

Using the DDM Editor Screen

The DDM editor screen is organized in a table where the field definitions data is contained in rows and columns. All attributes that belong to a field defined for a DDM are contained in one row (that is, source-code line), separated by tabs.

This section describes the columns contained on the DDM Editor screen and the commands provided to create or modify a DDM field, navigate in the screen, or catalog a DDM source, for example.

- DDM Header Information
 - Columns of Field Attributes
 - Commands for Editing and Function Execution
 - Specifying Extended Field Attributes
 - Displaying Tamino Doctype Information
 - Setting Editor Preferences - Services Profile
-

DDM Header Information

This section describes the fields contained in the header at the top of the DDM editor screen and how to modify them.

- Explanation of DDM Header Fields

Explanation of DDM Header Fields

Header Field	Description
DBID	<p>The database ID (DBID) as specified in the global configuration file. DBID contains the database file referenced by the DDM.</p> <p>Valid range: 0 to 65535 (except 255)</p> <p>See also: <i>DBMS Assignment</i> and <i>Database Management</i> in the <i>Configuration Utility</i> documentation.</p> <p>If 0 (zero) is specified, the default DBID as specified with the UDB profile parameter in the Natural parameter file (NATPARM) is used.</p> <p>To modify the field contents, see <i>To modify the contents of DDM header fields</i>.</p>
FNR	<p>The number of the file being referenced in the database</p> <p>The file number of a DDM from Tamino is always 1 and cannot be modified.</p> <p>Valid range: 1 to 5000</p> <p>To modify the field contents, see <i>To modify the contents of DDM header fields</i>.</p>
DDM	The name of the DDM currently contained in the work area of the DDM editor.
Line	The number of the source-code line where the cursor is currently positioned.
DEF. SEQ.	<p>Not applicable to Tamino.</p> <p>The default sequence by which the file is read when it is accessed with a READ LOGICAL statement in a Natural program. See also the READ statement described in the <i>Statements</i> documentation.</p> <p>The default sequence is specified with the two-character field short name. The system validates the short name based on the selected file number. If the database is accessible, the short name is checked against the corresponding field in the database file. If such a field does not exist in the database, a selection list of valid short names is displayed. If the database cannot be accessed, no selection list is generated.</p> <p>To modify the field contents, see <i>To modify the contents of DDM header fields</i>.</p>
TYPE	Displays the type XML for a DDM created from a Tamino database.

 **To modify the contents of DDM header fields**

1. Press F13.

Or:

From the **MISC** menu, choose **MODIFY DDM-HEADER**.

The cursor is positioned in the first header field (**DBID**) that can be modified.

2. Press TAB to go to the next header field to be modified.

Columns of Field Attributes

This section describes the field attributes that can be defined in the rows and columns of the DDM editor screen.

Column Heading	Field Attribute
T	<p>The type of field:</p> <p><i>blank</i> Elementary field. This type of field can hold data and does not contain any other fields. It can have only one value within a record.</p> <p>G Group. A group is a number of fields defined under one common group name. This allows you to reference several fields collectively by using the group name instead of the names of all the individual fields. Such fields cannot hold any data, but are only containers for other fields.</p> <p>Note: Groups defined in a DDM need not necessarily be defined as groups in the Natural object(s) that reference this DDM.</p> <p>M Not applicable to Tamino. Multiple-value field. This type of field can have more than one value within a record. See also <i>Multiple-Value Fields</i> in the <i>Programming Guide</i>.</p> <p>P Not applicable to Tamino. Periodic group. A group of fields that can have more than one value within a record. See also <i>Periodic Groups</i> in the <i>Programming Guide</i>.</p> <p>* Comment line.</p>
L	<p>The level number assigned to the field.</p> <p>Levels are used to indicate the structure and grouping of the field definitions. This is relevant with view definitions, redefinitions and field groups (see the relevant sections in the <i>Programming Guide</i>).</p> <p>Valid level numbers are 1 - 7.</p> <p>For Tamino: valid level numbers are 1 - 99.</p> <p>Level numbers must be specified in consecutive ascending order.</p>

Column Heading	Field Attribute
DB	<p>Not applicable to Tamino.</p> <p>The display of the DB column is switched off by default. To switch the display on or off, press F12 (toggle switch).</p> <p>The DB column displays the two-character short name of the corresponding field in the database file (see also <i>Example of a DB Column</i>).</p> <p>Creating Fields:</p> <p>If you create a new DDM field and the display of the DB column is switched off, the DDM editor assigns to the new field a short name that has not yet been used for another field. This means that for the new field there is no correlation between the database file and the DDM. To guarantee that the short name of a new field is checked against the database, create a field by using the line command \perp as described in the section <i>Commands for Editing and Function Execution</i>.</p>
Name	<p>The name of the field.</p> <p>It can be 3 - 32 characters long for Adabas fields and 1 - 32 characters for SQL columns and Tamino doctypes.</p> <p>The rules to create a name comply with the naming conventions for user-defined variables (see the <i>Using Natural</i> documentation), except that the first character of the name must always be a Latin capital letter (A - Z). In addition, the name must not start with L@ or N@. These prefixes identify indicator fields as explained in the following section.</p> <p>The field name is the name used in other Natural objects (for example, in a program) to reference the field.</p> <p>The field name is unique across the whole DDM.</p> <p>For Tamino, the field name is not necessarily the same name as Tag Name (see <i>Tamino-Specific Extended Field Attributes</i>).</p>
F	<p>The Natural data format of an elementary field, such as A (alphanumeric), P (packed numeric) or L (logical).</p> <p>For valid Natural data formats, refer to <i>Format and Length of User-Defined Variables</i> in the <i>Programming Guide</i>.</p>
Length	<p>The standard length of an elementary field.</p> <p>This length can be overridden by the user in a Natural program.</p> <p>For numeric fields (Natural data format N), the length is specified as <i>nn.m</i>, where <i>nn</i> is the number of digits before the decimal point and <i>m</i> is the number of digits after the decimal point.</p> <p>In the Length input field, you can specify either the field length as a numeric value or enter the keyword <i>DYNAMIC</i> to specify that the field length is variable.</p> <p>For further information, see <i>DDM Generation and Editing for Varying Length Columns</i> in the <i>Programming Guide</i>.</p>

Column Heading	Field Attribute
S	<p>Not applicable to Tamino.</p> <p>Null-value suppression option:</p> <p><i>blank</i> Indicates that standard Adabas suppression is used; that is, trailing blanks in alphanumeric fields and leading zeros in numeric fields are suppressed.</p> <p>F Indicates that the field is defined with the Adabas fixed storage option; that is, no suppression is used and the field is stored without compression.</p> <p>N Indicates that the field is defined with the Adabas null-value suppression option. This means that null values for the field are not stored in the inverted list and are not returned when the field is used in the WITH clause of a FIND statement, or in a HISTOGRAM or READ LOGICAL statement.</p> <p>M Indicates that the field is defined with the SQL null-value option not null. The Remark field (see <i>Specifying Extended Field Attributes</i>) for this field contains NN NC (not null, not counted). Below this field, the corresponding null-indicator field is listed.</p>

Column Heading	Field Attribute
D	<p>The Adabas descriptor type of an elementary field that is not an array.</p> <p>A descriptor can be used as the basis of a database search performed with the <code>READ</code> or the <code>FIND</code> statement. For example: a field from an Adabas database that has a <code>D</code> or an <code>S</code> in the D column can be used in the <code>BY</code> clause of the <code>READ</code> statement. Once a record has been read from the database using the <code>READ</code> statement, a <code>DISPLAY</code> statement can reference any field that has either a <code>D</code> or an <code>S</code> in this column.</p> <p>For a Tamino XML schema, an element is marked as a descriptor in the DDM when it has an overall multiplicity of a maximum of 1, in other words, if the <code>maxOccurs</code> values of the element and all of its predecessors in the schema are never greater than 1.</p> <p>Descriptors types are:</p> <p><i>blank</i> No descriptor. This field is not a descriptor.</p> <p>D Elementary descriptor. Value lists are created and maintained for this field by Adabas, so that this field can be used as a search criterion in a <code>FIND</code> statement, as a sort key in a <code>FIND</code> statement, or to control logical sequential reading in a <code>READ</code> statement.</p> <p>H Not applicable to Tamino. Hyperdescriptor. A hyperdescriptor is a user exit in Adabas. For Natural, it provides the same functionality as a phonetic descriptor (see below).</p> <p>N Not applicable to Tamino. Non-descriptor. A non-descriptor is not a descriptor, but can be used as a search field for a non-descriptor search.</p> <p>P Not applicable to Tamino. Phonetic descriptor. A phonetic descriptor allows the user to perform a phonetic search on a field (for example, a person's name). A phonetic search results in the return of all values which sound similar to the search value.</p> <p>S Not applicable to Tamino. Subdescriptor or superdescriptor. If a sub/superdescriptor contains a multiple-value field or a field from a periodic group (or part of such a field), the sub/superdescriptor is marked with an <code>M</code> or a <code>P</code> in the field type column; this enables Natural to create the correct search algorithms for this sub/superdescriptor.</p>

Example of a DB Column

		01/10/2004		DDM Services					
		19:02:57		V 6.1.1 Pl 9		Software AG 2004		Line: 1	
DBID: 20		FNR: 14		DDM: EMPLOYEEES		DEF.SEQ.:			
C	T	DB	L	Name	F	Length	S	D	
		AA	1	PERSONNEL-ID	A	8		D	
	*			CNNNNNNN					
	G	AB	1	FULL-NAME					
		AC	2	FIRST-NAME	A	20	N		
		AD	2	MIDDLE-I	A	1	N		
		AE	2	NAME	A	20		D	
		AD	1	MIDDLE-NAME	A	20	N		
		AF	1	MAR-STAT	A	1	F		
	*			M=MARRIED					
		AG	1	SEX	A	1	F		
		AH	1	BIRTH	N	06.0		D	
		AH	1	N@BIRTH	I	2		D	
	G	A1	1	FULL-ADDRESS					
	M	AI	2	ADDRESS-LINE	A	20	N		

Indicator Fields

An indicator field is used to retrieve the length of a variable length field or information about the data significance (NULL value indicator) of a database field. An indicator field does *not* provide the contents of a database field.

A database field name starting with L@ or N@ is interpreted as an indicator field, according to the indicator specified in the *NATCONV.INI* configuration file (see also IDENTIFIER-VALIDATION in *How to Use Different Character Sets* in the *Operations* documentation. Therefore, a database field name must not start with any of these character strings unless it represents an indicator field.

The following happens when a DDM is initially generated.

- An L@xxxxxx field is automatically added for every variable length field, where xxxxxx is the name of the related field.

This applies to long alpha (LA) and large object (LB) fields in an Adabas file.

If the length indicator relates to an LA, LB or LOB field, the Natural data format/length must be I4. For a VARCHAR field, the format/length must be I2.

- An N@xxxxxx field is automatically added for a field that may contain a NULL value, where xxxxxx is the name of the related field.

This applies to Adabas fields defined with the SQL Null Value Option. The Natural data format/length of a NULL indicator field must be I2.

Help on Columns of Fields

The following section describes how to invoke the help function for the columns of fields provided on the DDM editor screen.

▶ **To display help information on field columns**

- Position the cursor at a field and press F1 *once* for instructions on entering a valid input value in this field.

Or:

Position the cursor at a field and press F2 to select a valid input value for this field from a list.

Commands for Editing and Function Execution

This section provides information on the positioning commands, line commands, editor commands and Natural system commands provided with the DDM editor.

Positioning commands are used to navigate in the DDM editor screen and line commands manipulate one or more lines of DDM source code. Editor commands, for example, are used to change the display mode of the editor screen and system commands, for example, are used to save the source and the cataloged object of the DDM.

- Positioning Commands
- Line Commands
- Editor and System Commands

Positioning Commands

You can use the following keys to navigate in the DDM editor screen:

Key	Explanation
DOWN-ARROW	Scrolls down one line.
LEFT-ARROW	Moves left on the screen.
RIGHT-ARROW	Moves right on the screen.
UP-ARROW	Scrolls up one line.
TAB	Moves from one input field to the next.

Line Commands

The line commands available in the DDM editor are used to copy, delete, insert or move single or multiple DDM source-code lines. As an alternative to entering line commands in the DDM source as described below, you can use the equivalent function (F) keys described in *Function-Key Assignments*.

▶ **To execute a line command**

- On the DDM editor screen, in the column C, position the cursor in the source-code line(s) to which the command applies, and enter any of the line commands listed below:

Line Command	Explanation
C	<p>Copies a marked block of lines:</p> <p>Delimit the block of lines with an X and a Y and position the cursor in the line above which you want to copy the block of lines and enter a C.</p>
D	<p>Deletes the line in which the line command was entered or deletes a marked block of lines:</p> <p>Delimit the block of lines with an X and a Y and enter a D.</p>
H	Removes the marks from a block of lines.
I	<p>Inserts a blank line above the line in which the line command was entered.</p> <p>If the database is available, the Select Database Field window appears from which you can choose the field short name:</p> <div data-bbox="420 835 1008 1066" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <pre> +----- Select Database Field -----+ AA AA-1 AB AB-1 AC AC-1 AE AE-1 AD AD-1 +-----+ </pre> </div> <p>See also DB in the section <i>Columns of Field Attributes</i>.</p>
M	<p>Moves a marked block of lines:</p> <p>Delimit the block of lines with an X and a Y and position the cursor in the line above which you want to move the block of lines and enter an M.</p>
X	Marks the first line of a block of lines to be copied, deleted or moved.
Y	Marks the last line of a block of lines to be copied, deleted or moved.

Editor and System Commands

The editor commands or Natural system commands available in the DDM editor are executed by choosing either a command from the DDM editor menu **COMMANDS**, **MISC** or **QUIT**, or a function (F) key.

▶ To execute an editor or a system command from a menu

1. On the DDM editor screen, press ESC.

The DDM editor menus **COMMANDS**, **MISC** and **QUIT** appear at the top of the DDM editor screen.

(See also the example screen in *Terminating the DDM Editor*.)

2. Select a menu and press ENTER.

A list of valid commands appears. The commands and their equivalent F keys (if available) are explained later in this section.

3. Choose the command to be executed for the current DDM source and press ENTER.

The following section describes the editor or system commands provided with DDM editor menus and the standard F-key assignments.

- COMMANDS Menu
- MISC Menu
- QUIT Menu
- Function-Key Assignments

COMMANDS Menu

The commands available with the **COMMANDS** menu correspond to the Natural system commands with the same name. They are used to check or scan the DDM source currently contained in the editing area of the DDM editor, and save the source as a source and/or cataloged object in the current Natural library and/or system file.

The **COMMANDS** menu options and equivalent F keys (if available) are explained in the following table:

Menu Option	F Key	Explanation
CATALOG		Saves the DDM source as a cataloged object as described for the system command CATALOG in the <i>System Commands</i> documentation.
CHECK	F11	Checks the syntax of the DDM source as described for the system command CHECK in the <i>System Commands</i> documentation.
SAVE		Saves the DDM source as a source object as described for the system command SAVE in the <i>System Commands</i> documentation.
SCAN		Searches for a string of characters within the DDM source, with the option to replace the string with another string as described for the system command SCAN in the <i>System Commands</i> documentation.
STOW	F10	Checks the syntax of the DDM source and saves both the source and the cataloged object as described for the system command STOW in the <i>System Commands</i> documentation.

MISC Menu

The **MISC** menu options and equivalent F keys (if available) are explained in the following table:

Menu Option	F Key	Function
DB-SHORT-NAMES (ON/OFF)	F12	Not applicable to Tamino. Switches the display of the attribute column DB on the DDM editor screen on or off. See also DB in the section <i>Columns of Field Attributes</i> .
SHOW DOCTYPE INFO (ON/OFF)	F12	Only applies to Tamino. Switches the display of the Doctype Information section on the DDM editor screen on or off: see <i>Displaying Tamino Doctype Information</i> .
MODIFY DDM-HEADER	F13	Displays in edit mode the DDM editor header fields DBID , FNR and DEF.SEQ . See also the section <i>DDM Header Information</i> .
SHOW EXTENDED FIELDS (ON/OFF)	F14	Switches the display of the Extended Field Information section on the DDM editor screen on or off: see <i>Specifying Extended Field Attributes</i> .
EDIT EXTENDED FIELDS	F15	Displays in edit mode the fields contained in the Extended Field Information section on the DDM editor screen: see <i>Specifying Extended Field Attributes</i> .
SHOW COUPLED FILES		Only applies to DDMs that refer to Adabas files. Specifies that a file is physically coupled to this DDM. Files are coupled by using Adabas descriptors. For further information on file coupling, refer to the <i>Adabas</i> documentation.

QUIT Menu

The **QUIT** menu options and equivalent F keys (if available) are explained in the following table:

Menu Option	F Key	Explanation
EXIT (with STOW)	F3	Executes the STOW command (see <i>COMMANDS Menu</i>) and leaves the DDM editor.
QUIT (without STOW)		Leaves the DDM editor without saving any modifications and without executing the STOW command (see <i>COMMANDS Menu</i>).

Function-Key Assignments

The commands available with F keys are used as an alternative to the commands provided with DDM editor menus or line commands. In addition, the F keys provide help information on the commands and fields available in the DDM editor.

To list all current F-key assignments

- On the DDM editor screen, press F1 *twice*.

The following table lists all standard F-key assignments and equivalent menu options or line commands:

Function Key	Explanation
F1	<p>HELP</p> <p>If pressed <i>once</i>, displays help information for the field at which the cursor is positioned.</p> <p>If pressed <i>twice</i>, displays help information on the current F-key settings.</p>
F2	<p>CHOICE</p> <p>Displays a selection window (if relevant) for the field at which the cursor is positioned. From this window, you can choose a value. If no selection option is available, the help information window appears instead.</p>
F3	<p>STOW + EXIT</p> <p>Corresponds to EXIT (with STOW) in the QUIT menu.</p>

Function Key	Explanation
F4 - F9	<p>F4 - F9 are not displayed on the DDM editor screen because they can be reassigned to other keys. To display or change the current F-key settings, use the Function Keys option of the Services Profile menu described in the relevant section.</p> <p>F4 - F9 correspond to the following line commands:</p> <p>F4 Corresponds to the line command D.</p> <p>F5 Corresponds to the line command I.</p> <p>F6 Corresponds to the line commands X and Y.</p> <p>F7 Corresponds to the line command H.</p> <p>F8 Corresponds to the line command C.</p> <p>F9 Corresponds to the line command M.</p> <p>See also <i>To copy or move a block of lines with F keys.</i></p>
F10	<p>STOW</p> <p>Corresponds to STOW in the COMMANDS menu.</p>
F11	<p>CHECK</p> <p>Corresponds to CHECK in the COMMANDS menu.</p>
F12	<p>DB-SHORT-NAMES or DOCTYPE INFO</p> <p>Toggle switch.</p> <p>Adabas: Corresponds to DB-SHORT-NAMES (ON/OFF) in the MISC menu.</p> <p>Tamino: Corresponds to SHOW DOCTYPE INFO (ON/OFF) in the MISC menu.</p>
F13	<p>Corresponds to MODIFY DDM-HEADER in the MISC menu.</p>
F14	<p>SHOW EXT FIELD or HIDE EXT FIELD</p> <p>Toggle switch.</p> <p>Corresponds to SHOW EXTENDED FIELDS (ON/OFF) in the MISC menu.</p>
F15	<p>EDIT EXT FIELD</p> <p>Corresponds to EDIT EXTENDED FIELDS in the MISC menu.</p>

 **To copy or move a block of lines with F keys**

1. Position the cursor in the first line of the block of lines to be copied, deleted or moved and press F6.

The line is marked.

2. Move down or up to the next or previous line by pressing DOWN-ARROW or UP-ARROW.

Each additional line is marked.

3. In the last line of the block of lines to be marked, press F6 to stop marking further lines.

4. Position the cursor in the line above which you want to copy or move the block of lines and press F8 or F9.

Specifying Extended Field Attributes

The extended field editing function provides the option to specify default field attributes for headers and edit masks as well as remarks to be applied when the field is used in another Natural object (for example, in a program).

The header attribute specifies the default column header to be displayed above the field when it is output, for example, with a DISPLAY statement. If no header is specified, the field name is used as column header.

The edit mask attribute specifies the default edit mask to be used when the field is output, for example, with a DISPLAY statement. The edit mask must conform with Natural syntax rules and be valid for the Natural data format and length of the field.

The remark attribute specifies a comment about the field.

For Tamino, the extended field editing function also provides additional Tamino-specific information.

Related Topics:

- DISPLAY and INPUT in the *Statements* documentation
- EM - Edit Mask in the *Parameter Reference* documentation

The section below covers the following topics:

- Switching Extended Field Attributes On or Off
- Editing Extended Field Attributes
- Tamino-Specific Extended Field Attributes
- SQL-Specific Extended Field Attributes

Switching Extended Field Attributes On or Off

This section describes how to switch extended field attributes on or off.

▶ To switch extended field attributes on or off

- Press F14.

Or:

From the **MISC** menu, choose **SHOW EXTENDED FIELDS (ON/OFF)**.

If switched on (the default setting is off), the **Extended Field Information** section is displayed in the bottom half of the DDM editor screen as shown in the examples below.

Example of Extended Field Attributes from Adabas:

C	T	L Name	F	Length	S	D
		1 PERSONNEL-ID	A	8		D
	*	CNNNNNNN				
	G	1 FULL-NAME				
		2 FIRST-NAME	A	20	N	
		2 MIDDLE-I	A	1	N	
		2 NAME	A	20		D
		1 MIDDLE-NAME	A	20	N	
		1 MAR-STAT	A	1	F	
	*	M=MARRIED				
		1 SEX	A	1	F	
		1 BIRTH	N	06.0		D
		1 N@BIRTH	I	2		D
	G	1 FULL-ADDRESS				
	M	2 ADDRESS-LINE	A	20	N	

~~~~~ **Extended Field Information** ~~~~~

**Header** : MARITAL/STATUS  
**Edit Mask** :  
**Remark** : NC

F1 HELP F2 CHOICE F3 STOW+EXIT F10 STOW F11 CHECK  
F12 DB-SHORT-NAMES F13 MODIFY HEADER F14 HIDE EXT FIELD F15 EDIT EXT FIELD

Example of Extended Field Attributes from Tamino:

```

01/10/2004                      DDM Services
13:52:41                        V 6.1.1 Pl 9   Software AG 2004                Line: 11
DBID: 102   FNR: 1               DDM: EMPLOYEES-TAMINO                       TYPE: XML
  C   T   L   Name                                     F   Length  D
    G   4   GROUP$3
        5   FIRST-NAME                                 A           20  D
        5   MIDDLE-NAME                               A           20  D
        5   MIDDLE-I                                  A           20  D
        5   NAME                                       A           20  D
        3   MAR-STAT                                  A            1  D
        3   SEX                                       A            1  D
        3   BIRTH                                      A           10  D

~~~~~ Extended Field Information ~~~~~
Header : Marital/Status
Edit Mask :
Remark : xs:string
Tag Name : Mar-Stat
XPath : /Employee/Mar-Stat
Occurrence :
Flags : MULT_OPTIONAL
Default Value:
Fixed Value :
F1 HELP F2 CHOICE F3 STOW+EXIT F10 STOW F11 CHECK
F12 DOCTYPE INFO F13 MODIFY HEADER F14 HIDE EXT FIELD F15 EDIT EXT FIELD

```

The contents of the fields in the **Extended Field Information** section are triggered by the field at which the cursor is positioned. In the examples above, the cursor is positioned at **MAR-STAT**.

## Editing Extended Field Attributes

The section below describes how to edit the field attributes contained in the **Extended Field Information** section of the DDM editor screen. Note that Tamino-specific extended field attributes (see the relevant section) cannot be edited.

### To edit the fields in the Extended Field Information section

- Press F15.

The cursor is positioned in the **Extended Field Information** section in the Header input field, which is now highlighted and can be modified.

To move down to the next input field, press DOWN-ARROW or TAB.

To move to up to the previous field, press UP-ARROW.

### To terminate editing with or without field modification

- Press ENTER.

The cursor is positioned outside the **Extended Field Information** section.



## Tamino-Specific Extended Field Attributes

Tamino-specific extended field attributes are extracted from Tamino XML schema definitions.

In addition to the fields **Header**, **Edit Mask** and **Remark**, the following read-only Tamino-specific attributes are displayed in the **Extended Field Information** section:

| Attribute         | Function                                                                                                                                                                                                                                                                                                             |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Tag Name</b>   | <p>The name of the field within a Tamino doctype.</p> <p>This name may be not unique within the whole XML document. Some group fields might not have a Tag Name.</p>                                                                                                                                                 |
| <b>XPath</b>      | <p>The complete XPATH that references a field within a Tamino doctype.</p> <p>XPATH information is used during application runtime to uniquely identify a data element in a given XML document. Therefore, it is not possible to change the XPATH information.</p> <p>Some group fields might not have an XPATH.</p> |
| <b>Occurrence</b> | <p>The minimum and maximum numbers of occurrences.</p> <p>In Tamino, the multiplicity of the field as extracted from the Tamino XML schema. The multiplicity of a field is expressed with the <code>maxOccurs</code> facet in the Tamino XML schema.</p>                                                             |

| Attribute            | Function                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |       |                                                                       |                  |                                                                                   |                    |                                                                                                           |                |                                                                                                               |           |                                                                                              |               |                                           |               |                                           |                 |                                             |               |                                                           |               |                                       |           |                                                    |                |                                                                                 |
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| <b>Flags</b>         | <p>The flags represent the hierarchical field structure within a Tamino group structure. They are used internally to help in correctly recognizing special group structures (that is, the attributes of an element tag) or multiple occurrences. Additionally, the user can identify DDM fields which are either mandatory or optional in XML documents.</p> <p>Combinations of the flags for one field are possible.</p> <p>The following flags can be displayed:</p> <table border="0" data-bbox="345 493 1083 1724"> <tr> <td data-bbox="345 493 646 541">ARRAY</td> <td data-bbox="662 493 1083 541">Field is an array; that is, <code>maxOccurs</code> is greater than 1.</td> </tr> <tr> <td data-bbox="345 604 646 653">GROUP_ATTRIBUTES</td> <td data-bbox="662 604 1083 653">Field is a group that contains the attribute sub-fields of the predecessor field.</td> </tr> <tr> <td data-bbox="345 716 646 800">GROUP_ALTERNATIVES</td> <td data-bbox="662 716 1083 800">Field is a group that represents the choice constructor; the choice elements are contained as sub-fields.</td> </tr> <tr> <td data-bbox="345 863 646 947">GROUP_SEQUENCE</td> <td data-bbox="662 863 1083 947">Field is a group that represents the sequence constructor; the sequence elements are contained as sub-fields.</td> </tr> <tr> <td data-bbox="345 1010 646 1058">GROUP_ALL</td> <td data-bbox="662 1010 1083 1058">Field is a group that represents all constructors; all elements are contained as sub-fields.</td> </tr> <tr> <td data-bbox="345 1121 646 1144">ATTR_REQUIRED</td> <td data-bbox="662 1121 1083 1144">Field is an attribute marked as required.</td> </tr> <tr> <td data-bbox="345 1207 646 1230">ATTR_OPTIONAL</td> <td data-bbox="662 1207 1083 1230">Field is an attribute marked as optional.</td> </tr> <tr> <td data-bbox="345 1293 646 1316">ATTR_PROHIBITED</td> <td data-bbox="662 1293 1083 1316">Field is an attribute marked as prohibited.</td> </tr> <tr> <td data-bbox="345 1379 646 1423">MULT_OPTIONAL</td> <td data-bbox="662 1379 1083 1423">Field can occur in the XML document but does not need to.</td> </tr> <tr> <td data-bbox="345 1486 646 1509">MULT_REQUIRED</td> <td data-bbox="662 1486 1083 1509">Field must occur in the XML document.</td> </tr> <tr> <td data-bbox="345 1572 646 1617">MULT_ONCE</td> <td data-bbox="662 1572 1083 1617">Field must occur exactly once in the XML document.</td> </tr> <tr> <td data-bbox="345 1680 646 1724">SIMPLE_CONTENT</td> <td data-bbox="662 1680 1083 1724">Field was defined as <code>complexType</code> with <code>simpleContent</code>.</td> </tr> </table> | ARRAY | Field is an array; that is, <code>maxOccurs</code> is greater than 1. | GROUP_ATTRIBUTES | Field is a group that contains the attribute sub-fields of the predecessor field. | GROUP_ALTERNATIVES | Field is a group that represents the choice constructor; the choice elements are contained as sub-fields. | GROUP_SEQUENCE | Field is a group that represents the sequence constructor; the sequence elements are contained as sub-fields. | GROUP_ALL | Field is a group that represents all constructors; all elements are contained as sub-fields. | ATTR_REQUIRED | Field is an attribute marked as required. | ATTR_OPTIONAL | Field is an attribute marked as optional. | ATTR_PROHIBITED | Field is an attribute marked as prohibited. | MULT_OPTIONAL | Field can occur in the XML document but does not need to. | MULT_REQUIRED | Field must occur in the XML document. | MULT_ONCE | Field must occur exactly once in the XML document. | SIMPLE_CONTENT | Field was defined as <code>complexType</code> with <code>simpleContent</code> . |
| ARRAY                | Field is an array; that is, <code>maxOccurs</code> is greater than 1.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |       |                                                                       |                  |                                                                                   |                    |                                                                                                           |                |                                                                                                               |           |                                                                                              |               |                                           |               |                                           |                 |                                             |               |                                                           |               |                                       |           |                                                    |                |                                                                                 |
| GROUP_ATTRIBUTES     | Field is a group that contains the attribute sub-fields of the predecessor field.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |       |                                                                       |                  |                                                                                   |                    |                                                                                                           |                |                                                                                                               |           |                                                                                              |               |                                           |               |                                           |                 |                                             |               |                                                           |               |                                       |           |                                                    |                |                                                                                 |
| GROUP_ALTERNATIVES   | Field is a group that represents the choice constructor; the choice elements are contained as sub-fields.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |       |                                                                       |                  |                                                                                   |                    |                                                                                                           |                |                                                                                                               |           |                                                                                              |               |                                           |               |                                           |                 |                                             |               |                                                           |               |                                       |           |                                                    |                |                                                                                 |
| GROUP_SEQUENCE       | Field is a group that represents the sequence constructor; the sequence elements are contained as sub-fields.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |       |                                                                       |                  |                                                                                   |                    |                                                                                                           |                |                                                                                                               |           |                                                                                              |               |                                           |               |                                           |                 |                                             |               |                                                           |               |                                       |           |                                                    |                |                                                                                 |
| GROUP_ALL            | Field is a group that represents all constructors; all elements are contained as sub-fields.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |                                                                       |                  |                                                                                   |                    |                                                                                                           |                |                                                                                                               |           |                                                                                              |               |                                           |               |                                           |                 |                                             |               |                                                           |               |                                       |           |                                                    |                |                                                                                 |
| ATTR_REQUIRED        | Field is an attribute marked as required.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |       |                                                                       |                  |                                                                                   |                    |                                                                                                           |                |                                                                                                               |           |                                                                                              |               |                                           |               |                                           |                 |                                             |               |                                                           |               |                                       |           |                                                    |                |                                                                                 |
| ATTR_OPTIONAL        | Field is an attribute marked as optional.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |       |                                                                       |                  |                                                                                   |                    |                                                                                                           |                |                                                                                                               |           |                                                                                              |               |                                           |               |                                           |                 |                                             |               |                                                           |               |                                       |           |                                                    |                |                                                                                 |
| ATTR_PROHIBITED      | Field is an attribute marked as prohibited.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |       |                                                                       |                  |                                                                                   |                    |                                                                                                           |                |                                                                                                               |           |                                                                                              |               |                                           |               |                                           |                 |                                             |               |                                                           |               |                                       |           |                                                    |                |                                                                                 |
| MULT_OPTIONAL        | Field can occur in the XML document but does not need to.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |       |                                                                       |                  |                                                                                   |                    |                                                                                                           |                |                                                                                                               |           |                                                                                              |               |                                           |               |                                           |                 |                                             |               |                                                           |               |                                       |           |                                                    |                |                                                                                 |
| MULT_REQUIRED        | Field must occur in the XML document.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |       |                                                                       |                  |                                                                                   |                    |                                                                                                           |                |                                                                                                               |           |                                                                                              |               |                                           |               |                                           |                 |                                             |               |                                                           |               |                                       |           |                                                    |                |                                                                                 |
| MULT_ONCE            | Field must occur exactly once in the XML document.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |       |                                                                       |                  |                                                                                   |                    |                                                                                                           |                |                                                                                                               |           |                                                                                              |               |                                           |               |                                           |                 |                                             |               |                                                           |               |                                       |           |                                                    |                |                                                                                 |
| SIMPLE_CONTENT       | Field was defined as <code>complexType</code> with <code>simpleContent</code> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |       |                                                                       |                  |                                                                                   |                    |                                                                                                           |                |                                                                                                               |           |                                                                                              |               |                                           |               |                                           |                 |                                             |               |                                                           |               |                                       |           |                                                    |                |                                                                                 |
| <b>Default Value</b> | The default value assigned to the field; this attribute is not yet used.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |       |                                                                       |                  |                                                                                   |                    |                                                                                                           |                |                                                                                                               |           |                                                                                              |               |                                           |               |                                           |                 |                                             |               |                                                           |               |                                       |           |                                                    |                |                                                                                 |
| <b>Fixed Value</b>   | The fixed value assigned to the field; this attribute is not yet used.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |       |                                                                       |                  |                                                                                   |                    |                                                                                                           |                |                                                                                                               |           |                                                                                              |               |                                           |               |                                           |                 |                                             |               |                                                           |               |                                       |           |                                                    |                |                                                                                 |

## SQL-Specific Extended Field Attributes

In addition to the fields **Header**, **Edit Mask** and **Remark**, the following read-only SQL-specific attribute is displayed in the **Extended Field Information** section:

| Attribute | Function                                                                                                                                  |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------|
| SQLTYPE   | Information generated from the data types BLOB (Binary Large Object) or CLOB (Character Large Object) if contained in an Oracle database. |

## Displaying Tamino Doctype Information

On the DDM editor screen, you can display read-only Tamino-specific doctype information.

 **To switch doctype information on or off**

- Press F12 (toggle switch).

Or:

From the **MISC** menu, choose **SHOW DOCTYPE INFO ON/OFF**.

If switched on (the default setting is off), the **Doctype Information** section is displayed in the bottom half of the DDM editor screen as shown in the example below:

```

01/10/2004 DDM Services
11:05:45 V 6.1.1 Pl 9 Software AG 2004 Line: 1
DBID: 175 FNR: 1 DDM: DDM_TEST TYPE: XML
 C T L Name F Length D
 G 1 EMPLOYEE
 G 2 GROUP$1
 G 3 PERSONNEL-ID A 8 D
 G 2 GROUP$2
 G 3 FULL-NAME
 G 4 GROUP$3
 G 5 FIRST-NAME A 20 D
 G 5 MIDDLE-NAME A 20 D
~~~~~ Doctype Information ~~~~~
Collection: NATDemoData1
Schema      : Employee
Doctype    : Employee

Namespace URI                                               Prefix
-----
http://www.w3.org/2001/XMLSchema                             xs

F1  HELP   F2  CHOICE  F3  STOW+EXIT   F10 STOW           F11 CHECK
F12 DOCTYPE INFO   F13 MODIFY HEADER  F14 SHOW EXT FIELD  F15
    
```

The attributes displayed in the **Doctype Information** section are described in the table below. See also *Introducing Tamino XML Schema Language* in the *Programming Guide*.

| Attribute                   | Function                                                                    |
|-----------------------------|-----------------------------------------------------------------------------|
| <b>Collection</b>           | The name of the collection which is used within the Tamino database.        |
| <b>Schema</b>               | The name of the Tamino XML schema which is used within the Tamino database. |
| <b>Doctype</b>              | The name of the doctype within the collection.                              |
| <b>Namespace URI Prefix</b> | The list of namespace URI/prefix pairs which corresponds to the doctype.    |

## Setting Editor Preferences - Services Profile

The **Services Profile** menu of DDM Services is used to display or change the DDM editor profile settings for the function (F) keys F4 to F9, and the display mode of the **DB** column.

### ▶ To invoke Services Profile

- On the **DDM Services** screen, choose **Services Profile**.

The following menu options are displayed:

```

22/09/2004                DDM Services                Library: SYSTEM
14:21:44                  V 6.1.1 Pl 9   Software AG 2004   DBID   :
User: SAG                 FNR      :
+-----+-----+-----+-----+
| Library      DDM Maintenance      Services Profile      Quit      |
+-----+-----+-----+-----+
|                                     | Function Keys      |
|                                     | Other Definitions |
|                                     |                       |
+-----+-----+-----+-----+

Show Other Definitions

```

This section contains information on the **Services Profile** menu options.

- Function Keys
- Other Definitions

### Function Keys

With the **Function Keys** option, you can reassign the keys F4 to F9. These F keys are used to execute line commands (see the relevant section) in the DDM editor.

### ▶ To reassign an F key

1. From the **Services Profile** menu, choose **Function Keys**.

The **Profile settings** window appears with the current F-key assignments:

```
+--- Profile settings ----+
| Delete          F4      |
| Insert          F5      |
| Mark Block      F6      |
| Unmark Block    F7      |
| Copy            F8      |
| Move            F9      |
+-----+-----+
```

2. In the **Profile settings** window, position the cursor in the line of the function you want to reassign and *press* the F key to which you want to assign this function. You can only assign an F key that is not already assigned to any other DDM Services function.

The new F key setting is displayed in the **Profile settings** window as shown in the example below:

```
+--- Profile settings ----+
| Delete          F21   |
| Insert          F5      |
| Mark Block      F6      |
| Unmark Block    F7      |
| Copy            F8      |
| Move            F9      |
+-----+-----+
```

## Other Definitions

### Not applicable to Tamino.

With the **Other Definitions** option, you can determine whether or not to display the **DB** column as described in *Columns of Field Attributes*.

### ▶ To change the display mode of the DB column

1. From the **Services Profile** menu, choose **Other Definitions**.

The **Profile settings** window appears:

```
+----- Profile settings -----+
| Display Database short names N |
+-----+-----+
```

2. Replace the current value by Y (Yes) to display the **DB** column permanently, and N (No) to hide the column permanently.