

MetaStore Manager User Guide

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About This Guide

The *MetaStore Manager User Guide* is intended for MetaSuite metadata administrators.

1.1. Related Publications

The following table gives an overview of the complete MetaSuite documentation set.

Release Information	Release Notes 8.1.3
Installation Guides	<ul style="list-style-type: none">• BS2000/OSD Runtime Component• DOS/VSE Runtime Component• Fujitsu Windows Runtime Component• MicroFocus Windows Runtime Component• MicroFocus UNIX Runtime Component• OS/390 and Z/OS Runtime Component• OS/400 Runtime Component• VisualAge Windows Runtime Component• VisualAge UNIX Runtime Component• VMS Runtime Component
User Guides	<ul style="list-style-type: none">• INI Manager User Guide• Installation and Setup Guide• Introduction Guide• MetaStore Manager User Guide• MetaMap Manager User Guide• Generator Manager User Guide
Technical Guides	<ul style="list-style-type: none">• ADABAS File Access Guide• IDMS File Access Guide• IMS DLI File Access Guide• RDBMS File Access Guide• XML File Access Guide• Runtime Modules• User-defined Functions User Guide

If you are unfamiliar with MetaSuite, the following technical description provides you with a brief overview.

The MetaSuite System

MetaSuite is designed for data retrieval, extraction, conversion and reporting. It includes a workstation-based graphical user interface and a mainframe runtime component.

MetaSuite Database Interfaces	MetaSuite can access data from a number of database management systems, using the same commands, program structure and retrieval techniques used for non-database files. Each database interface is available as an optional enhancement to the base product.
MetaMap Manager	MetaMap Manager is the MetaSuite tool used to define models. Such models are intuitively built by describing overall program specifications, input file definitions (data and process) and target file definitions (data and process).
MetaStore Manager	MetaStore Manager is a tool that provides metadata maintenance and documentation services.
Generator Manager	The Generator Manager is the system administration tool. All kinds of basic functionalities and customization possibilities are supported by this tool.

Purpose of the MetaStore Manager

MetaSuite is a data integration application that enables you to rapidly move large volumes of data from any Source to any Target Business Intelligence Environment. For this purpose, MetaSuite needs to know the metadata of all possible data sources and targets.

MetaSuite MetaStore Manager is responsible for providing these metadata and allows to:

- Create Dictionary Files [automatically](#) (page 180) or [manually](#) (page 20)
- Edit (or enrich) available metadata.
- Save Dictionary Files into the MetaStore Repository.
- Export Dictionary Files in MDL, XML, XMI or PDL format. See [Exporting Dictionary Files](#) on page 242.

CHAPTER 3

Key Notions

The following table explains the key notions used by the MetaStore Manager.

Notion	Description
MetaStore	MetaStore is the repository containing all Dictionary Files.
Dictionary File	A Dictionary File describes the metadata for the logical unit of data either from which data will be extracted (data source) or to which data will be written (data target). The metadata describe both the physical and business characteristics of the Dictionary File. A Dictionary File contains subordinate objects, such as the underlying Records, Fields, Relationships and Indices. Each Dictionary File contains one or more Records.
Record	A Record in a Dictionary File describes the metadata of a specific data structure within the Dictionary File. This structure is described by the Record's underlying Fields. Each Record contains one or more Fields.
Field	A Field is the smallest data unit that can be addressed within a Record. It has an internal datatype and a size.
Group Field	A Group Field is a Field that can be expanded in one or more Subfields.
Subfield	A Subfield is a Field that is defined as a component of another Field (Group Field).
Relationship	A Relationship defines a logical relation between two or more Records.
Index	An Index defines an access path to a Record.

Prerequisites

The following prerequisites must be met before you can use the MetaStore Manager.

- Install the MetaSuite program
- Create a Repository
- Create ODBC access to the Repository
- Complete the setup after installation

If you will use a Version Management tool, the following additional steps need to be performed:

- Install this Version Management tool
- Create a repository for MetaSuite in this version management tool
- Allow user access on this repository
- Create a project within this repository

Note: All procedures you need to follow to obtain this situation are described in the *Installation and Setup Guide*.

CHAPTER 5

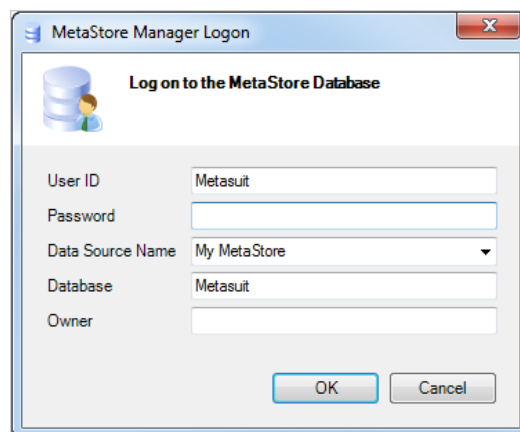
Getting Started

1. Start the *MetaStore Manager*.

MetaStore Manager requires initial settings defined in an INI file. The default name of this INI file is *MetaSuite.ini* and its default location is the user's AppData\Roaming\MetaSuite folder.

Note: If the *MetaSuite.ini* is not available at the expected location, the installation procedure will start automatically and the default *MetaSuite.ini* file will be created.

2. The *MetaStore Manager Logon* screen appears:



The image shows a Windows-style dialog box titled "MetaStore Manager Logon". Inside the dialog, there is a sub-header "Log on to the MetaStore Database" next to a database icon. Below this, there are five labeled input fields: "User ID" (containing "Metasuit"), "Password" (empty), "Data Source Name" (a dropdown menu showing "My MetaStore"), "Database" (containing "Metasuit"), and "Owner" (empty). At the bottom right of the dialog are two buttons: "OK" and "Cancel".

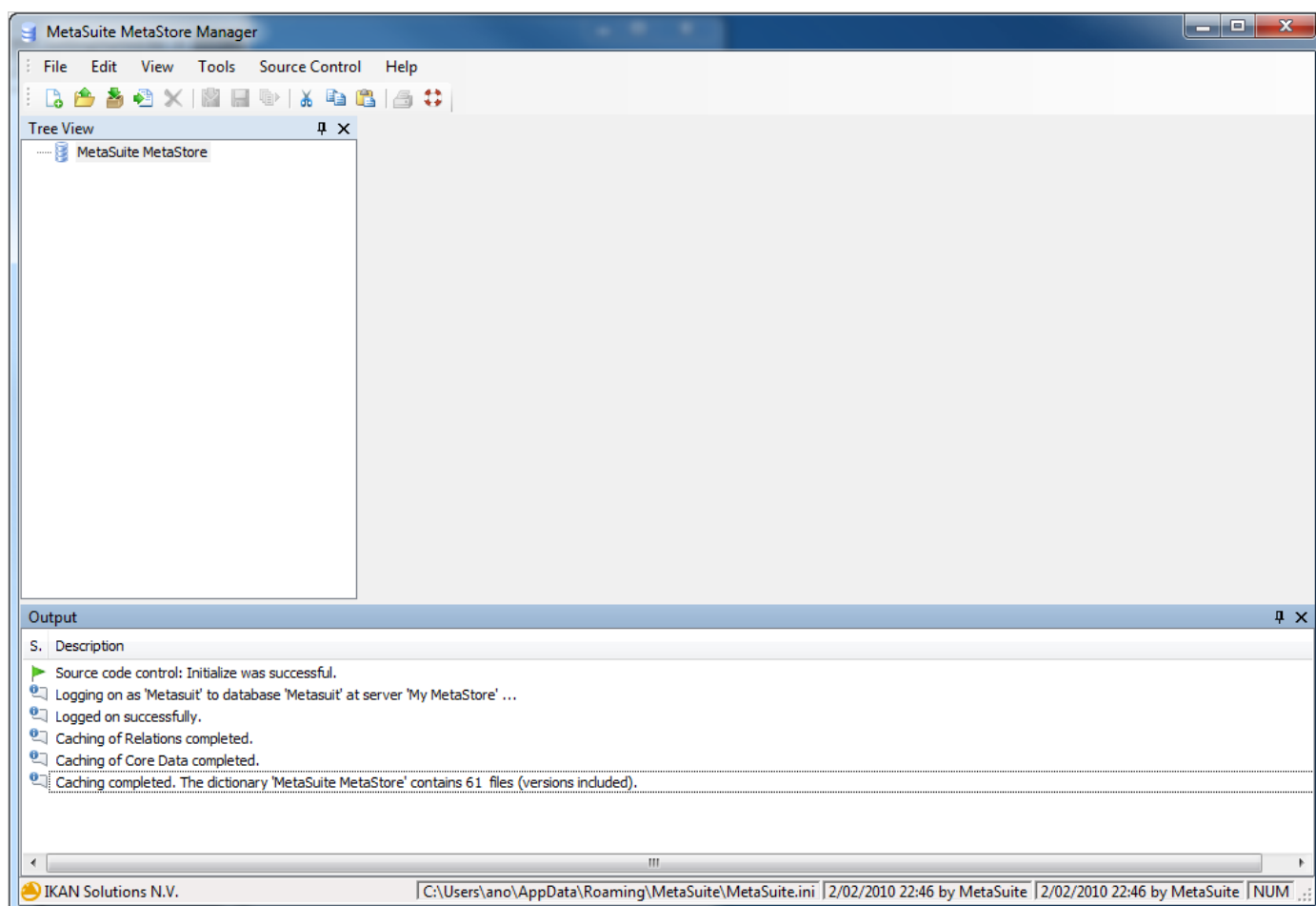
Fill out the fields as required:

Fields	Description
User ID	The User ID you want to use to connect to the MetaSuite Repository through ODBC.
Password	The password associated with the selected User ID.
Data Source Name	Select the required ODBC data source from the drop-down list. This drop-down list contains all DSNs defined on your machine.
Database	The name of the database where the MetaSuite Repository is implemented.
Owner	The name of the owner of the Repository Tables (if this Owner ID is different from the User ID).

Note: The default values that may be present in the field match the ones defined in the *MetaSuite.ini* file using the MetaSuite INI Manager.
For more information, refer to the chapter *Customizing the MetaSuite INI Settings* in the *Installation and Setup Guide*.

3. Click OK.

The MetaStore Manager opening screen appears:



MetaStore Manager User Interface

The MetaStore Manager User Interface is composed of the following elements:

Element	Description
Menu Bar (page 8)	The Menu Bar gives access to the different MetaStore Manager functionalities.
Toolbar (page 10)	The Toolbar gives access to frequently used functionalities, that can also be accessed from the Menu Bar.
Tree View Window (page 11)	The Tree View Window displays all opened Dictionary Files with their Records, Fields, Relationships and Indices. If you just started working, the MetaStore Root icon is the only icon available.
Workspace (page 12)	In the Workspace, the Properties Panels for the MetaStore Objects are displayed. The Properties Panels can be used for verifying or updating the Properties.
Record Fields Window (page 13)	In this window, the Fields belonging to the Record that was last opened in the Workspace, are displayed.
Output Window (page 15)	This window contains messages about all actions that took place while working with the current session of MetaStore Manager.
Record Layout Window (page 16)	In this window, the layout of the last opened Dictionary Record is displayed.
Statusbar (page 17)	The Statusbar displays timestamps of the creation and last update of the selected MetaStore object (MetaStore Repository, Dictionary File, Record, etc.).

6.1. Menu Bar






Once you have started the MetaStore Manager, the Menu Bar is displayed at the top of the opening screen. It contains the following menus:









Menu	Description
File	<p>The File menu contains the following options:</p> <ul style="list-style-type: none"> • <i>Add</i> (with submenu) See Building Dictionary Files Manually - Overview on page 20. • <i>Open/Delete File...</i> Use this option to open or to delete an existing Dictionary File from a list of available Dictionary Files. • <i>Collect File...</i> See Collecting Dictionary Files on page 180. • <i>Import File...</i> See Importing MDL Files on page 241. • <i>Save Properties</i> Use this option to save the Properties of newly defined MetaStore objects or to save the new settings, if you modified the Properties of an existing MetaStore object. • <i>Save to MetaStore</i> Use this option to save the changes you performed on the Dictionary File selected in the Tree View Window. This option is only active if you select a File Definition in the Tree View Window. • <i>Remove all Files from Workspace</i> Use this option to remove all opened Dictionary Files from the Tree View Window. This action does not delete these Dictionary Files from the Repository. However, if the Tree View Window contained unsaved items, they will be lost. • <i>Export</i> (with submenu) See Exporting Dictionary Files on page 242. • <i>Print Tree...</i> Use this option to print the MetaStore Tree as it is currently displayed in the Tree View Window. • <i>Reconnect...</i> Use this option to connect to another Repository. The connection to the current Repository is terminated and the <i>MetaSuite Logon</i> screen is displayed again. • <i>Exit</i> Use this option to leave the program. If there are any unsaved changes to the MetaStore, you will be asked if you want to save them now.
Edit	<p>The Edit menu contains the following standard Windows options:</p> <ul style="list-style-type: none"> • <i>Undo</i> • <i>Cut</i> • <i>Copy</i> • <i>Paste</i> <p>You can use these options to cut, copy and paste text entries in opened properties panels. You can also undo one of these actions.</p>
View	<p>The View menu contains the following options:</p> <ul style="list-style-type: none"> • <i>Toolbar</i> • <i>Statusbar</i> • <i>Tree View</i> • <i>Record Fields</i> • <i>Record Layout</i> • <i>Output</i> <p>By default, all options are checked, meaning that all listed items are displayed on the screen.</p>

Menu	Description
Tools	<p>The Tools menu contains the following option:</p> <ul style="list-style-type: none"> <i>User Profile...</i> Use this option to select another User Profile. See Selecting another User Profile on page 244.
Source Control	<p>The Source Control menu contains the following options:</p> <ul style="list-style-type: none"> <i>Get Latest Version</i> <i>Check Out</i> <i>Check In</i> <i>Undo Check Out</i> <i>Add to Source Control</i> <i>Open from Source Control</i> <i>Show History</i> <i>Show Status</i> <i>Connect to Source Control...</i> <i>Disconnect from Source Control</i> <i>SourceSafe</i> <p>For more information about these options, refer to Version Management with Source Control (page 245).</p>
Help	<p>The <i>Help</i> menu contains the following options:</p> <ul style="list-style-type: none"> <i>Contents</i> Use this option to access the MetaStore Manager online help. <i>About</i> This option displays the current MetaStore Manager release number.

6.2. Toolbar



If the *Toolbar* option in the *View* menu is checked, the Toolbar is displayed underneath the Menu Bar. The Toolbar contains the following buttons:

Button	Meaning	Description
	Add (giving access to submenu)	You need to add or build a Dictionary File manually, if the metadata cannot be collected or imported. See Building Dictionary Files Manually - Overview on page 20.
	Open/Delete File...	You can use this option to open or delete Dictionary Files that are available in the MetaStore. You need to open an existing Dictionary File in order to verify or modify its Properties.
	Collect File...	You need to collect a Dictionary File, if it does not yet exist in the MetaStore. The metadata can however be delivered in a standard format to the MetaStore. See Collecting Dictionary Files on page 180.
	Import File...	You need to import an MDL File, if the matching Dictionary File does not yet exist in the current MetaStore. See Importing MDL Files on page 241.
	Remove all Files from Workspace	Use this option to remove all opened Dictionary Files from Workspace. This does not delete them from the MetaStore.

Button	Meaning	Description
	Save Properties	Use this option to save the Properties of a newly defined MetaStore Object or to save the new settings, if you modified the Properties of an existing MetaStore Object.
	Save to MetaStore	Use this option to save the changes you performed on the MetaStore File selected in the Tree View Window. This option is only active if you select a File Definition in the Tree View Window.
	Export to MDL...	Use this option to generate a text file describing all opened Dictionary Files in MDL format. See Exporting Dictionary Files on page 242.
	Cut	You can use this standard Windows option to cut text sections in properties panels.
	Copy	You can use this standard Windows option to copy text sections in properties panels.
	Paste	You can use this standard Windows option to paste text sections in properties panels.
	Print Tree...	Print the MetaStore Tree as it is currently displayed in the Tree View Window.
	Help	If you click this icon, the version of the MetaSuite MetaStore Manager is displayed.




6.3. Tree View Window







If the *Tree View* option in the *View* menu is checked, the Tree View Window is displayed in the upper left corner.

Note: As this is a dockable window, you can modify its position ([Docking a Window](#) (page 17)). You can also hide the window, by clicking the *Auto Hide* () icon in its upper right corner. Reclicking the *Auto Hide* () icon will restore the window to its original position.

Expand the different levels by clicking the plus sign next to the item.

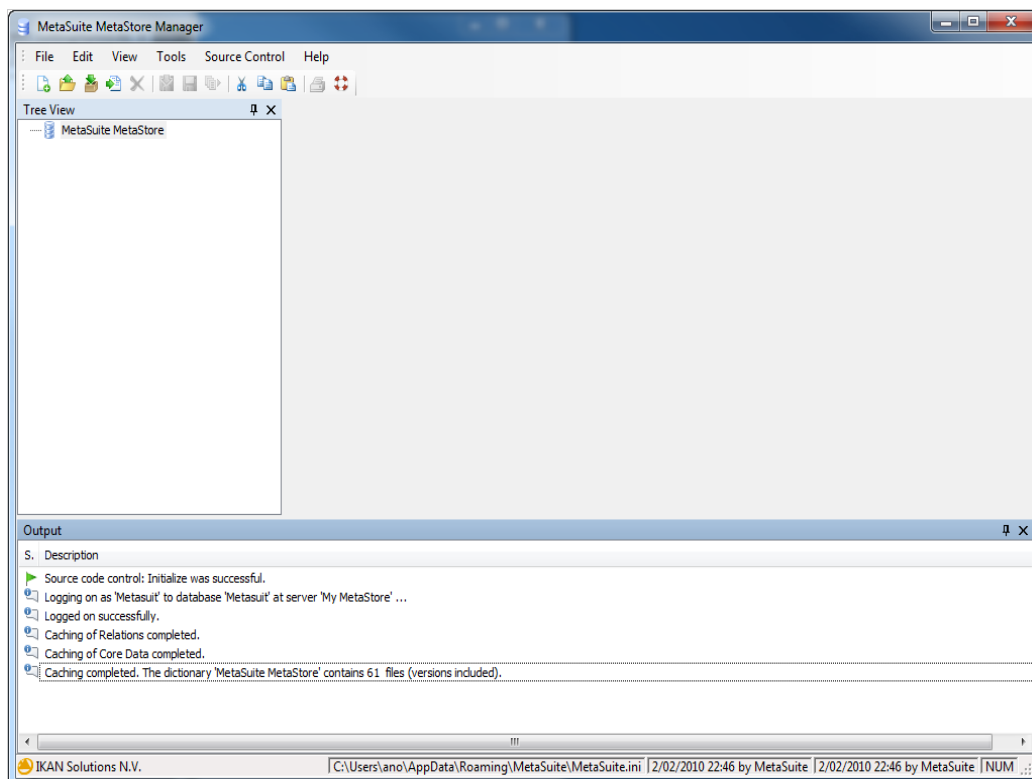
The following icons are used:

Icon	Meaning
	Dictionary File. Each Dictionary File is listed by its name and by its version number. Each Dictionary File contains the metadata pertaining to a specific data source or data target.
	Record
	Relationship

Icon	Meaning
	Index
	Field belonging to a Record
	Field belonging to a Record Key
	Field belonging to a File Key
	Field belonging to a Record and File Key
	Subfield
Field name followed by (G)	Group Field containing Subfields
Field name followed by (R)	Repeating Field
Field name followed by (GR)	Repeating Group Field

6.4. Workspace

In a standard configuration, the Workspace is the grey zone next to the Tree View Window.





This area is used to display the properties panels.



6.5. Record Fields Window

In a standard configuration, the Record Fields Window is docked underneath the Workspace. It contains information about the Fields belonging to the Record, that was last opened in the Workspace.

You open a Record in the Workspace by double-clicking it or by selecting *Properties* from its context menu.

Note: As this is a dockable window, you can modify its position ([Docking a Window](#) (page 17)). You can also hide the window, by clicking the *Auto Hide* () icon in its upper right corner. Reclicking the *Auto Hide* () icon will restore the window to its original position.

The following figure shows an example of a Record Fields window.

Record Fields  							
	Name	Type	Size	Decimals	Date Format	Occurs	Null
	department	Varchar	15	0	None	1	InNull
	employee_count	Decimal	5	0	None	1	InNull
	dept_annual_salary	Decimal	9	0	None	1	InNull

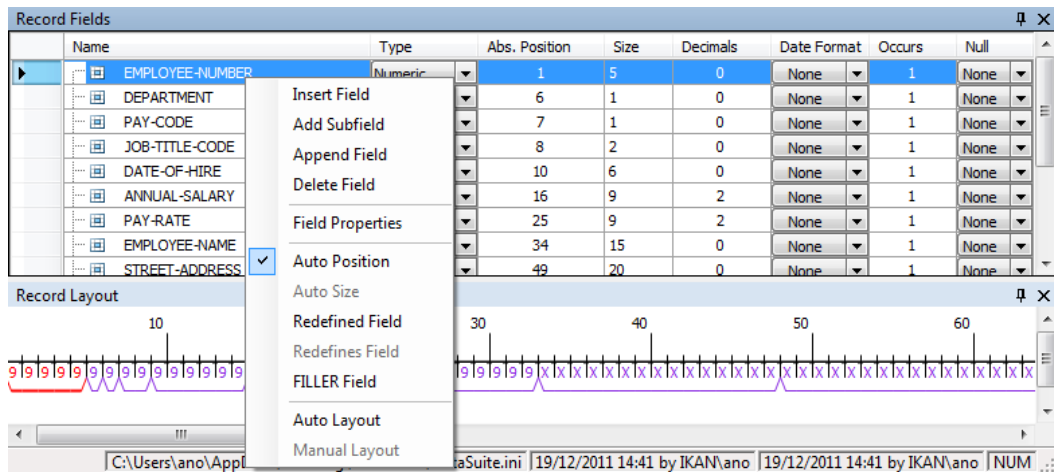
The main Properties for each Field in the Record Fields window are displayed:

Field	Meaning
Name	This field contains the name of the Field, as defined when it was added.
Type	This field contains the Field Type.
Abs. Position	If required by the Dictionary File type, this field contains the starting position for this field. If the starting position is not required by the Dictionary File type, this field remains empty.
Size	This field contains the size for this field.
Decimals	If the field type allows the definition of decimals, this field contains the number of decimals. If the field type does not allow the definition of decimals, this field contains the default value 0.
Date Format	If the field describes a date, the selected date format is displayed. If the field does not describe a date, the default message <i>NONE</i> is displayed.
Occurs	This field indicates the number of times this field occurs in the Record.
Null	This field indicates the nullable status of the field, and whether Inbound or Outbound nulls are used.

Context Menu

Right-click in the Record Fields Window.

The following context menu is displayed:



Note: One or more options may not be accessible, depending on the current settings or selection.



These options have the following meaning:

Option	Meaning
Insert Field	Select this option to add a field to the current record above the currently selected field. If no field is currently selected, the new field will be added at the end of the record.
Add Subfield	Select this option to add a Subfield to the selected Field.
Append Field	Select this option to add a field at the end of the Record.
Delete Field	Select this option to delete the currently selected field from the record.
Field Properties	Select this option to display the Properties of the selected Field. If no field is selected, this option is not accessible.
Auto Position	<p>Select this option if you want the position of the field to be recalculated automatically.</p> <p>Flagging this option makes it possible to automatically calculate the position. In most cases this results in the end position of the last field +1.</p> <p>There are some exceptions to this standard rule:</p> <ul style="list-style-type: none"> The first field has no predecessor. Obviously, in this case the position will be 1. Redefines: in this case the position of the "redefined" field will be taken. Subfields: this is in fact a variation of redefines. The first subfield will have the same position as the group field it belongs to. The second subfield will follow the standard rule.
Auto Size	Select this option if you want to automatically calculate the total field size of a group field.
Redefined Field	Flags a field as having redefines (fields that are starting at the same position, usually redefining the field as another data type)
Redefines Field	Locks the field's starting position to the position of those marked as 'redefined' (the step before). There can be several occurrences of 'redefine'.
FILLER field	A FILLER field always uses 'auto position' meaning that it follows the previous field(s) when their position/size changes (a size filler).

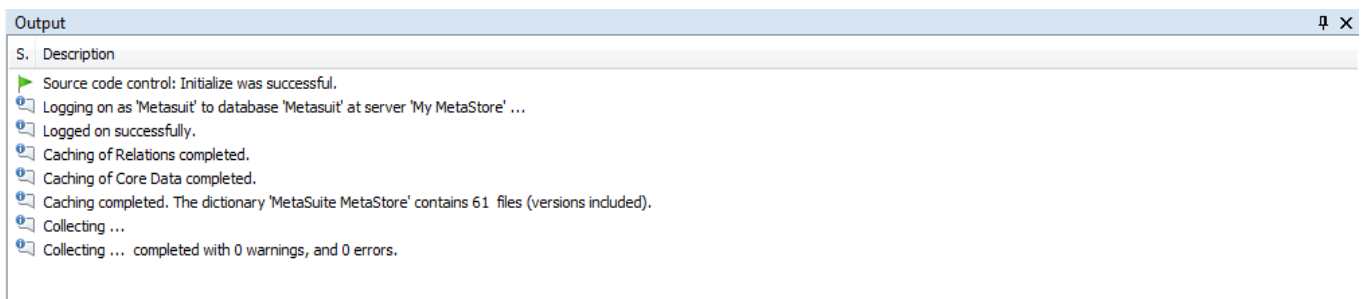
Option	Meaning
Auto Layout	Only available for complex fields and records (field containers): it orders the contained fields sequentially, by setting their "Auto position" and "auto size" to ON.
Manual Layout	Select this option to turn off the auto flags of contained fields and to keep the current values.

6.6. Output Window

If the *Output Window* option in the *View* menu is checked, the Output Window is by default displayed in the bottom left corner of the screen.

Note: As this is a dockable window, you can modify its position ([Docking a Window](#) (page 17)). You can also hide the window, by clicking the *Auto Hide* () icon in its upper right corner. Reclicking the *Auto Hide* () icon will restore the window to its original position.

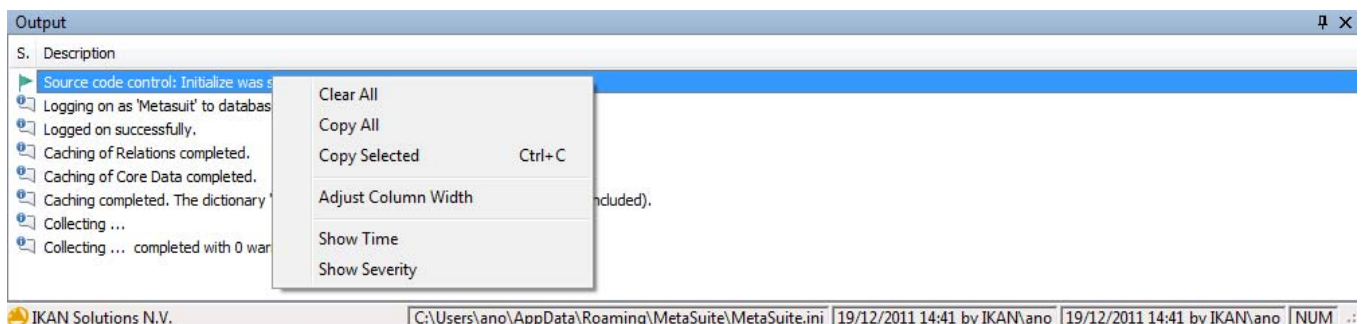
The *Output Window* contains messages and warnings pertaining to actions that have been performed during the current MetaSuite MetaStore Manager session.



Context Menu

Right-click in the Output Window.

The following context menu is displayed:





These options have the following meaning:

Option	Meaning
Clear All	Select this option to clear all messages from the Output Window.
Copy All	Select this option to select all messages in the Output Window.

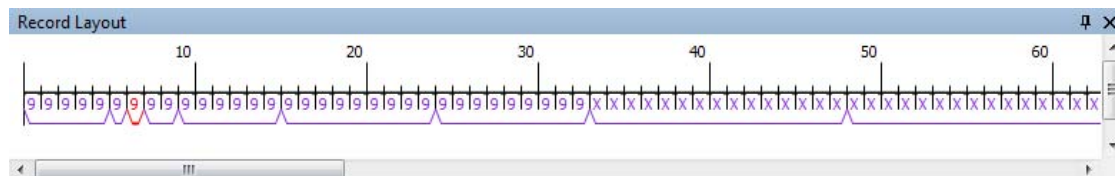
Option	Meaning
Copy Selected	Select this option to copy the selected messages in the Output Window to the Windows Clipboard.
Adjust Column Width	Select this option to adjust the column widths in order to display their full content.
Show Time	Select this option to display the time at which the messages were generated.
Show Severity	Select this option to display the severity of the messages.

6.7. Record Layout Window

If the *Record Layout* option in the *View* menu is checked, the Record Layout Window is by default displayed in the bottom right corner of the screen.

Note: As this is a dockable window, you can modify its position ([Docking a Window](#) (page 17)). You can also hide the window, by clicking the *Auto Hide* () icon in its upper right corner. Reclicking the *Auto Hide* () icon will restore the window to its original position.

The *Record Layout* window shows the following information about the last opened Record:



The Record Layout window shows a default value for each Field within the selected Record, dependent on the Field type. The default value matches the size of the Field, as defined in the Record Fields Window.

Default values are used to represent the values in different Field types:

Default Value	Field Type(s)
A	Alphabetic
B	Binary Binary native
1	Bit
b	Byte
X	Character
D	Decimal
F	Float
G	Graphic Vargraphic
H	Hexadecimal
?	Longvarchar Longvargraphic (not supported yet)

Default Value	Field Type(s)
U	National
9	Numeric
P	Printed Numeric Printed Numeric National
V	Varchar

6.8. Statusbar

If the *Statusbar* option in the *View* menu is checked, the Statusbar is displayed in the bottom right corner of the screen.

If an item (the MetaSuite Repository, a Dictionary File, a Record or a Field) is selected in the Tree View Window, the Statusbar contains the following information for the selected item:

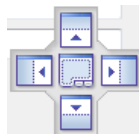
- Location of the INI file
- Creation user name and timestamp
- Last Update user name and timestamp
- NUM (Num Lock selected)

6.9. Docking a Window

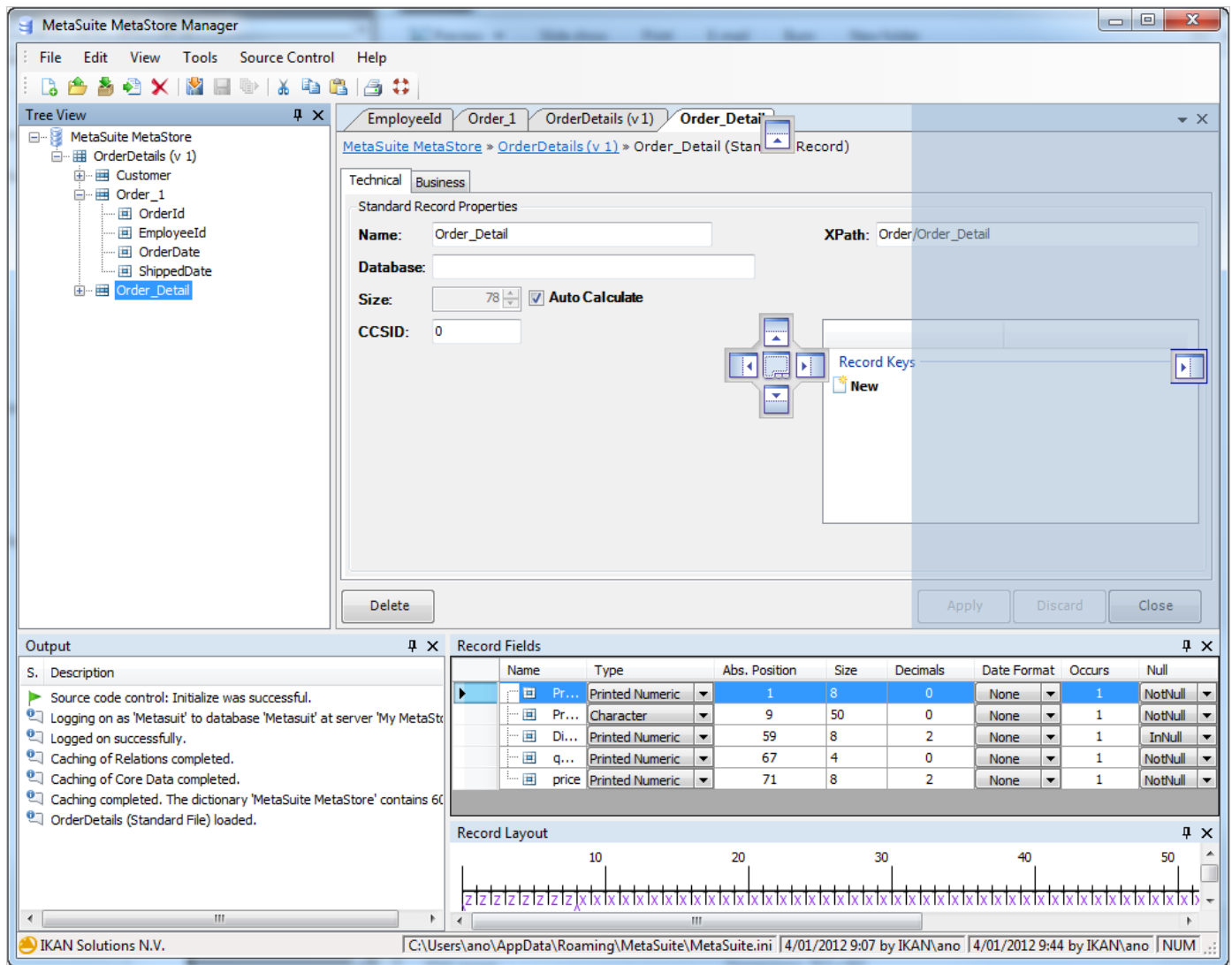
Dockable windows are windows that align themselves with the edge of another interface element, another window or properties panel.

1. Click the window title bar and keep the mouse button pressed.
2. Drag the selected window to the required position.

The window you are repositioning is displayed in grey and positioning anchors are displayed on the screen.



- Place the cursor on the anchor of your choice, and release the mouse button.






Note: You can also position the window outside the main MetaSuite window, on your Desktop. To return the window to its previous position within the MetaSuite window, double-click its header.

Creating Dictionary Files - Overview

There are three ways to create Dictionary Files.

They all match a command in the File Menu on the MetaStore Menu Bar, and an icon on the MetaStore Toolbar:

Method	File Menu Command	Toolbar Icon
Build Dictionary Files manually	From the <i>File</i> menu, use the <i>Add</i> command and select the required data source type from the submenu.	
Collecting Dictionary Files (page 180)	From the <i>File</i> menu, use the <i>Collect File</i> command.	
Importing MDL Files (page 241)	From the <i>File</i> menu, use the <i>Import File</i> command.	

Building Dictionary Files Manually - Overview

You will build Dictionary Files manually, if it is not possible to collect or import the required metadata.

As the procedures for building Dictionary Files are different for different source types, this guide contains separate chapters for each supported source type:

- [Adabas File Group](#) (page 21)
- [Datacom File Group](#) (page 46)
- [IMS PCB](#) (page 71)
- [SQL Table Group](#) (page 92)
- [Standard File](#) (page 109)
- [IDMS Subschema](#) (page 134)
- [Supra Database](#) (page 159)

Each chapter contains separate procedures for the following phases:

- Creating the Dictionary File
- Defining the Records
- Defining the Fields
- If applicable: Defining Relationships
- If applicable: Defining Indices

Adabas File Group

This chapter explains the following actions:

- [Creating the Dictionary File](#) (page 21)
- [Defining Records](#) (page 24)
- [Defining Fields](#) (page 28)
- [Defining Relationships](#) (page 38)
- [Defining Indices](#) (page 42)

For more technical information, refer to the *Adabas File Access Guide*.

9.1. Creating the Dictionary File

1. In the Tree View Window, right-click the MetaStore root icon and select *Add > Adabas File Group*.

The properties panel is displayed in the Workspace.

The screenshot shows a window titled "New Adabas File Group (v 1)". Below the title bar, the breadcrumb path is "MetaSuite MetaStore » New Adabas File Group (v 1) (Adabas File Group)". There are two tabs: "Technical" (selected) and "Business". The "Adabas File Group Properties" section contains the following fields:

- Name:** A text input field with a yellow background and a warning icon.
- Code-control:** A text input field.
- Database:** A text input field.
- Version:** A text input field containing the value "1".
- CCSID:** A text input field containing the value "0".

Two tabs are available: *Technical* and *Business*.

2. Fill out the required fields.

For a detailed description of the fields, refer to the sections:

- [Technical Tab \(Adabas File Groups\)](#) (page 22)
- [Business Tab \(Adabas Data Objects\)](#) (page 45)

3. Apply or discard your changes.
4. Save the changes to the MetaStore Repository.
In the Tree View Window, right-click the new Adabas File Group and select *Save to MetaStore*.

Note: If you do not save the Adabas File Group to the MetaStore Repository now, you will be asked whether you want to do this, when you leave the program.

Technical Tab (Adabas File Groups)

The following fields are available on the Technical tab:

- [Name](#) (page 22)
- [Code-control](#) (page 22)
- [Database](#) (page 23)
- [Version](#) (page 23)
- [CCSID](#) (page 23)

Name

Mandatory field.

The name you enter must meet the following conditions:

- The name may contain up to 32 characters.
- It must begin with an alphabetic character.
- It may contain the characters a-z, A-Z and 0-9.
- It may contain the following special characters: \$, #, @, _ (underscore) and - (hyphen).
- It may not be ended with a - (hyphen).
- File names must be unique in the MetaStore Repository.

Code-control

Optional field.

Code-control Tables contain information about how to process a certain type of data container. Each table element of the code-control table points to a code table in the COBOL Generator Dictionary.

Each data container type has a pre-defined code-control table. If required, this default code-control table can be overwritten. For example: in order to invoke an external I/O module to read or write the file or to expand or compress data.

Note: When the option is used, the selected table must exist in the COBOL Generator Dictionary before programs using the file can be generated.

For more information about code-control tables, refer to the section *Code-control Tables* in the *Generator Manager Guide*.

Database

Enter the name of the corresponding database, if applicable.

Version

Default value = 1

You can change the version number, if required.

When reimporting or recollecting an existing data container, the version will be modified depending on the settings specified in the INI Manager. For more information, refer to the chapter MetaStore Manager Settings in the *MetaSuite INI Manager Guide*.

CCSID

Enter the Coded Character Set Identifier.

CCSID is used by IBM as the abbreviation for "Coded Character Set Identifier". It is a 16-bit number that represents a specific encoding of a specific code page.

CCSID is commonly used for the data subtype CHARACTER, in order to distinguish the different character sets per country, language and the character encoding of the system. Despite of the philosophical approach of Unicode, CCSID can also be used on data type NATIONAL.

This CCSID is an enriched property and will not be collected.

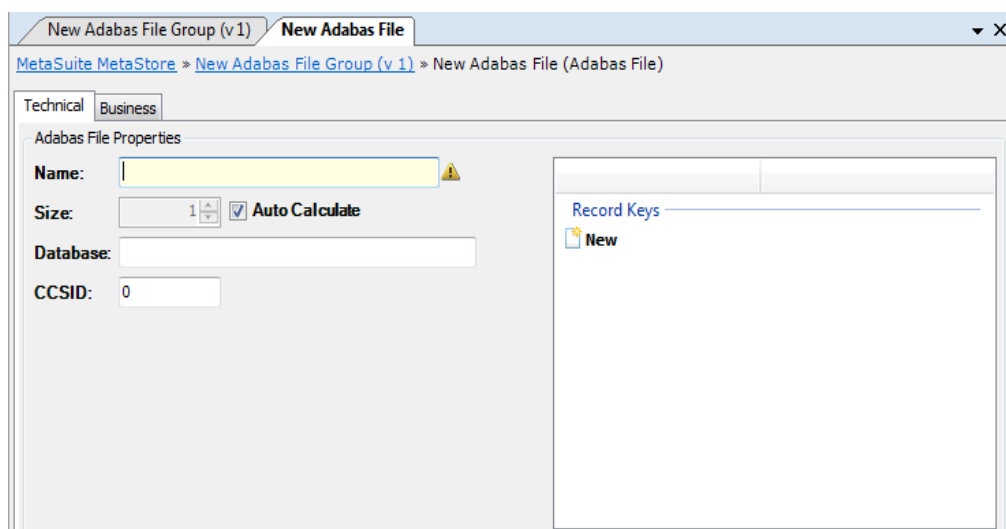
Business Tab (Adabas File Groups)

The fields on the Business Tab are identical for all Adabas data objects (Dictionary File, Record, Field, Relationship and Index). Refer to the section [Business Tab \(Adabas Data Objects\)](#) (page 45) for a description of the fields.

9.2. Defining Records

1. In the Tree View Window, right-click the Adabas File Group you want to define Records for and select *Add Adabas File*.

The properties panel is displayed in the Workspace.



Two tabs are available: *Technical* and *Business*.

2. Fill out the required fields.

For a detailed description of the fields, refer to the sections:

- [Technical Tab \(Adabas Files\)](#) (page 24)
- [Business Tab \(Adabas Data Objects\)](#) (page 45)

3. Save or discard your changes.

4. Save the changes to the MetaStore Repository.

In the Tree View Window, right-click the Adabas File Group the new Adabas File belongs to and select *Save to MetaStore*.

Note: If you do not add the File to the MetaStore Repository now, you will be asked whether you want to do this, when you leave the program.

Technical Tab (Adabas Files)

The following fields are available on the Technical tab:

- [Name](#) (page 25)
- [Size](#) (page 25)
- [Database](#) (page 25)
- [CCSID](#) (page 25)
- [Record Keys](#) (page 26)

Name

Mandatory field.

The name you enter must meet the following conditions:

- The name may contain up to 32 characters.
- It must begin with an alphabetic character.
- It may contain the characters a-z, A-Z and 0-9.
- It may contain the following special characters: \$, #, @, _ (underscore) and - (hyphen).
- It may not be ended with a - (hyphen).
- File names must be unique in the MetaStore Repository.

Size

Mandatory field.

Enter the maximum number of characters included in the record. The value must be an integer and cannot exceed the maximum record size defined for the Dictionary File it belongs to.

Note: If the size is changed manually and it is too small to contain all defined fields, it will be reset by the MetaStore Manager to the smallest size needed to contain all defined fields.

Auto Calculate

If this option is activated, the size will be calculated automatically.

Database

Note: This field is specific for each file (sub)type. Refer to the appropriate File Access Guide for more detailed information.

This field is mandatory for IMS Segments. Enter the segment name of the record, as specified in the DBDGEN and PSBGEN statements.

For RDBMS, the Creator Name should be entered in this field.

CCSID

Enter the Coded Character Set Identifier.

CCSID is used by IBM as the abbreviation for "Coded Character Set Identifier". It is a 16-bit number that represents a specific encoding of a specific code page.

CCSID is commonly used for the data subtype CHARACTER, in order to distinguish the different character sets per country, language and the character encoding of the system. Despite of the philosophical approach of Unicode, CCSID can also be used on data type NATIONAL.

This CCSID is an enriched property and will not be collected.

Record Keys

Optional field.

This option is used to identify Adabas File identification fields and the specific ranges of values for those key fields.

1. Double-click the *New* icon available in the *Record Keys* panel.

Note: You can only define Record Keys after having defined Records and Fields for the Dictionary File.

The following screen is displayed:

2. Fill out the name of the new Key.
3. Select the Key Type from the drop-down list.

The following options are available:

- *Access*
- *Storage*

4. Select the required Field.

Click the *Browse* button to display the list of all available fields and subfields.

Two extra options are available at the top right of the pop-up window for selecting the required item:

- Show all

When selecting this option, the *Select Item* drop-down list will be deactivated and all available fields for all categories will be displayed underneath.

- Indentation

When selecting this option, all fields displayed will be sorted per structure instead of alphabetically.

5. Enter the Value.

Note: If you want to specify more than 1 value (or range of values), you have to define separate record keys.

Operator	Value entered	Meaning
(Not) Equal	3	Only records where the selected field has (not) value 3 are taken into account.
	C	Only records where the selected field has (not) value C are taken into account.
Greater or equal	3	Only records where the selected field has a value greater than or equal to 3 are taken into account.
	C	Only records where the selected field has a value greater than or equal to C are taken into account.
Greater	3	Only records where the selected field has a value greater than 3 are taken into account.
	C	Only records where the selected field has a value greater than C are taken into account.
Less or equal	3	Only records where the selected field has a value lesser than or equal to 3 are taken into account.
	C	Only records where the selected field has a value lesser than or equal to C are taken into account.
Less	3	Only records where the selected field has a value lesser than 3 are taken into account.
	C	Only records where the selected field has a value lesser than C are taken into account.

6. Apply your changes and close the *Record Key Properties* panel.
The new Record Key is added to the *Record Keys* panel.
7. Repeat this action for all Record Keys you want to define.

Business Tab (Adabas Files)

The fields on the Business Tab are identical for all Adabas data objects (Dictionary File, Record, Field, Relationship and Index). Refer to the section [Business Tab \(Adabas Data Objects\)](#) (page 45) for a description of the fields.

9.3. Defining Fields

1. In the Tree View Window, right-click the Adabas File you want to define new Fields for and select *Add Adabas Field*.

The properties panel is displayed in the Workspace.

Two tabs are available: *Technical* and *Business*.

2. Fill out the required field.

For a detailed description of the fields, refer to the sections:

- [Technical Tab \(Adabas Fields\)](#) (page 28)
- [Business Tab \(Adabas Data Objects\)](#) (page 45)

Note: Some of the values can also be modified by double-clicking or selecting them from a drop-down list in the Record Fields Window.

3. Save or discard your changes
4. Save the changes to the MetaStore Repository.

In the Tree View Window, right-click Adabas File Group the new Field belongs to and select *Save to MetaStore*.

Note: If you do not add the Field to the MetaStore Repository now, you will be asked whether you want to do this, when you leave the program.

Technical Tab (Adabas Fields)

The following fields are available on the Technical tab:

- Properties
 - [Name](#) (page 29)
 - [Size](#) (page 29)
 - [Abs. Position](#) (page 31)
 - [Rel. Position](#) (page 31)
 - [Occurs](#) (page 31)
 - [Occurrence Depending on](#) (page 31)
- Content
 - [Type](#) (page 32)
 - [Decimals](#) (page 33)
 - [Unsigned](#) (page 33)
 - [Separated and Leading](#) (page 34)
 - [Initial](#) (page 34)
 - [Code](#) (page 34)
 - [Edit Mask](#) (page 35)
 - [Date Format](#) (page 37)
 - [Low Limit](#) (page 37)
 - [High Limit](#) (page 37)
 - [Database](#) (page 38)
 - [CCSID](#) (page 38)

Name

Mandatory field.

The name you enter must meet the following conditions:

- The name may contain up to 32 characters.
- It must begin with an alphabetic character.
- It may contain the characters a-z, A-Z and 0-9.
- It may contain the following special characters: \$, #, @, _ (underscore) and - (hyphen).
- It may not be ended with a - (hyphen).
- File names must be unique in the MetaStore Repository.

Size

In the *Size* field, enter an integer indicating the field length as a number of bytes. If the field occurs more than once in the record, this field indicates the length of a single occurrence of the field.

Type	Additional	Size in # Bytes	COBOL
Alphabetic		# characters	PIC A(c) DISPLAY

Type	Additional	Size in # Bytes	COBOL
Character		# characters	PIC X(c) DISPLAY
National		2 x # characters	PIC N(c)
Varchar		# characters	PIC X(c) DISPLAY
Binary	1 <= # digits <= 4	2	PIC S9(n)V9(d) BINARY
	5 <= # digits <= 9	4	PIC S9(n)V9(d) BINARY
	10 <= # digits <= 18	8	PIC S9(n)V9(d) BINARY
Binary Native	1 <= # digits <= 4	2	PIC S9(n)V9(d) COMP-5
	5 <= # digits <= 9	4	PIC S9(n)V9(d) COMP-5
	10 <= # digits <= 18	8	PIC S9(n)V9(d) COMP-5
Bit		1	-
Decimal	Signed / Null-signed	(# digits + 1) / 2	PIC S9(n)V9(d) PACKED-DECIMAL
Float	8 digits of precision	4	COMP-1
	17 digits of precision	8	COMP-2
Hexadecimal		1 byte = 2 hexadecimal digits	PIC X(c) DISPLAY
Numeric		# digits	PIC S9(n)V9(d) DISPLAY
Printed Numeric		# characters in Edit Mask	PIC EditMask DISPLAY
Printed Numeric National		2 x # characters in Edit Mask	PIC EditMask USAGE NATIONAL

Legend:

- c = number of characters
- n = number of integer digits
- d = number of decimal digits
- s = only present when value is signed. This option is not allowed for National.

Note: The Record Layout window shows the default value for the Field within the selected Record. The default value matches the size of the Field, as defined in the Record Fields Window.

Auto Calculate

If this option is activated, the size will be calculated automatically.

Abs. Position

In this field, you may change the Field's starting character position that was calculated automatically by the system. The value entered must be an integer.

Note: If the Record's length is variable, you may not include the four-character record descriptor word when determining the start position of the Field.

Rel. Position

This is the 1-based position of this field within its domed structure (i.e., Record or Group).

- For a field that is not a subfield, the absolute and relative positions are equal.
- For a field x that is a subfield of group g, the relative position will be calculated as $1 + (\text{absolute position of } x) - (\text{absolute position of } g)$.

For example: if group g starts on position 5, and the absolute position of x is also 5, then the relative position of x is $1 + 5 - 5 = 1$. In human terms: "x will start on the 1st position of g".

Auto Calculate

If this option is activated, the size will be calculated automatically.

Occurs

Optional field.

Enter an integer indicating the maximum number of times this field can occur in the record. If you do not define a specific value, the field is assumed to occur once.

Occurrence Depending on

Optional field. Only applies for repeating fields (n).

Select a numeric field that is defined prior to this field within the record.

Results:

- The value you defined with the *Occurs* option represents the *maximum* number of times this field can occur
- The value available in the selected field represents the *actual* number of times the field occurs.

1. Click the *Browse* button next to the *Occurrence Depending On* text field.

The list of available numeric fields is displayed.

2. Select the required Field.

The name of the selected Field is displayed in the *Occurrence Depending On* text field.

Note: If you click the Browse button again now, the Properties screen for the selected field will be displayed. If you want to select another field, you first have to delete the current field name from the text field and then click the Browse button.

Type

This field is mandatory and contains the default value *Character*.

There are two general classes of data types: *non-numeric* and *numeric*.

Non-numeric Data Types

Alphabetic	This datatype indicates a field containing strings using the characters A-Z and a-z.
Character	This datatype indicates that the field may contain any possible character within the character set being used (including <i>unprintable</i> characters). It is not possible to perform numeric operations on a Character type field, even when the field contains only digits. Matching RDBMS Data Types: CHAR, BYTE, VARCHAR, VARCHAR2, LONG, RAW, LONGVARCHAR
Graphic	DB2 terminology for Character datatype.
Hexadecimal	This datatype indicates that any hexadecimal characters are allowed within the field.
Long Varchar	This datatype indicates a field containing a variable character string of maximum 2 GB.
National	The National datatype is a subset of Unicode. The character set on which it is based is UTF-16, but restricted to two bytes per character.
Varchar	This datatype indicates a character field allowing the storage of values you need plus one byte for the length.
Vargraphic	DB2 terminology for Varchar datatype.

Numeric Data Types

Binary	This datatype indicates that the field contains a binary numeric value composed of 0's and 1's.
Binary Native	This datatype indicates that the field contains binary native numbers. This means that its internal representation depends on the Operating System and/or processor.
Bit	This datatype indicates a field occupying a single bit storage. A BIT type field may only contain the binary values 0 or 1. It is possible to perform numeric operations on a BIT type field.
Byte	This datatype indicates a field occupying a single byte storage. A byte is 8 bits. It is possible to perform numeric operations on a BYTE type field.
Decimal	This datatype indicates a field containing a packed decimal value. Packed decimal is the most commonly used internal numeric data type. Two decimal digits are contained in each byte of a packed decimal number. However, if the number is signed, the last half byte contains a positive or negative sign indicator.

Float	This datatype indicates that the field contains floating-point numbers, encoded in an encoded exponential form.
Numeric	This datatype indicates that any the field contains decimal numbers in a printable character format, this means that a single digit is stored per byte. Leading blanks are not permitted in this field type, nor may it contain editing characters, such as commas or decimal points. Use <i>Printed Numeric</i> in this case. Matching RDBMS Data Types: TINYINT, SMALLINT, INTEGER, BIGINT, DECIMAL, NUMBER, FLOAT
Printed Numeric	This datatype indicates that the character-based field contains a numeric value. The format in which the printed numeric value is displayed must be specified with the EDIT option.
Printed Numeric National	This datatype indicates that this is a National field that contains a numeric value. The format in which the PRN-NATIONAL value is displayed must be specified with the EDIT option.

Decimals

If the field type allows the definition of decimals, this field contains the number of decimals.

Decimals can be entered for the following field types:

- Binary
- Binary Native
- Decimal
- Numeric
- Printed Numeric
- Printed Numeric National

If the field type does not allow the definition of decimals, this field contains the default value 0.

Unsigned

Select the *Unsigned* check box to indicate that a numeric value is not signed, i.e. that it does not contain a sign indicator (+ or -).

This field applies for the following field types:

- Binary
- Binary Native
- Numeric

Note: For Decimal fields, the distinction between unsigned and positive signed INPUT fields is not relevant to the system.

Separated and Leading

These two check boxes allow to define how over-punched and separate sign indicators must be treated. They only apply for the Numeric field type.

There are several possibilities.

If the sign indicator is over-punched in the number, select the *Unsigned* check box above.

- Select *Leading* to put the sign on the initial digit.
- Select *Separate* to put the sign on the last byte (no digit).
- Select *Leading* and *Separate* to put the sign in the initial byte (no digit).

If the Numeric field contains a separate plus or minus sign attached to the number, select the *Separate* check box.

Initial

Optional field.

Enter the initial value for the field.

This value is only taken into account for Target Files. If an initial value was defined for a Source file, this parameter will not affect any operation, except for syntax checking.

For Numeric fields, this is a numeric constant, where the decimal point should be given by a . (point).

For Character fields, this may be an alphanumeric constant (not enclosed by quotes) or the system fields *SYS-LOW-VALUE* or *SYS-HIGH-VALUE*, which correspond to system fields *LOW-VALUE* and *HIGH-VALUE* within COBOL.

Code

Default value = *No Code*

The following options are available:

Option	Description
Code	This field is treated as a code, not as a number.
No Code	Resets the code operator to zero. Select this option when there is no additional information to be added for the field.
Time	Select this option to define a field that contains TIME information.
Timestamp	Select this option to define a field that contains TIMESTAMP information.

Edit Mask

This field is mandatory for Printed Numeric fields, but optional for other field types. It indicates how the alphanumeric values must be formatted.

Note: When the Edit Mask is set for a printed numeric field, the MetaStore Manager will reset the size of the field to the size that corresponds to the chosen Edit Mask.

Enter the characters defining a Mask in this text field. This Mask will override the default mask for the field. There is a default mask for each field type. Both the default masks and the manually created masks are composed of *Replacement* and *Insertion* characters.

The following table lists the Replacement characters and their meaning. Replacement characters indicate positions in the printed field that may be replaced by (the corresponding types of) characters from the input field.

Replacement Character	Meaning
\$	Floating dollar sign before the first digit, with leading zero suppression
Z	Leading zero suppression
*	Asterisks to replace leading zeros
9	Numeric character
A	Alphabetic character
N	National (2-byte Unicode character set)
X	Character

The following table lists the Insertion characters and their meaning. Insertion characters indicate characters to be printed in addition to those contained in the stored field.

Insertion Character	Meaning
\$	Leading dollar sign
*	Leading asterisk (generally for check protection)
,	Comma (separator for the sake of large number readability or decimal separator depending on the "Decimal Separator" option in the INI file)
.	Decimal point (separator for the sake of large number readability or decimal separator, depending on the "Decimal Separator" option in the INI file)
B	Blank
-	Floating or trailing minus for negative values. Plus is not accepted as valid character. Positive numbers will have a blank as sign character.
+	Floating or trailing plus or minus sign
CR	Trailing credit symbol for negative values only

Insertion Character	Meaning
DB	Trailing debit symbol for negative values
V	Virtual comma

As mentioned above, there is a default Mask for each field type:

Field Type	Default Mask Description
Signed numeric fields	The default mask contains a minus sign as the rightmost character. All negative values are printed with a trailing minus sign.
Numeric fields with decimals	The default mask contains a decimal point and as many digit replacement characters (9s) to the right of the decimal point as are specified by the Decimal option.
Numeric fields	The default mask contains as many digits as its size, without zero suppression.
Date fields	The default mask is its selected date format.
Alphanumeric fields	The default mask contains as many alphanumeric character replacement characters (X) as are required to print the field.

Examples of default masks:

Field Type	Size	Default mask
Signed numeric fields without decimal positions	6	999999-
Signed numeric fields with two decimals	6	9999.99-
Character Field	6	X(6)
Unicode Field	6	N(3)

You may also define customized masks.

Examples:

Field Type	Field Size	Mask	Field value	Printed value
Character	6	XXBXXXX	AB138B	AB 138B
Numeric with 2 decimal positions	2	.99	.35 0 -12	.35 .00 .12
Numeric with 3 minus signs	4	---9	0 -1 210	0 -1 210

Field Type	Field Size	Mask	Field value	Printed value
Numeric with 3 plus signs	4	+++9	0	+0
			-1	-1
			210	210

Date Format

If the field must contain a date, select the required date format from the drop-down list. The system automatically validates date fields whenever they are referenced in a MetaMap model, and automatically converts date fields whenever they are compared to another date or used in a calculation. In all the available formats, YY or YYYY stands for the year and MM stands for the month. DD stands for the day within a month and DDD stands for the day within the year.

When the format contains a '?', this indicates the date delimiter that is used. Data formats with a '?' are only supported for Character and Varchar field types. When the data format does not contain a '?', the different parts in the date are not delimited by a special character.

The Date Format list is accessible for the following field types:

- Binary
- Binary Native
- Character
- Decimal
- Numeric
- National
- Varchar

Note: When a date format is chosen, MetaStore Manager will reset the size of the field to the size that corresponds to the chosen date format.

Low Limit

Optional field.

When a *Low Limit* is specified, you must define a value in the *High Limit* field as well.

You may use this field to define a minimum value for this field. If a lower value is encountered, the system will consider the data invalid.

High Limit

Optional field.

When a *High Limit* is specified, you must define a value in the *Low Limit* field as well. You may use this field to define a maximum value for this field. If a higher value is encountered, the system will consider the data invalid.

Database

Enter the name of the corresponding database, if applicable.

CCSID

Enter the Coded Character Set Identifier.

CCSID is used by IBM as the abbreviation for "Coded Character Set Identifier". It is a 16-bit number that represents a specific encoding of a specific code page.

CCSID is commonly used for the data subtype CHARACTER, in order to distinguish the different character sets per country, language and the character encoding of the system. Despite of the philosophical approach of Unicode, CCSID can also be used on data type NATIONAL.

This CCSID is an enriched property and will not be collected.

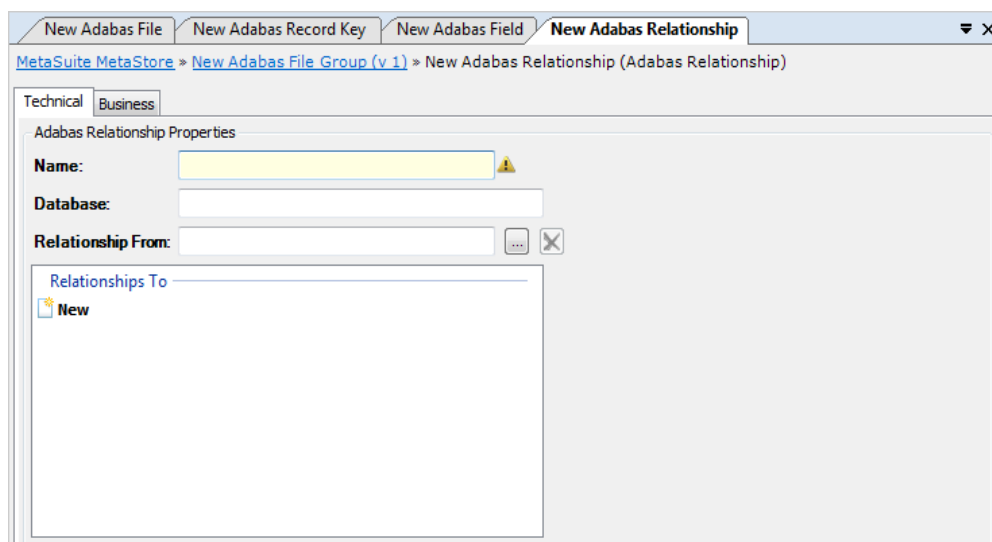
Business Tab (Adabas Fields)

The fields on the Business Tab are identical for all Adabas data objects (Dictionary File, Record, Field, Relationship and Index). Refer to the section [Business Tab \(Adabas Data Objects\)](#) (page 45) for a description of the fields.

9.4. Defining Relationships

1. In the Tree View Window, right-click the Adabas File Group you want to define a Relationship for and select *Add Adabas Relationship*.

The properties panel is displayed in the Workspace.



Each LINK definition relates two MetaSuite (ADABAS/C) records to one another. The "basis" of the link is a field in one record (the "from" record, so called because data is taken from that record and used to locate the other record) and a descriptor in the other (the "to" record, so called because the descriptor leads to that record).

Two tabs are available: *Technical* and *Business*.

2. Fill out the required fields.

For a detailed description of the fields, refer to the sections:

- [Technical Tab \(Adabas Relationships\)](#) (page 39)
- [Business Tab \(Adabas Data Objects\)](#) (page 45)

3. Save or discard your changes.

4. Save the changes to the MetaStore Repository.

In the Tree View Window, right-click the Adabas File Group the new Relationship belongs to and select *Save to MetaStore*.

Note: If you do not add the Relationship to the MetaStore Repository now, you will be asked whether you want to do this, when you leave the program.

Technical Tab (Adabas Relationships)

The following fields are available on the Technical tab:

- [Name](#) (page 39)
- [Database](#) (page 39)
- [Relationship From](#) (page 40)
- [Relationships To](#) (page 41)

Name

Mandatory field.

The name you enter must meet the following conditions:

- The name may contain up to 32 characters.
- It must begin with an alphabetic character.
- It may contain the characters a-z, A-Z and 0-9.
- It may contain the following special characters: \$, #, @, _ (underscore) and - (hyphen).
- It may not be ended with a - (hyphen).
- File names must be unique in the MetaStore Repository.

Database

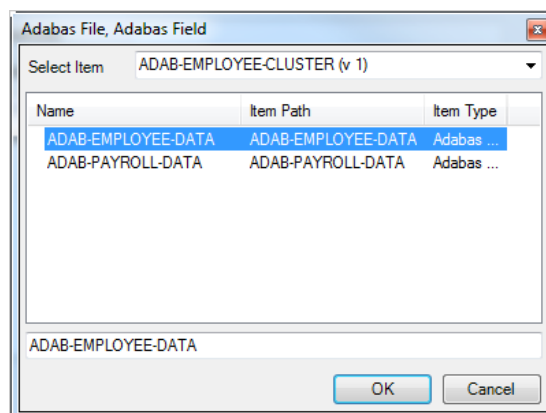
This is the unique name for the Database Entity (32 characters).

Relationship From

Mandatory field.

1. Fill out the name of the new Relationship key.
2. Click the *Browse* button next to the *Relationship From* text field.

The following screen is displayed:



3. Select the required File Group or File from the drop-down list and click *OK*.

Two extra options are available at the top right of the pop-up window for selecting the required item:

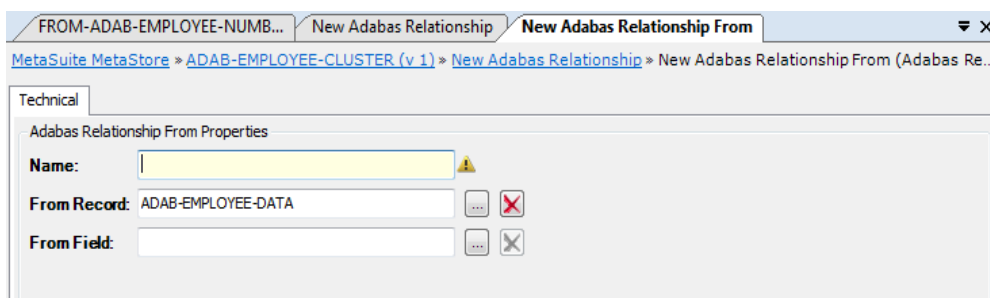
- Show all

When selecting this option, the *Select Item* drop-down list will be deactivated and all available fields for all categories will be displayed underneath.

- Indentation

When selecting this option, all fields displayed will be sorted per structure instead of alphabetically.

The *Adabas Relationship From* properties panel is displayed.



4. Fill out the required fields.

Name	The name of the new Relationship
From Record	In order to define a particular relationship between two records, the user has to specify the first record of the relationship in the <i>From Record</i> field.
From Field	The matching field of the <i>From Record</i> .

Note: You can use the *Browse* button to display the list of available items.

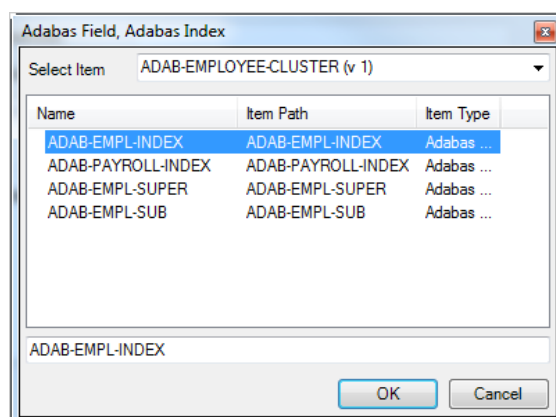
5. Apply your changes.

The name will be displayed in the *Relationship From* field.

Relationships To

1. Double-click the *New* icon available in the *Relationships To* text zone.

The following screen is displayed:



2. Select the required File Group or File. Two extra options are available at the top right of the pop-up window for selecting the required item:

- Show all

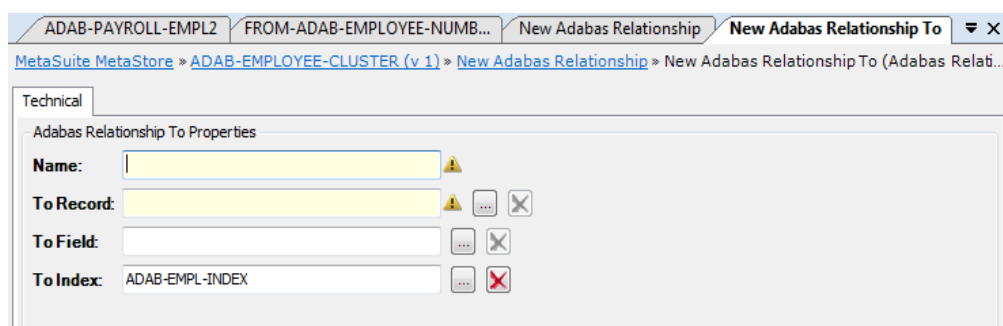
When selecting this option, the *Select Item* drop-down list will be deactivated and all available fields for all categories will be displayed underneath.

- Indentation

When selecting this option, all fields displayed will be sorted per structure instead of alphabetically.

3. Select the required Field and click OK.

The *Adabas Relationship To* properties panel is displayed.



- Fill out the required fields.

Name	The name of the new Relationship
To Record	In order to define a particular relationship between two records, the user has to specify the second record of the relationship in the <i>To Record</i> field.
To Field	The matching field of the <i>To Record</i> .
To Index	For faster access, the user can define an index on a table. This index has to be specified in the MetaStore database and can be referred to in this field.

Note: You can use the *Browse* button to display the list of available items.

- Apply your changes.

The relationship key name is added in the *Relationships To* panel.

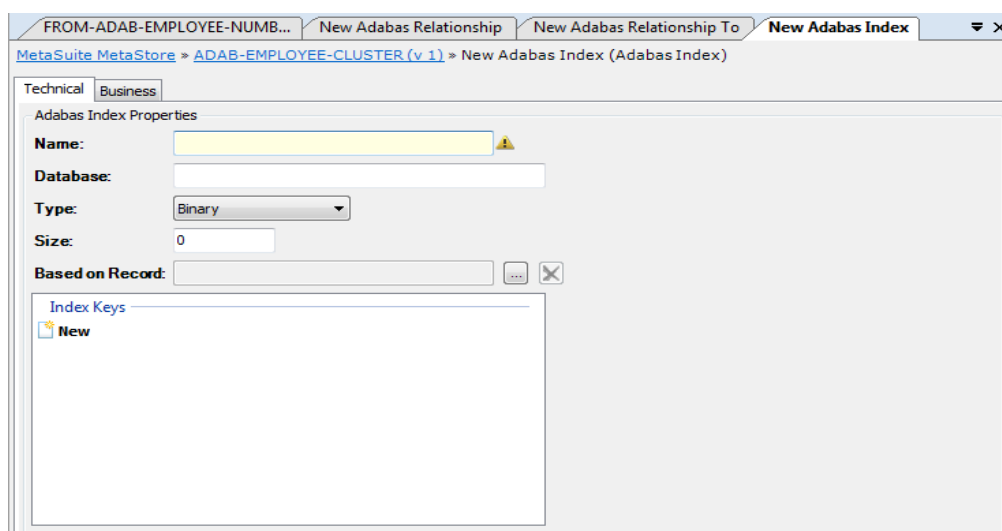
Business Tab (Adabas Relationships)

The fields on the Business Tab are identical for all Adabas data objects (Dictionary File, Record, Field, Relationship and Index). Refer to the section [Business Tab \(Adabas Data Objects\)](#) (page 45) for a description of the fields.

9.5. Defining Indices

- In the Tree View Window, right-click the Adabas File Group you want to define an Index for and select *Add Adabas Index*.

The properties panel is displayed in the Workspace.



Two tabs are available: *Technical* and *Business*.

- Fill out the required fields.

For a detailed description of the fields, refer to the sections:

- [Technical Tab \(Adabas Indices\)](#) (page 43)
- [Business Tab \(Adabas Data Objects\)](#) (page 45)

3. Save or discard your changes.

4. Save the changes to the MetaStore Repository.

In the Tree View Window, right-click the Adabas File Group the new Index belongs to and select *Save to MetaStore*.

Note: If you do not add the Index to the MetaStore Repository now, you will be asked whether you want to do this, when you leave the program.

Technical Tab (Adabas Indices)

The following fields are available on the Technical tab:

- [Name](#) (page 43)
- [Database](#) (page 43)
- [Type](#) (page 43)
- [Size](#) (page 44)
- [Based on Record](#) (page 44)
- [Index Keys](#) (page 44)

Name

Mandatory field.

The name you enter must meet the following conditions:

- The name may contain up to 32 characters.
- It must begin with an alphabetic character.
- It may contain the characters a-z, A-Z and 0-9.
- It may contain the following special characters: \$, #, @, _ (underscore) and - (hyphen).
- It may not be ended with a - (hyphen).

Database

Enter the name of the corresponding database.

Type

Select the required type from the drop-down list.

The following options are available:

- Binary

- Mixed
- Packed
- Packed Unsigned
- Zoned
- Zoned Unsigned

Size

Enter the size of the index key.

Based on Record

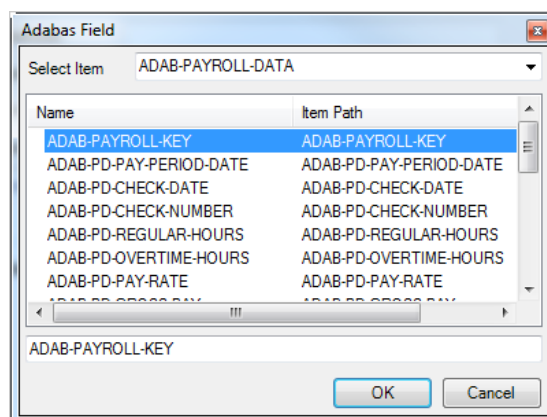
This field is not used for Adabas File Groups.

Index Keys

Mandatory field.

Note: You can only define Index Keys after having saved the Index.

1. Double-click the *New* icon available in the *Index Keys* panel.
The following screen is displayed.



2. Select the required Field and click *OK*.

Two extra options are available at the top right of the pop-up window for selecting the required item:

- Show all

When selecting this option, the *Select Item* drop-down list will be deactivated and all available fields for all categories will be displayed underneath.

- Indentation

When selecting this option, all fields displayed will be sorted per structure instead of alphabetically.

The *Adabas Index Key* properties panel is displayed.

The screenshot shows the 'ADAB-PAYROLL-KEY' properties panel. The 'Name' field is 'ADAB-PAYROLL-KEY', the 'Field' field is 'ADAB-PAYROLL-KEY[ADAB-PAYROLL-DATA]', and both 'Begin Position' and 'End Position' are set to 0. There are also buttons for adding and removing fields.

3. Fill out the required fields.

Name	The name of the new Relationship
Field	Name of the field on which the index key is applied
Begin Position	This field indicates the begin position of the field.
End Position	This field indicates the end position of the field.

4. Apply your changes.

The Index Key name is added in the *Index Keys* panel.

Business Tab (Adabas Indices)

The fields on the Business Tab are identical for all Adabas data objects (Dictionary File, Record, Field, Relationship and Index). Refer to the section [Business Tab \(Adabas Data Objects\)](#) (page 45) for a description of the fields.

9.6. Business Tab (Adabas Data Objects)

The following fields are available on the Business tab:

- [Business Rule](#) (page 45)
- [Note](#) (page 45)

Note: If you want to enter text in RTF (Rich Text Format), right-click and select *RTF* from the context menu (or use the shortcut *CTRL + R*).

Business Rule

Optional field.

Enter a free-form description for the data object (Dictionary File, Record, Field, Relationship or Index). For example, the business rule or the requirements.

Note

Optional field.

Enter a free-form note for the data object.

Datacom File Group

This chapter explains the following actions:

- [Creating the Dictionary File](#) (page 46)
- [Defining Records](#) (page 49)
- [Defining Fields](#) (page 52)
- [Defining Relationships](#) (page 63)
- [Defining Indices](#) (page 67)

10.1. Creating the Dictionary File

1. In the Tree View Window, right-click the MetaStore root icon and select *Add > Datacom File Group*.

The properties panel is displayed in the Workspace.

Two tabs are available: *Technical* and *Business*.

2. Fill out the required fields.

For a detailed description of the fields, refer to the sections:

- [Technical Tab \(Datacom File Groups\)](#) (page 47)
- [Business Tab \(Datacom Data Objects\)](#) (page 69)

3. Apply or discard your changes.

4. Save the changes to the MetaStore Repository.

In the Tree View Window, right-click the new Datacom File Group and select *Save to MetaStore*.

Note: If you do not save the Datacom File Group to the MetaStore Repository now, you will be asked whether you want to do this, when you leave the program.

Technical Tab (Datacom File Groups)

The following fields are available on the Technical tab:

- [Name](#) (page 47)
- [Code-control](#) (page 47)
- [Database](#) (page 48)
- [Version](#) (page 48)
- [CCSID](#) (page 48)

Name

Mandatory field.

The name you enter must meet the following conditions:

- The name may contain up to 32 characters.
- It must begin with an alphabetic character.
- It may contain the characters a-z, A-Z and 0-9.
- It may contain the following special characters: \$, #, @, _ (underscore) and - (hyphen).
- It may not be ended with a - (hyphen).
- File names must be unique in the MetaStore Repository.

Code-control

Optional field.

Code-control Tables contain information about how to process a certain type of data container. Each table element of the code-control table points to a code table in the COBOL Generator Dictionary.

Each data container type has a pre-defined code-control table. If required, this default code-control table can be overwritten. For example: in order to invoke an external I/O module to read or write the file or to expand or compress data.

Note: When the option is used, the selected table must exist in the COBOL Generator Dictionary before programs using the file can be generated.

For more information about code-control tables, refer to the section *Code-control Tables* in the *Generator Manager Guide*.

Database

Enter the name of the corresponding database, if applicable.

Version

Default value = 1

You can change the version number, if required.

When reimporting or recollecting an existing data container, the version will be modified depending on the settings specified in the INI Manager. For more information, refer to the chapter MetaStore Manager Settings in the *MetaSuite INI Manager Guide*.

CCSID

Enter the Coded Character Set Identifier.

CCSID is used by IBM as the abbreviation for "Coded Character Set Identifier". It is a 16-bit number that represents a specific encoding of a specific code page.

CCSID is commonly used for the data subtype CHARACTER, in order to distinguish the different character sets per country, language and the character encoding of the system. Despite of the philosophical approach of Unicode, CCSID can also be used on data type NATIONAL.

This CCSID is an enriched property and will not be collected.

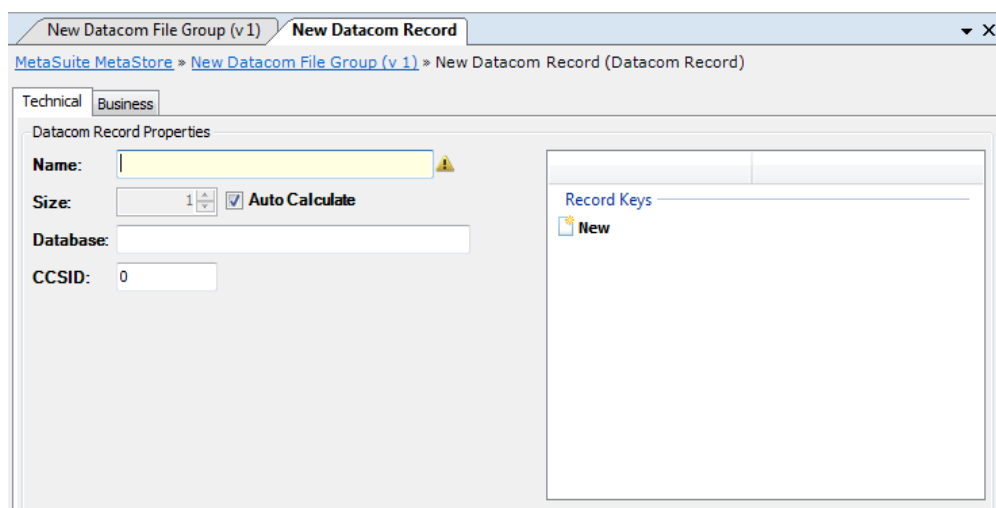
Business Tab (Datacom File Groups)

The fields on the Business Tab are identical for all Datacom data objects (Dictionary File, Record, Field, Relationship and Index). Refer to the section [Business Tab \(Datacom Data Objects\)](#) (page 69) for a description of the fields.

10.2. Defining Records

1. In the Tree View Window, right-click the Datacom File Group you want to define Records for and select *Add Datacom Record*.

The properties panel is displayed in the Workspace.



This screen contains two tabs: *Technical* and *Business*.

2. Fill out the required fields.

For a detailed description of the fields, refer to the sections:

- [Technical Tab \(Datacom Records\)](#) (page 49)
- [Business Tab \(Datacom Data Objects\)](#) (page 69)

3. Save or discard your changes.

4. Save the changes to the MetaStore Repository.

In the Tree View Window, right-click the Datacom File Group the new Record belongs to and select *Save to MetaStore*.

Note: If you do not add the Record to the MetaStore Repository now, you will be asked whether you want to do this, when you leave the program.

Technical Tab (Datacom Records)

The following fields are available on the Technical tab:

- [Name](#) (page 50)
- [Size](#) (page 50)
- [Database](#) (page 50)
- [CCSID](#) (page 50)
- [Record Keys](#) (page 51)

Name

Mandatory field.

The name you enter must meet the following conditions:

- The name may contain up to 32 characters.
- It must begin with an alphabetic character.
- It may contain the characters a-z, A-Z and 0-9.
- It may contain the following special characters: \$, #, @, _ (underscore) and - (hyphen).
- It may not be ended with a - (hyphen).
- File names must be unique in the MetaStore Repository.

Size

Mandatory field.

Enter the maximum number of characters included in the record. The value must be an integer and cannot exceed the maximum record size defined for the Dictionary File it belongs to.

Note: If the size is changed manually and it is too small to contain all defined fields, it will be reset by the MetaStore Manager to the smallest size needed to contain all defined fields.

Auto Calculate

If this option is activated, the size will be calculated automatically.

Database

Note: This field is specific for each file (sub)type. Refer to the appropriate File Access Guide for more detailed information.

This field is mandatory for IMS Segments. Enter the segment name of the record, as specified in the DBDGEN and PSBGEN statements.

For RDBMS, the Creator Name should be entered in this field.

CCSID

Enter the Coded Character Set Identifier.

CCSID is used by IBM as the abbreviation for "Coded Character Set Identifier". It is a 16-bit number that represents a specific encoding of a specific code page.

CCSID is commonly used for the data subtype CHARACTER, in order to distinguish the different character sets per country, language and the character encoding of the system. Despite of the philosophical approach of Unicode, CCSID can also be used on data type NATIONAL.

This CCSID is an enriched property and will not be collected.

Record Keys

Optional field.

This option is used to identify Datacom identification fields and the specific ranges of values for those key fields.

1. Double-click the *New* icon available in the *Record Keys* panel.

Note: You can only define Record Keys after having defined Records and Fields for the Dictionary File.

The following screen is displayed:

2. Fill out the name of the new Key.
3. Select the KeyType from the drop-down list.

The following options are available:

- *Access*: this is the Master Key, used to determine the read order
- *Storage*: this is the Native Key, used to determine the write or store order

4. Select the required Field

Click the *Browse* button to display the list of all available fields and subfields.

Two extra options are available at the top right of the pop-up window for selecting the required item:

- Show all
When selecting this option, the *Select Item* drop-down list will be deactivated and all available fields for all categories will be displayed underneath.
- Indentation
When selecting this option, all fields displayed will be sorted per structure instead of alphabetically.

5. Select the required Index

Click the *Browse* button to display the list of all available fields and subfields.

6. Enter the Value.

Note: If you want to specify more than 1 value (or range of values), you have to define separate record keys.

Mandatory field.

Only applicable when *Access* is selected as Key Type. This value defines the value of the field indicating an occurrence of the record.

Operator	Value entered	Meaning
Equal	3	Only records where the selected field has (not) value 3 are taken into account.
	C	Only records where the selected field has (not) value C are taken into account.

7. Apply your changes and close the *Record Key Properties* panel.
The new Record Key is added to the *Record Keys* panel.

8. Repeat this action for all Record Keys you want to define.

Business Tab (Datacom Records)

The fields on the Business Tab are identical for all Datacom data objects (Dictionary File, Record, Field, Relationship and Index). Refer to the section [Business Tab \(Datacom Data Objects\)](#) (page 69) for a description of the fields.

10.3. Defining Fields

1. In the Tree View Window, right-click the Datacom Record you want to define new Fields for and select *Add Datacom Field*.

The properties panel is displayed in the Workspace.

The screenshot shows the 'New Datacom Field' dialog box with the 'Business' tab selected. The 'Datacom Field Properties' section contains the following fields:

- Name: (empty text field)
- Size: 1 (spin box)
- Abs. Position: 1 (spin box)
- Rel. Position: 1 (spin box)
- Occurs: 1 (spin box)
- Occurrence Depending on: (empty text field)

The 'Content' section contains the following fields:

- Type: Character (dropdown menu)
- Decimals: 0 (spin box)
- Initial: (empty text field)
- Null: None (dropdown menu)
- Code: No Code (dropdown menu)
- Edit Mask: (empty text field)
- Date Format: None (dropdown menu)
- Low Limit: (empty text field)
- High Limit: (empty text field)
- CCSID: 0 (spin box)

Two tabs are available: *Technical* and *Business*.

2. Fill out the required fields.

For a detailed description of the fields, refer to the sections:

- [Technical Tab \(Datacom Fields\)](#) (page 53)
- [Business Tab \(Datacom Data Objects\)](#) (page 69)

Note: Some of the values can also be modified by double-clicking or selecting them from a drop-down list in the Record Fields Window.

3. Save or discard your changes.

4. Save the changes to the MetaStore Repository.

In the Tree View Window, right-click the Datacom File Group the new Field belongs to and select *Save to MetaStore*.

Note: If you do not add the Field to the MetaStore Repository now, you will be asked whether you want to do this, when you leave the program.

Technical Tab (Datacom Fields)

The following fields are available on the Technical tab:

- Properties
 - [Name](#) (page 54)
 - [Size](#) (page 54)
 - [Abs. Position](#) (page 55)
 - [Rel. Position](#) (page 55)
 - [Occurs](#) (page 55)
 - [Occurrence Depending On](#) (page 56)
- Content
 - [Type](#) (page 56)
 - [Decimals](#) (page 57)
 - [Unsigned](#) (page 58)
 - [Separated and Leading](#) (page 58)
 - [Initial](#) (page 58)
 - [Null](#) (page 58)
 - [Code](#) (page 59)
 - [Edit Mask](#) (page 60)
 - [Date Format](#) (page 62)
 - [Low Limit](#) (page 62)
 - [High Limit](#) (page 62)
 - [CCSID](#) (page 63)

Name

Mandatory field.

The name you enter must meet the following conditions:

- The name may contain up to 32 characters.
- It must begin with an alphabetic character.
- It may contain the characters a-z, A-Z and 0-9.
- It may contain the following special characters: \$, #, @, _ (underscore) and - (hyphen).
- It may not be ended with a - (hyphen).
- File names must be unique in the MetaStore Repository.

Size

In the *Size* field, enter an integer indicating the field length as a number of bytes. If the field occurs more than once in the record, this field indicates the length of a single occurrence of the field.

Type	Additional	Size in # Bytes	COBOL
Alphabetic		# characters	PIC A(c) DISPLAY
Character		# characters	PIC X(c) DISPLAY
National		2 x # characters	PIC N(c)
Varchar		# characters	PIC X(c) DISPLAY
Binary	1 <= # digits <= 4	2	PIC S9(n)V9(d) BINARY
	5 <= # digits <= 9	4	PIC S9(n)V9(d) BINARY
	10 <= # digits <= 18	8	PIC S9(n)V9(d) BINARY
Binary Native	1 <= # digits <= 4	2	PIC S9(n)V9(d) COMP-5
	5 <= # digits <= 9	4	PIC S9(n)V9(d) COMP-5
	10 <= # digits <= 18	8	PIC S9(n)V9(d) COMP-5
Bit		1	-
Decimal	Signed / Null-signed	(# digits + 1) / 2	PIC S9(n)V9(d) PACKED-DECIMAL
Float	8 digits of precision	4	COMP-1
	17 digits of precision	8	COMP-2
Hexadecimal		1 byte = 2 hexadecimal digits	PIC X(c) DISPLAY
Numeric		# digits	PIC S9(n)V9(d) DISPLAY
Printed Numeric		# characters in Edit Mask	PIC EditMask DISPLAY
Printed Numeric National		2 x # characters in Edit Mask	PIC EditMask USAGE NATIONAL

Legend:

- c = number of characters
- n = number of integer digits
- d = number of decimal digits
- s = only present when value is signed. This option is not allowed for National.

Note: The Record Layout window shows the default value for the Field within the selected Record. The default value matches the size of the Field, as defined in the Record Fields Window.

Auto Calculate

If this option is activated, the size will be calculated automatically.

Abs. Position

In this field, you may change the Field's starting character position that was calculated automatically by the system. The value entered must be an integer.

Note: If the Record's length is variable, you may not include the four-character record descriptor word when determining the start position of the Field.

Rel. Position

This is the 1-based position of this field within its domed structure (i.e., Record or Group).

- For a field that is not a subfield, the absolute and relative positions are equal.
- For a field x that is a subfield of group g , the relative position will be calculated as $1 + (\text{absolute position of } x) - (\text{absolute position of } g)$.

For example: if group g starts on position 5, and the absolute position of x is also 5, then the relative position of x is $1+5-5 = 1$. In human terms: " x will start on the 1st position of g ".

Auto Calculate

If this option is activated, the size will be calculated automatically.

Occurs

Optional field.

Enter an integer indicating the maximum number of times this field can occur in the record. If you do not define a specific value, the field is assumed to occur once.

Occurrence Depending On

Optional field. Only applies for repeating fields (n).

Select a numeric field that is defined prior to this field within the record.

Results:

- The value you defined with the *Occurs* option represents the *maximum* number of times this field can occur
- The value available in the selected field represents the *actual* number of times the field occurs.

1. Click the *Browse* button next to the *Occurrence Depending On* text field.

The list of available numeric fields is displayed.

2. Select the required Field.

The name of the selected Field is displayed in the *Occurrence Depending On* text field.

Note: If you click the Browse button again now, the Properties screen for the selected field will be displayed. If you want to select another field, you first have to delete the current field name from the text field and then click the Browse button.

Type

This field is mandatory and contains the default value *Character*.

There are two general classes of data types: *non-numeric* and *numeric*.

Non-numeric Data Types

Alphabetic	This datatype indicates a field containing strings using the characters A-Z and a-z.
Character	This datatype indicates that the field may contain any possible character within the character set being used (including <i>unprintable</i> characters). It is not possible to perform numeric operations on a Character type field, even when the field contains only digits. Matching RDBMS Data Types: CHAR, BYTE, VARCHAR, VARCHAR2, LONG, RAW, LONGVARCHAR
Graphic	DB2 terminology for Character datatype.
Hexadecimal	This datatype indicates that any hexadecimal characters are allowed within the field.
Long Varchar	This datatype indicates a field containing a variable character string of maximum 2 GB.
National	The National datatype is a subset of Unicode. The character set on which it is based is UTF-16, but restricted to two bytes per character.
Varchar	This datatype indicates a character field allowing the storage of values you need plus one byte for the length.
Vargraphic	DB2 terminology for Varchar datatype.

Numeric Data Types

Binary	This datatype indicates that the field contains a binary numeric value composed of 0's and 1's.
Binary Native	This datatype indicates that the field contains binary native numbers. This means that its internal representation depends on the Operating System and/or processor.
Bit	This datatype indicates a field occupying a single bit storage. A BIT type field may only contain the binary values 0 or 1. It is possible to perform numeric operations on a BIT type field.
Byte	This datatype indicates a field occupying a single byte storage. A byte is 8 bits. It is possible to perform numeric operations on a BYTE type field.
Decimal	This datatype indicates a field containing a packed decimal value. Packed decimal is the most commonly used internal numeric data type. Two decimal digits are contained in each byte of a packed decimal number. However, if the number is signed, the last half byte contains a positive or negative sign indicator.
Float	This datatype indicates that the field contains floating-point numbers, encoded in an encoded exponential form.
Numeric	This datatype indicates that any the field contains decimal numbers in a printable character format, this means that a single digit is stored per byte. Leading blanks are not permitted in this field type, nor may it contain editing characters, such as commas or decimal points. Use <i>Printed Numeric</i> in this case. Matching RDBMS Data Types: TINYINT, SMALLINT, INTEGER, BIGINT, DECIMAL, NUMBER, FLOAT
Printed Numeric	This datatype indicates that the character-based field contains a numeric value. The format in which the printed numeric value is displayed must be specified with the EDIT option.
Printed Numeric National	This datatype indicates that this is a National field that contains a numeric value. The format in which the PRN-NATIONAL value is displayed must be specified with the EDIT option.

Decimals

If the field type allows the definition of decimals, this field contains the number of decimals.

Decimals can be entered for the following field types:

- Binary
- Binary Native
- Decimal
- Numeric
- Printed Numeric
- Printed Numeric National

If the field type does not allow the definition of decimals, this field contains the default value 0.

Unsigned

Select the *Unsigned* check box to indicate that a numeric value is not signed, i.e. that it does not contain a sign indicator (+ or -).

This field applies for the following field types:

- Binary
- Binary Native
- Numeric

Note: For Decimal fields, the distinction between unsigned and positive signed INPUT fields is not relevant to the system.

Separated and Leading

These two check boxes allow to define how over-punched and separate sign indicators must be treated. They only apply for the Numeric field type.

There are several possibilities.

If the sign indicator is over-punched in the number, select the *Unsigned* check box above.

- Select *Leading* to put the sign on the initial digit.
- Select *Separate* to put the sign on the last byte (no digit).
- Select *Leading* and *Separate* to put the sign in the initial byte (no digit).

If the Numeric field contains a separate plus or minus sign attached to the number, select the *Separate* check box.

Initial

Optional field.

Enter the initial value for the field.

This value is only taken into account for Target Files. If an initial value was defined for a Source file, this parameter will not affect any operation, except for syntax checking.

For Numeric fields, this is a numeric constant, where the decimal point should be given by a . (point).

For Character fields, this may be an alphanumeric constant (not enclosed by quotes) or the system fields *SYS-LOW-VALUE* or *SYS-HIGH-VALUE*, which correspond to system fields *LOW-VALUE* and *HIGH-VALUE* within COBOL.

Null

This field indicates the nullable status of the field, and whether Inbound or Outbound nulls are used.

Note: If this field is left blank, the default NULLABLE value defined in the MetaSuite dictionary will be applied to this field. For more information, refer to the section *Create Dictionary/Enter License Key* in the *Generator Manager Guide*.

Select the required null-indicator from the drop-down list.

Entry	Description
None	Select this option if no nullability information is known about the field, or when it is of no importance for the field.
Default	Select this option if this field is a NotNull field with a default value. The Default notion is only documentary metadata for a field. The default Nullable value defined in the MetaSuite dictionary will be applied. Refer to the section <i>Create a Dictionary/Enter License Key</i> in the Generator Manager User Guide.
NotNull	Select this option if a Null Value should never be allowed in this field.
InNull	Select this option if a Null Value is allowed in this field. The used value to define a Null value is determined by a default setting in the MetaSuite COBOL Generator. When a Null Value is assigned, the first position or character of the field itself indicates the Null Value (the so called inbound Null). Note: In case of National or PRN-National, the Null Value is indicated by two bytes.
OutNull	Select this option if Null Values are allowed in this field. To store a Null value, an additional placeholder is foreseen in the sequential file that precedes the real field. When a Null value is assigned, this additional placeholder indicates the Null value (the so called left outbound Null). The used value to define a Null value is determined by a default setting in the MetaSuite COBOL Generator. Note: This placeholder contains one byte in order to store the Null indicator, except in case of field type National or PRN-National. In that case the placeholder contains two bytes.
OutNullR	Select this option if Null Values are allowed in this field. To store a Null value, an additional placeholder is foreseen in the sequential file that follows the real field. When a Null value is assigned, this additional placeholder indicates the Null value (the so called right outbound Null). The used value to define a Null value is determined by a default setting in the MetaSuite COBOL Generator. Note: This placeholder contains one byte in order to store the Null indicator, except in case of field type National or PRN-National. In that case the placeholder contains two bytes.

Code

Default value = *No Code*

The following options are available:

Option	Description
Code	This field is treated as a code, not as a number.
No Code	Resets the code operator to zero. Select this option when there is no additional information to be added for the field.
Time	Select this option to define a field that contains TIME information.
Timestamp	Select this option to define a field that contains TIMESTAMP information.

Edit Mask

This field is mandatory for Printed Numeric fields, but optional for other field types. It indicates how the alphanumeric values must be formatted.

Note: When the Edit Mask is set for a printed numeric field, the MetaStore Manager will reset the size of the field to the size that corresponds to the chosen Edit Mask.

Enter the characters defining a Mask in this text field. This Mask will override the default mask for the field. There is a default mask for each field type. Both the default masks and the manually created masks are composed of *Replacement* and *Insertion* characters.

The following table lists the Replacement characters and their meaning. Replacement characters indicate positions in the printed field that may be replaced by (the corresponding types of) characters from the input field.

Replacement Character	Meaning
\$	Floating dollar sign before the first digit, with leading zero suppression
Z	Leading zero suppression
*	Asterisks to replace leading zeros
9	Numeric character
A	Alphabetic character
N	National (2-byte Unicode character set)
X	Character

The following table lists the Insertion characters and their meaning. Insertion characters indicate characters to be printed in addition to those contained in the stored field.

Insertion Character	Meaning
\$	Leading dollar sign
*	Leading asterisk (generally for check protection)
,	Comma (separator for the sake of large number readability or decimal separator depending on the "Decimal Separator" option in the INI file)
.	Decimal point (separator for the sake of large number readability or decimal separator, depending on the "Decimal Separator" option in the INI file)
B	Blank
-	Floating or trailing minus for negative values. Plus is not accepted as valid character. Positive numbers will have a blank as sign character.
+	Floating or trailing plus or minus sign
CR	Trailing credit symbol for negative values only

Insertion Character	Meaning
DB	Trailing debit symbol for negative values
V	Virtual comma

As mentioned above, there is a default Mask for each field type:

Field Type	Default Mask Description
Signed numeric fields	The default mask contains a minus sign as the rightmost character. All negative values are printed with a trailing minus sign.
Numeric fields with decimals	The default mask contains a decimal point and as many digit replacement characters (9s) to the right of the decimal point as are specified by the Decimal option.
Numeric fields	The default mask contains as many digits as its size, without zero suppression.
Date fields	The default mask is its selected date format.
Alphanumeric fields	The default mask contains as many alphanumeric character replacement characters (X) as are required to print the field.

Examples of default masks:

Field Type	Size	Default mask
Signed numeric fields without decimal positions	6	999999-
Signed numeric fields with two decimals	6	9999.99-
Character Field	6	X(6)
Unicode Field	6	N(3)

You may also define customized masks.

Examples:

Field Type	Field Size	Mask	Field value	Printed value
Character	6	XXBXXXX	AB138B	AB 138B
Numeric with 2 decimal positions	2	.99	.35 0 -12	.35 .00 .12
Numeric with 3 minus signs	4	---9	0 -1 210	0 -1 210

Field Type	Field Size	Mask	Field value	Printed value
Numeric with 3 plus signs	4	+++9	0	+0
			-1	-1
			210	210

Date Format

If the field must contain a date, select the required date format from the drop-down list. The system automatically validates date fields whenever they are referenced in a MetaMap model, and automatically converts date fields whenever they are compared to another date or used in a calculation. In all the available formats, YY or YYYY stands for the year and MM stands for the month. DD stands for the day within a month and DDD stands for the day within the year.

When the format contains a '?', this indicates the date delimiter that is used. Data formats with a '?' are only supported for Character and Varchar field types. When the data format does not contain a '?', the different parts in the date are not delimited by a special character.

The Date Format list is accessible for the following field types:

- Binary
- Binary Native
- Character
- Decimal
- Numeric
- National
- Varchar

Note: When a date format is chosen, MetaStore Manager will reset the size of the field to the size that corresponds to the chosen date format.

Low Limit

Optional field.

When a *Low Limit* is specified, you must define a value in the *High Limit* field as well.

You may use this field to define a minimum value for this field. If a lower value is encountered, the system will consider the data invalid.

High Limit

Optional field.

When a *High Limit* is specified, you must define a value in the *Low Limit* field as well. You may use this field to define a maximum value for this field. If a higher value is encountered, the system will consider the data invalid.

CCSID

Enter the Coded Character Set Identifier.

CCSID is used by IBM as the abbreviation for "Coded Character Set Identifier". It is a 16-bit number that represents a specific encoding of a specific code page.

CCSID is commonly used for the data subtype CHARACTER, in order to distinguish the different character sets per country, language and the character encoding of the system. Despite of the philosophical approach of Unicode, CCSID can also be used on data type NATIONAL.

This CCSID is an enriched property and will not be collected.

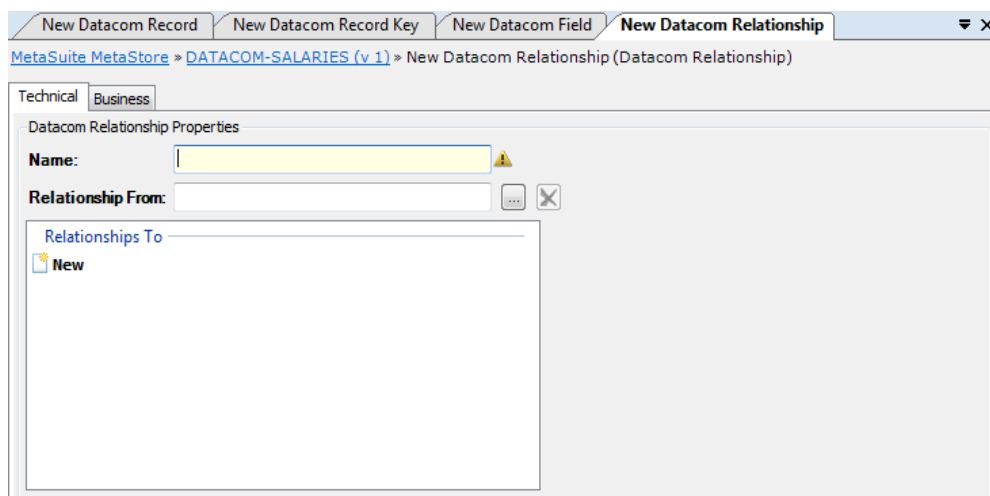
Business Tab (Datacom Fields)

The fields on the Business Tab are identical for all Datacom data objects (Dictionary File, Record, Field, Relationship and Index). Refer to the section [Business Tab \(Datacom Data Objects\)](#) (page 69) for a description of the fields.

10.4. Defining Relationships

1. In the Tree View Window, right-click the Datacom File Group you want to define a Relationship for and select *Add Datacom Relationship*.

The properties panel is displayed in the Workspace.



Each LINK definition relates two MetaSuite (Datacom File Group) records to one another. The "basis" of the link is a field in one record (the "from" record, so called because data is taken from that record and used to locate the other record) and a descriptor in the other (the "to" record, so called because the descriptor leads to that record).

Two tabs are available: *Technical* and *Business*.

2. Fill out the required fields.

For a detailed description of the fields, refer to the sections:

- [Technical Tab \(Datacom Relationships\)](#) (page 64)
- [Business Tab \(Datacom Data Objects\)](#) (page 69)

3. Save or discard your changes.
4. Save the changes to the MetaStore Repository.
In the Tree View Window, right-click the Datacom File Group and select *Save to MetaStore*.

Note: If you do not save the Relationship to the MetaStore Repository now, you will be asked whether you want to do this, when you leave the program.

Technical Tab (Datacom Relationships)

The following fields are available on the Technical tab:

- [Name](#) (page 64)
- [Relationship From](#) (page 64)
- [Relationships To](#) (page 66)

Name

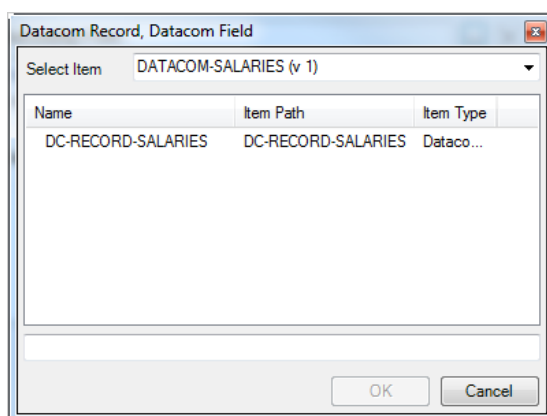
Mandatory field.

The name you enter must meet the following conditions:

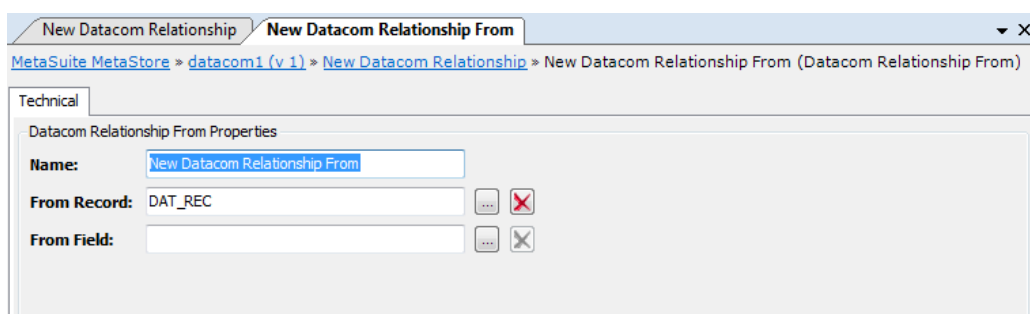
- The name may contain up to 32 characters.
- It must begin with an alphabetic character.
- It may contain the characters a-z, A-Z and 0-9.
- It may contain the following special characters: \$, #, @, _ (underscore) and - (hyphen).
- It may not be ended with a - (hyphen).
- File names must be unique in the MetaStore Repository.

Relationship From

1. Fill out the name of the new Relationship key.
2. Click the *Browse* button next to the *Relationship From* text field.
A screen similar to this one is displayed:



3. First select the required Item (File Group or Record) using the drop-down list.
All available fields for the selected record or fields will be displayed underneath.
Two extra options are available at the top right of the pop-up window for selecting the required item:
 - Show all
When selecting this option, the *Select Item* drop-down list will be deactivated and all available fields for all categories will be displayed underneath.
 - Indentation
When selecting this option, all fields displayed will be sorted per structure instead of alphabetically.
4. Select the required record or field and click OK.
The *Datacom Relationship From* properties panel is displayed.



5. Fill out the required fields.

Name	The name of the new Relationship
From Record	In order to define a particular relationship between two records, the user has to specify the first record of the relationship in the <i>From Record</i> field.
From Field	The matching field of the <i>From Record</i> .

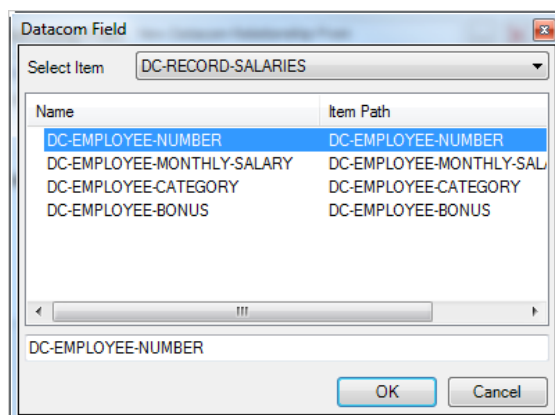
Note: You can use the *Browse* button to display the list of available items.

6. Apply your changes and close the properties panel.
The name will be displayed in the *Relationship From* field.

Relationships To

1. Double-click the *New* icon available in the *Relationships To* text zone.

A screen similar to this one is displayed:



2. First select the required Record using the drop-down list.
All available fields for the selected record will be displayed underneath.

3. Select the required Field and click *OK*.

Two extra options are available at the top right of the pop-up window for selecting the required item:

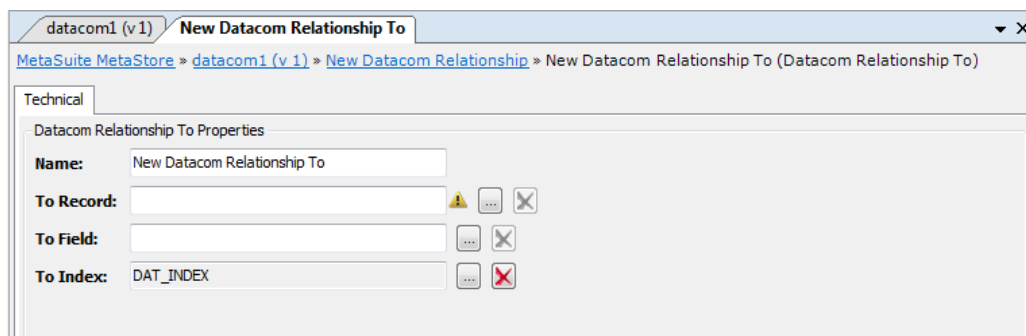
- Show all

When selecting this option, the *Select Item* drop-down list will be deactivated and all available fields for all categories will be displayed underneath.

- Indentation

When selecting this option, all fields displayed will be sorted per structure instead of alphabetically.

The *Datacom Relationship To* properties panel is displayed.



4. Fill out the required fields.

Name	The name of the new Relationship
To Record	In order to define a particular relationship between two records, the user has to specify the second record of the relationship in the <i>To Record</i> field.
To Field	The matching field of the <i>To Record</i> .
To Index	The matching index of the <i>To Record</i> .

Note: You can use the *Browse* button to display the list of available items.

5. Apply your changes and close the properties panel.
The relationship key name is added in the *Relationships To* panel.

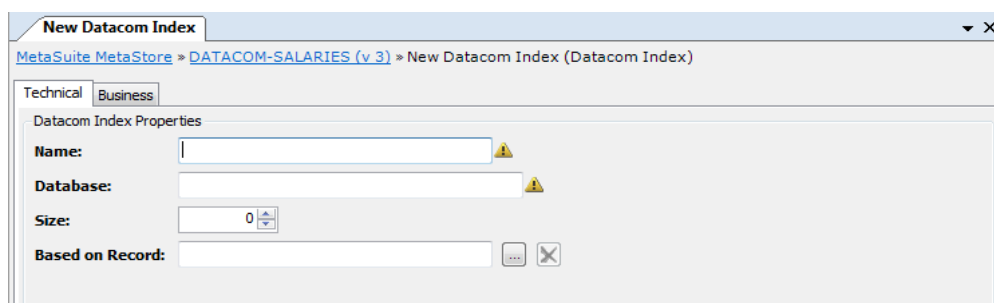
Business Tab (Datacom Relationships)

The fields on the Business Tab are identical for all Datacom data objects (Dictionary File, Record, Field, Relationship and Index). Refer to the section [Business Tab \(Datacom Data Objects\)](#) (page 69) for a description of the fields.

10.5. Defining Indices

1. In the Tree View Window, right-click the Datacom File Group you want to define an Index for and select *Add Datacom Index*.

The properties panel is displayed in the Workspace:



Two tabs are available: *Technical* and *Business*.

2. Fill out the required fields.
For a detailed description of the fields, refer to the sections:
 - [Technical Tab \(Datacom Indices\)](#) (page 68)
 - [Business Tab \(Datacom Data Objects\)](#) (page 69)

3. Save or discard your changes.
4. Save the changes to the MetaStore Repository.
In the Tree View Window, right-click the Datacom File Group the new Index belongs to and select *Save to MetaStore*.

Note: If you do not add the Index to the MetaStore Repository now, you will be asked whether you want to do this, when you leave the program.

Technical Tab (Datacom Indices)

The following fields are available on the Technical tab:

- [Name](#) (page 68)
- [Database](#) (page 68)
- [Size](#) (page 68)
- [Based on Record](#) (page 69)

Name

Mandatory field.

The name you enter must meet the following conditions:

- The name may contain up to 32 characters.
- It must begin with an alphabetic character.
- It may contain the characters a-z, A-Z and 0-9.
- It may contain the following special characters: \$, #, @, _ (underscore) and - (hyphen).
- It may not be ended with a - (hyphen).

Database

Enter the name of the corresponding database. This name is limited to 5 characters.

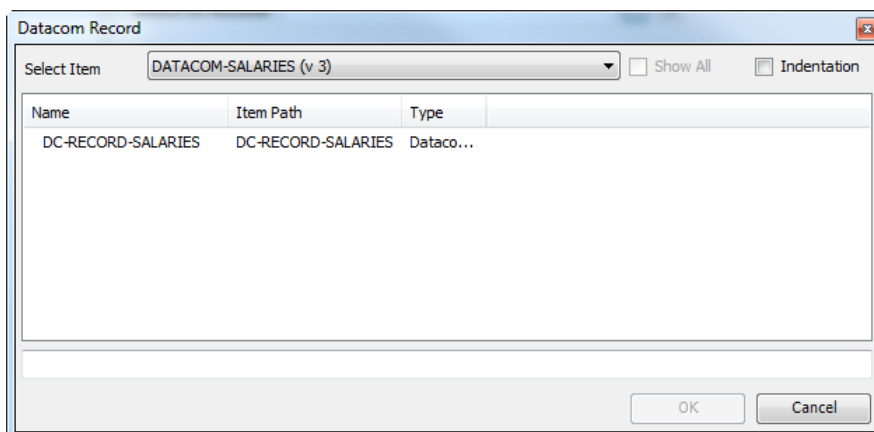
Size

Enter the size of the index key.

Based on Record

1. Click the *Browse* button next to the *Based on Record* text field to select the Record.

A screen similar to this one is displayed:



2. First select the required Item (File Group or Record) using the drop-down list.
All available fields for the selected record or fields will be displayed underneath.
Two extra options are available at the top right of the pop-up window for selecting the required item:
 - Show all
When selecting this option, the *Select Item* drop-down list will be deactivated and all available fields for all categories will be displayed underneath.
 - Indentation
When selecting this option, all fields displayed will be sorted per structure instead of alphabetically.
3. Select the required Record and click *OK*.
The name of the Record is now entered in the *Based on Record* field.

Business Tab (Datacom Indices)

The fields on the Business Tab are identical for all Datacom data objects (Dictionary File, Record, Field, Relationship and Index). Refer to the section [Business Tab \(Datacom Data Objects\)](#) (page 69) for a description of the fields.

10.6. Business Tab (Datacom Data Objects)

The following fields are available on the Business tab:

- [Business Rule](#) (page 70)
- [Note](#) (page 70)

Note: If you want to enter text in RTF (Rich Text Format), right-click and select *RTF* from the context menu (or use the shortcut *CTRL + R*).

Business Rule

Optional field.

Enter a free-form description for the data object (Dictionary File, Record, Field, Relationship or Index). For example, the business rule or the requirements.

Note

Optional field.

Enter a free-form note for the data object.

CHAPTER 11

IMS PCB

IMS is a database management system (DBMS) for z/OS environments. An IMS application of a database is called a PCB (Program Control Block). It is treated as a single MetaSuite Dictionary File.

In the remainder of this chapter, a *Dictionary File for an IMS PCB* is referred to as an *IMS PCB Dictionary File*. The following table shows how the IMS PCB terminology can be matched with the MetaSuite terminology:

IMS PCB Terminology	MetaSuite Terminology
IMS PCB	Dictionary File
IMS Segment	Record
Field	Field
IMS Index	Index

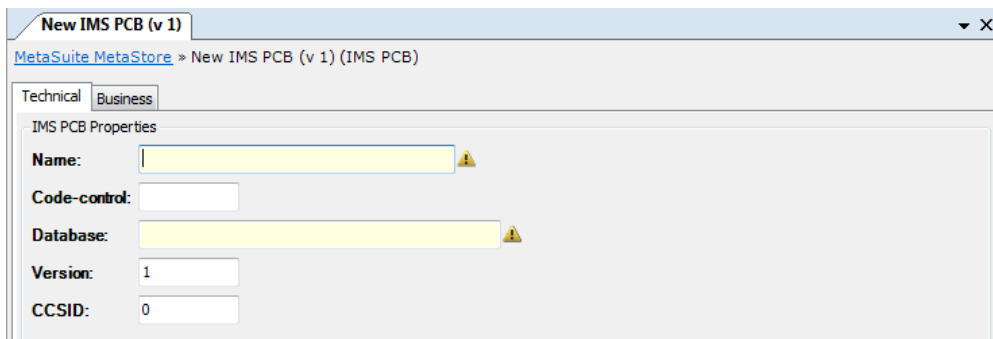
This chapter explains the following actions:

- [Creating the Dictionary File](#) (page 71)
- [Defining Records](#) (page 74)
- [Defining Fields](#) (page 77)
- [Defining Indices](#) (page 87)

For more technical information, refer to the *IMS DLI File Access Guide*.

11.1. Creating the Dictionary File

1. In the Tree View Window, right-click the MetaStore root icon and select *Add > IMS PCB*. The properties panel is displayed in the Workspace.



The screenshot shows a window titled "New IMS PCB (v 1)" with a close button. Below the title bar, the breadcrumb "MetaSuite MetaStore > New IMS PCB (v 1) (IMS PCB)" is visible. The window contains two tabs: "Technical" (selected) and "Business". Under the "Technical" tab, the "IMS PCB Properties" section is displayed. It includes the following fields:

- Name:** A text input field with a yellow highlight and a warning icon.
- Code-control:** A text input field.
- Database:** A text input field with a yellow highlight and a warning icon.
- Version:** A text input field containing the value "1".
- CCSID:** A text input field containing the value "0".

Two tabs are available: *Technical* and *Business*.

2. Fill out the required fields.

For a detailed description of the fields, refer to the sections:

- [Technical Tab \(IMS PCB\)](#) (page 72)
- [Business Tab \(IMS PCB Data Objects\)](#) (page 90)

3. Apply or discard your changes.

4. Save the changes to the MetaStore Repository.

In the Tree View Window, right-click the new Dictionary File and select *Save to MetaStore*.

Note: If you do not save the Dictionary File to the MetaStore Repository now, you will be asked whether you want to do this, when you leave the program.

Technical Tab (IMS PCB)

The following fields are available on the Technical tab:

- [Name](#) (page 72)
- [Code-control](#) (page 72)
- [Database](#) (page 73)
- [Version](#) (page 73)
- [CCSID](#) (page 73)

Name

Mandatory field.

The name you enter must meet the following conditions:

- The name may contain up to 32 characters.
- It must begin with an alphabetic character.
- It may contain the characters a-z, A-Z and 0-9.
- It may contain the following special characters: \$, #, @, _ (underscore) and - (hyphen).
- It may not be ended with a - (hyphen).
- File names must be unique in the MetaStore Repository.

Note: If the PCB name is not specified in the PSBGEN, or if it is spelled the same as a PCB name in another PSBGEN, you may not use it as file name.

Code-control

Optional field.

Code-control Tables contain information about how to process a certain type of data container. Each table element of the code-control table points to a code table in the COBOL Generator Dictionary.

Each data container type has a pre-defined code-control table. If required, this default code-control table can be overwritten. For example: in order to invoke an external I/O module to read or write the file or to expand or compress data.

Note: When the option is used, the selected table must exist in the COBOL Generator Dictionary before programs using the file can be generated.

For more information about code-control tables, refer to the section *Code-control Tables* in the *Generator Manager Guide*.

Database

Enter the name of the corresponding database, if applicable.

Note: This field is mandatory for IMS Pcb. Enter the name of the PCB as found in the PSBGEN. Make sure that the DBDGEN job, which you are using, defines the same DBD as specified in the DBDname parameter of the PCB statement in the PSBGEN. The name of the PSB in the PSBGEN job can be found at the end of the job by the indication: *PSBNAME=PSB-name*

Version

Default value = 1

You can change the version number, if required.

When reimporting or recollecting an existing data container, the version will be modified depending on the settings specified in the INI Manager. For more information, refer to the chapter MetaStore Manager Settings in the *MetaSuite INI Manager Guide*.

CCSID

Enter the Coded Character Set Identifier.

CCSID is used by IBM as the abbreviation for "Coded Character Set Identifier". It is a 16-bit number that represents a specific encoding of a specific code page.

CCSID is commonly used for the data subtype CHARACTER, in order to distinguish the different character sets per country, language and the character encoding of the system. Despite of the philosophical approach of Unicode, CCSID can also be used on data type NATIONAL.

This CCSID is an enriched property and will not be collected.

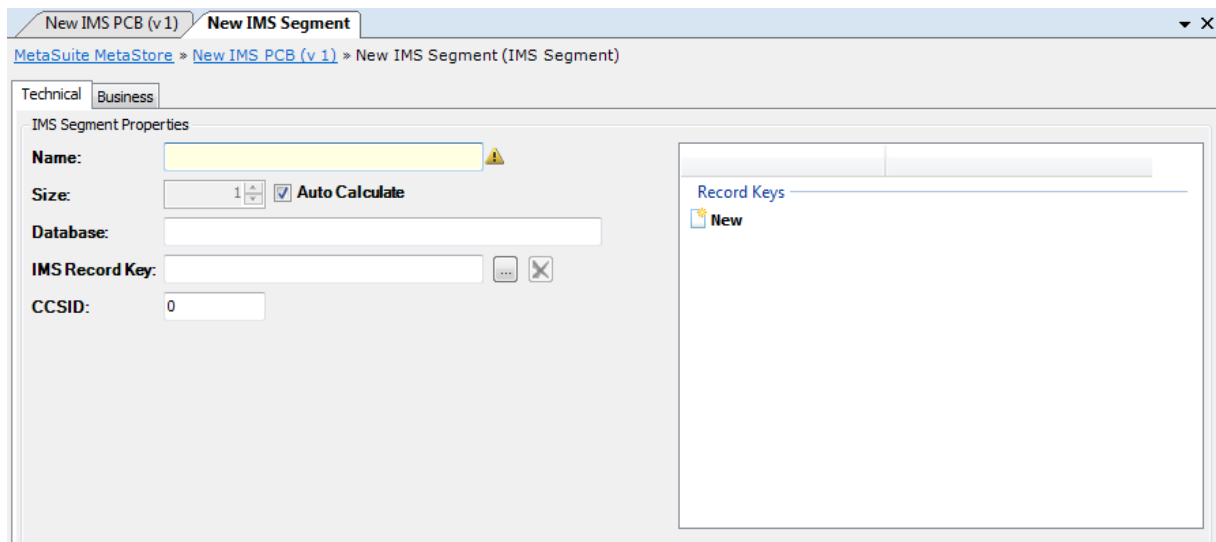
Business Tab (IMS PCB)

The fields on the Business Tab are identical for all IMS PCB data objects (Dictionary File, Record, Field, Relationship and Index). Refer to the section [Business Tab \(IMS PCB Data Objects\)](#) (page 90) for a description of the fields.

11.2. Defining Records

1. In the Tree View Window, right-click the appropriate IMS PCB Dictionary File and select *Add IMS Segment*.

The properties panel is displayed in the Workspace.



Two tabs are available: *Technical* and *Business*.

2. Fill out the required fields.

For a detailed description of the fields, refer to the sections:

- [Technical Tab \(IMS Segments\)](#) (page 74)
- [Business Tab \(IMS Segments\)](#) (page 77)

3. Save or discard your changes.

4. Save the changes to the MetaStore Repository.

In the Tree View Window, right-click the Dictionary File the new Record belongs to and select *Save to MetaStore*.

Note: If you do not add the Record to the MetaStore Repository now, you will be asked whether you want to do this, when you leave the program.

Technical Tab (IMS Segments)

The following fields are available on the Technical tab:

- [Name](#) (page 75)
- [Size](#) (page 75)
- [Database](#) (page 75)
- [IMS Record Key](#) (page 75)
- [CCSID](#) (page 76)
- [Record Keys](#) (page 76)

Name

Mandatory field.

The name you enter must meet the following conditions:

- The name may contain up to 32 characters.
- It must begin with an alphabetic character.
- It may contain the characters a-z, A-Z and 0-9.
- It may contain the following special characters: \$, #, @, _ (underscore) and - (hyphen).
- It may not be ended with a - (hyphen).
- File names must be unique in the MetaStore Repository.

Note: You can use the name of the segment as specified in the DBD and PSBGENs.

Size

Mandatory field.

Enter the value of the BYTES parameter of the SEGM statement in the DBDGEN job.

The number specified for the record size need not be exact, but must be at least as large as the actual record size. Specifying a record size that is too small for the actual record will cause unpredictable processing results.

Auto Calculate

If this option is activated, the size will be calculated automatically.

Database

Note: This field is specific for each file (sub)type. Refer to the appropriate File Access Guide for more detailed information.

This field is mandatory for IMS Segments. Enter the segment name of the record, as specified in the DBDGEN and PSBGEN statements.

For RDBMS, the Creator Name should be entered in this field.

IMS Record Key

Select the name of the storage key of the IMS database segment, by which you can obtain the record.

1. Click the *Browse* button to display the IMS Record Key Properties panel.
2. Fill out the name of the new IMS Record Key.
3. Select the required IMS Field.
Click the *Browse* button to display the list of all available fields and subfields.

4. Apply your changes and close the *IMS Record Key Properties* panel.

The new Record Key is displayed in the IMS Record Key field.

CCSID

Enter the Coded Character Set Identifier.

CCSID is used by IBM as the abbreviation for "Coded Character Set Identifier". It is a 16-bit number that represents a specific encoding of a specific code page.

CCSID is commonly used for the data subtype CHARACTER, in order to distinguish the different character sets per country, language and the character encoding of the system. Despite of the philosophical approach of Unicode, CCSID can also be used on data type NATIONAL.

This CCSID is an enriched property and will not be collected.

Record Keys

Optional field.

This option is used to select the field, by which you can randomly obtain the segment (or record). This option must be specified for any segment whose DBDGEN definition includes a field with the "SEQ" attribute. You can determine if this is the case by examining the DBDGEN statements for the record being defined. If one of the FIELD statements, following the SEGM statement for the record in question, appears in the format below, this is the storage key for the record:

```
FIELD NAME=(IMS-field,SEQ,U),START=9999
```

1. Double-click the *New* icon available in the *Record Keys* panel.

Note: You can only define Record Keys after having defined Records and Fields for the Dictionary File.

The following screen is displayed.

2. Fill out the name of the new Key.

3. Select the required IMS Field.

Click the *Browse* button to display the list of all available IMS Fields.

Two extra options are available at the top right of the pop-up window for selecting the required item:

- Show all

When selecting this option, the *Select Item* drop-down list will be deactivated and all available fields for all categories will be displayed underneath.

- Indentation

When selecting this option, all fields displayed will be sorted per structure instead of alphabetically.

4. Apply your changes and close the *Record Key Properties* panel.

The new Record Key is added to the *Record Keys* panel.

5. Repeat this action for all Record Keys you want to define.

Business Tab (IMS Segments)

The fields on the Business Tab are identical for all IMS PCB data objects (Dictionary File, Record, Field, Relationship and Index). Refer to the section [Business Tab \(IMS PCB Data Objects\)](#) (page 90) for a description of the fields.

11.3. Defining Fields

Many fields available in an IMS Segment will not be defined in the DBDGEN job. Typically, a few large group-fields will be defined with FIELD statements in the DBDGEN job, and the fine structure (the individual fields) will be defined only in the application programs. Consequently, you will need to consult with your systems staff to locate descriptions of most of the fields available in your database - the DBDGEN and PSBGEN jobs will provide only descriptions of the key fields and the large group-fields.

Various kinds of IMS "field-level sensitivity" may impact the appearance of the records returned by the DBMS. If the PSBGEN job contains SENSEG statements which specify PROCOPT=K, then only the key fields of those records may be defined to the MetaStore Manager. Likewise, if the PSBGEN job contains SENSEG statements which are followed by SENFLD statements, then only the fields defined by the SENFLD statements may be defined to the MetaStore Manager.

1. In the Tree View Window, right-click the IMS Segment you want to define new Fields for and select *Add IMS Field*.

The properties panel is displayed in the Workspace.

The screenshot displays the 'New IMS Field' dialog box within the MetaSuite MetaStore Manager. The dialog has four tabs: 'New IMS PCB (v1)', 'New IMS Segment', 'New IMS Record Key', and 'New IMS Field'. The 'New IMS Field' tab is selected, showing the 'IMS Field Properties' section. This section includes fields for 'Name', 'Size' (with a spin button set to 1 and an 'Auto Calculate' checkbox), 'Abs. Position' (set to 1), 'Rel. Position' (with a spin button set to 1 and an 'Auto Calculate' checkbox), 'Occurs' (set to 1), and 'Occurrence Depending on' (with a dropdown and a button). Below this is the 'Content' section, which includes 'Type' (set to 'Character'), 'Decimals' (with a spin button set to 0 and an 'Auto Calculate' checkbox), 'Initial' (a text field), 'Code' (a dropdown set to 'No Code'), 'Edit Mask' (a text field), 'Date Format' (a dropdown set to 'None'), 'Low Limit' (a text field), 'High Limit' (a text field), 'Database' (a text field), and 'CCSID' (a text field set to 0).

2. Fill out the required field.

For a detailed description of the fields, refer to the sections:

- [Technical Tab \(IMS Fields\)](#) (page 78)
- [Business Tab \(IMS PCB Data Objects\)](#) (page 90)

Note: Some of the values can also be modified by double-clicking or selecting them from a drop-down list in the Record Fields Window.

3. Save or discard your changes

4. Save the changes to the MetaStore Repository.

In the Tree View Window, right-click the Dictionary File the new Field belongs to and select *Save to MetaStore*.

Note: If you do not add the Fields to the MetaStore Repository now, you will be asked whether you want to do this, when you leave the program.

Technical Tab (IMS Fields)

The following fields are available on the Technical tab:

- Properties
 - [Name](#) (page 79)
 - [Size](#) (page 79)
 - [Abs. Position](#) (page 80)
 - [Rel. Position](#) (page 80)
 - [Occurs](#) (page 80)
 - [Occurrence Depending On](#) (page 80)
- Content
 - [Type](#) (page 81)
 - [Decimals](#) (page 82)
 - [Unsigned](#) (page 83)
 - [Separated and Leading](#) (page 83)
 - [Initial](#) (page 83)
 - [Code](#) (page 83)
 - [Edit Mask](#) (page 84)
 - [Date Format](#) (page 86)
 - [Low Limit](#) (page 86)
 - [High Limit](#) (page 87)
 - [Database](#) (page 87)
 - [CCSID](#) (page 87)

Name

Mandatory field.

The name you enter must meet the following conditions:

- The name may contain up to 32 characters.
- It must begin with an alphabetic character.
- It may contain the characters a-z, A-Z and 0-9.
- It may contain the following special characters: \$, #, @, _ (underscore) and - (hyphen).
- It may not be ended with a - (hyphen).
- File names must be unique in the MetaStore Repository.

Size

Note: If the Segment field is defined in the DBDGEN job, enter the value of the BYTES parameter as the Field Size.

If the Segment field is not defined in the DBDGEN job, follow the guidelines below.

In the *Size* field, enter an integer indicating the field length as a number of bytes. If the field occurs more than once in the record, this field indicates the length of a single occurrence of the field.

This field applies for all types, except *Printed Numeric*.

If you are using a COBOL record description to define your fields, refer to the following table to determine each field's size according to the COBOL "use" and "picture clause" definitions. This table also indicates the data type.

COBOL Usage	COBOL Picture	MetaSuite Type	MetaSuite Size
DISPLAY	PIC X(c)	CHARACTER	SIZE c
	PIC X(c)	HEX	SIZE c
	PIC editmask	PRN	SIZE c
	PIC S9(n)V9(d)	ZONED	SIZE n+d+s
COMPUTATIONAL BINARY	PIC S9(n)V9(d)	BINARY	SIZE 2 1 <= n+d <= 4 SIZE 4 5 <= n+d <= 9 SIZE 8 10 <= n+d <= 18
COMPUTATIONAL-1		FLOAT	SIZE 4
COMPUTATIONAL-2		FLOAT	SIZE 8
COMPUTATIONAL-3 PACKED-DECIMAL	PIC S9(n)V9(d)	FLOAT	SIZE (n+d+1)/2 (rounded up)
COMPUTATIONAL-5	PIC S9(n)V9(d) COMP-5	BINARY NATIVE	SIZE 2 1 <= n+d <= 4 SIZE 4 5 <= n+d <= 9 SIZE 8 10 <= n+d <= 18
COBOL usage NATIONAL	picture N(n)	NATIONAL	2*n
COBOL usage NATIONAL	picture 9(n)V9(d)	PRN-NATIONAL	2*(n+d)

Where: c = number of characters
 n = number of integer digits
 d = number of decimal digits
 s = 1 for sign indicator (if present) or 0 for no sign indicator

Note: The Record Layout window shows the default value for the Field within the selected Record. The default value matches the size of the Field, as defined in the Record Fields Window.

Auto Calculate

If this option is activated, the size will be calculated automatically.

Abs. Position

Note: If the Segment field is defined in the DBDGEN job, enter the value of the START parameter in the Size field.?
 If the Segment field is not defined in the DBDGEN job, follow the guidelines below.

In this field, you may change the Field's starting character position that was calculated automatically by the system. The value entered must be an integer.

Note: If the Record's length is variable, you may not include the four-character record descriptor word when determining the start position of the Field.

Rel. Position

This is the 1-based position of this field within its domed structure (i.e., Record or Group).

- For a field that is not a subfield, the absolute and relative positions are equal.
- For a field x that is a subfield of group g, the relative position will be calculated as $1 + (\text{absolute position of } x) - (\text{absolute position of } g)$.

For example: if group g starts on position 5, and the absolute position of x is also 5, then the relative position of x is $1 + 5 - 5 = 1$. In human terms: "x will start on the 1st position of g".

Occurs

Optional field.

Enter an integer indicating the maximum number of times this field can occur in the record. If you do not define a specific value, the field is assumed to occur once.

Occurrence Depending On

Optional field. Only applies for repeating fields (n).

Select a numeric field that is defined prior to this field within the record.

Results:

- The value you defined with the *Occurs* option represents the *maximum* number of times this field can occur
- The value available in the selected field represents the *actual* number of times the field occurs.

1. Click the *Browse* button next to the *Occurrence Depending On* text field.

The list of available numeric fields is displayed.

2. Select the required Field.

The name of the selected Field is displayed in the *Occurrence Depending On* text field.

Note: If you click the Browse button again now, the Properties screen for the selected field will be displayed. If you want to select another field, you first have to delete the current field name from the text field and then click the Browse button.

Type

This field is mandatory and contains the default value *Character*.

There are two general classes of data types: *non-numeric* and *numeric*.

Non-numeric Data Types

Alphabetic	This datatype indicates a field containing strings using the characters A-Z and a-z.
Character	This datatype indicates that the field may contain any possible character within the character set being used (including <i>unprintable</i> characters). It is not possible to perform numeric operations on a Character type field, even when the field contains only digits. Matching RDBMS Data Types: CHAR, BYTE, VARCHAR, VARCHAR2, LONG, RAW, LONGVARCHAR
Graphic	DB2 terminology for Character datatype.
Hexadecimal	This datatype indicates that any hexadecimal characters are allowed within the field.
Long Varchar	This datatype indicates a field containing a variable character string of maximum 2 GB.
National	The National datatype is a subset of Unicode. The character set on which it is based is UTF-16, but restricted to two bytes per character.
Varchar	This datatype indicates a character field allowing the storage of values you need plus one byte for the length.
Vargraphic	DB2 terminology for Varchar datatype.

Numeric Data Types

Binary	This datatype indicates that the field contains a binary numeric value composed of 0's and 1's.
Binary Native	This datatype indicates that the field contains binary native numbers. This means that its internal representation depends on the Operating System and/or processor.
Bit	This datatype indicates a field occupying a single bit storage. A BIT type field may only contain the binary values 0 or 1. It is possible to perform numeric operations on a BIT type field.
Byte	This datatype indicates a field occupying a single byte storage. A byte is 8 bits. It is possible to perform numeric operations on a BYTE type field.
Decimal	This datatype indicates a field containing a packed decimal value. Packed decimal is the most commonly used internal numeric data type. Two decimal digits are contained in each byte of a packed decimal number. However, if the number is signed, the last half byte contains a positive or negative sign indicator.
Float	This datatype indicates that the field contains floating-point numbers, encoded in an encoded exponential form.
Numeric	This datatype indicates that any the field contains decimal numbers in a printable character format, this means that a single digit is stored per byte. Leading blanks are not permitted in this field type, nor may it contain editing characters, such as commas or decimal points. Use <i>Printed Numeric</i> in this case. Matching RDBMS Data Types: TINYINT, SMALLINT, INTEGER, BIGINT, DECIMAL, NUMBER, FLOAT
Printed Numeric	This datatype indicates that the character-based field contains a numeric value. The format in which the printed numeric value is displayed must be specified with the EDIT option.
Printed Numeric National	This datatype indicates that this is a National field that contains a numeric value. The format in which the PRN-NATIONAL value is displayed must be specified with the EDIT option.

Decimals

If the field type allows the definition of decimals, this field contains the number of decimals.

Decimals can be entered for the following field types:

- Binary
- Binary Native
- Decimal
- Numeric
- Printed Numeric
- Printed Numeric National

If the field type does not allow the definition of decimals, this field contains the default value 0.

Unsigned

Select the *Unsigned* check box to indicate that a numeric value is not signed, i.e. that it does not contain a sign indicator (+ or -).

This field applies for the following field types:

- Binary
- Binary Native
- Numeric

Note: For Decimal fields, the distinction between unsigned and positive signed INPUT fields is not relevant to the system.

Separated and Leading

These two check boxes allow to define how over-punched and separate sign indicators must be treated. They only apply for the Numeric field type.

There are several possibilities.

If the sign indicator is over-punched in the number, select the *Unsigned* check box above.

- Select *Leading* to put the sign on the initial digit.
- Select *Separate* to put the sign on the last byte (no digit).
- Select *Leading* and *Separate* to put the sign in the initial byte (no digit).

If the Numeric field contains a separate plus or minus sign attached to the number, select the *Separate* check box.

Initial

Optional field.

Enter the initial value for the field.

This value is only taken into account for Target Files. If an initial value was defined for a Source file, this parameter will not affect any operation, except for syntax checking.

For Numeric fields, this is a numeric constant, where the decimal point should be given by a . (point).

For Character fields, this may be an alphanumeric constant (not enclosed by quotes) or the system fields *SYS-LOW-VALUE* or *SYS-HIGH-VALUE*, which correspond to system fields *LOW-VALUE* and *HIGH-VALUE* within COBOL.

Code

Default value = *No Code*

The following options are available:

Option	Description
Code	This field is treated as a code, not as a number.

Option	Description
No Code	Resets the code operator to zero. Select this option when there is no additional information to be added for the field.
Time	Select this option to define a field that contains TIME information.
Timestamp	Select this option to define a field that contains TIMESTAMP information.

Edit Mask

This field is mandatory for Printed Numeric fields, but optional for other field types. It indicates how the alphanumeric values must be formatted.

Note: When the Edit Mask is set for a printed numeric field, the MetaStore Manager will reset the size of the field to the size that corresponds to the chosen Edit Mask.

Enter the characters defining a Mask in this text field. This Mask will override the default mask for the field. There is a default mask for each field type. Both the default masks and the manually created masks are composed of *Replacement* and *Insertion* characters.

The following table lists the Replacement characters and their meaning. Replacement characters indicate positions in the printed field that may be replaced by (the corresponding types of) characters from the input field.

Replacement Character	Meaning
\$	Floating dollar sign before the first digit, with leading zero suppression
Z	Leading zero suppression
*	Asterisks to replace leading zeros
9	Numeric character
A	Alphabetic character
N	National (2-byte Unicode character set)
X	Character

The following table lists the Insertion characters and their meaning. Insertion characters indicate characters to be printed in addition to those contained in the stored field.

Insertion Character	Meaning
\$	Leading dollar sign
*	Leading asterisk (generally for check protection)

Insertion Character	Meaning
,	Comma (separator for the sake of large number readability or decimal separator depending on the "Decimal Separator" option in the INI file)
.	Decimal point (separator for the sake of large number readability or decimal separator, depending on the "Decimal Separator" option in the INI file)
B	Blank
-	Floating or trailing minus for negative values. Plus is not accepted as valid character. Positive numbers will have a blank as sign character.
+	Floating or trailing plus or minus sign
CR	Trailing credit symbol for negative values only
DB	Trailing debit symbol for negative values
V	Virtual comma

As mentioned above, there is a default Mask for each field type:

Field Type	Default Mask Description
Signed numeric fields	The default mask contains a minus sign as the rightmost character. All negative values are printed with a trailing minus sign.
Numeric fields with decimals	The default mask contains a decimal point and as many digit replacement characters (9s) to the right of the decimal point as are specified by the Decimal option.
Numeric fields	The default mask contains as many digits as its size, without zero suppression.
Date fields	The default mask is its selected date format.
Alphanumeric fields	The default mask contains as many alphanumeric character replacement characters (X) as are required to print the field.

Examples of default masks:

Field Type	Size	Default mask
Signed numeric fields without decimal positions	6	999999-
Signed numeric fields with two decimals	6	9999.99-
Character Field	6	X(6)
Unicode Field	6	N(3)

You may also define customized masks.

Examples:

Field Type	Field Size	Mask	Field value	Printed value
Character	6	XXBXXXX	AB138B	AB 138B
Numeric with 2 decimal positions	2	.99	.35 0 -.12	.35 .00 .12
Numeric with 3 minus signs	4	---9	0 -1 210	0 -1 210
Numeric with 3 plus signs	4	+++9	0 -1 210	+0 -1 210

Date Format

If the field must contain a date, select the required date format from the drop-down list. The system automatically validates date fields whenever they are referenced in a MetaMap model, and automatically converts date fields whenever they are compared to another date or used in a calculation. In all the available formats, YY or YYYY stands for the year and MM stands for the month. DD stands for the day within a month and DDD stands for the day within the year.

When the format contains a '?', this indicates the date delimiter that is used. Data formats with a '?' are only supported for Character and Varchar field types. When the data format does not contain a '?', the different parts in the date are not delimited by a special character.

The Date Format list is accessible for the following field types:

- Binary
- Binary Native
- Character
- Decimal
- Numeric
- National
- Varchar

Note: When a date format is chosen, MetaStore Manager will reset the size of the field to the size that corresponds to the chosen date format.

Low Limit

Optional field.

When a *Low Limit* is specified, you must define a value in the *High Limit* field as well.

You may use this field to define a minimum value for this field. If a lower value is encountered, the system will consider the data invalid.

High Limit

Optional field.

When a *High Limit* is specified, you must define a value in the *Low Limit* field as well. You may use this field to define a maximum value for this field. If a higher value is encountered, the system will consider the data invalid.

Database

This field contains the IMS name which is needed for key and index fields. If this field is not a key field nor an index field, this database property can be omitted.

For more technical information, refer to the *IMS DLI File Access Guide* or contact your IMS DLI database administrator.

CCSID

Enter the Coded Character Set Identifier.

CCSID is used by IBM as the abbreviation for "Coded Character Set Identifier". It is a 16-bit number that represents a specific encoding of a specific code page.

CCSID is commonly used for the data subtype CHARACTER, in order to distinguish the different character sets per country, language and the character encoding of the system. Despite of the philosophical approach of Unicode, CCSID can also be used on data type NATIONAL.

This CCSID is an enriched property and will not be collected.

Business Tab (IMS Fields)

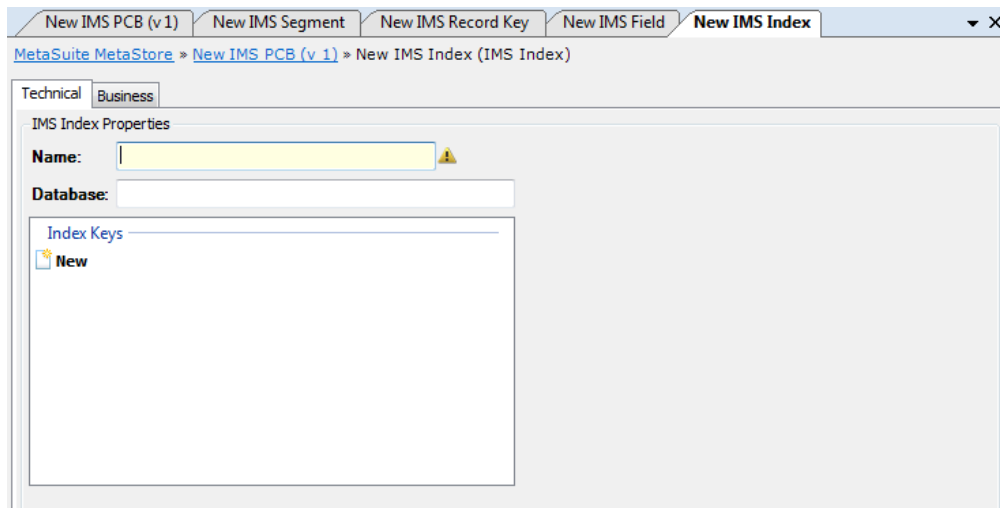
The fields on the Business Tab are identical for all IMS PCB data objects (Dictionary File, Record, Field, Relationship and Index). Refer to the section [Business Tab \(IMS PCB Data Objects\)](#) (page 90) for a description of the fields.

11.4. Defining Indices

Indices need to be defined if the database is an indexed database (HISAM, HIDAM, etc.) or if the database has secondary indexes defined.

1. In the Tree View Window, right-click the new IMS PCB Dictionary File you want to define an Index for and select *Add IMS Index* from the context menu.

The properties panel is displayed in the Workspace.



Two tabs are available: *Technical* and *Business*.

2. Fill out the required fields on the *Technical* Tab.

For a detailed description of the fields, refer to the sections:

- [Technical Tab \(IMS Indices\)](#) (page 88)
- [Business Tab \(IMS PCB Data Objects\)](#) (page 90)

3. Save or discard your changes.

4. Save the changes to the MetaStore Repository.

In the Tree View Window, right-click the Dictionary File the new Index belongs to and select *Save to MetaStore*.

Note: If you do not add the Index to the MetaStore Repository now, you will be asked whether you want to do this, when you leave the program.

Technical Tab (IMS Indices)

The following fields are available on the Technical tab:

- [Name](#) (page 88)
- [Database](#) (page 89)
- [Index Keys](#) (page 89)

Name

Mandatory field.

The name you enter must meet the following conditions:

- The name may contain up to 32 characters.
- It must begin with an alphabetic character.

- It may contain the characters a-z, A-Z and 0-9.
- It may contain the following special characters: \$, #, @, _ (underscore) and - (hyphen).
- It may not be ended with a - (hyphen).

Database

Each IMS index is an IMS database, called Index Database. The Segments (or Records) are not accessed by a MetaSuite Program, but by the DBMS, which controls the sequence to the database. As this is a transparent operation, there is no need to specify the Database Name.

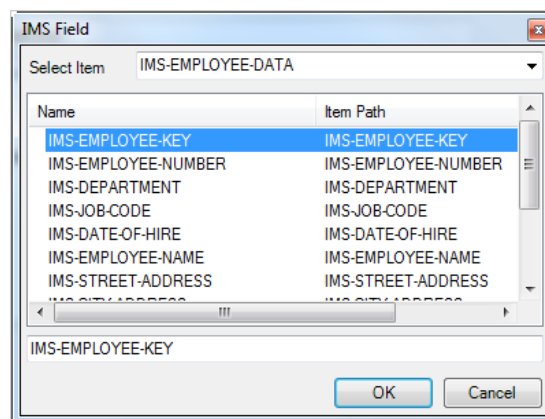
Index Keys

Mandatory field.

Records in an IMS database are accessed by using Pointers. This field contains the Pointer that you want to use in order to access the Records. The IMS field names will be specified as the internal database names when we define these MetaSuite fields later.

1. Double-click the *New* icon available in the *Index Keys* panel.

A screen similar to this one is displayed:



2. First select the *Item* (IMS Segment or IMS Field) using the drop-down list.

All available fields for the selected IMS Segment or IMS Field will be displayed underneath.

Two extra options are available at the top right of the pop-up window for selecting the required item:

- Show all

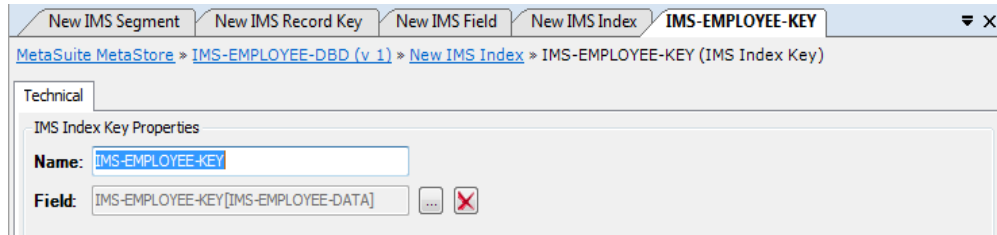
When selecting this option, the *Select Item* drop-down list will be deactivated and all available fields for all categories will be displayed underneath.

- Indentation



When selecting this option, all fields displayed will be sorted per structure instead of alphabetically.

3. Select the required Field and click OK.

The *IMS Index Key* properties panel is displayed.



4. Fill out the required fields.

Name	The name of the new Index
Field	Displays the name of the Field you selected. Click the  button to display its properties. Click the  button to remove the Field and select another one.

5. Apply your changes and close the *Index Key Properties* panel.
The Index Key name is added in the *Index Keys* panel.
6. Repeat this action for all Index Keys you want to define.
7. If you need to change the order of the Index Keys:
 - Right-click the key to be moved.
 - Select *Move Forward* or *Move Backward* from the pop-up menu, until the Key reaches its required position.

Note: You can also create and delete Index Keys using this pop-up menu.

Business Tab (IMS Indices)

The fields on the Business Tab are identical for all IMS PCB data objects (Dictionary File, Record, Field, Relationship and Index). Refer to the section [Business Tab \(IMS PCB Data Objects\)](#) (page 90) for a description of the fields.

11.5. Business Tab (IMS PCB Data Objects)

The following fields are available on the Business tab:

- [Business Rule](#) (page 91)
- [Note](#) (page 91)

Note: If you want to enter text in RTF (Rich Text Format), right-click and select *RTF* from the context menu (or use the shortcut *CTRL + R*).

Business Rule

Optional field.

Enter a free-form description for the data object (Dictionary File, Record, Field, Relationship or Index). For example, the business rule or the requirements.

Note

Optional field.

Enter a free-form note for the data object.

CHAPTER 12

SQL Table Group

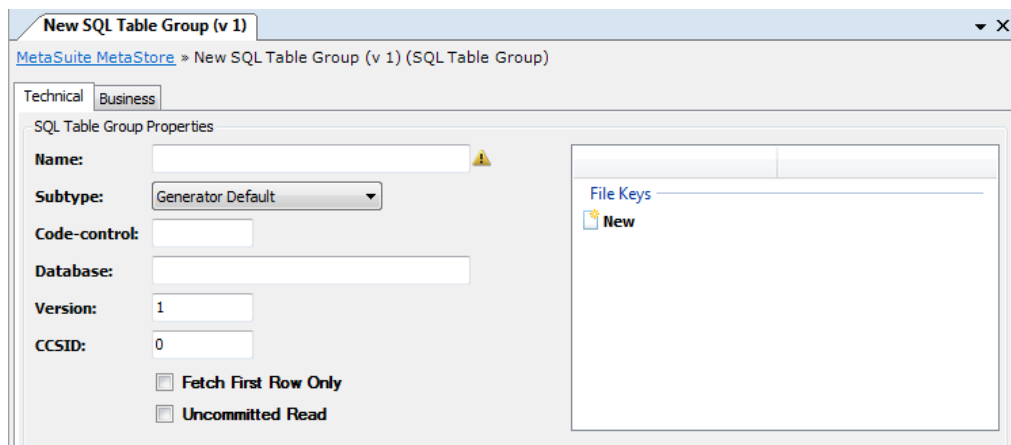
This chapter explains the following actions:

- [Creating the Dictionary File](#) (page 92)
- [Defining Records](#) (page 97)
- [Defining Fields](#) (page 99)

For more technical information, refer to the *RDBMS File Access Guide*.

12.1. Creating the Dictionary File

1. In the Tree View Window, right-click the MetaStore root icon and select *Add > SQL Table Group*. The properties panel is displayed in the Workspace.



Two tabs are available: *Technical* and *Business*.

2. Fill out the required fields.

For a detailed description of the fields, refer to the sections:

- [Technical Tab \(SQL Table Groups\)](#) (page 93)
- [Business Tab \(SQL Table Group Data Objects\)](#) (page 108)

3. Apply or discard your changes.

4. Save the changes to the MetaStore Repository.

In the Tree View Window, right-click the new SQL Table Group and select *Save to MetaStore*.

Note: If you do not save the SQL Table Group to the MetaStore Repository now, you will be asked whether you want to do this, when you leave the program.

Technical Tab (SQL Table Groups)

The following fields are available on the Technical tab:

- [Name](#) (page 93)
- [Subtype](#) (page 93)
- [Code-control](#) (page 94)
- [Database](#) (page 94)
- [Version](#) (page 94)
- [CCSID](#) (page 94)
- [Fetch First Row Only](#) (page 95)
- [Uncommitted Read](#) (page 95)
- [File Keys](#) (page 95)

Name

Mandatory field.

The name you enter must meet the following conditions:

- The name may contain up to 32 characters.
- It must begin with an alphabetic character.
- It may contain the characters a-z, A-Z and 0-9.
- It may contain the following special characters: \$, #, @, _ (underscore) and - (hyphen).
- It may not be ended with a - (hyphen).
- File names must be unique in the MetaStore Repository.

Subtype

Default value = *Generator_Default*

Select the required Subtype from the drop-down list. These options match the RDBMS you are working with.

The following options are available:

- *DB2 for OS/400*
- *DB2 for z/OS*
- *DB2 LUW*
- *DB2/2*

- *DB2/VSE*
- *Generator Default* (Use the SQL dialect set as default in the Generator Manager)
- *Informix*
- *Ingres*
- *MySQL*
- *ODBC*
- *Oracle*
- *Oracle/RBD*
- *SESAM*
- *SQL Server*
- *Sybase*
- *Teradata*

Code-control

Optional field.

Code-control Tables contain information about how to process a certain type of data container. Each table element of the code-control table points to a code table in the COBOL Generator Dictionary.

Each data container type has a pre-defined code-control table. If required, this default code-control table can be overwritten. For example: in order to invoke an external I/O module to read or write the file or to expand or compress data.

Note: When the option is used, the selected table must exist in the COBOL Generator Dictionary before programs using the file can be generated.

For more information about code-control tables, refer to the section *Code-control Tables* in the *Generator Manager Guide*.

Database

Enter the name of the corresponding database, if applicable.

Version

Default value = 1

You can change the version number, if required.

When reimporting or recollecting an existing data container, the version will be modified depending on the settings specified in the INI Manager. For more information, refer to the chapter MetaStore Manager Settings in the *MetaSuite INI Manager Guide*.

CCSID

Enter the Coded Character Set Identifier.

CCSID is used by IBM as the abbreviation for "Coded Character Set Identifier". It is a 16-bit number that represents a specific encoding of a specific code page.

CCSID is commonly used for the data subtype CHARACTER, in order to distinguish the different character sets per country, language and the character encoding of the system. Despite of the philosophical approach of Unicode, CCSID can also be used on data type NATIONAL.

This CCSID is an enriched property and will not be collected.

Fetch First Row Only

Select this check box, if you want to read only the first row, in case different rows contain the same key.

Uncommitted Read

Select this check box, if you want to perform a so-called dirty read. This means reading data without checking if the data has been locked or not.

File Keys

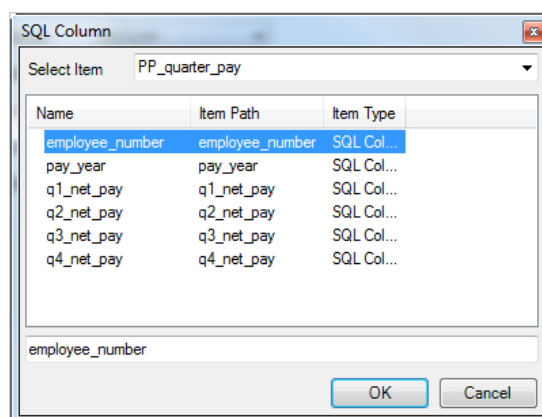
Optional field.

This field is available for Standard Files with subtype *Record Sequential*, *Index* or *VSAM*, and for SQL Table Groups.

Note: You can only define File Keys after having defined Data Structures (Standard Records or SQL Tables) and Data Entities (Standard Fields or SQL Columns).

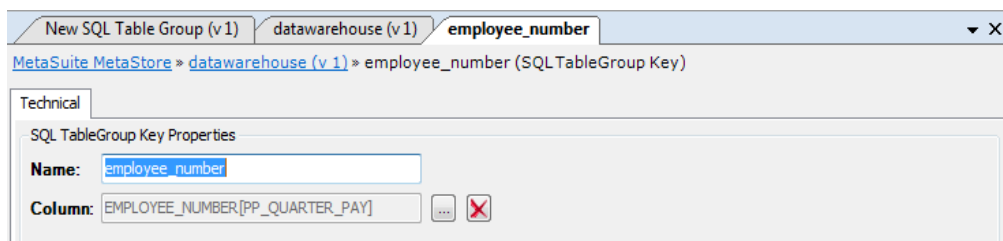
1. Double-click the *New* icon available in the *File Keys* panel.

A screen similar to this one is displayed:





2. First select the *Item* (the SQL Table) using the drop-down list.
All available Columns for the selected Table will be displayed underneath.

3. Select the required SQL Column and click OK.
The *SQL Table Group Key* properties panel is displayed.



4. Fill out the required fields.

Name	By default, this field contains the name of the Data Entity you selected. If required you can modify the name.
Column	Displays the name of the Column you selected. Click the  button to display its properties. Click the  button to remove the Column and select another one.

5. Apply your changes and close the *SQL TableGroup Key Properties* panel.
The new File Key is added to the *File Keys* panel.
6. Repeat this action for all File Keys you want to define.
7. If you need to change the order of the File Keys:
 - Right-click the key to be moved.
 - Select *Move Forward* or *Move Backward* from the pop-up menu, until the Key reaches its required position.

Note: You can also create and delete File Keys using this pop-up menu.

Business Tab (SQL Table Groups)

The fields on the Business Tab are identical for all SQL Table Group data objects (Dictionary File, Record, Field, Relationship and Index). Refer to the section [Business Tab \(SQL Table Group Data Objects\)](#) (page 108) for a description of the fields.

12.2. Defining Records

1. In the Tree View Window, right-click the SQL Table Group you want to define Records for and select *Add SQL Table*.

The properties panel is displayed in the Workspace.

Two tabs are available: *Technical* and *Business*.

2. Fill out the required fields.

For a detailed description of the fields, refer to the sections:

- [Technical Tab \(SQL Tables\)](#) (page 97)
- [Business Tab \(SQL Table Group Data Objects\)](#) (page 108)

3. Save or discard your changes.

4. Save the changes to the MetaStore Repository.

In the Tree View Window, right-click the SQL Table Group the new Table belongs to and select *Save to MetaStore*.

Note: If you do not add the Table to the MetaStore Repository now, you will be asked whether you want to do this, when you leave the program.

Technical Tab (SQL Tables)

The following fields are available on the Technical tab:

- [Name](#) (page 97)
- [Creator](#) (page 98)
- [Location](#) (page 98)
- [Type](#) (page 98)
- [CCSID](#) (page 98)

Name

Mandatory field.

The name you enter must meet the following conditions:

- The name may contain up to 32 characters.

- It must begin with an alphabetic character.
- It may contain the characters a-z, A-Z and 0-9.
- It may contain the following special characters: \$, #, @, _ (underscore) and - (hyphen).
- It may not be ended with a - (hyphen).
- File names must be unique in the MetaStore Repository.

Creator

Enter the name of the Table Creator, as defined in the relational catalogue. If omitted, the value will be considered being *Null*.

Location

This field has become obsolete.

Type

This field has become obsolete.

CCSID

Enter the Coded Character Set Identifier.

CCSID is used by IBM as the abbreviation for "Coded Character Set Identifier". It is a 16-bit number that represents a specific encoding of a specific code page.

CCSID is commonly used for the data subtype CHARACTER, in order to distinguish the different character sets per country, language and the character encoding of the system. Despite of the philosophical approach of Unicode, CCSID can also be used on data type NATIONAL.

This CCSID is an enriched property and will not be collected.

Business Tab (SQL Tables)

The fields on the Business Tab are identical for all SQL Table Group data objects (Dictionary File, Record, Field, Relationship and Index). Refer to the section [Business Tab \(SQL Table Group Data Objects\)](#) (page 108) for a description of the fields.

12.3. Defining Fields

1. In the Tree View Window, double-click the Record you want to define Fields for and select *Add SQL Column*.

The properties panel is displayed in the Workspace.

Two tabs are available: *Technical* and *Business*.

2. Fill out the required field.

For a detailed description of the fields, refer to the sections:

- [Technical Tab \(SQL Columns\)](#) (page 100)
- [Business Tab \(SQL Table Group Data Objects\)](#) (page 108)

Note: Some of the values can also be modified by double-clicking or selecting them from a drop-down list in the Record Fields Window.

3. Save or discard your changes
4. Save the changes to the MetaStore Repository.
In the Tree View Window, right-click the SQL Table Group the new Column belongs to and select *Save to MetaStore*.

Note: If you do not add the Column to the MetaStore Repository now, you will be asked whether you want to do this, when you leave the program.

Technical Tab (SQL Columns)

The following fields are available on the Technical tab:

- Properties
 - [Name](#) (page 100)
 - [Size](#) (page 102)
- Content
 - [Type](#) (page 100)
 - [Decimals](#) (page 103)
 - [Unsigned](#) (page 103)
 - [Separated and Leading](#) (page 103)
 - [Nulls Allowed](#) (page 104)
 - [With Default](#) (page 104)
 - [Date Format](#) (page 104)
 - [Edit Mask](#) (page 105)
 - [Code](#) (page 107)
 - [Low Limit](#) (page 107)
 - [High Limit](#) (page 107)
 - [CCSID](#) (page 107)

Name

Mandatory field.

The name you enter must meet the following conditions:

- The name may contain up to 32 characters.
- It must begin with an alphabetic character.
- It may contain the characters a-z, A-Z and 0-9.
- It may contain the following special characters: \$, #, @, _ (underscore) and - (hyphen).
- It may not be ended with a - (hyphen).
- File names must be unique in the MetaStore Repository.

Type

This field is mandatory and contains the default value *Character*.

There are two general classes of data types: *non-numeric* and *numeric*.

Non-numeric Data Types

Alphabetic	This datatype indicates a field containing strings using the characters A-Z and a-z.
------------	--

Character	This datatype indicates that the field may contain any possible character within the character set being used (including <i>unprintable</i> characters). It is not possible to perform numeric operations on a Character type field, even when the field contains only digits. Matching RDBMS Data Types: CHAR, BYTE, VARCHAR, VARCHAR2, LONG, RAW, LONGVARCHAR
Graphic	DB2 terminology for Character datatype.
Hexadecimal	This datatype indicates that any hexadecimal characters are allowed within the field.
Long Varchar	This datatype indicates a field containing a variable character string of maximum 2 GB.
National	The National datatype is a subset of Unicode. The character set on which it is based is UTF-16, but restricted to two bytes per character.
Varchar	This datatype indicates a character field allowing the storage of values you need plus one byte for the length.
Vargraphic	DB2 terminology for Varchar datatype.

Numeric Data Types

Binary	This datatype indicates that the field contains a binary numeric value composed of 0's and 1's.
Binary Native	This datatype indicates that the field contains binary native numbers. This means that its internal representation depends on the Operating System and/or processor.
Bit	This datatype indicates a field occupying a single bit storage. A BIT type field may only contain the binary values 0 or 1. It is possible to perform numeric operations on a BIT type field.
Byte	This datatype indicates a field occupying a single byte storage. A byte is 8 bits. It is possible to perform numeric operations on a BYTE type field.
Decimal	This datatype indicates a field containing a packed decimal value. Packed decimal is the most commonly used internal numeric data type. Two decimal digits are contained in each byte of a packed decimal number. However, if the number is signed, the last half byte contains a positive or negative sign indicator.
Float	This datatype indicates that the field contains floating-point numbers, encoded in an encoded exponential form.
Numeric	This datatype indicates that any the field contains decimal numbers in a printable character format, this means that a single digit is stored per byte. Leading blanks are not permitted in this field type, nor may it contain editing characters, such as commas or decimal points. Use <i>Printed Numeric</i> in this case. Matching RDBMS Data Types: TINYINT, SMALLINT, INTEGER, BIGINT, DECIMAL, NUMBER, FLOAT

Printed Numeric	This datatype indicates that the character-based field contains a numeric value. The format in which the printed numeric value is displayed must be specified with the EDIT option.
Printed Numeric National	This datatype indicates that this is a National field that contains a numeric value. The format in which the PRN-NATIONAL value is displayed must be specified with the EDIT option.

Size

In the *Size* field, enter an integer indicating the field length as a number of bytes. If the field occurs more than once in the record, this field indicates the length of a single occurrence of the field.

This field applies for all types, except *Printed Numeric*.

If you are using a COBOL record description to define your fields, refer to the following table to determine each field's size according to the COBOL "use" and "picture clause" definitions. This table also indicates the data type.

COBOL Usage	COBOL Picture	MetaSuite Type	MetaSuite Size
DISPLAY	PIC X(c)	CHARACTER	SIZE c
	PIC X(c)	HEX	SIZE c
	PIC editmask	PRN	SIZE c
	PIC S9(n)V9(d)	ZONED	SIZE n+d+s
COMPUTATIONAL BINARY	PIC S9(n)V9(d)	BINARY	SIZE 2 1 <= n+d <= 4 SIZE 4 5 <= n+d <= 9 SIZE 8 10 <= n+d <= 18
COMPUTATIONAL-1		FLOAT	SIZE 4
COMPUTATIONAL-2		FLOAT	SIZE 8
COMPUTATIONAL-3 PACKED-DECIMAL	PIC S9(n)V9(d)	FLOAT	SIZE (n+d+1)/2 (rounded up)
COMPUTATIONAL-5	PIC S9(n)V9(d) COMP-5	BINARY NATIVE	SIZE 2 1 <= n+d <= 4 SIZE 4 5 <= n+d <= 9 SIZE 8 10 <= n+d <= 18
COBOL usage NATIONAL	picture N(n)	NATIONAL	2*n
COBOL usage NATIONAL	picture 9(n)V9(d)	PRN-NATIONAL	2*(n+d)

Where: c = number of characters

n = number of integer digits

d = number of decimal digits

s = 1 for sign indicator (if present) or 0 for no sign indicator

Note: The Record Layout window shows the default value for the Field within the selected Record. The default value matches the size of the Field, as defined in the Record Fields Window.

Auto Calculate

If this option is activated, the size will be calculated automatically.

Decimals

If the field type allows the definition of decimals, this field contains the number of decimals.

Decimals can be entered for the following field types:

- Binary
- Binary Native
- Decimal
- Numeric
- Printed Numeric
- Printed Numeric National

If the field type does not allow the definition of decimals, this field contains the default value 0.

Unsigned

Select the *Unsigned* check box to indicate that a numeric value is not signed, i.e. that it does not contain a sign indicator (+ or -).

This field applies for the following field types:

- Binary
- Binary Native
- Numeric

Note: For Decimal fields, the distinction between unsigned and positive signed INPUT fields is not relevant to the system.

Separated and Leading

These two check boxes allow to define how over-punched and separate sign indicators must be treated. They only apply for the Numeric field type.

There are several possibilities.

If the sign indicator is over-punched in the number, select the *Unsigned* check box above.

- Select *Leading* to put the sign on the initial digit.
- Select *Separate* to put the sign on the last byte (no digit).
- Select *Leading* and *Separate* to put the sign in the initial byte (no digit).

If the Numeric field contains a separate plus or minus sign attached to the number, select the *Separate* check box.

Nulls Allowed

If you select the *Nulls allowed* option, no DBNAME statement will be added to the field description when exporting to MDL.

If you select the *Nulls allowed* option, the field will be considered as being "INNULL".

If you unflag the *Nulls allowed* option, the field will be considered as being "NOTNULL".

With Default

By default this option is selected, which means that default NULLS are not allowed.

When exporting to MDL, the statement *DBNAME DEFAULT* will be added to the field description.

Note: If you uncheck both the *Nulls allowed* and the *With default* option, the statement DBNAME 'NOTNULL' will be added to the field description when exporting to MDL.

Date Format

If the field must contain a date, select the required date format from the drop-down list. The system automatically validates date fields whenever they are referenced in a MetaMap model, and automatically converts date fields whenever they are compared to another date or used in a calculation. In all the available formats, YY or YYYY stands for the year and MM stands for the month. DD stands for the day within a month and DDD stands for the day within the year.

When the format contains a '?', this indicates the date delimiter that is used. Data formats with a '?' are only supported for Character and Varchar field types. When the data format does not contain a '?', the different parts in the date are not delimited by a special character.

The Date Format list is accessible for the following field types:

- Binary
- Binary Native
- Character
- Decimal
- Numeric
- National
- Varchar

Note: When a date format is chosen, MetaStore Manager will reset the size of the field to the size that corresponds to the chosen date format.

Edit Mask

This field is mandatory for Printed Numeric fields, but optional for other field types. It indicates how the alphanumeric values must be formatted.

Note: When the Edit Mask is set for a printed numeric field, the MetaStore Manager will reset the size of the field to the size that corresponds to the chosen Edit Mask.

Enter the characters defining a Mask in this text field. This Mask will override the default mask for the field. There is a default mask for each field type. Both the default masks and the manually created masks are composed of *Replacement* and *Insertion* characters.

The following table lists the Replacement characters and their meaning. Replacement characters indicate positions in the printed field that may be replaced by (the corresponding types of) characters from the input field.

Replacement Character	Meaning
\$	Floating dollar sign before the first digit, with leading zero suppression
Z	Leading zero suppression
*	Asterisks to replace leading zeros
9	Numeric character
A	Alphabetic character
N	National (2-byte Unicode character set)
X	Character

The following table lists the Insertion characters and their meaning. Insertion characters indicate characters to be printed in addition to those contained in the stored field.

Insertion Character	Meaning
\$	Leading dollar sign
*	Leading asterisk (generally for check protection)
,	Comma (separator for the sake of large number readability or decimal separator depending on the "Decimal Separator" option in the INI file)
.	Decimal point (separator for the sake of large number readability or decimal separator, depending on the "Decimal Separator" option in the INI file)
B	Blank
-	Floating or trailing minus for negative values. Plus is not accepted as valid character. Positive numbers will have a blank as sign character.
+	Floating or trailing plus or minus sign
CR	Trailing credit symbol for negative values only

Insertion Character	Meaning
DB	Trailing debit symbol for negative values
V	Virtual comma

As mentioned above, there is a default Mask for each field type:

Field Type	Default Mask Description
Signed numeric fields	The default mask contains a minus sign as the rightmost character. All negative values are printed with a trailing minus sign.
Numeric fields with decimals	The default mask contains a decimal point and as many digit replacement characters (9s) to the right of the decimal point as are specified by the Decimal option.
Numeric fields	The default mask contains as many digits as its size, without zero suppression.
Date fields	The default mask is its selected date format.
Alphanumeric fields	The default mask contains as many alphanumeric character replacement characters (X) as are required to print the field.

Examples of default masks:

Field Type	Size	Default mask
Signed numeric fields without decimal positions	6	999999-
Signed numeric fields with two decimals	6	9999.99-
Character Field	6	X(6)
Unicode Field	6	N(3)

You may also define customized masks.

Examples:

Field Type	Field Size	Mask	Field value	Printed value
Character	6	XXBXXXX	AB138B	AB 138B
Numeric with 2 decimal positions	2	.99	.35 0 -12	.35 .00 .12
Numeric with 3 minus signs	4	---9	0 -1 210	0 -1 210

Field Type	Field Size	Mask	Field value	Printed value
Numeric with 3 plus signs	4	+++9	0	+0
			-1	-1
			210	210

Code

Default value = *No Code*

The following options are available:

Option	Description
Code	This field is treated as a code, not as a number.
No Code	Resets the code operator to zero. Select this option when there is no additional information to be added for the field.
Time	Select this option to define a field that contains TIME information.
Timestamp	Select this option to define a field that contains TIMESTAMP information.

Low Limit

Optional field.

When a *Low Limit* is specified, you must define a value in the *High Limit* field as well.

You may use this field to define a minimum value for this field. If a lower value is encountered, the system will consider the data invalid.

High Limit

Optional field.

When a *High Limit* is specified, you must define a value in the *Low Limit* field as well. You may use this field to define a maximum value for this field. If a higher value is encountered, the system will consider the data invalid.

CCSID

Enter the Coded Character Set Identifier.

CCSID is used by IBM as the abbreviation for "Coded Character Set Identifier". It is a 16-bit number that represents a specific encoding of a specific code page.

CCSID is commonly used for the data subtype CHARACTER, in order to distinguish the different character sets per country, language and the character encoding of the system. Despite of the philosophical approach of Unicode, CCSID can also be used on data type NATIONAL.

This CCSID is an enriched property and will not be collected.

Business Tab (SQL Columns)

The fields on the Business Tab are identical for all SQL Table Group data objects (Dictionary File, Record, Field, Relationship and Index). Refer to the section [Business Tab \(SQL Table Group Data Objects\)](#) (page 108) for a description of the fields.

12.4. Business Tab (SQL Table Group Data Objects)

The following fields are available on the Business tab:

- [Business Rule](#) (page 108)
- [Note](#) (page 108)

Note: If you want to enter text in RTF (Rich Text Format), right-click and select *RTF* from the context menu (or use the shortcut *CTRL + R*).

Business Rule

Optional field.

Enter a free-form description for the data object (Dictionary File, Record, Field, Relationship or Index). For example, the business rule or the requirements.

Note

Optional field.

Enter a free-form note for the data object.

CHAPTER 13

Standard File

A file is considered to be a "Standard File", if the data is stored in physical files that are not controlled by a DBMS (database management system).

This chapter explains the following actions:

- [Creating the Dictionary File](#) (page 109)
- [Defining Records](#) (page 117)
- [Defining Fields](#) (page 122)

13.1. Creating the Dictionary File

1. In the Tree View Window, right-click the MetaStore root icon and select *Add > Standard File*.
The properties panel is displayed in the Workspace.

The screenshot shows the 'New Standard File (v 1)' dialog box. It has a title bar with 'New Standard File (v 1)' and a close button. Below the title bar is a breadcrumb trail: 'MetaSuite MetaStore > New Standard File (v 1) (Standard File)'. There are two tabs: 'Technical' (selected) and 'Business'. The 'Standard File Properties' section contains the following fields:

- Name: [Text field]
- Subtype: [Dropdown menu, currently 'Sequential']
- Code-control: [Text field]
- Database: [Text field]
- Version: [Text field, value '1']
- CCSID: [Text field, value '0']
- Recording Mode: [Dropdown menu, currently 'Native']
- Record Format: [Dropdown menu, currently 'Fixed']
- Label: [Dropdown menu, currently 'Standard']
- File Description Size: [Text field, value '0'] with an 'Auto Calculate' checkbox (checked)
- Block Size: [Text field, value '0'] with an 'Auto Calculate' checkbox (checked)
- Column Separator: [Text field, value ';']
- Row Terminator: [Text field]
- External Source: [Text field]
- ☐ Spanned

On the right side, there is a 'File Keys' section with a 'New' button.

Two tabs are available: *Technical* and *Business*.

2. Fill out the required fields.

For a detailed description of the fields, refer to the sections:

- [Technical Tab \(Standard Files\)](#) (page 110)
- [Business Tab \(Standard File Data Objects\)](#) (page 133)

3. Apply or discard your changes.
4. Save the changes to the MetaStore Repository.
In the Tree View Window, right-click the new Standard File and select *Save to MetaStore*.

Note: If you do not save the Standard File to the MetaStore Repository now, you will be asked whether you want to do this, when you leave the program.

Technical Tab (Standard Files)

The following fields are available on the Technical tab:

- [Name](#) (page 110)
- [Subtype](#) (page 111)
- [Code-control](#) (page 112)
- [Database](#) (page 112)
- [Version](#) (page 112)
- [CCSID](#) (page 113)
- [Recording Mode](#) (page 113)
- [Record Format](#) (page 113)
- [Label](#) (page 114)
- [File Description Size](#) (page 114)
- [Block Size](#) (page 114)
- [Column Separator](#) (page 115)
- [Row Terminator](#) (page 115)
- [External Source](#) (page 115)
- [Spanned](#) (page 115)
- [File Keys](#) (page 116)

Name

Mandatory field.

The name you enter must meet the following conditions:

- The name may contain up to 32 characters.
- It must begin with an alphabetic character.
- It may contain the characters a-z, A-Z and 0-9.
- It may contain the following special characters: \$, #, @, _ (underscore) and - (hyphen).
- It may not be ended with a - (hyphen).
- File names must be unique in the MetaStore Repository.

Subtype

Select the required Subtype from the drop-down list.

Default value = *Sequential*

Subtype	Description
Delimited	<p>Select this option, if the file is organized as sequential and if all field values in the file are separated by a predefined token.</p> <p>This predefined token is also known as "the delimiter".</p> <p>Delimited files are often saved on Windows systems with the extension ".csv", which is the abbreviation of "comma separated values".</p> <p>The field values within the delimited file have following restrictions:</p> <ul style="list-style-type: none"> • Numeric field values: any digit sequence with a "." or "," as decimal point depending on the decimal point default of the MetaSuite COBOL Generator library, with a prefixed sign "+" or "-". • Character field values: may be enclosed in single quotes or double quotes or no quotes at all.
Function	<p>Select this option if you want to describe a structure that is not part of an input-output process, for instance the input and output fields required for a subroutine.</p>
Index	<p>Select this option if the records of the file are sequenced logically (but not necessarily physically) according to the value of a specified key field.</p> <p>Records of this type of file may be accessed sequentially in key sequence, or randomly, for specific values of the key field. The key field for a TYPE INDEX file must be identified using the File Keys (page 116) option. In Mainframe terminology, this type of file organization is referred to as ISAM (Indexed Sequential Access Method).</p>
Line Sequential	<p>Used on open systems (Windows, UNIX and Linux).</p> <p>Select this option if the records of the file are physically stored in sequential order and may only be retrieved in the order in which they are written. Each record is separated by a delimiter, which is the Carriage Return/Line Feed character.</p>
MetaSuite File System	<p>This option is reserved for future use.</p>
MQ-Series	<p>WebSphere MQ (formerly MQ-Series) is the standard for messaging across multiple platforms. Select this option if you want to store such messages in the MetaStore Repository.</p>
Record Sequential	<p>Used on mainframes (Z/OS, BS2000 etc.).</p> <p>Select this option if the records of the file are physically stored in sequential order and may only be retrieved in the order in which they are written. Each record is identified by its position within the file, and is not separated by a special delimiter.</p> <p>The length of each record is fixed or variable. If the length is variable, the value is put in the four-byte Record Descriptor word that is put before each record.</p>
Relative	<p>Select this option if the file is a relative record file in which records are stored and retrieved according to the value of a relative record number (the number of the record relative to the beginning of the file). In IBM terminology, this type of file organization is referred to as BDAM (Basic Direct Access Method).</p>

Subtype	Description
Sequential	Select this option if the records of the file are physically stored in sequential order and may only be retrieved in the order in which they are written. The physical file structure depends on the operating system: <i>Line Sequential</i> for Windows, UNIX or Linux, and <i>Record Sequential</i> for Mainframes.
VSAM	<p>Select this option if IBM's Virtual Storage Access Method is used to store and retrieve the records of the file.</p> <p>There are two types of VSAM files supported by the system: ESDS (Entry Sequence Data Set), and KSDS (Key Sequence Data Set). ESDS files are analogous to record sequential files, and KSDS files are analogous to indexed sequential files.</p> <p>The key field for the VSAM KSDS file must be defined in the "File Key" property of the file definition. In addition to the primary key field for a VSAM KSDS file, secondary index fields may exist. These fields provide alternate access paths to the records of the file. For example, the primary key field of an employee master file might be the employee number, meaning that the records of the file are organized logically and accessed (randomly or in sequence) by the employee number.</p> <p>If it is frequently necessary to access the records of this file in some other sequence (employee name, for example), a secondary index field would be defined (to VSAM) to provide an alternate access path. The records of the file could then be accessed in sequence by either employee number or employee name.</p>
XML	Select this option if records are stored in an XML file.

Code-control

Optional field.

Code-control Tables contain information about how to process a certain type of data container. Each table element of the code-control table points to a code table in the COBOL Generator Dictionary.

Each data container type has a pre-defined code-control table. If required, this default code-control table can be overwritten. For example: in order to invoke an external I/O module to read or write the file or to expand or compress data.

Note: When the option is used, the selected table must exist in the COBOL Generator Dictionary before programs using the file can be generated.

For more information about code-control tables, refer to the section *Code-control Tables* in the *Generator Manager Guide*.

Database

Enter the name of the corresponding database, if applicable.

Version

Default value = 1

You can change the version number, if required.

When reimporting or recollecting an existing data container, the version will be modified depending on the settings specified in the INI Manager. For more information, refer to the chapter MetaStore Manager Settings in the *MetaSuite INI Manager Guide*.

CCSID

Enter the Coded Character Set Identifier.

CCSID is used by IBM as the abbreviation for "Coded Character Set Identifier". It is a 16-bit number that represents a specific encoding of a specific code page.

CCSID is commonly used for the data subtype CHARACTER, in order to distinguish the different character sets per country, language and the character encoding of the system. Despite of the philosophical approach of Unicode, CCSID can also be used on data type NATIONAL.

This CCSID is an enriched property and will not be collected.

Recording Mode

Select the Recording Mode from the drop-down list.

Default value = *Native*

Recording Mode	Description
Native	Select this option if the file contains data in the native format of the system where the generated programs will run. For mainframe, the native format is EBCDIC. For midrange or PC platforms, the native format is ASCII.
ASCII	Select this option if the file contains data in ASCII format.
EBCDIC	Select this option if the file contains data in EBCDIC format.

Note: The Recording Mode for Standard Files with subtype *Function* will be disabled.

Record Format

Select the required Record Format from the drop-down list.

Default value = *Fixed*

Note: The Record Format for Standard Files with subtype *Delimited* will be disabled, and is always set to *Variable*.

Record Format	Description
Undefined	Select this option if the records in the file are no standard variable length records. Record descriptor words (4 bytes), which are standard for variable-length records, are not maintained at the start of each undefined record. Instead, the applications accessing the file determine the record size using other criteria. It is not possible to select this option together with the <i>Block Size</i> option. In this case, the record size defined in the following field defines the maximum number of characters contained in any record belonging to the file.
Variable	Select this option if the file contains records of different sizes. The record size defined in the <i>Record Size</i> field matches in this case the maximum record length (in number of characters)
Fixed	Select this option if the records of the file have all the same length. This size, expressed as a number of characters, is defined in the <i>Record Size</i> field.

Label

Select the required option from the drop-down list.

Default value = *Standard*

Option	Description
Standard	Select this option if the file has standard label records (as defined by IBM). A label contains information such as the creation date and the length of the file.
Omit	Select this option if the file does not contain label records.

File Description Size

Mandatory field.

Enter the record size as a number of characters. The exact meaning depends on the selected [Record Format](#) (page 113).

Auto Calculate

If this option is activated, the size will be calculated automatically.

Block Size

Optional field. If no value is defined, the block size defaults to the record size.

Define the maximum number of characters contained in a block of records in the file. For variable-length records, the block size includes the four-byte record descriptor word for each record.

The block size is not allowed if the *Undefined* option is specified for the Record Format.

Auto Calculate

If this option is activated, the size will be calculated automatically.

Column Separator

This field contains the default column separator for Standard Files, if defined on the *MetaMap Manager Settings* screen of the MetaSuite INI Manager. For more information, refer to the *Installation and Setup Guide*. You can enter another character in this field in order to override the default column separator for this file.

Row Terminator

This field contains the default row terminator for Standard Files, if defined on the *MetaMap Manager Settings* screen of the MetaSuite INI Manager. For more information, refer to the *Installation and Setup Guide*. You can enter another character (sequence) in the field in order to override the default row terminator for this file.

External Source

Optional field.

You can use it in the two following situations:

1. You want to define a link between the *Name* definition in MetaSuite and the physical file name on disk. The physical file name will be automatically used in the generated job.
2. You want to indicate that there is no direct access to the data source. The data source might be remote, or there is need to copy or transform the source file via a simple copy or via a transformation tool. In this case the file, specified by the *External Source* parameter is the file that has to be transferred or copied to the local area. The local input file will have the name indicated by *Name*.

This parameter will be processed in the customizable MRL Tables. By default, MetaSuite will use the following conversion rules:

External Source Name	Meaning
STD:Filename	This file name will be taken as input file. (This is the first method of using External Source)
FTP:Filename	The file will be downloaded via the FTP protocol.
CPY:Filename	A file copy will be done from this file to the standard file.

Note: These options are supported on the Windows and UNIX platform. Please contact the MetaSuite support team if you want to use this option on another platform.

Spanned

Select this check box if the variable-length records may "span" two or more blocks.

This option is only applicable if the Record Format is set to *Variable* the Block Size is smaller than the Record Size, and the Subtype is *Index*, *Relative* or *Sequential*.

File Keys

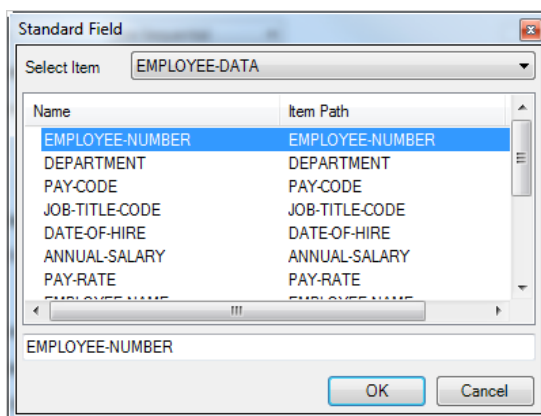
Optional field.

This field is available for Standard Files with subtype *Record Sequential*, *Index* or *VSAM*, and for SQL Table Groups.

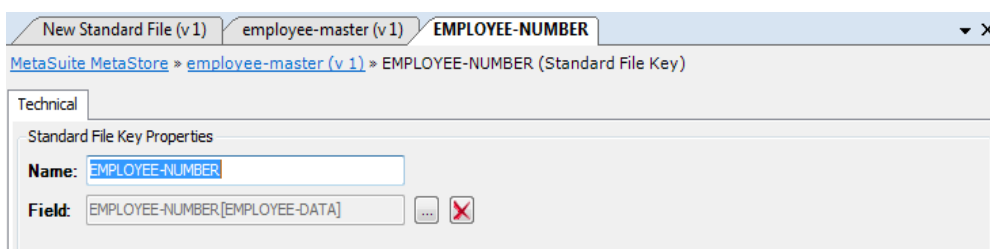
Note: You can only define File Keys after having defined Data Structures (Standard Records or SQL Tables) and Data Entities (Standard Fields or SQL Columns).

1. Double-click the *New* icon available in the *File Keys* panel.



A screen similar to this one is displayed:



2. First select the *Item* (the Record) using the drop-down list.
All available fields for the selected record will be displayed underneath.
3. Select the required Standard Field and click OK.
The *Standard File Key* properties panel is displayed.



- Fill out the required fields.

Name	By default, this field contains the name of the Data Entity you selected. If required you can modify the name.
Field	Displays the name of the Field you selected. Click the  button to display its properties. Click the  button to remove the Field and select another one.

- Apply your changes and close the *File Key Properties* panel.
The new File Key is added to the *File Keys* panel.
- Repeat this action for all File Keys you want to define.
- If you need to change the order of the File Keys:
 - Right-click the key to be moved.
 - Select *Move Forward* or *Move Backward* from the pop-up menu, until the Key reaches its required position.

Note: You can also create and delete File Keys using this pop-up menu.

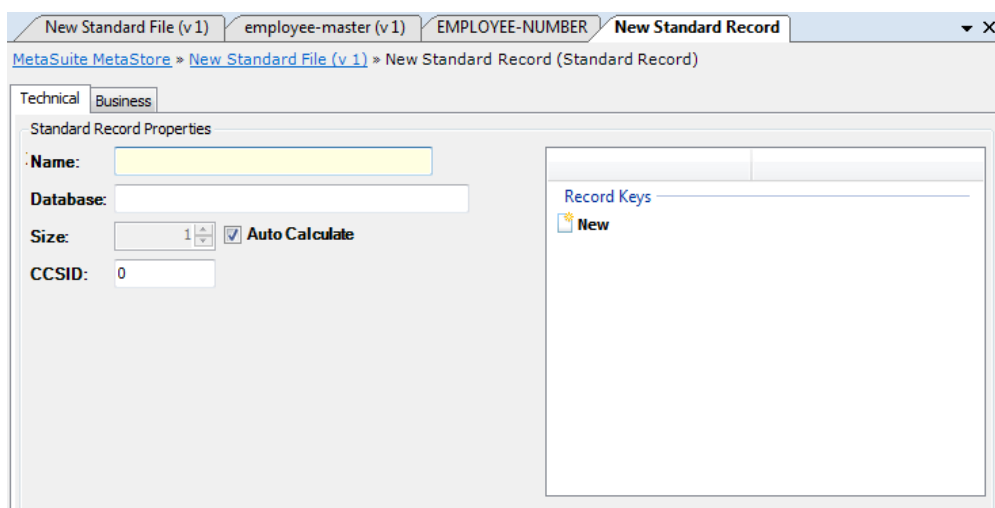
Business Tab (Standard Files)

The fields on the Business Tab are identical for all Standard File data objects (Dictionary File, Record, Field, Relationship and Index). Refer to the section [Business Tab \(Standard File Data Objects\)](#) (page 133) for a description of the fields.

13.2. Defining Records

- In the Tree View Window, right-click the Standard File you want to define Records for and select *Add Standard Record*.

The properties panel is displayed in the Workspace.



Two tabs are available: *Technical* and *Business*.

2. Fill out the required fields.

For a detailed description of the fields, refer to the sections:

- [Technical Tab \(Standard Records\)](#) (page 118)
- [Business Tab \(Standard File Data Objects\)](#) (page 133)

3. Save or discard your changes.

4. Save the changes to the MetaStore Repository.

In the Tree View Window, right-click the Standard File the new Record belongs to and select *Save to MetaStore*.

Note: If you do not add the Record to the MetaStore Repository now, you will be asked whether you want to do this, when you leave the program.

Technical Tab (Standard Records)

The following fields are available on the Technical tab:

- [Name](#) (page 118)
- [Database](#) (page 118)
- [Size](#) (page 119)
- [CCSID](#) (page 119)
- [Record Keys](#) (page 119)

Name

Mandatory field.

The name you enter must meet the following conditions:

- The name may contain up to 32 characters.
- It must begin with an alphabetic character.
- It may contain the characters a-z, A-Z and 0-9.
- It may contain the following special characters: \$, #, @, _ (underscore) and - (hyphen).
- It may not be ended with a - (hyphen).
- File names must be unique in the MetaStore Repository.

Database

Note: This field is specific for each file (sub)type. Refer to the appropriate File Access Guide for more detailed information.

This field is mandatory for IMS Segments. Enter the segment name of the record, as specified in the DBDGEN and PSBGEN statements.

For RDBMS, the Creator Name should be entered in this field.

Size

Mandatory field.

Enter the maximum number of characters included in the record. The value must be an integer and cannot exceed the maximum record size defined for the Dictionary File it belongs to.

Note: If the size is changed manually and it is too small to contain all defined fields, it will be reset by the MetaStore Manager to the smallest size needed to contain all defined fields.

Auto Calculate

If this option is activated, the size will be calculated automatically.

CCSID

Enter the Coded Character Set Identifier.

CCSID is used by IBM as the abbreviation for "Coded Character Set Identifier". It is a 16-bit number that represents a specific encoding of a specific code page.

CCSID is commonly used for the data subtype CHARACTER, in order to distinguish the different character sets per country, language and the character encoding of the system. Despite of the philosophical approach of Unicode, CCSID can also be used on data type NATIONAL.

This CCSID is an enriched property and will not be collected.

Record Keys

Optional field.

This field only applies to fields containing multiple record types.

This option is used to identify Record identification fields and the specific ranges of values for those key fields. Record identification fields are used to identify the record type being defined.

1. Double-click the *New* icon available in the *Record Keys* panel.

Note: You can only define Record Keys after having defined Records and Fields for the Dictionary File.

The following screen is displayed:

The screenshot shows the 'New Standard Record Key' dialog box in the MetaSuite MetaStore Manager. The dialog has a breadcrumb trail: *MetaSuite MetaStore > employee-master (v 1) > EMPLOYEE-DATA > New Standard Record Key (Standard Record Key)*. Below the breadcrumb, there are tabs for 'Technical' and 'Business'. The 'Standard Record Key Properties' section contains the following fields:

- Name:** A text input field that is currently empty, with a yellow warning icon to its right.
- Type:** A dropdown menu currently set to 'Access'.
- Field:** A text input field that is currently empty, with a yellow warning icon, an ellipsis button, and a close button to its right.
- Operator:** A dropdown menu currently set to 'Equal'.
- Value:** A text input field that is currently empty.
- High Value:** A text input field that is currently empty.

2. Fill out the name of the new Key.

3. Select the required Field.

Click the *Browse* button to display the list of all available Fields.

Two extra options are available at the top right of the pop-up window for selecting the required item:

- Show all
When selecting this option, the *Select Item* drop-down list will be deactivated and all available fields for all categories will be displayed underneath.
- Indentation
When selecting this option, all fields displayed will be sorted per structure instead of alphabetically.

4. Select the Operator from the drop-down list.

The following options work with the *Value* field only:

- *Equal*
- *Greater or equal*
- *Greater*
- *Less or equal*
- *Less*
- *Not equal*

The following of the available options work with both the *Value* and the *High Value* fields:

- *In range*
- *Not in range*

5. Enter the Value.

If you selected an operator working with the Value field only, enter the required value.

Note: If you want to specify more than 1 value (or range of values), you have to define separate record keys.

Operator	Value entered	Meaning
(Not) Equal	3	Only records where the selected field has (not) value 3 are taken into account.
	C	Only records where the selected field has (not) value C are taken into account.
Greater or Equal	3	Only records where the selected field has a value greater than or equal to 3 are taken into account.
	C	Only records where the selected field has a value greater than or equal to C are taken into account.
Greater	3	Only records where the selected field has a value greater than 3 are taken into account.
	C	Only records where the selected field has a value greater than C are taken into account.

Operator	Value entered	Meaning
Less or Equal	3	Only records where the selected field has a value lesser than or equal to 3 are taken into account.
	C	Only records where the selected field has a value lesser than or equal to C are taken into account.
Less	3	Only records where the selected field has a value lesser than 3 are taken into account.
	C	Only records where the selected field has a value lesser than C are taken into account.

If you selected an operator working with both the *Value* and *High Value* fields, enter the required value in these fields.

Operator	Value Field	HighValue Field	Meaning
(Not) In Range	3	12	Only records where the selected field has (not) a value from 3 up to 12 included are taken into account.
	E	G	Only records where the selected field has (not) an alphabetical value from E up to G included are taken into account.

6. Apply your changes and close the properties panel.
The new Record Key is added to the *Record Keys* panel.
7. Repeat this action for all Record Keys you want to define.

Business Tab (Standard Records)

The fields on the Business Tab are identical for all Standard File data objects (Dictionary File, Record, Field, Relationship and Index). Refer to the section [Business Tab \(Standard File Data Objects\)](#) (page 133) for a description of the fields.

13.3. Defining Fields

1. In the Tree View Window, right-click the Standard Record you want to define Fields for and select *Add Standard Field*.

The properties panel is displayed in the Workspace.

The screenshot shows the 'New Standard Field' dialog box with the 'Technical' tab selected. The 'Standard Field Properties' section includes fields for Name, Size, Abs. Position, Rel. Position, Occurs, and Occurrence Depending on. The 'Content' section includes Type, Decimals, Initial, Null, and Code. The 'Edit Mask' section includes Edit Mask, Date Format, Low Limit, High Limit, and CCSID.

Two tabs are available: *Technical* and *Business*.

2. Fill out the required fields.

For a detailed description of the fields, refer to the sections:

- [Technical Tab \(Standard Fields\)](#) (page 123)
- [Business Tab \(Standard File Data Objects\)](#) (page 133)

Note: Some of the values can also be modified by double-clicking or selecting them from a drop-down list in the Record Fields Window.

3. Save or discard your changes.

4. Save the changes to the MetaStore Repository.

In the Tree View Window, right-click the Standard File the new Field belongs to and select *Save to MetaStore*.

Note: If you do not add the Field to the MetaStore Repository now, you will be asked whether you want to do this, when you leave the program.

Technical Tab (Standard Fields)

The following fields are available on the Technical tab:

- Properties
 - [Name](#) (page 123)
 - [Size](#) (page 123)
 - [Abs. Position](#) (page 125)
 - [Rel. Position](#) (page 125)
 - [Occurs](#) (page 125)
 - [Occurrence Depending On](#) (page 125)
- Content
 - [Type](#) (page 126)
 - [Decimals](#) (page 127)
 - [Unsigned](#) (page 127)
 - [Separated and Leading](#) (page 128)
 - [Initial](#) (page 128)
 - [Null](#) (page 128)
 - [Code](#) (page 129)
 - [Edit Mask](#) (page 129)
 - [Date Format](#) (page 132)
 - [Low Limit](#) (page 132)
 - [High Limit](#) (page 132)
 - [CCSID](#) (page 132)

Name

Mandatory field.

The name you enter must meet the following conditions:

- The name may contain up to 32 characters.
- It must begin with an alphabetic character.
- It may contain the characters a-z, A-Z and 0-9.
- It may contain the following special characters: \$, #, @, _ (underscore) and - (hyphen).
- It may not be ended with a - (hyphen).
- File names must be unique in the MetaStore Repository.

Size

In the *Size* field, enter an integer indicating the field length as a number of bytes. If the field occurs more than once in the record, this field indicates the length of a single occurrence of the field.

Type	Additional	Size in # Bytes	COBOL
Alphabetic		# characters	PIC A(c) DISPLAY
Character		# characters	PIC X(c) DISPLAY
National		2 x # characters	PIC N(c)
Varchar		# characters	PIC X(c) DISPLAY
Binary	1 <= # digits <= 4	2	PIC S9(n)V9(d) BINARY
	5 <= # digits <= 9	4	PIC S9(n)V9(d) BINARY
	10 <= # digits <= 18	8	PIC S9(n)V9(d) BINARY
Binary Native	1 <= # digits <= 4	2	PIC S9(n)V9(d) COMP-5
	5 <= # digits <= 9	4	PIC S9(n)V9(d) COMP-5
	10 <= # digits <= 18	8	PIC S9(n)V9(d) COMP-5
Bit		1	-
Decimal	Signed / Null-signed	(# digits + 1) / 2	PIC S9(n)V9(d) PACKED-DECIMAL
Float	8 digits of precision	4	COMP-1
	17 digits of precision	8	COMP-2
Hexadecimal		1 byte = 2 hexadecimal digits	PIC X(c) DISPLAY
Numeric		# digits	PIC S9(n)V9(d) DISPLAY
Printed Numeric		# characters in Edit Mask	PIC EditMask DISPLAY
Printed Numeric National		2 x # characters in Edit Mask	PIC EditMask USAGE NATIONAL

Legend:

- c = number of characters
- n = number of integer digits
- d = number of decimal digits
- s = only present when value is signed. This option is not allowed for National.

Note: The Record Layout window shows the default value for the Field within the selected Record. The default value matches the size of the Field, as defined in the Record Fields Window.

Auto Calculate

If this option is activated, the size will be calculated automatically.

Abs. Position

In this field, you may change the Field's starting character position that was calculated automatically by the system. The value entered must be an integer.

Note: If the Record's length is variable, you may not include the four-character record descriptor word when determining the start position of the Field.

Rel. Position

This is the 1-based position of this field within its domed structure (i.e., Record or Group).

- For a field that is not a subfield, the absolute and relative positions are equal.
- For a field x that is a subfield of group g, the relative position will be calculated as $1 + (\text{absolute position of } x) - (\text{absolute position of } g)$.

For example: if group g starts on position 5, and the absolute position of x is also 5, then the relative position of x is $1 + 5 - 5 = 1$. In human terms: "x will start on the 1st position of g".

Auto Calculate

If this option is activated, the size will be calculated automatically.

Occurs

Optional field.

Enter an integer indicating the maximum number of times this field can occur in the record. If you do not define a specific value, the field is assumed to occur once.

Occurrence Depending On

Optional field. Only applies for repeating fields (n).

Select a numeric field that is defined prior to this field within the record.

Results:

- The value you defined with the *Occurs* option represents the *maximum* number of times this field can occur
- The value available in the selected field represents the *actual* number of times the field occurs.

1. Click the *Browse* button next to the *Occurrence Depending On* text field.

The list of available numeric fields is displayed.

2. Select the required Field.

The name of the selected Field is displayed in the *Occurrence Depending On* text field.

Note: If you click the Browse button again now, the Properties screen for the selected field will be displayed. If you want to select another field, you first have to delete the current field name from the text field and then click the Browse button.

Type

This field is mandatory and contains the default value *Character*.

There are two general classes of data types: *non-numeric* and *numeric*.

Non-numeric Data Types

Alphabetic	This datatype indicates a field containing strings using the characters A-Z and a-z.
Character	This datatype indicates that the field may contain any possible character within the character set being used (including <i>unprintable</i> characters). It is not possible to perform numeric operations on a Character type field, even when the field contains only digits. Matching RDBMS Data Types: CHAR, BYTE, VARCHAR, VARCHAR2, LONG, RAW, LONGVARCHAR
Graphic	DB2 terminology for Character datatype.
Hexadecimal	This datatype indicates that any hexadecimal characters are allowed within the field.
Long Varchar	This datatype indicates a field containing a variable character string of maximum 2 GB.
National	The National datatype is a subset of Unicode. The character set on which it is based is UTF-16, but restricted to two bytes per character.
Varchar	This datatype indicates a character field allowing the storage of values you need plus one byte for the length.
Vargraphic	DB2 terminology for Varchar datatype.

Numeric Data Types

Binary	This datatype indicates that the field contains a binary numeric value composed of 0's and 1's.
Binary Native	This datatype indicates that the field contains binary native numbers. This means that its internal representation depends on the Operating System and/or processor.
Bit	This datatype indicates a field occupying a single bit storage. A BIT type field may only contain the binary values 0 or 1. It is possible to perform numeric operations on a BIT type field.
Byte	This datatype indicates a field occupying a single byte storage. A byte is 8 bits. It is possible to perform numeric operations on a BYTE type field.
Decimal	This datatype indicates a field containing a packed decimal value. Packed decimal is the most commonly used internal numeric data type. Two decimal digits are contained in each byte of a packed decimal number. However, if the number is signed, the last half byte contains a positive or negative sign indicator.

Float	This datatype indicates that the field contains floating-point numbers, encoded in an encoded exponential form.
Numeric	This datatype indicates that any the field contains decimal numbers in a printable character format, this means that a single digit is stored per byte. Leading blanks are not permitted in this field type, nor may it contain editing characters, such as commas or decimal points. Use <i>Printed Numeric</i> in this case. Matching RDBMS Data Types: TINYINT, SMALLINT, INTEGER, BIGINT, DECIMAL, NUMBER, FLOAT
Printed Numeric	This datatype indicates that the character-based field contains a numeric value. The format in which the printed numeric value is displayed must be specified with the EDIT option.
Printed Numeric National	This datatype indicates that this is a National field that contains a numeric value. The format in which the PRN-NATIONAL value is displayed must be specified with the EDIT option.

Decimals

If the field type allows the definition of decimals, this field contains the number of decimals.

Decimals can be entered for the following field types:

- Binary
- Binary Native
- Decimal
- Numeric
- Printed Numeric
- Printed Numeric National

If the field type does not allow the definition of decimals, this field contains the default value 0.

Unsigned

Select the *Unsigned* check box to indicate that a numeric value is not signed, i.e. that it does not contain a sign indicator (+ or -).

This field applies for the following field types:

- Binary
- Binary Native
- Numeric

Note: For Decimal fields, the distinction between unsigned and positive signed INPUT fields is not relevant to the system.

Separated and Leading

These two check boxes allow to define how over-punched and separate sign indicators must be treated. They only apply for the Numeric field type.

There are several possibilities.

If the sign indicator is over-punched in the number, select the *Unsigned* check box above.

- Select *Leading* to put the sign on the initial digit.
- Select *Separate* to put the sign on the last byte (no digit).
- Select *Leading* and *Separate* to put the sign in the initial byte (no digit).

If the Numeric field contains a separate plus or minus sign attached to the number, select the *Separate* check box.

Initial

Optional field.

Enter the initial value for the field.

This value is only taken into account for Target Files. If an initial value was defined for a Source file, this parameter will not affect any operation, except for syntax checking.

For Numeric fields, this is a numeric constant, where the decimal point should be given by a . (point).

For Character fields, this may be an alphanumeric constant (not enclosed by quotes) or the system fields *SYS-LOW-VALUE* or *SYS-HIGH-VALUE*, which correspond to system fields *LOW-VALUE* and *HIGH-VALUE* within COBOL.

Null

This field indicates the nullable status of the field, and whether Inbound or Outbound nulls are used.

Note: If this field is left blank, the default NULLABLE value defined in the MetaSuite dictionary will be applied to this field. For more information, refer to the section *Create Dictionary/Enter License Key* in the *Generator Manager Guide*.

Select the required null-indicator from the drop-down list.

Entry	Description
None	Select this option if no nullability information is known about the field, or when it is of no importance for the field.
Default	Select this option if this field is a NotNull field with a default value. The Default notion is only documentary metadata for a field. The default Nullable value defined in the MetaSuite dictionary will be applied. Refer to the section <i>Create a Dictionary/Enter License Key</i> in the <i>Generator Manager User Guide</i> .
NotNull	Select this option if a Null Value should never be allowed in this field.

Entry	Description
InNull	<p>Select this option if a Null Value is allowed in this field. The used value to define a Null value is determined by a default setting in the MetaSuite COBOL Generator. When a Null Value is assigned, the first position or character of the field itself indicates the Null Value (the so called inbound Null).</p> <p>Note: In case of National or PRN-National, the Null Value is indicated by two bytes.</p>
OutNull	<p>Select this option if Null Values are allowed in this field. To store a Null value, an additional placeholder is foreseen in the sequential file that precedes the real field. When a Null value is assigned, this additional placeholder indicates the Null value (the so called left outbound Null). The used value to define a Null value is determined by a default setting in the MetaSuite COBOL Generator.</p> <p>Note: This placeholder contains one byte in order to store the Null indicator, except in case of field type National or PRN-National. In that case the placeholder contains two bytes.</p>
OutNullR	<p>Select this option if Null Values are allowed in this field. To store a Null value, an additional placeholder is foreseen in the sequential file that follows the real field. When a Null value is assigned, this additional placeholder indicates the Null value (the so called right outbound Null). The used value to define a Null value is determined by a default setting in the MetaSuite COBOL Generator.</p> <p>Note: This placeholder contains one byte in order to store the Null indicator, except in case of field type National or PRN-National. In that case the placeholder contains two bytes.</p>

Code

Default value = *No Code*

The following options are available:

Option	Description
Code	This field is treated as a code, not as a number.
No Code	<p>Resets the code operator to zero.</p> <p>Select this option when there is no additional information to be added for the field.</p>
Time	Select this option to define a field that contains TIME information.
Timestamp	Select this option to define a field that contains TIMESTAMP information.

Edit Mask

This field is mandatory for Printed Numeric fields, but optional for other field types. It indicates how the alphanumeric values must be formatted.

Note: When the Edit Mask is set for a printed numeric field, the MetaStore Manager will reset the size of the field to the size that corresponds to the chosen Edit Mask.

Enter the characters defining a Mask in this text field. This Mask will override the default mask for the field. There is a default mask for each field type. Both the default masks and the manually created masks are composed of *Replacement* and *Insertion* characters.

The following table lists the Replacement characters and their meaning. Replacement characters indicate positions in the printed field that may be replaced by (the corresponding types of) characters from the input field.

Replacement Character	Meaning
\$	Floating dollar sign before the first digit, with leading zero suppression
Z	Leading zero suppression
*	Asterisks to replace leading zeros
9	Numeric character
A	Alphabetic character
N	National (2-byte Unicode character set)
X	Character

The following table lists the Insertion characters and their meaning. Insertion characters indicate characters to be printed in addition to those contained in the stored field.

Insertion Character	Meaning
\$	Leading dollar sign
*	Leading asterisk (generally for check protection)
,	Comma (separator for the sake of large number readability or decimal separator depending on the "Decimal Separator" option in the INI file)
.	Decimal point (separator for the sake of large number readability or decimal separator, depending on the "Decimal Separator" option in the INI file)
B	Blank
-	Floating or trailing minus for negative values. Plus is not accepted as valid character. Positive numbers will have a blank as sign character.
+	Floating or trailing plus or minus sign
CR	Trailing credit symbol for negative values only
DB	Trailing debit symbol for negative values
V	Virtual comma

As mentioned above, there is a default Mask for each field type:

Field Type	Default Mask Description
Signed numeric fields	The default mask contains a minus sign as the rightmost character. All negative values are printed with a trailing minus sign.
Numeric fields with decimals	The default mask contains a decimal point and as many digit replacement characters (9s) to the right of the decimal point as are specified by the Decimal option.
Numeric fields	The default mask contains as many digits as its size, without zero suppression.
Date fields	The default mask is its selected date format.
Alphanumeric fields	The default mask contains as many alphanumeric character replacement characters (X) as are required to print the field.

Examples of default masks:

Field Type	Size	Default mask
Signed numeric fields without decimal positions	6	999999-
Signed numeric fields with two decimals	6	9999.99-
Character Field	6	X(6)
Unicode Field	6	N(3)

You may also define customized masks.

Examples:

Field Type	Field Size	Mask	Field value	Printed value
Character	6	XXBXXXX	AB138B	AB 138B
Numeric with 2 decimal positions	2	.99	.35 0 -.12	.35 .00 .12
Numeric with 3 minus signs	4	---9	0 -1 210	0 -1 210
Numeric with 3 plus signs	4	+++9	0 -1 210	+0 -1 210

Date Format

If the field must contain a date, select the required date format from the drop-down list. The system automatically validates date fields whenever they are referenced in a MetaMap model, and automatically converts date fields whenever they are compared to another date or used in a calculation. In all the available formats, YY or YYYY stands for the year and MM stands for the month. DD stands for the day within a month and DDD stands for the day within the year.

When the format contains a '?', this indicates the date delimiter that is used. Data formats with a '?' are only supported for Character and Varchar field types. When the data format does not contain a '?', the different parts in the date are not delimited by a special character.

The Date Format list is accessible for the following field types:

- Binary
- Binary Native
- Character
- Decimal
- Numeric
- National
- Varchar

Note: When a date format is chosen, MetaStore Manager will reset the size of the field to the size that corresponds to the chosen date format.

Low Limit

Optional field.

When a *Low Limit* is specified, you must define a value in the *High Limit* field as well.

You may use this field to define a minimum value for this field. If a lower value is encountered, the system will consider the data invalid.

High Limit

Optional field.

When a *High Limit* is specified, you must define a value in the *Low Limit* field as well. You may use this field to define a maximum value for this field. If a higher value is encountered, the system will consider the data invalid.

CCSID

Enter the Coded Character Set Identifier.

CCSID is used by IBM as the abbreviation for "Coded Character Set Identifier". It is a 16-bit number that represents a specific encoding of a specific code page.

CCSID is commonly used for the data subtype CHARACTER, in order to distinguish the different character sets per country, language and the character encoding of the system. Despite of the philosophical approach of Unicode, CCSID can also be used on data type NATIONAL.

This CCSID is an enriched property and will not be collected.

Business Tab (Standard Fields)

The fields on the Business Tab are identical for all Standard File data objects (Dictionary File, Record, Field, Relationship and Index). Refer to the section [Business Tab \(Standard File Data Objects\)](#) (page 133) for a description of the fields.

13.4. Business Tab (Standard File Data Objects)

The following fields are available on the Business tab:

- [Business Rule](#) (page 133)
- [Note](#) (page 133)

Note: If you want to enter text in RTF (Rich Text Format), right-click and select *RTF* from the context menu (or use the shortcut *CTRL + R*).

Business Rule

Optional field.

Enter a free-form description for the data object (Dictionary File, Record, Field, Relationship or Index). For example, the business rule or the requirements.

Note

Optional field.

Enter a free-form note for the data object.

IDMS Subschema

In an *IDMS Subschema*, the data are stored in one centralized location beyond the scope of the defined application program. An *IDMS record* is a collection of related data items or fields and can belong to many *Sets*. Each Set defines a logical relationship between record types.

The following table shows how the IDMS terminology can be matched with the standard MetaSuite terminology

IDMS Terminology	MetaSuite Terminology
Schema	File
Record Type	Record
Field	Field
Index	Index
Set	Link

This chapter explains the following actions:

- [Creating the Dictionary File](#) (page 135)
- [Defining Records](#) (page 137)
- [Defining Fields](#) (page 140)
- [Defining Relationships](#) (page 151)
- [Defining Indices](#) (page 155)

For more technical information, refer to the *IDMS File Access Guide*.

14.1. Creating the Dictionary File

1. In the Tree View Window, right-click the MetaStore root icon and select *Add > Subschema*. The properties panel appears in the Workspace.

The screenshot shows a window titled 'New Subschema (v 1)' with a tabbed interface. The 'Technical' tab is active, displaying the 'Subschema Properties' section. Fields include: Name (empty with a warning icon), Code-control (empty), Database (empty), Version (set to 1), CCSID (set to 0), Subtype (dropdown menu showing 'IDMS/R'), and Schema (empty with a warning icon). The 'Business' tab is also visible but not selected.

Two tabs are available: *Technical* and *Business*.

2. Fill out the required fields.
For a detailed description of the fields, refer to the sections:
 - [Technical Tab \(Subschemas\)](#) (page 135)
 - [Business Tab \(Subschema Data Objects\)](#) (page 158)
3. Save the changes to the MetaStore Repository.
In the Tree View Window, right-click the new Dictionary File and select *Save to MetaStore*.

Note: If you do not save the Dictionary File to the MetaStore Repository now, you will be asked whether you want to do this, when you leave the program.

Technical Tab (Subschemas)

The following fields are available on the Technical tab:

- [Name](#) (page 135)
- [Code-control](#) (page 136)
- [Database](#) (page 136)
- [Version](#) (page 136)
- [CCSID](#) (page 136)
- [Subtype](#) (page 137)
- [Schema](#) (page 137)

Name

Mandatory field.

The name you enter must meet the following conditions:

- The name may contain up to 32 characters.

- It must begin with an alphabetic character.
- It may contain the characters a-z, A-Z and 0-9.
- It may contain the following special characters: \$, #, @, _ (underscore) and - (hyphen).
- It may not be ended with a - (hyphen).
- File names must be unique in the MetaStore Repository.

Code-control

Optional field.

Code-control Tables contain information about how to process a certain type of data container. Each table element of the code-control table points to a code table in the COBOL Generator Dictionary.

Each data container type has a pre-defined code-control table. If required, this default code-control table can be overwritten. For example: in order to invoke an external I/O module to read or write the file or to expand or compress data.

Note: When the option is used, the selected table must exist in the COBOL Generator Dictionary before programs using the file can be generated.

For more information about code-control tables, refer to the section *Code-control Tables* in the *Generator Manager Guide*.

Database

Enter the name of the corresponding database, if applicable.

Note: This field is mandatory for Subschemas.
Enter the name of the default subschema and optionally the default CA-IDMS database in the following format: Subschema-name [.Database-name]
This name will be used by MetaMap when accessing the IDMS Subschema. The name must be enclosed in single quotes.

Version

Default value = 1

You can change the version number, if required.

When reimporting or recollecting an existing data container, the version will be modified depending on the settings specified in the INI Manager. For more information, refer to the chapter MetaStore Manager Settings in the *MetaSuite INI Manager Guide*.

CCSID

Enter the Coded Character Set Identifier.

CCSID is used by IBM as the abbreviation for "Coded Character Set Identifier". It is a 16-bit number that represents a specific encoding of a specific code page.

CCSID is commonly used for the data subtype CHARACTER, in order to distinguish the different character sets per country, language and the character encoding of the system. Despite of the philosophical approach of Unicode, CCSID can also be used on data type NATIONAL.

This CCSID is an enriched property and will not be collected.

Subtype

Select the required subtype from the drop-down list.

The following options are available:

- IDMS/R
- IDMS/X
- IDXII

Schema

Mandatory field.

Enter the name of the CA-IDMS schema.

Business Tab (Subschemas)

The fields on the Business Tab are identical for all Subschema data objects (Dictionary File, Record, Field, Relationship and Index). Refer to the section [Business Tab \(Subschema Data Objects\)](#) (page 158) for a description of the fields.

14.2. Defining Records

1. In the Tree View Window, right-click the appropriate IDMS Subschema Dictionary File and select *Add Subschema Record*.

The properties panel is displayed in the Workspace.

This screen contains two tabs: *Technical* and *Business*.

2. Fill out the required fields.

For a detailed description of the fields, refer to the sections:

- [Technical Tab \(Subschema Records\)](#) (page 138)
- [Business Tab \(Subschema Data Objects\)](#) (page 158)

3. Save or discard your changes.

4. Save the changes to the MetaStore Repository.

In the Tree View Window, right-click the Dictionary File the new Record belongs to and select *Save to MetaStore*.

Note: If you do not add the File to the MetaStore Repository now, you will be asked whether you want to do this, when you leave the program.

Technical Tab (Subschema Records)

The following fields are available on the Technical tab:

- [Name](#) (page 138)
- [Size](#) (page 138)
- [Database](#) (page 139)
- [Area Name](#) (page 139)
- [Subschema Record Key](#) (page 139)
- [CCSID](#) (page 139)

Name

Mandatory field.

The name you enter must meet the following conditions:

- The name may contain up to 32 characters.
- It must begin with an alphabetic character.
- It may contain the characters a-z, A-Z and 0-9.
- It may contain the following special characters: \$, #, @, _ (underscore) and - (hyphen).
- It may not be ended with a - (hyphen).
- File names must be unique in the MetaStore Repository.

Size

Mandatory field.

Enter the record size. The value must be at least as large as the record LENGTH shown in the IDMSRPTS Subschema Data Dictionary Listing.

Auto Calculate

If this option is activated, the size will be calculated automatically.

Database

Enter *BDAM* in this field, if the field must be considered as a "dummy" field describing the record identifier portion of a BDAM actual key.

Area Name

Mandatory field.

IDMS organizes its databases as a series of files. These files are mapped and pre-formatted into so-called areas. The areas are subdivided into pages which correspond to physical blocks on the disk. The database records are stored within these blocks. The DBA allocates a fixed number of pages in a file for each area. The DBA then defines which records are to be stored in each area, and details of how they are to be stored.

Enter the *WITHIN* name as it appears on the IDMSRPTS Subschema Record Description Listing for the record being defined.

Subschema Record Key

This record key is also known as the storage key for the CALC method. Four methods are available for storing records in an IDMS database: Direct, Sequential, CALC, and VIA. CALC uses a hashing algorithm to decide where to place the record; the hash key then provides efficient retrieval of the record. The entire CALC area is preformatted each with a header consisting of a special CALC "owner" record. The hashing algorithm determines a page number (from which the physical disk address can be determined), and the record is then stored on this page, or as near as possible to it, and is linked to the header record on that page using the CALC set. The CALC records are linked to the page's CALC Owner record using a single link-list (pointers). The CALC Owner located in the page header thus owns the set of all records which target to its particular page (whether the records are stored on that page or, in the case of an overflow, on another page).

CALC provides extremely efficient storage and retrieval: IDMS can retrieve a CALC record in 1.1 I/O operations. However, the method does not cope well with changes to the value of the primary key, and expensive reorganization is needed if the number of pages needs to be expanded.

Select the name of the field, by which you can randomly obtain the record.

1. Click the *Browse* button to display the Subschema Record Key Properties panel.
2. Fill out the name of the new Subschema Record Key.
3. Select the required Subschema Field.
Click the *Browse* button to display the list of all available fields and subfields.
4. Apply your changes and close the *Subschema Record Key Properties* panel.
The new Record Key is displayed in the Subschema Record Key field.

CCSID

Enter the Coded Character Set Identifier.

CCSID is used by IBM as the abbreviation for "Coded Character Set Identifier". It is a 16-bit number that represents a specific encoding of a specific code page.

CCSID is commonly used for the data subtype CHARACTER, in order to distinguish the different character sets per country, language and the character encoding of the system. Despite of the philosophical approach of Unicode, CCSID can also be used on data type NATIONAL.

This CCSID is an enriched property and will not be collected.

Business Tab (Subschema Records)

The fields on the Business Tab are identical for all Subschema data objects (Dictionary File, Record, Field, Relationship and Index). Refer to the section [Business Tab \(Subschema Data Objects\)](#) (page 158) for a description of the fields.

14.3. Defining Fields

1. In the Tree View Window, right-click the IDMS Subschema Record you want to define Elements for and select *Add Subschema Element*.

The properties panel is displayed in the Workspace.

The screenshot shows the 'New Subschema Element' dialog box with the 'Business' tab selected. The 'Subschema Element Properties' section contains the following fields:

- Name:** A text input field with a yellow background and a warning icon.
- Size:** A numeric input field with the value '1' and an 'Auto Calculate' checkbox.
- Abs. Position:** A numeric input field with the value '35'.
- Rel. Position:** A numeric input field with the value '35' and an 'Auto Calculate' checkbox.
- Occurs:** A numeric input field with the value '1'.
- Occurrence Depending on:** A text input field with a dropdown arrow and a close button.

The 'Content' section contains the following fields:

- Type:** A dropdown menu set to 'Character'.
- Decimals:** A numeric input field with the value '0' and an 'Auto Calculate' checkbox.
- Initial:** A text input field.
- Null:** A dropdown menu set to 'None'.
- Code:** A dropdown menu set to 'No Code'.
- Edit Mask:** A text input field.
- Date Format:** A dropdown menu set to 'None'.
- Low Limit:** A text input field.
- High Limit:** A text input field.
- CCSID:** A numeric input field with the value '0'.

2. Fill out the required fields.

For a detailed description of the fields, refer to the sections:

- [Technical Tab \(Subschema Elements\)](#) (page 141)
- [Business Tab \(Subschema Data Objects\)](#) (page 158)

Note: Some of the values can also be modified by double-clicking or selecting them from a drop-down list in the Record Fields Window.

3. Save or discard your changes.
4. Save the changes to the MetaStore Repository.
In the Tree View Window, right-click the Subschema the new Element belongs to and select *Save to MetaStore*.

Note: If you do not add the Element to the MetaStore Repository now, you will be asked whether you want to do this, when you leave the program.

Technical Tab (Subschema Elements)

The following fields are available on the Technical tab:

- Properties
 - [Name](#) (page 141)
 - [Size](#) (page 142)
 - [Abs. Position](#) (page 143)
 - [Rel. Position](#) (page 143)
 - [Occurs](#) (page 143)
 - [Occurrence Depending On](#) (page 143)
- Content
 - [Type](#) (page 144)
 - [Decimals](#) (page 145)
 - [Unsigned](#) (page 145)
 - [Separated and Leading](#) (page 146)
 - [Initial](#) (page 146)
 - [Null](#) (page 146)
 - [Code](#) (page 147)
 - [Edit Mask](#) (page 148)
 - [Date Format](#) (page 150)
 - [Low Limit](#) (page 150)
 - [High Limit](#) (page 150)
 - [CCSID](#) (page 151)

Name

Mandatory field.

The name you enter must meet the following conditions:

- The name may contain up to 32 characters.
- It must begin with an alphabetic character.
- It may contain the characters a-z, A-Z and 0-9.
- It may contain the following special characters: \$, #, @, _ (underscore) and - (hyphen).

- It may not be ended with a – (hyphen).
- File names must be unique in the MetaStore Repository.

Size

In the *Size* field, enter an integer indicating the field length as a number of bytes. If the field occurs more than once in the record, this field indicates the length of a single occurrence of the field.

Type	Additional	Size in # Bytes	COBOL
Alphabetic		# characters	PIC A(c) DISPLAY
Character		# characters	PIC X(c) DISPLAY
National		2 x # characters	PIC N(c)
Varchar		# characters	PIC X(c) DISPLAY
Binary	1 <= # digits <= 4	2	PIC S9(n)V9(d) BINARY
	5 <= # digits <= 9	4	PIC S9(n)V9(d) BINARY
	10 <= # digits <= 18	8	PIC S9(n)V9(d) BINARY
Binary Native	1 <= # digits <= 4	2	PIC S9(n)V9(d) COMP-5
	5 <= # digits <= 9	4	PIC S9(n)V9(d) COMP-5
	10 <= # digits <= 18	8	PIC S9(n)V9(d) COMP-5
Bit		1	-
Decimal	Signed / Null-signed	(# digits + 1) / 2	PIC S9(n)V9(d) PACKED-DECIMAL
Float	8 digits of precision	4	COMP-1
	17 digits of precision	8	COMP-2
Hexadecimal		1 byte = 2 hexadecimal digits	PIC X(c) DISPLAY
Numeric		# digits	PIC S9(n)V9(d) DISPLAY
Printed Numeric		# characters in Edit Mask	PIC EditMask DISPLAY
Printed Numeric National		2 x # characters in Edit Mask	PIC EditMask USAGE NATIONAL

Legend:

- *c* = number of characters
- *n* = number of integer digits
- *d* = number of decimal digits
- *s* = only present when value is signed. This option is not allowed for National.

Note: The Record Layout window shows the default value for the Field within the selected Record. The default value matches the size of the Field, as defined in the Record Fields Window.

Auto Calculate

If this option is activated, the size will be calculated automatically.

Abs. Position

In this field, you may change the Field's starting character position that was calculated automatically by the system. The value entered must be an integer.

Note: If the Record's length is variable, you may not include the four-character record descriptor word when determining the start position of the Field.

Rel. Position

This is the 1-based position of this field within its domed structure (i.e., Record or Group).

- For a field that is not a subfield, the absolute and relative positions are equal.
- For a field x that is a subfield of group g, the relative position will be calculated as $1 + (\text{absolute position of } x) - (\text{absolute position of } g)$.

For example: if group g starts on position 5, and the absolute position of x is also 5, then the relative position of x is $1 + 5 - 5 = 1$. In human terms: "x will start on the 1st position of g".

Auto Calculate

If this option is activated, the size will be calculated automatically.

Occurs

Optional field.

Enter an integer indicating the maximum number of times this field can occur in the record. If you do not define a specific value, the field is assumed to occur once.

Occurrence Depending On

Optional field. Only applies for repeating fields (n).

Select a numeric field that is defined prior to this field within the record.

Results:

- The value you defined with the *Occurs* option represents the *maximum* number of times this field can occur
- The value available in the selected field represents the *actual* number of times the field occurs.

1. Click the *Browse* button next to the *Occurrence Depending On* text field.
The list of available numeric fields is displayed.

2. Select the required Field.

The name of the selected Field is displayed in the *Occurrence Depending On* text field.

Note: If you click the Browse button again now, the Properties screen for the selected field will be displayed. If you want to select another field, you first have to delete the current field name from the text field and then click the Browse button.

Type

This field is mandatory and contains the default value *Character*.

There are two general classes of data types: *non-numeric* and *numeric*.

Non-numeric Data Types

Alphabetic	This datatype indicates a field containing strings using the characters A-Z and a-z.
Character	This datatype indicates that the field may contain any possible character within the character set being used (including <i>unprintable</i> characters). It is not possible to perform numeric operations on a Character type field, even when the field contains only digits. Matching RDBMS Data Types: CHAR, BYTE, VARCHAR, VARCHAR2, LONG, RAW, LONGVARCHAR
Graphic	DB2 terminology for Character datatype.
Hexadecimal	This datatype indicates that any hexadecimal characters are allowed within the field.
Long Varchar	This datatype indicates a field containing a variable character string of maximum 2 GB.
National	The National datatype is a subset of Unicode. The character set on which it is based is UTF-16, but restricted to two bytes per character.
Varchar	This datatype indicates a character field allowing the storage of values you need plus one byte for the length.
Vargraphic	DB2 terminology for Varchar datatype.

Numeric Data Types

Binary	This datatype indicates that the field contains a binary numeric value composed of 0's and 1's.
Binary Native	This datatype indicates that the field contains binary native numbers. This means that its internal representation depends on the Operating System and/or processor.
Bit	This datatype indicates a field occupying a single bit storage. A BIT type field may only contain the binary values 0 or 1. It is possible to perform numeric operations on a BIT type field.

Byte	This datatype indicates a field occupying a single byte storage. A byte is 8 bits. It is possible to perform numeric operations on a BYTE type field.
Decimal	This datatype indicates a field containing a packed decimal value. Packed decimal is the most commonly used internal numeric data type. Two decimal digits are contained in each byte of a packed decimal number. However, if the number is signed, the last half byte contains a positive or negative sign indicator.
Float	This datatype indicates that the field contains floating-point numbers, encoded in an encoded exponential form.
Numeric	This datatype indicates that any the field contains decimal numbers in a printable character format, this means that a single digit is stored per byte. Leading blanks are not permitted in this field type, nor may it contain editing characters, such as commas or decimal points. Use <i>Printed Numeric</i> in this case. Matching RDBMS Data Types: TINYINT, SMALLINT, INTEGER, BIGINT, DECIMAL, NUMBER, FLOAT
Printed Numeric	This datatype indicates that the character-based field contains a numeric value. The format in which the printed numeric value is displayed must be specified with the EDIT option.
Printed Numeric National	This datatype indicates that this is a National field that contains a numeric value. The format in which the PRN-NATIONAL value is displayed must be specified with the EDIT option.

Decimals

If the field type allows the definition of decimals, this field contains the number of decimals.

Decimals can be entered for the following field types:

- Binary
- Binary Native
- Decimal
- Numeric
- Printed Numeric
- Printed Numeric National

If the field type does not allow the definition of decimals, this field contains the default value 0.

Unsigned

Select the *Unsigned* check box to indicate that a numeric value is not signed, i.e. that it does not contain a sign indicator (+ or -).

This field applies for the following field types:

- Binary
- Binary Native

- Numeric

Note: For Decimal fields, the distinction between unsigned and positive signed INPUT fields is not relevant to the system.

Separated and Leading

These two check boxes allow to define how over-punched and separate sign indicators must be treated. They only apply for the Numeric field type.

There are several possibilities.

If the sign indicator is over-punched in the number, select the *Unsigned* check box above.

- Select *Leading* to put the sign on the initial digit.
- Select *Separate* to put the sign on the last byte (no digit).
- Select *Leading* and *Separate* to put the sign in the initial byte (no digit).

If the Numeric field contains a separate plus or minus sign attached to the number, select the *Separate* check box.

Initial

Optional field.

Enter the initial value for the field.

This value is only taken into account for Target Files. If an initial value was defined for a Source file, this parameter will not affect any operation, except for syntax checking.

For Numeric fields, this is a numeric constant, where the decimal point should be given by a . (point).

For Character fields, this may be an alphanumeric constant (not enclosed by quotes) or the system fields *SYS-LOW-VALUE* or *SYS-HIGH-VALUE*, which correspond to system fields *LOW-VALUE* and *HIGH-VALUE* within COBOL.

Null

This field indicates the nullable status of the field, and whether Inbound or Outbound nulls are used.

Note: If this field is left blank, the default NULLABLE value defined in the MetaSuite dictionary will be applied to this field. For more information, refer to the section *Create Dictionary/Enter License Key* in the *Generator Manager Guide*.

Select the required null-indicator from the drop-down list.

Entry	Description
None	Select this option if no nullability information is known about the field, or when it is of no importance for the field.

Entry	Description
Default	Select this option if this field is a NotNull field with a default value. The Default notion is only documentary metadata for a field. The default Nullable value defined in the MetaSuite dictionary will be applied. Refer to the section <i>Create a Dictionary/Enter License Key</i> in the Generator Manager User Guide.
NotNull	Select this option if a Null Value should never be allowed in this field.
InNull	Select this option if a Null Value is allowed in this field. The used value to define a Null value is determined by a default setting in the MetaSuite COBOL Generator. When a Null Value is assigned, the first position or character of the field itself indicates the Null Value (the so called inbound Null). Note: In case of National or PRN-National, the Null Value is indicated by two bytes.
OutNull	Select this option if Null Values are allowed in this field. To store a Null value, an additional placeholder is foreseen in the sequential file that precedes the real field. When a Null value is assigned, this additional placeholder indicates the Null value (the so called left outbound Null). The used value to define a Null value is determined by a default setting in the MetaSuite COBOL Generator. Note: This placeholder contains one byte in order to store the Null indicator, except in case of field type National or PRN-National. In that case the placeholder contains two bytes.
OutNullR	Select this option if Null Values are allowed in this field. To store a Null value, an additional placeholder is foreseen in the sequential file that follows the real field. When a Null value is assigned, this additional placeholder indicates the Null value (the so called right outbound Null). The used value to define a Null value is determined by a default setting in the MetaSuite COBOL Generator. Note: This placeholder contains one byte in order to store the Null indicator, except in case of field type National or PRN-National. In that case the placeholder contains two bytes.

Code

Default value = *No Code*

The following options are available:

Option	Description
Code	This field is treated as a code, not as a number.
No Code	Resets the code operator to zero. Select this option when there is no additional information to be added for the field.
Time	Select this option to define a field that contains TIME information.
Timestamp	Select this option to define a field that contains TIMESTAMP information.

Edit Mask

This field is mandatory for Printed Numeric fields, but optional for other field types. It indicates how the alphanumeric values must be formatted.

Note: When the Edit Mask is set for a printed numeric field, the MetaStore Manager will reset the size of the field to the size that corresponds to the chosen Edit Mask.

Enter the characters defining a Mask in this text field. This Mask will override the default mask for the field. There is a default mask for each field type. Both the default masks and the manually created masks are composed of *Replacement* and *Insertion* characters.

The following table lists the Replacement characters and their meaning. Replacement characters indicate positions in the printed field that may be replaced by (the corresponding types of) characters from the input field.

Replacement Character	Meaning
\$	Floating dollar sign before the first digit, with leading zero suppression
Z	Leading zero suppression
*	Asterisks to replace leading zeros
9	Numeric character
A	Alphabetic character
N	National (2-byte Unicode character set)
X	Character

The following table lists the Insertion characters and their meaning. Insertion characters indicate characters to be printed in addition to those contained in the stored field.

Insertion Character	Meaning
\$	Leading dollar sign
*	Leading asterisk (generally for check protection)
,	Comma (separator for the sake of large number readability or decimal separator depending on the "Decimal Separator" option in the INI file)
.	Decimal point (separator for the sake of large number readability or decimal separator, depending on the "Decimal Separator" option in the INI file)
B	Blank
-	Floating or trailing minus for negative values. Plus is not accepted as valid character. Positive numbers will have a blank as sign character.
+	Floating or trailing plus or minus sign
CR	Trailing credit symbol for negative values only

Insertion Character	Meaning
DB	Trailing debit symbol for negative values
V	Virtual comma

As mentioned above, there is a default Mask for each field type:

Field Type	Default Mask Description
Signed numeric fields	The default mask contains a minus sign as the rightmost character. All negative values are printed with a trailing minus sign.
Numeric fields with decimals	The default mask contains a decimal point and as many digit replacement characters (9s) to the right of the decimal point as are specified by the Decimal option.
Numeric fields	The default mask contains as many digits as its size, without zero suppression.
Date fields	The default mask is its selected date format.
Alphanumeric fields	The default mask contains as many alphanumeric character replacement characters (X) as are required to print the field.

Examples of default masks:

Field Type	Size	Default mask
Signed numeric fields without decimal positions	6	999999-
Signed numeric fields with two decimals	6	9999.99-
Character Field	6	X(6)
Unicode Field	6	N(3)

You may also define customized masks.

Examples:

Field Type	Field Size	Mask	Field value	Printed value
Character	6	XXBXXXX	AB138B	AB 138B
Numeric with 2 decimal positions	2	.99	.35 0 -.12	.35 .00 .12
Numeric with 3 minus signs	4	---9	0 -1 210	0 -1 210

Field Type	Field Size	Mask	Field value	Printed value
Numeric with 3 plus signs	4	+++9	0	+0
			-1	-1
			210	210

Date Format

If the field must contain a date, select the required date format from the drop-down list. The system automatically validates date fields whenever they are referenced in a MetaMap model, and automatically converts date fields whenever they are compared to another date or used in a calculation. In all the available formats, YY or YYYY stands for the year and MM stands for the month. DD stands for the day within a month and DDD stands for the day within the year.

When the format contains a '?', this indicates the date delimiter that is used. Data formats with a '?' are only supported for Character and Varchar field types. When the data format does not contain a '?', the different parts in the date are not delimited by a special character.

The Date Format list is accessible for the following field types:

- Binary
- Binary Native
- Character
- Decimal
- Numeric
- National
- Varchar

Note: When a date format is chosen, MetaStore Manager will reset the size of the field to the size that corresponds to the chosen date format.

Low Limit

Optional field.

When a *Low Limit* is specified, you must define a value in the *High Limit* field as well.

You may use this field to define a minimum value for this field. If a lower value is encountered, the system will consider the data invalid.

High Limit

Optional field.

When a *High Limit* is specified, you must define a value in the *Low Limit* field as well. You may use this field to define a maximum value for this field. If a higher value is encountered, the system will consider the data invalid.

CCSID

Enter the Coded Character Set Identifier.

CCSID is used by IBM as the abbreviation for "Coded Character Set Identifier". It is a 16-bit number that represents a specific encoding of a specific code page.

CCSID is commonly used for the data subtype CHARACTER, in order to distinguish the different character sets per country, language and the character encoding of the system. Despite of the philosophical approach of Unicode, CCSID can also be used on data type NATIONAL.

This CCSID is an enriched property and will not be collected.

Business Tab (Subschema Elements)

The fields on the Business Tab are identical for all Subschema data objects (Dictionary File, Record, Field, Relationship and Index). Refer to the section [Business Tab \(Subschema Data Objects\)](#) (page 158) for a description of the fields.

14.4. Defining Relationships

The purpose of defining Relationships is to define CA-IDMS sets to the MetaStore as link entities.

1. In the Tree View Window, right-click the new Subschema and select *Add Subschema Relationship*.

The properties panel is displayed in the Workspace.

Each LINK definition relates two MetaSuite (Subschema) records to one another. The "basis" of the link is a field in one record (the "from" record, so called because data is taken from that record and used to locate the other record) and a descriptor in the other (the "to" record, so called because the descriptor leads to that record).

Two tabs are available: *Technical* and *Business*.

2. Fill out the required fields.

For a detailed description of the fields, refer to the sections:

- [Technical Tab \(Subschema Relationships\)](#) (page 152)
- [Business Tab \(Subschema Data Objects\)](#) (page 158)

3. Save or discard your changes.

4. Save the changes to the MetaStore Repository.

In the Tree View Window, right-click the Subschema File Group and select *Save to MetaStore*.

Note: If you do not save the Relationship to the MetaStore Repository now, you will be asked whether you want to do this, when you leave the program.

Technical Tab (Subschema Relationships)

The following fields are available on the Technical tab:

- [Name](#) (page 152)
- [Database](#) (page 152)
- [Relationship From](#) (page 152)
- [Optional check box](#) (page 154)
- [Relationships To](#) (page 154)

Name

Mandatory field.

Enter the name of the Relationship as shown next to the SET statement in the Subschema Set Description Listing for the subschema.

Database


This is the unique name for the Database Entity (32 characters).

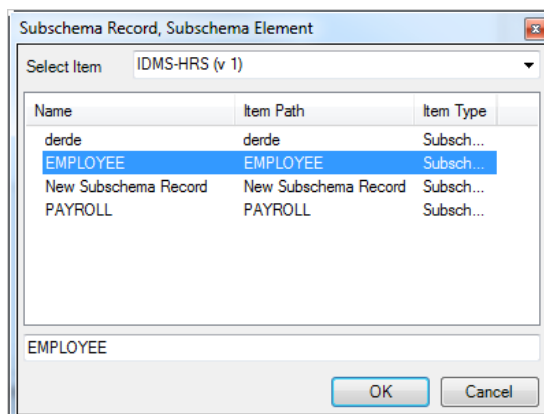
Relationship From

Note: Enter the name of the record type specified next to the OWNER statement in the Subschema Set Description Listing. If the name in the Subschema Set Description Listing is in the format *IXOWNER*, the set must be added as an Index to the MetaStore Repository.

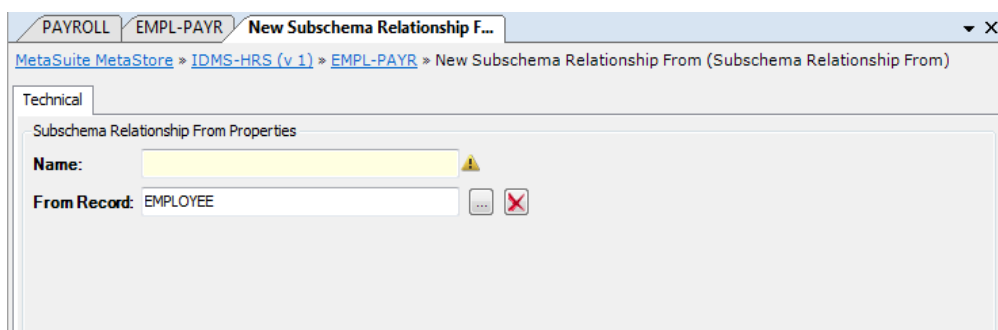
Mandatory field.

For more technical information, refer to the section *ADD LINK* in the *IDMS File Access Guide*.

1. Fill out the name of the new Relationship key.
2. Click the  button next to the *Relationship From* text field.
A screen similar to this one is displayed:



3. First select the required Item (Subschema or Subschema Record) using the drop-down list.
All available elements for the selected Subschema or Subschema Record will be displayed underneath.
Two extra options are available at the top right of the pop-up window for selecting the required item:
 - Show all
When selecting this option, the *Select Item* drop-down list will be deactivated and all available fields for all categories will be displayed underneath.
 - Indentation
When selecting this option, all fields displayed will be sorted per structure instead of alphabetically.
4. Select the required Subschema Elements and click OK.
The *Subschema Relationship From* properties panel is displayed.



5. Fill out the required fields.

Name	The name of the new Relationship
From Record	In order to define a particular relationship between two records, the user has to specify the first record of the relationship in the <i>From Record</i> field.

Note: You can use the *Browse* button to display the list of available items.

6. Apply your changes and close the properties panel.
The name will be displayed in the *Relationship From* field.

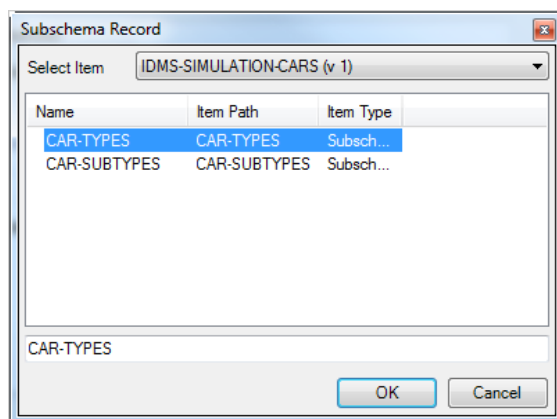
Optional check box

Select the *Optional* check box if the participation of a given record type in the set is optional, meaning that CA-IDMS allows the link between two record types to be either present or absent under user-defined conditions.

If the MEMBER line of the IDMSRPTS Subschema Set Description Listing for the set contains the word OPTIONAL, you must select this check box.

Relationships To

1. Double-click the *New* icon available in the *Relationships To* text zone.
A screen similar to this one is displayed:

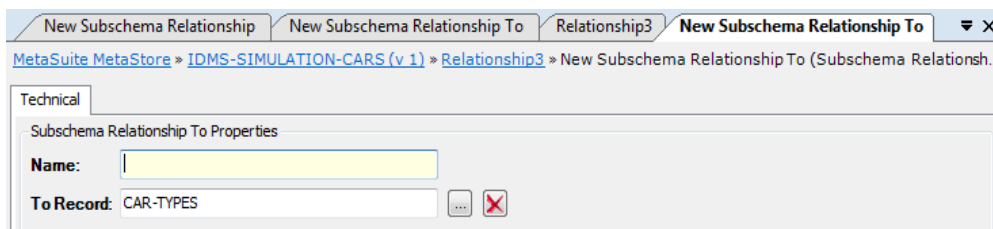


2. First select the required File Group or File using the drop-down list.
3. Select the required Field and click OK.

Two extra options are available at the top right of the pop-up window for selecting the required item:

- Show all
When selecting this option, the *Select Item* drop-down list will be deactivated and all available fields for all categories will be displayed underneath.
- Indentation
When selecting this option, all fields displayed will be sorted per structure instead of alphabetically.

The *Subschema Relationship To* properties panel is displayed.



- Fill out the required fields.

For more technical information, refer to the section *ADD LINK* in the *IDMS File Access Guide*.

Name	The name of the new Relationship
To Record	In order to define a particular relationship between two records, the user has to specify the second record of the relationship in the <i>To Record</i> field.

Note: You can use the *Browse* button to display the list of available items.

- Apply your changes and close the properties panel.
The relationship key name is added in the *Relationships To* panel.

Business Tab (Subschema Relationships)

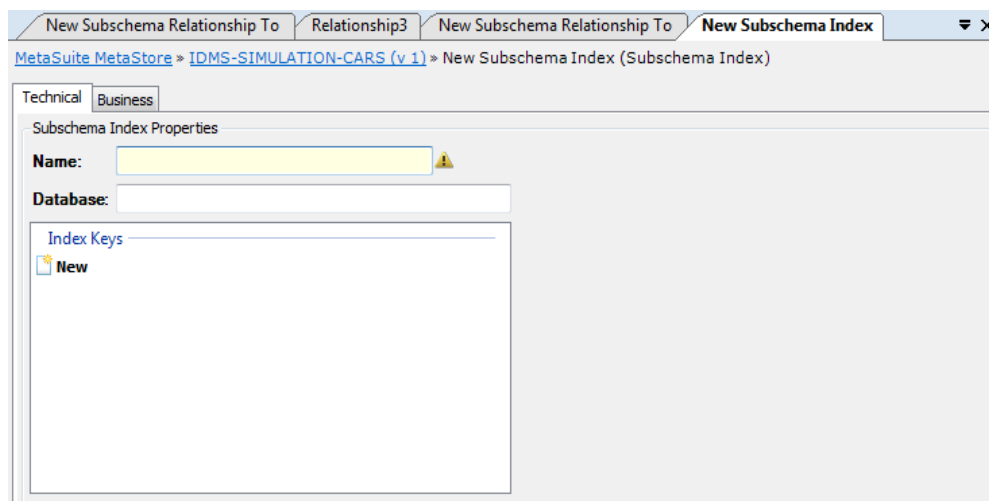
The fields on the Business Tab are identical for all Subschema data objects (Dictionary File, Record, Field, Relationship and Index). Refer to the section [Business Tab \(Subschema Data Objects\)](#) (page 158) for a description of the fields.

14.5. Defining Indices

An IDMS Subschema index declares the CA-IDMS to the MetaStore Repository.

- In the Tree View Window, right-click the Subschema you want to define an Index for and select *Add | Subschema Index*.

The properties panel is displayed in the Workspace:



Two tabs are available: *Technical* and *Business*.

- Fill out the required fields.
For a detailed description of the fields, refer to the sections:
 - [Technical Tab \(Subschema Indices\)](#) (page 156)
 - [Business Tab \(Subschema Data Objects\)](#) (page 158)

3. Save or discard your changes.
4. Save the changes to the MetaStore Repository.
In the Tree View Window, right-click the Subschema the new Index belongs to and select *Save to MetaStore*.

Note: If you do not add the Index to the MetaStore Repository now, you will be asked whether you want to do this, when you leave the program.

Technical Tab (Subschema Indices)

The following fields are available on the Technical tab:

- [Name](#) (page 156)
- [Database](#) (page 156)
- [Index Keys](#) (page 156)

Name

Mandatory field.

Enter the name of a CA-IDMS set as identified by SET statement in the Subschema Set Description Listing.

Database

Enter the name of the corresponding database.

Index Keys

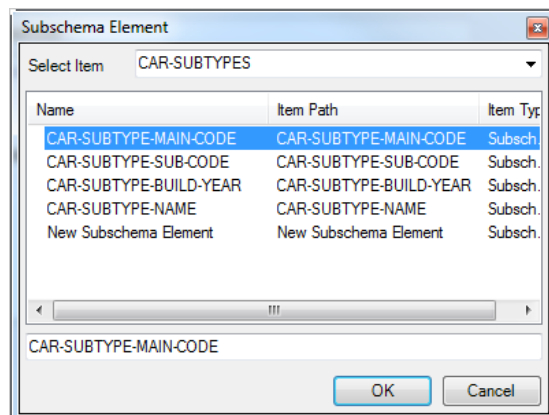
Mandatory field.

Select the keyfield for the set, as identified by the MEMBER statement in the Subschema Set Description Listing.

Note: You can only define Index Keys after having saved the Index.

1. Double-click the *New* icon available in the *Index Keys* panel.

The following screen is displayed.



2. Select the required Field and click *OK*.

Two extra options are available at the top right of the pop-up window for selecting the required item:

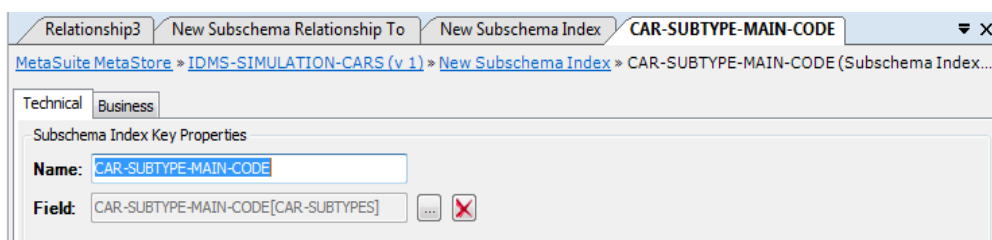
- Show all

When selecting this option, the *Select Item* drop-down list will be deactivated and all available fields for all categories will be displayed underneath.

- Indentation

When selecting this option, all fields displayed will be sorted per structure instead of alphabetically.

The *Subschema Index Key* properties panel is displayed.



3. Fill out the required fields.

Name	The name of the new Index. The Index-set-name is the name of a CA-IDMS set (identified by SET in the Subschema Set Description Listing).
Field	The Index-field-name name of the keyfield for the set, as shown following the MEMBER record name in the Subschema Set Description Listing.

4. Apply your changes.

The Index Key name is added in the *Index Keys* panel.

Business Tab (Subschema Indices)

The fields on the Business Tab are identical for all Subschema data objects (Dictionary File, Record, Field, Relationship and Index). Refer to the section [Business Tab \(Subschema Data Objects\)](#) (page 158) for a description of the fields.

14.6. Business Tab (Subschema Data Objects)

The following fields are available on the Business tab:

- [Business Rule](#) (page 158)
- [Note](#) (page 158)

Note: If you want to enter text in RTF (Rich Text Format), right-click and select *RTF* from the context menu (or use the shortcut *CTRL + R*).

Business Rule

Optional field.

Enter a free-form description for the data object (Dictionary File, Record, Field, Relationship or Index). For example, the business rule or the requirements.

Note

Optional field.

Enter a free-form note for the data object.

CHAPTER 15

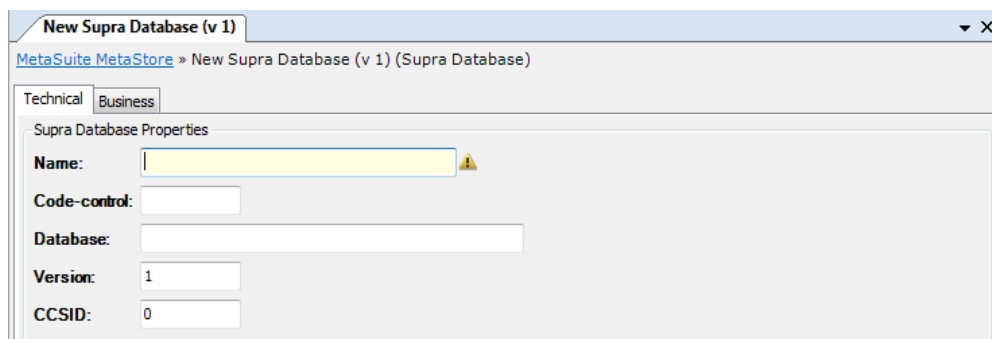
Supra Database

This chapter explains the following actions:

- [Creating the Dictionary File](#) (page 159)
- [Defining Records](#) (page 161)
- [Defining Fields](#) (page 164)
- [Defining Relationships](#) (page 175)

15.1. Creating the Dictionary File

1. In the Tree View Window, right-click the MetaStore root icon and select *Add > Supra Database*. The properties panel is displayed in the Workspace.



Two tabs are available: *Technical* and *Business*.

2. Fill out the required fields.
For a detailed description of the fields, refer to the sections:
 - [Technical Tab \(Supra Databases\)](#) (page 160)
 - [Business Tab \(Supra Data Objects\)](#) (page 179)
3. Apply or discard your changes.
4. Save the changes to the MetaStore Repository.
In the Tree View Window, right-click the new Supra Database and select *Save to MetaStore*.

Note: If you do not save the Supra Database to the MetaStore Repository now, you will be asked whether you want to do this, when you leave the program.

Technical Tab (Supra Databases)

The following fields are available on the Technical tab:

- [Name](#) (page 160)
- [Code-control](#) (page 160)
- [Database](#) (page 160)
- [Version](#) (page 160)
- [CCSID](#) (page 161)

Name

Mandatory field.

The name you enter must meet the following conditions:

- The name may contain up to 32 characters.
- It must begin with an alphabetic character.
- It may contain the characters a-z, A-Z and 0-9.
- It may contain the following special characters: \$, #, @, _ (underscore) and - (hyphen).
- It may not be ended with a - (hyphen).
- File names must be unique in the MetaStore Repository.

Code-control

Optional field.

Code-control Tables contain information about how to process a certain type of data container. Each table element of the code-control table points to a code table in the COBOL Generator Dictionary.

Each data container type has a pre-defined code-control table. If required, this default code-control table can be overwritten. For example: in order to invoke an external I/O module to read or write the file or to expand or compress data.

Note: When the option is used, the selected table must exist in the COBOL Generator Dictionary before programs using the file can be generated.

For more information about code-control tables, refer to the section *Code-control Tables* in the *Generator Manager Guide*.

Database

Enter the name of the corresponding database, if applicable.

Version

Default value = 1

You can change the version number, if required.

When reimporting or recollecting an existing data container, the version will be modified depending on the settings specified in the INI Manager. For more information, refer to the chapter *MetaStore Manager Settings* in the *MetaSuite INI Manager Guide*.

CCSID

Enter the Coded Character Set Identifier.

CCSID is used by IBM as the abbreviation for "Coded Character Set Identifier". It is a 16-bit number that represents a specific encoding of a specific code page.

CCSID is commonly used for the data subtype CHARACTER, in order to distinguish the different character sets per country, language and the character encoding of the system. Despite of the philosophical approach of Unicode, CCSID can also be used on data type NATIONAL.

This CCSID is an enriched property and will not be collected.

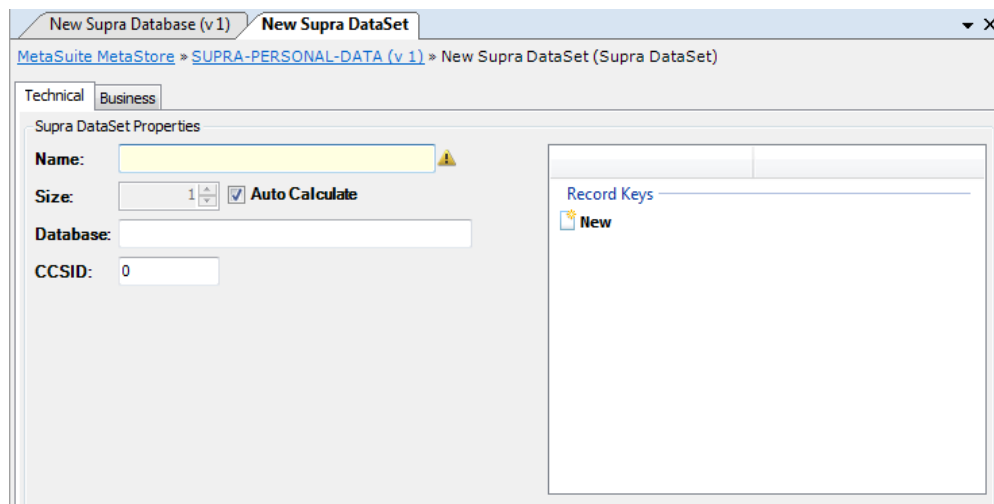
Business Tab (Supra Databases)

The fields on the Business Tab are identical for all Supra data objects (Dictionary File, Record, Field, Relationship and Index). Refer to the section [Business Tab \(Supra Data Objects\)](#) (page 179) for a description of the fields.

15.2. Defining Records

1. In the Tree View Window, right-click the Supra Database you want to define Datasets for and select *Add Supra DataSet*.

The properties panel is displayed in the Workspace.



This screen contains two tabs: *Technical* and *Business*.

2. Fill out the required fields.

For a detailed description of the fields, refer to the sections:

- [Technical Tab \(Supra Datasets\)](#) (page 162)
- [Business Tab \(Supra Data Objects\)](#) (page 179)

3. Save or discard your changes.
4. Save the changes to the MetaStore Repository.
In the Tree View Window, right-click the Supra Database the new Dataset belongs to and select *Save to MetaStore*.

Note: If you do not add the Dataset to the MetaStore Repository now, you will be asked whether you want to do this, when you leave the program.

Technical Tab (Supra Datasets)

The following fields are available on the Technical tab:

- [Name](#) (page 162)
- [Size](#) (page 162)
- [Database](#) (page 162)
- [CCSID](#) (page 163)
- [Record Keys](#) (page 163)

Name

Mandatory field.

The name you enter must meet the following conditions:

- The name may contain up to 32 characters.
- It must begin with an alphabetic character.
- It may contain the characters a-z, A-Z and 0-9.
- It may contain the following special characters: \$, #, @, _ (underscore) and - (hyphen).
- It may not be ended with a - (hyphen).
- File names must be unique in the MetaStore Repository.

Database

Note: This field is specific for each file (sub)type. Refer to the appropriate File Access Guide for more detailed information.

This field is mandatory for IMS Segments. Enter the segment name of the record, as specified in the DBDGEN and PSBGEN statements.

For RDBMS, the Creator Name should be entered in this field.

Size

Mandatory field.

Enter the maximum number of characters included in the record. The value must be an integer and cannot exceed the maximum record size defined for the Dictionary File it belongs to.

Note: If the size is changed manually and it is too small to contain all defined fields, it will be reset by the MetaStore Manager to the smallest size needed to contain all defined fields.

Auto Calculate

If this option is activated, the size will be calculated automatically.

CCSID

Enter the Coded Character Set Identifier.

CCSID is used by IBM as the abbreviation for "Coded Character Set Identifier". It is a 16-bit number that represents a specific encoding of a specific code page.

CCSID is commonly used for the data subtype CHARACTER, in order to distinguish the different character sets per country, language and the character encoding of the system. Despite of the philosophical approach of Unicode, CCSID can also be used on data type NATIONAL.

This CCSID is an enriched property and will not be collected.

Record Keys

Optional field.

This option is used to identify Supra Database identification fields and the specific ranges of values for those key fields.

1. Click the *New* icon available in the *Record Keys* panel.

Note: You can only define Record Keys after having defined Records and Fields for the Dictionary File.

The following screen is displayed.

2. Fill out the name of the new Key.
3. Select the Key Type from the drop-down list.

The following options are available:

- *Access*
- *Storage*

4. Select the required Supra DataSet.

Click the *Browse* button to display the list of all available Subschema Records and click *OK*.

Two extra options are available at the top right of the pop-up window for selecting the required item:

- Show all

When selecting this option, the *Select Item* drop-down list will be deactivated and all available fields for all categories will be displayed underneath.

- Indentation

When selecting this option, all fields displayed will be sorted per structure instead of alphabetically.

5. Enter the Value.

6. Apply your changes.

The new Record Key is added to the *Record Keys* panel.

7. Repeat this action for all Record Keys you want to define.

Business Tab (Supra Datasets)

The fields on the Business Tab are identical for all Supra data objects (Dictionary File, Record, Field, Relationship and Index). Refer to the section [Business Tab \(Supra Data Objects\)](#) (page 179) for a description of the fields.

15.3. Defining Fields

1. In the Tree View Window, right-click the Supra DataSet you want to define new Fields for and select *Add Supra Field*.

The properties panel is displayed in the Workspace.

Two tabs are available: *Technical* and *Business*.

2. Fill out the required fields.

For a detailed description of the fields, refer to the sections:

- [Technical Tab \(Supra Fields\)](#) (page 165)
- [Business Tab \(Supra Data Objects\)](#) (page 179)

Note: Some of the values can also be modified by double-clicking or selecting them from a drop-down list in the Record Fields Window.

3. Save or discard your changes.

4. Save the changes to the MetaStore Repository.

In the Tree View Window, right-click the Supra Database the new Field belongs to and select *Save to MetaStore*.

Note: If you do not add the Field to the MetaStore Repository now, you will be asked whether you want to do this, when you leave the program.

Technical Tab (Supra Fields)

The following fields are available on the Technical tab:

- Properties
 - [Name](#) (page 166)
 - [Size](#) (page 166)
 - [Abs. Position](#) (page 167)
 - [Rel. Position](#) (page 167)
 - [Occurs](#) (page 167)
 - [Occurrence Depending On](#) (page 167)
- Content
 - [Type](#) (page 168)
 - [Decimals](#) (page 169)
 - [Unsigned](#) (page 170)
 - [Separated and Leading](#) (page 170)
 - [Initial](#) (page 170)
 - [Null](#) (page 170)
 - [Code](#) (page 171)
 - [Edit Mask](#) (page 172)
 - [Date Format](#) (page 174)
 - [Low Limit](#) (page 174)
 - [High Limit](#) (page 174)
 - [CCSID](#) (page 175)

Name

Mandatory field.

The name you enter must meet the following conditions:

- The name may contain up to 32 characters.
- It must begin with an alphabetic character.
- It may contain the characters a-z, A-Z and 0-9.
- It may contain the following special characters: \$, #, @, _ (underscore) and - (hyphen).
- It may not be ended with a - (hyphen).
- File names must be unique in the MetaStore Repository.

Size

In the *Size* field, enter an integer indicating the field length as a number of bytes. If the field occurs more than once in the record, this field indicates the length of a single occurrence of the field.

Type	Additional	Size in # Bytes	COBOL
Alphabetic		# characters	PIC A(c) DISPLAY
Character		# characters	PIC X(c) DISPLAY
National		2 x # characters	PIC N(c)
Varchar		# characters	PIC X(c) DISPLAY
Binary	1 <= # digits <= 4	2	PIC S9(n)V9(d) BINARY
	5 <= # digits <= 9	4	PIC S9(n)V9(d) BINARY
	10 <= # digits <= 18	8	PIC S9(n)V9(d) BINARY
Binary Native	1 <= # digits <= 4	2	PIC S9(n)V9(d) COMP-5
	5 <= # digits <= 9	4	PIC S9(n)V9(d) COMP-5
	10 <= # digits <= 18	8	PIC S9(n)V9(d) COMP-5
Bit		1	-
Decimal	Signed / Null-signed	(# digits + 1) / 2	PIC S9(n)V9(d) PACKED-DECIMAL
Float	8 digits of precision	4	COMP-1
	17 digits of precision	8	COMP-2
Hexadecimal		1 byte = 2 hexadecimal digits	PIC X(c) DISPLAY
Numeric		# digits	PIC S9(n)V9(d) DISPLAY
Printed Numeric		# characters in Edit Mask	PIC EditMask DISPLAY
Printed Numeric National		2 x # characters in Edit Mask	PIC EditMask USAGE NATIONAL

Legend:

- c = number of characters
- n = number of integer digits
- d = number of decimal digits
- s = only present when value is signed. This option is not allowed for National.

Note: The Record Layout window shows the default value for the Field within the selected Record. The default value matches the size of the Field, as defined in the Record Fields Window.

Auto Calculate

If this option is activated, the size will be calculated automatically.

Abs. Position

In this field, you may change the Field's starting character position that was calculated automatically by the system. The value entered must be an integer.

Note: If the Record's length is variable, you may not include the four-character record descriptor word when determining the start position of the Field.

Rel. Position

This is the 1-based position of this field within its domed structure (i.e., Record or Group).

- For a field that is not a subfield, the absolute and relative positions are equal.
- For a field x that is a subfield of group g , the relative position will be calculated as $1 + (\text{absolute position of } x) - (\text{absolute position of } g)$.

For example: if group g starts on position 5, and the absolute position of x is also 5, then the relative position of x is $1+5-5 = 1$. In human terms: " x will start on the 1st position of g ".

Auto Calculate

If this option is activated, the size will be calculated automatically.

Occurs

Optional field.

Enter an integer indicating the maximum number of times this field can occur in the record. If you do not define a specific value, the field is assumed to occur once.

Occurrence Depending On

Optional field. Only applies for repeating fields (n).

Select a numeric field that is defined prior to this field within the record.

Results:

- The value you defined with the *Occurs* option represents the *maximum* number of times this field can occur
 - The value available in the selected field represents the *actual* number of times the field occurs.
1. Click the *Browse* button next to the *Occurrence Depending On* text field.
The list of available numeric fields is displayed.
 2. Select the required Field.
The name of the selected Field is displayed in the *Occurrence Depending On* text field.

Note: If you click the Browse button again now, the Properties screen for the selected field will be displayed. If you want to select another field, you first have to delete the current field name from the text field and then click the Browse button.

Type

This field is mandatory and contains the default value *Character*.

There are two general classes of data types: *non-numeric* and *numeric*.

Non-numeric Data Types

Alphabetic	This datatype indicates a field containing strings using the characters A-Z and a-z.
Character	This datatype indicates that the field may contain any possible character within the character set being used (including <i>unprintable</i> characters). It is not possible to perform numeric operations on a Character type field, even when the field contains only digits. Matching RDBMS Data Types: CHAR, BYTE, VARCHAR, VARCHAR2, LONG, RAW, LONGVARCHAR
Graphic	DB2 terminology for Character datatype.
Hexadecimal	This datatype indicates that any hexadecimal characters are allowed within the field.
Long Varchar	This datatype indicates a field containing a variable character string of maximum 2 GB.
National	The National datatype is a subset of Unicode. The character set on which it is based is UTF-16, but restricted to two bytes per character.
Varchar	This datatype indicates a character field allowing the storage of values you need plus one byte for the length.
Vargraphic	DB2 terminology for Varchar datatype.

Numeric Data Types

Binary	This datatype indicates that the field contains a binary numeric value composed of 0's and 1's.
--------	---

Binary Native	This datatype indicates that the field contains binary native numbers. This means that its internal representation depends on the Operating System and/or processor.
Bit	This datatype indicates a field occupying a single bit storage. A BIT type field may only contain the binary values 0 or 1. It is possible to perform numeric operations on a BIT type field.
Byte	This datatype indicates a field occupying a single byte storage. A byte is 8 bits. It is possible to perform numeric operations on a BYTE type field.
Decimal	This datatype indicates a field containing a packed decimal value. Packed decimal is the most commonly used internal numeric data type. Two decimal digits are contained in each byte of a packed decimal number. However, if the number is signed, the last half byte contains a positive or negative sign indicator.
Float	This datatype indicates that the field contains floating-point numbers, encoded in an encoded exponential form.
Numeric	This datatype indicates that any the field contains decimal numbers in a printable character format, this means that a single digit is stored per byte. Leading blanks are not permitted in this field type, nor may it contain editing characters, such as commas or decimal points. Use <i>Printed Numeric</i> in this case. Matching RDBMS Data Types: TINYINT, SMALLINT, INTEGER, BIGINT, DECIMAL, NUMBER, FLOAT
Printed Numeric	This datatype indicates that the character-based field contains a numeric value. The format in which the printed numeric value is displayed must be specified with the EDIT option.
Printed Numeric National	This datatype indicates that this is a National field that contains a numeric value. The format in which the PRN-NATIONAL value is displayed must be specified with the EDIT option.

Decimals

If the field type allows the definition of decimals, this field contains the number of decimals.

Decimals can be entered for the following field types:

- Binary
- Binary Native
- Decimal
- Numeric
- Printed Numeric
- Printed Numeric National

If the field type does not allow the definition of decimals, this field contains the default value 0.

Unsigned

Select the *Unsigned* check box to indicate that a numeric value is not signed, i.e. that it does not contain a sign indicator (+ or -).

This field applies for the following field types:

- Binary
- Binary Native
- Numeric

Note: For Decimal fields, the distinction between unsigned and positive signed INPUT fields is not relevant to the system.

Separated and Leading

These two check boxes allow to define how over-punched and separate sign indicators must be treated. They only apply for the Numeric field type.

There are several possibilities.

If the sign indicator is over-punched in the number, select the *Unsigned* check box above.

- Select *Leading* to put the sign on the initial digit.
- Select *Separate* to put the sign on the last byte (no digit).
- Select *Leading* and *Separate* to put the sign in the initial byte (no digit).

If the Numeric field contains a separate plus or minus sign attached to the number, select the *Separate* check box.

Initial

Optional field.

Enter the initial value for the field.

This value is only taken into account for Target Files. If an initial value was defined for a Source file, this parameter will not affect any operation, except for syntax checking.

For Numeric fields, this is a numeric constant, where the decimal point should be given by a . (point).

For Character fields, this may be an alphanumeric constant (not enclosed by quotes) or the system fields *SYS-LOW-VALUE* or *SYS-HIGH-VALUE*, which correspond to system fields *LOW-VALUE* and *HIGH-VALUE* within COBOL.

Null

This field indicates the nullable status of the field, and whether Inbound or Outbound nulls are used.

Note: If this field is left blank, the default NULLABLE value defined in the MetaSuite dictionary will be applied to this field. For more information, refer to the section *Create Dictionary/Enter License Key* in the *Generator Manager Guide*.

Select the required null-indicator from the drop-down list.

Entry	Description
None	Select this option if no nullability information is known about the field, or when it is of no importance for the field.
Default	Select this option if this field is a NotNull field with a default value. The Default notion is only documentary metadata for a field. The default Nullable value defined in the MetaSuite dictionary will be applied. Refer to the section <i>Create a Dictionary/Enter License Key</i> in the Generator Manager User Guide.
NotNull	Select this option if a Null Value should never be allowed in this field.
InNull	Select this option if a Null Value is allowed in this field. The used value to define a Null value is determined by a default setting in the MetaSuite COBOL Generator. When a Null Value is assigned, the first position or character of the field itself indicates the Null Value (the so called inbound Null). Note: In case of National or PRN-National, the Null Value is indicated by two bytes.
OutNull	Select this option if Null Values are allowed in this field. To store a Null value, an additional placeholder is foreseen in the sequential file that precedes the real field. When a Null value is assigned, this additional placeholder indicates the Null value (the so called left outbound Null). The used value to define a Null value is determined by a default setting in the MetaSuite COBOL Generator. Note: This placeholder contains one byte in order to store the Null indicator, except in case of field type National or PRN-National. In that case the placeholder contains two bytes.
OutNullR	Select this option if Null Values are allowed in this field. To store a Null value, an additional placeholder is foreseen in the sequential file that follows the real field. When a Null value is assigned, this additional placeholder indicates the Null value (the so called right outbound Null). The used value to define a Null value is determined by a default setting in the MetaSuite COBOL Generator. Note: This placeholder contains one byte in order to store the Null indicator, except in case of field type National or PRN-National. In that case the placeholder contains two bytes.

Code

Default value = *No Code*

The following options are available:

Option	Description
Code	This field is treated as a code, not as a number.
No Code	Resets the code operator to zero. Select this option when there is no additional information to be added for the field.
Time	Select this option to define a field that contains TIME information.
Timestamp	Select this option to define a field that contains TIMESTAMP information.

Edit Mask

This field is mandatory for Printed Numeric fields, but optional for other field types. It indicates how the alphanumeric values must be formatted.

Note: When the Edit Mask is set for a printed numeric field, the MetaStore Manager will reset the size of the field to the size that corresponds to the chosen Edit Mask.

Enter the characters defining a Mask in this text field. This Mask will override the default mask for the field. There is a default mask for each field type. Both the default masks and the manually created masks are composed of *Replacement* and *Insertion* characters.

The following table lists the Replacement characters and their meaning. Replacement characters indicate positions in the printed field that may be replaced by (the corresponding types of) characters from the input field.

Replacement Character	Meaning
\$	Floating dollar sign before the first digit, with leading zero suppression
Z	Leading zero suppression
*	Asterisks to replace leading zeros
9	Numeric character
A	Alphabetic character
N	National (2-byte Unicode character set)
X	Character

The following table lists the Insertion characters and their meaning. Insertion characters indicate characters to be printed in addition to those contained in the stored field.

Insertion Character	Meaning
\$	Leading dollar sign
*	Leading asterisk (generally for check protection)
,	Comma (separator for the sake of large number readability or decimal separator depending on the "Decimal Separator" option in the INI file)
.	Decimal point (separator for the sake of large number readability or decimal separator, depending on the "Decimal Separator" option in the INI file)
B	Blank
-	Floating or trailing minus for negative values. Plus is not accepted as valid character. Positive numbers will have a blank as sign character.
+	Floating or trailing plus or minus sign
CR	Trailing credit symbol for negative values only

Insertion Character	Meaning
DB	Trailing debit symbol for negative values
V	Virtual comma

As mentioned above, there is a default Mask for each field type:

Field Type	Default Mask Description
Signed numeric fields	The default mask contains a minus sign as the rightmost character. All negative values are printed with a trailing minus sign.
Numeric fields with decimals	The default mask contains a decimal point and as many digit replacement characters (9s) to the right of the decimal point as are specified by the Decimal option.
Numeric fields	The default mask contains as many digits as its size, without zero suppression.
Date fields	The default mask is its selected date format.
Alphanumeric fields	The default mask contains as many alphanumeric character replacement characters (X) as are required to print the field.

Examples of default masks:

Field Type	Size	Default mask
Signed numeric fields without decimal positions	6	999999-
Signed numeric fields with two decimals	6	9999.99-
Character Field	6	X(6)
Unicode Field	6	N(3)

You may also define customized masks.

Examples:

Field Type	Field Size	Mask	Field value	Printed value
Character	6	XXBXXXX	AB138B	AB 138B
Numeric with 2 decimal positions	2	.99	.35 0 -12	.35 .00 .12
Numeric with 3 minus signs	4	---9	0 -1 210	0 -1 210

Field Type	Field Size	Mask	Field value	Printed value
Numeric with 3 plus signs	4	+++9	0	+0
			-1	-1
			210	210

Date Format

If the field must contain a date, select the required date format from the drop-down list. The system automatically validates date fields whenever they are referenced in a MetaMap model, and automatically converts date fields whenever they are compared to another date or used in a calculation. In all the available formats, YY or YYYY stands for the year and MM stands for the month. DD stands for the day within a month and DDD stands for the day within the year.

When the format contains a '?', this indicates the date delimiter that is used. Data formats with a '?' are only supported for Character and Varchar field types. When the data format does not contain a '?', the different parts in the date are not delimited by a special character.

The Date Format list is accessible for the following field types:

- Binary
- Binary Native
- Character
- Decimal
- Numeric
- National
- Varchar

Note: When a date format is chosen, MetaStore Manager will reset the size of the field to the size that corresponds to the chosen date format.

Low Limit

Optional field.

When a *Low Limit* is specified, you must define a value in the *High Limit* field as well.

You may use this field to define a minimum value for this field. If a lower value is encountered, the system will consider the data invalid.

High Limit

Optional field.

When a *High Limit* is specified, you must define a value in the *Low Limit* field as well. You may use this field to define a maximum value for this field. If a higher value is encountered, the system will consider the data invalid.

CCSID

Enter the Coded Character Set Identifier.

CCSID is used by IBM as the abbreviation for "Coded Character Set Identifier". It is a 16-bit number that represents a specific encoding of a specific code page.

CCSID is commonly used for the data subtype CHARACTER, in order to distinguish the different character sets per country, language and the character encoding of the system. Despite of the philosophical approach of Unicode, CCSID can also be used on data type NATIONAL.

This CCSID is an enriched property and will not be collected.

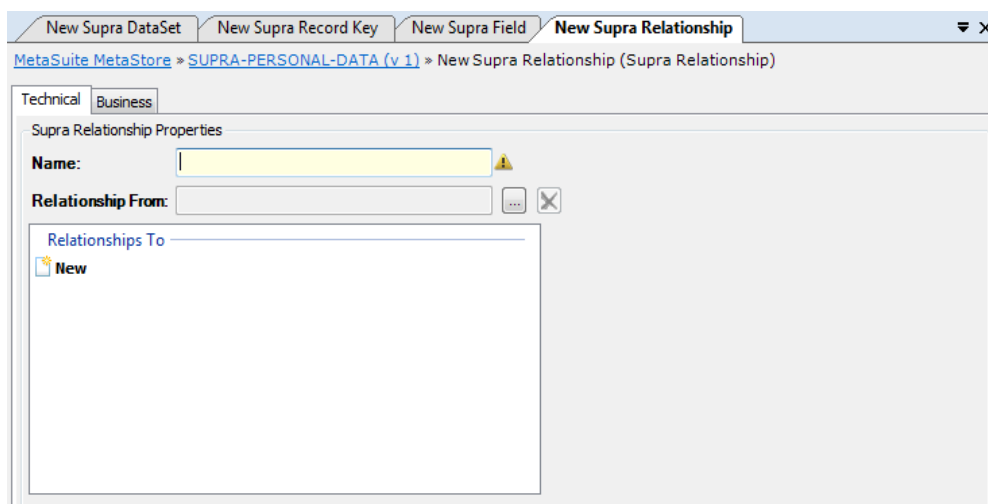
Business Tab (Supra Fields)

The fields on the Business Tab are identical for all Supra data objects (Dictionary File, Record, Field, Relationship and Index). Refer to the section [Business Tab \(Supra Data Objects\)](#) (page 179) for a description of the fields.

15.4. Defining Relationships

1. In the Tree View Window, right-click the Supra Database you want to define Relationships for and select *Add Supra Relationship*.

The properties panel is displayed in the Workspace.



Each LINK definition relates two MetaSuite (Supra Database) records to one another. The "basis" of the link is a field in one record (the "from" record, so called because data is taken from that record and used to locate the other record) and a descriptor in the other (the "to" record, so called because the descriptor leads to that record).

Two tabs are available: *Technical* and *Business*.

2. Fill out the required fields.

For a detailed description of the fields, refer to the sections:

- [Technical Tab \(Supra Relationships\)](#) (page 176)
- [Business Tab \(Supra Data Objects\)](#) (page 179)

3. Save or discard your changes.
4. Save the changes to the MetaStore Repository.
In the Tree View Window, right-click the Supra Database and select *Save to MetaStore*.

Note: If you do not save the Relationship to the MetaStore Repository now, you will be asked whether you want to do this, when you leave the program.

Technical Tab (Supra Relationships)

The following fields are available on the Technical tab:

- [Name](#) (page 176)
- [Relationship From](#) (page 176)
- [Relationships To](#) (page 178)

Name

Mandatory field.

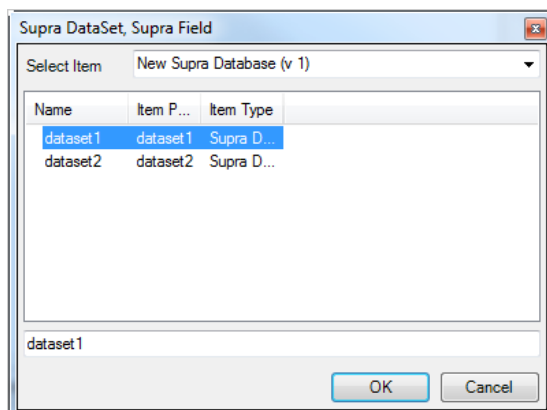
The name you enter must meet the following conditions:

- The name may contain up to 32 characters.
- It must begin with an alphabetic character.
- It may contain the characters a-z, A-Z and 0-9.
- It may contain the following special characters: \$, #, @, _ (underscore) and - (hyphen).
- It may not be ended with a - (hyphen).
- File names must be unique in the MetaStore Repository.

Relationship From

Mandatory field.

1. Fill out the name of the new Relationship key.
2. Click the *Browse* button next to the *Relationship From* text field.
The following screen is displayed:



3. Select the required File Group or File and click OK.

Two extra options are available at the top right of the pop-up window for selecting the required item:

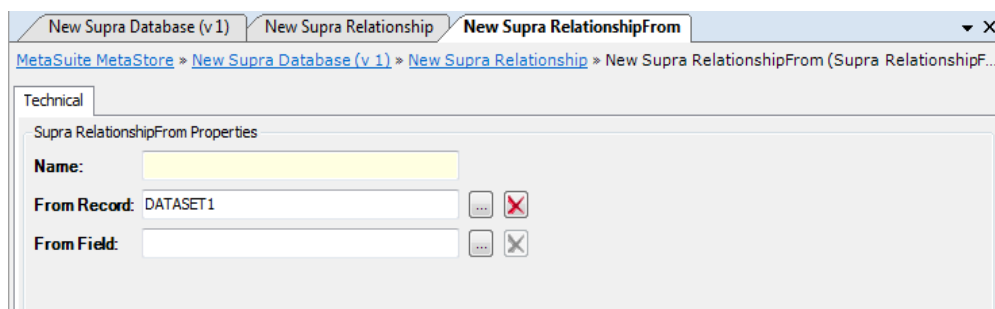
- Show all

When selecting this option, the *Select Item* drop-down list will be deactivated and all available fields for all categories will be displayed underneath.

- Indentation

When selecting this option, all fields displayed will be sorted per structure instead of alphabetically.

The *Supra Relationship From* properties panel is displayed.



4. Fill out the required fields.

Name	The name of the new Relationship
From Record	In order to define a particular relationship between two records, the user has to specify the first record of the relationship in the <i>From Record</i> field.
From Field	The matching field of the <i>From Record</i> .

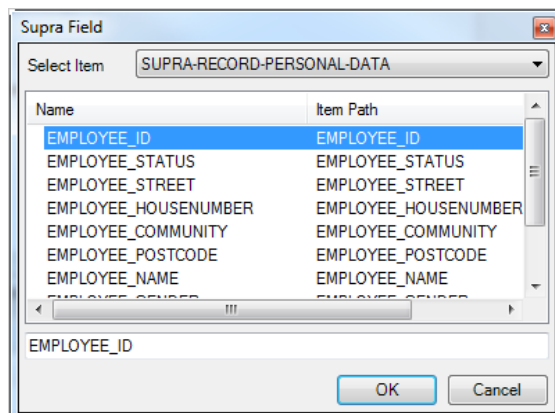
Note: You can use the *Browse* button to display the list of available items.

5. Apply your changes.
The name will be displayed in the *Relationship From* field.

Relationships To

1. Double-click the *New* icon available in the *Relationships To* text zone.

The following screen is displayed:



2. Select the required DataSet and click OK.

Two extra options are available at the top right of the pop-up window for selecting the required item:

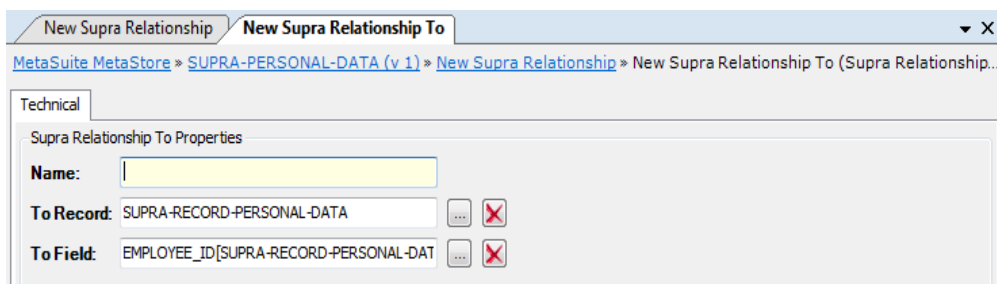
- Show all

When selecting this option, the *Select Item* drop-down list will be deactivated and all available fields for all categories will be displayed underneath.

- Indentation

When selecting this option, all fields displayed will be sorted per structure instead of alphabetically.

The *Supra Relationship To* properties panel is displayed.



3. Fill out the required fields.

Name	The name of the new Relationship
To Record	In order to define a particular relationship between two records, the user has to specify the second record of the relationship in the <i>To Record</i> field.
To Field	The matching field of the <i>To Record</i> .

Note: You can use the *Browse* button to display the list of available items.

4. Apply your changes.

The relationship key name is added in the *Relationships To* panel.

Business Tab (Supra Relationships)

The fields on the Business Tab are identical for all Supra data objects (Dictionary File, Record, Field, Relationship and Index). Refer to the section [Business Tab \(Supra Data Objects\)](#) (page 179) for a description of the fields.

15.5. Business Tab (Supra Data Objects)

The following fields are available on the Business tab:

- [Business Rule](#) (page 179)
- [Note](#) (page 179)

Note: If you want to enter text in RTF (Rich Text Format), right-click and select *RTF* from the context menu (or use the shortcut *CTRL + R*).

Business Rule

Optional field.

Enter a free-form description for the data object (Dictionary File, Record, Field, Relationship or Index). For example, the business rule or the requirements.

Note

Optional field.

Enter a free-form note for the data object.

Collecting Dictionary Files

Collecting Source and Target Dictionary Files means to capture File Definitions. This capture can be done in several ways:

- directly from the database catalog via an ODBC connection
- from a text file describing the records structures in one of the supported languages or formats.

For captures using a text file, the following formats are supported:

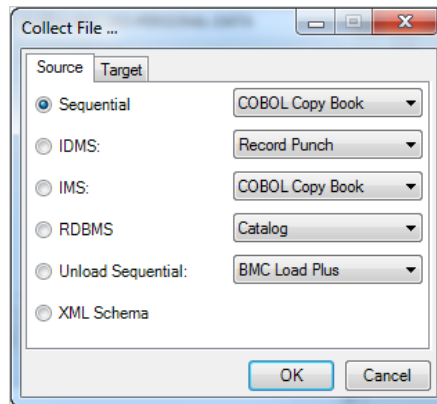
- COBOL Copy Book
- PL/I Include Book
- IDMS schema and IDMS record
- SAP DMI
- DB2 DDL

During the collection process, MetaStore also generates the required load and unload scripts for various RDBMSs.

Note: The File collection process can be customized using the INI Manager. Refer to the *INI Manager User Guide* for more information.

16.1. Accessing the Collect File Screen

1. On the MetaStore Toolbar, click the *Collect File* button.
The following screen appears.



Note: You can also select the *Collect File* option on the *File* menu or use the *MetaStore* context menu in the Tree View Window.

The *Collect File* screen contains two tabs:

- the *Source* tab (for collecting Source Dictionary Files)
See [Source Dictionary Files](#) on page 183.
- the *Target* tab (for collecting Target Dictionary Files)
See [Target Dictionary Files](#) on page 212.

2. Select the *Source* tab.

This tab allows you to start collecting a Source Dictionary File.

- The options on the left match the File Types that can be used as Data Sources in MetaSuite.
- The drop-down lists on the right match the supported formats for each supported Data Source.

The following table gives an overview of the possible selections:

File Type	Supported Formats
Sequential	<ul style="list-style-type: none"> • COBOL Copy Book • PL/I Include Book
IDMS	<ul style="list-style-type: none"> • Record Punch • Schema Punch
IMS	<ul style="list-style-type: none"> • COBOL Copy Book • PL/I Include Book
RDBMS	<ul style="list-style-type: none"> • Catalog • SQL DDL • DB2 pureXML

File Type	Supported Formats
Unload Sequential	<ul style="list-style-type: none"> • BMC Load Plus • BMC UNLOAD PLUS for DB2 • INGRESS • MS-ACCESS • SESAM
XML Schema	XSD (standard XML Schema Description Language)

3. Select the Target tab.

This tab allows you start collecting a Target Dictionary File.

- The options on the left match the File Types that can be used as Data Targets in MetaSuite.
- The drop-down lists on the right match the supported formats for each supported Data Target.

The following table gives an overview of the possible selections:

File Type	Supported Formats
Load Sequential	<ul style="list-style-type: none"> • BMC Load Plus • BMC UNLOAD PLUS for DB2 • CA Fast Unload for DB2 for z/OS • DB2 for OS/400 • DB2 for z/OS • DB2 LUW • Teradata • SAP/R3-DMI 3.1 • SAP/R3-DMI 4.0
Load Delimited	<ul style="list-style-type: none"> • Adabas D • DB2 LUW • Informix • Oracle • Red Brick • SQL Server • Sybase
Load RDBMS	<ul style="list-style-type: none"> • Catalog • DB2 DDL

4. Select the required File Type and Format from the matching drop-down list.

5. Click OK.

The rest of the procedure depends on your selection. Refer to the sections matching your selection.

Source Dictionary Files

A Source Dictionary File describes the metadata for the logical unit of data from which data will be extracted (data source).

The metadata describe both the physical and business characteristics of the Dictionary File. A Dictionary File contains subordinate objects, such as the underlying Records, Fields, Relationships and Indices.

17.1. File Type - Sequential

Supported File Types:

- COBOL Copy Book
- PL/I Include Book

Procedure

1. On the *Collect File* screen, open the *Source* tab and select *Sequential* as File Type.
See [Accessing the Collect File Screen](#) on page 181.
2. Select the required format (COBOL Copy Book or PL/I Include Book) and click OK.
The default folder (as defined in the MetaSuite.ini file) opens in a new window and displays the available COBOL Copy Books (extension *.cbl*) or PL/I Include Books (extension *.pli*).

Note: If the COBOL Copy Book or PL/I Include Book you need is not available in this folder, browse to the required folder.

3. Select the required COBOL Copy Book or PL/I Include Book and click *Open*.

The following screen is displayed.

The screenshot shows a dialog box titled '(employee)'. It contains the following fields and controls:

- Prefix:** A text box containing 'employee'.
- Dictionary File Name (for the ADD FILE Statement):** A text box containing 'employee'.
- File Type:** A dropdown menu set to 'Sequential'.
- File Description Size:** A text box set to '204'.
- Block Size:** A text box set to '204'.
- Recording Mode:** A dropdown menu set to 'Native'.
- Column Separator:** A text box containing ':'.
- Code-control Table Name:** A text box.
- External Source:** A text box.
- Remarks:** A large text area.
- Key Field:** A dropdown menu.
- Record Format:** A dropdown menu set to 'Fixed'.
- Spanned:** An unchecked checkbox.
- Label:** A dropdown menu set to 'Standard'.
- Row Terminator:** A text box.
- Database:** A text box.
- Buttons:** 'OK' and 'Cancel' buttons at the bottom right.

4. Fill out the required fields and click OK.

Refer to the section [Description of the Available Fields](#) (page 184) for a detailed description of each field. The COBOL Copy Book or PL/I Include Book is collected and the matching Dictionary File Definition is displayed in the Tree View Window.

5. If required, edit the definitions.

The procedure to edit the definitions is identical to building Dictionary Files manually. See [Building Dictionary Files Manually - Overview](#) on page 20.

6. Once the settings of the Dictionary File match your requirements, you can save it to the MetaStore.

Click the *Save to MetaStore* icon () to do so.

Description of the Available Fields

- [Prefix, Separator and Dictionary File Name](#) (page 185)
- [File Type](#) (page 185)
- [Key Field](#) (page 185)
- [File Description Size](#) (page 185)
- [Record Format](#) (page 186)
- [Block Size](#) (page 186)
- [Spanned](#) (page 186)
- [Recording Mode](#) (page 186)
- [Label](#) (page 186)
- [Column Separator](#) (page 187)
- [Row Terminator](#) (page 187)
- [Code-control Table Name](#) (page 187)

- [Database](#) (page 187)
- [External Source](#) (page 187)
- [Remarks](#) (page 188)

Prefix, Separator and Dictionary File Name

In the three fields at the top of the screen, you can enter the prefix, the separator character and the Dictionary File Name:

- The prefix will be placed in front of all Objects (file, records and fields) in order to facilitate its identification. Its maximum length is 8 characters.
- The Separator character will be placed between the defined prefix and the Dictionary File name.
- A default name for the Dictionary File is automatically filled it. You can however define another name.

Note: For Dictionary Files of type *Unload Sequential* the characters `_F` are appended to the default name in order to preserve name uniqueness.

The total length of prefix, separator and filename may not exceed 32 characters.

File Type

Select the required File Type from the drop-down list. Its default value is set to *Sequential*.

The following options are available:

- ADABAS
- Delimited
- Function
- Index
- Line Sequential
- Record Sequential
- Relative
- Sequential
- VSAM

Key Field

If required, select the Key Field for the Dictionary File from the drop-down list. Fields occurring more than once are omitted from the list. The field names are listed in alphabetical order. Their names are concatenated with the names of containing fields or records.

File Description Size

In this field, enter the maximum record size. This corresponds to the Input-Output buffer size.

The value entered must be at least the size of the largest record within the file definition.

Record Format

Select the required format from the drop-down list.

The following options are available:

- *Fixed*: Select this option if the records of the file have all the same length. This size, expressed as a number of characters, is defined in the *File Description Size* field.
- *Undefined*: Select this option if the records in the file are no standard variable length records. Record descriptor words, which are standard for variable-length records, are not maintained at the start of each undefined record. Instead, the applications accessing the file determine the record size using other criteria. It is not possible to select this option together with the *Block Size* option. In this case, the record size defined in the following field defines the maximum number of characters contained in any record belonging to the file.
- *Variable*: Select this option if the file contains records of different sizes. The record size defined in the *File Description Size* field matches in this case the maximum record length (in number of characters)

Block Size

In this field, you may enter the block size. It may not be smaller than the value defined in the *File Description Size* field.

Spanned

Select this check box if the variable-length records may "span" two or more blocks.

This option is only applicable if the Record Format is set to *Variable*, the *Block Size* is greater than the *File Description Size*, and the subtype is index, relative or sequential.

Recording Mode

Select the required recording mode from the drop-down list.

The following options are available:

- Native
- ASCII
- EBCDIC

Label

Select the required label from the drop-down list.

The following options are available:

Option	Description
Standard	Select <i>Standard</i> if the file has standard label records. A file label contains information such as the creation date and the length of the file.
Omit	Select <i>Omit</i> if the file does not contain label records.

Column Separator

This field contains the default Column Separator for Standard Files, if defined on the *MetaMap Manager Settings* tab of the MetaSuite INI Manager. For more information, refer to the chapter *Customizing the MetaSuite INI Settings* in the *Install and Setup Guide*.

You can enter another character in this field in order to override the default Column Separator for this file.

Row Terminator

This field contains the default Row Terminator for Standard Files, if defined on the MetaMap Manager Settings tab of the MetaSuite INI Manager. For more information, refer to the chapter *Customizing the MetaSuite INI Settings* in the *Install and Setup Guide*.

You can enter another character (sequence) in the field in order to override the default Row Terminator for this file.

Code-control Table Name

When a MetaSuite Model is generated into COBOL Source Code, this operation is performed with standard Code-control Tables.

It is possible to use a customized Code-control table instead, by entering its name in this field.

If the table name is a three-letter word, the Code-control parameter will be suffixed with INP.

Example:

Code-control XML will become XMLINP, and Code-control MQS will become MQSINP.

More information about code-control tables can be found in the *Generator Manager Guide*.

Database

Not relevant here. This information will be ignored.

External Source

Optional field.

You can use it in the two following situations:

- You want to define a link between the *file-name* definition in MetaSuite and the physical file name on disk. The physical file name will be used automatically in the generated job.
- You want to indicate that there is no direct access to the data source. The data source might be remote, or there is need to copy or transform the source file via a simple copy or via a transformation tool. In this case the file, specified by the *EXTERNAL-SOURCE* parameter is the file that has to be transferred or copied to the local area. The local input file will have the name indicated by *file-name*.

This parameter will be processed in the customizable MRL Tables. By default, MetaSuite will use the following conversion rules:

External Source Name	Meaning
STD:Filename	This file name will be taken as input file. (This is the first method of using EXTERNAL-SOURCE)
FTP:Filename	The file will be downloaded via the FTP protocol.
CPY:Filename	A file copy will be done from this file to the standard file.

Note: The External Source parameter is not supported yet on every platform. UNIX and Windows are fully supported. OS390 supports the STD type. Please contact the MetaSuite support team if you want to use this option on another platform.

Remarks

In this field, enter your remarks to the Dictionary File. They will be stored as Business Rule in the MetaStore.

17.2. File Type - IDMS

Supported File Types:

- Record Punch
- Schema Punch

Procedure

1. On the *Collect File* screen, open the *Source* tab and select *IDMS* as File Type.
See [Accessing the Collect File Screen](#) on page 181.
2. Select the required format (Record Punch or Schema Punch) and click *OK*.
The default folder (as defined in the MetaSuite.ini file) opens in a new window and displays the available Record Punches (extension *.cpy* and *.txt*) or Schema Punches (extension *.sch*).

Note: If the Record Punch or Schema Punch you need is not available in this folder, browse to the required folder.

3. Select the required Record Punch or Schema Punch and click *Open*.

The following screen is displayed.

The screenshot shows a dialog box titled '(employee)'. It contains the following fields and controls:

- Prefix:** A text box containing 'employee'.
- Dictionary File Name (for the ADD FILE Statement):** A text box containing 'employee'.
- File Type:** A dropdown menu set to 'Sequential'.
- Key Field:** A dropdown menu.
- File Description Size:** A text box containing '204'.
- Record Format:** A dropdown menu set to 'Fixed'.
- Block Size:** A text box containing '204'.
- Spanned:** An unchecked checkbox.
- Recording Mode:** A dropdown menu set to 'Native'.
- Label:** A dropdown menu set to 'Standard'.
- Column Separator:** A text box containing ':'.
- Row Terminator:** A text box.
- Code-control Table Name:** A text box.
- Database:** A text box.
- External Source:** A text box.
- Remarks:** A large text area.
- Buttons:** 'OK' and 'Cancel' buttons at the bottom right.

4. Fill out the required fields and click OK.

Refer to the section [Description of the Available Fields](#) (page 189) for a detailed description of each field. The Record Punch or Schema Punch is collected and the matching Dictionary File Definition is displayed in the Tree View Window.

5. If required, edit the definitions.

The procedure to edit the definitions is identical to building Dictionary Files manually. See [Building Dictionary Files Manually - Overview](#) on page 20.

6. Once the settings of the Dictionary File match your requirements, you can save it to the MetaStore.

Click the *Save to MetaStore* icon () to do so.

Description of the Available Fields

- [Prefix, Separator and Dictionary File Name](#) (page 190)
- [File Type](#) (page 190)
- [Key Field](#) (page 190)
- [File Description Size](#) (page 190)
- [Record Format](#) (page 191)
- [Block Size](#) (page 191)
- [Spanned](#) (page 191)
- [Recording Mode](#) (page 191)
- [Label](#) (page 191)
- [Column Separator](#) (page 192)
- [Row Terminator](#) (page 192)
- [Code-control Table Name](#) (page 192)

- [Database](#) (page 192)
- [External Source](#) (page 192)
- [Remarks](#) (page 193)

Prefix, Separator and Dictionary File Name

In the three fields at the top of the screen, you can enter the prefix, the separator character and the Dictionary File Name:

- The prefix will be placed in front of all Objects (file, records and fields) in order to facilitate its identification. Its maximum length is 8 characters.
- The Separator character will be placed between the defined prefix and the Dictionary File name.
- A default name for the Dictionary File is automatically filled it. You can however define another name.

Note: For Dictionary Files of type *Unload Sequential* the characters `_F` are appended to the default name in order to preserve name uniqueness.

The total length of prefix, separator and filename may not exceed 32 characters.

File Type

Select the required File Type from the drop-down list. Its default value is set to *Sequential*.

The following options are available:

- ADABAS
- Delimited
- Function
- Index
- Line Sequential
- Record Sequential
- Relative
- Sequential
- VSAM

Key Field

If required, select the Key Field for the Dictionary File from the drop-down list. Fields occurring more than once are omitted from the list. The field names are listed in alphabetical order. Their names are concatenated with the names of containing fields or records.

File Description Size

In this field, enter the maximum record size. This corresponds to the Input-Output buffer size.

The value entered must be at least the size of the largest record within the file definition.

Record Format

Select the required format from the drop-down list.

The following options are available:

- *Fixed*: Select this option if the records of the file have all the same length. This size, expressed as a number of characters, is defined in the *File Description Size* field.
- *Undefined*: Select this option if the records in the file are no standard variable length records. Record descriptor words, which are standard for variable-length records, are not maintained at the start of each undefined record. Instead, the applications accessing the file determine the record size using other criteria. It is not possible to select this option together with the *Block Size* option. In this case, the record size defined in the following field defines the maximum number of characters contained in any record belonging to the file.
- *Variable*: Select this option if the file contains records of different sizes. The record size defined in the *File Description Size* field matches in this case the maximum record length (in number of characters)

Block Size

In this field, you may enter the block size. It may not be smaller than the value defined in the *File Description Size* field.

Spanned

Select this check box if the variable-length records may "span" two or more blocks.

This option is only applicable if the Record Format is set to *Variable*, the *Block Size* is greater than the *File Description Size*, and the subtype is index, relative or sequential.

Recording Mode

Select the required recording mode from the drop-down list.

The following options are available:

- Native
- ASCII
- EBCDIC

Label

Select the required label from the drop-down list.

The following options are available:

Option	Description
Standard	Select <i>Standard</i> if the file has standard label records. A file label contains information such as the creation date and the length of the file.
Omit	Select <i>Omit</i> if the file does not contain label records.

Column Separator

This field contains the default Column Separator for Standard Files, if defined on the *MetaMap Manager Settings* tab of the MetaSuite INI Manager. For more information, refer to the chapter *Customizing the MetaSuite INI Settings* in the *Install and Setup Guide*.

You can enter another character in this field in order to override the default Column Separator for this file.

Row Terminator

This field contains the default Row Terminator for Standard Files, if defined on the MetaMap Manager Settings tab of the MetaSuite INI Manager. For more information, refer to the chapter *Customizing the MetaSuite INI Settings* in the *Install and Setup Guide*.

You can enter another character (sequence) in the field in order to override the default Row Terminator for this file.

Code-control Table Name

When a MetaSuite Model is generated into COBOL Source Code, this operation is performed with standard Code-control Tables.

It is possible to use a customized Code-control table instead, by entering its name in this field.

If the table name is a three-letter word, the Code-control parameter will be suffixed with INP.

Example:

Code-control XML will become XMLINP, and Code-control MQS will become MQSINP.

More information about code-control tables can be found in the *Generator Manager Guide*.

Database

Enter the name of the corresponding database.

External Source

Optional field.

You can use it in the two following situations:

- You want to define a link between the *file-name* definition in MetaSuite and the physical file name on disk. The physical file name will be used automatically in the generated job.
- You want to indicate that there is no direct access to the data source. The data source might be remote, or there is need to copy or transform the source file via a simple copy or via a transformation tool. In this case the file, specified by the *EXTERNAL-SOURCE* parameter is the file that has to be transferred or copied to the local area. The local input file will have the name indicated by *file-name*.

This parameter will be processed in the customizable MRL Tables. By default, MetaSuite will use the following conversion rules:

External Source Name	Meaning
STD:Filename	This file name will be taken as input file. (This is the first method of using EXTERNAL-SOURCE)
FTP:Filename	The file will be downloaded via the FTP protocol.
CPY:Filename	A file copy will be done from this file to the standard file.

Note: The External Source parameter is not supported yet on every platform. UNIX and Windows are fully supported. OS390 supports the STD type. Please contact the MetaSuite support team if you want to use this option on another platform.

Remarks

In this field, enter your remarks to the Dictionary File. They will be stored as Business Rule in the MetaStore.

17.3. File Type - IMS

Supported File Types:

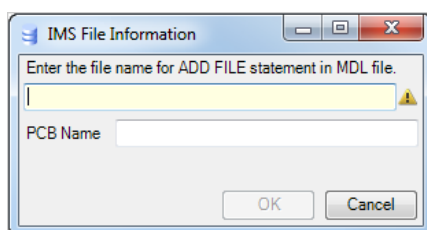
- COBOL Copy Book
- PL/I Include Books

Procedure

1. On the *Collect File* screen, open the *Source* tab and select *IMS* as File Type.
See [Accessing the Collect File Screen](#) on page 181.
2. Select the required format (COBOL Copy Book or PL/I Include Book) and click *OK*.
The default folder (as defined in the MetaSuite.ini file) opens in a new window and displays the available COBOL Copy Books or PL/I Include Books.

Note: If the COBOL Copy Book or PL/I Include Book you need is not available in this folder, browse to the required folder.

3. Select the required COBOL Copy Book or PL/I Include Book and click *Open*.
The following screen is displayed.



4. Fill out the required fields and click OK.

Refer to the section [Description of the Available Fields](#) (page 194) for a detailed description of each field. The COBOL Copy Book or PL/I Include Book is collected and the matching Dictionary File Definition is displayed in the Tree View Window.

5. If required, edit the definitions.

The procedure to edit the definitions is identical to building Dictionary Files manually. See [Building Dictionary Files Manually - Overview](#) on page 20.

6. Once the settings of the Dictionary File match your requirements, you can save it to the MetaStore.

Click the *Save to MetaStore* icon () to do so.

Description of the Available Fields

- [File Name](#) (page 194)
- [PCB Name](#) (page 194)

File Name

File name for the ADD FILE command, reference name for the program.

PCB Name

Program view of the database (program communication block).

17.4. File Type - RDBMS

Supported File Types:

- Catalog
- SQL DDL
- DB2 pureXML (not supported yet)

Procedures

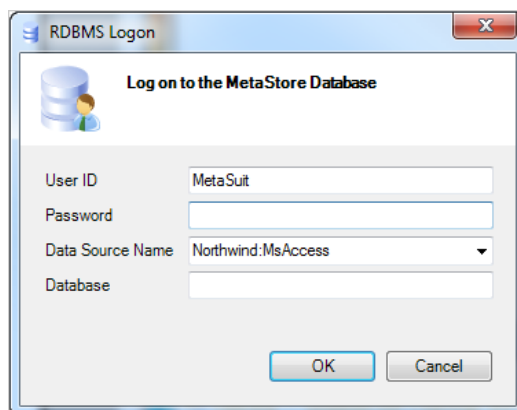
- [Catalog](#) (page 194)
- [SQL DDL](#) (page 197)

Catalog

1. On the *Collect File* screen, open the *Source* tab and select *RDBMS* as File Type. See [Accessing the Collect File Screen](#) on page 181.

2. Select *Catalog* as supported format and click *OK*.

The *RDBMS Logon* screen is displayed.



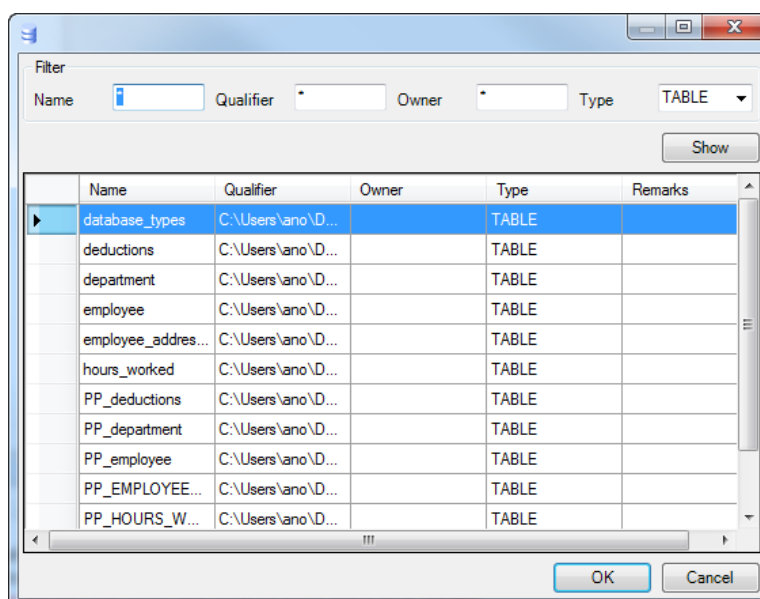
The RDBMS Logon dialog box is titled "Log on to the MetaStore Database". It contains four input fields: "User ID" with the value "MetaSuit", "Password" (empty), "Data Source Name" with a dropdown menu showing "Northwind:MsAccess", and "Database" (empty). At the bottom are "OK" and "Cancel" buttons.

3. Fill out the required fields and click *OK*.

Field	Description
User ID	Enter your User Name to get access to the database. The User ID displayed in this field is the default User ID defined in <code>Metasuite.ini</code> .
Password	Enter your password.
Data Source Name	Enter the required DSN. The DSN displayed in this field is the default DSN defined in <code>Metasuite.ini</code> .
Database	Enter the name of the database.

Note: If required, make the necessary selections to obtain the ODBC connection.

Once the ODBC connection is established, the following screen is displayed.



The screen shows a table selection interface. At the top, there is a "Filter" section with fields for "Name", "Qualifier", "Owner", and "Type" (set to "TABLE"). A "Show" button is to the right. Below is a table listing database tables:

	Name	Qualifier	Owner	Type	Remarks
▶	database_types	C:\Users\ano\D...		TABLE	
	deductions	C:\Users\ano\D...		TABLE	
	department	C:\Users\ano\D...		TABLE	
	employee	C:\Users\ano\D...		TABLE	
	employee_addres...	C:\Users\ano\D...		TABLE	
	hours_worked	C:\Users\ano\D...		TABLE	
	PP_deductions	C:\Users\ano\D...		TABLE	
	PP_department	C:\Users\ano\D...		TABLE	
	PP_employee	C:\Users\ano\D...		TABLE	
	PP_EMPLOYEE...	C:\Users\ano\D...		TABLE	
	PP_HOURS_W...	C:\Users\ano\D...		TABLE	

At the bottom are "OK" and "Cancel" buttons.

4. In the upper part of the screen, define your selection criteria and click *Show*.
The lower part of the screen will list the Tables and/or Views matching your selection criteria.

Selection Criterium	Description
Name	Enter a Table or View name in this field, if you want to limit your search to tables or views with this name. You may use the asterisk (*) and the question mark (?) as standard wildcard characters.
Qualifier	Enter a Qualifier in this field, if you want to limit your search to tables or views with this Qualifier. You may use the asterisk (*) and the question mark (?) as standard wildcard characters.
Owner	Enter a User ID in this field, if you want to limit your search to tables or views owned by this User ID. You may use the asterisk (*) and the question mark (?) as standard wildcard characters.
Type	Select one of the following types: <ul style="list-style-type: none"> • TABLE: include database tables in your search. • VIEW: include database views in your search. • BOTH: include both database tables and views in your search.

Note: *Owner* and *Qualifier* are ODBC terms. The meaning of these terms can differ between different databases or different ODBC drivers. Some drivers return an error when you enter a search string for Owner or Qualifier or some return no tables.

If you encounter problems when entering search criteria for Owner or Qualifier, try entering only an asterisk.

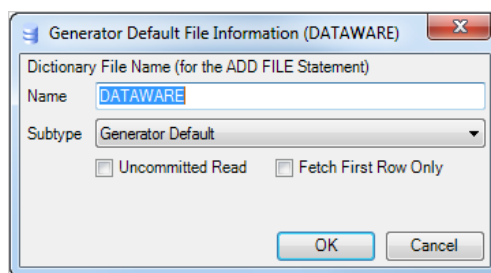
If the User ID you used to access the database does not have the required access rights to some or all Tables or Views, these Tables and Views will not be displayed.

- Select the Table(s) and View(s) you want to include and click **OK**.

Note: If you want to select multiple adjacent items, click the first and the last item while pressing the *Shift* Key.

If you want to select multiple non-adjacent items, click the items while pressing the *Ctrl* Key.

The following screen is displayed.



- Fill out the required fields and click **OK**.

The following fields are available:

Field	Description
Name	Enter the Dictionary File Name for the ADD FILE statement in MDL-file.
Subtype	Select the required SubType from the drop-down list. You can also select <i>Generator Default</i> to use the SQL dialect set as default in the Generator Manager.

Field	Description
Uncommitted Read	(DB2 only) Select this check box, if you want to perform a so-called dirty read. This means reading data without checking if the data has been locked or not.
Fetch First Row Only	(DB2 only) Select this check box, if you want to read only the first row, if different rows contain the same key.

The Dictionary File Definition is displayed in the Tree View Window.

7. If required, edit the definitions.

The procedure to edit the definitions is identical to building Dictionary Files manually. See [Building Dictionary Files Manually - Overview](#) on page 20.

8. Once the settings of the Dictionary File match your requirements, you can save it to the MetaStore.

Click the *Save to MetaStore* button () to do so.

SQL DDL

1. On the *Collect File* screen, open the *Source* tab and select *RDBMS* as File Type. See [Accessing the Collect File Screen](#) on page 181.

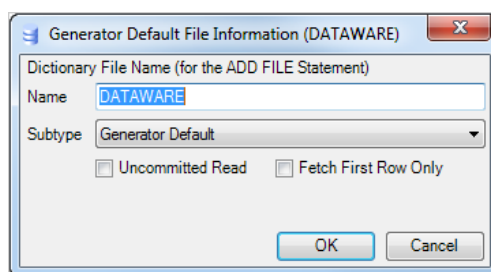
2. Select *SQL DDL* as supported format and click *OK*.

The default folder (as defined in the *MetaSuite.ini* file) opens in a new window and displays the available SQL DDLs (extension *.ddl*).

Note: If the DDL you need is not available in this folder, browse to the required folder.

3. Select the required DDL and click *Open*.

The following screen is displayed.



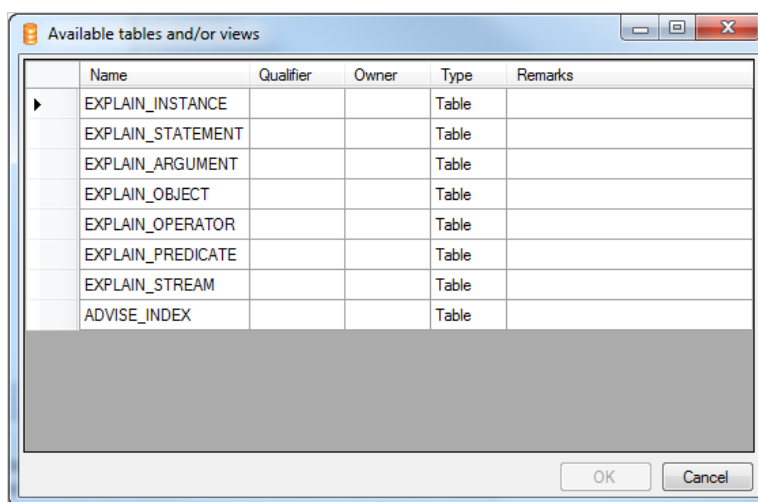
4. Fill out the required fields and click *OK*.

The following fields are available:

Field	Description
Name	Enter the Dictionary File Name for the ADD FILE statement in MDL-file.
Subtype	Select the required SubType from the drop-down list. You can also select <i>Generator Default</i> to use the SQL dialect set as default in the Generator Manager.
Uncommitted Read	(DB2 only) Select this check box, if you want to perform a so-called dirty read. This means reading data without checking if the data has been locked or not.
Fetch First Row Only	(DB2 only) Select this check box, if you want to read only the first row, if different rows contain the same key.

The screen listing the available Tables and Views is displayed.

- Select the Table(s) and View(s) you want to include in the new Dictionary File and click OK.



The screen lists the Tables and Views belonging to the selected Database.

If you want to select multiple adjacent items, click the first and the last item while pressing the Shift Key.

If you want to select multiple non-adjacent items, click the items while pressing the Ctrl Key.

The Dictionary File for each selected Table or Views is displayed in the Tree View Window.

- If required, edit the definitions.

The procedure to edit the definitions is identical to building Dictionary Files manually. See [Building Dictionary Files Manually - Overview](#) on page 20.

- Once the settings of the Dictionary File match your requirements, you can save it to the MetaStore.

Click the *Save to MetaStore* icon () to do so.

17.5. File Type - Unload Sequential

Supported File Types:

- BMC Load Plus
- BMS UNLOAD PLUS for DB2
- INGRES
- MS-Access
- SESAM

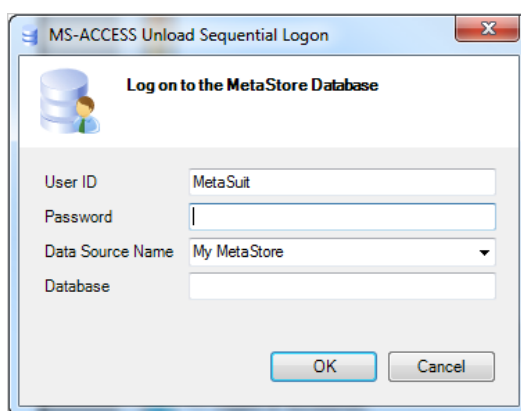
Procedures

- [BMC and INGRES](#) (page 199)
- [MS-Access and SESAM](#) (page 202)

BMC and INGRES

BMC	BMC is a tool facilitating the unloading of DB2 files. Use the option <i>Unload Sequential</i> on the <i>Source</i> tab of the <i>Collect File</i> screen to collect a BMC Dictionary File. During the collection process, MetaStore generates the required unload script matching the metadata found in the source collected.
INGRES	If you prefer retrieving information from an unloaded sequential file, rather than directly from an CA/Ingres Relational Database, you can use the option <i>Unload Sequential</i> . MetaSuite will generate the Dictionary File matching the metadata of the unloaded sequential file. Furthermore, the required unload script will be generated, if required.

1. On the *Collect File* screen, open the *Source* tab and select *Unload Sequential* as File Type.
See [Accessing the Collect File Screen](#) on page 181.
If required, make the necessary selections to obtain the ODBC connection.
2. Select *BMC* or *CA/Ingres* as supported format and click *OK*.
The *Unload Sequential Logon* screen is displayed.



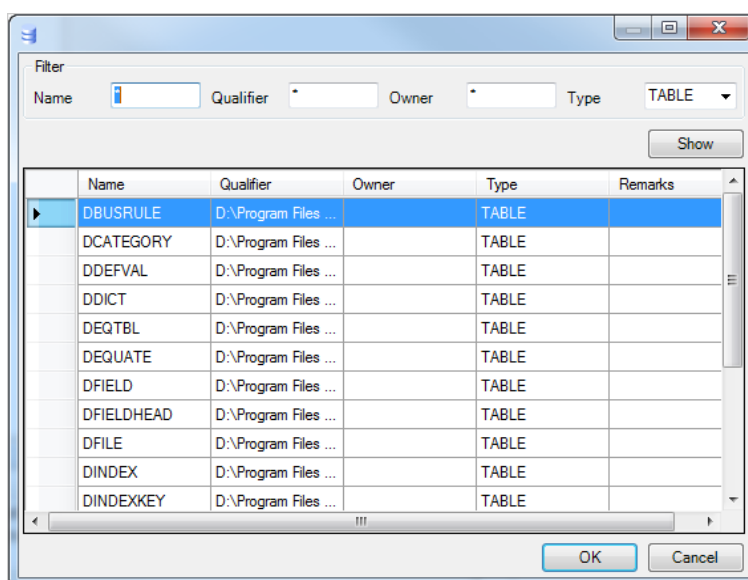
Note: If an error is displayed, please check the settings in `MetaSuite.ini`. Refer to the *INI Manager Guide* for more information.

- Fill out the required fields and click OK.

Field	Description
User ID	Enter your User Name to get access to the database. The User ID displayed in this field is the default User ID defined in <code>Metasuite.ini</code> .
Password	Enter your password.
Data Source Name	Enter the required DSN. The DSN displayed in this field is the default DSN defined in <code>Metasuite.ini</code> .
Database	Enter the name of the database.

Note: If required, make the necessary selections to obtain the ODBC connection.

Once the ODBC connection is established, the following screen is displayed.



- In the upper part of the screen, define your selection criteria and click *Show*.
The lower part of the screen will list the Tables and/or Views matching your selection criteria.

Selection Criterium	Description
Name	Enter a Table or View name in this field, if you want to limit your search to tables or views with this name. You may use the asterisk (*) and the question mark (?) as standard wildcard characters.
Qualifier	Enter a Qualifier in this field, if you want to limit your search to tables or views with this Qualifier. You may use the asterisk (*) and the question mark (?) as standard wildcard characters.
Owner	Enter a User ID in this field, if you want to limit your search to tables or views owned by this User ID. You may use the asterisk (*) and the question mark (?) as standard wildcard characters.
Type	Select one of the following types: <ul style="list-style-type: none"> • TABLE: include database tables in your search. • VIEW: include database views in your search. • BOTH: include both database tables and views in your search.

Note: *Owner* and *Qualifier* are ODBC terms. The meaning of these terms can differ between different databases or different ODBC drivers. Some drivers return an error when you enter a search string for Owner or Qualifier or some return no tables.

If you encounter problems when entering search criteria for Owner or Qualifier, try entering only an asterisk.

If the User ID you used to access the database does not have the required access rights to some or all Tables or Views, these Tables and Views will not be displayed.


- Select the Table(s) and View(s) you want to include and click OK.

Note: If you want to select multiple adjacent items, click the first and the last item while pressing the *Shift* Key.

If you want to select multiple non-adjacent items, click the items while pressing the *Ctrl* Key.

The following screen is displayed for each selected Table or View.

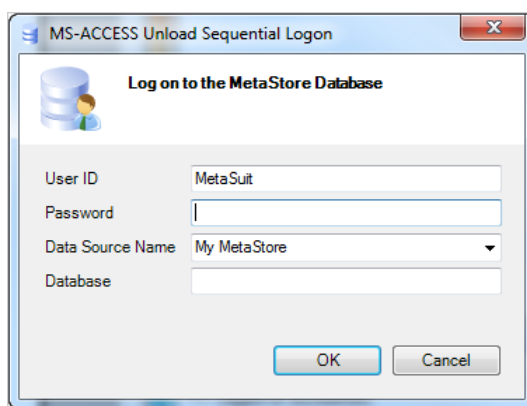
Each selected Table or View will be saved in a separate Dictionary File.

6. Fill out the required fields and click OK.
Refer to [Description of the Available Fields](#) (page 205) for a detailed description of each field.
7. Confirm the default location for the SQL Unload Script or browse to another folder and click OK.
8. Repeat the previous steps for each selected Table or View.
The Dictionary File for each selected Table or Views is displayed in the Tree View Window.
9. If required, edit the definitions.
The procedure to edit the definitions is identical to building Dictionary Files manually. See [Building Dictionary Files Manually - Overview](#) on page 20.
10. Once the settings of the Dictionary Files match your requirements, you can save them to the MetaStore.
Click the *Save to MetaStore* icon () to do so.
11. In order to really perform the Unload, you need to further process the MXL file.
See [Processing the MXL File](#) on page 209.

MS-Access and SESAM

If you prefer retrieving information from an unloaded sequential file, rather than directly from an RDBMS, you can use the option *Unload Sequential*. MetaSuite will generate the Dictionary File matching the metadata of the unloaded sequential file.

1. On the *Collect File* screen, open the *Source* tab and select *Unload Sequential* as File Type.
See [Accessing the Collect File Screen](#) on page 181.
2. Select *MS-Access* or *Sesam* as supported format and click OK.
The *Unload Sequential Logon* screen is displayed.



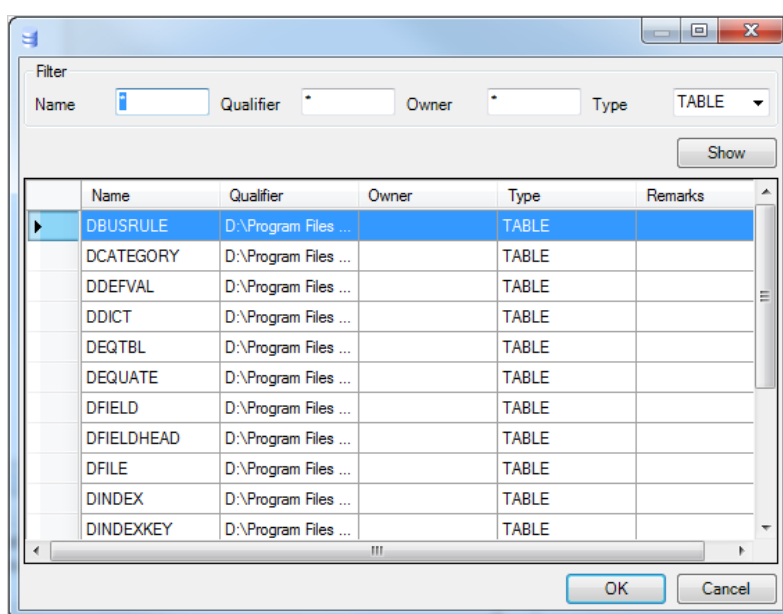
Note: If an error is displayed, please check the settings in `MetaSuite.ini`. Refer to the *INI Manager Guide* for more information.

- Fill out the required fields and click OK.

Field	Description
User ID	Enter your User Name to get access to the database. The User ID displayed in this field is the default User ID defined in <code>Metasuite.ini</code> .
Password	Enter your password.
Data Source Name	Enter the required DSN. The DSN displayed in this field is the default DSN defined in <code>Metasuite.ini</code> .
Database	Enter the name of the database.

Note: If required, make the necessary selections to obtain the ODBC connection.

Once the ODBC connection is established, the following screen is displayed.



- In the upper part of the screen, define your selection criteria and click *Show*.
The lower part of the screen will list the Tables and/or Views matching your selection criteria.

Selection Criterium	Description
Name	Enter a Table or View name in this field, if you want to limit your search to tables or views with this name. You may use the asterisk (*) and the question mark (?) as standard wildcard characters.
Qualifier	Enter a Qualifier in this field, if you want to limit your search to tables or views with this Qualifier. You may use the asterisk (*) and the question mark (?) as standard wildcard characters.
Owner	Enter a User ID in this field, if you want to limit your search to tables or views owned by this User ID. You may use the asterisk (*) and the question mark (?) as standard wildcard characters.
Type	Select one of the following types: <ul style="list-style-type: none"> • TABLE: include database tables in your search. • VIEW: include database views in your search. • BOTH: include both database tables and views in your search.

Note: *Owner* and *Qualifier* are ODBC terms. The meaning of these terms can differ between different databases or different ODBC drivers. Some drivers return an error when you enter a search string for Owner or Qualifier or some return no tables.

If you encounter problems when entering search criteria for Owner or Qualifier, try entering only an asterisk.

If the User ID you used to access the database does not have the required access rights to some or all Tables or Views, these Tables and Views will not be displayed.

- Select the Table(s) and View(s) you want to include and click OK.


Note: If you want to select multiple adjacent items, click the first and the last item while pressing the *Shift* Key.

If you want to select multiple non-adjacent items, click the items while pressing the *Ctrl* Key.

The following screen is displayed for each selected Table or View.

Each selected Table or View will be saved in a separate Dictionary File.

6. Fill out the required fields and click OK.
Refer to [Description of the Available Fields](#) (page 205) for a detailed description of each field.
7. Repeat the previous steps for each selected Table or View.
The Dictionary File for each selected Table or Views is displayed in the Tree View Window.
8. If required, edit the definitions.
The procedure to edit the definitions is identical to building Dictionary Files manually. See [Building Dictionary Files Manually - Overview](#) on page 20.
9. Once the settings of the Dictionary Files match your requirements, you can save them to the MetaStore.

Click the *Save to MetaStore* icon () to do so.
10. In order to really perform the Unload, you need to further process the MXL file.
See [Processing the MXL File](#) on page 209.

Description of the Available Fields

- [Prefix, Separator and Dictionary File Name](#) (page 205)
- [File Type](#) (page 206)
- [Key Field](#) (page 206)
- [File Description Size](#) (page 206)
- [Record Format](#) (page 206)
- [Block Size](#) (page 206)
- [Spanned](#) (page 207)
- [Recording Mode](#) (page 207)
- [Label](#) (page 207)
- [Column Separator](#) (page 207)
- [Row Terminator](#) (page 207)
- [Code-control Table Name](#) (page 207)
- [Database](#) (page 208)
- [External Source](#) (page 208)
- [Remarks](#) (page 208)

Prefix, Separator and Dictionary File Name

In the three fields at the top of the screen, you can enter the prefix, the separator character and the Dictionary File Name:

- The prefix will be placed in front of all Objects (file, records and fields) in order to facilitate its identification. Its maximum length is 8 characters.
- The Separator character will be placed between the defined prefix and the Dictionary File name.

- A default name for the Dictionary File is automatically filled in. You can however define another name.

Note: For Dictionary Files of type *Unload Sequential* the characters `_F` are appended to the default name in order to preserve name uniqueness.

The total length of prefix, separator and filename may not exceed 32 characters.

File Type

This read-only Field is always set to *Sequential*.

Key Field

If required, select the Key Field for the Dictionary File from the drop-down list. Fields occurring more than once are omitted from the list. The field names are listed in alphabetical order. Their names are concatenated with the names of containing fields or records.

File Description Size

In this field, enter the maximum record size. This corresponds to the Input-Output buffer size.

The value entered must be at least the size of the largest record within the file definition.

Record Format

Select the required format from the drop-down list.

The following options are available:

- *Fixed:* Select this option if the records of the file have all the same length. This size, expressed as a number of characters, is defined in the *File Description Size* field.
- *Undefined:* Select this option if the records in the file are no standard variable length records. Record descriptor words, which are standard for variable-length records, are not maintained at the start of each undefined record. Instead, the applications accessing the file determine the record size using other criteria. It is not possible to select this option together with the *Block Size* option. In this case, the record size defined in the following field defines the maximum number of characters contained in any record belonging to the file.
- *Variable:* Select this option if the file contains records of different sizes. The record size defined in the *File Description Size* field matches in this case the maximum record length (in number of characters)

Block Size

In this field, you may enter the block size. It may not be smaller than the value defined in the *File Description Size* field.

Spanned

Select this check box if the variable-length records may "span" two or more blocks.

This option is only applicable if the Record Format is set to *Variable*, the *Block Size* is greater than the *File Description Size*, and the subtype is index, relative or sequential.

Recording Mode

Select the required recording mode from the drop-down list.

The following options are available:

- Native
- ASCII
- EBCDIC

Label

Select the required label from the drop-down list.

The following options are available:

Option	Description
Standard	Select <i>Standard</i> if the file has standard label records. A file label contains information such as the creation date and the length of the file.
Omit	Select <i>Omit</i> if the file does not contain label records.

Column Separator

This field contains the default Column Separator for Standard Files, if defined on the *MetaMap Manager Settings* tab of the MetaSuite INI Manager. For more information, refer to the chapter *Customizing the MetaSuite INI Settings* in the *Install and Setup Guide*.

You can enter another character in this field in order to override the default Column Separator for this file.

Row Terminator

This field contains the default Row Terminator for Standard Files, if defined on the MetaMap Manager Settings tab of the MetaSuite INI Manager. For more information, refer to the chapter *Customizing the MetaSuite INI Settings* in the *Install and Setup Guide*.

You can enter another character (sequence) in the field in order to override the default Row Terminator for this file.

Code-control Table Name

When a MetaSuite Model is generated into COBOL Source Code, this operation is performed with standard Code-control Tables.

It is possible to use a customized Code-control table instead, by entering its name in this field.

If the table name is a three-letter word, the Code-control parameter will be suffixed with INP.

Example:

Code-control XML will become XMLINP, and Code-control MQS will become MQSINP.

More information about code-control tables can be found in the *Generator Manager Guide*.

Database

Informational. The name of the Database that will be unloaded.

External Source

Optional field.

You can use it in the two following situations:

- You want to define a link between the *file-name* definition in MetaSuite and the physical file name on disk. The physical file name will be used automatically in the generated job.
- You want to indicate that there is no direct access to the data source. The data source might be remote, or there is need to copy or transform the source file via a simple copy or via a transformation tool. In this case the file, specified by the *EXTERNAL-SOURCE* parameter is the file that has to be transferred or copied to the local area. The local input file will have the name indicated by *file-name*.

This parameter will be processed in the customizable MRL Tables. By default, MetaSuite will use the following conversion rules:

External Source Name	Meaning
STD:Filename	This file name will be taken as input file. (This is the first method of using EXTERNAL-SOURCE)
FTP:Filename	The file will be downloaded via the FTP protocol.
CPY:Filename	A file copy will be done from this file to the standard file.

Note: The External Source parameter is not supported yet on every platform. UNIX and Windows are fully supported. OS390 supports the STD type. Please contact the MetaSuite support team if you want to use this option on another platform.

Remarks

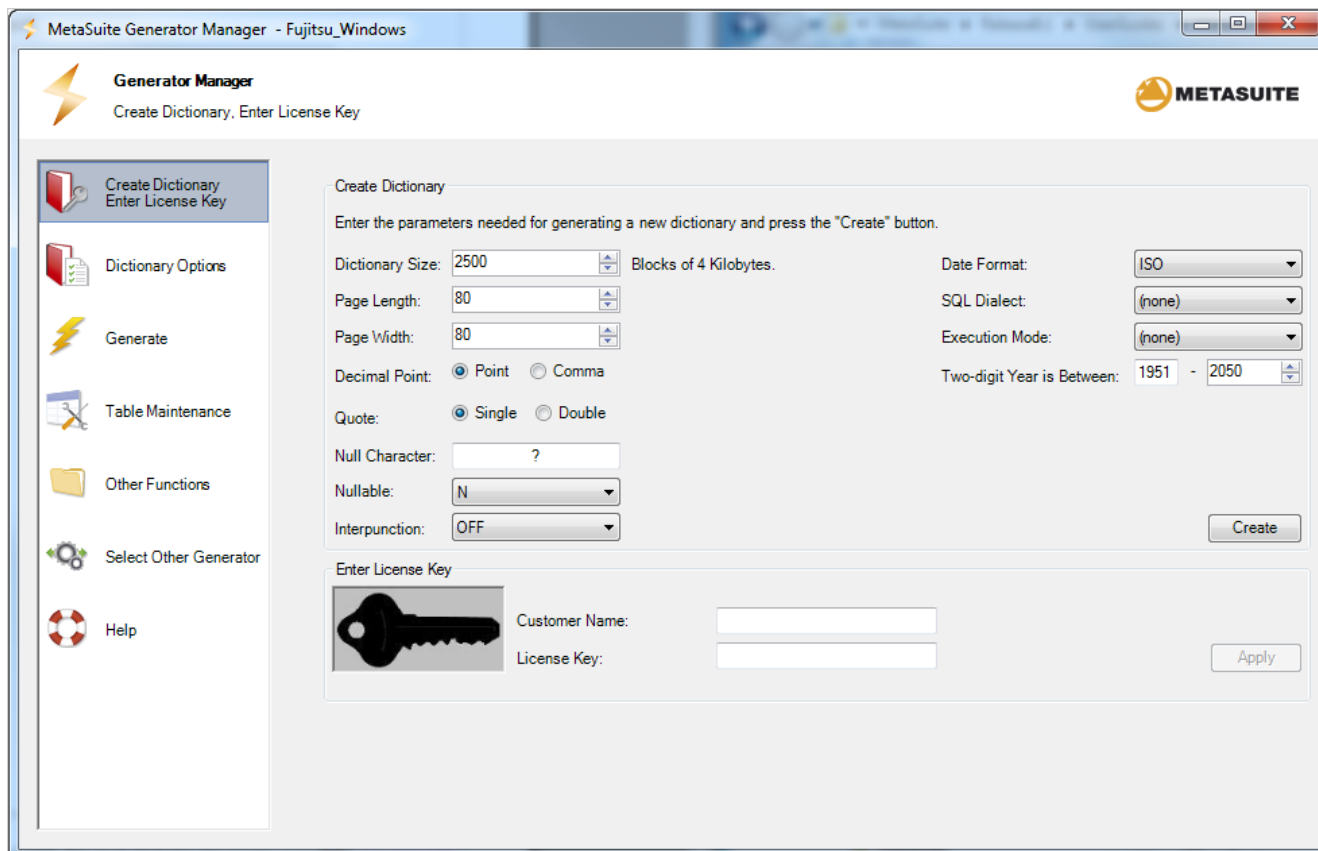
In this field, enter your remarks to the Dictionary File. They will be stored as Business Rule in the MetaStore.

Processing the MXL File

This section describes the steps to be performed once the Dictionary Files and MXL program files have been collected, in order to effectively unload Sequential files from a database.

1. Start the *Generator Manager*:

Select the Generator type and click *OK* to display the Generator Manager Window.



2. On the *Generate* tab, select the MXL type and next the required MXL file, and click the *Generate* icon.

For more information, refer to the *Generator Manager User Guide*.

Results:

- The COBOL Source Code is generated and saved (by default) in the <MetaSuiteRoot>/MGL folder. It has the same name as the MXL file, but the extension is *.MGL*.
- The MetaSuite Run Script is generated and saved (by default) in the <MetaSuiteRoot>/MRL folder. It has the same name as the MXL file, but the extension is *.MRL*.

Note: Use the *Other Functions* tab to access the folders identified in the *Browse* section.

3. Transfer both the MGL and MRL files to the platform where the program needs to be executed.
4. You may need to edit the MRL file to change the following parameters:

Parameter	Description
PPTTD01	In this field you will find the name of the Data Target File. By default, this file has the same name as the MRL file, but the extension is <code>.d01</code> . You may change the name and the extension of the file. You may also enter a path in front of the file name, if you want to save the Data Target File in another directory. In order to change the target file name, you can also set the MTL option <code>OPTION-USE-TARGETNAME</code> to <code>ON</code> .
PPTDBG	In this field you will find the name of the Debug File. All debug information generated during the program execution will be saved in this file. By default, this file has the same name as the MRL file, but the extension is <code>.dbg</code> . You may change the name and the extension of the file. You may also enter a path in front of the file name, if you want to save the Data Target File in another directory.
PPTLOG	In this field you will find the name of the Log File. This file contains information logged during the program execution. However, it is not saved in a readable format. By default, this file has the same name as the MRL file, but the extension is <code>.log</code> . You may change the name and the extension of the file. You may also enter a path in front of the file name, if you want to save the Data Target File in another directory.
PPTLST	In this field you will find the name of the Listing File. This file contains information logged during the program execution and it is in readable format. By default, this file has the same name as the MRL file, but the extension is <code>.lst</code> . You may change the name and the extension of the file. You may also enter a path in front of the file name, if you want to save the Data Target File in another directory.

Note: You can also change the MXL tables in order to perform the changes automatically.

5. Compile and link the MGL file.
 - To compile this file, you can for example use the compile script in the `<MetaSuiteRoot>/TMP` folder which is defined on the *MetaMap Manager Settings* screen (i.e., `mkcob.cmd`).
Copy the script to the MGL folder and adapt the access to the corresponding compiler on the Target platform. Next, execute the following command:
`mkcob.cmd file_name` (do not add the extension `.MGL`)
 - To create the link to the database, adapt the `.MRL` file before starting the processing.
6. You are now ready to execute the Run Script.
The Target Data File will be generated.

17.6. File Type: XML Schema

XSD is a file format, describing a structure. This format is used to validate an XML file against a specific template.

The MetaStore collect function extracts the file/record/field information from an XSD file. The resulting dictionary file has the XML subtype, meaning that the source file is in XML format.

1. Open the *Source* tab of the *Collect File* screen. See [Collecting Dictionary Files](#) on page 180.
2. On the *Source* tab, select *XML Schema* as File Type and click *OK*.
3. Select the file(s) you want to collect and click *OK*.
4. If required, edit the definitions.

The procedure to edit the definitions is identical to building Dictionary Files manually. See [Building Dictionary Files Manually - Overview](#) on page 20.

5. Once the settings of the Dictionary Files match your requirements, you can save them to the MetaStore.

Click the *Save to MetaStore* icon () to do so.

Target Dictionary Files

A Target Dictionary File describes the metadata for the logical unit of data to which data will be written (data target).

The metadata describe both the physical and business characteristics of the Dictionary File. A Dictionary File contains subordinate objects, such as the underlying Records, Fields, Relationships and Indices.

When collecting target dictionary files, the data definition is created, as well as an upload script to load the data definition in the target database.

18.1. File Type: Load Sequential

Supported File Types:

- BMC Load Plus
- BMC UNLOAD PLUS for DB2
- CA Fast Unload for DB2 for z/OS
- DB2 for OS/400
- DB2 for z/OS
- DB2 LUW
- Teradata
- SAP/R3-DMI 3.1
- SAP/R3-DMI 4.0

Procedures

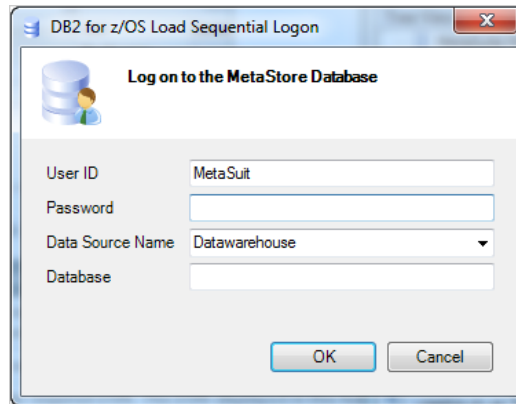
During the collection process, MetaStore generates the required load script matching the data found in the source collected.

Refer to the following sections for the description of the collection process:

- [Procedure \(BMC, DB2/xxx\)](#) (page 213)
- [Procedure \(SAP\)](#) (page 215)
- [Procedure \(Teradata\)](#) (page 217)

Procedure (BMC, DB2/xxx)

1. On the *Collect File* screen, open the *Target* tab and select *Load Sequential* as File Type.
2. Select the required format from the drop-down list and click *OK*.
The *Load Sequential Logon* screen is displayed.

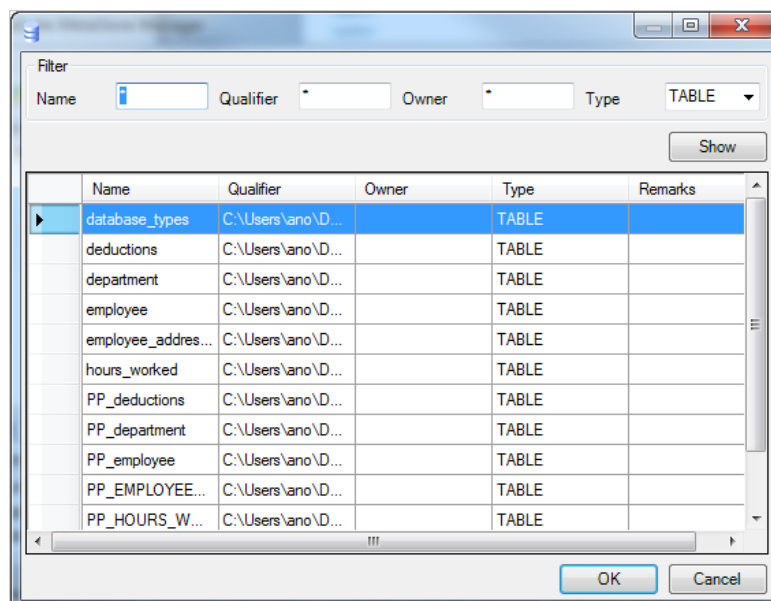


3. Fill out the required fields and click *OK*.

Field	Description
User ID	Enter your User Name to get access to the database. The User ID displayed in this field is the default User ID defined in <i>Metasuite.ini</i> .
Password	Enter your password.
Data Source Name	Enter the required DSN. The DSN displayed in this field is the default DSN defined in <i>Metasuite.ini</i> .
Database	Enter the name of the database.

Note: If required, make the necessary selections to obtain the ODBC connection.

Once the ODBC connection is established, the following screen is displayed.



4. In the upper part of the screen, define your selection criteria and click *Show*.
The lower part of the screen will list the Tables and/or Views matching your selection criteria.

Selection Criterium	Description
Name	Enter a Table or View name in this field, if you want to limit your search to tables or views with this name. You may use the asterisk (*) and the question mark (?) as standard wildcard characters.
Qualifier	Enter a Qualifier in this field, if you want to limit your search to tables or views with this Qualifier. You may use the asterisk (*) and the question mark (?) as standard wildcard characters.
Owner	Enter a User ID in this field, if you want to limit your search to tables or views owned by this User ID. You may use the asterisk (*) and the question mark (?) as standard wildcard characters.
Type	Select one of the following types: <ul style="list-style-type: none"> • TABLE: include database tables in your search. • VIEW: include database views in your search. • BOTH: include both database tables and views in your search.

Note: *Owner* and *Qualifier* are ODBC terms. The meaning of these terms can differ between different databases or different ODBC drivers. Some drivers return an error when you enter a search string for Owner or Qualifier or some return no tables. If you encounter problems when entering selection criteria for Owner or Qualifier, try entering only an asterisk.
If the User ID you used to access the database does not have the required access rights to some or all Tables or Views, these Tables and Views will not be displayed.

5. Select the Table(s) and View(s) you want to include in the new Dictionary Files and click *OK*.

Note: If you want to select multiple adjacent items, click the first and the last item while pressing the *Shift* Key.
If you want to select multiple non-adjacent items, click the items while pressing the *Ctrl* Key.

The following screen is displayed for each selected Table or View.

Each selected Table or View will be saved in a separate Dictionary File.

6. Fill out the required fields and click OK.

Refer to the section [Description of the Available Fields](#) (page 219) for a detailed description of each field. The *Load Sequential Options* screen will be displayed.

7. Define the Load Options for the selected table and click OK.

Refer to your database-specific technical documentation for more information about the displayed options.

Note: This step is not needed for DB2/400.

8. Specify the name and location for the Load Script and click Save.
9. Repeat the previous steps for each selected Table or View.
The Dictionary File for each selected Table or Views is displayed in the Tree View Window.
10. If required, edit the definitions.
The procedure to edit the definitions is identical to building Dictionary Files manually. See [Building Dictionary Files Manually - Overview](#) on page 20.
11. Once the settings of the Dictionary Files match your requirements, you can save them to the MetaStore.

Click the *Save to MetaStore* icon () to do so.

Procedure (SAP)

1. On the *Collect File* screen, open the *Target* tab and select *Load Sequential* as File Type.
2. Select the required format from the drop-down list and click OK.
The default folder (as defined in the MetaSuite.ini file) opens in a new window and displays the available DMI files (extensions .idoc).

Note: If the DMI file you need is not available in this folder, browse to the required folder.

3. Select the required DMI file and click *OK*.

The following screen is displayed.

4. Fill out the required fields and click *OK*.

Refer to the section [Description of the Available Fields](#) (page 219) for a detailed description of each field. The DMI file is collected and the matching Dictionary File Definition is displayed in the Tree View Window.

5. If required, edit the definitions.

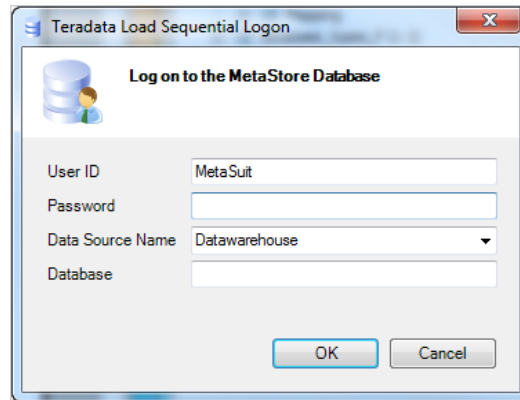
The procedure to edit the definitions is identical to building Dictionary Files manually. See [Building Dictionary Files Manually - Overview](#) on page 20.

6. Once the settings of the Dictionary Files match your requirements, you can save them to the MetaStore.

Click the *Save to MetaStore* icon () to do so.

Procedure (Teradata)

1. On the *Collect File* screen, open the *Target* tab and select *Load Sequential* as File Type.
2. Select the required format from the drop-down list and click *OK*.
The *Load Sequential Logon* screen is displayed.

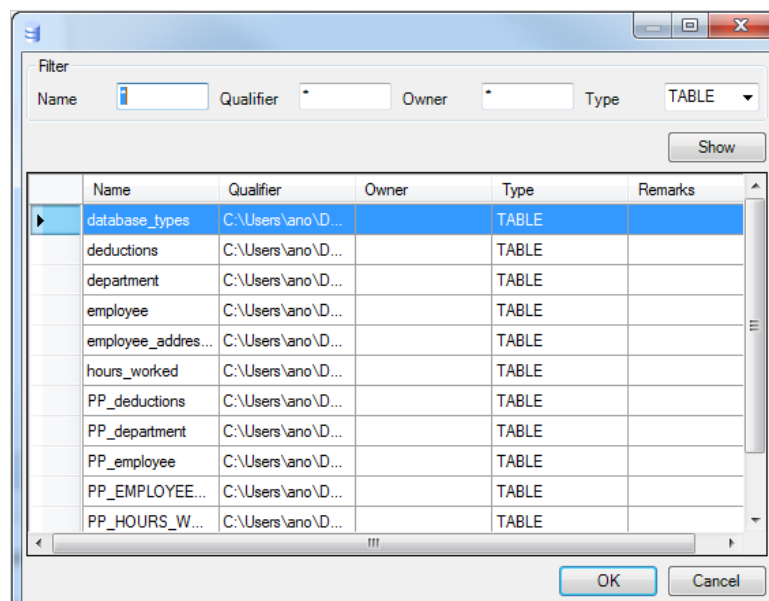


3. Fill out the required fields and click *OK*.

Field	Description
User ID	Enter your User Name to get access to the database. The User ID displayed in this field is the default User ID defined in <code>Metasuite.ini</code> .
Password	Enter your password.
Data Source Name	Enter the required DSN. The DSN displayed in this field is the default DSN defined in <code>Metasuite.ini</code> .
Database	Enter the name of the database.

Note: If required, make the necessary selections to obtain the ODBC connection.

Once the ODBC connection is established, the following screen is displayed.



4. In the upper part of the screen, define your selection criteria and click *Show*.
The lower part of the screen will list the Tables and/or Views matching your selection criteria.

Selection Criterium	Description
Name	Enter a Table or View name in this field, if you want to limit your search to tables or views with this name. You may use the asterisk (*) and the question mark (?) as standard wildcard characters.
Qualifier	Enter a Qualifier in this field, if you want to limit your search to tables or views with this Qualifier. You may use the asterisk (*) and the question mark (?) as standard wildcard characters.
Owner	Enter a User ID in this field, if you want to limit your search to tables or views owned by this User ID. You may use the asterisk (*) and the question mark (?) as standard wildcard characters.
Type	Select one of the following types: <ul style="list-style-type: none"> • TABLE: include database tables in your search. • VIEW: include database views in your search. • BOTH: include both database tables and views in your search.

Note: *Owner* and *Qualifier* are ODBC terms. The meaning of these terms can differ between different databases or different ODBC drivers. Some drivers return an error when you enter a search string for Owner or Qualifier or some return no tables. If you encounter problems when entering selection criteria for Owner or Qualifier, try entering only an asterisk.
If the User ID you used to access the database does not have the required access rights to some or all Tables or Views, these Tables and Views will not be displayed.

5. Select the Table(s) and View(s) you want to include in the new Dictionary Files and click *OK*.

Note: If you want to select multiple adjacent items, click the first and the last item while pressing the *Shift* Key.
If you want to select multiple non-adjacent items, click the items while pressing the *Ctrl* Key.

The following screen is displayed for each selected Table or View.

The screenshot shows a dialog box titled '(employee)'. It has a 'Prefix' field with a dropdown arrow and a 'Dictionary File Name (for the ADD FILE Statement)' field containing 'employee_F'. Below these are several configuration options: 'File Type' (Sequential), 'File Description Size' (145), 'Block Size' (145), 'Recording Mode' (Native), 'Column Separator' (comma), 'Code-control Table Name' (empty), 'Key Field' (empty), 'Record Format' (Fixed), 'Label' (Standard), 'Row Terminator' (empty), and 'Database' (empty). There is also an 'External Source' field and a large 'Remarks' text area. At the bottom right are 'OK' and 'Cancel' buttons.

Each selected Table or View will be saved in a separate Dictionary File.

6. Fill out the required fields and click OK.

Refer to the section [Description of the Available Fields](#) (page 219) for a detailed description of each field. The following screen will be displayed.

7. Define the Teradata Options and click OK.

The following field are available:

Field	Meaning
Restart Log Table	Enter the name of the Log Table.
User Name	Enter the Username
Password	Enter the Password
Checkpoint Interval	Enter the checkpoint interval related to a possible restart.
Infile	Enter the Input File name.

8. Confirm the location for the Load Script or browse to the required location first. Then click OK.

9. Repeat the previous steps for each selected Table or View.

The Dictionary File for each selected Table or Views is displayed in the Tree View Window.

10. If required, edit the definitions.

The procedure to edit the definitions is identical to building Dictionary Files manually. See [Building Dictionary Files Manually - Overview](#) on page 20.

11. Once the settings of the Dictionary Files match your requirements, you can save them to the MetaStore.

Click the *Save to MetaStore* icon () to do so.

Description of the Available Fields

- [Prefix, Separator and Dictionary File Name](#) (page 220)
- [File Type](#) (page 220)
- [Key Field](#) (page 220)
- [File Description Size](#) (page 220)
- [Record Format](#) (page 220)
- [Block Size](#) (page 221)

- [Spanned](#) (page 221)
- [Recording Mode](#) (page 221)
- [Label](#) (page 221)
- [Column separator](#) (page 221)
- [Row terminator](#) (page 222)
- [Code-control Table Name](#) (page 222)
- [Database](#) (page 222)
- [External Source](#) (page 222)
- [Remarks](#) (page 223)

Prefix, Separator and Dictionary File Name

In the three fields at the top of the screen, you can enter the prefix, the separator character and the Dictionary File Name:

- The prefix will be placed in front of all Objects (file, records and fields) in order to facilitate its identification. Its maximum length is 8 characters.
- The Separator character will be placed between the defined prefix and the Dictionary File name.
- A default name for the Dictionary File is automatically filled in. The characters `_F` are appended to this name in order to preserve name uniqueness. You can however define another name.

The total length of prefix, separator and filename may not exceed 32 characters.

File Type

This read-only Field is always set to *Sequential*.

Key Field

If required, select the Key Field for the Dictionary File from the drop-down list. Fields occurring more than once are omitted from the list. The field names are listed in alphabetical order. Their names are concatenated with the names of containing fields or records.

File Description Size

In this field, enter the maximum record size. This corresponds to the Input-Output buffer size.

The value entered must be at least the size of the largest record within the file definition.

Record Format

Select the required format from the drop-down list.

The following options are available:

- *Fixed*: Select this option if the records of the file have all the same length. This size, expressed as a number of characters, is defined in the *File Description Size* field.

- *Undefined*: Select this option if the records in the file are no standard variable length records. Record descriptor words, which are standard for variable-length records, are not maintained at the start of each undefined record. Instead, the applications accessing the file determine the record size using other criteria. It is not possible to select this option together with the *Block Size* option. In this case, the record size defined in the following field defines the maximum number of characters contained in any record belonging to the file.
- *Variable*: Select this option if the file contains records of different sizes. The record size defined in the *File Description Size* field matches in this case the maximum record length (in number of characters)

Block Size

In this field, you may enter the block size. It may not be smaller than the value defined in the *File Description Size* field.

Spanned

Select this check box if the variable-length records may "span" two or more blocks.

This option is only applicable if the Record Format is set to *Variable*, the *Block Size* is greater than the *File Description Size*, and the subtype is index, relative or sequential.

Recording Mode

Select the required recording mode from the drop-down list.

The following options are available:

- Native
- ASCII
- EBCDIC

Label

Select the required label from the drop-down list.

The following options are available:

Option	Description
Standard	Select <i>Standard</i> if the file has standard label records. A file label contains information such as the creation date and the length of the file.
Omit	Select <i>Omit</i> if the file does not contain label records.

Column separator

This field contains the default Column Separator for Standard Files, if defined on the *MetaMap Manager Settings* tab of the MetaSuite INI Manager. For more information, refer to the chapter *Customizing the MetaSuite INI Settings* in the *Install and Setup Guide*.

You can enter another character in this field in order to override the default Column Separator for this file.

Row terminator

This field contains the default Row Terminator for Standard Files, if defined on the MetaMap Manager Settings tab of the MetaSuite INI Manager. For more information, refer to the chapter *Customizing the MetaSuite INI Settings* in the *Install and Setup Guide*.

You can enter another character (sequence) in the field in order to override the default Row Terminator for this file.

Code-control Table Name

When a MetaSuite Model is generated into COBOL Source Code, this operation is performed with standard Code-control Tables.

It is possible to use a customized code-control table instead, by entering its name in this field.

If the table name is a three-letter word, the Code-Control parameter will be suffixed with OUT.

Example:

Code-control XML will become XMLOUT, and Code-control MQS will become MQSOUT

More information about code-control tables can be found in the *Generator Manager Guide*.

Database

Name of the database you want to feed.

External Source

Optional field.

You can use it in the two following situations:

- You want to define a link between the *file-name* definition in MetaSuite and the physical file name on disk. The physical file name will be used automatically in the generated job.
- You want to indicate that there is no direct access to the data source. The data source might be remote, or there is need to copy or transform the source file via a simple copy or via a transformation tool. In this case the file, specified by the *EXTERNAL-SOURCE* parameter is the file that has to be transferred or copied to the local area. The local input file will have the name indicated by *file-name*.

This parameter will be processed in the customizable MRL Tables. By default, MetaSuite will use the following conversion rules:

External Source Name	Meaning
STD:Filename	This file name will be taken as input file. (This is the first method of using EXTERNAL-SOURCE)
FTP:Filename	The file will be downloaded via the FTP protocol.
CPY:Filename	A file copy will be done from this file to the standard file.
Note: The External Source parameter is not supported yet on every platform. UNIX and Windows are fully supported. OS390 supports the STD type. Please contact the MetaSuite support team if you want to use this option on another platform.	

Remarks

In this field, enter your remarks to the Dictionary File. They will be stored as Business Rule in the MetaStore.

18.2. File Type: Load Delimited

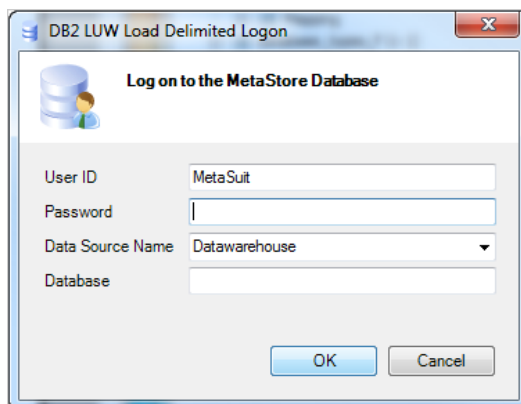
Supported File Types:

- ADABAS D
- DB2/2 LUW
- Informix
- Oracle
- Red Brick
- SQL Server
- Sybase

The option *Load Delimited* on the *Target* tab of the *Collect File* screen allows you to generate a Copy script to load the stored data from a delimited file. All tables are found in the existing data sources.

Procedure

1. On the *Collect File* screen, open the *Target* tab and select *Load Delimited* as File Type.
2. Select the required format from the drop-down list and click *OK*.
The *Load Delimited Logon* screen is displayed.

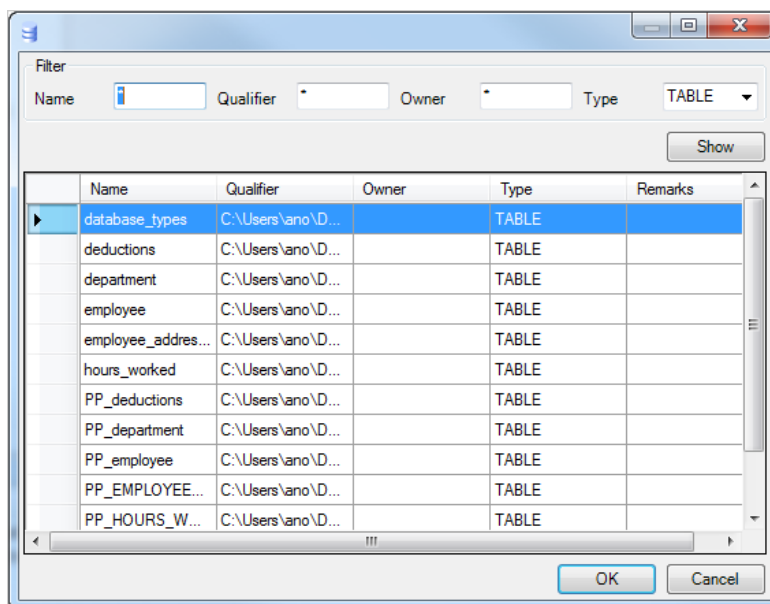


3. Fill out the required fields and click *OK*.

Field	Description
User ID	Enter your User Name to get access to the database. The User ID displayed in this field is the default User ID defined in <code>Metasuite.ini</code> .
Password	Enter your password.
Data Source Name	Enter the required DSN. The DSN displayed in this field is the default DSN defined in <code>Metasuite.ini</code> .
Database	Enter the name of the database.

Note: If required, make the necessary selections to obtain the ODBC connection.

Once the ODBC connection is established, the following screen is displayed.



4. In the upper part of the screen, define your selection criteria and click *Show*.
The lower part of the screen will list the Tables and/or Views matching your selection criteria.

Selection Criterium	Description
Name	Enter a Table or View name in this field, if you want to limit your search to tables or views with this name. You may use the asterisk (*) and the question mark (?) as standard wildcard characters.
Qualifier	Enter a Qualifier in this field, if you want to limit your search to tables or views with this Qualifier. You may use the asterisk (*) and the question mark (?) as standard wildcard characters.
Owner	Enter a User ID in this field, if you want to limit your search to tables or views owned by this User ID. You may use the asterisk (*) and the question mark (?) as standard wildcard characters.
Type	Select one of the following types: <ul style="list-style-type: none"> • TABLE: include database tables in your search. • VIEW: include database views in your search. • BOTH: include both database tables and views in your search.

Note: *Owner* and *Qualifier* are ODBC terms. The meaning of these terms can differ between different databases or different ODBC drivers. Some drivers return an error when you enter a search string for Owner or Qualifier or some return no tables. If you encounter problems when entering selection criteria for Owner or Qualifier, try entering only an asterisk.
If the User ID you used to access the database does not have the required access rights to some or all Tables or Views, these Tables and Views will not be displayed.

5. Select the Table(s) and View(s) you want to include in the new Dictionary Files and click *OK*.

Note: If you want to select multiple adjacent items, click the first and the last item while pressing the *Shift* Key.
If you want to select multiple non-adjacent items, click the items while pressing the *Ctrl* Key.

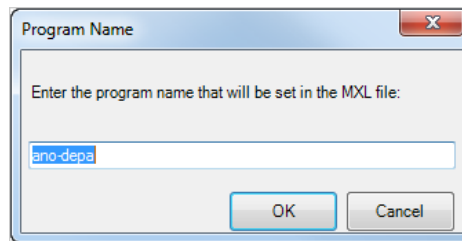
The following screen is displayed for each selected Table or View.

The screenshot shows a Windows-style dialog box titled '(department)'. It contains several input fields and dropdown menus for configuring a dictionary file. The 'Prefix' field is empty, and the 'Dictionary File Name (for the ADD FILE Statement)' field contains 'department_F'. The 'File Type' is set to 'Delimited', 'Key Field' is empty, 'File Description Size' is '29', 'Record Format' is 'Fixed', 'Block Size' is '29', 'Spanned' is unchecked, 'Recording Mode' is 'Native', 'Label' is 'Standard', 'Column Separator' is ';', 'Row Terminator' is empty, 'Code-control Table Name' is empty, 'Database' is empty, 'External Source' is empty, and 'Remarks' is empty. At the bottom are 'OK' and 'Cancel' buttons.

Each selected Table or View will be saved in a separate Dictionary File.

6. Fill out the required fields and click **OK**.

Refer to the section [Description of the Available Fields](#) (page 219) for a detailed description of each field. The following screen is displayed:



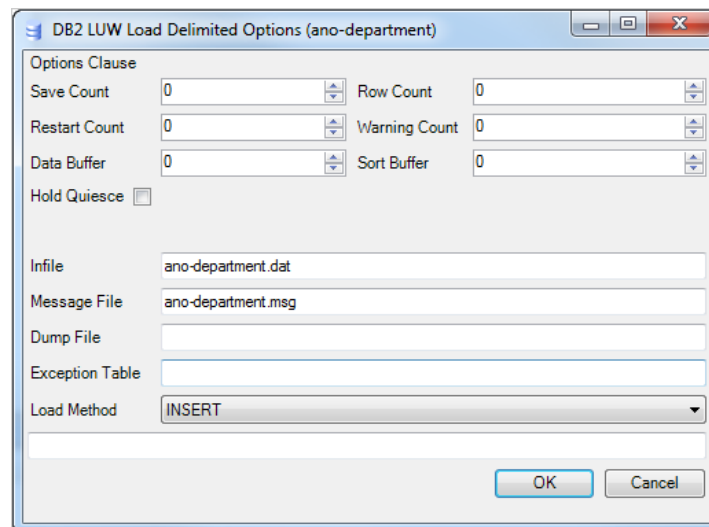
7. Enter the program name and click **OK**.

As this program name will also be assigned to the generated COBOL source program, you should already take the following naming rules into account:

- The name may be from 1-8 characters in length.
- It must begin with an alphabetic character.
- It may contain the characters A-Z, 0-9 and embedded hyphens.

The default name displayed is the Table or View name truncated to 8 characters and with omission of any unauthorized characters (for instance underscores).

8. The *Load Delimited Options* screen will be displayed. Define the Load Options for the selected table and click **OK**.



Refer to the section [Load Delimited Options](#) (page 230) for a description of the different load options for each file type.

9. Repeat the previous steps for each selected Table or View. The Dictionary File for each selected Table or Views is displayed in the Tree View Window.
10. If required, edit the definitions.

The procedure to edit the definitions is identical to building Dictionary Files manually. See [Building Dictionary Files Manually - Overview](#) on page 20.

11. Once the settings of the Dictionary Files match your requirements, you can save them to the MetaStore.

Click the *Save to MetaStore* icon () to do so.

Description of the Available Fields

- [Prefix, Separator and Dictionary File Name](#) (page 227)
- [File Type](#) (page 227)
- [Key Field](#) (page 227)
- [File Description Size](#) (page 228)
- [Record Format](#) (page 228)
- [Block Size](#) (page 228)
- [Spanned](#) (page 228)
- [Recording Mode](#) (page 228)
- [Label](#) (page 228)
- [Column separator](#) (page 229)
- [Row terminator](#) (page 229)
- [Code-control Table Name](#) (page 229)
- [Database](#) (page 229)
- [External Source](#) (page 229)
- [Remarks](#) (page 230)

Prefix, Separator and Dictionary File Name

In the three fields at the top of the screen, you can enter the prefix, the separator character and the Dictionary File Name:

- The prefix will be placed in front of all Objects (file, records and fields) in order to facilitate its identification. Its maximum length is 8 characters.
- The Separator character will be placed between the defined prefix and the Dictionary File name.
- A default name for the Dictionary File is automatically filled in. The characters `_F` are appended to this name in order to preserve name uniqueness. You can however define another name.

The total length of prefix, separator and filename may not exceed 32 characters.

File Type

This read-only Field is always set to *Sequential*.

Key Field

If required, select the Key Field for the Dictionary File from the drop-down list. Fields occurring more than once are omitted from the list. The field names are listed in alphabetical order. Their names are concatenated with the names of containing fields or records.

File Description Size

In this field, enter the maximum record size. This corresponds to the Input-Output buffer size. The value entered must be at least the size of the largest record within the file definition.

Record Format

Select the required format from the drop-down list.

The following options are available:

- *Fixed*: Select this option if the records of the file have all the same length. This size, expressed as a number of characters, is defined in the *File Description Size* field.
- *Undefined*: Select this option if the records in the file are no standard variable length records. Record descriptor words, which are standard for variable-length records, are not maintained at the start of each undefined record. Instead, the applications accessing the file determine the record size using other criteria. It is not possible to select this option together with the *Block Size* option. In this case, the record size defined in the following field defines the maximum number of characters contained in any record belonging to the file.
- *Variable*: Select this option if the file contains records of different sizes. The record size defined in the *File Description Size* field matches in this case the maximum record length (in number of characters)

Block Size

In this field, you may enter the block size. It may not be smaller than the value defined in the *File Description Size* field.

Spanned

Select this check box if the variable-length records may "span" two or more blocks.

This option is only applicable if the Record Format is set to *Variable*, the *Block Size* is greater than the *File Description Size*, and the subtype is index, relative or sequential.

Recording Mode

Select the required recording mode from the drop-down list.

The following options are available:

- Native
- ASCII
- EBCDIC

Label

Select the required label from the drop-down list.

The following options are available:

Option	Description
Standard	Select <i>Standard</i> if the file has standard label records. A file label contains information such as the creation date and the length of the file.
Omit	Select <i>Omit</i> if the file does not contain label records.

Column separator

This field contains the default Column Separator for Standard Files, if defined on the *MetaMap Manager Settings* tab of the MetaSuite INI Manager. For more information, refer to the chapter *Customizing the MetaSuite INI Settings* in the *Install and Setup Guide*.

You can enter another character in this field in order to override the default Column Separator for this file.

Row terminator

This field contains the default Row Terminator for Standard Files, if defined on the MetaMap Manager Settings tab of the MetaSuite INI Manager. For more information, refer to the chapter *Customizing the MetaSuite INI Settings* in the *Install and Setup Guide*.

You can enter another character (sequence) in the field in order to override the default Row Terminator for this file.

Code-control Table Name

When a MetaSuite Model is generated into COBOL Source Code, this operation is performed with standard Code-control Tables.

It is possible to use a customized code-control table instead, by entering its name in this field.

If the table name is a three-letter word, the Code-Control parameter will be suffixed with OUT.

Example:

Code-control XML will become XMLOUT, and Code-control MQS will become MQSOUT

More information about code-control tables can be found in the *Generator Manager Guide*.

Database

Name of the database you want to feed.

External Source

Optional field.

You can use it in the two following situations:

- You want to define a link between the *file-name* definition in MetaSuite and the physical file name on disk. The physical file name will be used automatically in the generated job.
- You want to indicate that there is no direct access to the data source. The data source might be remote, or there is need to copy or transform the source file via a simple copy or via a transformation tool. In this case

the file, specified by the *EXTERNAL-SOURCE* parameter is the file that has to be transferred or copied to the local area. The local input file will have the name indicated by *file-name*.

This parameter will be processed in the customizable MRL Tables. By default, MetaSuite will use the following conversion rules:

External Source Name	Meaning
STD:Filename	This file name will be taken as input file. (This is the first method of using EXTERNAL-SOURCE)
FTP:Filename	The file will be downloaded via the FTP protocol.
CPY:Filename	A file copy will be done from this file to the standard file.

Note: The External Source parameter is not supported yet on every platform. UNIX and Windows are fully supported. OS390 supports the STD type. Please contact the MetaSuite support team if you want to use this option on another platform.

Remarks

In this field, enter your remarks to the Dictionary File. They will be stored as Business Rule in the MetaStore.

Load Delimited Options

This section describes the different load options for each of the Load Delimited file types.

- [ADABAS D](#) (page 230)
- [DB2 LUW](#) (page 231)
- [Informix](#) (page 232)
- [Oracle](#) (page 232)
- [Red Brick](#) (page 233)
- [SQL Server](#) (page 234)
- [Sybase](#) (page 235)

ADABAS D

The following load options are available. They are all mandatory.

Field	Meaning
Infile	Enter the name of the Infile.
Character Set	Select the Character Set from the drop-down list. The following options are available: <ul style="list-style-type: none"> • ASCII • EBCDIC
Fields terminated by	Enter the character to be used to terminate the fields.

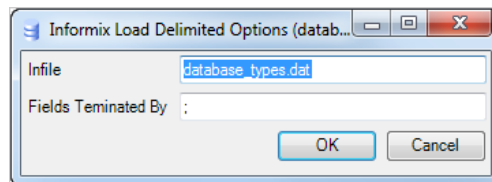
DB2 LUW

The following load options are available.

Field	Meaning
Save Count	Enter the number of physical records in the file to be loaded.
Row Count	In this field, specify that the load utility is to establish consistency points after the specified number of rows. This value is converted to a page count, and rounded up to intervals of the extent size.
Restart Count	Reserved.
Warning Count	Enter the number of warnings after which the load operation should be stopped. Set this parameter if no warnings are expected, but verification that the correct file and table are being used is desired.
Data Buffer	Enter the value to use as buffered space for transferring data within the utility.
Sort Buffer	Enter the value that overrides the SORTHEAP database configuration parameter during a load operation. This parameter is useful for throttling the sort memory that is used when loading tables with many indexes without changing the value of SORTHEAP, which would also affect general query processing.
Hold Quiesce	Select this check box if the utility should leave the table in quiesced exclusive state after the load operation.
Infile	This file is mandatory. Enter the name of the Infile
Message File	Enter the name of the Message File.
Dump File	Enter the name of the Dump File.
Exception Table	Enter the name of the exception table into which rows in error will be copied.

Field	Meaning
Load Method	Select the required Load Method from the drop-down list. The following options are available: <ul style="list-style-type: none"> • INSERT • REPLACE • RESTART • TERMINATE
Fields terminated by	Enter the character to be used to terminate the fields.

Informix



The following load options are available.

Field	Meaning
Infile	Mandatory field. Enter the name of the Infile
Fields Terminated By	Mandatory field. Enter the character that marks the end of a specific field.

Oracle

The following load options are available.

Field	Meaning
Options Clause - Skip	Enter the number of logical records to be skipped.
Options Clause - Load	Enter number of logical records to be loaded.
Options Clause - Errors	Enter the number of errors to allow on the load.
Options Clause - Rows	Enter the number of rows to load before a commit is issued (conventional path only). For direct path loads, rows are the number of rows to read from the data file before saving the data in the datafiles.
Options Clause - Silent - Feedback	Select this check box to suppress feedback errors during data load.
Options Clause - Silent - Discards	Select this check box to suppress discard errors during data load.
Options Clause - Silent - Errors	Select this check box to suppress errors during data load.

Field	Meaning
Options Clause - Direct	Select this check box, if a direct path load must be used. Use Direct Path Loads: The conventional path loader essentially loads the data by using standard insert statements. The direct path loader (direct=true) loads directly into the Oracle data files and creates blocks in Oracle database block format.
Infile	Enter the name of the Infile.
Infile - Recoverable	Select this check box to enable the writing of the data to the redo logs. This option is available for direct path loads only.
Badfile	Enter the name of the Badfile.
Discardfile	Enter the name of the Discardfile.
Discardmax	Enter the maximum number of Discards allowed.
Load Method	Select the required Load Method from the drop-down list. The following options are available: <ul style="list-style-type: none"> • APPEND • INSERT • REPLACE • TRUNCATE
Fields Terminated By	Enter the character that marks the end of a specific field.
Preserve blanks	Select this check box, if you want to retain leading whitespace when optional enclosure delimiters are not present, or if you want to leave trailing whitespace intact when fields are specified with a predetermined size.
Trailing Nullcols	Select this check box, if you want any missing data to be loaded as NULL values.

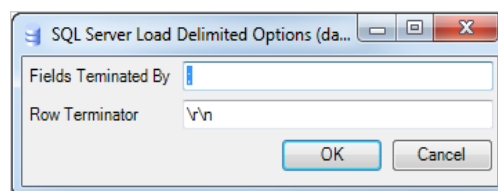
Red Brick

The following load options are available.

Field	Meaning
Input Clause - Input File	Enter the name of the input file.
Input Clause - Tape Device	Enter the Tape Device parameter value.
Input Clause - Start Record	Enter the Start Record parameter value.
Input Clause - Stop Record	Enter the Stop Record parameter value.
Format Clause - Load Method	Select the required Load Method from the drop-down list. The following options are available: <ul style="list-style-type: none"> • APPEND • INSERT • MODIFY • REPLACE • UPDATE

Field	Meaning
Format Clause - Character Set	Select the required character set from the drop-down list. The following options are available: <ul style="list-style-type: none"> • ASCII • EBCDIC
Format Clause - Fields Terminated By	Mandatory field. Enter the character that marks the end of a specific field.
Discard Clause - Discardfile (ASCII)	Enter the name of the ASCII Discard File.
Discard Clause - Discardfile (EBCDIC)	Enter the name of the EBCDIC Discard File.
Discard Clause - Discardmax	Enter the number of discards to allow.
Discard Clause - AutoRowGen	Select the required option from the drop-down list. The following options are available: <ul style="list-style-type: none"> • <i>DEFAULT</i> • <i>OFF</i>: Records violating referential integrity are written to the discard file. • <i>ON</i>: New rows are automatically generated (using the column default values) and added to the referenced tables to fully satisfy referential integrity, and the input record is added to the table being loaded.
Discard Clause - List of Tables	Enter the value for the List of Tables.
Discard Clause - 2nd AutoRowGen	Enter the value for the 2nd AutoRowGen.
Discard Clause - Additional List of Tables	In this field enter the value for the Additional List of Tables.
RI-DiscardFile	Enter the name of the RI Discard File.
Optimize	Select the required option from the drop-down list. The following options are available: <ul style="list-style-type: none"> • OFF • ON
Duplicates Discardfile	Enter the value of the corresponding parameter.
Remarks	Optional field. Enter user comments.

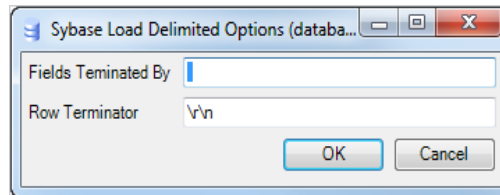
SQL Server



The following load options are available:

Field	Meaning
Fields Terminated By	Mandatory field. Enter the character terminating the individual fields.
Row Terminator	Mandatory field. Enter the character string marking the end of a row.

Sybase



The following load options are available:

Field	Meaning
Fields Terminated By	Mandatory field. Enter the character terminating the individual fields.
Row Terminator	Mandatory field. Enter the character string marking the end of a row.

18.3. Load RDBMS

Supported File Types:

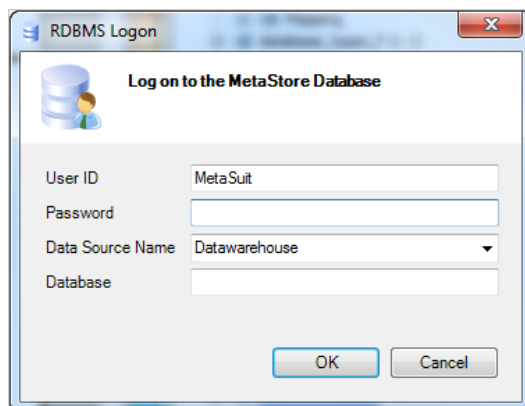
- Catalog
- DB2 DDL

Procedures

- [Catalog](#) (page 236)
- [SQL DDL](#) (page 238)

Catalog

1. On the *Collect File* screen, open the *Target* tab and select *RDBMS* as File Type.
2. Select the required format from the drop-down list and click *OK*.
The *RDBMS Logon* screen is displayed.

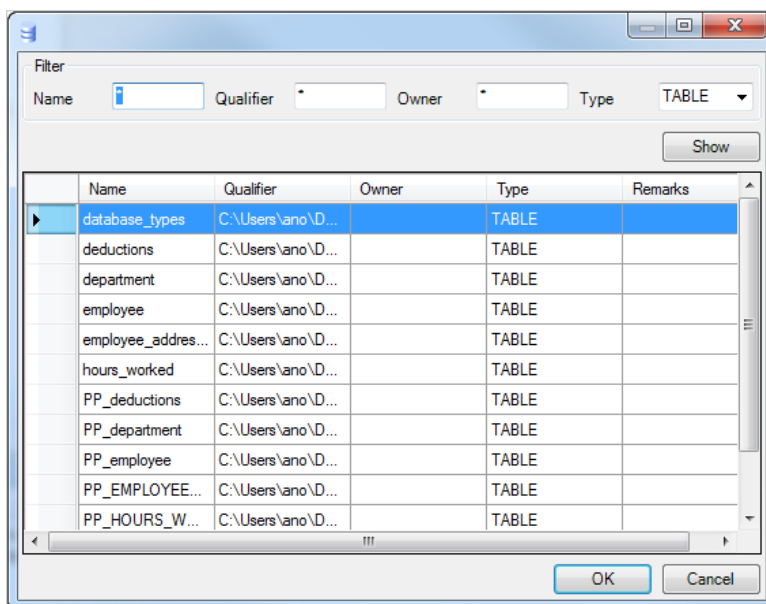


3. Fill out the required fields and click *OK*.

Field	Description
User ID	Enter your User Name to get access to the database. The User ID displayed in this field is the default User ID defined in <code>Metasuite.ini</code> .
Password	Enter your password.
Data Source Name	Enter the required DSN. The DSN displayed in this field is the default DSN defined in <code>Metasuite.ini</code> .
Database	Enter the name of the database.

Note: If required, make the necessary selections to obtain the ODBC connection.

Once the ODBC connection is established, the following screen is displayed.



4. In the upper part of the screen, define your selection criteria and click *Show*.
The lower part of the screen will list the Tables and/or Views matching your selection criteria.

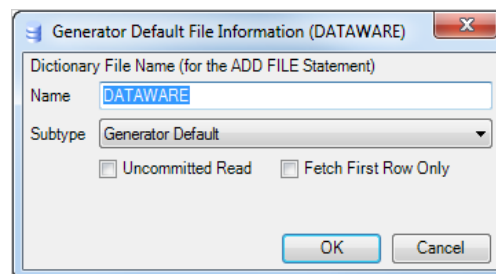
Selection Criterium	Description
Name	Enter a Table or View name in this field, if you want to limit your search to tables or views with this name. You may use the asterisk (*) and the question mark (?) as standard wildcard characters.
Qualifier	Enter a Qualifier in this field, if you want to limit your search to tables or views with this Qualifier. You may use the asterisk (*) and the question mark (?) as standard wildcard characters.
Owner	Enter a User ID in this field, if you want to limit your search to tables or views owned by this User ID. You may use the asterisk (*) and the question mark (?) as standard wildcard characters.
Type	Select one of the following types: <ul style="list-style-type: none"> • TABLE: include database tables in your search. • VIEW: include database views in your search. • BOTH: include both database tables and views in your search.

Note: *Owner* and *Qualifier* are ODBC terms. The meaning of these terms can differ between different databases or different ODBC drivers. Some drivers return an error when you enter a search string for *Owner* or *Qualifier* or some return no tables. If you encounter problems when entering selection criteria for *Owner* or *Qualifier*, try entering only an asterisk.
If the User ID you used to access the database does not have the required access rights to some or all Tables or Views, these Tables and Views will not be displayed.

5. Select the Table(s) and View(s) you want to include in the new Dictionary Files and click *OK*.

Note: If you want to select multiple adjacent items, click the first and the last item while pressing the *Shift* Key.
If you want to select multiple non-adjacent items, click the items while pressing the *Ctrl* Key.

The *RDBMS File Information* screen is displayed.



- Fill out the required fields.

Field	Description
File Name (Enter the filename for ADD FILE statement in MDL-file)	Enter the name of the Dictionary File
RDBMS SubType Information	Select the required SubType from the drop-down list. You can also select Generator Default to use the SQL dialect set as default in the Generator Manager.
Uncommitted Read	(DB2 only) Select this check box, if you want to perform a so-called dirty read. This means reading data without checking if the data has been locked or not.
Fetch First Row Only	(DB2 only) Select this check box, if you want to read only the first row, if different rows contain the same key.

The Dictionary File for each selected Table or Views is displayed in the Tree View Window.

- If required, edit the definitions.

The procedure to edit the definitions is identical to building Dictionary Files manually. See [Building Dictionary Files Manually - Overview](#) on page 20.

- Once the settings of the Dictionary Files match your requirements, you can save them to the MetaStore.

Click the *Save to MetaStore* icon () to do so.

SQL DDL

- On the *Collect File* screen, open the *Target* tab and select *RDBMS* as File Type.

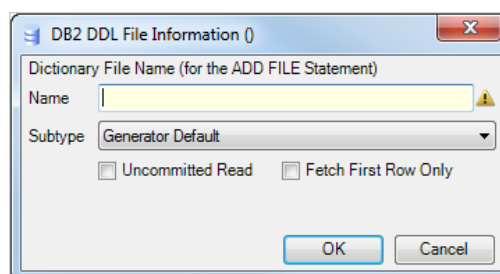
- Select the required format and click *OK*.

The default folder (as defined in the *MetaSuite.ini* file) opens in a new window and displays the available SQL DDLs (extension *.ddl*).

Note: If the DDL you need is not available in this folder, browse to the required folder.

- Select the required DDL and click *Open*.

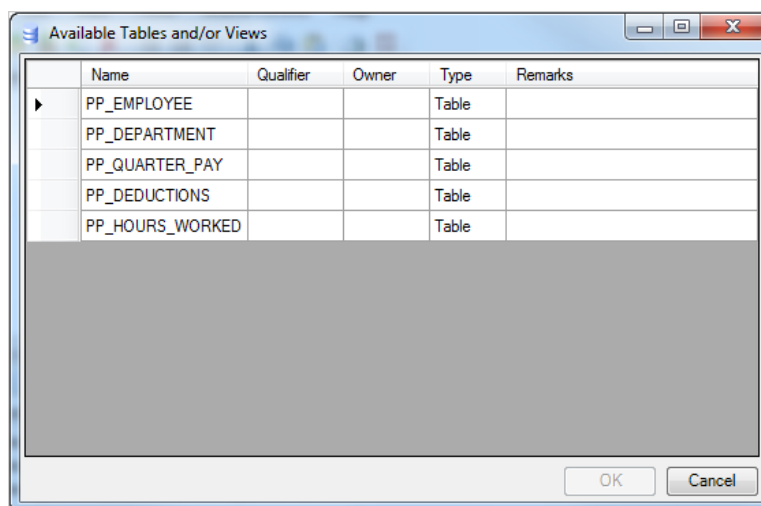
The *SQL DLL File Information* screen is displayed.



4. Fill out the required fields and click OK.

Field	Description
File Name	Enter the name of the Dictionary File. The name of the DDL file is used as default value.
RDBMS Subtype Information	<p>Select the required SubType from the drop-down list. The following options are available:</p> <ul style="list-style-type: none"> • DB2 for OS/400 • DB2 for z/OS • DB2 LUW • DB2/2 • DB2_VSE • Generator Default • Informix • Ingres • MySQL • ODBC • Oracle • Oracle/RDB • SESAM • SQLServer • Sybase • Teradata

The following screen is displayed.



5. In the upper part of the screen, define your selection criteria and click Show.
The lower part of the screen will list the Tables and/or Views matching your selection criteria.

Selection Criterium	Description
Name	Enter a Table or View name in this field, if you want to limit your search to tables or views with this name. You may use the asterisk (*) and the question mark (?) as standard wildcard characters.
Qualifier	Enter a Qualifier in this field, if you want to limit your search to tables or views with this Qualifier. You may use the asterisk (*) and the question mark (?) as standard wildcard characters.
Owner	Enter a User ID in this field, if you want to limit your search to tables or views owned by this User ID. You may use the asterisk (*) and the question mark (?) as standard wildcard characters.
Type	Select one of the following types: <ul style="list-style-type: none"> • TABLE: include database tables in your search. • VIEW: include database views in your search. • BOTH: include both database tables and views in your search.

Note: *Owner* and *Qualifier* are ODBC terms. The meaning of these terms can differ between different databases or different ODBC drivers. Some drivers return an error when you enter a search string for Owner or Qualifier or some return no tables. If you encounter problems when entering selection criteria for Owner or Qualifier, try entering only an asterisk.

If the User ID you used to access the database does not have the required access rights to some or all Tables or Views, these Tables and Views will not be displayed.

- Select the Table(s) and View(s) you want to include in the new Dictionary Files and click OK.

Note: If you want to select multiple adjacent items, click the first and the last item while pressing the *Shift* Key.

If you want to select multiple non-adjacent items, click the items while pressing the *Ctrl* Key.

- If required, edit the definitions.

The procedure to edit the definitions is identical to building Dictionary Files manually. See [Building Dictionary Files Manually - Overview](#) on page 20.

- Once the settings of the Dictionary File match your requirements, you can save it to the MetaStore.


Click the *Save to MetaStore* icon () to do so.

Importing MDL Files

Importing an MDL File means adding a Dictionary File to the MetaStore.

It can be useful to import MDL files, if:

- you need to transfer a Dictionary File from one to another MetaStore (e.g. if you have separate MetaStore for testing and actual use)
- you need to transfer a Dictionary File to a newer version of the MetaStore.

1. On the MetaStore Toolbar, click the *Import File* icon ()

The default folder (as defined in the *MetaSuite.ini* file) opens in a new window and displays the available MDL files.

Note: In order to access this screen, you can also select the *Import File* option accessible from the *File* menu or from the *MetaStore* context menu in the Tree View Window.

2. Select the required MDL file (or browse to another folder first, if it is not available in this one) and click Open.

The contents of the MDL file is displayed in the Tree View Window.

3. If required, edit the definitions.

The procedure to edit the definitions is identical to building Dictionary Files manually. See [Building Dictionary Files Manually - Overview](#) on page 20.

4. Once the settings of the Dictionary File match your requirements, you can save it to the MetaStore.

Click the *Save to MetaStore* icon () to do so.

Exporting Dictionary Files

Exporting a Dictionary File means generating a text file containing the definition of the selected Dictionary File(s) to one of the supported formats:

Format	Use
MDL (MetaSuite Definition Language)	<ul style="list-style-type: none"> Transfer a Dictionary File from one MetaStore to another (e.g. if you have separate MetaStores for testing and actual use) Edit the MDL code directly. Refer to the section Definition Language Commands (page 258). <p>Note: This use is no longer advised, as all required editing can be performed using the MetaStore Manager GUI.</p>
MXL	Conversion from an original format into <i>Delimited</i> (without using the MetaMap Manager).
XML	Conversion from an original format into an XML format.
XMI	Conversion from an original format into an XMI format, a standard format for modeling tools.
OWB	Will be supported in the next release.

20.1. General Export Procedure


1. Open the Dictionary File(s) to be exported.

To do so, click the *Open File* icon () from the MetaStore Toolbar. Select the required Dictionary File(s) from the list and click *Open*.

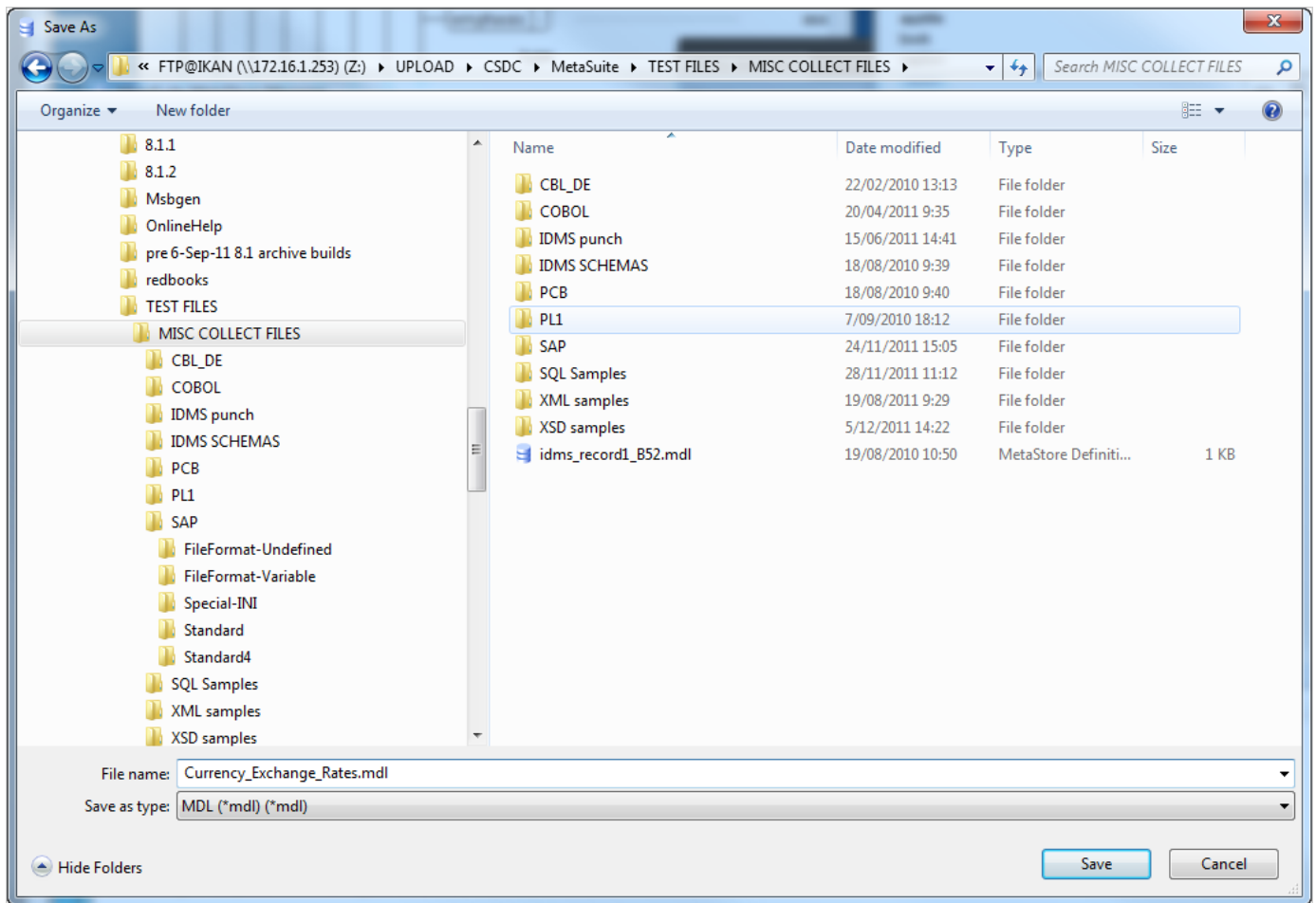
2. Select the Dictionary File to be exported in the Tree View Window.

Note: You can also export all opened Dictionary Files by selecting the MetaStore icon at the top of the Tree View Window.

3. From the *File* menu, select *Export*. Then choose the required format from the submenu.

Note: If you want to export the Dictionary File(s) to MDL, you can also click the *Export File* icon () on the MetaStore Toolbar.

The default folder (as defined in the MetaSuite.ini file) opens in a new window.



4. Confirm or enter the name and location of the exported File.
 - If you selected an individual Dictionary File, the default name for the exported file is the identical. If you selected the MetaStore icon, the default name for the exported MDL file is *DATA*.
 - The extension reflects the selected format.
 - The suggested location is determined by the MetaSuite initial settings. For more information, refer to the chapter *Customizing the MetaSuite INI Settings* in the *Installation and Setup Guide*.
5. Click Save.
The file is exported.

Selecting another User Profile

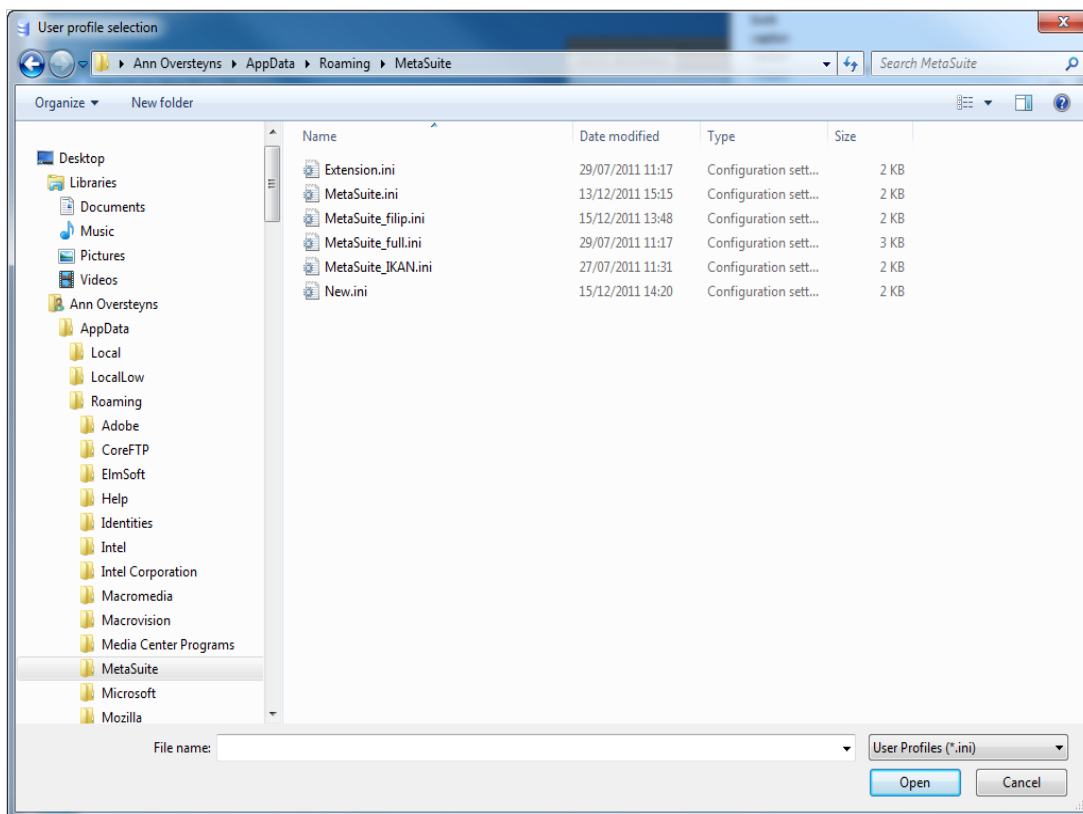
In MetaSuite, a *User Profile* is a combination of personalized settings which are saved in an INI file.

The default name of this INI file is `MetaSuite.ini` and it is located in the user's `AppData\Roaming\MetaSuite` folder. The initial settings were defined during the MetaSuite installation. It is possible to change the settings in the `MetaSuite.ini` file or to create additional INI files with different settings.

The option *User Profile* from the *Tools* menu allows to select another User Profile or to reload a modified User Profile, so that its settings become active.

Note: The procedure on how to update User Profiles is explained in the *INI Manager Guide*.

1. Select *Tools > User Profile*.
All available INI files are displayed.



2. Select the required INI file and click *Open*.

Version Management with Source Control

It is possible to save multiple versions of a Dictionary File. The versions are saved in a Source Control system like Microsoft SourceSafe and can be retrieved as files written in the MDL (*MetaSuite Definition Language*) format.

22.1. Establishing the Connection Between MetaStore and the Source Control System

When you start a new MetaStore Manager session, the connection to the Source Control system is not automatically established. If you want to use the Source Control, you need to establish the connection manually.

1. Select *Source Control > Connect to Source Control...*

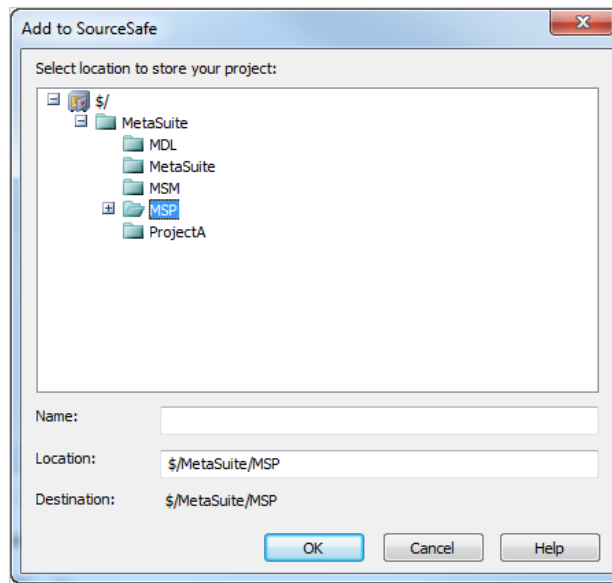
A screen similar to this one is displayed:



2. Fill out the fields as required and click **OK**.

Field	Description
Username	Enter a username you can use to access the Source Control database.
Password	Enter the required password.
Database	Enter the name of the Source Control database to be used. You can also use the <i>Browse</i> button to access the required database.

The following screen is displayed:



3. Select *MetaSuite* > *MSP* and click *OK*.

Note: The MSP folder is the default folder for MetaSuite Packages. You can modify the default folder using the INI Manager (refer to the INI Manager User Guide for more information).




The following message is displayed in the Output Window: *Source code-control: Connect to project was successful.*

22.2. Terminating the Connection Between MetaStore and the Source Control System

If you do not want to work with Source Control any longer, you can terminate the connection.

1. Select *Source Control* > *Disconnect from Source Control...*

Results:

- The following message is displayed in the Message window: *Source code control: Disconnect was successful*
- The special Dictionary File icons ( and ) are replaced by the standard Dictionary File icon ().

Note: When you make changes to Dictionary Files while the connection to Source Control is inactive, these changes will NOT be taken into account by the Source Control database. As a result, a discrepancy will occur between the MetaStore and the Source Control database.

22.3. Adding Dictionary Files to Source Control

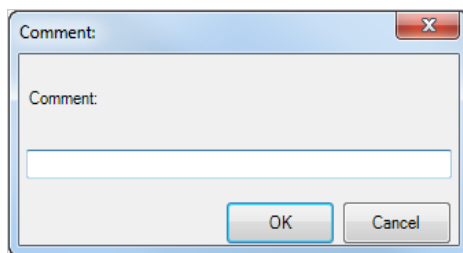
The purpose of adding Dictionary Files to Source Control is to save multiple versions of these files and to be able to retrieve each of these versions.

1. Create or open the Dictionary File you want to add to Source Control.


Refer to [Building Dictionary Files Manually - Overview](#) (page 20).

Note: You can verify if a Dictionary File has already been added to Source Control by selecting *Show Status* from the *Source Control* menu. See [Showing the Source Control Status of Opened Source Files](#) on page 247.

2. Right-click the Dictionary File name in the Tree View Window and select *Add to Source Control*. The following screen is displayed:



3. Enter a comment and click *OK*.

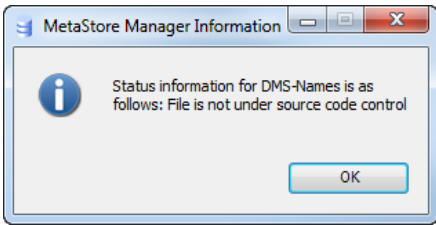

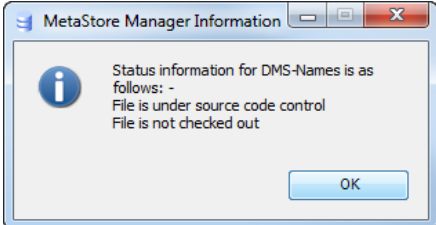

The Dictionary File is now checked in. In the Tree View Window, checked-in Dictionary Files are represented by the  icon.

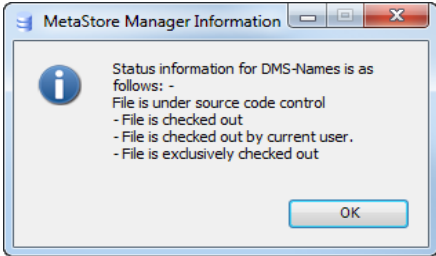

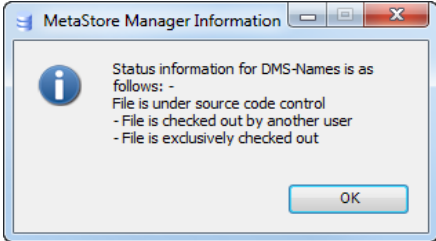

If you want to make changes to a checked-in file, you first have to check out the file. See [Performing Changes to Dictionary Files Under Source Control](#) on page 248.

22.4. Showing the Source Control Status of Opened Source Files

1. Open the Dictionary File you want to display the status for.
2. Select *Show Status* from the *Source Control* menu.

The applicable status message is displayed. The following table lists the different possibilities:

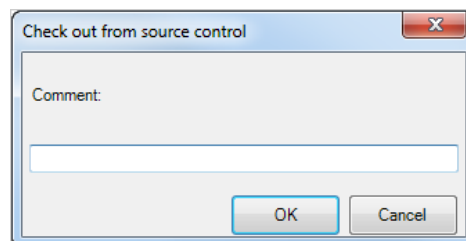
Status	Displayed message	Icon
Dictionary File not added to Source Control		
Dictionary File added to Source Control, not checked out		

Status	Displayed message	Icon
Dictionary File added to Source Control, checked out by you. This message does not exclude that this file has also been checked out by one or more other users.		
Dictionary File added to Source Control, checked out by at least one other user, but not by yourself.		

22.5. Performing Changes to Dictionary Files Under Source Control


1. Make the required Dictionary File version available in the Tree View Window.
2. Right-click the Dictionary File name and select *Check Out*.

The following screen is displayed:



3. If required, enter a Comment and click *OK*.

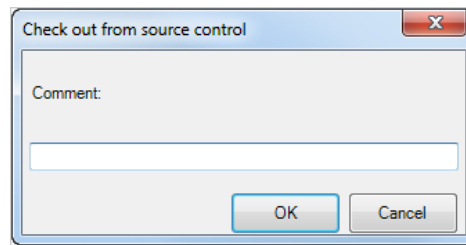
The Comment will be available in the Source Control program (Visual SourceSafe, ClearCase, etc.)

The Dictionary File is checked out. Its icon in the Tree View Window changes to .

4. If the selected Dictionary File was already checked out by another user, a warning is displayed. Click *Yes* to check out the file as well.
When you and the other user check in the Dictionary File, they will both get a Version Number, and they will be both managed by Source Control.
5. Perform the required changes to the Dictionary File.
See [Performing Changes to Dictionary Files Under Source Control](#) on page 248.

- Once the required changes have been performed, select *Check In* from the *Source Control* menu.

The following screen is displayed:



- If required, enter a Comment and click *OK*.

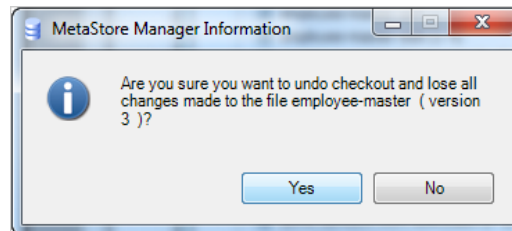
The Comment will be available in the Source Control program (Visual SourceSafe, ClearCase, etc.)

22.6. Undoing the Check-Out of a Dictionary File


You can undo the check-out of a Dictionary File, if you want to revert to the last saved version of a Dictionary File while ignoring the changes made in the mean time.

- Select the required Dictionary File in the Tree View Window.
- Select *Undo Check Out* from the *Source Control* menu.

The following message appears:



- Click *Yes* to confirm the operation.

The check-out is undone and the Dictionary File icon on the Tree View Window changes to . You can also click *No* to cancel the operation and keep the file checked out.

Internal Source Control

[Version Management with Source Control](#) (page 245) offers external version management: it maintains multiple versions of metadata in another database rather than in the MetaStore.

23.1. Metadata Versioning Rules

The MetaStore can contain several versions of a Dictionary File. The file type and name are identical, but the version number is different.

It is not possible to have several Dictionary Files with the same name, but different file types.

If you create or collect a new Dictionary File, the *Version* field on the Dictionary File properties panel should be defined as follows:

- If a Dictionary File with the same name already exists, enter the highest version number + 1 in this field.
- If a Dictionary File with the same name does not yet exist, enter 1 in this field.

When you import an MDL file, the Version should be set to the *nnnn* version number on the *ADD FILE* line of the file. If the version information is not present, the *Version* field on the Dictionary File properties panel should be defined as follows:

- If a Dictionary File with the same name already exists, enter the highest version number + 1 in this field.
- If a Dictionary File with the same name does not yet exist, enter 1 in this field.

When you export an MDL file, the Version is used to set the *nnnn* version number on the *ADD FILE* line of the file. If Version field is not available, the *nnnn* version number is set to 1.

The version number should consist of 1 to 4 digits, in the range between 1 and 9999. If the version number is 9999, the next build number is set to 1 again.

If a file without version indication is opened, the version will be set to 1.

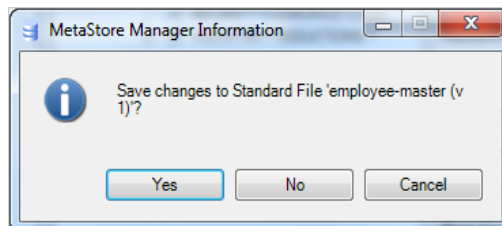
23.2. Incrementing the Version Number of a Dictionary File

1. Open a Dictionary File in MetaStore Manager.
2. Perform the required changes.
3. On the Dictionary File Properties window, increment the Version by 1.

The screenshot shows the 'employee-master (v 1)' properties window in MetaSuite MetaStore. The 'Version' field is highlighted with a yellow box and contains the value '0001'. Other fields include Name, Subtype, Code-control, Database, CCSID, Recording Mode, Record Format, Label, File Description Size, Block Size, Column Separator, and Row Terminator. A 'File Keys' pane on the right shows a 'New' button.

4. Save the Dictionary File to the MetaStore.

The following screen is displayed:



5. Click Yes.

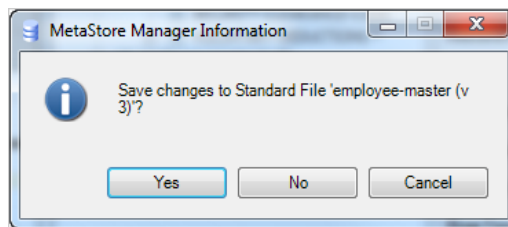
The incremented version is saved in the MetaStore.

23.3. Creating a New Instance of a Dictionary File

1. Open the Dictionary File you want to duplicate.
2. Right-click the Dictionary File name and select *Create New Version*.
A duplicate of the selected Dictionary File will be added at the bottom of the Tree View Window.

Note: The version number has automatically been incremented by 1.
If required, you can modify this version number. See [Incrementing the Version Number of a Dictionary File](#) on page 251.

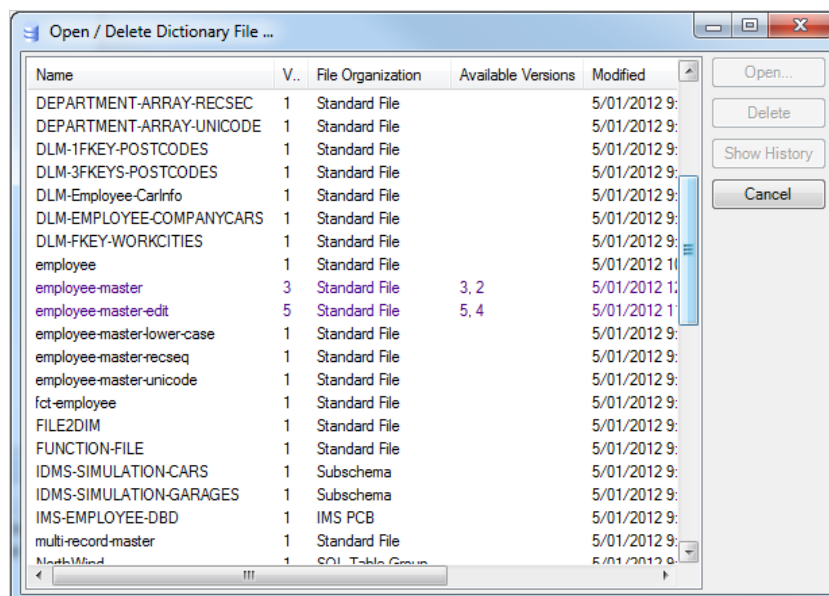
3. Select the newly created instance and save the Dictionary File to the MetaStore.
The following screen is displayed:



4. Click Yes.
The new instance is saved in the MetaStore.

23.4. Opening a Specific Version of a Dictionary File

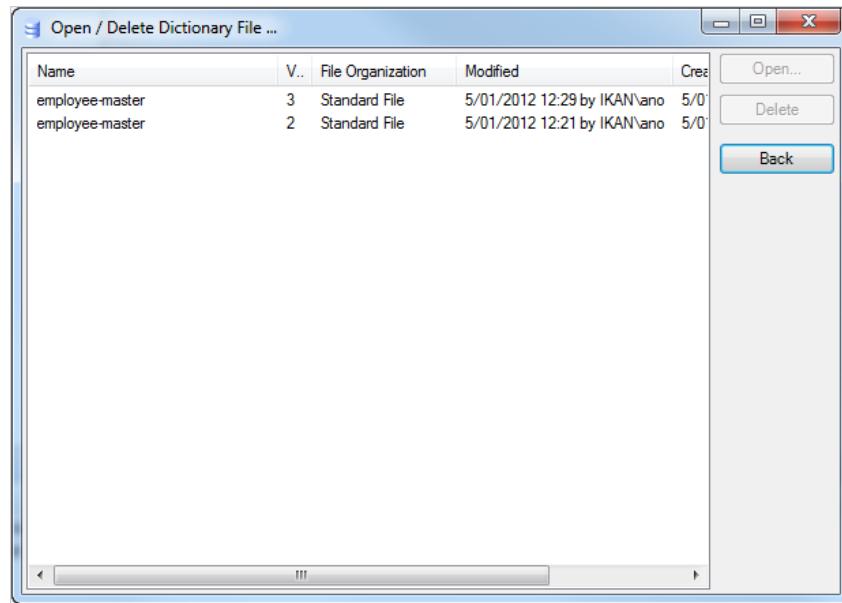
1. Click the *Open/Delete File ...* icon (📁) on the MetaStore Toolbar.
A screen similar to this one is displayed:



If there are multiple versions for a Dictionary File, these are indicated in the column *Available Versions*.

2. Select the Dictionary File with multiple versions and click the *Show History* button.

The following screen is displayed:



3. Select the required version(s) and click *Open*.

The selected version(s) are displayed in the Tree View Window.

Calling the MetaStore Manager in Batch

Users can call the MetaStore Manager in batch in order to

- import new definitions into the MetaStore dictionary
- export existing Metadata from the MetaStore dictionary to an MDL file.

The *MSBSTORE.exe* program (for MetaSuite Batch MetaStore) is located in the MetaSuite installation folder. The MDL file may contain multiple File Definitions. It can be used with an MS-DOS prompt or in batch mode.

24.1. Using MSBSTORE to Import MDL Files into the MetaStore Dictionary

Command format

```
msbstore -v[:version | +] [options] MDL_Filename
```

Where *MDL_Filename* is the name of the file containing the data description in MDL format.

The following table contains an overview of what version number is assigned to the Dictionary File in specific situation:

Option	MDL version number	MetaStore version number	New version number
-v	No version specified	Dictionary File not yet in MetaStore	1
	No version specified	y	y
	x	Dictionary File not yet in MetaStore	x
	x	y	x (in all cases)
-v+	No version specified	Dictionary File not yet in MetaStore	1
	No version specified	y	y+1
	x	Dictionary File not yet in MetaStore	x
	x	y	y+1, if x<=y x, if x>y

For more information on the available options, refer to [Optional Parameters Overview](#) (page 256).

Example

```
msbstore.exe -v -i:MetaSuite.ini "%MDLDIR%\XML-INP-PAIN.MDL"
Metasuite MetaStore Manager Batch Tool Version 08.01.02 Build 999
No path information specified FOR INI file, assuming C:\Documents and Set-
tings\fib\Application Data\MetaSuite.
Logging on as 'Metasuit' to database 'Metasuit' at server 'MetaStore:813:MsAccess'
...
Caching completed. The dictionary 'MetaSuite MetaStore' contains 57 files (ver-
sions included).
Importing ... : Z:\UPLOAD\CSDC\MetaSuite\TEST FILES\STANDARD MDL FILES\XML-INP-
PAIN.MDL
Importing ... completed with 0 warnings, and 0 errors.
Save XML-PAIN (StandardFile) ...
Save XML-PAIN (StandardFile) ... OK
Save MetaSuite MetaStore (Dictionary) ...
Save MetaSuite MetaStore (Dictionary) ... OK
Batch command(s) succeeded.
```

24.2. Using MSBSTORE to Export MDL Files from the MetaStore Dictionary

Command format

```
msbstore -e[:version] [options] MetaStore_Filename
```

Option	Description
-e[:version]	Export the specified MDL file from the MetaStore. If no version is specified in the MDL file, the latest version will be taken.
MetaStore_Filename	The name of the file that will be exported. If * is used as filename, all existing files in the MetaStore will be exported to DATA.MDL.

For more information on the available options, refer to [Optional Parameters Overview](#) (page 256).

Example

```
D:\Program Files\IKAN Solutions\MetaSuite813>msbstore -e -i:metasuite.ini -f:em-
ployee-master?
Metasuite MetaStore Manager Batch Tool Version 08.01.02 Build 267?
No path information specified FOR INI file, assuming C:\Documents and Set-
tings\fib\Application Data\MetaSuite.?
Logging on as 'Metasuit' to database 'Metasuit' at server 'MetaStore:813:MsAccess'
...?
Caching completed. The dictionary 'MetaSuite MetaStore' contains 60 files (ver-
sions included).?
Exporting "employee-master (v 1)". . . ?
Export of employee-master to D:\Program Files\IKAN Solutions\MetaSuite813\MDL\em-
ployee-master.Mdl: Done.?
Batch command(s) succeeded.??
```

24.3. Using MSBSTORE to Collect Files

Command format

```
msbstore -c[+] -t:collectType [options] -f:Collect_filename}
```

Where *filename* is the name of the collected file.

Option	Description
-c	Collect the specified file into the MetaStore. If no version is specified in the collected file this is the same as -c+.
-c+	Collect the specified file into the MetaStore and create a new version of the files.
-t:collectType	Collect type: cbl - COBOL copy book pli - PL/I include Book rp - Idms record punch sp - Idms schema punch ddl - SQL DDL or DB2 DDL sap - SAP/R3DMI 3.1, SAP/R3DMI 4.0 xsd - XSD
-f:Collect_filename	The name of the collected file.

For more information on the optional parameters, refer to [Optional Parameters Overview](#) (page 256).

Example

```
D:\Program Files\IKAN Solutions\MetaSuite813>msbstore -c -i:metasuite.ini -f:em-
ployee-master.cbl -t:cbl
Metasuite MetaStore Manager Batch Tool Version 08.01.02 Build 267
No path information specified FOR INI file, assuming C:\Documents and Set-
tings\fib\Application Data\MetaSuite.
Logging on as 'Metasuit' to database 'Metasuit' at server 'MetaStore:813:MsAccess'
...
Caching completed. The dictionary 'MetaSuite MetaStore' contains 60 files (ver-
sions included).
Started collecting of 'Z:\UPLOAD\CSDC\MetaSuite\TEST FILES\MISC COLLECT FILES\em-
ployee-master.cbl'.
Save employee-master (StandardFile) ...
Save employee-master (StandardFile) ... OK
Batch command(s) completed with error(s).
```

24.4. Optional Parameters Overview

Option	Description
-h or -?	Help. Displays the options.

Option	Description
-i:file name	INI file with preset settings for MetaSuite. Mandatory if no user, pass, etc. are supplied. INI settings will be overridden by the command line settings.
u:userid	User ID to log on to the MetaStore.
-p:password	Password to log on to the MetaStore.
-s:DSN	Data source name for ODBC connection to the MetaStore.
-d:database	Database to log on to the MetaStore.
-o:owner	The owner of the MetaStore tables.
-l:folder	The folder where the MDL: <ul style="list-style-type: none"> • will be placed (optional) - for export • resides (optional) - for import

24.5. MSBSTORE Return Codes

There are two possible Return Codes after an MSBSTORE run:

- 0 (zero): Import or export successful. A message is written to stdout.
- 4: Import or export failed. An appropriate message is written to stdout and to the *msbstore.log* file. This file is located in the MetaSuite installation folder.

24.6. Calling MetaStore Manager Via the Commandline

MetaStore Manager can be called by means of the following command:

```
MetaStore [filename1] [filenameN] <Ins>
```

filename1 ... filenameN	optional	These files can be collectable files or MDL files. Metastore will investigate the extension of the file name and will collect or import the file accordingly.
Ins	mandatory	The installation directory specified during installation.

Definition Language Commands

25.1. ADD FILE

The *ADD FILE* command is used to add a file definition. This command defines the physical characteristics of a file. The *ADD FILE* command options are used to specify the type of file organization, the size and format of the records in the file, the recording mode used to store file data, the type of label records used, and the name of the field used as a key for random access.

Format

```
ADD FILE file-name
  [VERSION file-version]
  [TYPE file-type]
    {FIXED | VARIABLE | UNDEFINED} record-size
  [BLOCK block-size] [SPANNED]
  [MODE {EBCDIC | ASCII}]
  [LABEL {STANDARD | OMITTED}]
  [KEY (key-field)]
  [CODE-CONTROL table-name]
  [FETCH-FIRST-ONLY]
  [UNCOMMITTED-READ]
  [EXTERNAL-SOURCE 'external-source-name']
  [COLUMN-SEPARATOR 'column separator characters']
  [ROW-TERMINATOR 'row terminator characters']
  [CCSID coded-character-set-identifier]
  [XPATH XML-path]
  [XML-DECLARATION xml-declaration]
  [RULE business-rule]
  [NOTE note]
```

ADD FILE

Required.

File-name is the name of the file being defined.

The name you enter must meet the following conditions:

- The name may contain up to 32 characters.
- It must begin with an alphabetic character.
- It may contain the characters A-Z and 0-9.
- It may contain the following embedded special characters: \$, #, @, _ (underscore) and - (hyphen).
- File names must be unique in the MetaSuite Generator Library.

The example below defines two files: PAYROLL-DETAIL, with a fixed record length of 100 and EMPLOYEE-MASTER, an indexed sequential file with a fixed record length of 150.

```
ADD FILE PAYROLL-DETAIL FIXED 100 -
RULE CONTAINS DETAIL PAY INFORMATION FOR EACH EMPLOYEE FOR EACH PAY-PERIOD
ADD FILE EMPLOYEE-MASTER TYPE INDEX FIXED 150 KEY (EMPLOYEE-NUMBER)
```

Some restrictions apply when defining certain types of database files. File naming considerations for each type of supported database file are described in the supplement appropriate for the database.

VERSION

Optional.

The *VERSION* option specifies the *version-number* of a file.

The following command defines a sequential file with version 2:

```
ADD FILE PAYROLL-DETAIL VERSION 2 TYPE SEQUENTIAL FIXED 100
```

TYPE

Optional.

The *TYPE* option specifies the type of file organization used by the file. If omitted, it defaults to *TYPE SEQUENTIAL* (indicating a sequential file).

```
TYPE {FUNCTION | SEQUENTIAL | INDEX | RELATIVE | VSAM | SEQ-LINE | SEQ-RECORD |
DELIMITED | XML | database}
```

Each type of file organization is described separately.

FUNCTION	<p>TYPE <i>FUNCTION</i> indicates that the records of the file describe the input and/or output fields required for a subroutine INVOKE command.</p> <p>The following command defines a function file named CALLING-PARMS:</p> <pre>ADD FILE CALLING-PARMS TYPE FUNCTION</pre>
SEQUENTIAL	<p>TYPE <i>SEQUENTIAL</i>, the default file type, indicates that the records of the file are physically stored in sequential order and may only be retrieved in the order in which they were written.</p> <p>The following command defines a sequential file named PAYROLL-DETAIL:</p> <pre>ADD FILE PAYROLL-DETAIL TYPE SEQUENTIAL FIXED 100</pre> <p>This type corresponds with Line Sequential on LUW systems and with Record Sequential on Mainframe systems.</p> <p>Note that <i>SEQUENTIAL</i> describes any sequential file, regardless of the media (disk, tape, card, etc.) on which it is stored.</p>
INDEX	<p>TYPE <i>INDEX</i> indicates that the records of the file are sequenced logically (but not necessarily physically) according to the value of a specified <i>key-field</i>.</p> <p>Records of this type of a file may be accessed sequentially in key sequence, or randomly, for specific values of the <i>key-field</i>.</p> <p>The <i>key-field</i> for a TYPE INDEX file must be identified using the KEY option (described later).</p> <p>In IBM terminology, this type of file organization is referred to as ISAM: an acronym for the Indexed Sequential Access Method.</p> <p>The following command defines an ISAM employee master file:</p> <pre>ADD FILE EMPLOYEE-MASTER TYPE INDEX FIXED 150 KEY (EMPLOYEE-NUMBER)</pre> <p>Note: Before referencing this file in a program request, the <i>key-field</i> (EMPLOYEE-NUMBER) must be defined as a field within a record of the EMPLOYEE-MASTER file.</p>

RELATIVE	<p>TYPE <i>RELATIVE</i> indicates that the file is a relative record file in which records are stored and retrieved according to the value of a relative record number (the number of the record relative to the beginning of the file). A file with relative file organization is referred to as a BDAM (Basic Direct Access Method) file.</p> <p>The following ADD FILE command defines a TYPE RELATIVE file named STATE-TABLES:</p> <pre>ADD FILE STATE-TABLES TYPE RELATIVE FIXED 522</pre> <p>Note: Unlike other keyed file types (ISAM and VSAM KSDS), TYPE RELATIVE files are not defined using the KEY option to identify the field within the record that contains the random access key. This is because the <i>key-fields</i> for a relative file are not actually contained within the records, but are rather maintained by the BDAM access method externally to the records. MetaSuite will automatically identify, define and maintain relative-record access <i>key-fields</i>.</p>
VSAM	<p>TYPE VSAM indicates that the IBM's Virtual Storage Access Method is used to store and retrieve the records of the file. There are two types of VSAM files supported by the system: ESDS (Entry Sequence Data Set), and KSDS (Key Sequence Data Set). ESDS files are analogous to sequential files, and KSDS files are analogous to indexed sequential files. Like TYPE INDEX files, TYPE VSAM files of the KSDS variety must be defined with the KEY option (described below), to identify the field on whose value the sequencing of the file is based.</p> <p>The following commands illustrate the definition of ESDS and KSDS type VSAM files:</p> <pre>ADD FILE PAYROLL-DETAIL TYPE VSAM FIXED 100 ADD FILE EMPLOYEE-MASTER TYPE VSAM FIXED 100 KEY (EMPL-NUMBER)</pre> <p>Before referencing the second file above (EMPLOYEE-MASTER) in a program request, the <i>key-field</i> (EMPLOYEE-NUMBER) must be defined as a field within a record of the EMPLOYEE-MASTER file.</p> <p>In addition to the primary <i>key-field</i> for a VSAM KSDS file, secondary index fields may exist. These fields provide alternate access paths to the records of the file. For example, the primary <i>key-field</i> of an employee master file might be the employee number, meaning that the records of the file are organized logically and accessed (randomly or in sequence) by the employee number. If it is frequently necessary to access the records of this file in some other sequence (employee name, for example), a secondary index field would be defined (to VSAM) to provide an alternate access path. The records of the file could then be accessed in sequence by either employee number or employee name.</p> <p>A secondary index path is defined as a <i>separate VSAM file</i>, with the name of the secondary index field being used in the KEY specification (instead of the primary index field).</p> <p>For example, the following two commands define the same physical file. However, when the first file definition is accessed in a program request, the records will be returned in EMPLOYEE-NUMBER sequence. When the second file definition is accessed, the records will be returned in EMPLOYEE-NAME sequence.</p> <pre>ADD FILE EMPLOYEE-BY-NUMBER TYPE VSAM FIXED 150 KEY (EMPLOYEE-NUMBER) ADD FILE EMPLOYEE-BY-NAME TYPE VSAM FIXED 150 KEY (EMPLOYEE-NAME)</pre>
SEQ-LINE	<p>Type <i>SEQ-LINE</i> indicates that the file is defined as line sequential.</p> <pre>ADD FILE employee TYPE SEQ-LINE FIXED 204 LABEL STANDARD</pre>
SEQ-RECORD	<p>Type <i>SEQ-RECORD</i> indicates that the file is defined as record sequential.</p> <pre>ADD FILE employee TYPE SEQ-RECORD FIXED 204 LABEL STANDARD</pre>

DELIMITED	<p>"Delimited" is a special case of "Sequential". The default CODE-CONTROL table of "Delimited" is different to the default code-control table of "Line sequential".</p> <p>ADD FILE employee TYPE DELIMITED VARIABLE 204</p> <p>Delimited records, or comma-separated records, are line sequential records for which the fields are separated by semicolons.</p> <p>Example:</p> <pre>10;"DOE";"JOHN";15;"IKAN";"Y" 20;"ARMSTRONG";"NEIL";20;;"N" --> here's a null value 30;"ALDRIN";"BUZZ";50;" ";"N" --> no null value, but a space</pre>
XML	<p>XML files are sequential files with a specific structure. The default CODE-CONTROL table of "XML" is XML, but the more sophisticated format is XPC. The difference between XML and XPC code control tables lays in the fact that XPC files make use of an XPATH in order to find the correct record and field structure, while simple XML files have a flat structure, or are supposed to have a flat structure.</p> <p>ADD FILE employee TYPE XML VARIABLE 204</p> <p>For more information about XML files, please refer to the <i>XML File Access Guide</i>.</p>
database	<p>When defining a database file, refer to the appropriate database supplement for instruction.</p>

Record-size

Required.

FIXED record-size, *VARIABLE record-size*, or *UNDEFINED record-size* defines the type of the records of the file and their (maximum) length. When coded, one of the three formats (described individually below) must be used.

FIXED <i>record-size</i>	<p>Fixed Length</p> <p><i>FIXED</i> indicates that the records of the file are all the same number of characters in length. <i>Record-size</i> defines the character length of the records. As an example, the following command defines a file whose records are all 100 characters in length:</p> <pre>ADD FILE PAYROLL-DETAIL FIXED 100</pre>
VARIABLE <i>record-size</i>	<p><i>VARIABLE</i> indicates that records of more than one length exist on the file, with <i>record-size</i> specifying the maximum number of characters contained in any one record (exclusive of the four-character "record descriptor word" that is always present at the beginning of a variable length record). The following command defines a file containing variable length records having a maximum length of 482 characters:</p> <pre>ADD FILE ACCOUNT-TRANSACTIONS VARIABLE 482</pre> <p>Note: When defining the fields of the records of variable-length record files, the first data field begins in POSITION 1; the four-character "record descriptor word" that is present at the start of each record cannot be accessed directly from the generated COBOL record description.</p>

UNDEFINED *record-size*

UNDEFINED indicates that the record length is variable, but that the records are not standard variable length records. (Record descriptor words, which are standard for variable-length records, are not maintained at the start of each UNDEFINED record; rather, the application programs accessing the file determine the record size according to other criteria.)

When the UNDEFINED option is coded, the BLOCK option (described below) may not be coded.

Record-size specifies the maximum number of characters contained on any record in the file.

The following command illustrates the definition of a file containing records of an undefined format.

```
ADD FILE FOREIGN-DATA UNDEFINED 4095
```

BLOCK

Optional.

Block-size specifies the maximum number of characters contained in a block of records in the file. For variable-length records, the block size includes the four-byte record descriptor word for each record. If the BLOCK option is omitted, block size defaults to the same size as the record size.

The *block-size* is not allowed in conjunction with the UNDEFINED option (described above).

For sequential files in the z/OS environment, the block size defined is for documentation purposes only; generated programs accessing such files will determine the block size at execution time, either from the file label or from the JCL. In the VSE environment, this option must be coded in all cases where the block size is not equal to the record size.

The following commands illustrate the use of the BLOCK option to define the maximum block size of a file:

```
ADD FILE PAYROLL-DETAIL FIXED 100 BLOCK 3000
ADD FILE SMF-EXTRACT VARIABLE 6628 BLOCK 32760
```

SPANNED

Optional.

Applicable only when both the VARIABLE and BLOCK options (described above) are coded. *SPANNED* indicates that each variable length record may "span" two or more blocks.

The command below illustrates the use of the *SPANNED* option:

```
ADD FILE SALES-HIST VARIABLE 4080 BLOCK 2084 SPANNED
```

MODE

Optional.

MODE defines the recording mode of the file: EBCDIC (Extended Binary Coded Decimal Interchange Code) or ASCII (American National Standard Code for Information Interchange). The default recording mode depends on the generator that is used. The following command illustrates the use of the MODE option to define a file containing ASCII data:

```
ADD FILE TAX-TABLES FIXED 800 BLOCK 4000 MODE ASCII
```

Note: The OS/VS COBOL parameter LANGLVL(1) must be included in the COBOL parameter list for any program that accesses an ASCII file.

LABEL

Optional.

LABEL defines whether the file has standard label records or no label at all.

STANDARD, the default label-type, indicates that the file has standard label records (as defined by IBM). A file label contains information such as the creation date and the length of the file. *OMITTED* indicates that the file does not contain label records. The following command illustrates the use of the *LABEL* option to define a file containing no label records:

```
ADD FILE PAY-HIST FIXED 266 BLOCK 2660 LABEL OMITTED
```

KEY

Optional.

Applicable for type INDEX, type VSAM (KSDS), sequential and SQL arrays. The *KEY* option names the field (*key-field*) whose value may be used to access a record in the file directly or identify the external array search *key-field*. Before the records of the file can be accessed randomly or searched for in a generated program, *key-field* must be defined as a field within a record of *file-name*.

The following command identifies the EMPLOYEE-NUMBER field as the random access *key-field* of the VS-EMPLOYEE-MASTER file:

```
ADD FILE VS-EMPLOYEE-MASTER TYPE VSAM FIXED KEY (EMPLOYEE-NUMBER)
```

CODE-CONTROL

Optional.

The *CODE-CONTROL* option allows you to override the normal system generated COBOL code used to process this file, as directed by the MetaSuite Generator library table identified by *table-name*. This is used when you want to invoke an external I/O module to read or write the file or to expand or compress data. When this option is used, the table specified by *table-name* must exist in the MetaSuite Generator library before programs using the file can be generated.

If the *table-name* is a three letter word than the *CODE-CONTROL* parameter will be suffixed with "INP".

Example: Code-control XML will become XMLINP, and Code-control MQS will become MQSINP.

FETCH-FIRST-ONLY

Optional.

Use this option to include FETCH FIRST (1) ROW ONLY in select statements on this source file.

The FETCH FIRST (1) ROW ONLY clause was implemented in V7 of DB2 for z/OS. The major benefit of this query is that it limits the number of rows returned by the query, regardless of how many rows qualify from the WHERE clause.

Remark: Older compilers versions may not support this option, so be careful when using this feature.

UNCOMMITTED-READ

Optional.

Uncommitted Read (UR) is also known as "dirty read" or "read through locks".

Use this option to specify WITH UR in select statements on this source file.

This option will override the isolation level with which the plan or package was bound.

UR requires Type 2 indexes if an index access path is to be used. Please note that using UR can produce strange results. Use it only if you are sure it can do no damage.

Note: Contrary to popular belief (to coin a phrase) queries using UR do acquire locks, though not the kind that are likely to cause contention. First, they acquire a special "mass delete" lock in share (S) mode on the target table or table space; this is not the same as a normal share (S) lock on a table or table space. The special mass delete S lock prevents any other process from issuing a mass delete (a delete statement without a WHERE clause) while the query is running. Thus, it is possible to have contention between a UR query and a mass delete. Second, UR queries acquire IX locks on any table space they may happen to use in the temporary work file database. This lock prevents the work file table space from being dropped while the query is running; it is of no concern to the developer because the work file table spaces are dropped, if at all, only during DB2 subsystem maintenance, and no queries would be running while such maintenance was in progress.

Remark: Older compilers versions may not support this option, so be careful when using this feature.

EXTERNAL-SOURCE

This parameter is optional.

The *EXTERNAL-SOURCE* option can be used in two ways:

1. In order to make a link between the *file-name* definition in MetaSuite and the physical file name on disk. The physical file name will be used automatically in the generated job.
2. In order to indicate that there is no direct access to the data source. The data source might be remote, or there is need to copy or transform the source file via a simple copy or via a transformation tool. In this case the file, specified by the *EXTERNAL-SOURCE* parameter is the file that has to be transferred or copied to the local area.

The local input file will have the name indicated by *file-name*.

The transfer method is put before the name of the external file, in the form TTT:FFFFF, where TTT = the name of the transfer method and FFFFF = the external file.

Transfer Method Convention.

The treatment of this parameter will be done in the MRL tables.

The client can customize those tables.

Although the interpretation of the *EXTERNAL-SOURCE* option is fully customizable, the standard MetaSuite installation will use the following convention rule:

External Source Name	Meaning
FTP:Filename	The file will be downloaded via the FTP protocol.
CPY:Filename	A file copy will be done from this file to the standard file.
STD:Filename	This file name will be taken as input file.

The External Source parameter is not supported yet on every platform.

UNIX and Windows are fully supported. OS390 supports the STD type.

Please contact the MetaSuite support team if you want to use this option on another platform.

Some MTL options are made available in order to help you with the use and customization of your external-source solutions.

Extract from the MTLOPT table:


```

@TNR RL1002 A F 72?
lrem - get external source %[STANDARD-PREFIX]F#2%?
>FREEZE QUOTE?
>EVALUATE '#5'?
>WHEN 'FTP'?
lset FTPDAT=ftp#2.dat?
lecho open [FTP-ADDRESS]>%FTPDAT%?
lecho [FTP-USER]>>%FTPDAT%?
lecho [FTP-PASSWORD]>>%FTPDAT%?
lecho [FTP-TYPE]>>%FTPDAT%?
lecho get "#6" %[STANDARD-PREFIX]F#2%>>%FTPDAT%?
lecho close>>%FTPDAT%?
lecho quit>>%FTPDAT%?
lftp -s:%FTPDAT%?
ldel %FTPDAT%?
>WHEN 'CPY'?
lcopy "#6" %[STANDARD-PREFIX]F#2%?
>WHEN 'STD'?
lcopy "#6" [STANDARD-PREFIX]F#2?
>END-EVALUATE?
>UNFREEZE QUOTE

```

The MRL tables to be customized are RL1002 and RL1012. RL1002 is used to get the external source on the local machine and RL1012 is used to remove the external source from the local machine at the end of the job. For more information about the use of the MRL tables, please refer to the *Generator Manager User Guide*.

COLUMN-SEPARATOR

Optional.

This parameter is used in case of delimited source files.

It contains the delimiter character(s) of the delimited source file.

If this parameter is missing, the default column separator character ";" will be used.

The Column Separator can be 1 to 3 bytes long.

Following special values are allowed:

```

SYS-LOW-VALUE or LOW-VALUE : replaces hex "00".
SYS-HIGH-VALUE or HIGH-VALUE : replaces hex "FF".
TAB-CHARACTER : replaces hex "09" .

```

ROW-TERMINATOR

Optional.

This parameter is used in case of delimited source files.

It contains the character or character sequence on which the record data stops. All bytes behind this character or character sequence are interpreted as comment.

If this parameter is missing, no row terminator character will be interpreted.

The Row Terminator can be 0 to 5 bytes long

CCSID

Optional.

CCSID is an abbreviation to mean "Coded Character Set Identifier". It is a 16-bit number that represents a specific encoding of a specific code page.

This *CCSID* can be specified on general MetaSuite level (dictionary settings CHARACTER-CCSID and UNICODE-CCSID), but also on file level, record level and field level.

XPATH

Optional.

XPATH is a query language for selecting nodes from an XML document. The *XPATH* contains the concatenation of the different nodes that have to be read before the actual content starts.

The *XPATH* delimiter is a forward slash.

Example:

```
ADD FILE COLLECT_TYPES TYPE XML CODE-CONTROL XPC XPATH '/XML/Profiles'
XML-DECLARATION ...
```

No record verification will be done until the nodes <XML> and <Profiles> have been read.

When writing a target file, the full *XPATH* will be written before the record node is put.

XML-DECLARATION

Optional.

This parameter is used when writing XML target files. It contains the XML declaration sentence that must be written at the start of an XML file.

Example:

```
ADD FILE COLLECT_TYPES TYPE XML ... XML-DECLARATION '<?xml version="1.0"
encoding="UTF-8"?>'
```

This will result in the following output:

```
<?xml version="1.0" encoding="UTF-8"?>
<xml>
  <Profiles>
  ...
  </Profiles>
</xml>
```

RULE

Optional.

The *RULE* option is used to add a business rule documenting your file.

NOTE

Optional.

The *NOTE* option is used to add a note documenting your file.

25.2. ADD RECORD

The *ADD RECORD* command is used to define a record (table). Each record that is formatted differently should be defined as a separate record. At least one record must be defined for each file.

Note that additional options of the *ADD RECORD* command are available (and in some cases required) when defining the records of database files. Refer to the appropriate database supplement when defining the records of a database file.

Format

```
ADD RECORD record-name [OF file-name]
    [SIZE maximum-record-size]
    [KEY (field-name value-test,...)]
    [COLUMN-SEPARATOR 'column separator characters']
    [ROW-TERMINATOR 'row terminator characters']
    [CCSID coded-character-set-identifier]
    [XPATH XML-path]
    [RULE business-rule]
    [NOTE note]
```

ADD RECORD

record-name

Required.

Record-name is the name of the record being defined.

The name you enter must meet the following conditions:

- The name may contain up to 32 characters.
- It must begin with an alphabetic character.
- It may contain the characters A-Z and 0-9.
- It may contain the following embedded special characters: \$, #, @, _ (underscore) and - (hyphen).

Note: Additional restrictions apply to the naming of the records of database files. Refer to the appropriate database supplement when defining such records.

Any appropriate name may be selected for *record-name*. For example, the following command defines a record named EMPLOYEE-DATA within the file named EMPLOYEE-MASTER:

```
ADD RECORD EMPLOYEE-DATA OF EMPLOYEE-MASTER
```

file-name

Optional.

File-name defines the dictionary file for which the record is defined. When omitted, the last changed dictionary file is considered to be the file for which the record is defined.

SIZE

Optional.

Maximum-record-size defines the maximum number of characters included in the record. It must be an integer, and cannot exceed the maximum record size defined for any file in which the record is being defined. If the SIZE option is omitted, it defaults to the record size of the file referenced in the OF list.

KEY

```
KEY (field-name value-test,...)
```

The *KEY* option is used to identify record identification fields and the specific ranges of values for those key fields. Record identification fields are used to identify the record type being defined. *Field-name* is the name of a field within the record. *Value-test* defines the value of the field that indicates an occurrence of *record-name* has been obtained. *Value-test* takes the forms shown below:

Form	Meaning
EQ value	the record-id is <i>equal</i> to the specified
EQ (value,...)	the record-id is <i>equal</i> to any of the specified values.
NE value	the record-id is <i>not equal</i> to the specified value.
NE (value,...)	the record-id is <i>not equal</i> to any of the specified values.
LT value	the record-id is a value <i>less than</i> the specified value.
LE value	the record-id is a value that is <i>less than or equal</i> to the specified value.
GT value	the record-id is a value that is <i>greater than</i> the specified value.
GE value	the record-id is a value that is <i>greater than or equal</i> to the specified value.
IR (low TO high)	the record-id is a value that does fall in the specified range of values.
NI (low TO high)	the record-id is a value that does not fall in the specified range of values.

You can specify any number of expressions, separated by commas. If you do, an occurrence will not be identified unless all the expressions are true.

Assume that a file named TRANSACTION contains three differently formatted records: a master record, a billing record, and a payment record. A one-character field, containing the value "M", "B", or "P", identifies each record type. The three records of this file might be defined as follows:

```
ADD RECORD MASTER-TRANS KEY (MASTER-TYPE EQ 'M')
ADD RECORD BILL-TRANS KEY (BILL-TYPE EQ 'B')
ADD RECORD PAY-TRANS KEY (PAY-TYPE EQ 'P')
```

The following example defines two multiple-record types. Each is identified by the value 200 in FIELD-A, but differentiated by the values in FIELD-B. One record, named FIRST-RECORD, is defined by the following command:

```
ADD RECORD FIRST-RECORD KEY (FIRST-FIELD-A EQ 200, FIRST-FIELD-B EQ 'Z')
```

The second record is defined with ADD RECORD as shown below:

```
ADD RECORD SECOND-RECORD KEY (SECOND-FIELD-A EQ 200, SECOND-FIELD-B EQ
('A', 'B', 'C'))
```

Special considerations apply to the coding of the *KEY* option when defining the records of database files. In most cases no *KEY* option is coded for a database record, because only the specific record type requested will be accessed by the DBMS. However, under some circumstances, multiple record types are stored and accessed as a single record type by the DBMS. When this occurs, you must provide a means of distinguishing the different types of records that may be returned. The *KEY* option is used for this purpose, and is described in the appropriate supplement for each supported DBMS.

COLUMN-SEPARATOR

Optional.

The *COLUMN-SEPARATOR* option specifies the separator characters to use for a delimited file. This can only be specified for Delimited/BRS file types.

The Column Separator size is one to three characters.

Alphabetic characters are not suitable to serve as column separator. Therefore we have exploited some of them to refer to special characters like TAB, high-value and so forth.

Column Separator	Will be replaced by
B	Blank character – space
L	Low-value character – Hex-00
H	High-value character – Hex-FF
T	Tab character – Hex-09

If the user wants to use comma separated value files (CSV-files) as input, then the same abbreviations can be taken. The comma separator for source files can be specified in the MTL option *OPTION-CSV-SEPARATOR*.

ROW-TERMINATOR

Optional.

The *ROW-TERMINATOR* option specifies the characters that will end a row of a delimited file. This can only be specified for Delimited file types.

The Row Terminator size is zero to five characters.

CCSID

Optional.

CCSID is an abbreviation to mean "Coded Character Set Identifier". It is a 16-bit number that represents a specific encoding of a specific code page.

This *CCSID* can be specified on general MetaSuite level (dictionary settings *CHARACTER-CCSID* and *UNICODE-CCSID*), but also on file level, record level and field level.

XPATH

Optional.

XPATH is a query language for selecting nodes from an XML document. The *XPATH* contains the concatenation of the different nodes that have to be read before the actual content starts.

The *XPATH* on record level can have an *ABSOLUTE* or a *RELATIVE* value.

- If the value of *XPATH* starts with a forward slash ("/"), it is an absolute *XPATH* and the *XPATH* of the file level is being ignored.
- If the value does not start with a forward slash ("/"), the value will be concatenated with the *XPATH* on file level. In that case a value must be defined on file level.

See also [XPATH](#) (page 266) on file level.

RULE

Optional.

The *RULE* option is used to add a business rule documenting your record.

NOTE

Optional.

The *NOTE* option is used to add a note documenting your record.

25.3. ADD FIELD

The *ADD FIELD* command is used to define a field (column). This command defines all of the field's physical attributes, such as size and internal data type. In addition, it may define other (optional) attributes, such as a special editing format, a date format and an allowable range of values.

Note that additional options of the *ADD FIELD* command are available (and in some cases required) when defining the fields of database files. Refer to the appropriate database supplement when defining the fields of a database file.

Format

```
ADD FIELD field-name
  [OF { record-name | group-field}]
  POSITION start-position
  SIZE characters
  [OCCURS number-times [DEPENDING ON depend-field]]
  [TYPE datatype ]
  [{DATE 'format' | TIME | TIMESTAMP}]
  [EDIT 'mask']
  [LIMITS (minimum TO maximum)]
  [NULL-INDICATOR 'Null-indicator']
  [INITIAL initial-value]
  [XML-NAME XML-name]
  [XML-TYPE XML-type]
  [FORMAT-MASK XML-format-mask]
  [CCSID ]coded-character-set-identifier
  [XPATH XML-path]
  [RULE business-rule]
  [NOTE note]
```

ADD FIELD

Field-name

Required.

Field-name is the name of the field being defined.

The name you enter must meet the following conditions:

- The name may contain up to 32 characters. In case of SQL type of fields, 65 characters: 32 characters for the table name, a separating point, and 32 characters for the field name.

- It must begin with an alphabetic character.
- It may contain the characters A-Z and 0-9.
- It may contain the following embedded special characters: \$, #, @, _ (underscore) and - (hyphen).
- Field names must be unique in the MetaSuite Generator Library.

As an example, the following commands define two fields, named STATE-CODE and ZIP-CODE:

```
ADD FIELD STATE-CODE SIZE 2 TYPE CHARACTER
ADD FIELD ZIP-CODE SIZE 5 TYPE ZONED
```

Record-name

Optional.

Record-name identifies the owning record for the field. If omitted, *field-name* is assumed to fall in the current record.

Group-field

Optional.

Group-field identifies the encompassing field of a component field. If this specification is omitted, *field-name* is assumed to fall in the current record.

For example, assume that the first three characters of a nine-digit account number contain a branch number. You might define the account number and branch number sub-field as follows:

```
ADD FIELD ACCOUNT-NUMBER SIZE 9 TYPE CHARACTER
ADD FIELD BRANCH-CODE OF ACCOUNT-NUMBER SIZE 3 TYPE ZONED UNSIGNED
```

You may redefine fields with different data types, i.e. character with numeric and numeric with character. Please take the representation of the sign into consideration when you redefine a character as a numeric.

POSITION

Required.

Start-position defines the field's starting character position in the record or, if the OF *group-field* option is specified, in the group-field. *Start-position* must be an integer.

If the record is variable-length, do not include the four-character record descriptor word (at the start of each record) when determining the start position of the field. The first data field starts in position 1.

The following commands illustrate the use of the POSITION option:

```
ADD FIELD EXP-DATE OF EXPENSE POSITION 21 SIZE 6 TYPE ZONED UNSIGNED DATE 'MMDDYY'
ADD FIELD EXP-YEAR OF EXP-DATE POSITION 5 SIZE 2 TYPE ZONED UNSIGNED
```

The first field, EXP-DATE, is defined starting in position 21 of the record named EXPENSE. The second field, EXP-YEAR, is defined starting with the fifth character of the field EXP-DATE.

SIZE

Required.

Size specifies the length in bytes of the field being defined. If the field occurs more than one time in the record, the SIZE option defines the length of a single occurrence of the field. *Size* must be an integer value. Consider the following example:

```
ADD FIELD CUSTOMER-NAME SIZE 20 TYPE CHARACTER
```

```
ADD FIELD CUSTOMER-ACCOUNT SIZE 9 TYPE ZONED
```

The first command defines the CUSTOMER-NAME field as being 20 characters in length. The second command defines the CUSTOMER-ACCOUNT field as being nine characters in length.

Please refer to the appropriate database supplement for size-specific issues.

If you are using a COBOL record description to define your fields, refer to the following table to determine each field's size according to the COBOL "use" and "picture clause" definitions. This table also indicates the data type.

COBOL Usage	COBOL Picture	MetaSuite Type	MetaSuite Size
DISPLAY	PIC X(c)	CHARACTER	SIZE c
	PIC X(c)	HEX	SIZE c
	PIC editmask	PRN	SIZE c
	PIC S9(n)V9(d)	ZONED	SIZE n+d+s
COMPUTATIONAL BINARY	PIC S9(n)V9(d)	BINARY	SIZE 2 1 <= n+d <= 4 SIZE 4 5 <= n+d <= 9 SIZE 8 10 <= n+d <= 18
COMPUTATIONAL-1		FLOAT	SIZE 4
COMPUTATIONAL-2		FLOAT	SIZE 8
COMPUTATIONAL-3 PACKED-DECIMAL	PIC S9(n)V9(d)	FLOAT	SIZE (n+d+1)/2 (rounded up)
COMPUTATIONAL-5	PIC S9(n)V9(d) COMP-5	BINARY NATIVE	SIZE 2 1 <= n+d <= 4 SIZE 4 5 <= n+d <= 9 SIZE 8 10 <= n+d <= 18
COBOL usage NATIONAL	picture N(n)	NATIONAL	2*n
COBOL usage NATIONAL	picture 9(n)V9(d)	PRN-NATIONAL	2*(n+d)

Where: c = number of characters

n = number of integer digits

d = number of decimal digits

s = 1 for sign indicator (if present) or 0 for no sign indicator

OCCURS

Optional.

Number-times specifies the maximum number of times the field being defined occurs in the record. If the OCCURS option is omitted, the field is assumed to occur one time. When a field occurs more than once, the option is required. *Number-times* must be an integer. As an example, the command below defines a field that occurs ten times:

```
ADD FIELD PD-DEDUCTIONS SIZE 3 TYPE PACKED DECIMAL 2 OCCURS 10
```


DEPENDING ON

Optional.

If *field-name* occurs a variable number of times, *number-times* specifies the maximum number of times the field may occur, and *depend-field* specifies the actual number of times the field occurs. The *depend-field* must be a numeric integer field, defined in the same record before *field-name*.

In COBOL, a definition of a variably occurring field might appear as shown below. The key to identifying a variably occurring field from a COBOL definition is the "DEPENDING ON" clause; whenever this clause is present, a variably-occurring field is being defined.

```
02 ITEM-COUNT      PIC S9(4).
02 ITEM-TABLE      OCCURS 1 TO 100 TIMES DEPENDING ON ITEM-COUNT.
    03 ITEM-NUMBER  PIC 9(5).
    03 ITEM-DESC    PIC X(20).
```

The variably occurring field structure would be defined as shown below:

```
ADD FIELD ITEM-COUNT SIZE 4 TYPE ZONED
ADD FIELD ITEM-TABLE SIZE 25 OCCURS 100 DEPENDING ON ITEM-COUNT
ADD FIELD ITEM-NUMBER OF ITEM-TABLE POSITION 1 SIZE 5 TYPE ZONED UNSIGNED
ADD FIELD ITEM-DESC OF ITEM-TABLE POSITION 6 SIZE 20 TYPE CHARACTER
```

TYPE

Optional.

Datatype defines the internal data type of the field. If the option is omitted, TYPE CHARACTER is assumed. A list of possible datatypes is given below:

```
TYPE {CHARACTER | HEX | BIT number | FLOAT | VARCHAR | BYTE |
    PRN [DECIMAL places] |
    BINARY [NATIVE] [DECIMAL places] [UNSIGNED] |
    PACKED [DECIMAL places] [UNSIGNED|NULLSIGN] |
    ZONED [DECIMAL places] [UNSIGNED|[SEPARATE]][LEADING]}
```

Each datatype is described separately below.

There are two general classes of datatypes: non-numeric and numeric. Datatypes CHARACTER is considered non-numeric; all others are numeric. (The default for all numeric fields is signed.)

CHARACTER	<p>CHARACTER data can be represented by <i>CHARACTER</i> or <i>VARCHAR</i>. <i>TYPE CHARACTER</i>, the default data type, indicates that the field may contain any possible character within the character set being used (including "unprintable" characters). Note that numeric operations cannot be performed on a field defined as <i>CHARACTER</i>, even when that field contains all digits.</p> <p>Usage: <i>TYPE CHARACTER</i></p> <p>Note: Group fields that contain different types of data must be defined as <i>CHARACTER</i>, as illustrated by the example below:</p> <pre>ADD FIELD PRODUCT SIZE 35 TYPE CHARACTER ADD FIELD PRODUCT-NUMBER OF PRODUCT POSITION 1 SIZE 5 TYPE ZONED UNSIGNED ADD FIELD PRODUCT-DESCRIPTION OF PRODUCT POSITION 6 SIZE 30 TYPE CHARACTER</pre> <p>The first command defines a 35-character group field named <i>PRODUCT</i>. The first five characters of the <i>PRODUCT</i> field contain a five-digit product number, defined as a <i>ZONED</i> field (meaning that it may contain only the characters 0-9). The last 30 characters are defined as a <i>CHARACTER</i> field, named <i>PRODUCT-DESCRIPTION</i>, which would presumably contain some printable text describing the product. <i>TYPE VARCHAR</i> gives the character string a variable nature. This data type is useful for supporting relational technology data types.</p> <p>Usage: <i>TYPE VARCHAR</i></p>
HEXADECIMAL	<p><i>TYPE HEX</i> indicates that any hexadecimal characters are allowed within the field being defined.</p> <p>Usage: <i>TYPE HEX</i></p> <p>For example, the following command:</p> <pre>ADD FIELD RECORD-CODE SIZE 1 TYPE HEX</pre> <p>defines a one-character field named <i>RECORD-CODE</i>, which may contain the value X'00' to X'FF'.</p>
BIT	<p><i>TYPE BIT number</i> indicates that the field being defined occupies a single bit storage.</p> <p>Usage: <i>TYPE BIT Number</i></p> <p>A field defined with the <i>TYPE BIT</i> option may contain only the binary values zero or one. If printed, such a field will print as a character 0 or 1. <i>Number</i> refers to the location of the bit being defined within its encompassing byte, with the highest order (left-most) bit being 1 and the lowest order (right-most) bit being bit 8. Typically, <i>BIT</i> fields will not be found in files created by COBOL programs, because there is no corresponding COBOL data type. However, you may encounter <i>BIT</i> fields in files created by assembler or other language programs. Numeric operations may be performed on a <i>TYPE BIT</i> field.</p> <p>The example below illustrates <i>TYPE BIT</i>, and defines the second bit of the third byte in a record:</p> <pre>ADD FIELD CLOSED-FLAG POSITION 3 SIZE 1 TYPE BIT 2</pre> <p>Note that the <i>SIZE</i> specification for a <i>BIT</i> field is always 1, and that the <i>POSITION</i> option refers to the location of the character containing the bit being defined. SQL flags will obtain the data type <i>BIT 1</i> after collection.</p>

FLOATING-POINT NUMERIC	<p>TYPE <i>FLOAT</i> indicates that the field being defined is a floating-point number. A floating-point number is stored in an encoded exponential form. This type of data is rarely used in business applications.</p> <p>Usage: TYPE <i>FLOAT</i></p> <p>Only two <i>SIZE</i> specifications are allowed for <i>FLOAT</i> fields: 4 or 8 (characters in length), allowing, respectively, for 8 or 17 digits of precision.</p> <p>The following commands illustrate the two types of floating-point numeric fields that may be defined:</p> <pre>ADD FIELD ESTIMATED-GRAINS-OF-SAND SIZE 4 TYPE FLOAT ADD FIELD MORE-PRECISE-ESTIMATE SIZE 8 TYPE FLOAT</pre> <p>These two types of numeric data are sometimes referred to as "short" and "long" floating-point numeric (or as "single precision" and "double precision" numeric, respectively).</p>
PRINTED NUMERIC	<p>TYPE <i>PRN</i> indicates that the field contains a printed numeric value. The format in which the printed numeric value is displayed is to be specified by the mandatory option 'EDIT'. The <i>PRN</i> value needs to be converted before it can be used. MetaSuite Generator will automatically convert this value when required.</p> <p>Usage: TYPE <i>PRN</i> [<i>DECIMAL Places</i>] EDIT '<i>mask</i>'</p> <p>The following commands illustrate the definition of two <i>PRN</i> fields. The first field has no decimal place, the second field has two decimal places.</p> <pre>ADD FIELD employee_number POSITION 1 SIZE 8 TYPE PRN EDIT '-9999999' NULL-INDICATOR 'NOTNULL' ADD FIELD annual_salary POSITION 1 SIZE 11 TYPE PRN DECIMAL 2 EDIT '-9999999.99' NULL-INDICATOR 'OUTNULL'</pre>
BINARY	<p>TYPE <i>BINARY</i> indicates that the field contains a binary numeric value: one that is stored as a sequence of 0's and 1's. Only three sizes are allowed for binary fields: half-word (two bytes), full-word (four bytes) and double-word (eight characters).</p> <p>Usage: TYPE <i>BINARY</i> [<i>DECIMAL Places</i>] [<i>UNSIGNED</i>]</p> <p>The <i>DECIMAL</i> option indicates the number of decimal <i>places</i> to the right of an implied decimal point. Omit the <i>DECIMAL</i> option for integers; it defaults to 0 places.</p> <p>The <i>UNSIGNED</i> option indicates that there is no sign present on the data.</p> <p>The following commands illustrate the definition of three binary numeric fields, each of a different size. The first two fields have no decimal places, and the third field has two decimal places.</p> <pre>ADD FIELD FLIGHT-TYPE SIZE 2 TYPE BINARY ADD FIELD FLIGHT-NUMBER SIZE 4 TYPE BINARY ADD FIELD CUM-FLIGHT-MILES SIZE 8 TYPE BINARY DECIMAL 2</pre>
BINARY NATIVE	<p>TYPE <i>BINARY NATIVE</i> indicates that the field contains a binary numeric value: one that is stored as a sequence of 0's and 1's. Only three sizes are allowed for binary fields: half-word (two bytes), full-word (four bytes) and double-word (eight characters). Internal storage depends on the operating system.</p> <p>Usage: TYPE <i>BINARY NATIVE</i> [<i>DECIMAL Places</i>] [<i>UNSIGNED</i>]</p> <p>The <i>DECIMAL</i> option indicates the number of decimal <i>places</i> to the right of an implied decimal point. Omit the <i>DECIMAL</i> option for integers; it defaults to 0 places. The <i>UNSIGNED</i> option indicates that there is no sign present on the data.</p> <p>The following commands illustrate the definition of three binary numeric fields, each of a different size. The first two fields have no decimal places, and the third field has two decimal places.</p> <pre>ADD FIELD FLIGHT-TYPE SIZE 2 TYPE BINARY NATIVE ADD FIELD FLIGHT-NUMBER SIZE 4 TYPE BINARY NATIVE ADD FIELD CUM-FLIGHT-MILES SIZE 8 TYPE BINARY NATIVE DECIMAL 2</pre>

PACKED	<p>TYPE <i>PACKED</i> indicates that the field contains a packed decimal value.</p> <p>Usage: TYPE PACKED [DECIMAL <i>Places</i>] [UNSIGNED NULLSIGN]</p> <p>The <i>DECIMAL</i> option indicates the number of decimal <i>places</i> to the right of an implied decimal point. Omit the <i>DECIMAL</i> option for integers; it defaults to 0 places.</p> <p>Packed decimal is the most commonly used internal numeric data type. Two decimal digits are contained in each byte of a packed decimal number, except that, if the number is signed, the last half byte contains a positive or negative sign indicator (and no digit). Thus, to calculate the size of a packed decimal numeric, you should use the following formula:</p> $\text{SIZE} = (n + s)/2$ <p>Rounded up to the next integer, the value of <i>n</i> is the number of digits in the number. <i>s</i> is 1 if the value is signed; 0 if it is not.</p> <p>The following commands illustrate the definition of two packed decimal fields:</p> <pre>ADD FIELD SALES-QUARTER SIZE 1 TYPE PACKED ADD FIELD SALES-AMOUNT SIZE 8 TYPE PACKED DECIMAL 2</pre> <p>Because it is only one character in length, the SALES-QUARTER field may contain only the value -9 through +9. The second field, SALES-AMOUNT, may contain up to 15 digits (including two decimal places), in addition to the sign indicator. It is important to note that any packed decimal field created by most COBOL programs will always contain a sign indicator in the last half byte. Packed decimal numeric fields created by other language programs may or may not contain the sign indicator. If there is no sign indicator, the <i>UNSIGNED</i> option must be coded. Whenever you redefine the leading digits of a packed number as a separate field, you will specify the <i>UNSIGNED</i> option, as illustrated by the example below:</p> <pre>ADD FIELD SHP-DATE SIZE 3 TYPE PACKED DATE 'YYDDD' ADD FIELD SHP-YEAR OF SHP-DATE POSITION 1 SIZE 1 TYPE PACKED UN- SIGNED</pre> <p>SHP-YEAR redefines the first two digits of the packed field SHP-DATE.</p> <p>If a field is defined a packed decimal field, and within a generated program it is found to contain invalid decimal digits or an invalid sign indicator, an error message ("INVALID NUMERIC DATA") will be produced by the system.</p> <p>The <i>NULLSIGN</i> option defines a packed field in which the second half of the last byte has a neutral sign (value X'xF').</p>
NATIONAL	<p>A national character string literal is a literal having 2-byte Unicode characters as its value.</p> <p>The most common characters of the local character set (CCSID) can be derived from the ASCII character set and a low-value added before (big endian systems) or behind (little endian systems).</p>
PRN-NATIONAL	<p>This is the NATIONAL variant of PRN.</p> <p>Note: The same restrictions as for PRN apply to PRN-NATIONAL. The size of the field will be twice the size of the mask.</p>

ZONED	<p>TYPE <i>ZONED</i> indicates that the field contains decimal numbers in a printable character format, with one digit stored per byte.</p> <p>Usage: TYPE ZONED [<i>DECIMAL Places</i>] [<i>UNSIGNED</i>] [<i>SEPARATE</i>] [<i>LEADING</i>]</p> <p>The <i>DECIMAL</i> option indicates the number of decimal <i>places</i> to the right of an implied decimal point. Omit the <i>DECIMAL</i> option for integers; it defaults to 0 places.</p> <p>TYPE <i>ZONED</i> numbers are sometimes referred to as "display" or "external" decimal numbers. Leading blanks are not permitted in this type of field, nor may it contain editing characters, such as commas or a decimal-point (which are permitted in COBOL edited numeric or print numeric fields, and are represented by MetaSuite datatype PRN).</p> <p>The following commands illustrate the definition of two zoned decimal numbers. The first field contains two digits and the second field contains three digits.</p> <pre>ADD FIELD DIVISION-CODE SIZE 2 TYPE ZONED ADD FIELD NEW-BRANCHES SIZE 3 TYPE ZONED</pre> <p>A sign indicator is typically "over-punched" on the last character of a zoned numeric. If there is no "over-punched" sign in the number, you must specify the <i>UNSIGNED</i> option. Whenever you redefine the leading digits of a zoned number as a separate field, you will specify the <i>UNSIGNED</i> option, as illustrated by the example below (where DUE-MONTH redefines the first two digits of the zoned numeric field DUE-DATE):</p> <pre>ADD FIELD DUE-DATE SIZE 6 TYPE ZONED DATE 'MMDDYY' ADD FIELD DUE-MONTH OF DUE-DATE POSITION 1 SIZE 2 TYPE ZONED UNSIGNED</pre> <p>There are three options, as follows:</p> <ul style="list-style-type: none"> • <i>LEADING</i> puts the sign on the initial digit. • <i>SEPARATE</i> puts the sign in the last byte (no digit). • <i>SEPARATE LEADING</i> puts the sign in the initial byte (no digit). <p>If the <i>ZONED</i> number contains a separate (i.e., not over-punched) plus or minus sign attached to the number, you must specify the <i>SEPARATE</i> option. In the first example above, if the second field (NEW-BRANCHES) contained a separate plus or minus sign, it would have been defined with the <i>SEPARATE</i> option, and could contain only two digits (since one character position would be occupied by the sign).</p> <p>When a separate sign is included in a field, it is generally at the end of the numeric position of the field. If, instead, the sign appears at the start of the number, then you must include the keyword <i>LEADING</i>.</p> <p>The example below defines a three-digit zoned numeric field that is followed by a plus or minus sign. If the sign preceded the digits, the <i>LEADING</i> option would have been included.</p> <pre>ADD FIELD DAYS-LATE SIZE 4 TYPE ZONED SEPARATE</pre> <p>The <i>SIZE</i> specification for a zoned numeric is equal to the number of digits. An exception occurs when the <i>SEPARATE</i> option is coded, in which case the size is equal to the number of digits plus one character (for the sign).</p> <p>If you are using a COBOL record description to define your fields, refer to the table in the section SIZE (page 271) to determine each field's data type according to the COBOL "use" and "picture clause" definitions.</p>
-------	---

DATE

Optional.

The *DATE* option defines the field as a date field. The system automatically validates date fields whenever they are referenced in program requests, and automatically converts date fields whenever they are compared to another date or used in a calculation.

Format is specified as a string of Ys, Ms and Ds, representing, respectively, digits for years, months and days. A ? indicates any single character like -, / and . . The format specification must be enclosed in single quotation marks.

Allowable format values are listed below:

'MMDDYY'	'DDMMYY'	'MMDDYYYY'	'DDMMYYYY'
'MM?DD?YY'	'DD?MM?YY'	'MM?DD?YYYY'	'DD?MM?YYYY'
'YYMMDD'	'YYDDMM'	'YYYYMMDD'	'YYYYDDMM'
'YY?MM?DD'	'YY?DD?MM'	'YYYY?MM?DD'	'YYYY?DD?MM'
'YYDDD'	'YYYYDDD'	'YY?DDD'	'YYYY?DDD'

The format specification is used by the system to choose the appropriate conversion routine, when validating dates or performing calculations or comparisons based on dates.

For example, if the following two fields were defined:

```
ADD FIELD PAYMENT-DATE SIZE 6 TYPE ZONED DATE 'DDMMYY'
ADD FIELD SALE-DATE SIZE 4 TYPE PACKED DATE 'YYMMDD'
```

the system would always check to determine that PAYMENT-DATE contained a valid date in the DDMMYY format, and that SALE-DATE contained a valid date in the YYMMDD format. For example, if PAYMENT-DATE contained the value 010195, and SALE-DATE had the value 940805, the following conditional command:

```
IF PAYMENT-DATE GT SALE-DATE...
```

This statement would test as "true" with no conversions having to be performed by the user in procedural code.

TIME

Optional.

The *TIME* option is used to define a field of type *TIME*. The field can be any TYPE and SIZE. For example, you might define:

```
ADD FIELD HHMMSS TYPE ZONED SIZE 6 TIME
```

TIMESTAMP

Optional.

The *TIMESTAMP* option is used to define a field of type *TIMESTAMP*. For example:

```
ADD FIELD SET-TIMESTAMP TYPE CHARACTER SIZE 26 TIMESTAMP
```

EDIT

Optional.

The *EDIT* option is used to override the default (output) edit mask for the field. It allows you to define the output format (*mask*) for the field, specifying what types of characters can be printed, and insertion characters -- such as blanks and commas -- that will improve the readability of the output **reports**.

You can also use the edit mask of a field on a **non-report**, when the SYS-EDIT function is used.

An edit mask consists of a combination of symbols, enclosed in quotation marks, that describe the contents of the field and allow the insertion of special editing characters. When constructing an edit mask, you specify what type of character appears in each position of the printed field. To do this, you place a symbol in the corresponding position of the mask.

Repeating editing characters can be noted as '?(*n*)' where ? = the repeating character and *n* = the number of occurrences.

There are two types of editing characters, called "replacement" and "insertion" characters. These types of characters are described below.

REPLACEMENT Characters

Replacement characters indicate positions in the printed field that may be replaced by (the corresponding types of) characters from the input field. Possible replacement characters are listed below:

Replacement Character	Description of Replaced Character(s)
\$	Floating dollar sign before the first digit, with leading zero suppression
Z	Leading zero suppression
N	2-byte based Unicode
*	Asterisks to replace leading zeros
9	Numeric character
A	Alphabetic character
X	Alphanumeric character

INSERTION Characters

Insertion characters indicate characters to be printed in addition to those contained in the stored field. Possible insertion characters are listed below:

Insertion Character	Description of Inserted Character
\$	Leading dollar sign
*	Leading asterisk (generally for check protection)
,	Comma
.	Decimal Point
B	Blank
-	Trailing minus sign for negative values
+	Trailing plus or minus sign
CR	Trailing credit symbol for negative values only
DB	Trailing debit symbol for negative values

By default, the system provides you with the most commonly used edit mask for a field, depending on its data type and other definition options specified.

The components of the default edit mask are determined as follows:

- For **signed numeric fields**, the default edit mask will contain a minus sign as the right-most character. All negative values will print with a trailing minus sign.
- For **non-integral numeric fields**, the default edit mask will contain a decimal point and as many digit replacement characters (9s) to the right of the decimal point as are specified by the `DECIMAL` option.
- For **numeric fields**, the default edit mask will contain comma insertion characters as appropriate for any value greater than 999, and zero suppression characters (Zs) for each digit to the left of the decimal point (if any). If no `DECIMAL` option has been coded the rightmost digit will be represented by a digit replacement character (9), rather than a zero suppression character (Z).
- For **date fields**, a special routine is used to insert slashes between the month, day, and year values. The default edit mask for a field defined with the `DATE` option may not be overridden.
- For **alphanumeric fields**, the default edit mask contains as many alphanumeric character replacement characters (Xs) as are required to print the field.

The table below illustrates the generated system default edit masks for various types of fields:

Field Definition	Default Edit Mask	Field Value	Printed Value
SIZE 6 TYPE CHARACTER	'X(6)'	AB138C	AB138C
SIZE 2 TYPE ZONED DECIMAL 2	'.99-'	350	.35 .00
SIZE 4 TYPE ZONED	'Z,ZZ9-'	231	231
SIZE 4 TYPE ZONED	'Z,ZZ9-'	-231 8234 0	231- 8,234 0
SIZE 5 TYPE ZONED DECIMAL 2	'ZZ9.99-'	12.88	12.88

To avoid interpunction in the default edit masks, use the *CHANGE DEFAULT INTERPUNCTION* command (MIL) in the Generator Manager.

This command is used to specify the default edit mask for numeric values (if the `CODE` flag is not set).

If the `CODE` flag is set, the default edit mask will have no zero suppression and no interpunction, regardless of the *INTERPUNCTION* option.

For more information, refer to the chapter *The Generate Screen - Implementing MIL Instructions* in the *Generator Manager User Guide*.

When overriding the system default edit mask for a field, you must account for all of the characters in the field (unless it is your intention to truncate the field on output). The table below illustrates the output produced by common edit mask specifications:

Edit Specification	Field Value	Printed Value
EDIT 'XXBXXXX'	AB138C	AB 138C
EDIT '.99'	.35	.35
	0	.00
	-.12	.12
EDIT 'ZZZZ'	231	231
	0	(blank)
(blank)		
EDIT '\$\$,\$\$\$\$.99-'	-2.31	\$2.31-
	8234.22	\$8,234.22
	0	\$.00
EDIT '\$\$\$\$.99CR'	12.88	\$12.88
	-155.10	\$155.10CR

Note: If you do not include a sign indicator character for numeric fields, negative values will be printed as positive values in your reports, as illustrated in the table above.

LIMITS

Optional.

The *LIMITS* option indicates that the value of the field must be within the inclusive range specified by *minimum* and *maximum*; otherwise, the system will consider the data invalid, print an appropriate error message, and bypass the record containing the invalid data.

For example:

```
ADD FIELD STATE-CODE TYPE BINARY SIZE 2 LIMITS (1 TO 50)
```

This indicates that the value of STATE-CODE must fall between 1 and 50, inclusive. An error message will be issued whenever an invalid state code (less than 1 or greater than 50) is encountered during processing of a generated program.

NULL-INDICATOR (former DBNAME)

Optional.

The *Null-Indicator* is used to specify the nullability of a field, and whether Inbound or Outbound nulls are used for the field.

```
NULL-INDICATOR '{NOTNULL | INNULL | OUTNULL | OUTNULR | DEFAULT}'
```

Each type of *Null-indicator* is described separately.

NOTNULL	<p>The field is a NOTNULL field, and no NULL value should be assigned in the MetaMap model to this field. You should always assign a value to a NOTNULL field. For example:</p> <pre>ADD FIELD department OF PP_department POSITION 1 SIZE 15 TYPE CHARACTER NULL-INDICATOR 'NOTNULL'</pre>
INNULL	<p>The field is a NULLS Allowed field, and a NULL value can be assigned in the MetaMap model to this field. When a NULL value is assigned, the first position of the field itself indicates the NULL value (the so called inbound NULL). For example:</p> <pre>ADD FIELD employee_count OF PP_department POSITION 16 SIZE 2 TYPE BINARY NULL-INDICATOR 'INNULL'</pre> <p>The value of position 16 determines whether employee_count is NULL, or whether it contains a real value.</p>
OUTNULL	<p>The field is a NULLS Allowed field, and a NULL value can be assigned in the MetaMap model to this field. To store an eventual NULL value an additional byte is foreseen in the sequential file that precedes the real field. When a NULL value is assigned, this additional position indicates the NULL value (the so called outbound NULL). For example:</p> <pre>ADD FIELD dept_annual_salary OF PP_department POSITION 18 SIZE 5 TYPE PACKED DECIMAL 2 NULL-INDICATOR 'OUTNULL'</pre> <p>The value of position 17 determines whether dept_annual_salary is NULL, or whether the value that is stored from position 18 onwards is the real value of the field.</p>
OUTNULR	<p>The field is a NULLS Allowed field, and a NULL value can be assigned in the MetaMap model to this field. To store an eventual NULL value an additional byte is foreseen in the sequential file that follows the real field. When a NULL value is assigned, this additional position indicates the NULL value (the so called outbound NULL). For example:</p> <pre>ADD FIELD dept_annual_salary OF PP_department POSITION 18 SIZE 5 TYPE PACKED DECIMAL 2 NULL-INDICATOR 'OUTNULR'</pre> <p>The value of position 23 determines whether dept_annual_salary is NULL, or whether the value that is stored from position 18 onwards is the real value of the field.</p>
DEFAULT	<p>The field is a NOTNULL field, and no NULL value should be assigned in the MetaMap model to this field. When no value is assigned to a DEFAULT NOTNULL field, some database systems provide you with the possibility to assign a default value to the field. For example:</p> <pre>ADD FIELD department OF PP_department POSITION 1 SIZE 15 TYPE CHARACTER NULL-INDICATOR 'DEFAULT'</pre>

Note: The use of Null-Indicator can change when the field describes a database field. Please refer to the appropriate database supplement for instruction.

If the NULL-INDICATOR parameter is left out, the standard "NULLABLE" value will be taken. This value can be either "INNULL" or "NOTNULL".

Please refer to the *Generator Manager User Guide* for more information on the "NULLABLE" parameter.

INITIAL

Optional.

The *INITIAL* option is used in case of target file MDL definitions.

In case of source file definitions this parameter will not affect any operation, except for syntax checking.

MetaStore Manager can collect MDL definitions containing the *INITIAL* option.

SYS-LOW-VALUE and SYS-HIGH-VALUE can also be used.

In case of target files, MetaMap will not write the original MDL definition to the MXL file. For target files MetaMap will convert the *ADD FIELD* commands into *FIELD* commands. Please refer to the *FIELD* command in the *MetaMap Manager User Guide* for more information on this subject.

XML-NAME

Optional.

The collected name of the XML node. In most cases, the *XML-name* will be a part of the field name.

XML-TYPE

Optional.

This *XML-TYPE* can be *GROUP*, *NODE* or *ATTRIBUTE*. *NODE* is the default value.

This property is important for the correct output of the XML file, when this definition is used in a target file.

In case of reading XML files, this property is not important.

FORMAT-MASK

Optional.

This field can contain the XML edit mask. (MetaStore Manager does it automatically during the XSD collect process). It will be used in later versions.

CCSID

Optional.

CCSID is an abbreviation to mean "Coded Character Set Identifier". It is a 16-bit number that represents a specific encoding of a specific code page.

This *CCSID* can be specified on general MetaSuite level (dictionary settings *CHARACTER-CCSID* and *UNICODE-CCSID*), but also on file level, record level and field level.

XPATH

Optional.

XPATH, the XML Path, is a format for selecting nodes from an XML document.

The *XPATH* contains the different nodes that have to be read before the real "file" content starts. The *XPATH* on file level -if specified- should start with a forward slash ("/").

RULE

Optional.

The *RULE* option is used to add a business rule documenting your field.

NOTE

Optional.

The *NOTE* option is used to add a note documenting your field.

25.4. COPY FILE

The *COPY FILE* command is used to copy one or more MetaSuite Generator dictionary files to an output command file. The file to contain the copied commands is `TEMPDIR\MSCOPY.MDL`.

Where `TEMPDIR` is the directory defined in the `TEMP` system/user variable, the `TMP` directory defined in the `TMP` system/user variable, or the directory `x:\installationdirectory\GENxxx\TMP`.

Format

```
COPY FILE [ file-name | ALL ]
```

File-name is the name of the MetaSuite Generator dictionary file to be copied to the output command file. For example, to copy the definition of the dictionary file `EMPLOYEE-MASTER` to the output command file, you would use the following command:

```
COPY FILE EMPLOYEE-MASTER
```

ALL indicates that all the dictionary files defined in the MetaSuite Generator library need to be copied to the output command file.

25.5. COPY RECORD

The *COPY RECORD* command is used to copy one or more MetaSuite Generator dictionary records to an output command file. The file to contain the copied commands is `TEMPDIR\MSCOPY.MDL`.

Where `TEMPDIR` is the directory defined in the `TEMP` system/user variable, the `TMP` directory defined in the `TMP` system/user variable, or the directory `x:\installationdirectory\GENxxx\TMP`.

Format

```
COPY RECORD [ Record-name | ALL OF FILE file-name | ALL ]
```

Record-name is the name of the MetaSuite Generator dictionary record to be copied to the output command file. For example, to copy the definition of the dictionary record `EMPLOYEE-DATA` to the output command file, you would use the following command:

```
COPY RECORD EMPLOYEE-DATA
```

File-name is the name of the MetaSuite Generator dictionary file for which all its dictionary records are to be copied to the output command file. For example, to copy the definition of all the dictionary records of the dictionary file `EMPLOYEE-MASTER` to the output command file, you would use the following command:

```
COPY RECORD ALL OF FILE EMPLOYEE-MASTER
```

ALL indicates that all the dictionary records defined in the MetaSuite Generator library need to be copied to the output command file.

25.6. COPY FIELD

The *COPY FIELD* command is used to copy one or more MetaSuite Generator dictionary fields to an output command file. The file to contain the copied commands is `TEMPDIR\MSCOPY.MDL`.

Where `TEMPDIR` is the directory defined in the `TEMP` system/user variable, the `TMP` directory defined in the `TMP` system/user variable, or the directory `x:installationdirectory\GENxxx\TMP`.

Format

```
COPY FIELD [ Field-name |
             ALL OF RECORD Record-name |
             ALL OF FILE file-name |
             ALL ]
```

Field-name is the name of the MetaSuite Generator dictionary field to be copied to the output command file. For example, to copy the definition of the dictionary field `EMPLOYEE-NUMBER` to the output command file, you would use the following command:

```
COPY FIELD EMPLOYEE-NUMBER
```

Record-name is the name of the MetaSuite Generator dictionary record for which all its dictionary fields are to be copied to the output command file. For example, to copy the definition of all the dictionary fields of the dictionary record `EMPLOYEE-DATA` to the output command file, you would use the following command:

```
COPY FIELD ALL OF RECORD EMPLOYEE-DATA
```

File-name is the name of the MetaSuite Generator dictionary file for which all its dictionary fields are to be copied to the output command file. For example, to copy the definition of all the dictionary fields of the dictionary file `EMPLOYEE-MASTER` to the output command file, you would use the following command:

```
COPY FIELD ALL OF FILE EMPLOYEE-MASTER
```

ALL indicates that all the dictionary fields defined in the MetaSuite Generator library need to be copied to the output command file.

25.7. DELETE FILE

The *DELETE FILE* command is used to delete a dictionary file from the MetaSuite Generator library

Format

```
DELETE FILE file-name
```

File-name is the name of the MetaSuite Generator dictionary file to be deleted. For example, to delete the dictionary file named `EMPLOYEE-MASTER` from the library, you might use the following command:

```
DELETE FILE EMPLOYEE-MASTER
```

25.8. LIST FILE

The *LIST FILE* command is used to list a dictionary file in the MetaSuite Generator library. This command is particularly useful to produce a hard copy listing of each MetaSuite Generator library dictionary file before modifying or deleting it.

Format

```
LIST FILE [ file-name | ALL ]
```

File-name is the name of the MetaSuite Generator dictionary file to be listed. For example, to list the definition of the dictionary file EMPLOYEE-MASTER, you would use the following command:

```
LIST FILE EMPLOYEE-MASTER
```

ALL indicates that all the dictionary files defined in the MetaSuite Generator library need to be listed.

25.9. LIST RECORD

The *LIST RECORD* command is used to list a dictionary record in the MetaSuite Generator library. This command is particularly useful to produce a hard copy listing of each MetaSuite Generator library dictionary record before modifying or deleting it.

Format

```
LIST RECORD [ Record-name | ALL OF FILE file-name | ALL]
```

Record-name is the name of the MetaSuite Generator dictionary record to be listed. For example, to list the definition of the dictionary record EMPLOYEE-DATA, you would use the following command:

```
LIST RECORD EMPLOYEE-DATA
```

File-name is the name of the MetaSuite Generator dictionary file for which all its dictionary records are to be listed. For example, to list the definition of all the dictionary records of the dictionary file EMPLOYEE-MASTER, you would use the following command:

```
LIST RECORD ALL OF FILE EMPLOYEE-MASTER
```

ALL indicates that all the dictionary records defined in the MetaSuite Generator library need to be listed.

25.10. LIST FIELD

The *LIST FIELD* command is used to list a dictionary field in the MetaSuite Generator library. This command is particularly useful to produce a hard copy listing of each MetaSuite Generator library dictionary field before modifying or deleting it.

Format

```
LIST FIELD [ Field-name |  
             ALL OF RECORD Record-name |  
             ALL OF FILE file-name |  
             ALL]
```

Field-name is the name of the MetaSuite Generator dictionary field to be listed. For example, to list the definition of the dictionary field EMPLOYEE-NUMBER, you would use the following command:

```
LIST FIELD EMPLOYEE-NUMBER
```

Record-name is the name of the MetaSuite Generator dictionary record for which all its dictionary fields are to be listed. For example, to list the definition of all the dictionary fields of the dictionary record EMPLOYEE-DATA, you would use the following command:

```
LIST FIELD ALL OF RECORD EMPLOYEE-DATA
```

File-name is the name of the MetaSuite Generator dictionary file for which all its dictionary fields are to be listed. For example, to list the definition of all the dictionary fields of the dictionary file EMPLOYEE-MASTER, you would use the following command:

```
LIST FIELD ALL OF FILE EMPLOYEE-MASTER
```

ALL indicates that all the dictionary fields defined in the MetaSuite Generator library need to be listed.

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