view an entire rowset), or it can be a vertical array (i.e. it shows the values in a column). No matter what array you want to view, in the grid it is always shown as a column. Thus, even though the example shown in the figure below displays a rowset, the data in the row are displayed in the grid as a column.

Data Mining ActiveX	
	CustomerID
1	ANTON
2	Antonio Moreno Taquería
3	Antonio Moreno
4	Owner
5	Mataderos 2312
6	México D.F.
7	<Empty>
8	05023
9	Mexico
10	(5) 555-3932
11	<Empty>

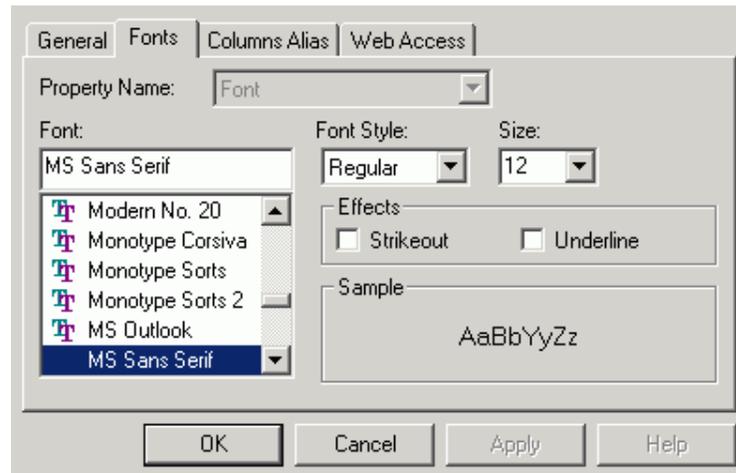
Viewing Data Items in Runtime Mode: One-dimensional Array

NOTE

If you want to browse for data mining tags on a remote computer, go to the **OPC DA** tab of the Unified Data Browser and browse to the computer in the **Network Neighborhood** tree.

Fonts

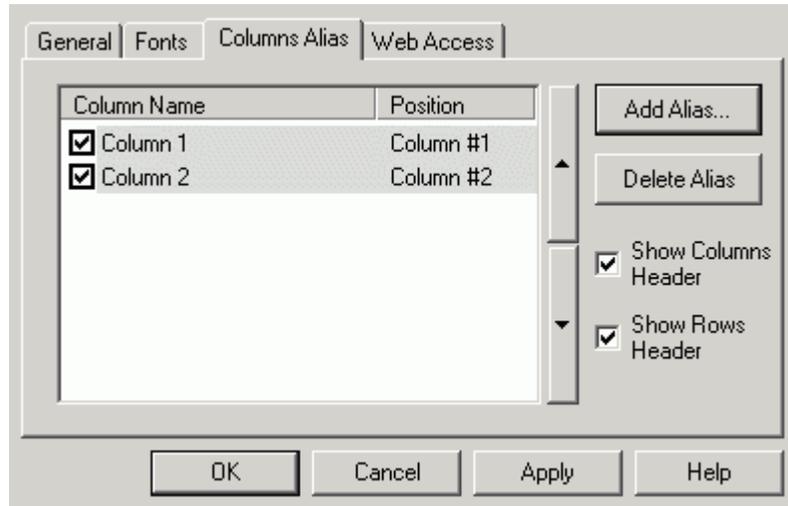
The **Fonts** tab of the **Data Mining ActiveX Properties** dialog box, shown below is similar to many fonts property screens. The **Font** field determines the font, and the **Font Style** field determines whether the text will be **Regular**, **Bold**, **Italic**, or **Bold Italic**. The **Effects** section allows for strikethrough or underlining, and the **Sample** section shows a real-size example of the font, style, and size you have chosen.



Data Mining ActiveX Properties: Fonts Tab

Columns Alias

The **Columns Alias** tab of the **Data Mining ActiveX Properties** dialog box, shown below, allows you to create column names and associate each name with a column that is displayed in the Data Mining ActiveX Grid.

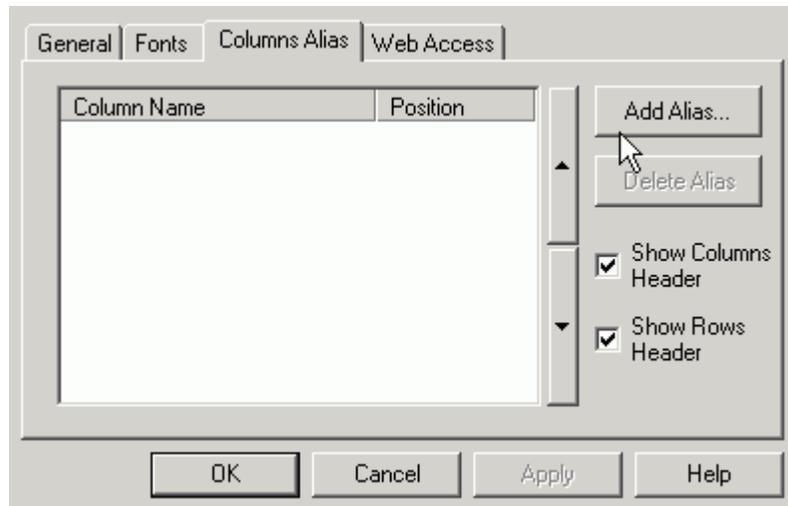


Data Mining ActiveX Properties: Columns Alias Tab

Creating Column Aliases

To create a new column alias:

1. On the **Columns** tab, click the **Add Alias** button, as shown in the figure below.

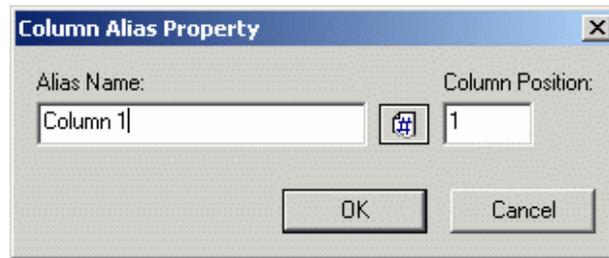


Adding a Column Alias

2. This opens the Column Alias Property dialog box, as shown in the figure below. In the Alias Name field, specify a column name. Then specify a Column Position number, which corresponds to the position of the column where the alias will be applied in the Grid display. Click OK.

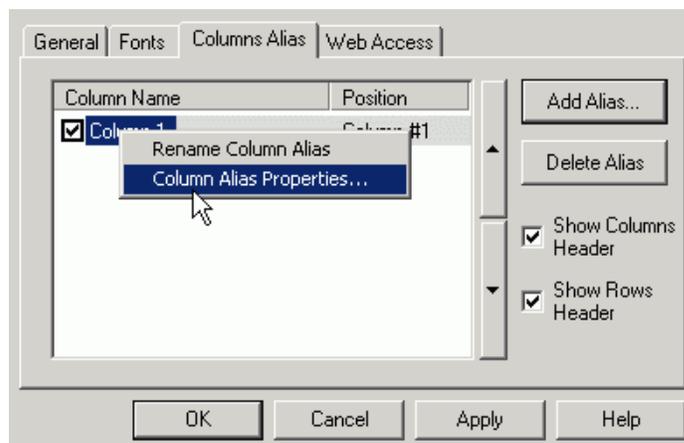
NOTES

With column aliasing, you can define aliases for the columns that you need. Column positions do not need to be sequential. For example, you could define two aliases: one for column position 3 and another for column position 13. You can also click the # button to select a global alias from the global alias browser.



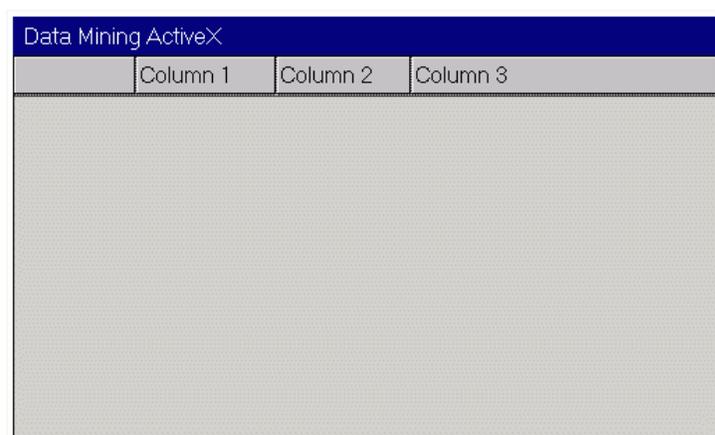
Column Alias Property

3. The new column alias and position number appear in the under the **Column Name** list, as shown in the figure below. You have the following additional options:
 - **Add Alias:** You can add additional column aliases to the list. When multiple column aliases are selected, click the up and down arrow buttons to change the order in which the columns are displayed in the Data Mining ActiveX Grid. The **Position** number corresponds to the position of each data item in the Grid display.
 - **Delete Alias:** Deletes the selected column alias from the list.
 - **Rename Column Alias:** Enables you to change the name of the selected column aliases.
 - **Column Alias Properties:** Opens the **Column Alias Property** dialog box for the selected column alias.



Editing Column Alias Properties

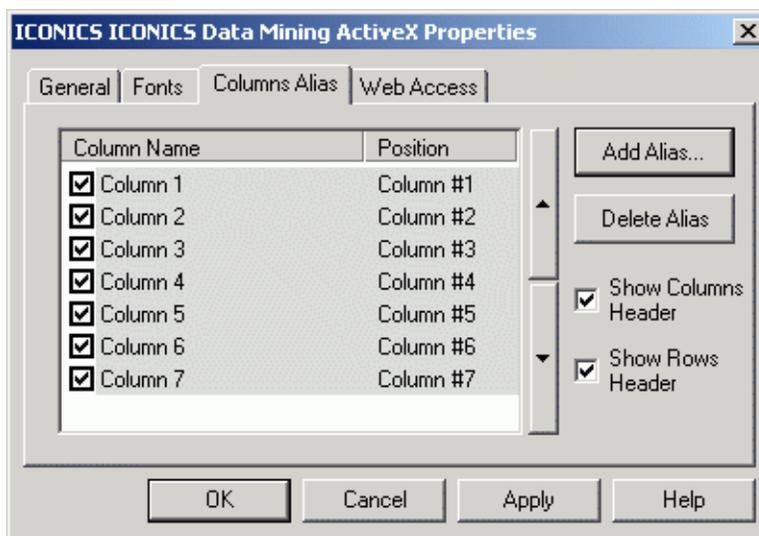
4. When you enter the display into runtime mode, you will see the associated data items displayed in the Data Mining Grid with the substituted column aliases, as shown in the figure below. You can change the column width by moving the column dividers.



Column Aliases Displayed in Data Mining Grid

Hiding Columns

Suppose that you have configured a database connection that reads a data set with multiple columns, and you have created a column alias for each column of data that is read from the database, as shown in the figure below. You can hide each columns from the display by simply unchecking the check box next to the column.



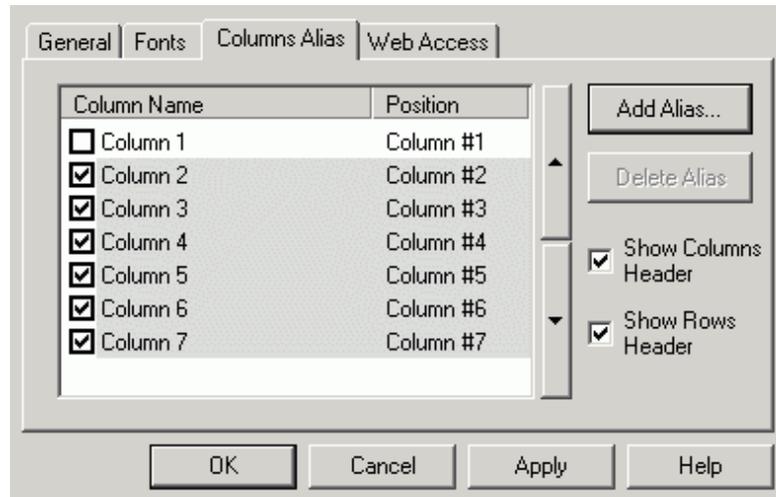
Multiple Column Aliases

For example, in runtime mode the grid display appears as shown in the figure below. As you can see, the column alias names are displayed at the top of the grid. Column 1 contains some data (e.g. abbreviations, cryptic characters, etc.) that may not make sense to some users and therefore should be removed from the display. Thus, we will hide Column 1.

Data Mining ActiveX							
	Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
1	ALFKI	Alfreds Futt	Maria And	Sales Rep	Obere Str.	Berlin	<Empty>
2	ANATR	Ana Trujillo	Ana Trujill	Owner	Avda. de l	México D.	<Empty>
3	ANTON	Antonio Mor	Antonio M	Owner	Matadero	México D.	<Empty>
4	AROUT	Around the	Thomas H	Sales Rep	120 Hano	London	<Empty>
5	BERGS	Berglunds s	Christina	Order Ad	Berguvsvä	Luleå	<Empty>
6	BLAUS	Blauer See	Hanna Mo	Sales Rep	Forsterstr.	Mannheim	<Empty>
7	BLONP	Blondel pèr	Frédériqu	Marketing	24. place	Strasbour	<Empty>
8	BOLID	Bólido Comi	Martín So	Owner	C/ Araquil	Madrid	<Empty>
9	BONAP	Bon app'	Laurence	Owner	12. rue de	Marseille	<Empty>
10	BOTTM	Bottom-Doll	Elizabeth	Accountin	23 Tsawa	Tsawasse	BC
11	BSBEV	B's Beverag	Victoria A	Sales Rep	Fauntlero	London	<Empty>
12	CACTU	Cactus Co	Patricio Si	Sales Age	Cerrito 33	Buenos Ai	<Empty>
13	CENTC	Centro com	Francisco	Marketing	Sierras de	México D.	<Empty>
14	CHOPS	Chop-suey	Yang Wa	Owner	Hauptstr.	Bern	<Empty>

Grid Display With Multiple Columns

Go back to the **Columns Alias** tab and uncheck the check box next to Column 1, as shown in the figure below. Click **OK**.



Hiding a Column

When you start runtime mode, you can see that Column 1 is now hidden, and the first column is now Column 2, as shown in the figure below.

NOTE

You can also hide the column headers and row headers. To hide the column names in the Grid, uncheck the Show Columns Header check box on the Columns Alias tab. To hide the row names (or numbers) in the Grid, uncheck the Show Rows Header check box on the Columns Alias tab.

Data Mining ActiveX							
	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	
1	Alfreds Fu	Maria And	Sales Rep	Obere Str	Berlin		1
2	Ana Trujill	Ana Trujill	Owner	Ayda. de l	México D.		0
3	Antonio M	Antonio M	Owner	Matadero	México D.		0
4	Around th	Thomas H	Sales Rep	120 Hano	London		1
5	Berglunds	Christina	Order Ad	Berguvsvä	Luleå		3
6	Blauer Se	Hanna Mo	Sales Rep	Forsterstr	Mannheim		6
7	Blondel p	Frédériqu	Marketing	24, place	Strasbourg		6
8	Bólido Co	Martín So	Owner	C/ Araquil,	Madrid		2
9	Bon app'	Laurence	Owner	12, rue de	Marseille		1
10	Bottom-D	Elizabeth	Accountin	23 Tsawa	Tsawasse BC		1
11	B's Bever	Victoria A	Sales Rep	Fauntlero	London		1
12	Cactus Co	Patricio Si	Sales Age	Cerrito 33	Buenos Ai		1
13	Centro co	Francisco	Marketing	Sierras de	México D.		0
14	Chop-sue	Yang Wa	Owner	Hauptstr.	Bern		3

Grid Display With Hidden Columns

Web Access

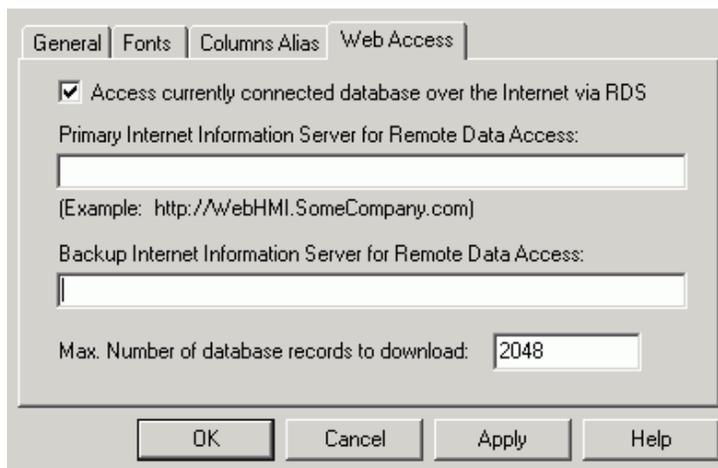
The **Web Access** tab of the **Data Mining ActiveX Properties** dialog box, shown below, allows you to access the currently connected database over the Internet via a **Remote Data Service (RDS)**. The RDS, which is hosted by an Internet Information Server (IIS), enables the downloading of data from the connected database to a client over the Internet. Simply specify the URL name or IP address of the primary IIS Web server in the **Primary Internet Information Server for RDA** field, as shown in the figure below. The **Remote Recordset Page Size** field specifies the size of the recordset portion in the database records.

NOTES

You also may designate a redundant IIS Web server by specifying the URL name or IP address of the redundant IIS Web server in the **Backup Internet Information Server for RDA** field, as shown in the figure below.

For more information about Remote Data Access, please refer to the AlarmWorX Remote Database Access Manager help documentation.

The **Web Access** tab only applies when you are connecting via an ADO database connection. If you are using a data mining tag, you need only supply the node name or IP address of the server in front of the tag name.



Data Mining ActiveX Properties: Web Access Tab

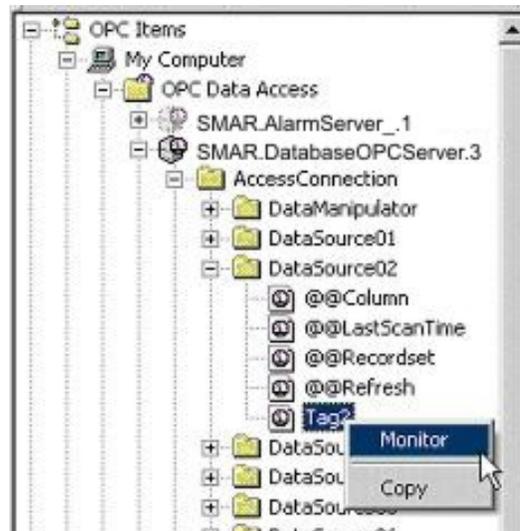
Viewing Data in the Runtime Grid

Once you have established your data source connections, you are ready to view the data in the Data Mining ActiveX Grid.

Testing Your Data Tags

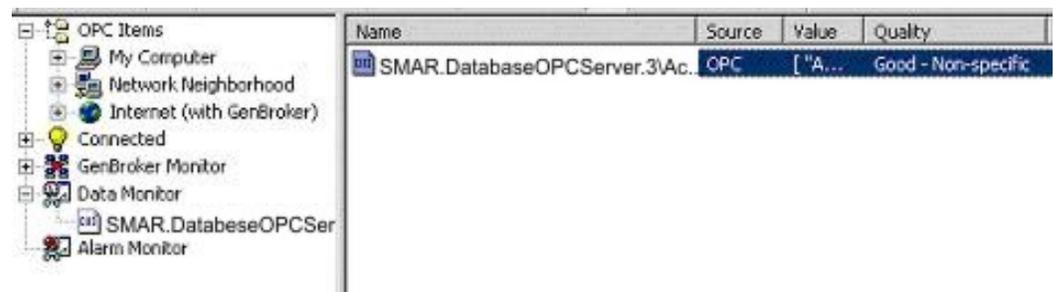
Before you try to connect to data sources and view your data tags, it is highly recommended that you verify if the tags present inside the display are well configured from the server side. To do that you have to check the quality of your data tags using OPC DataSpy:

1. Start OPC DataSpy from the Windows **Start** menu by selecting **Programs > ICONCS ProcessView > OPC DataSpy**.
2. In OPC DataSpy, expand the tree control and browse to your data tag. Right-click on the data tag(s) and select **Monitor** from the pop-up menu, as shown in the figure below.



Browsing for Data Tags in OPC DataSpy

- The data tag(s) now appear in under the Data Monitor tree control, as shown in the figure below. The tag quality is indicated in the right-hand pane. If the tag quality is good, then the tag is ready for data mining. If the tag quality is bad, go back to the Database Mining Configurator and check your data source and data item configurations.



Data Tag Quality Indicated in DataSpy Data Monitor

Viewing One-Dimensional Arrays

The figure below shows a one-dimensional array in runtime mode. This example (refer to the "Connecting to a One-Dimensional Data Mining Data Source" section above for details) displays the entire rowset ANTON in the **Customer ID** column in the connected Northwind.mdb database, as defined by the connected **AccessConnection.DataSource02.Tag2** data tag. You can change the column width by moving the column dividers.

NOTE

The array can be a horizontal array (i.e. view an entire rowset), or it can be a vertical array (i.e. it shows the values in a column). No matter what array you want to view, in the grid it is always shown as a column. Thus, even though the example shown in the figure below displays a rowset, the data in the row are displayed in the grid as a column.

Data Mining ActiveX	
	CustomerID
1	ANTON
2	Antonio Moreno Taquería
3	Antonio Moreno
4	Owner
5	Mataderos 2312
6	México D.F.
7	<Empty>
8	05023
9	Mexico
10	(5) 555-3932
11	<Empty>

Viewing Data Items in Runtime Mode: One-dimensional Array

Viewing Multidimensional Arrays

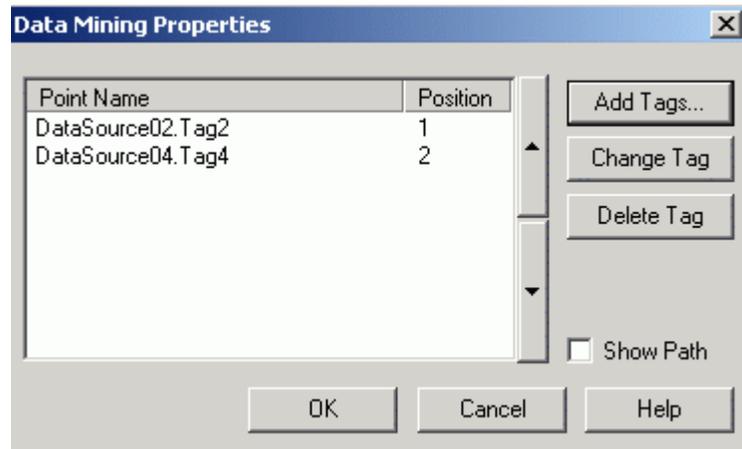
The figure below shows a multidimensional array in runtime mode. This example (refer to the "Connecting to a Multidimensional Data Mining Data Source" section above for details) displays columns of data (e.g. Customer ID, Company Name, Contact Name, Contact Title, etc.) that match the columns in the connected Northwind.mdb database, as defined by the connected **AccessConnection.DataSource04.Tag4** data tag. You can change the column width by moving the column dividers.

Data Mining ActiveX											
	CustomerID	CompanyName	ContactName	ContactTitle	Address	City	Region	PostalCode	Country	Phone	Fax
1	ALFKI	Alfreds Futterkis	Maria Anders	Sales Repre	Obere St	Berli		12209	German	030-00	030-0
2	ANATR	Ana Trujillo Emp	Ana Trujillo	Owner	Avda. de	Méxi		05021	Mexico	(5) 555	(5) 55
3	ANTON	Antonio Moreno	Antonio Moren	Owner	Matader	Méxi		05023	Mexico	(5) 555	
4	AROUT	Around the Hor	Thomas Hardy	Sales Repre	120 Han	Lon		WA1 1DP	UK	(171) 5	(171)
5	BERGS	Berglunds snab	Christina Bergl	Order Admini	Berguysv	Lule		S-958 22	Sweden	0921-1	0921-
6	BLAUS	Blauer See Deli	Hanna Moos	Sales Repre	Forsterst	Man		68306	German	0621-0	0621-
7	BLONP	Blondel père et f	Frédérique Cit	Marketing M	24. place	Stra		67000	France	88.60.1	88.60.
8	BOLID	Bólido Comidas	Martín Somme	Owner	C/ Araqui	Mad		28023	Spain	(91) 55	(91) 5
9	BONAP	Bon app'	Laurence Lebi	Owner	12. rue d	Mar		13008	France	91.24.4	91.24.
10	BOTTM	Bottom-Dollar M	Elizabeth Linc	Accounting	23 Tsaw	Tsa	BC	T2F 8M4	Canada	(604) 5	(604)
11	BSBEV	B's Beverages	Victoria Ashwo	Sales Repre	Faunter	Lon		EC2 5NT	UK	(171) 5	
12	CACTU	Cactus Comidas	Patricio Simps	Sales Agent	Cerrito 3	Bue		1010	Argentina	(1) 135	(1) 13
13	CENTC	Centro comercia	Francisco Cha	Marketing M	Sierras d	Méxi		05022	Mexico	(5) 555	(5) 55
14	CHOPS	Chop-suey Chin	Yang Wang	Owner	Hauptstr.	Ber		3012	Switzerl	0452-0	
15	COMMI	Comércio Mineir	Pedro Afonso	Sales Associ	Av. dos L	São	SP	05432-043	Brazil	(11) 55	
16	CONSH	Consolidated H	Elizabeth Bro	Sales Repre	Berkeley	Lon		WX1 6LT	UK	(171) 5	(171)
17	DRACD	Drachenblut Del	Sven Ottlieb	Order Admini	Walsersw	Aac		52066	German	0241-0	0241-
18	DUMON	Du monde entie	Janine Labrun	Owner	67. rue d	Nan		44000	France	40.67.8	40.67.
19	EASTC	Eastern Connec	Ann Devon	Sales Agent	35 King	Lon		WX3 6FW	UK	(171) 5	(171)
20	ERNSH	Ernst Handel	Roland Mende	Sales Mana	Kirchgass	Gra		8010	Austria	7675-3	7675-
21	FAMIA	Familia Arquibal	Aria Cruz	Marketing A	Rua Oro	São	SP	05442-030	Brazil	(11) 55	

Viewing Data Items in Runtime Mode: Multidimensional Array

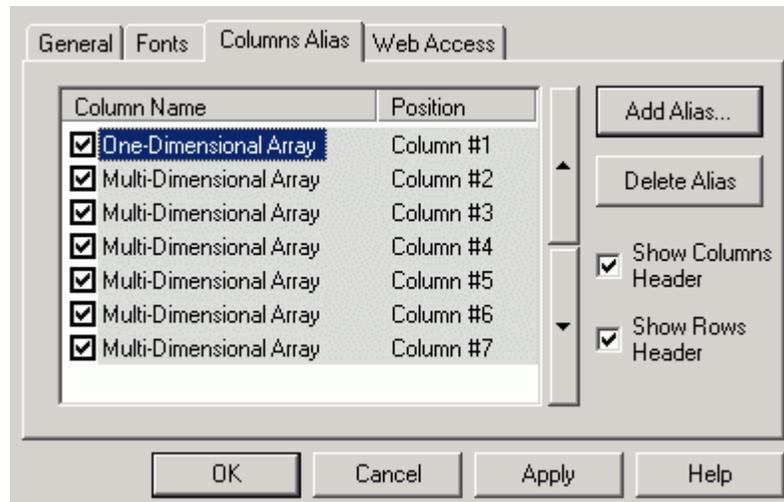
Viewing Combined Arrays

It is possible to view data from a one-dimensional array and data from a multidimensional array in the same grid display. For example, the data tags selected in the Data Mining Properties below contain two different types of arrays: Tag2 is one-dimensional, and Tag4 is multidimensional. Tag2 will yield only one column of data in the grid display, while Tag4 will produce many columns. When you enter the display into runtime, the data from both arrays will be displayed side-by-side in the Data Mining ActiveX Grid.



Data-Mining Properties: Combining Data Sources

Thus, it is recommended that you use some column aliases to distinguish between the two different sets of data. In the example configuration shown in the figure below, Column 1 represents the single column from Tag2, and the other columns (2-6) represent the columns from Tag4.



Column Names for Combined Arrays

When you enter the display into runtime mode, you can clearly distinguish between the two sets of data produced by each of the data tags, as shown in the figure below.

Data Mining ActiveX					
	One-Dimensional Array	MultiDimensional Array	MultiDimensional Array	MultiDimensional Array	MultiDimensional Array
1	ANTON	ALFKI	Alfreds Futterkiste	Maria Anders	Sales Representative
2	Antonio Moreno Taquer	ANATR	Ana Trujillo Emparedad	Ana Trujillo	Owner
3	Antonio Moreno	ANTON	Antonio Moreno Taquer	Antonio Moreno	Owner
4	Owner	AROUT	Around the Horn	Thomas Hardy	Sales Representative
5	Mataderos 2312	BERGS	Berglunds snabbköp	Christina Berglund	Order Administrator
6	México D.F.	BLAUS	Blauer See Delikatesse	Hanna Moos	Sales Representative
7	<Empty>	BLONP	Blondel père et fils	Frédérique Citeaux	Marketing Manager
8	05023	BOLID	Bólido Comidas prepar	Martín Sommer	Owner
9	Mexico	BONAP	Bon app'	Laurence Lebihan	Owner
10	(5) 555-3932	BOTTM	Bottom-Dollar Markets	Elizabeth Lincoln	Accounting Manager
11	<Empty>	BSBEV	B's Beverages	Victoria Ashworth	Sales Representative
12	<Empty>	CACTU	Cactus Comidas para ll	Patricio Simpson	Sales Agent
13	<Empty>	CENTC	Centro comercial Mocte	Francisco Chang	Marketing Manager
14	<Empty>	CHOPS	Chop-suey Chinese	Yang Wang	Owner
15	<Empty>	COMMI	Comércio Mineiro	Pedro Afonso	Sales Associate
16	<Empty>	CONSH	Consolidated Holdings	Elizabeth Brown	Sales Representative

Viewing Combined Arrays in the Grid Display

Refreshing the Data Grid

The Data Mining ActiveX automatically updates data from the connected data source (ADO data connections only) at the frequency (in seconds) you specified in the **Auto Update** field in the Data Mining ActiveX **General** tab. To manually update the data in the Grid, right-click on the data during runtime mode and select **Refresh Grid** from the pop-up menu, as shown in the figure below.



Refreshing Data in Grid

Data Mining ActiveX OLE Automation References

This reference describes the OLE Automation features available in the Data Mining ActiveX.

Automation Interfaces

The Data Mining ActiveX provides a COM interface that allows automation interfaces run from within the ActiveX container to manipulate the Data Mining ActiveX control as it is running. The interface is available to all programming languages that support COM, including Visual Basic (VB), Visual Basic for Applications (VBA), and Microsoft Visual C++.

To access the Automation interface from VB and VBA, the Data Mining ActiveX must be made available by choosing **Project > Components** from the main menu in the VB or VBA development environment and selecting **Smr DBGrid** in the list of available components.

Control Properties

AutoSelectRow

Type: Boolean

Description

If true, when the user clicks on a cell the whole row will be highlighted.

AutoUpdateInterval

Type: Short

Description

Sets/gets the number of seconds between automatic updates.
Available only for ADO connections.

Example

```
ThisDocument.DBMining1.AutoUpdateInterval=60
```

BackColor

Type: OLE_COLOR

Description

Sets/gets the background color of the column.

Example

```
Dim column As OGridColumnWrapper
Set column = ThisDisplay.DBMining1.GetColumn(1)
column.ModifyBackColor = True
column.BackColor = RGB(0, 255, 0)
```

The above example will change the background color for column 1 to green.

BlinkOnUpdate

Type: Boolean

Description

Sets/gets whether or not the Database Mining ActiveX will blink on update.

Example

```
ThisDocument.DBMining1.BlinkOnUpdate=True
```

BorderType

Type: String

Description

Sets/gets control's border appearance. Can be one of the following:

"0" - none

"1" - flat border

"2" - 3D border

Example

Sets 3D look for the control's border.

```
ThisDocument.DBMining1.BorderType="2"
```

ConnectionString

Type: String

Description

Sets/gets ADO connection string used by the Database Mining ActiveX control to access data.

Example

```
Dim strConnString as String
strConnString="Provider=Microsoft.Jet.OLEDB.4.0; _
Data Source=c:\alarms\AWXLog32.mdb; _
User ID=Admin; Password=SYSTEM"
```

```
ThisDocument.DBMining1.ConnectionString = strConnString
```

DataSourceType

Type: Short

Description

Sets/gets the Database Mining ActiveX connection type.

"0" - ADO

"1" - Database Mining

DBMiningTitle

Type: String

Description

Sets/gets the title shown in the window title bar of the Database Mining ActiveX control during runtime mode.

DisplayGridTitle

Type: Boolean

Description

Sets/gets Boolean value that controls the visibility of the grid title bar.

Example

ThisDocument.DBMining1. DisplayGridTitle = TRUE

EnableAutoUpdate

Type: Boolean

Description

Enables/disables automatic updates for ADO connections.

Example

ThisDocument.DBMining1.EnableAutoUpdate=True

EnableWebAccess

Type: Boolean

Description

Enables/disables Database Mining ActiveX Web access for ADO connections.

Example

ThisDocument.DBMining1.EnableWebAccess=True

FileName

Type: BSTR

Description

Sets/gets the name of the Database Mining ActiveX configuration file.

Example

ThisDocument.DBMining1.FileName="C:\DBMiningConfig.dbm"

Font

Type: StdFont

Description

Returns a reference to the control's default font.

Example

To set control's default font to Arial, 14 pt., use the following statements:

With ThisDocument.DBMining1.Font

.Name="Arial"

.Size=14

End With

ForeColor

Type: OLE_COLOR

Description

Sets/gets foreground (usually font) color property of the Database Mining ActiveX.

Example

ThisDocument.DBMining1. ForeColor=RGB(0,0,0)

GridBackColor

Type: OLE_COLOR

Description

Sets/gets color value used to paint the gaps between rightmost column and right edge of the grid, last row and bottom edge of the grid, and row headers column (the 'back area' of the grid).

Example

ThisDocument.DBMining1. GridBackColor =RGB(0,127,0)

GridDefRowHeight

Type: Integer

Description

Sets/gets the default row height for data grid.

Example

ThisDocument.DBMining1. GridDefRowHeight=16

GridHorizLinesColor and GridVertLinesColor**Type:** OLE_COLOR**Description**

Sets/gets color for horizontal or vertical grid lines.

Example

ThisDocument.DBMining1. GridHorizLinesColor =RGB(127,127,127)

ThisDocument.DBMining1. GridVertLinesColor = RGB(127,127,127)

GridHorizLinesStyle and GridVertLinesStyle**Type:** Integer**Description**

Sets/gets style for horizontal or vertical grid lines. Can be one of the following:

0 - no line

1 - solid line

2 - dot line

3 - dash line

4 - dashdot line

5 - dashdotdot line

Example

ThisDocument.DBMining1. GridHorizLinesStyle =0

ThisDocument.DBMining1. GridVertLinesStyle = 2

GridHorizLinesWidth and GridVertLinesWidth**Type:** Integer**Description**

Sets/gets the widths for the horizontal or vertical grid lines when corresponding grid line style (property GridHorizLinesStyle or GridVertLinesStyle) is set to 1 - solid line. For all other line styles, these properties must be set to 1.

Example

Sets both horizontal and vertical grid lines to solid line style, 2 pixels wide.

ThisDocument.DBMining1. GridHorizLinesStyle =1

ThisDocument.DBMining1. GridVertLinesStyle = 1

ThisDocument.DBMining1. GridHorizLinesWidth =2

ThisDocument.DBMining1. GridVertLinesWidth = 2

GridTitleBackColor**Type:** OLE_COLOR**Description**

Sets/gets the background color for the grid's title bar.

Example

Sets title bar background color to dark blue.

ThisDocument.DBMining1. GridTitleBackColor =GRB(0,0,127)

GridTitleTextColor**Type:** OLE_COLOR**Description**

Sets/gets the text color for the grid's title bar.

Example

Sets grid's title bar text color to yellow.

ThisDocument.DBMining1. GridTitleBackColor =GRB(255,255,0)

HeaderColor**Type:** OLE_COLOR**Description**

Sets/gets the background color for grid's column headers.

Example

Sets color of grid's column header to dark green.

ThisDocument.DBMining1. GridTitleBackColor =GRB(0,127,0)

IsConnected**Type:** Boolean**Description**

This is read-only property, indicating that control is connected to the server.

Example

If ThisDocument.DBMining1.IsConnected Then

`` do something here ``

End If

MaxRecords

Type: Long

Description

Sets/gets the maximum number of records that the Database Mining ActiveX will download using a Web access RDS connection.

Example

ThisDocument.DBMining1.MaxRecords=1024

QueryText

Type: String

Description

Sets/gets the SQL statement used with an ADO connection to populate the data grid in runtime mode.

Example

```
Dim strQry as String
strQry=ThisDocument.DBMining1.QueryText
MsgBox strQry
```

RemoteDataServer

Type: BSTR

Description

This is the Internet Information Server used with the Web access RDS connections.

Example

ThisDocument.DBMining1.RemoteDataServer = "http://localhost"

RemoteDataServerBackup

Type: BSTR

Description

This is the backup URL used with Web access RDS connections if the connection with the server specified on RemoteDataServer property fails.

Example

ThisDocument.DBMining1.RemoteDataServerBackup = "http://localhost"

ShowColsHeader and ShowRowsHeader

Type: Boolean

Description

Show/hide the rows/columns headers.

URLPathName

Type: BSTR

Description

Sets/gets the URL path for a configuration file over the Web. Must set URLPathUsed to "True" for this to take effect.

Example

```
ThisDocument.DBMining1.URLPathName=
"http://www.smar.com/dbminingcfg.dbm"
```

URLPathUsed

Type: Boolean

Description

Enables/disables the use of a URL path.

Example

ThisDocument.DBMining1.URLPathUsed=True

UseLocalSettings;

Type: Boolean

Description

When the URL path is enabled, it allows you to use or not to use the local settings configuration file.

Example

ThisDocument.DBMining1.UseLocalSettings=True

Control Methods

AboutBox

Shows About dialog box.

Example

```
ThisDocument.DBMining1.AboutBox
```

Connect As Boolean

It forces the control to establish connection to database, using the information set in ConnectionString and QueryText. If control is already connected, the current connection will be closed and a new connection will be established. This method can be used in VBA scripts automatically to switch the Database Mining ActiveX between different connections.

Return Value

On success, returns TRUE; if for any reason connection cannot be established, returns FALSE.

Example

```
Dim strConnString as String
strConnString="Provider=Microsoft.Jet.OLEDB.4.0; _
Data Source=c:\alarms\SomeOtherDatabase.mdb; _
User ID=Admin; Password=SYSTEM"
ThisDocument.DBMining1.ConnectionString = strConnString
ThisDocument.DBMining1.QueryText="Select * from [Table]"
ThisDocument.DBMining1.Connect
ThisDocument.DBMining1.Refresh
```

LoadConfigFile(BSTR newVal) as Boolean

It loads the configuration file specified in newVal.

Example

```
Dim ret As Boolean
ret = DBMining1.LoadConfigFile("C:\My Configs\cfg.dbm")
```

SaveConfigFile(BSTR newVal) as Boolean

It saves your current Database Mining ActiveX configuration to the file specified in newVal.

Example

```
Dim ret As Boolean
ret = DBMining1.SaveConfigFile("C:\My Configs\cfg.dbm")
```

LoadConfigURL(BSTR newVal) as Boolean

Loads the configuration file specified in the URL string newVal.

Example

```
Dim ret As Boolean
ret = DBMining1.LoadConfigURL("http://localhost/cfg.dbm")
```

ReplaceHost(BSTR OldHostName, BSTR NewHostName) as Long

It works over data source tags, data mining tags and path name attributes and replaces node name substring within URL path only. Returns 0 on success and HRESULT when something fails.

Example

```
'similar to ReplaceTag
'VBA example, works only in configure mode
'replaces host name in whole display
```

Dim Status As Long

```
Status = ThisDisplay.ReplaceHost("Host1", "Host2")
'if Status <> 0 then there was no replacement performed or an error occurs
If Status <> 0 Then
  MsgBox "No replacements"
Else
  MsgBox "Tags replaced"
End If
```

ReplaceHostEx(BSTR OldHostNameSubstring, BSTR NewHostNameSubstring, BOOL MatchCase, BOOL MatchWholeWord) as Long

It works over data source tags, data mining tags and path name attributes and replaces node name substring within URL path only, and supports case-sensitivity, wildcard strings and MatchWholeWord flag. Returns 0 on success and HRESULT when something fails.

Example

'similar to ReplaceTag
'VBA example, works only in configure mode
'replaces host name in whole display, regarding "case" and "whole words" options

```
Dim Status As Long
Status = ThisDisplay.ReplaceHostEx("Host1", "Host2", True, True)
'if Status <> 0 then there was no replacement performed or an error occurs
If Status <> 0 Then
  MsgBox "No replacements"
Else
  MsgBox "Tags replaced"
End If
```

SaveConfigFile(BSTR newVal) as Boolean
It saves your current Database Mining ActiveX configuration to the file specified in newVal.

Example

```
Dim ret As Boolean
ret = DBMining1.SaveConfigFile("C:\My Configs\cfg.dbm")
```

SetDBType(short NewDBType)
Sets the database type.

Example

```
DBMining1.SetDBType(1)
```

GetGridCellValue(long ColNum,long RowNum) as VARIANT

It takes inside the grid buffer the current cell value with column number equal to *ColNum* and row number equal to *RowNum*.