



## **Data Express 4.0**

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A large, decorative graphic consisting of multiple overlapping, wavy blue lines that create a sense of motion and depth. The lines are in various shades of blue, from dark to light, and are set against a light blue gradient background.

**Front End Guide**

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**2015-08-10**

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# Front End Guide

The guide provides step-by-step instructions to help you analyze and handle modifications of the data within the data sets and data stores of the applications running in your environment. With Data Express, you can verify the integrity of data within databases of applications that are either developed internally or purchased by external suppliers.

The scope of Data Express is to allow users to consult and maintain the Knowledge Base obtained to be able to analyze their own databases with a simple user interface which highlights:

- Copybooks associated with the data store (Data Express for z/OS only.)
- The corresponding record layout
- The distribution of values in the data elements

Data Express contains the following elements:

- Setup processing in the mainframe environment that automatically identifies data-store traces.
- An engine in the mainframe environment that submits jobs for file analysis and sampling functions. This respectively allows you to verify and evaluate the integrity of data (or the jobs of other functions), such as the data masking and test environment creation functions. (Data Express for z/OS only.)
- The evaluation of results using Data Express on a PC.

This guide provides the product configuration procedures and indicates the steps required to analyze the data stores that make up your application.

## General Features

The principal functions of Data Express are to:

- Perform consultation and maintenance functions to define the work area.
- Schedule batch jobs to run on z/OS. (Data Express for z/OS only.)
- List application files, with the possibility of applying selection filters with user-defined criteria.
- Complete and/or selectively access all information available for the selected data store:
  - Details of the record layout
  - Selection of the data classes defined
  - Display (also graphical) of data element contents
- Perform consultation and maintenance functions to confirm the results of batch phases run on z/OS. (Data Express for z/OS only.)

## Considerations

Be aware of the following points about the Data Builder module for Data Express:

- To use the Data Express for z/OS solution, you must have the correct license. Refer to the *Installation Guide* for more details.
- You do not need to analyze the sources of the programs in the application to use Data Express.
- Data Express does not perform any operation capable of altering the analyzed data.


# Getting Started with Data Builder

This chapter provides an overview of the Data Builder module within Data Express. You should read it before using the Data Builder module.

## General characteristics of use

Data Express for z/OS can be used in either Standard or Client/Server mode, whereas Data Express for Distributed Systems can only be used in Standard mode:

- Standard – Supports direct access to the data resident on RDBMS from your PC.
- Client/Server – Supports access to the data resident on RDBMS through the Data Express kbde-Server: a product based on a three-tier architecture where the second tier handles data transfer optimization. Client/Server mode lets you access data over the Internet with the lowest amount of administration necessary and the best utilization of network capacity.

 **Note:** Client/Server mode can use the same functions as Standard mode without you having to install additional software on your PC, such as the DB2 client or the Borland Database Engine (BDE).

For Data Express configuration information and instructions, see [Appendix A. Standard Mode](#) and [Appendix B. Client / Server Mode](#).

The following guidelines apply to windows and screen items within Data Express:


- The main window: **[Work with Data Stores]** cannot be closed except when exiting the module.
- Multiple MDI windows may be opened simultaneously.
- Right-click an item or area to view a list of applicable commands.
- The list layout in the Grid area can be customized by selecting which columns you want to show or hide, by selecting column width and position, or by ordering columns by increasing or decreasing order. These customizations are automatically saved in the registry so that they are applied the next time the application is run.

Each list can be exported to a file (with several formats available) so that it can be manipulated within a spreadsheet.


## Starting the Data Builder module

To start Data Builder:

1. Click **Start > All Programs > Micro Focus Data Express 4.0 > Data Builder- CS**

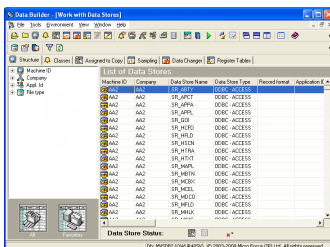
 **Note:** If you are using Data Express on Windows Vista and User Access Control (UAC) is enabled, you must run Data Builder as Administrator.

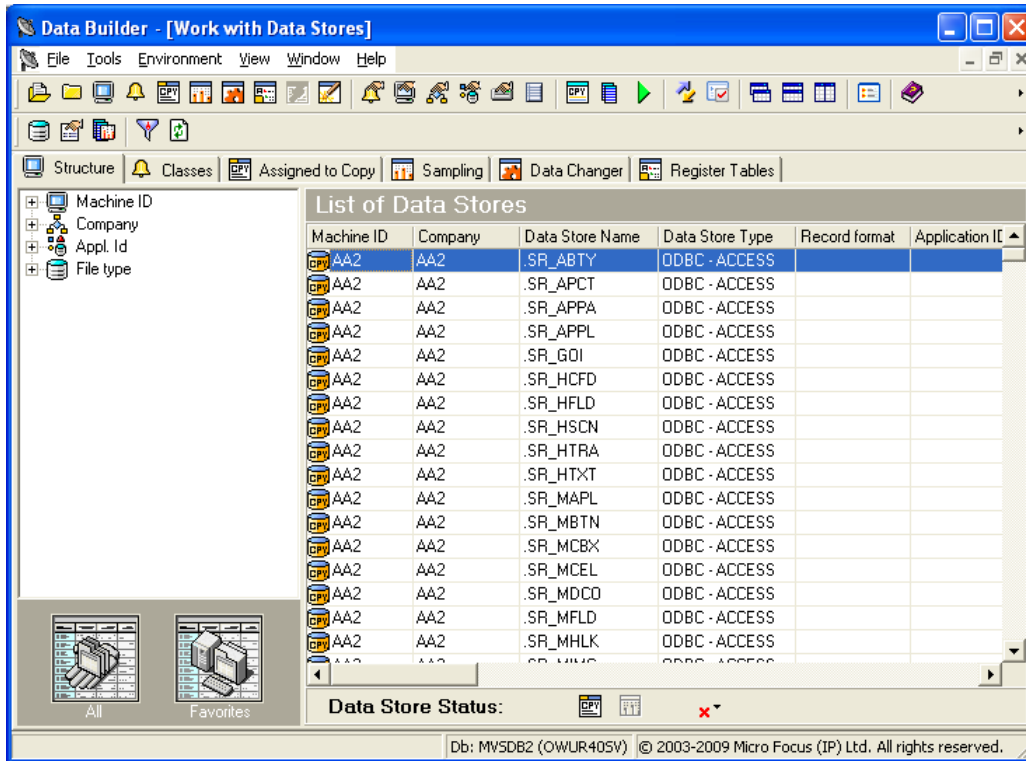
2. Select the required database with which to launch the connection. By default, the highlighted item in the list of available databases is the last database you connected to using the Data Builder module.


 **Note:** To connect to the database for first time, you need your user ID and password.

3. Select the required schema.

The **Data Builder - [Work with Data Stores]** window appears:





 **Tip:** Once you are connected to a database, you can open and close a database from the **[Work with Data Stores]** window by clicking **File > Open** or **File > Close**.

## Work environment settings

This section describes the process of preparing a work environment or workspace. You must specify a workspace to organize and sort data on the basis of a logical model. The creation of at least one machine ID and one company for the work environment is required.

A Data Express detailed work environment comprises the following objects:

- Machine Identifiers – a primary identifier for your working environment.
- Companies – a secondary identifier for your working environment.
- Application Identifiers – applications that use data.
- Process Identifiers – routines needed by the product to read, analyze, and interpret the data of the processed data stores.
- Classes – data types that are used to classify the data processed by Data Express.

### Machine identifier creation

You can create a new machine identifier or modify a previously defined one.

One application file (that is managed by Data Express) must be associated with at least one machine identifier. This operation helps you enable a partial analysis of the data stores and a partial display of information while using Data Express.

For more information on the individual fields, see [Work with Machine IDs](#).

## Company creation

You can create a new company or modify a previously defined one.

One application file (that is managed by Data Express) must be associated with at least one company. This operation helps you enable a partial analysis of the data stores and a partial display of information while using Data Express.

For more information on the individual fields, see [Work with Companies](#).

## Application identifier creation

Data Express allows the definition of an Application Identifier. Using this function, you can create a new Application Identifier or modify a previously defined one.

Application IDs can be associated with the data stores of applications managed by Data Express, so as to enable a partial analysis of the data stores and a partial display of information while using Data Express.

For more information on the individual fields, see [Work with Application IDs](#).

## Default environment parameter settings selection

You can set default parameters for the environment, identified by the Machine ID and Company pair. The main parameter, `Output Date Format`, indicates the format in which dates are displayed in Data Express. For example:

- DD/MM/YY or DD/MM/YYYY – day/month/year (year with 2 or 4 digits)
- MM/DD/YY or MM/DD/YYYY – month/day/year (year with 2 or 4 digits)



**Note:** The `Output Date Format` parameter is valid for the whole environment and is therefore independent of the `Company` parameter. To define or change this parameter, click **Environment > Work With Default Parameters**.

## Analysis parameter modification



**Note:** This section applies only for Micro Focus Data Express for z/OS.

Data Express includes a function that recognizes the file record image automatically. This function – together with the possibility of analyzing the COBOL and PL/I copies – lets you automatically associate the data store with the copybook describing it.

The applied algorithms are based on statistical analysis of the information. The information included in the data stores is analyzed to indicate the type of data included in each byte.

The analysis algorithms are based on parameters, which can be modified to meet the specific requirements of your database.

The analysis parameters include:

### Analysis Option

Indicates the conditions under which a data store must be analyzed. For example:

- Perform the analysis only if the data store has not been analyzed.
- Perform the analysis if the data store has been analyzed but not associated.
- Perform the analysis even if the data store has already been analyzed and associated.

### Number of Records

Indicates the number of records to analyze to identify the record image. The larger the number of analyzed records, the more accurate is the recognized record image.





**Note:** If the number of records to analyze is increased, the time required for the processing increases as well. The default value proposed is normally an acceptable compromise. In many cases, the different data elements included in the data stores may contain null values, such as a low-value, blank value, or all 0 or 9 digits. As a result, we recommend you increase the value of the `Number of Records` parameter to allow the analysis of a significant number of values.

### Sample Data

Indicates whether to perform the analysis of the first n records of the data store (leaving the option blank), or to sample the records to be processed evenly within the data store.



**Note:** Record sampling increases the time required for processing, but we recommend record sampling for those data stores, which include many non-valued data elements within the first n records.

### Copy Association

Indicates whether or not to associate the data store directly with the copybook describing its trace. The association algorithm will only be executed on copybooks analyzed until the copybook association is run. Therefore, we recommend you use this option only when the whole packet of copybooks belonging to the application has been analyzed.

### Tolerance

Specifies a percentage of tolerance between the length of the data store layout and that of the copybook describing it.



**Note:** If you set this parameter to 0 (zero), these length values must coincide. Setting a tolerance to a value different from zero may be useful when 'FILLER' fields involving the use of a copybook layout longer than the data store layout are used in the copybook.

### DB2 Date External Format

Specifies the format of the **DB2 DATE** field. This information is required during verification of values outside a validity range or in the identification of special values.



**Note:** During analysis, default values can be modified temporarily.

## Default copy analysis parameter modification



**Note:** This section applies only for Micro Focus Data Express for z/OS.

The copybook analysis parameters include:

### Analysis Option

Indicates the conditions under which a copybook must be analyzed. For example:

- Perform the analysis only if the data store has not been analyzed.
- Perform the analysis if the data store has been analyzed but not associated.
- Perform the analysis even the data store has already been analyzed and associated.

### Maximum Progressive of I/O Area

Specifies the maximum number of incongruent formats an I/O area can describe through the `REDEFINES` clause (within COBOL copies) or the `READDRESSING` (within PL/I includes) clause.

### COBOL Decimal Separator

Specifies the decimal separator within the COBOL copybook.

### Statements beginning in PL/I sources - Statements length in PL/I sources

Specifies the source start column and the length of the source row within the PL/I INCLUDES.



**Note:** During analysis, default values can be temporarily modified.

## Database interface specification



**Note:** This section applies only for Micro Focus Data Express for z/OS.

A different default process identifier is loaded for each type of database. This identifier can be replaced if appropriate.

Process identifiers guide Data Express through the processing modes of each database by providing the following information:

### Format type

Fixed (FB) or variable (VB) length format.

### Access type used

Direct access to the database, access to its sequential unload (for example, DL/I database unload, or DB2 table unload) or access to image-copybook files for DB2 databases.

### Length of the sequential unload

Required only for the DL/I sequential unloads.

### File identifier within the sequential unload

Required only for the DL/I sequential unloads.

### Data record position within the sequential unload

Required only for the DL/I sequential unloads. For all the other types of databases, you can leave the default value.

### Data record length within the sequential unload

Required only for the DL/I sequential unloads.

### Name of the I/O routine called for the reading of the database.

## Database access modes

This section outlines, in a table, all the database access modes available in the different processing phases.



**Note:** This section applies only for Micro Focus Data Express for z/OS.

The table is divided into the following main phases:


- Load Data Store Information
- Data Store Analysis
- Data Store Sampling

Data Store Type	Load File Information	Data Store Analysis	Data Store Sampling
DB2 <sup>(1)</sup>	Direct access / Sequential unload	Direct access / Sequential unload	Direct access / Sequential unload
SEQ	Direct access / Sequential copybook	Direct access / Sequential copybook	Direct access / Sequential copybook
GDG	Direct access / Sequential copybook	Direct access / Sequential copybook	Direct access / Sequential copybook


Data Store Type	Load File Information	Data Store Analysis	Data Store Sampling
VSAM	Direct access / Sequential unload (REPRO)	Direct access / Sequential unload (REPRO)	Direct access / Sequential unload (REPRO)
DL/I	Sequential unload	Sequential unload	Sequential unload
Others <sup>(2)</sup>	Sequential unload / Customized I/O routine	Sequential unload / Customized I/O routine	Sequential unload / Customized I/O routine

(1) Data automatically acquires the column definitions.

(2) Any other database, even from another operating system, can be managed in a sequential format. For databases running with the same system of Data Express, a customized I/O routine can be written and used for a direct access.

 **Note:** The access to the file sequential copybook can use the disk and/or tape unit.


## Process identifier and database types relationships

 **Note:** This section applies only for Micro Focus Data Express for z/OS.

The following table describes process identifiers pre-loaded by Data Express:

Process Identifier	Access Type	Description
ADAUN	Unload File Access (DSNTIAUL)	ADABAS BY UNLOAD
DB2DA	DB Direct Access (output DSNTIAUL)	DB2 DIRECT ACCESS
DB2IY	Image Copy (output UNLOAD)	DB2 BY UNLOAD OF ICOPY FULL
DB2UN	Unload File Access (DSNTIAUL)	DB2 BY UNLOAD
DLIHD	Unload File Access (DSNTIAUL)	DL/I BY UNLOAD HSSR
DLIUN	Unload File Access (DSNTIAUL)	DL/I BY UNLOAD
GENDA	DB Direct Access (output DSNTIAUL)	VSAM,SEQ,GDG DIRECT ACCESS
GENUN	Unload File Access (DSNTIAUL)	VSAM,SEQ,GDG BY UNLOAD
VSMDA	DB Direct Access (output DSNTIAUL)	VSAM DIRECT ACCESS

## Main functions - phase execution

 **Note:** This section applies only for Micro Focus Data Express for z/OS.

The main functions of Data Express can be expressed in phases executed in the following order:

1. Copybook specification.
2. Copybook analysis.
3. Source specification.
4. Source analysis.
5. Data store specification.
6. Data store analysis.
7. Automatic file or copybook association.

Other phases provided by Data Express are:

1. Data element sampling.
2. Data class definitions and association with the data elements.




**Note:** Many of the phases involve the submission of jobs. After launching a job, you must wait for it to complete before proceeding with the next phase.

## Menus

This section describes the menus and common toolbars displayed in the **[Work with Data Stores]** window.

### File menu

The **File** menu contains the following options:

Menu option	Description
<b>Open</b>	Opens a project.
<b>Close</b>	Closes a project.
<b>Close Enterprise View Connection</b>	Disconnects you from the Micro Focus Enterprise View Database. This option is activated after using  ( <b>view Enterprise View relations</b> ).
<i>Database-Schema</i>	Indicates the name of the most recently opened database.
<b>Exit</b>	Terminates the Data Builder module.

### Tools menu

The **Tools** menu contains the following option:

Menu option	Description
<b>Options</b>	Opens the <b>Option</b> window for setting the help language, security options, Oracle options, filter settings, and confirmation message options.

### Environment menu

The **Environment** menu contains the following options:

Menu option	Description
<b>Work with Classes</b>	Opens the <b>Work with Classes</b> window for consultation and data entry of classes which can be assigned to a data element of the data store.
<b>Work with Machine IDs</b>	Opens the <b>Work with Machine IDs</b> window for consultation and data entry of identifiers of machines to which the data stores to be analyzed belong.
<b>Work with Companies</b>	Opens the <b>Work with Companies</b> window for consultation and data entry of the companies which use the database to be analyzed.
<b>Work with Application IDs</b>	Opens the <b>Work with Application IDs</b> window for consultation and data entry of the application identifiers.
<b>Work with Process IDs</b>	Opens the <b>Work with Process IDs</b> window for consultation and data entry of the process identifiers.
<b>Work with Default Parameters</b>	Opens the <b>Work with Default Parameters</b> window to change the output date format.

### View menu

The **View** menu contains the following options:

Menu option	Description
<b>View Data Stores by Structure</b>	Displays the list of data stores on the <b>Structure</b> page.
<b>View Data Stores by Classes</b>	Displays the list of data stores on the <b>Classes</b> page.
<b>View Data Stores by Copybook</b>	Displays the list of data stores on the <b>Assigned to Copy</b> page. This option is listed only in the Data Express for z/OS solution.
<b>View Data Stores by Sampling</b>	Displays the list of data stores on the <b>Sampling</b> page. This option is listed only in the Data Express for z/OS solution.
<b>View Data Stores by Data Changer</b>	Displays the list of data stores on the <b>Data Changer</b> page.
<b>View Data Stores by Register Tables</b>	Displays the list of data stores on the <b>Register Tables</b> page.
<b>Toolbar</b>	Displays or hides the toolbar.
<b>Status bar</b>	Displays or hides the status bar.

## Windows menu

The set of open windows can be organized according to the standard Windows arrangements. The **Windows** menu contains the following options:

Menu option	Description
<b>Tile Horizontally</b>	Arranges all open windows from top to bottom.
<b>Tile Vertically</b>	Arranges all open windows from left to right.
<b>Cascade</b>	Arranges all open windows so that they do not overlap.
<b>Minimize All</b>	Minimizes all open windows with the exception of the main window, <b>[Work with Data Stores]</b> .
<b>Arrange</b>	Arranges all minimized windows.

## Help menu

The **Help** menu contains the following options:


Menu option	Description
<b>Contents</b>	Opens online Help information for the product in the language selected in the Options window.
Micro Focus SupportLine	Contains commands for connecting to Micro Focus SupportLine for information or technical assistance.
Micro Focus Data Express - Home Page	Connects to the Micro Focus Data Express Web site.
About	Displays production information about the Data Builder module.

## Context menu

This section describes the options displayed in context (pop-up) menus.

### Column sorting

A context menu to display a list of sort options can be displayed by right-clicking a column header.

 **Note:** All changes to the grid layout are saved in the Windows system registry. For example, groups , column width attributes, column order attributes , and column font and color information. However, filtering and sorting preferences are not saved.

The column sorting context menu contains the following options:


Menu option	Description
<b>Sort Descending</b>	Sorts the list contents in a descending order. The same result can be obtained by simply clicking the column heading.
<b>Sort Ascending</b>	Sorts the list contents in an ascending order. The same result can be obtained by simply clicking the column heading.
<b>Group by This Column</b>	Groups the list according to the contents of the selected column if the Group Panel has been enabled.
<b>Remove This Column</b>	Deletes the selected column.
<b>Column Selector</b>	Displays a <b>Customize</b> window that contains a list of columns that have been removed previously. A column can be restored by performing a drag-and-drop operation to the desired position in the list. A column can be removed from a list by performing a drag-and-drop operation from the list to the <b>Customize</b> window.
<b>Alignment</b>	Aligns the content of the columns to the center, right, or left as specified by the user.
<b>Best Fit</b>	Resizes the selected column to allow the content of each record to be displayed. The same result can be obtained by double-clicking the column's external margin.
<b>Pick Color</b>	Allows the color of the selected column to be changed.
<b>Pick Font</b>	Allows the font, font style, size, color, and script to be changed.
<b>Best Fit (All Columns)</b>	Resizes all the columns from the list to allow the content of each record to be displayed.

 **Notes:**

- Columns can also be sorted by clicking or performing a drag-and-drop operation on the column heading.
- Information displayed can be reduced by clicking a column heading, then typing the first letter of the items you are interested in.


### Grid functions


A context menu to display a list of functions for a grid can be displayed by right-clicking any place on the grid.

 **Note:** All changes to the grid layout are saved in the Windows registry. For example, groups , column width attributes, column order attributes , and column font and color information . However, filtering and sorting preferences are not saved.

The grid functions context menu contains the following options:

Menu option	Description
<b>Column Selector</b>	Displays a <b>Customize</b> window that contains a list of columns that have been removed previously. A column can be restored by performing a drag-and-drop operation to the desired position in the list. A column can be

Menu option	Description
	removed from a list by performing a drag-and-drop operation from the list to the <b>Customize</b> window.
<b>Best Fit (All Columns)</b>	Resizes all the columns from the list to allow the content of each record to be displayed.
<b>Export to File</b>	<p>Exports the information to a file using one of the following compatible formats:</p> <ul style="list-style-type: none"> <li>• comma separated value (.csv)</li> <li>• Hyper Text Markup Language (.htm)</li> <li>• text (.txt)</li> <li>• Excel (.xls)</li> <li>• Extensible Markup Language (.xml)</li> </ul>
<b>Show Summary Footer</b>	<p>Displays the summary footer beneath the grid. By selecting a row and right-clicking the summary footer, a context menu displaying arithmetic operations you can perform on the selected row appears.</p> <p><b>Note:</b> Arithmetic operations are only possible on numeric contents.</p> <p>Possible arithmetic operations include:</p> <p><b>Summary</b> Displays the sum of all quantities in the column. This option is active only for columns with integer or percentage values; if the value of the cells in a specific column are represented as a percentage their sum does not always equal 100%.</p> <p><b>Minimum</b> Displays the minimum value of all values in the column. The option is active only for columns with numerical values.</p> <p><b>Maximum</b> Displays the maximum value of all values in the column. The option is active only for columns with numerical values.</p> <p><b>Count</b> Displays the number of elements in a column.</p> <p><b>Average</b> Displays the arithmetic mean of all values in the column. The option is active only for columns with numerical values.</p> <p><b>None</b> Specifies using no arithmetic operation on a column.</p>
<b>Show Group Panel</b>	<p>Displays the column name by which data is grouped above the grid. By dragging the column headers into this window, a group hierarchy can be defined.</p> <p> <b>Note:</b> If data is being grouped by column, a footer panel is displayed beneath the grid for each group.</p>
<b>Filter Active</b>	<p>If enabled, lets you choose data to be displayed on the grid: a downward arrow icon will appear in the column headers.</p> <p>Click an arrow to choose the data to be displayed on the grid. This function lets you generate a personal filter.</p>

Menu option	Description
	 <b>Note:</b> The time taken to display the window increases with the number of records to be loaded.

## Main Window - Work with Data Stores

After starting Data Builder, the main window, **[Work with Data Stores]** appears.

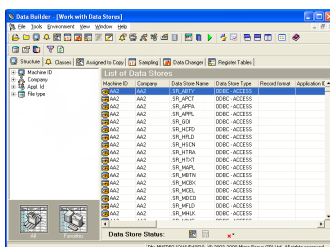
This window provides a list of data stores cataloged by Data Express using different sets of search criteria, including:

- Machine identifiers
- Company names
- Application identifiers
- Data store types
- Data stores with assigned classes (Multiple class Selection)
- Data stores assigned to copybook (Only applicable for Data Express for z/OS)
- Data stores not assigned to copybook (Only applicable for Data Express for z/OS)
- Data stores to be sampled
- Data stores sampled
- Data stores with sampling inactivated
- Data stores with sampling activated
- Data stores with Data Changer activated
- Data stores with Data Changer inactivated
- Data stores set as Register Table
- Data stores without Register Table attribute
- You can select a tab to view data stores using a specific set of criteria as listed above. Each tab is associated with different grouping criteria.

The list of displayed data stores can be further restricted by applying filters. Filters can be selected from the context menu displayed by right-clicking the **List of Data Stores** grid, or by selecting the specific icons displayed on the left-hand side of the screen.

In the Data Express for z/OS, the **[Work with Data Stores]** window comprises six tabular views:

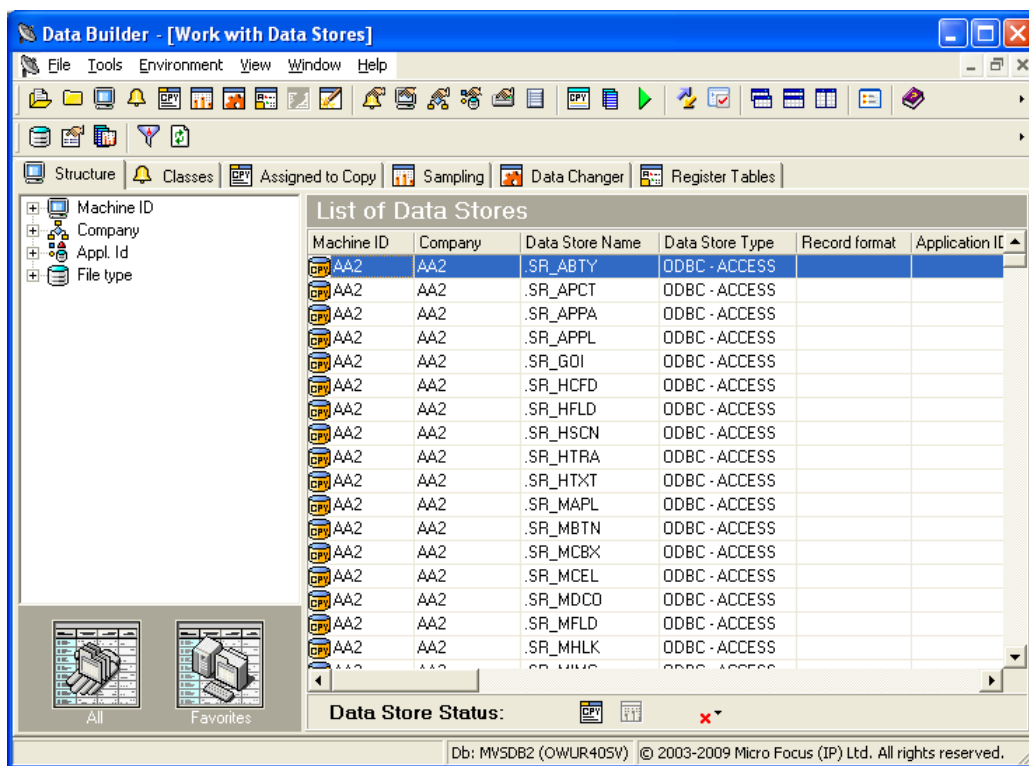
- **Structure**
- **Classes**
- **Assigned to Copy**
- **Sampling**
- **Data Change**
- **Register Tables**






In the Data Express for Distributed Systems, the **[Work with Data Stores]** window comprises five tabular views:

- **Structure**
- **Classes**
- **Sampling**
- **Data Changer**



 **Note:** Double-click a data store name in the grid to view detailed information.

## Window pages

This section describes each tabbed page of the **[Work with Data Stores]** window.

### Structure page

Root nodes	Description
<b>Machine ID</b>	Data stores are grouped by machine ID.
<b>Company</b>	Data stores are grouped by company ID.
<b>Appl ID</b>	Data stores are grouped by application ID.
<b>File type</b>	Data stores are grouped by type.

Data store groupings can be saved by right-clicking the left-hand side of the screen to display the context menu, then clicking **Add to Favorites**.

- **All:** Reverts to the initial setting and displays all the catalogued data stores.
- **Favorites:** Displays the views you have saved.

## Classes page

Data stores containing data elements with associated classes.

Root nodes	Description
<b>Multiple Class Selection</b>	By dragging two or more classes into the appropriate window, data stores showing both classes can be selected.

Multiple class selections can be saved by right-clicking the left-hand side of the screen to display the context menu, then clicking **Add to Favorites**.

- **All:** Reverts to the initial setting and displays all the classes created.
- **Favorites:** Displays the views you have saved.

## Assigned to Copy page

Data stores assigned to copybook or data stores not assigned to copybook. (Data Express for z/OS only).

Use the icons to display a list of tables with assigned and non-assigned copybooks from the **Assigned to Copy** page.



- **Assigned:** Data stores with assigned copybooks.
- **Unassigned:** Data stores without assigned copybooks.

## Sampling page

Data stores sampled or not sampled. The Data Sampling function can be used to display the content of the data elements or a sample of the values contained in the data elements with the number of occurrences for each of them. The Data Sampling phase provides the following information:

- Up to 1000 different values for each data element, with their frequency and the frequency of the 999 ranges defined by the 1000 values (standard sampling).
- Fingerprints (compressed sampling). This is a visual representation of the statistical distribution, in a compressed format, of the data element content.
- The concise representation of the content of a data element depends on the nature of the data element:
  - The values of numeric data elements are divided into homogeneous groups differentiated by the value of their first digit and the number of digits they include. This description preserves the general representation of the values distributed in the data element.
  - The values of alphanumeric data elements are organized according to several criteria, including: First character, value length, presence of numeric characters only, presence of alphabetic characters only.

The number of values belonging to each class is stored for each of these criteria, which allows the data element content properties to be preserved. If you want to process the compressed sampling, the minimum and maximum values of each sampled data element can also be calculated.

To access the data sampling function, click the  Sampling tab or click  (**View Data Stores by Sampling**) on the toolbar.

Icon	Description
<b>Activated</b>	Data stores with data elements that have been sampled.
<b>Deactivated</b>	Data stores that contain no data elements with sampling activated.
<b>Sampled</b>	Data stores that contain sampled data elements.

Icon	Description
<b>Not Sampled</b>	Data stores that contain no sampled data elements.

The first two icons can be combined with the second two to give four different combinations.

The following options are accessed by right-clicking a selected data store in the **Work with Data Stores** area on the **Sampling** page:

Option	Description
<b>Open Selected Data Store</b>	Displays a window, which shows all the objects associated with the data store ( <b>Work with Data Stores</b> area).
<b>Data Store Properties</b>	Displays a window with all the information about the data store.
<b>Delete Selected Data Store</b>	Starts a job and deletes highlighted data stores from the Knowledge Base.
<b>Work with Data Elements of the Selected Data Elements</b>	Displays the data element details window, filtered for the currently selected data store.
<b>Show Synthetic Data Element Contents</b>	Shows the statistical distribution of values in graphical form about the sampling of data elements within the selected data store.
<b>Schedule Jobs</b>	Shows a submenu used to schedule jobs for the selected data store. (Data Express for z/OS only).
<b>Enable/Disable Sampling</b>	Enables and disables the sampling function.
<b>Export to File</b>	Exports the list of displayed data to a file of the chosen type.
<b>Filter Active</b>	Independently of the data store selected, applies selections to the list of data stores.

## Data Changer page



The Data Changer function is a function of the Data Builder module that enables you to manage the privacy of the data contained in the database of a specified application.

In Data Express for z/OS, you generate a copybook applying data masking logic on the basis of exit routines. Records of the original data store can be omitted in the copybook by specifying filtering user exit.

The Data Changer:

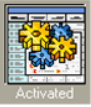

- Provides a list of the application files having the Data Changer functions applied, which may be filtered according to selection criteria defined by the user.
- Accesses, completely and/or selectively, all the information available for the selected data store:
  - Details of the record layout.
  - Selection of the data classes defined.
  - Display (also graphical) data element contents.

For more information about the Data Changer, see the *Data Masking Guide*.

To access the Data Changer, click the  Data Changer tab or click  (**View Data Stores by Data Changer**) on the toolbar.


## Button bar

Use the icons below to display a list of tables from the **Data Changer** page:

Icon	Description
	<b>Activated:</b> Data stores with Data Changer activated.
	<b>Deactivated:</b> Data stores with Data Changer deactivated.

## Column headings

The following list describes the columns listed in the **List of data stores** grid of the **Data Changer** page from the **Work with Data Stores** area.

 **Note:** The order and dimensions of the columns are saved by the application automatically so that they are retained for the next time the application is run.

<b>Data Store Name</b>	Name of the data store.
<b>Data Store Type</b>	Identifies the data store type: DB2, DL/I, Sequential (SEQ), VSAM, GDG ODBC, or ORA. Data stores are grouped by type.
<b>Machine ID</b>	Identifier of the machine. Data stores are grouped by machine ID.
<b>Company</b>	Company name. Data stores are grouped by company ID.
<b>Record format</b>	Name of the record format.
<b>Application ID</b>	Identifier (if it exists) of the application area the data store belongs to. Data stores are grouped by application ID.
<b>Number of Records</b>	Number of records contained in the data store.
<b>Record Length</b>	Length in bytes of the record layout.
<b>Date of Migration</b>	Date on which the data store was migrated.
<b>Number of Analyzed Records</b>	vNumber of records analyzed in the data store.
<b>Unload Input Data Store Type</b>	Type of the Unload Input data store.
<b>Unload Input File Name</b>	Name of the Unload Input data store.
<b>Unload Input File Version</b>	Version of the Unload Input store.
<b>Format Selector</b>	Exit-routine for recognizing formats.
<b>Select Program</b>	Selection program of the individual record.
<b>Unload Output Data Store Type</b>	Type of the Unload Output data store.
<b>Unload Output Data Store Name</b>	Name of the Unload Output data store.
<b>Unload Output Data Store Version</b>	Version of the Unload Output data store.
<b>Write Program for Output</b>	Write program of the Output data store.

<b>Associated Copybook PDS</b>	Name of the PDS, which contains the copybook associated with the file. (Only applicable for Data Express for z/OS.)
<b>Assigned Copybook Name</b>	Name of the copybook associated with the data store. (Only applicable for Data Express for z/OS.)
<b>IO area Name</b>	Name of the area (level 01) within the copybook associated with the data store. (Only applicable for Data Express for z/OS.)
<b>IO area Prg.</b>	Progressive number of the area within the copybook associated with the data store. (Only applicable for Data Express for z/OS.)
<b>Copy Association Provider</b>	Identifies who supplied the association information; PGM is information obtained from batch processing, USR is information supplied by the user. (Only applicable for Data Express for z/OS.)
<b>Description</b>	Any text associated with the data store.
<b>Data Store Nickname</b>	Internal name given to the data store.

### Context menu

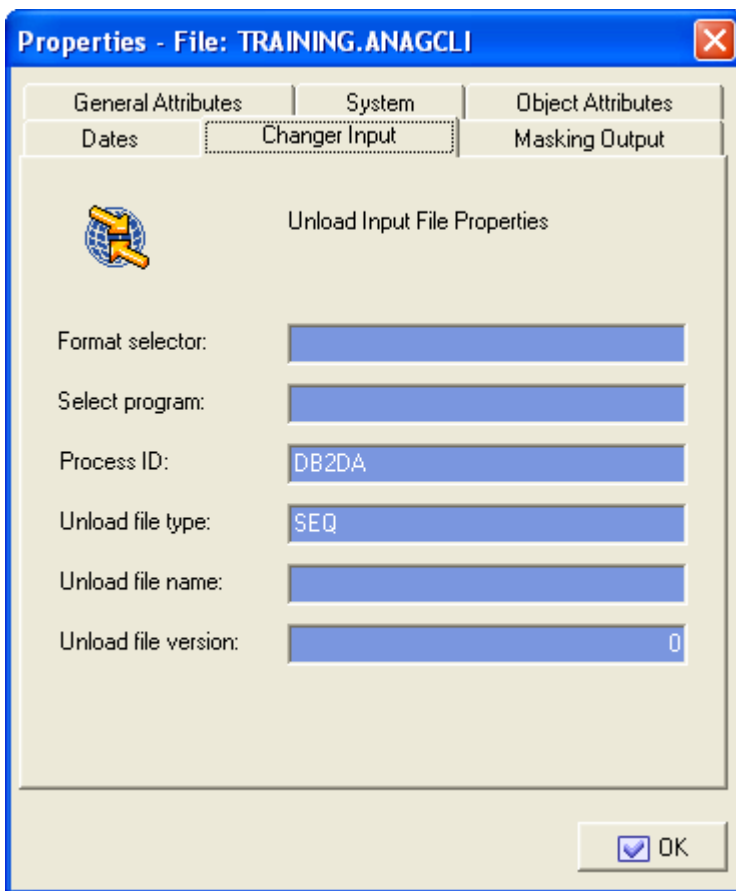
This section describes options you can access by right-clicking a selected data store in the **Work with Data Stores** area from the **Data Changer** page.

<b>Open the Selected Data Store</b>	Displays a window that shows all the objects associated with the data store in a Work with Data Store window.
<b>Data Store Properties</b>	Displays a window with all the information about the data store. See <a href="#">Properties- File</a> .
<b>Delete Selected Data Store</b>	Deletes information for the highlighted data stores from the Knowledge Base.
<b>Work with Data Elements of the Selected Data Store</b>	Displays the data elements details window, filtered for the currently selected data store.
<b>Show Synthetic Data Element Contents</b>	Shows information in graphical form about the sampling of data elements within the selected data store.
<b>Schedule Jobs</b>	Shows a submenu used to schedule jobs for the selected data store. (Data Express for z/OS only.)
<b>Export to File</b>	Exports the list of displayed data to a data store of the chosen type.
<b>Filter Active</b>	Independently of the data store selected, applies selections to the list of data stores.

### Properties- File

The **Properties - File** window is a tabbed view that displays all attributes for a selected data store.

To access the **Properties - File** window, display the Data Changer context menu and click **Data Store Properties**. An example of the **Properties - File** window is shown below:



The fields on the **Changer Input** page are:

<b>Format selector</b>	Exit routine for recognizing formats.
<b>Select program</b>	Selection program of the individual record.
<b>Process ID</b>	Process identifier.
<b>Unload data store type</b>	Type of the Unload Input data store.
<b>Unload data store name</b>	Name of the Unload Input data store.
<b>Unload data store version</b>	Version of the Unload Input data store.

The fields listed on the **Making Output** page are:

<b>Write program</b>	Write program of the output file.
<b>Unload data store type</b>	Type of the Unload Output data store.
<b>Unload data store name</b>	Name of the Unload Output data store.
<b>Unload data store version</b>	Version of the Unload Output data store.

## Register Tables page

The **Register Tables** page shows the environment files divided into two subsets: **Register Table** files and **Other Table** files.

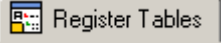

When data stores are loaded into the environment, they are initially all stored in the **Other Table** category. If, during the sampling phase, a data store contains at least one data element containing all different values, the tool considers this data store to be a register table file, and stores it in the **Register Table** subset.

You can use the specially provided commands to modify this subdivision at any time. The splitting up into **Register Table** files and **Other Table** files has mainly been introduced for the Data Subset Extraction (DSE) module.

The DSE function helps you create methodologies for the automatic generation of complete or reduced test environments starting from an existing environment and on the basis of selection criteria entered by the user. Additionally, the function lets you apply data masking logic during the generation of new environments, including:





- Integral test environment
- Reduced test environment
- Migrated environment

For further information on the Data Subset Extraction function, refer to the *Data Subset Extraction Guide*.

To access this function, click the  Register Tables tab or click  (**View Data Stores by Register Tables**) on the toolbar

### Button bar

Use the icons below to display a list of data stores from the **Register Tables** page:

Icon	Description
 Register Tables	<b>Register Tables:</b> Data stores set as register tables.
 Other Tables	<b>Other Tables:</b> Data stores that do not have the <b>Register Tables</b> flag activated.
 Automatically Provided	<b>Automatically Provided:</b> Data stores that have been automatically assigned this characteristic during the sampling phase. (Data Express for z/OS only).
 Provided By The User	<b>Provided By The User:</b> Data stores that have been manually assigned this characteristic.

The first two icons can be combined with the second two to give four different combinations.

### Context menu

This section describes commands listed by right-clicking a selected data store in the **Work with Data Stores** area from the **Register Tables** page.

- |                                     |   |
|-------------------------------------|---|
| <b>Open the Selected Data Store</b> | Displays a window showing all the objects associated with the data store ( <b>Work with Data Store</b> window). |
| <b>Data Store Properties</b>        | Displays a window with all the information about the data store.  |

<b>Delete Selected Data Store</b>	Deletes information for the highlighted data store from the Knowledge Base.
<b>Work with Data Elements of the Selected Data Store</b>	Displays the data element details window filtered for the currently selected data store.
<b>Show Synthetic Data Elements Contents</b>	Shows information in graphical form about the sampling of data elements within the selected data store.
<b>Schedule Jobs</b>	Shows a submenu used to schedule jobs for the selected data store. (Data Express for z/OS only.)
<b>Set as Register Table</b>	Manually sets the data store as <b>Register Table</b> .
<b>Set as Not Register Table</b>	Manually sets the data store as <b>Other Table</b> .
<b>Export to File</b>	Exports the list of displayed data to a file of the chosen type.
<b>Filter Active</b>	Independently of the selected data store, applies selections to the list of data stores.

## Custom Query page

The **Custom Query** tab appears only after a custom query has been created. To create a custom query, see [New Custom Query Wizard](#).

## Column headings in the grid area

The **Grid** area is on the right-hand side of each tab. The following list describes the column headings in the **Grid** area for data stores that have been loaded in the Data Express Knowledge Base:

<b>Machine ID</b>	Identifier of the machine.
<b>Company</b>	Name of company.
<b>Data Store Name</b>	Name of the data store.
<b>Data Store type</b>	Type of data store. For example, DB2, VSAM, DL/I, GDG, SEQ, GDG ODBC, or ORA.
<b>Record format</b>	Name of the record format.
<b>Application ID</b>	Identifier (if it exists) of the application area the data store belongs to.
<b>Associated Copybook PDS</b>	Name of the PDS that contains the copybook associated with the data store. (Applicable only for Data Express for z/OS.)
<b>Assigned Copybook Name</b>	Name of the copybook associated with the data store. (Applicable only for Data Express for z/OS.)
<b>IOarea Name</b>	Name of the area (level 01) within the copybook associated with the data store. (Applicable only for Data Express for z/OS.)
<b>IOarea Progr</b>	Progressive number of the area within the copybook associated with the data store. (Applicable only for Data Express for z/OS.)
<b>Description</b>	Brief description of the data store.
<b>Copy Association Provider</b>	Supplier of the association information. <b>PGM</b> is information obtained from batch processing, <b>USR</b> is information supplied by the user.
<b>Number of Records</b>	Number of records contained in the data store.
<b>Record Length</b>	Length in bytes of the record layout.
<b>Date of Last Calculation</b>	Date of the last calculation run on the data store.



<b>Date of Last Sample</b>	Date of the last calculation of the distribution of values of the data elements of the data store involved in that process.
<b>Date of Analysis</b>	Date of the analysis carried out on the data store.
<b>Number of Analyzed Records</b>	Number of records analyzed in the data store.
<b>File Nickname</b>	Internal name given to the data store.
<b>Sampling</b>	Indicator of whether the Sampling function has been enabled.

## Available grid operations

Right-click a table name in the grid to view a list of available commands as described below:



**Note:** Not all commands are available on all pages.

<b>Open Selected Data Store</b>	Displays the <b>Work with Data Store</b> window that shows all the objects associated with the data store.
<b>Data Store Properties</b>	Displays a window listing data store information.
<b>Assign an Application ID</b>	Displays the <b>Assign an application ID</b> window where you can assign an application ID to a single data store or assign multiple application IDs to multiple data stores. Not available from the <b>Data Changer</b> page.
<b>Delete Selected Data Store</b>	Deletes information for the selected data store from the Knowledge Base.
<b>Work with Data Elements of the Selected Data Store</b>	Displays the <b>Work with Data Elements</b> window that shows data element details, filtered for the selected data store.
<b>Show Synthetic Data Element Contents</b>	Displays information in graphical form about the sampling of data elements within the selected data store.
<b>Schedule Jobs</b>	Displays a submenu used to schedule jobs on the selected data store. (Data Express for z/OS only.)
<b>Enable Sampling or Disable Sampling</b>	Toggles the Sampling function on and off.
<b>Set as Register Tables</b>	Manually sets the data store as <b>Register Table</b> . This command is only available from the context menu accessible from the <b>Register Table</b> page.
<b>Reset as Register Table</b>	Manually sets the data store as <b>Other Table</b> . This command is only available from the context menu accessible from the <b>Register Tables</b> page.

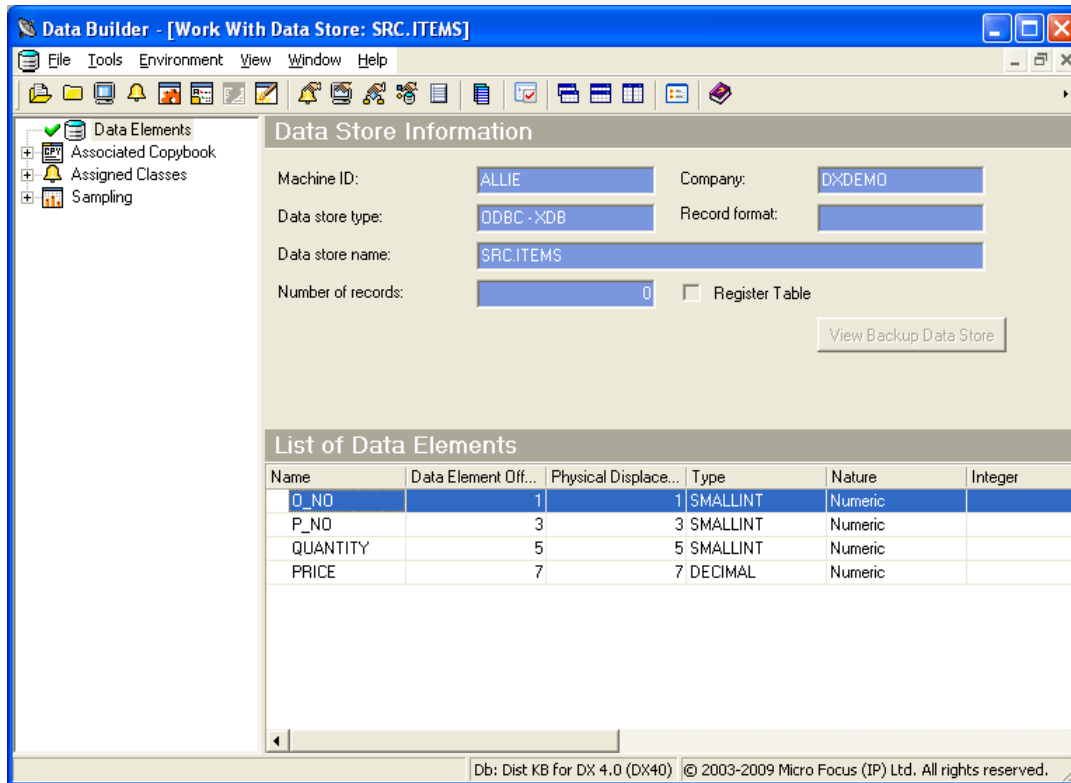
## Work with Data Store Window

The **Work with Data Store** window provides information about the selected data store and all the objects related to it. The information related to a data store includes:

- The data elements in the data store.
- The copybooks that describe the data store. (Applicable only for Data Express for z/OS.)
- The classes assigned to the data elements.
- The distribution of values in the data elements (spectrum).
- The information about the data stores that have the Data Masking routines applied.
- To access the **Work with Data Store** window, right-click a table in the **Grid** area (on the appropriate page), and click **Open Selected Data Store**.

# Window contents

This section describes the fields and items listed in the Work with Data Store area as shown below:



The left pane contains a tree structure containing nodes with the available information about the opened data store. The right-hand part of the screen shows a list of data linked to the selected node.



**Note:** The **Parent Segment** field appears for DL/I files and is an indicator of whether the data store is a parent segment. (Data Express for z/OS only.)

## Node pane

The root nodes are:

- Data Elements** Shows a detailed list of all the data elements of the data store, and shows summary information in the data elements listed above the grid. This node does not contain sub-level nodes.
- Associated Copybook** Shows a detailed list of the copybooks that are compatible with the data store. This node contains sub-level nodes, which are the copybooks. When a copybook is selected, a list of fields is displayed, and summary information is displayed in the fields above the grid. (Data Express for z/OS only.)
- Assigned Classes** Shows a detailed list of all the data elements of the data store associated with the class. This node contains sub-level nodes, which are the associated classes. When a class is selected, a list of fields is displayed, and summary information is displayed in the data elements above the grid.
- Sampling** Shows a detailed list of all data elements of the data store for which the sampling of the values has been activated, and those for which the sampling of the values has been


calculated at least once. This node contains sub-level nodes, which populate the fields listed above the grid when selected.

## Grid

The columns displayed in the **Grid** area depend on the node selected in the **Node** pane.

### Data Elements columns

The following list describes the columns listed by selecting the **Data Elements** node:

<b>Name</b>	Name of the data element within the data store.
<b>Displacement</b>	Offset of the data element.
<b>Physical Displacement</b>	Physical displacement of a DB2 field.
	 <b>Note:</b> Only DB2 fields use a <b>Physical Displacement</b> value.
<b>Type</b>	Data type of the data element. For example, <b>Numeric</b> or <b>Alphanumeric</b> .
<b>Nature</b>	Nature of the data elements, for example, <b>Alphabetical</b> .
<b>Integer</b>	Number of integers within a numeric data element.
<b>Length</b>	Length of the data element in bytes.
<b>Decimal</b>	Number of digits included to the right of the decimal point.
<b>Assigned Class</b>	Description of the associated class.
<b>Estimated Class</b>	Description of the most likely class to associate with the data element.
<b>Minimum Value</b>	Minimum value for the data element (result of data sampling).
<b>Maximum Value</b>	Maximum value for the data element (result of data sampling).
<b>No. of Different Values</b>	Number of different values that the data element can take on. This is the principal result of sampling the data store.

### Associated Copybook columns

The following list describes the columns listed by selecting the **Associated Copybook** node. The **Associated Copybook** node only applies to the Data Express for z/OS solution.

<b>Machine ID</b>	Identifier of the machine.
<b>Company</b>	Name of the company.
<b>Copybook name</b>	Name of the copybook (associated/compatible)
<b>Copy PDS</b>	Partitioned data set of the copybook.
<b>I/O Area Name</b>	Name of the associated area within the copybook (equivalent to level 01 of COBOL copybooks or of PL/I includes).
<b>I/O Area Progressive</b>	Progressive area number. If greater than 0 (zero), indicates the existence of incongruent redefinitions of the area.
<b>Deleted Flags</b>	Logical deletion of the data store/copybook association
<b>Record Length</b>	Length of the record in bytes.
<b>Number of Matches</b>	Number of congruent bytes between the record layout of the data store and the format of the copybook.

**Information Provider** Origin of the information; **PGM** is supplied by batch process, **USR** is supplied by user.

**Associated Copy** An indicator of whether a copybook is associated with the data store (**Yes, No**).

### Associated Copybook - CopybookName columns

**Associated Copybook - CopybookName** is a subnode of the **Associated Copybook** node.




**Note:** The **Associated Copybook - CopybookName** node only applies to the Data Express for z/OS solution.

The following list describes the columns listed by selecting the **Associated Copybook - CopybookName** node:

<b>Name</b>	Name of the field within the copybook.
<b>Displacement</b>	Position of the field within the layout of the copybook.
<b>Level</b>	Level of the field within the COBOL copybook or PL/I include.
<b>Type</b>	Type of copybook field. For example, <b>Numeric</b> or <b>Alphanumeric</b> .
<b>Length</b>	Length of copybook field in bytes.
<b>Integer</b>	Number of integer digits in the copybook field.
<b>Decimal</b>	Number of digits included to the right of the decimal point.
<b>Sign</b>	An indicator of whether the field is signed ( <b>Yes, No</b> ).
<b>OCCURS Level</b>	An indicator if the field is defined with recurrences.
<b>Group</b>	An indicator whether the field is of a group ( <b>Yes, No</b> ).

### Assigned Classes columns


The following list describes the columns listed by selecting the **Assigned Classes** node:

<b>Name</b>	Name of the data element within the data store.
<b>Displacement</b>	The offset of the data element.
<b>Physical Displacement</b>	The physical displacement of a DB2 field.
	 <b>Note:</b> Only DB2 fields use a <b>Physical Displacement</b> value.
<b>Type</b>	Data type of the data element. For example, <b>Numeric</b> or <b>Alphanumeric</b> .
<b>Nature</b>	Nature of the data element, for example, <b>Alphabetical</b> .
<b>Length</b>	Length of the data element in bytes.
<b>Integer</b>	Number of integers within a numeric data element.
<b>Decimal</b>	Number of digits included to the right of the decimal point.
<b>Assigned Class</b>	Description of the associated class.
<b>Estimated Class</b>	Description of the most likely class to associate with the data element.
<b>Minimum Value</b>	Minimum value for the data element (result of data sampling). (Applicable only for Data Express for z/OS.)
<b>Maximum Value</b>	Maximum value for the data element (result of data sampling). (Applicable only for Data Express for z/OS.)

**No. of Different Values** Number of different values that the data element can take on. This is the principal result of sampling the data element. (Applicable only for Data Express for z/OS.)

### Sampling columns

The following list describes the columns listed by selecting the **Sampling** node. The **Sampling** node only applies to the Data Express for z/OS solution.

<b>Name</b>	Name of the data element within the data store.
<b>Displacement</b>	The offset of the data element.
<b>Physical Displacement</b>	The physical displacement of a DB2 field.  <b>Note:</b> Only DB2 fields use a <b>Physical Displacement</b> value.
<b>Type</b>	Data type of the data element. For example, <b>Numeric</b> or <b>Alphanumeric</b> .
<b>Nature</b>	Nature of the data element. For example, <b>Alphabetical</b> .
<b>Length</b>	Length of the data element in bytes.
<b>Integer</b>	Number of integers within a numeric data element.
<b>Decimal</b>	Number of digits included to the right of the decimal point.
<b>Assigned Class</b>	Description of the associated class.
<b>Estimated Class</b>	Description of the most likely class to associate with the data element.
<b>Minimum Value</b>	Minimum value for the data element (result of data sampling).
<b>Maximum Value</b>	Maximum value for the data element (result of data sampling).
<b>No. of Different Values</b>	Number of different values that the data element can take on. This is the principal result of sampling the data store.

### Sampling – DataElementName columns


**Sampling – DataElementName** is a subnode of the **Sampling** node.

The following list describes the columns listed by selecting the **Sampling – DataElementName** node:

<b>Field Value</b>	Value assumed by the data element.
<b>Occurrence No</b>	Number of times the value in <b>Field Value</b> has been found.
<b>Percentage</b>	Percentage of the value over all the occurrences.
<b>In-Range Occurrences</b>	In the complete sample, up to 1000 different values are recorded for each data element. Each new value is considered within the range defined by the values immediately above and below. This field indicates the occurrence within such ranges.
<b>Recalculation Date</b>	Date of the last sampling.

### Context menu

This section outlines the commands displayed in the context menu when selecting a data element in the **Work with Data Store** area, and then right-clicking to display the context menu.

 **Note:** All changes of the grid layout are saved in the Windows system registry. For example, groups, column width attributes, column order attributes, and column font and color information. However, filtering and sorting preferences are not saved.

The data element context menu contains the following commands:

<b>Zoom of the Synthetic Data Element Content</b>	Displays the window showing the Zoom of the distribution of the data element values (provided that there are values sampled for the data element).
<b>Data Element Properties</b>	Displays a window with summary information about the data store.
<b>Show In Sampling</b>	Displays a window showing the sampling results.
<b>Set as Register Table Data Element</b>	Sets the selected data element as a Register Table data element.
<b>Reset as Register Table Data Element</b>	Resets the selected data element as a Register Table data element.
<b>Add to Combined Data Element</b>	Displays the <b>Add to Combined Data Element</b> window where you can define a new data element (which is a combination of multiple data elements), after multiple data elements have been selected.

## Data element properties

The **Data Element Properties** window displays all attributes for a selected data element.

To access the **Data Element Properties** window, display the context menu from the main window [**Work with Data Element**] for a selected data element, and click **Data Element Properties**.

The following list describes the fields listed in the **Data Element Properties** window:

<b>Name</b>	Name of the data element within the data store.
<b>Description</b>	Data store description.
<b>Type</b>	Type of data element.
<b>Nature</b>	Nature of the data element. For example, <b>Numeric</b> or <b>Alphanumeric</b> .
<b>Displacement</b>	Field offset at the beginning of the I/O area. (Data Express for z/OS only)
<b>Length</b>	Length of data element in bytes.
<b>Integer</b>	Number of integer digits present.
<b>Decimal</b>	Number of decimal digits present.
<b>Register Table Data Element</b>	Indicator of whether the data element is unique in the data store ( <b>Yes, No</b> ).
<b>Data Element Sign</b>	Indicator of whether the data element is considered as signed or not signed.
<b>Variable Length</b>	Indicator of whether the length of the data element is variable.
<b>Justified</b>	Indicator of whether the data element is justified.
<b>Nullable Data Element</b>	Indicator of whether the data element is set to NULL.

The buttons at the bottom of the fields in the **Data Element Properties** window are:

<b>Change</b>	Initializes fields for insertion.
<b>OK</b>	Saves any changes that have not been applied and closes the window.
<b>Cancel</b>	Cancel any changes to the field properties and closes the window.

# Assign an Application ID Window

You can assign an application ID to a single data store or assign multiple application IDs to multiple data stores.

 **Note:** You can call the Assign an Application ID window from all pages on the **[Work with Data Stores]** main window except the **Data Changer** page.

1. From the **[Work with Data Stores]** main window, select one or more data stores on the grid; then right-click and select **Assign an Application ID** from the context menu.
2. Do either of the following:

**To assign a single application ID to all selected data stores**

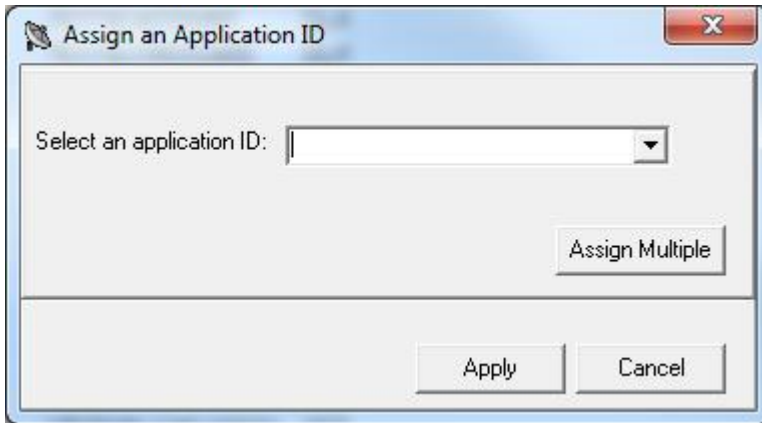
From the **Select an application ID** drop-down list, select an application ID; then click **Apply**.

**To assign multiple application IDs to multiple files**

1. Click **Assign Multiple**.
2. Using the drop-down list in the **Application ID** column for each corresponding data store, select an application ID to associate with each data store.
3. When finished, click **Apply**.

## Window contents - Assign Single

Describes the fields and items that appear on the **Assign an Application ID** window for assigning a single application ID to one or more data stores.



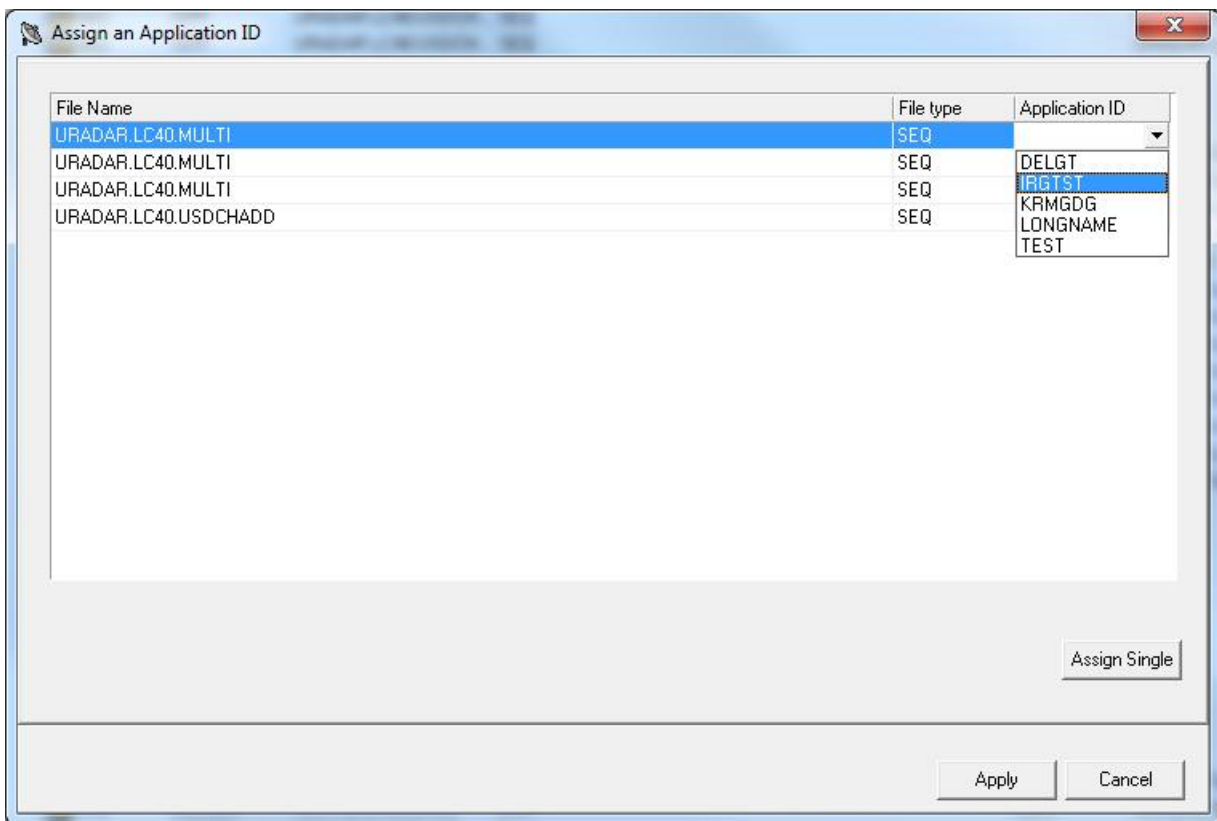
**Select an application ID** Lists all available application IDs that can be applied to the selected data store or data stores.

**Assign Multiple** Opens the **Assign an Application ID** window for assigning multiple IDs to multiple selected data stores.

**Apply** Applies the selected application ID to the selected data store or data stores.

## Window contents - Assign Multiple

Describes the fields and items that appear on the **Assign an Application ID** window for assigning multiple application IDs to multiple data stores. The following shows four example data stores:



- File Name** Name of the data store.
- File type** Type of data store. For example, DB2, VSAM, DL/I, GDG, SEQ, GDG ODBC, or ORA.
- Application ID** Identifier of the application area to assign to the corresponding data store.
- Assign Multiple** Opens the **Assign an Application ID** window for assigning a single application ID to the selected data stores.
- Apply** Applies the selected application IDs to their corresponding data stores.

## Add to Combined Data Element Window

The **Add to Combined Data Element** window displays information about the combined data element you are managing and the data store layout data element that comprise the combination. This window lets you display, modify, or delete data element combination information.

A combined data element is essentially a “dummy” data element that you create to manage a combination of different data elements that belong to the same data store.

To access the **Add to Combined Data Element** window, right-click one or more fields in the **Grid** area of the **Work with Data Store** area and click **Add to Combined Data Element**.

An example of the **Add to Combined Data Element** window is shown below:



**Add to Combined Data Element**

Machine ID:  Company:

Data store type:  Record format:

Data Store Name:  Number of records:

List of Data Elements							
Name	Field Offset	Type	Length	Integer	Decimal	Signed	Description
PNO	1	CHAR	3	3	0	No	
PNAME	4	CHAR	5	5	0	No	
COLOR	9	CHAR	5	5	0	No	
WEIGHT	14	SMALLINT	2	5	0	No	
CITY	16	CHAR	7	7	0	No	

**Combined Data Element Attributes**

Data element name:

Description:

Edit Mask

Current length:

List of Data Elements Combined								
Sequence	Name	Field Offset	Type	Length	Integer	Decimal	Use Decimal	Description
1	PNAME	4	CHAR	5	5	0	No	

 **Note:** For more information about accessing the **Work with Data Element** area and the **Data Element** context menu, see [Work with Data Store Window](#).

## Combined data element requirements and limitations

Before data elements can be encompassed into a combined data element, they must be checked for correctness. Each data element must meet the following requirements:

- The data element is part of the data store that is being processed.
- The data element is not a combined data element.
- The data element is not a BIT data element.

There are limitations to the management of combined data elements as follows:

- A previously defined combined data element cannot be inserted in the list of data elements.
- There is a 230-digit limit to the length of the fields for sampling and subsetting operations. If you want to perform these operations on longer combined data elements, you must develop some exit routines. (Data Express for z/OS only.)

## Available operations

The buttons at the bottom of the **Add to Combined Data Element** window are:

- Refresh** Refreshes the information. If another user defines a combined data element from a different executable in the same database, you can see the changes.
- Apply** Confirms the changes made to the combined data element. A newly created combined data element appears as the last field in the **List of Data Elements** grid.
- Delete** Deletes all information for the selected combined data element.
- Cancel** Cancels any changes applied to the selected data element. Any actions confirmed with the **Apply** button cannot be restored with **Cancel** but must be entered and confirmed again.


## Drag-and-drop operations

Data elements listed in the **List of Data Elements** grid can be added to the **List of Data Elements** grid by using a drag-and-drop operation.

# Work with Classes

The **Work with Classes** area lets you manage classes by categorizing data element with homogeneous characteristics and by writing generalized routines to check data.


A class identifies a user-defined group of data element with homogeneous characteristics. Typical classes of data can be quantities, prices, client code, totals, or currency flags. Each data element can be cataloged as a member of a class.

 **Note:** The Data Builder module provides some predefined classes, which you can use but not modify.

Classes are grouped into sets called Super Classes. A Super Class gathers several different classes in a single set. During the class automatic assignment phase, this type of classification enables you to restrict the search for classes to a subset of all the defined classes.

The set of Super Classes is as follows:

- **Numbers (N)**
- **Codes (C)**
- **Date (D)**
- **Complemented Date (9)**
- **Descriptions (X)**
- **Privacy (P)**
- **Other (O)**
- **None**

 **Note:** The Super Class **Other** is used for new user classes that may not fall into any of the previous Super Classes. Conversely, the Super Class **None** is used for classes that do not belong to a Super Class.


Date classes are defined by four available formats so you can run a formal check on the validity of the date fields. For more information about the format of dates, see [Getting Started With Data Builder](#)


## Work with Classes window




The **Work with Classes** window appears after clicking  (**Work with Classes**) from the main window.



The upper part of the window contains a list of classes, which is continuously updated according to the functions performed. Below the list is a group of objects that map to all the data elements of the selected class.

The following table describes the columns and fields listed in the **Work with Classes** area.

 **Note:** If the corresponding **Min** and **Max** fields maintain their default values, the data range is ignored and only the **Data type** value is considered.

Field/Column Name	Description	Additional Information/ Requirements
<b>Class ID</b>	The Class identifier, which is a unique key for the file that records the classes.	Mandatory field that is only editable during class creation.  <b>Note:</b> Class IDs 9990-9999 are reserved for use by the

Field/Column Name	Description	Additional Information/ Requirements
		Data Subset Extraction module to implement OR conditions during subsetting.
<b>Super Class</b>	The Super Class that has been associated with the class.	If the <b>Super Class</b> value has been set to a space character, it indicates that no Super Class has been associated with the data element.
<b>Name</b>	The name of the class.	Mandatory field.
<b>Charcode</b>	The character identifier of the class.	Optional field.
<b>Description</b>	A brief description of the class. The information in this column matches the information in the <b>Full Description</b> field.	Mandatory field.
<b>Highlight</b>	The primary class flag.	Optional field.
<b>Edit Mask</b>	The class editing mask.	Optional field.
<b>Changer Program</b>	The program which will be used when the class is assigned as a changer for a selected field.	Optional field.
<b>Data type</b>	Allowed data type for the class.	Mandatory field. This attribute is relevant only if you use the associating data stores/copybooks automatically function. It is also used by Data Subset Extraction.
<b>Min Length</b>	Allowed minimum length range for the class. The default value is <b>0</b> .	This attribute is relevant only if you use the associating data stores/copybooks automatically function.  <b>Note:</b> A check on the length is only performed on non-numeric classes.
<b>Min Int</b>	Allowed minimum number of integer digits for the class. The default value is <b>0</b> .	This attribute is relevant only if you use the associating data stores/copybooks automatically function.  <b>Note:</b> A check on the length is only performed on non-numeric classes.
<b>Min Dec</b>	Allowed minimum number of decimal digits for the class. The default value is <b>99</b> .	This attribute is relevant only if you use the associating data stores/copybooks automatically function.  <b>Note:</b> A check on the length is only performed on non-numeric classes.
<b>Max Length</b>	Allowed maximum length range for the class. The default value is <b>0</b> .	This attribute is relevant only if you use the associating data stores/copybooks automatically function.

Field/Column Name	Description	Additional Information/ Requirements
<b>Max Int</b>	Allowed maximum number of integer digits for the class. The default value is <b>0</b> .	 <b>Note:</b> A check on the length is only performed on non-numeric classes. The <b>Min Int</b> and <b>Max Int</b> values must be specified if you receive the message: " <b>Error! Reference source not found.</b> "
<b>Max Dec</b>	Allowed maximum number of decimal digits for the class. The default value is <b>99</b> .	 <b>Note:</b> If the class is non-numeric, this field is ignored. This attribute is relevant only if you use the associating data stores/ copybooks automatically function.
<b>Name contains</b>	Sequence of characters that data elements associated with the class must contain.	Optional field.
<b>Name does not contain</b>	Sequence of characters that data elements associated with the class must exclude.	Optional field.
<b>Refresh button</b>	Refreshes the class information.	If another user creates a class from a different executable in the same database, you can see the changes.
<b>Apply button</b>	Confirms the changes made to the class.	
<b>New button</b>	Initializes fields for insertion when creating a new class.	
<b>Delete button</b>	Deletes the selected class. Before a class can be deleted, a series of referential integrity checks are carried out which, if not passed, generate an error message and block the deletion.	
<b>Cancel button</b>	Cancels any changes applied to the selected class. Any actions confirmed with <b>Apply</b> cannot be restored with <b>Cancel</b> but must be entered and confirmed again.	
<b>OK button</b>	Saves any changes that have not been applied and closes the window.	

## Work with Machine IDs


The **Work with Machine IDs** area lets you perform consultation and data entry (insert, edit, and delete) operations on classes. The insertion and edit data entry operations are stored. These operations carry out a series of formal controls on the data element types. When deleting, however, checks are made on referential integrity on the data stores, which depend on the machine identifiers.

To access the **Work with Machine IDs** window, click  (**Work with Machine IDs**) from the main window.

## Work with Machine IDs window

This section describes the columns and fields listed in the **Work with Machine IDs** window.

The upper part of the window contains a list of machine identifiers, which is continuously updated according to the functions performed. Below the list is a group of objects that map to all the data elements of the selected machine identifier. The following list describes the controls listed in the **Machine IDs** window:

Control	Description
<b>Field:</b>	
<b>Machine ID</b>	Identifier of the machine. This field uniquely identifies the element and cannot be changed.
<b>Description</b>	Description of the machine identifier.
<b>Model</b>	Model of the machine.
<b>Processor</b>	Processor in the machine.
<b>Insert Date</b>	Date when the new machine ID was created.
<b>Insert Time</b>	Time when the new machine ID was created.
<b>Button:</b>	
<b>Refresh</b>	The machine ID information. If another user creates a machine ID from a different executable in the same database, you can see the changes.
<b>Apply</b>	Confirms the changes made to the machine ID. Before changes are applied, a series of checks on data elements are performed; if the checks fail, the update is blocked.
<b>New</b>	Initializes fields for insertion when creating a new machine ID.
<b>Delete</b>	Deletes the selected machine ID. Before a machine ID can be deleted, a series of referential integrity checks are carried out which, if not passed, generate an error message and block the deletion.   <b>Note:</b> Before deleting a machine ID, any company identifiers contained within it must be deleted in the <b>Work with Companies</b> area. For more information, see <a href="#">Work with Companies</a> .
<b>Cancel</b>	Cancels any changes applied to the selected machine identifier. Any actions confirmed with <b>Apply</b> cannot be restored with <b>Cancel</b> but must be entered and confirmed again.
<b>OK</b>	Saves any changes that have not been applied and closes the window.

## Work with Companies

The **Work with Companies** area lets you perform consultation and data entry (insert, edit, and delete) operations on the companies cataloged by Data Express.

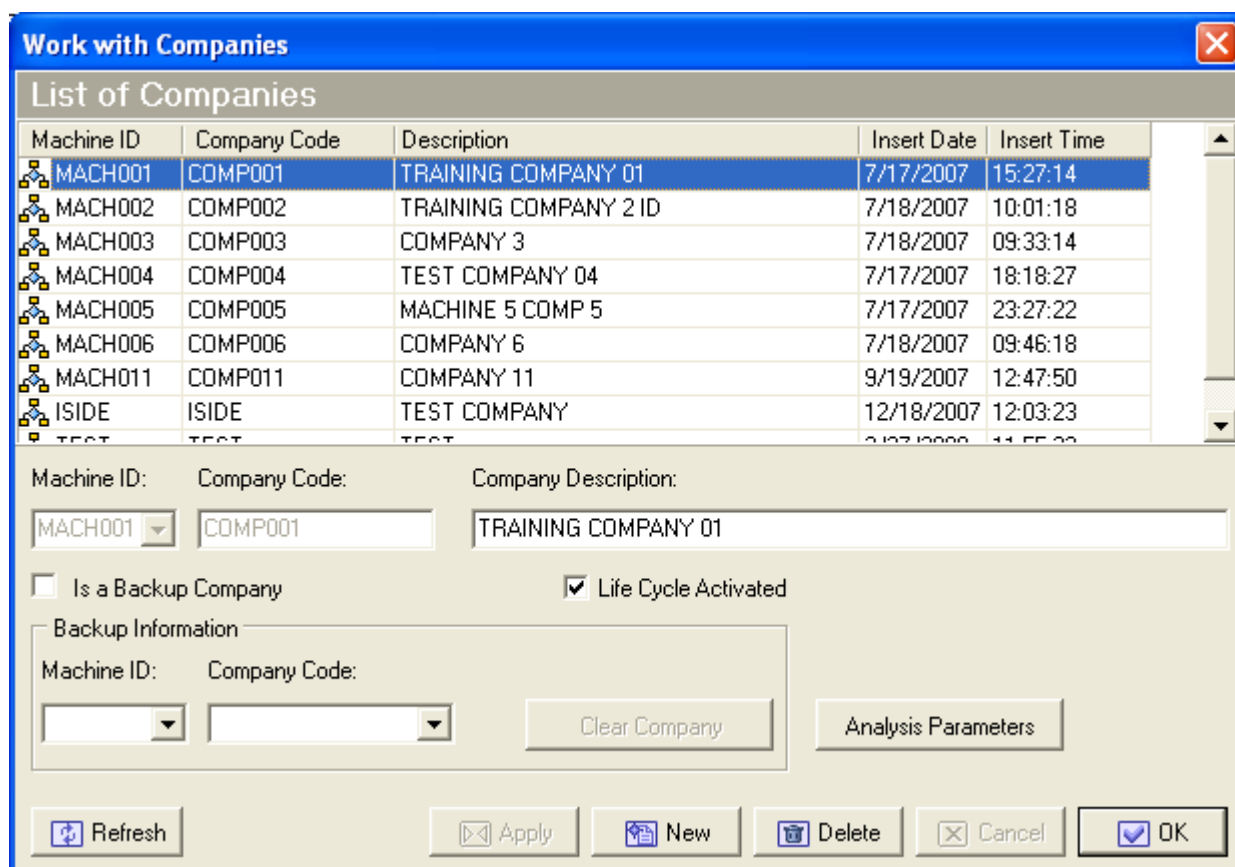
The insert and edit data entry operations are stored. These operations carry out a series of formal controls on the data element types. When deleting, however, checks are made on referential integrity on the data stores, which depend on the company identifiers.

A new company ID may be inserted only if an existing machine ID is selected. If a new machine ID is required, it must be created from the **Work with Machine IDs** area. For more information about the **Work with Machine IDs** area, see [Work with Machine IDs](#).

To access the **Work with Companies** window, click  (**Work with Companies**) from the main window.

## Window contents

This section describes the columns and fields listed in the **Work with Companies** window as shown below:



The upper part of the window contains a list of companies, which is continuously updated according to the functions performed. Below the list is a group of objects that map to all the fields of the selected company.

- Machine ID** Identifier of the machine. This field uniquely identifies the element and cannot be changed.
- Company Code** Company identifier. This field uniquely identifies the element and cannot be changed.
- Description** Description of the company identifier. The information in this column matches the information in the **Company Description** field.
- Insert Date** Date when the new company was created.
- Insert Time** Time when the new company was created.

**Life Cycle Activated** Indicator of whether the Life Cycle is activated or deactivated.

**Backup Information** Information on the corresponding backup company including the **Machine ID** and **Company Code**. If **Is a Backup Company** box is checked, the company is used by the Life Cycle to save the old file information. To remove backup company information, check **Clear Company**.

## Available operations


The buttons at the bottom of the **Work with Companies** area are:

<b>Refresh</b>	Refreshes the company information. If another user creates a company from a different executable in the same database, you can see the changes.
<b>Apply</b>	Confirms the changes made to the company. Before changes are applied, a series of checks on non-key fields are performed; if the checks fail, the update is blocked.
<b>New</b>	Initializes fields for insertion when creating a new company.
<b>Delete</b>	Deletes the selected company.
<b>Cancel</b>	Cancels any changes applied to the selected company. Any actions confirmed with <b>Apply</b> cannot be restored with <b>Cancel</b> but must be entered and confirmed again.
<b>OK</b>	Applies the changes immediately and closes the window.
<b>Clear Company</b>	Clears the information on the associated backup company.
<b>Analysis Parameters</b>	Launches the <b>Define Analysis Parameters Wizard</b> where copybook analysis parameters can be defined.

## Work with Application IDs

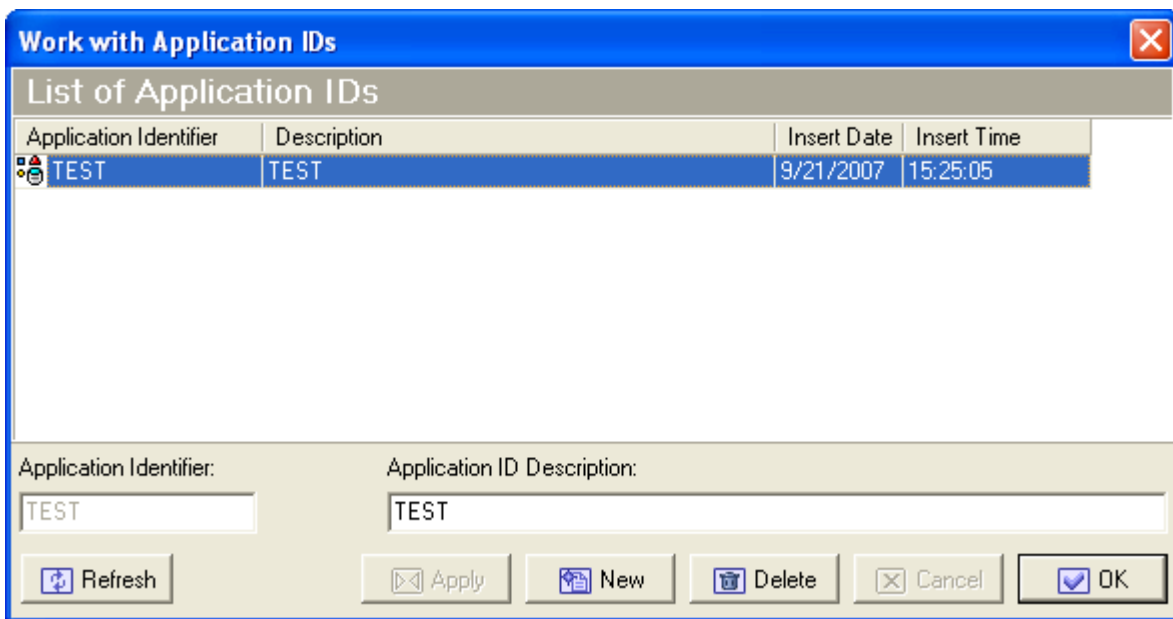
The **Work with Application IDs** area lets you perform consultation and data entry (insert, edit, and delete) operations on the application IDs cataloged by Data Express.

The insertion and edit data entry operations are stored. These operations carry out a series of formal controls on the data element types. When deleting, however, checks are made on referential integrity on the data stores, which depend on the application identifiers.

To access the **Work with Application IDs** window, click  (**Work with Application IDs**) from the main window.

## Window contents

This section describes the columns and fields listed in the **Work with Application IDs** area as shown below:



The upper part of the window contains a list of application identifiers, which is continuously updated according to the functions performed. Below the list is a group of objects that map to all the fields of the selected element.

**Application Identifier** Identifier of the application.

**Description** Description of the application identifier. The information in this column matches the information in the **Application ID Description** field.

**Insert Date** Date when the new application ID was created.

**Insert Time** Time when the new application ID was created.

## Available operations

The buttons at the bottom of the **Work with Application IDs** area are:

**Refresh** Refreshes the application identifier information. If another user creates an application identifier from a different executable in the same database, you can see the changes.

**Apply** Confirms the changes made to the application identifier. Before changes are applied, a series of checks on non-key data elements are performed. If the checks fail, the update is blocked.

 **Note:** Only the **Application ID Description** field can be modified.

**New** Initializes fields for insertion when creating a new application identifier.

**Delete** Deletes the selected application identifier. An application identifier can only be deleted if data stores have not been cataloged for it by Data Express.

**Cancel** Cancels any modifications made to the selected application identifier. Any actions confirmed with **Apply** cannot be restored with **Cancel** but must be entered and confirmed again.

**OK** Saves any changes that have not been applied and closes the window.

## Work with Process IDs

The **Work with Process IDs** area lets you perform consultation and data entry (insert, edit, and delete) operations on the process IDs cataloged by Data Express.



The **Work with Process IDs** window is available only in the Data Express for z/OS solution.

The insertion and edit data entry operations are stored. These operations carry out a series of formal controls on the data element types. When deleting, however, checks are made on referential integrity on the data stores, which depend on the process identifiers.

To access the **Work with Process IDs** window, click  (**Work with Process IDs**) from the main window.

## Window contents

This section describes the columns and fields listed in the **Work with Process IDs** area as shown below:

The upper part of the window contains a list of process identifiers, which is continuously updated according to the functions performed. Below the list is a group of objects that map to all the fields of the selected element.

The following describes the general fields listed in the **Work with Process IDs** area:

Field	Description
<b>Process identifier</b>	Identifier of process. This field uniquely identifies the element and cannot be changed.
<b>Access type</b>	Access type to be used: <ul style="list-style-type: none"> <li>• Direct access to database, output in <b>DSNTIAUL</b> format.</li> <li>• Direct access to database, output in <b>UNLOAD</b> format.</li> <li>• Access to sequential unload in <b>DSNTIAUL</b> format.</li> <li>• Access to sequential unload in <b>UNLOAD</b> format.</li> <li>• Access to sequential unload in <b>UNLOAD</b> by <b>REORG</b> format.</li> <li>• Access to data set of full image-copy, output in <b>DSNTIAUL</b> format.</li> <li>• Access to data set of full image-copy, output in <b>UNLOAD</b> format.</li> <li>• Access to CA variable sequential unload, output in <b>DSNTIAUL</b> format.</li> <li>• Access to CA comma delimited sequential unload, output in <b>DSNTIAUL</b> format.</li> <li>• Access to CA external sequential unload, output in <b>DSNTIAUL</b> format.</li> <li>• Access to CA fixed sequential unload, output in <b>DSNTIAUL</b> format.</li> </ul>
<b>Record format</b>	Format of the record ( <b>FB</b> for fixed length format, <b>VB</b> for variable length format).
<b>Description</b>	Description of the process identifier.
<b>I/O program name</b>	I/O routine called for the reading of the database.

The following describes the general fields listed in the **DL/I Attributes** section of the **Work with Process IDs** area:

Field	Description
<b>Record Length</b>	Length of sequential unload (record).

Field	Description
<b>Data Position</b>	Position of the data area within the sequential unload that contains the information described in the copybook.
<b>Record type position</b>	Position of the data area within the sequential unload that contains the segment name.
<b>Record type length</b>	Length of the data area within the sequential unload that contains the segment name.
<b>Type</b>	Type of length value.
<b>Position</b>	Position of length value.
<b>Length</b>	Length of length value.



**Note:** The **Data Length File Attributes** fields provide information regarding the area, if one exists, of the sequential unload that contains the length of the data area. If values are not specified, the message “**There is not enough information in the process identifier to retrieve the segment record lengths**” is reported, and Data Express assumes the data area has the maximum available length (to the end of the physical layout).

## Available operations


The buttons at the bottom of the **Work with Process IDs** area are:

- Refresh** Refreshes the process identifier information. If another user creates a process identifier from a different executable in the same database, you can see the changes.
- Apply** Confirms the changes made to the process identifier. Before changes are applied, a series of checks on non-key data elements are performed. If the checks fail, the update is blocked.
- New** Initializes fields for insertion when creating a new process identifier.
- Delete** Deletes a selected process identifier. A process identifier can only be deleted if data stores have not been cataloged for it by Data Express.
- Cancel** Cancels any modifications made to the selected process. Any actions confirmed with **Apply** cannot be restored with **Cancel** but must be entered and confirmed again.
- OK** Saves any changes that have not been applied and closes the window.

## Work with Data Elements

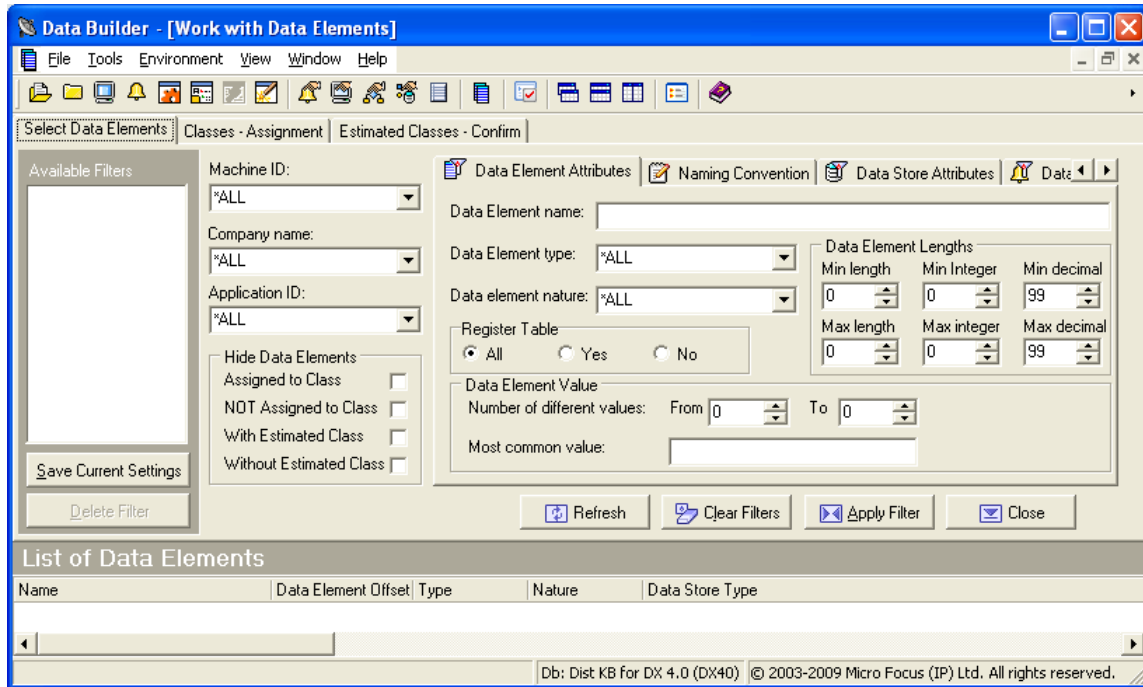
The **Work with Data Elements** area lets you implement the following functions:

Associated page	Function
<b>Select Data Elements</b>	Find a list of data elements in the fastest and simplest way possible.
<b>Classes - Assignment</b>	Allow the data elements found to be associated with a class after using appropriate filters.
<b>Estimated Classes - Confirm</b>	Confirm (or select from suggested alternatives) the class obtained by the batch function executed for the automatic cataloging of the data elements.

To access the **Work with Data Elements** window, click  (**Work with Data Elements**) from the main window.

# Window contents

This section describes the **Work with Data Elements** area as shown below:



## Note:

The **List of Data Elements** grid appears at the bottom of the window of all the pages.

## Select Data Elements page

The **Selected Data Elements** page lets you filter the list of data elements by various attributes shown on the following sub-pages:

- **Data Element Attributes**
- **Naming Convention**
- **Data Store Attributes**
- **Data Element Class**


### Available Filters area

The **Available Filters** area (in the left-hand corner of the screen) is the set of principal filters used to define the environment by the following fields:

- **Machine ID**
- **Company name**
- **Application ID**
- **Hide Data Elements**
  - **Assigned to Class** – Hides data elements assigned to class.
  - **NOT Assigned to Class** – Hides data elements not assigned to class.
  - **With Estimated Class** – Hides data elements with estimated class.
  - **Without Estimated Class** – Hides data elements without estimated class.

## Data Element Attributes page

The following list describes the fields listed on the **Data Element Attributes** page:

<b>Data Element name</b>	Allows selection by data element name.
<b>Data Element type</b>	Allows selection by data element type ( <b>Alphanumeric, Numeric, Packed, Binary, Float, Edit Field, Time Stamp, Date, and Time</b> ).
	<b>Restriction:</b> Data Express does not support LOB data element types for DB2 and ADABAS databases. Also, some <b>Binary</b> data element types are not handled during ADABAS FDT analysis.
<b>Data element nature</b>	Allows selection by data element nature ( <b>Alphabetical</b> or <b>Numeric</b> ).
<b>Data Element length</b>	Allows selection by range of data element length.
<b>Min/Max length</b>	Allowed length range for the class.
<b>Min/Max integer</b>	Allowed integer digits for the class.
<b>Min/Max decimal</b>	Allowed decimal digits for the class.
<b>Register Table Fields</b>	Allows selection based on the Register Table property.
<b>Data Element Value</b>	Allows selection based on the distribution of the data element contents.

## Naming Convention page

The following list describes the fields listed on the **Naming Convention** page:

<b>Data element name contains</b>	Allows selection of data elements whose names contain one of the strings inserted in the list.
<b>Data element name does NOT contain</b>	Allows non-selection of data elements whose names contain one of the strings inserted in the list.

## Data Store Attributes page

The following list describes the fields listed on the **Data Store Attributes** page:

<b>DB2 Owner, DL/I DBD</b>	Allows selection by file qualifier.
<b>Data store name</b>	Allows selection by data store name.
<b>Data store type</b>	Allows selection by data store type.
<b>Data store version</b>	Allows selection by data store version.

## Data Element Class page

The following list describes the fields listed on the **Data Element Class** page:

<b>Super Class</b>	Allows selection of all data elements that have an associated class of the same category as the chosen Super Class ( <b>Number, Codes, Date, Complemented Date, Description, and Other</b> ).
<b>Assigned class</b>	Allows selection of data elements associated with a particular class.
<b>Estimated class</b>	Allows selection of data elements associated with an estimated class.

By clicking **Save Current Settings**, views can be saved and restored at any time. Each view is given a name, which differentiates it from the others. Double-click a name to display the corresponding view. Click **Delete Filter** to delete a view.

## Available operations

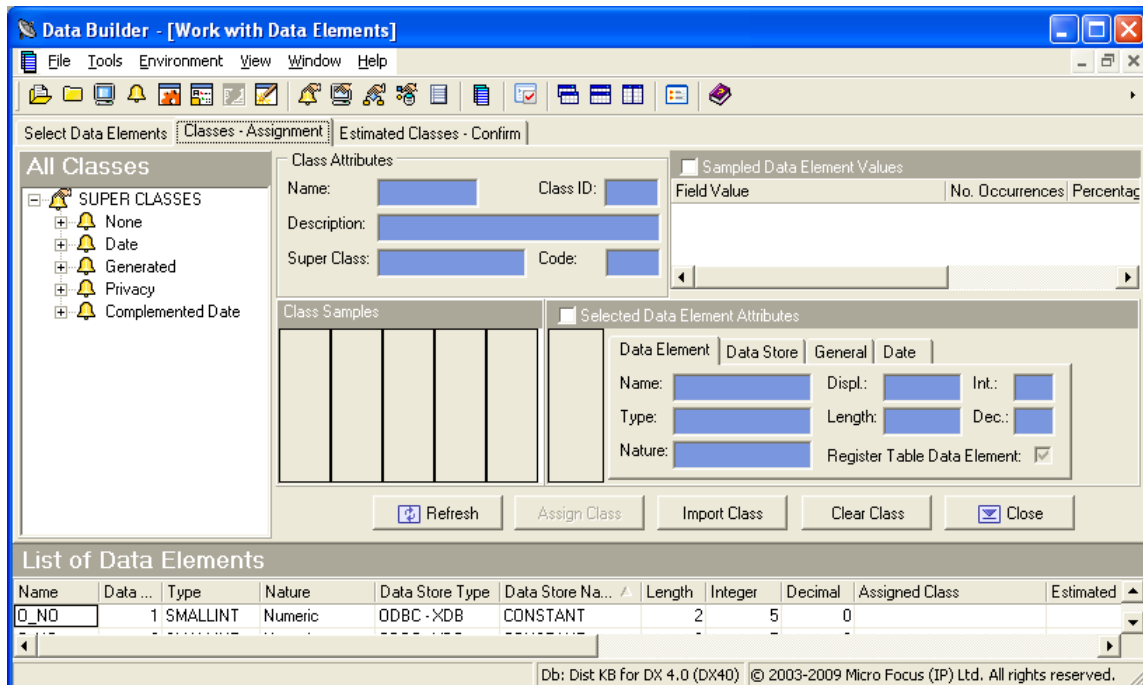
The buttons on the **Select Data Elements** page of the **Work with Data Elements** area are:

- Refresh** Refreshes the window.
- Clear Filters** Resets all the filter conditions setup in the different tabs.
- Apply Filters** Applies all filters configured to the window.
- Close** Closes the window.

## Classes - Assignment page

The **Class - Assignment** page is used to assign a class to the data elements of the filtered list, supplying detailed information related to both the class and data elements. Information on the page is divided into two parts, where information linked to the classes appears on the left and to the fields on the right.

An example of the **Class - Assignment** page in the **Work with Data Elements** area is shown below:



### All classes hierarchy

On the left the class tree is shown. The main branches are made up of Super Classes (**Number, Codes, Date, Description, Other**) while the secondary ones are made up of the constituent classes.

### Class Attributes area

Selecting a class updates the corresponding attribute fields (Class Attributes):

- Name** Class name.
- Class ID** Class code.
- Description** Description of the class.
- Super Class** Name of the Super Class.
- Code** Identifier code for the class.
- Class Samples** Examples of distribution associated with the class.

The filtered list of fields is shown at the bottom. Selecting one of these updates the corresponding attribute fields:

### **Selected Data Element Attributes – Data Element page**

The fields listed on the **Data Element** page are:

<b>Name</b>	Name of the data element within the data store.
<b>Type</b>	Type of data element.
<b>Nature</b>	Nature of the data element ( <b>Numeric</b> or <b>Alphanumeric</b> ).
<b>Displ</b>	Position of the data element within the record layout.
<b>Length</b>	Length of data element in bytes.
<b>Int</b>	Number of integer digits.
<b>Dec</b>	Number of decimal digits.
<b>Register Table Field</b>	Indicator of whether the data element is a <b>Register Table</b> field.

### **Selected Data Element Attributes – Data Store page**

The fields listed on the **Data Store** page are:

<b>Name</b>	Name of the data store.
<b>Type</b>	The type of data store.
<b>Version</b>	Version of the data store.
<b>Number of Records</b>	Number of records in the data store.

### **Selected Data Elements Attributes - General page**

The fields listed on the **General** page are:

<b>Machine ID</b>	Identifier of the machine.
<b>Company</b>	Name of the company.
<b>Application ID</b>	Identifier of the application.

### **Selected Data Elements Attributes - Date page**

The fields listed on the **Date** page are:

<b>Recalculation Date</b>	Date of last recalculation.
---------------------------	-----------------------------

### **Available operations**

The buttons listed on the **Classes - Assignment** page of the **Work with Data Elements** area are:

**Refresh** Refreshes the window.

**Assign Class** Assigns a class to a list of selected data elements. The steps are as follows:

1. Select the fields involved in the association from the **List of Data Elements** grid.
2. Click the **Classes - Assignments** tab.
3. Select a node on the class tree.
4. Click **Assign Class**.

**Clear Class** Deletes the class associated with the list of selected data elements. The steps are as follows:

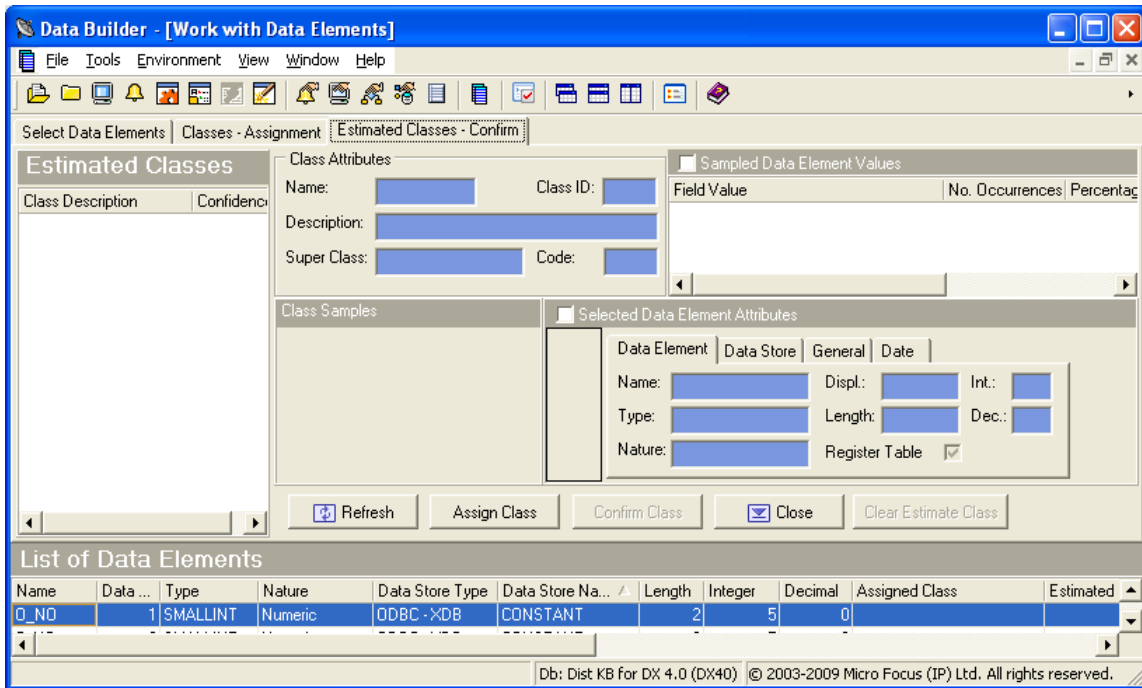
1. Select the data elements involved in the disassociation from the **List of Data Elements** grid.
2. Click **Clear Class**.

**Close** Closes the window.

## Estimated Classes - Confirm page

The **Estimated Classes - Confirm** page is used to confirm the class assignment proposals. On z/OS, this is produced by the batch analysis. Information on the page is divided into two parts, where information about proposed classes appears on the left and information about selected data elements on the right.

An example of the **Estimated Classes - Confirm** page in the **Work with Data Elements** area is shown below:



### Class Attributes area

On the left the list of classes proposed for the selected data element is shown. Selecting a class updates the corresponding attribute data elements:

- Name** Name of the class.
- Class ID** Class code.
- Description** Description of the class.
- Super Class** Name of the Super Class.
- Code** Identifier code for the class.
- Class Samples** Examples of distribution associated with the class.

The filtered list of data elements is shown at the bottom. Selecting one of these updates the corresponding attribute data elements in the **Selected Data Element Attributes** area.

## Selected Data Element Attributes area

### *Data Element page*

The following list describes the fields listed on the **Data Element** page:

<b>Name</b>	Name of the data element within the data store.
<b>Type</b>	Type of data element.
<b>Nature</b>	Nature of the data element (for example, <b>Numeric</b> or <b>Alphanumeric</b> ).
<b>Displ</b>	Position of the data element within the record layout.
<b>Length</b>	Length of data element in bytes.
<b>Int</b>	Number of integer digits.
<b>Dec</b>	Number of digits included to the right of the decimal point.
<b>Register Table Field</b>	Indicator of whether the data element is a <b>Register Table</b> field.

### *Data Store page*

The following list describes the fields listed on the **Data Store** page:

<b>Name</b>	Name of the data store.
<b>Type</b>	Type of data store.
<b>Version</b>	Version of the data store.
<b>Number of Records</b>	Number of records in the data store.

### *General page*

The following list describes the fields listed on the **General** page:

<b>Machine ID</b>	Identifier of the machine.
<b>Company</b>	Name of the company.
<b>Application ID</b>	Identifier of the application.

### *Date page*

The following list describes the fields listed on the **Date** page:

<b>Recalculation date</b>	Date of last recalculation.
---------------------------	-----------------------------

## Available operations

This section describes the functions of the buttons listed on the **Estimated Classes - Confirm** page of the **Work with Data Elements** area:

<b>Refresh</b>	Refreshes the window.
<b>Assign Class</b>	Assigns a selected class to a data element. The steps are as follows: <ol style="list-style-type: none"><li>1. Select the field involved in the association from the <b>List of Data Elements</b> grid.</li><li>2. Select the class to assign.</li><li>3. Click <b>Assign Class</b>.</li></ol>



**Confirm Class** Allows the most likely class to be assigned to a list of selected data elements. The steps are as follows:

1. Select the fields involved in the association from the **List of Data Elements** grid.
2. Click **Confirm Class**.

**Close** Closes the window.

## Work with Jobs

The **Work with Jobs** area is used to schedule batch jobs to run on z/OS.



**Note:** The **Work with Jobs** area is available only the Data Express for z/OS solution.

Once the product setup phase is finished and a stable state is established, the **Work with Jobs** area lets you work directly from a PC for both the scheduling of jobs and the consultation and maintenance of the results obtained.

To access the **Work with Jobs** area, click  (**Work with Jobs**) from the main window.

## Window contents

This section describes the **Work with Jobs** area as shown below:

The screenshot shows the 'Work with Jobs' window with two main grids and several form fields.

**List of Jobs**

Name	Description	Process
BURCLAR	Class Field Assignment	Data Analysis
BURECLR	Import Classification From Data Diction...	Data Classification
BURDDUR	Import Classification From Referential I...	Data Classification
BDCGENR	Create Data Changer Jobs	Data Masking
BDCCHGR	File Data Changer	Data Masking
BTEDDUR	Import Method From Referential Integrity	Data Subsetting
BURSYN	DB2 Catalog Synchronization	Data Subsetting
BTEGENR	Create Extraction Jobs	Data Subsetting
BTUNLDR	Create Unload Jobs	Data Subsetting
BTEALSR	Create Allocation Jobs	Data Subsetting
BTELODR	Create Reload Jobs	Data Subsetting
BTESBMR	Test Environment Creation	Data Subsetting
BLCFILR	Life Cycle	Life Cycle
BLCCLR	Clear Life Cycle History	Life Cycle

**List Of Scheduled Jobs**

User ID	Job Name	Job Description
cs3\TP639	BTEALSR	Create Allocation Jobs
cs3\TP639	BTESBMR	Test Environment Creation
cs3\TP639	BTESBMR	Test Environment Creation
cs3\TP639	BTESBMR	Test Environment Creation
PANDS\PANO	BTESBMR	Test Environment Creation
PANDS\PANO	BTEALSR	Create Allocation Jobs
RumyanaK\S	BTESBMR	Test Environment Creation
mamar\TOU	BTESBMR	Test Environment Creation
PANDS\PANO	BTEALSR	Create Allocation Jobs
RumyanaK\S	BTEALSR	Create Allocation Jobs
PANDS\PANO	BTEALSR	Create Allocation Jobs
bcheong\AU	BTESBMR	Test Environment Creation
eric\ERICM	BTESBMR	Test Environment Creation

**General**

Machine ID:

Company name:

**Copybook**

Copy PDS:

Copybook name:

**Job Creation/Submission**

Job creation  Job submission

**File Qualification**

Application ID:

DB2 Owner, DL/I DBD:

File type:

File name:

File version:

Record format:





Buttons: Change, Apply, New, Delete, Cancel, OK


### List of Jobs grid

The **List of Jobs** grid displays a fixed list of possible jobs to schedule.

## List of Scheduled Jobs grid

The **List of Scheduled Jobs** grid displays a list of jobs that have been scheduled . Each scheduled job is associated with a job state as indicated by the following icons:

Icon	Description	Status flag
	Job still to be submitted	0
	Job running	1
	Job finished	9
	Job not submitted	-x (negative digits)

 **Note:** The **Work with Jobs** area lets you create a job without submitting it. You can submit a job later by changing its job submission status from **Job Creation** to **Job Submission**.

## Window fields

The following list describes the fields listed in various sections in the **Work with Jobs** area:

<b>Machine ID</b>	Identifier of the machine.
<b>Company name</b>	Identifier of the company.
<b>Copy PDS</b>	PDS of copybooks/includes to analyze.
<b>Copybook name</b>	Name of the copybooks/includes to analyze.
<b>Job creation</b>	Option for creating a new job without submitting it.
<b>Job submission</b>	Option for submitting a new job.
<b>Application ID</b>	Identifier of the application.
<b>DB2 Owner, DL/I DBD</b>	Qualifier of the data store to analyze.
<b>Data store type</b>	Type of the data store to analyze ( <b>VSAM, DB2, DL/I, SEQ, GDG, ORA, SQE, or ADA</b> ).
<b>Data store name</b>	Name of the data store to analyze.
<b>Data store version</b>	Version of GDG data store to analyze.
<b>Record format</b>	Record format to analyze.

## Available operations

This section describes the buttons at the bottom of the **Work with Jobs** area.

- Change** Modifies a scheduled job. By selecting a scheduled job with status flag 0 (i.e. still to be submitted), all the job submission parameters are updated in the lower part of the window. It is possible to change all the parameters and then, after having introduced the changes, save them to z/OS by clicking Apply. Before updating the list, a new window is displayed requesting additional parameters.
- Apply** Confirms the update/insertion data for a job to schedule.
- New** Initializes all the field parameters. You can then insert the scheduling parameters of the new job. To save to z/OS, click **Apply**. Before updating the list, a new window is displayed requesting additional parameters.

- Delete** Cancels a highlighted job. If this is being executed (flag status 1), you are prompted to confirm the delete operation.
- Cancel** Cancels any changes made to the selected job. Any actions confirmed with **Apply** cannot be restored with **Cancel** but must be entered and confirmed again.
- OK** Saves any changes that have not been applied and closes the window.

## Job creation

This section describes the basic procedure for creating a new job. The subsections address the secondary parameters needed for creating specific jobs. The following guides discuss other jobs:

### Life Cycle Guide

Life Cycle  
Clear Life Cycle History

### Data Masking Guide

Data Store Data Changer  
Create Data Changer Jobs

### Subset Extraction Guide

Test Environment Creation  
Create Allocation Jobs  
Create Unload Jobs  
Create Reload Jobs  
Create Extraction Jobs

To begin job creation:

1. Select the job from the **List of Jobs** grid.
2. Click **New** to initialize fields for insertion.
3. Select **Machine ID** and **Company name** from the corresponding lists.
4. Click **Apply**.
5. Follow the guidelines in the appropriate subsection for the job you want to create.



**Note:** The **Reset All**, **Apply**, and **Cancel** buttons are available in each **Secondary Options** window.

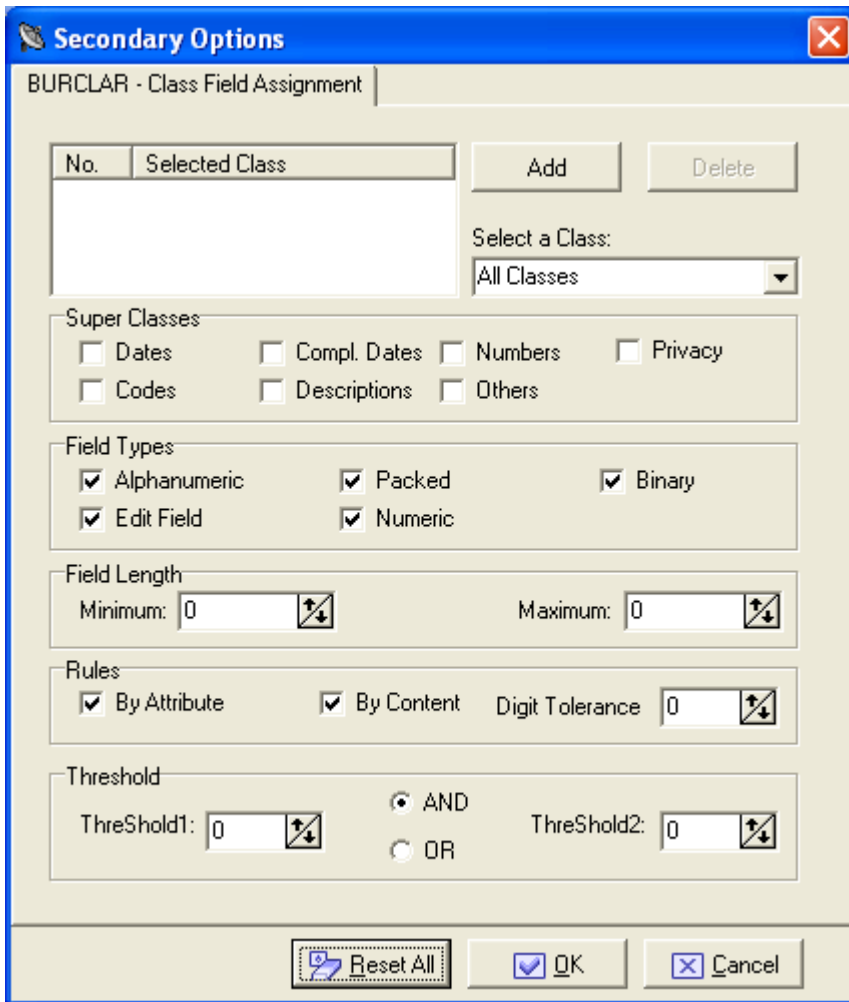


**Note:** If your Data Express Knowledge Base is in on MVS but the described data is on a distributed system – as an alternative to scheduling jobs using **Work with Jobs** – you can update the classes and the method from the referential integrity interface in interactive mode just as you would for Data Express for Distributed Systems. The interactive update is described in your *Getting Started with Distributed Data Stores* guide, and can be activated if:

- The version of DB2 is 8 or later.
- The HSURDRIA table within the Data Express Knowledge Base only contains one record and this record is set to **Y**. (This table must be populated by a DB2 administrator. Data Express does not directly modify the table in order to prevent unwilling use of the interactive update from referential integrity.)

## Class Field Assignment job

Complete the values listed in the **Secondary Options** window for the **Class Field Assignment** job as shown below:



## Sections and fields

Complete the values in the following sections and fields as appropriate:

**Select a Class** Selects a class from the list.

**Super Classes** Selects a super class.

**Field Types** Selects type or combination of types.

**Field Length** Gives minimum and maximum length of the field.

**Rules** Group of data entry functions with the masking and reduction rules to be applied to an environment.

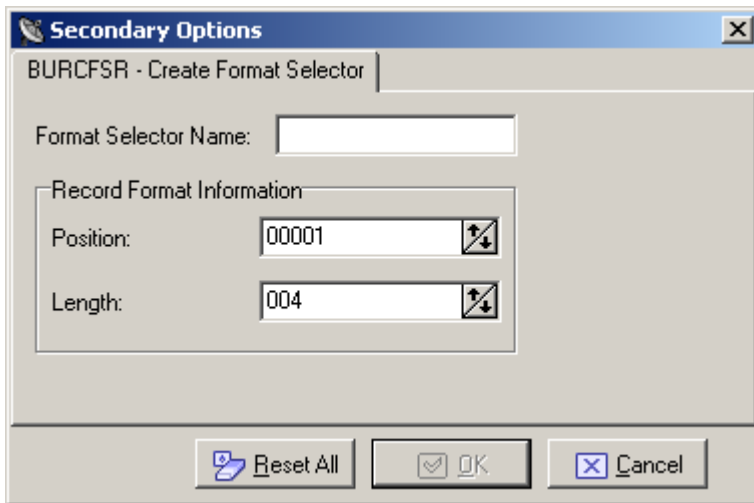
**Thresholds** Logical operations between **Treshold1** and **Treshold2**.

## Available operations

Use the **Add** and **Delete** buttons to add or delete a selected class.

## Create Format Selector job

Complete the values listed in the **Secondary Options** window for the **Create Format Selector** job as shown below:



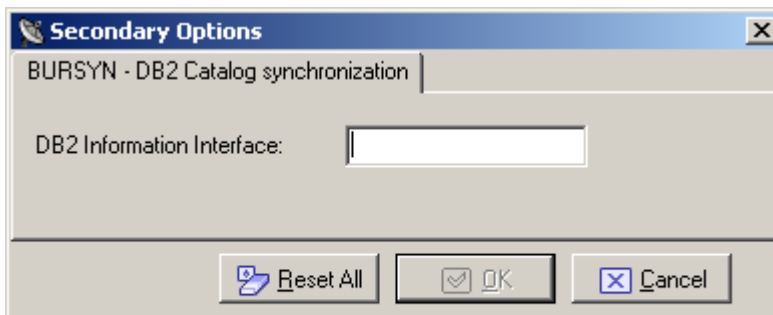
**Format Selector Name**      The name of the format selector. It is a character field with a maximum length of 8 characters.

**Position**                      The position of the record format. It is a 5-digit number.

**Length**                         The length of the record format. It is a 3-digit number.

## DB2 Catalog Synchronization job

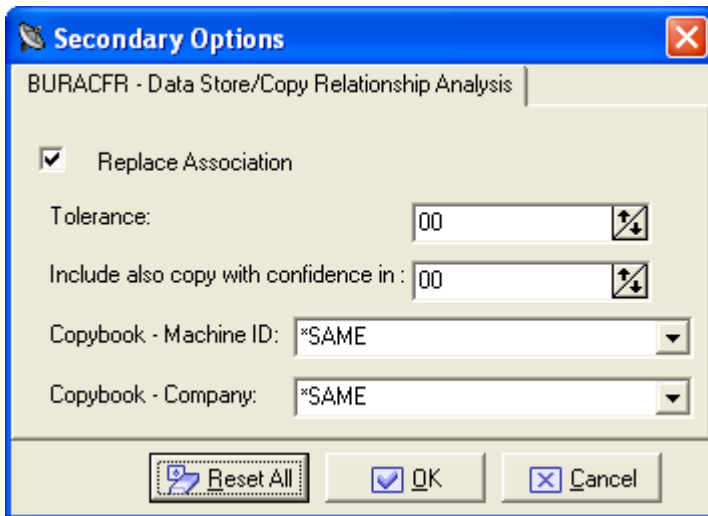
Complete the values listed in the **Secondary Options** window for the **DB2 Catalog Synchronization** job as shown below:



**DB2 Information Interface**                                      Type of the DB2 interface.

## Data Store / Copybook Relationship Analysis job

Complete the values listed in the **Secondary Options** window for the **Data Store / Copybook Relationship Analysis** job as shown below:



**Replace Association** Indicator of whether an existing association will be replaced.

**Tolerance** This parameter allows you to specify a percentage of tolerance between the length of the data store layout and that of the copybook describing it. If you set this parameter to zero, these length values must coincide. Setting a tolerance to a value different from zero may be useful when 'FILLER' fields involving the use of a copybook layout longer than the data store layout are used in the copies.

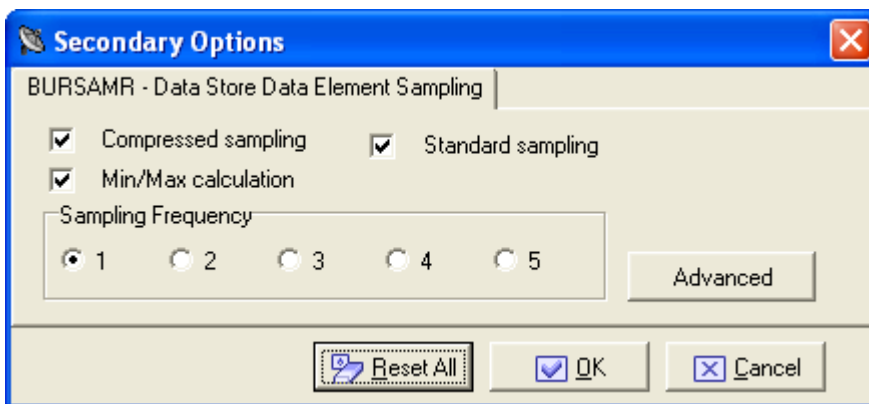
**Include also copy with confidence in** Choose the range.

**Copy - Machine ID** Select Machine ID from the list.

**Copy - Company** Select the company from the list.

## Data Store Data Element Sampling job

Complete the values listed in the **Secondary Options** window for the **Data Store Data Element Sampling** job as shown below:



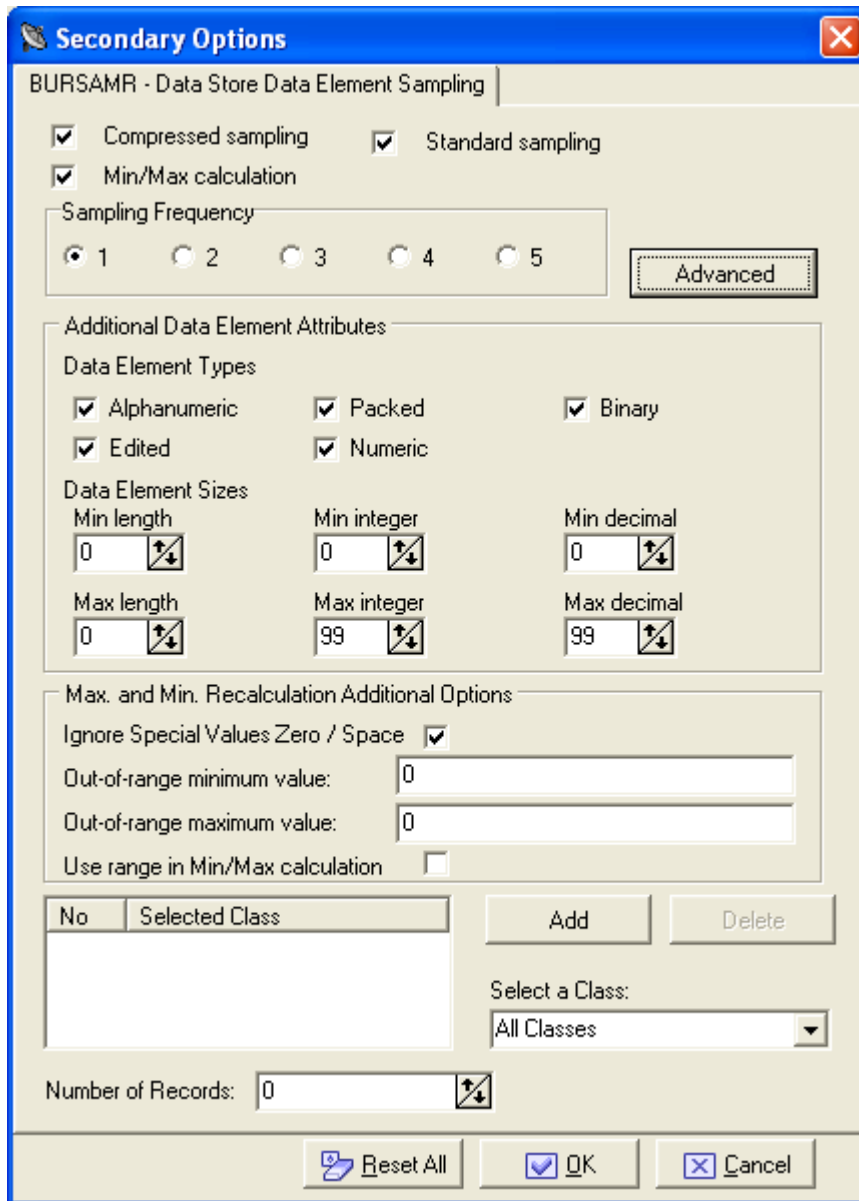
**Compressed sampling** A processing of the compressed sampling is requested.

**Min/Max calculation** The minimum and maximum values of each sampled field can also be calculated.

**Sampling Frequency** The frequency of the sampling execution (values from 1 to 5).

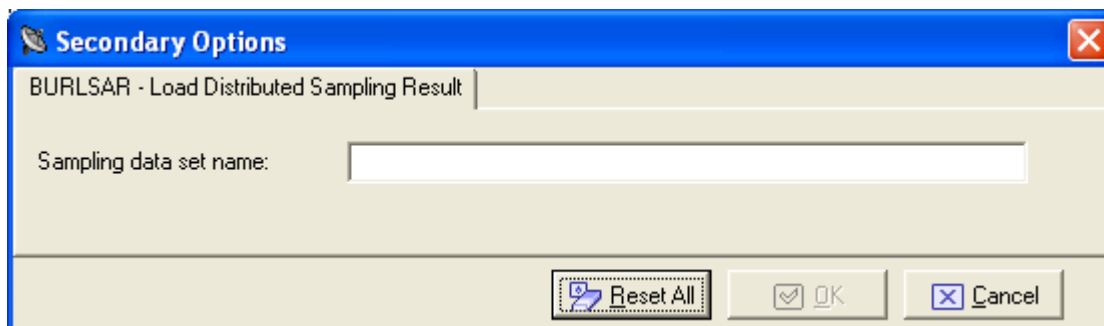
**Standard sampling** Standard Sampling will be performed.

Additional field attributes can be chosen by clicking Advanced. An example of the window displayed is shown below:



## Load Distributed Sampling Results job

Complete the values listed in the **Secondary Options** window for the **Load Distributed Sampling Results** job as shown below:



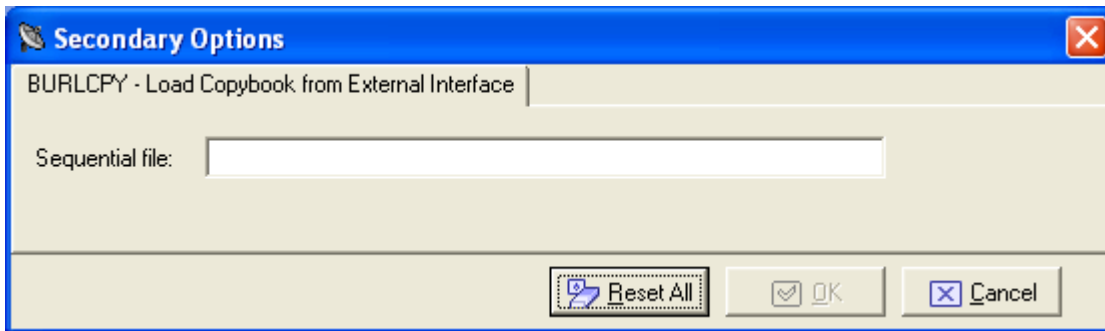




<b>Referential integrity interface</b>	Referential Integrity Interface name.
<b>Method</b>	Name of a particular method or all methods.
<b>Method text</b>	Method description.
<b>Class</b>	Name of the class.
<b>Update method</b>	Check this to update an existing method, adding a new relationship between data stores.

## Load Copy Information from External Interface job

Complete the values listed in the **Secondary Options** window for the **Load Copy Information from External Interface** job as shown below:



**Sequential file** Name of the sequential file on z/OS.

## Load DB2 Table Information by Unload job

This job can be used before creating the extraction method. Be sure to specify a sequential unload of the files and insert the process identifier for reading the file.

Complete the values listed in the **Secondary Options** window for the **Load DB2 Table Information by Unload** job as shown below:

Insert the fields related to the sequential unload:

<b>SYSPUNCH or DCLGEN name</b>	The name of the SYSPUNCH or DCLGEN file.
<b>Unload data set name</b>	The name of the unload data set.
<b>Process identifier</b>	Process identifier used for the management of DB2 files with sequential access.
<b>Application identifier</b>	Application identifier (if applicable).

For the z/OS solution, the only DB2 utility for the UNLOAD of table supported by Data Express is DSNTIAUL or a direct JCL Unload with some limitations.

The following is a sample of the JCL:

```

//DSURUNL2 JOB (00001),DMP,MSGCLASS=A,CLASS=1,NOTIFY=&SYSUID
//JOB LIB DD DISP=SHR,DSN=DSN810.SDSNLOAD
// * ----- *
//UNLOAD3 EXEC PGM=IKJEFT01,DYNAMNBR=20
//STEPLIB DD DISP=SHR,DSN=DSN810.SDSNLOAD
//SYSTSPRT DD SYSOUT=*
//SYSPRINT DD SYSOUT=*
//SYSUDUMP DD SYSOUT=*
//SYSTSIN DD *
DSN SYSTEM(HADB)
RUN PROGRAM(DSNTIAUL) PLAN(DSNTIB81) -
LIB('DB2HAL.RUNLIB.LOAD')

```





**DBD name** The name of the DL/I database.

**Unload data set name** The name of the unload data set.

**Process identifier** Process identifier used for the management of DL/I files with sequential access.


**Application identifier** Application identifier (if applicable).

**Select Option** Select this option if partial unload of the multi format segments will be performed. In this case, define the **Segment Name** and **Format Selector** of the segments you want to be unloaded.

## Load Data Store Information from External Interface job

Complete the values listed in the **Secondary Options** window for the **Load Data Store Information from External Interface** job as shown below:

**Sequential file** Name of the sequential file on z/OS.

 **Note:** Before starting the job, all copybooks described in the sequential file must be already loaded in the product.

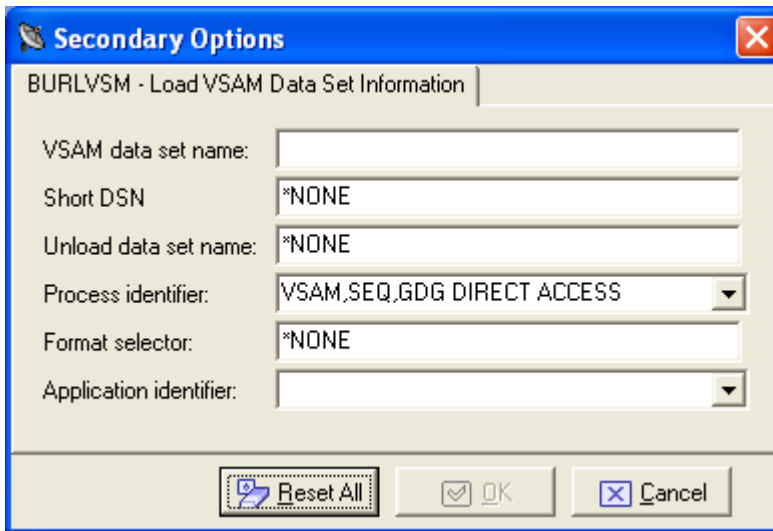
## Load SEQ/GDG Data Set Information job

Complete the values listed in the **Secondary Options** window for the **Load SEQ/GDG Data Set Information** job as shown below:

<b>Data set name</b>	Name of the data set on z/OS.
<b>Short DSN</b>	Short name of the data set.
<b>Unload data set name</b>	Name of the unload data set. This is for the z/OS environment only. It can be different from the original name loaded into the Knowledge Base. To do this, the process ID associated with the elaboration should be created with characteristics for an Unload File Access. For example, <i>GENUN</i> .
<b>Process identifier</b>	The routines needed by the product to read, analyze and interpret the data of the processed files.
<b>Format selector</b>	Exit routine for recognizing formats.
<b>Application identifier</b>	Application identifier (if applicable).

## Load VSAM Data Set Information job

Complete the values listed in the **Secondary Options** window for the **Load VSAM Data Set Information** job as shown below:









<b>VSAM data set name</b>	Name of the VSAM data set on z/OS.
<b>Short DSN</b>	Short name of the data set.
<b>Unload data set name</b>	Name of the unload data set.
<b>Process identifier</b>	The routines needed by the product to read, analyze and interpret the data of the processed files.
<b>Format selector</b>	Exit routine for recognizing formats.
<b>Application identifier</b>	Application identifier (if applicable).

## New Custom Query Wizard

The **New Custom Query Wizard** guides you through creating custom views for the data stores in the Knowledge Base.

# Starting the New Custom Query wizard

1. To start the **New Custom Query Wizard**, click .  
 **Note:** To return to the **Set Name&Bitmap** screen and discard any changes, click **Restart**. To exit the wizard and discard any changes, click **Abort**.
2. Specify the query name.
3. Select the image you want to use by clicking the **Button Bitmap** image.
4. Click **Next**.
5. Select the fields to be displayed in the custom query.  
 **Note:** Click **Finish** if you do not want to set a filter. The function proceeds with creating the view.
6. Click **Next**.
7. Filter results for the custom query by selecting information for the following fields:
  - **Machine ID**
  - **Company name**
  - **Application ID**
  - **DB2 Owner DL/1 DBD**
  - **File type** **Note:** Click **Finish** if you do not want to set any other filter. The function proceeds with creating the view.
8. Click **Next**.
9. Select the desired filters and click **Add**.  
 **Note:** Click **Finish** if you do not want to sort the query. The function proceeds with creating the view.
10. Click **Next**.
11. Set the order by which you want to display data.
12. Choose one or more fields from the **List of available data elements** list and the **Sort Mode** section.  
 **Note:** Click **Finish** if you do not want to set the query as default. The function proceeds with creating the view.
13. Click **Next**.
14. If desired, check **Set this query as default view on startup** to specify the query you created is used as the default.
15. Click **Finish**.

## Options

Data Express can be customized to meet the requirements for different users.

This section describes the available options in the Data Builder and Data Subset Extraction modules. For available options in the Data Masking module, see the *Data Masking Guide*.

## Window contents

Options can be edited in the **Options** window. To display the window, click **Tools > Options**.

## General

The **General** page has the following fields:

### Help options

**Help language** The language used for online help. The Help language list contains the languages available on your PC.

### Security options

**Save user and password** An indicator of whether or not you want to save your user ID and password information for the current database connection.

## Filter settings

The **Filter Settings** page allows the scope of the filters configured in the **Work with Data Stores** area to be selected.

The **Filter Settings** page has the following fields:

### Filter Scope Options

**Filter on current TabSheet** This filter is valid for the current sheet, so that the filter is applied if the tree node is changed, but is not applied if the sheet is changed.

**Filter on all TabSheets** This filter is valid for the nodes of the tree, so that the filter is not applied when the tree node is changed.

### Data Store Behavior Options

**Show filter before loading the data** Allows the filter to be shown before loading the data.

**Clear All Existing Filters** Deletes all existing filters.

## Confirmation messages

The **Confirmation Messages** page lets you set specific work modes. The **Confirmation Messages** page has the following fields:

**Assign the example data element to all companies – (Yes, No, Ask).**

**Clean Class/es assigned to the selected data elements – (Yes, Ask).**

## Server information

The **Server Information** page allows the connection options for Data Express kbde-Server to be displayed and modified.



**Note:** The **Server Information** page is only displayed in Client/Server mode use of the Data Builder module.

The **Server Information** page has the following fields:

### Server Information

**IP Address** The IP address of the NT server (required for Socket and DCom connections).

**Port Number** The port number assigned to the Borland Socket Server validity when the tree node is changed (required for Socket connections).

**URL** The URL to identify the `httpserver.DLL` file installed on the server machine (required for HTTP connections).

**Connection options** Type of connection (Socket, DCom, HTTP).

## Available operations

The buttons at the bottom of the **Options** window are:


**OK** Saves any changes that have not been applied and closes the window.

**Cancel** Cancel any changes applied. Any actions confirmed with **Apply** cannot be restored with **Cancel** but must be entered and confirmed again.

**Apply** Confirms the changes.

## File Properties

The **Properties - File** window is a tabbed view that displays all attributes for a selected data store.

To access the **Properties - File** window, click  (**Data Store Properties**) from the **Work with Data Stores** area, or right-click the appropriate table from the **List of Data Stores** and click **Data Store Properties**.

## Window contents

This section describes each tab of the **Properties - File** window.

### General attributes page

The fields on the **General Attributes** page are:

**Data store description** Description of the data store.

**Application ID** Identifier (if it exists) of the application area that the data store belongs to.

**Process ID** Process Identifier.

**Format selector** Exit routine for data-store format recognition.

**Record length** Length (in bytes) of the record.

**Data store name** Name of the data store.

**Data store type** Type of data store, for example, DB2, VSAM, DL/I, GDG, SEQ, ODBC, or ORA.

**Data store ver** Version of the data store.

**Sampling frequency** Frequency (for example, daily or monthly) of sampling of the table fields for which the distribution of values is desired. (Only applicable for Data Express for z/OS.)

**Register Tables** Indicator of whether the data store is a register table.

### System page

The fields on the **System** page are:

**Machine ID** Identifier of the machine.

**Company name** Name of the company.



## Object attributes page

The fields on the **Object Attributes** page are:

<b>Data store type</b>	Type of table, for example, DB2, VSAM, DL/I, GDG, SEQ, ODBC, ORA.
<b>Data store name</b>	Name of the data store.
<b>Data store description</b>	Description of the data store.
<b>Application ID</b>	Identifier (if it exists) of the application area that the data store belongs to.
<b>Record length</b>	Length (in bytes) of the record.
<b>Record format</b>	Name of the record format.
<b>Format selector</b>	Exit routine for table format recognition.
<b>Number of records</b>	Number of records contained in the data store.
<b>Analyzed records</b>	Number of analyzed records.
<b>Database name</b>	Name of the database.
<b>Tablespace name</b>	Name of the tablespace.
<b>Object ID</b>	Object identifier.

## Dates page

The fields on the **Dates** page are:

<b>Date of analysis</b>	Date of the analysis carried out on the table.
<b>Date of last calculation</b>	Date of the last recalculation carried out on the table.
<b>Date of last sample</b>	Date of the last calculation of the distribution of values of the table fields involved in the process.

## Associated Copybook page

The **Associated Copybook** page is only available in the Data Express for z/OS solution.

The fields on the **Associated Copybook** page are:

<b>Copy PDS</b>	Partitioned data set to which the copybook assigned to the data store belongs.
<b>Copybook name</b>	Name of the copybook assigned to the data store.
<b>I/O area name</b>	Name of the area present on the copybook which describes the layout of the data store.
<b>I/O Area Progressive</b>	Progressive number of the area within the copybook associated with the data store.
<b>Information provider</b>	Identifies who carried out the association of the copybook with the data store. <b>Manual</b> indicates the user did this manually. <b>Automatic</b> indicates the assignment was done automatically by the analysis carried out Data Express.



**Note:** The **Associated Copybook** page is not visible for DB2 tables.

## Available operations

The buttons at the bottom of the **Properties – File** window are:

**Change** Enables control and goes into edit mode.



**Note:** This button is only available on the **General Attributes** page.

**OK** Saves any changes that have not been applied and closes the window.

**Cancel** Cancels any changes applied to the data store properties and closes the window. Any actions confirmed with **Apply** cannot be restored with **Cancel** but must be entered and confirmed again.

## Filter by Data Store

The **Filter-Data Stores** window enables you to apply a filter definition to the data store list so you can make a partial selection of information and carry out a one-off analysis.

Various types of selection can be applied and are applicable to different requirements. For example:

- A very large application might be divided by Application ID values so each manager could carry out an analysis on his area of responsibility.
- Anyone who uses a prefix for distinguishing data store belonging to an area could use a partial selection on the data store name.
- Anyone who uses a different qualifier (for example, **Owner**) for each area of responsibility of data stores could carry out a selection by library.

To access this function, click  (**Filter-Data Stores**) from the **Work with Data Stores** area.

## Window contents

This section describes the fields listed on each page of the **Filter-Data Stores** window.

### System page

The fields on the **System** page are:

<b>Machine ID</b>	Selects by machine ID.
<b>Company</b>	Selects by company name.

### Object page

The fields on the **Object** page are:

<b>Application ID</b>	Selects data stores based on the application area they belong to.
<b>DB2 owner, DL/I DBD</b>	Selects by (DB2) owner or by database description (DL/I). For other types of data stores, the generic term <b>*ALL</b> can be used.
<b>Data store type</b>	Selects by data store type distinguishing between DB2, VSAM, DL/I, Sequential (SEQ), GDG, ODBC, or ORA.
<b>Data store name</b>	Selects by data store name.
<b>Data store version</b>	Selects by data store version.
<b>Analyzed</b>	Selects by state of analysis of the data store. The possible values are: ( <b>Yes</b> , <b>No</b> , and <b>*ALL</b> ).

### Record page

The fields on the **Record** page are:

<b>Record format</b>	Selects by record format.
<b>Record length</b>	Selects data stores with <i>record layout length</i> within a range of values. If only one of the two limits of the interval is specified all of the values greater than the start value (if the end value is not specified) or less than the end value (if the start value is not specified) are extracted.
<b>Number of records</b>	Selects data stores with the <i>number of records</i> within a range of values. If only one of the two limits of the interval is specified all of the values greater than the start value (if the end value is not specified) or less than the end value (if the start value is not specified) are extracted.
<b>Records analyzed</b>	Selects data stores with the <i>number of records</i> , which have been <i>analyzed</i> within a range of values. If only one of the two limits of the interval is specified, all of the values greater than the start value (if the end value is not specified) or less than the end value (if the start value is not specified) are extracted.

## Dates page

The fields on the **Dates** page are:

<b>Date of analysis</b>	Selects data stores with a given analysis date.
<b>Date of last calculation</b>	Selects data stores with a given date of the last recalculation.
<b>Date of last sample</b>	Selects data stores with a given date of the last calculation of the distribution of values.

## Associated Copybook page

The fields on the **Associated Copybook** page are:

<b>Copybook PDS</b>	Selects by partitioned data set the copybooks assigned to the data stores.
<b>Copybook name</b>	Selects by the name of copybooks assigned to the data stores.

## Scheduling page

The **Scheduling** page only applies to Data Express for z/OS.

The field on the **Scheduling** page is:

<b>Sampling frequency</b>	Selects by frequency of sampling (for example, daily or monthly) of the data store data elements.
---------------------------	---


## Available operations

The buttons at the bottom of the **Filter-Data Stores** window are:

<b>Clear All</b>	Clears all modifications made to the selected filter.
<b>Settings</b>	Sets any modifications made to the selected filter.
<b>OK</b>	Saves any changes made to the selected filter and closes the window.
<b>Cancel</b>	Cancels any changes made to the selected filter and closes the window. Any actions confirmed with <b>Apply</b> cannot be restored with <b>Cancel</b> but must be entered and confirmed again.

# Compare Layouts - Copybook

The **Compare Layouts– Copybook** window lets you check that the calculated association is correct, by checking the byte-by-byte congruence of the data element layout with an associated copybook.

 **Note:** The **Compare Layouts– Copybook** window is not applicable for distributed data stores.

Data Express uses an association algorithm to determine the list of compatible copybooks (that describe its trace) for each data store. The association algorithm is based on:

- Compatibility of length between data store and copybook.
- Byte-by-byte congruence between the data type of the data store and copybook traces.

The information for copybook bytes is obtained from the analysis of the source of the same copybook. The information for file bytes is obtained during the file analysis on the basis of the congruence of the values found within the records, their positions being equal.

Each byte, depending on its type, has a specific hexadecimal content. The evaluation of the congruence between the copybook and the file bytes is based on an algorithm comparing the copybook byte with the hexadecimal content of the corresponding file byte.

To access this function, click  (**Compare Layouts – Copybook**) from the **Work with Data Store** area.

## Window contents

This section describes the fields listed in the **Compare Layouts – Copybook** window.

The upper part of the window shows two frames containing the file and the selected copybook attributes. Selecting the assigned copybook node on the left-hand side displays a list of compatible copybooks.


Field	Description
<b>Data Store</b>	
<b>Machine ID</b>	Identifier of machine that the data store belongs to.
<b>Company</b>	Identifier of company that the data store belongs to.
<b>Name</b>	Name of the data store.
<b>Record format</b>	Record format name.
<b>Record length</b>	Length of the data store record.
<b>Selected Copybook</b>	
<b>Machine ID</b>	Identifier of machine that the data store belongs to.
<b>Company</b>	Identifier of company that the data store belongs to.
<b>PDFS</b>	Partitioned data set that the selected copybook belongs to.
<b>Name</b>	Name of the selected copybook.
<b>Copy Length</b>	Length of the selected copybook.
<b>I/O Area Name</b>	Name of the I/O area identified within the copybook.
<b>Prog</b>	I/O area progressive number.
<b>Byte-by-Byte Congruence</b>	

Field	Description
<b>Byte Position</b>	Position of the seventh byte in the data store layout.
<b>File Byte</b>	Data type for the seventh byte in the data store layout. Available values: Alphanumeric, Binary, Filler, Low-value, Packed Central, Packed Final Unsigned, Packed Final Signed, Space, Zoned Unsigned, Zoned Signed, and Bit.
<b>Confidence</b>	Hypothesis confidence for the seventh byte in the data store layout.
<b>Copybook byte</b>	The seventh byte type of the selected copybook. Available values: Alphanumeric, Binary, Filler, Low-value, Packed Central, Packed Final Unsigned, Packed Final Signed, Space, Zoned Unsigned, Zoned Signed, and Bit.
<b>Green disk icon</b>	Full compatibility, the copybook byte is the same as the file byte.
<b>Half green, half yellow disk icon</b>	Partial compatibility with high reliability.
<b>Yellow disk icon</b>	Partial compatibility with low reliability. The file bytes always set to spaces and/or the copybook bytes included in filler areas also belong to this category.
<b>Red disk icon</b>	Total incongruence between the copybook byte and the file byte.
<b>Level of compatibility indicators</b>	
<b>Copy Bytes Matching</b>	Percentage of bytes compatible between data store and copybook with respect to the length of the data store layout.
<b>Confidence</b>	Estimate of the level of similarity between the proposed file byte value and the corresponding file byte content considering the file analysis only.
<b>Compatible Copybooks</b>	Displays the list of all the copies with the same level of compatibility with the data store.
<b>All Copies (Filtered)</b>	Displays all the copybooks belonging to the environment selected on the basis of the specified associated filters.
<b>Filter on All Copybooks - General Tab</b>	
<b>Machine ID</b>	Allows selection by machine identifier.
<b>Company</b>	
<b>Filter on All Copybooks - Copybook Attributes Tab</b>	
<b>Name</b>	Allows selection by company name.
<b>Tolerance %</b>	If a value different from 0 (zero) is set, it allows you to select copies from the environment whose length differs from that of the file layout by the set percentage value. By default, the parameter is set to 0. This implies that copies whose length coincides with that of the file are displayed.

Field	Description
	Value 100 allows you to select all the copybooks belonging to the Machine ID and to the company selected on the <b>General</b> page.

## Available operations




The buttons listed in the **Compare Layouts – Copybook** window are described below:

Button	Description
<b>Data Store</b>	
<b>Compare</b>	Displays a list showing the byte-per-byte compatibility between data store and selected copybook and the Copy Bytes Matching and Confidence percentages.
<b>Assign</b>	Assigns the copybook to the data store.
<b>Delete</b>	Deletes the copybook-data store association.
 <b>(Graph)</b>	Opens a window including a pie chart of the distribution of the byte compatibility between data store and selected copybook.
<b>Filter</b>	
<b>Clear Filters</b>	Returns all the conditions included in the window to their initial value.
<b>Apply Filters</b>	Applies the selected filters.
<b>Close</b>	Closes the window.

## Sample Graph - Data Sampling

The Data Sampling function can be used to display a pie chart of the distribution of values of a data store data element, highlighting the values that occur most often within the data element.

To access the **Sample Graph** window from the Data Sampling function:

1. Click the  **Sampling** tab or  (**View Data Stores by Sampling**) on the toolbar.
2. Right-click the appropriate table and click **Open Selected Data Store**.
3. Right-click the appropriate table in the **List of Data Elements** and click **Show In Sampling**.
4. Select the appropriate field in the **List of Sample Analysis of the Selected Data Store Field**, and either click  (**Sample Graph of the Selected Data Element**) or right-click to display the context menu.
5. Click **Sample Graph of the Selected Data Element**.

## Window contents

This section describes the contents of the **Sample Graph** window.

The pie chart shows the values that occur most often.

On the right-hand side, the legend shows how many times a certain value appears and the color of its corresponding segment in the graph. The width of each segment is proportional to the number of records with that value.

The fields and buttons in the **Sample Graph** window are:


<b>Number of Different Values</b>	Number of different values estimated for this field.
<b>Show the x Values with Major Occurrence</b>	Number of largest occurring different values. By default, this value is <b>5</b> . All the other values are included in the segment labeled as <b>OTHER</b> . This value can be increased or decreased.
<b>Apply</b>	Applies the changed value in the field <b>Values with Major Occurrence</b> and shows the graph with the changed values immediately.
<b>OK</b>	Closes the window.

## Show Synthetic Data Element Contents

The function of the **Show Synthetic Data Element Contents** window is to obtain a concise graphical representation of data element content. The representation of the content depends on the nature of the data element.

- The values of the numeric data elements are divided into homogeneous groups that are differentiated by the value of their first digit and by the number of digits they contain. This description preserves the general representation of the distribution of the values throughout the data element.
- The values of the alphanumeric data elements are divided according to various criteria:
  - First character
  - Value length
  - Presence of numeric characters only
  - Presence of alphabetical characters only

The number of values belonging to each class is stored for all of these criteria. All this information allows you to preserve many of the data elements content properties.

To access the **Show Synthetic Data Element Contents** window, from the main window, select the appropriate data store and either click  (**Show Synthetic Data Elements**). Or, right-click to display the context menu, then click **Show Synthetic Data Element Contents**.

## Window contents

This section describes the fields listed in the **Show Synthetic Data Element Contents** window.

The tree of the data store data elements for which the sampling has been carried out is displayed on the left-hand side of the window. If you select one of these data elements, its concise content in the form of a table and graph is highlighted on the right-hand side of the window.

Control	Description
<b>Field:</b>	
<b>Machine ID</b>	Identifier of machine that the data store belongs to.
<b>Company</b>	Identifier of company that the data store belongs to.
<b>Name</b>	Name of the data store.
<b>Record format</b>	Name of the record format.
<b>Data store type</b>	Type of data store.
<b>Number of records</b>	Number of records in the data store.

Control	Description
Recalculation date	Reference sampling date.
<b>Button:</b>	
<b>Apply</b>	Applies the filter on a recalculation date.
<b>Close</b>	Closes the window.
<b>Sample or Graph</b>	Shows the synthetic data element content in the form of a value list and of a graph at the bottom of the window.
<b>Sort or Normal</b>	Orders the sampling density values in decreasing order (valid for numeric data elements only).
<b>Filter</b>	Opens a window where you can apply filters to the data element selection.

## Work with Copybooks

The **Work with Copybooks** area provides information on the COBOL copies and PL/I includes loaded in the Data Express Knowledge Base.



**Note:** The languages handled by Data Express are COBOL, PL/I, and DCLGEN. Any sources written in different languages are loaded as unhandled languages. If you want to avoid loading unrecognized sources, choose the relevant option.

To access the **Work with Copybooks** area, click  (**Work with Copybooks**) on the toolbar.

## Window contents

This section describes the columns listed in the **Work with Copybooks** area and **Work with a Selected Copybook** window.

### Work with Copybooks

<b>Copybook Name</b>	Name of the COBOL copybook or of the PL/I include.
<b>Copybook PDS</b>	Name of the partitioned data set that contains the COBOL copybook or PL/I include file.
<b>Machine ID</b>	Identifier of the machine that the copybook belongs to.
<b>Company</b>	Identifier of the company that the copybook belongs to.
<b>I/O area name</b>	Name of the I/O area identified within the copybook.
<b>IO Area Prog</b>	I/O area progressive number determined by incongruent redefinitions of the area.
<b>Copy Text</b>	The copybook text.
<b>Analysis Flag</b>	Indicator of whether the copybook has been analyzed.
<b>Bad Copy Flag</b>	Indicator of whether there is additional information on the copybooks.
<b>Type of Anomaly</b>	<p><b>MIX (1)</b> Statements have been identified within the copybook.</p> <p><b>N01 (2)</b> The 01 level of the I/O area has not been identified.</p> <p><b>MUL (3)</b> More than an I/O area has been identified within the copybook.</p>



**NFR (4)** No I/O areas have been identified within the copybook.

**ERR (5)** An error has been identified during the analysis.

**Language**

Copybook language:

<b>CBL</b>	COBOL copy
<b>PLI</b>	PL/I include
<b>DGC</b>	COBOL dclgen
<b>DGP</b>	PL/I dclgen
<b>DDL</b>	DDL
<b>N/A</b>	Non-handled language

**Record Length** Length of the copybook records.

**Number of Fields** Number of fields in the copybook/include file.

**Number of Packed Fields** Number of packed fields in the copybook/include file.

**Number of Binary Fields** Number of binary fields in the copybook/include file.

**Associated Copy** Indicator of whether the I/O area has been associated with a data store.

**Work with Selected Copybook**

**Field name** Name of the field.

**Displacement** Field offset at the beginning of the I/O area.

**Field Level** Definition level of the field within the COBOL copybook or PL/I include.

**Type** Data type included in the field:

<b>(B)</b>	Binary numeric type.
<b>(F)</b>	Floating point numeric type.
<b>(N)</b>	Zoned numeric type.
<b>(P)</b>	Packed numeric type.
<b>(X)</b>	Alphanumeric type.
<b>(Z)</b>	Edited type.
<b>(A)</b>	Pointer type.

**Length** Length of the field in bytes.

**Integer** Number of integer digits within the numeric field.

**Decimal** Number of decimal digits within the numeric field.

**Sign** Indicator of whether the numeric field is signed (Yes or No).

**OCCURS Level** Indicator of whether the field is an array.

**Group** Indicator of whether the field belongs to a group (Yes or No).

## Buttons

### Refresh



Refreshes the screen.

### Open selected Copy

Opens another menu with detailed information about the selected copybook/include file and fields contained in it.

**Delete Selected Copybook** Deletes the selected copybook.

## Distributed Loader

The Distributed Loader is a utility that lets you load and map information from source data stores to your Knowledge Base as part of the Data Inventory process. The Knowledge Base can exist either on Windows or z/OS.



### Note:

- For data stores that you will access using the Oracle Extension, you must configure a BDE alias for your data store.
- For data stores that you will access using the ODBC Extension, only an ODBC DSN is required.

For more information, see the *Getting Started with Distributed Data Stores* guide.

You can use the **Load from Database** functionality if you have a connection configured to access your data store from your Windows machine. Otherwise, you must use the **Load from File** functionality.

To access the **Distributed Loader** window, click  from the main window.

## Load from database

Begin by selecting the **Load from Database** tab. In Data Express for Distributed Systems, you will see an import checkbox for referential integrity labeled: Load Referential Integrity. This provides the ability to load your referential integrity information into the Windows Knowledge Base, in addition to standard schema information about your tables. You are now ready to import your referential integrity classes. See the *Getting Started with Distributed Data Stores* guide for more information.

In Data Express for z/OS, an export checkbox labeled **Export Referential Integrity** is provided instead. In this environment, a file that contains referential information is created for you. Once this file is transferred to the mainframe, you can load and import your referential integrity classes. See the *Getting Started with Distributed Data Stores* guide for more information.

Standard schema information about your distributed data store's tables is automatically loaded in the z/OS knowledge base. You can logically reduce the amount of information you wish to load by specifying the name of a schema in the **Schema** field. Otherwise, you leave this field blank and the Distributed Loader retrieves and loads all the information about all the schemas in the data store.

## Load from file

Begin by selecting the **Load from File** tab. In Data Express for Distributed Systems, two files can be used as input to the load process. The first file contains information about your tables, columns, and indexes. The second optional file contains information about your data store's referential integrity.

In Data Express for z/OS, only the file that contains information about your tables, columns, and indexes can be used. For a z/OS Knowledge Base, your referential integrity information gets loaded into the Knowledge Base while executing the **Import Classification from Referential Integrity** job.

The files used as input by the Distributed Loader are created by the Extension Technology utility: **dxegenloadfile**. Note that this utility will create both files. So, if you are using Data Express for z/OS, the

referential integrity file created is used as input to the **Import Classification from Referential Integrity** job.

For more information, see the *Getting Started with Distributed Data Stores* guide.

## Appendix A. Standard Mode

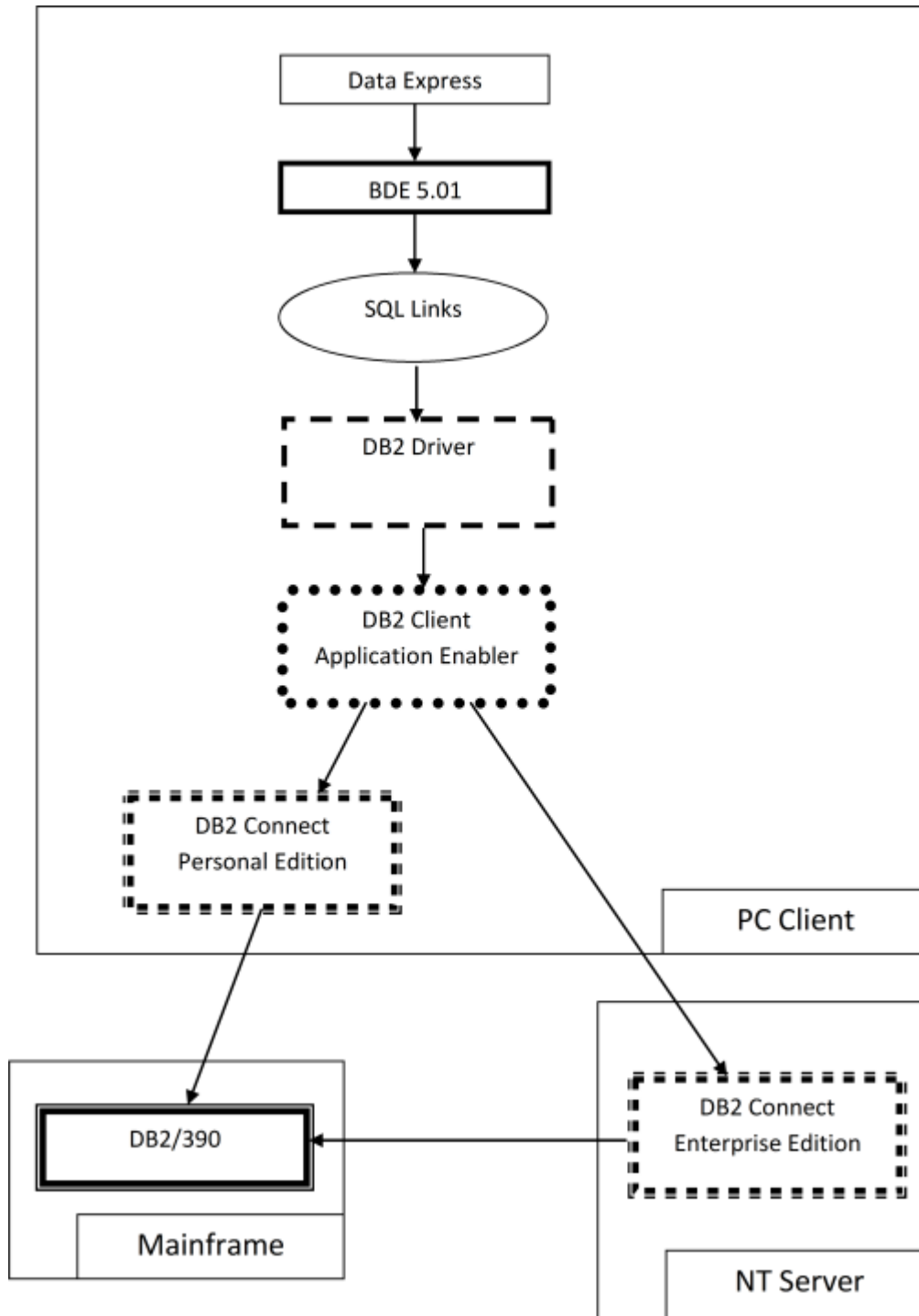
This appendix shows you how to prepare a working environment (or project) before using the Data Builder module.

The Standard configuration enables you to access data on your system in different ways. The database engine is Borland Database Engine (BDE) 5.01, which you install after you complete your Data Express installation on Windows.



**Note:** The Data Express for Distributed Systems solution is installed as standard mode. For Data Express for z/OS, you can install the product in standard mode if you choose.

# Architecture



BDE is inserted on another layer, the Borland SQL Links layer, which is installed together with BDE.

Connection to a database involves the creation of a database alias, which is a link to a database through a DB2 SQL Links database driver. The database alias is created from BDE Administrator.

# Database connection prerequisite

Before opening the project with Data Express, you must create a database alias that establishes a connection to the database.

## DB2 database alias creation

Before you can create a DB2 database alias, you must have an IBM Client Application Enabler, and you must have already cataloged all databases you want to access.



### Notes:

- The connection to the OS/390 system cannot be established through an ODBC DB2 database alias but only through a DB2 database alias (that is, only through SQL Links).
- If you are using Data Express on Windows Vista and User Access Control is enabled, you must run the BDE Administrator utility as Administrator.

To create a DB2 database alias:

1. From Windows Control Panel, open **BDE Administrator**.
2. Click **Object > New**.
3. In the **Database Driver Name** list, click **DB2**.
4. Click **OK** to create the database alias.
5. Enter the database alias name in the **All Database Aliases** pane.
6. Click **Object > Apply**.
7. In the **Definition of** pane, click in the second column for **DB2 DSN** to display a list of schemas for DB2 databases that have been cataloged on the PC.
8. Select the appropriate database schema name, then click **Object > Apply**.
9. Verify the DB2 SQL Links Driver uses the correct library to access DB2 Connect 5.2. On the **Configuration** page, select **DB2** from **/Configuration/Drivers/Native**.
10. Click in the second column for **DLL32** and ensure that **SQLDB2V5** is selected.

## Authorizations and privileges

When you open a project, you must enter the user ID and password to connect to the database server where the project is located.

Data Express can save login information and use it for future connections to the same project, so you do not need to enter your user ID and password every time you connect. However, not saving login information is the default behavior.

The user ID used to establish the database connection must have read privileges on the following tables or views:

- All tables created by Data Express in the MVS, OS/390, or z/OS DB2 environment during the installation phase.
- **SYSIBM.SYSTABLES**
- **SYSIBM.SYSCOLUMNNS**

## Appendix B. Client / Server Mode

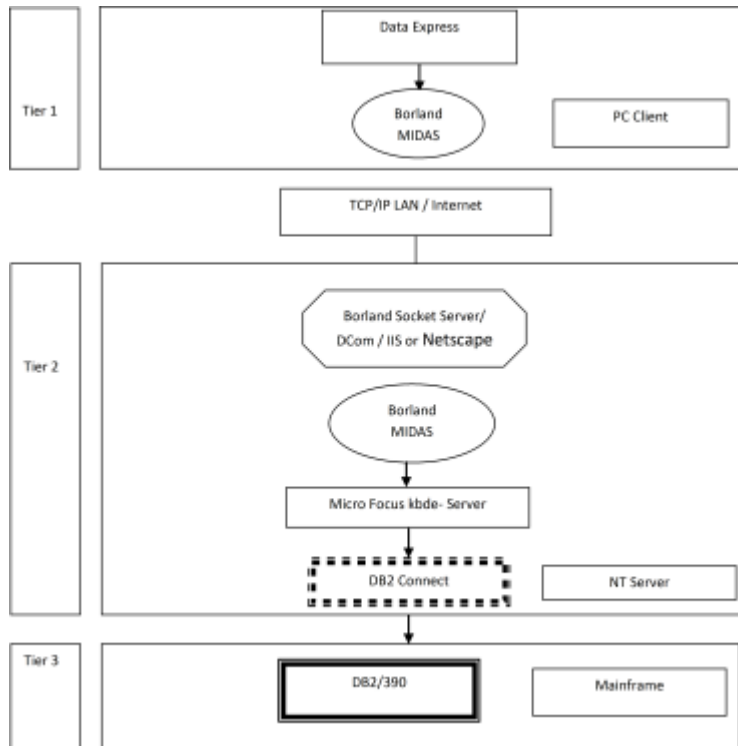
This appendix shows how to configure access to the kbde-Server before using Data Express.

The actions listed in this section should be followed as a necessary first step before any serious use of Data Builder .

The Client/Server configuration provides access to the data resident on the MVS, OS/390, or z/OS system through the kbde-Server. The intermediate layer of this architecture is Borland MIDAS 3 and the connection to the server can be based on Socket, DCOM, or HTTP.

 **Note:** You can only use client/server mode for Data Express for z/OS.

## Architecture



## Server connection prerequisite

Before opening a project in Data Express, you must define connection information for the kbde-Server.

### Defining server connection information

This section describes how to define server connections for the Data Builder and Data Subset Extraction modules.

 **Notes:**

- For more information about connection options to the kbde-Server, see [Options](#).
- Connection information is handled differently in the Data Masking module. For information about defining server connections for Data Masking, see the *Data Masking Guide*.

To define connection information:

1. Click **Tools > Options**, then click the **Server Information** tab.
2. Specify the following information:
  - **IP Address** – IP address of NT server (required for **Socket** and **DCom**).
  - **Port Number** – Port number assigned to Borland Socket Server (required for **Socket**).
  - **URL** – URL for the identification of the .dll installed on the server machine (required for HTTP).
  - **Connection options** – Type of connection desired.

3. Click **OK** to confirm.

## Authorizations and privileges

Even though the connection to the MVS, OS/390, or z/OS system is established through the kbde-Server, authentication information is requested at the client level. In other words, when you connect to a project made available by the kbde-Server, you must enter a user ID and password to connect to the database server where the project is located.

Data Express can save login information and use it for future connections to the same project, so you will not need to enter your user ID and password every time you connect.



**Note:** Not selecting the **Save user and password** item from the **Option** window disables this feature.

The user ID used to establish the database connection must have read privileges on the following tables or views:

- All tables created by Data Express in the MVS, OS/390, or z/OS DB2 environment during the installation phase.
- **SYSIBM.SYSTABLES**
- **SYSIBM.SYSCOLUMN**

## Starting Server-side Executables as Windows Services

To establish a connection between Data Express modules and the Knowledge Base server, your DB2 server must be running the following server-side executables as services:

- `scktsrvr.exe` - socket server
- `kbdeserver.exe` - KBDE server

Data Express provides both executable files, which are located in the `%ProgramFiles(x86)%\Micro Focus\Data Express 4.0\kbde-Server` directory by default.

You can configure Windows to start these executables automatically as services each time you start Windows on the DB2 server. When both the socket and KBDE server services are started, the connection is established automatically.

When the socket server service is started on the DB2 server, Windows starts the KBDE server service automatically. Therefore, you need to configure only the socket server service to start automatically:

1. Set `scktsrvr.exe` to run as an administrator:
  - a. From Windows Explorer, change to the `%ProgramFiles(x86)%\Micro Focus\Data Express 4.0\kbde-Server` folder.
  - b. Right-click `scktsrvr.exe`; then select **Properties**.
  - c. Click the **Compatibility** tab.
  - d. Check **Run this program as an administrator**; then click **OK**.
2. At a Windows command prompt, change to the `%ProgramFiles(x86)%\Micro Focus\Data Express 4.0\kbde-Server` directory.
3. Enter the following command:

```
scktsrvr.exe /install
```
4. Open Windows Services and start the Borland socket server, or reboot your machine.



**Note:** To remove these services:

1. Stop the Borland socket server service.
2. At a command prompt, change to the `%ProgramFiles(x86)%\Micro Focus\Data Express 4.0\kbde-Server` directory.
3. Enter the following command:

```
scktsrvr.exe /uninstall
```