



The Mainframe Software Partner
For The Next 50 Years

File-AID/Data Solutions

Reference Summary

Release 10.2

Please direct questions about File-AID/Data Solutions
or comments on this document to:

Compuware Customer Support

<http://go.compuware.com/>

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Introduction

File-AID/Data Solutions is an integrated set of data management tools that enables programmers and other IT professionals to manipulate data to suit a variety of business challenges. It provides powerful and precise solutions for converting euro currencies, aging dates for testing, validating data, encrypting sensitive data and more. File-AID/Data Solutions eliminates the need to write one-time programs by giving programmers a consistent, repeatable and accurate process for all data management tasks.

Data Solutions's field-level exits enable you to perform calculations, analysis, and modifications on individual fields. Sample exits are provided for data analysis, date analysis, generating test dates, data encryption and decryption, European currency conversion, mathematical calculations, etc. In addition, Data Solutions has a screen-driven EURO currency conversion feature to simplify converting currency to and from the European Currency Unit (ECU).

File-AID/Data Solutions Reference Summary is an overview of Data Solutions' functions and summarizes information such as pattern name notation, primary commands, and product options. For more information, refer to the *File-AID/Data Solutions Reference* manual and the product's online help.

File-AID Data Privacy

File-AID Data Privacy is a common data privacy management and repository component for Compuware's File and Data Management product line. The objective of this component is to simplify the creation, management, enforcement, and auditing of test data privacy rules from a centralized workbench.

File-AID Data Privacy is a plugin of the Compuware Workbench and is ordered and installed separately from File-AID/Data Solutions.

Data Solutions Options

This section lists the options available for each Data Solutions function. For detailed information, refer to the *File-AID/Data Solutions Reference* manual.

0 — PARAMETERS

- 0.1 Data Solutions system parameters
- 0.2 Selection criteria default parameters
- 0.3 Print default parameters
- 0.4 Processing option default parameters
- 0.5 Audit file allocation parameters

1 — DATE AGING

- 1.1 Age dates
- 1.2 Date calculator
- 1.3 Business rules

2 — EURO TOOLS

- 2.1 Euro conversion
- 2.2 Euro triangulation

3 — DATA ANALYZER

- 3.1 Date analysis
- 3.2 Data validation
- 3.3 Data analysis

4 — TRANSLATOR

Translates data values in one or more fields based on a translate table containing lookup and/or result values.

5 — GENERATION

- 5.1 Random, Sequential and Mask Generation
- 5.2 Pattern Controlled Data Generation

6 — FIELD EXITS

Processes Data Solutions-defined and user-defined business function data conversions.

7 — DATA ENCRYPTION

Transforms a field value to mask the original value.

8 — DATA REPLACE

Replaces a value or source for the specified field.

D — Data Privacy

Disguises data by executing Dynamic Privacy Rules (DPR) created by the File-AID Data Privacy component of the Compuware Workbench.

U — UTILITIES

- U.1 Print criteria sets.
- U.2 Print contents of an audit trail.
- U.3 Generate file overrides for criteria members.
- U.4 Update criteria with new file names.

S — CRITERIA

Create and maintain a change criteria member. Change criteria can include: selection options, global fields, selection criteria, and the following formatted criteria: aging, EURO currency conversion or triangulation, date analysis, data translator, data generator, field-level exit, encryption, and data replace.

R — XREF

Create and maintain record layout cross references.

C — CHANGES

Identifies the changes to the product since the last release.

T — TUTORIAL

Display information about Data Solutions.

X — EXIT

Terminate Data Solutions.

Notation Rules

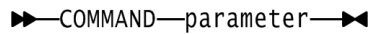
Syntax diagrams define primary command syntax.

A **parameter** is either a keyword or a variable.

All KEYWORDS are shown in uppercase characters and must be spelled exactly as shown. You cannot substitute another value. If any part of a KEYWORD is shown in lowercase characters, that part is optional.

Variables are user-specified values and are printed in lowercase italics. For example, *dataset-name* indicates you are to substitute a value.

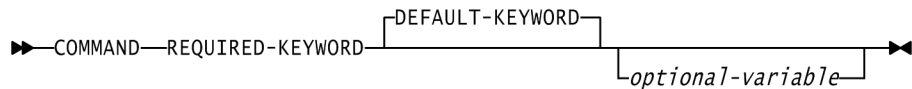
The syntax for commands is described in diagrams that help you visualize parameter use. The following example shows a command and a parameter:



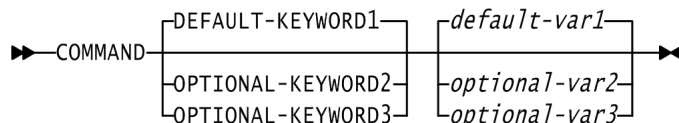
Read the diagrams from left to right and from top to bottom. These symbols help you follow the path of the syntax:

- ▶▶ indicates the beginning of a statement.
- indicates the statement is continued on the next line.
- ▶ indicates the statement is continued from the previous line.
- ▶▶ indicates the end of a statement.

Required parameters appear on the horizontal line (the main path). Optional parameters appear below the main path. Default parameters appear above the main path and are optional. The command will execute the same whether the default parameter is included or not.



Vertically stacked parameters are mutually exclusive. If you must choose a parameter, one item of the stack appears on the main path. If the parameters are optional, the entire stack appears below the main path. If a parameter in a stack is the default, it appears above the main path.



If the same parameters are used with several commands, their syntax may be documented in a separate diagram. In the command syntax, these common parameters are indicated with separators before and after the parameter name.

▶—COMMAND—| common-parameter |—▶

An arrow returning to the left indicates a repeatable item. If the arrow contains a comma, separate the repeated items with a comma.

▶—COMMAND—↓', ————— |—▶
 ↑
 required-var

File-AID/Data Solutions Dataset Requirements

Dataset Type	DSORG	RECFM	LRECL
Record Layout	Sequential, Partitioned, Panvalet, Librarian, GEM	*	*
XREF	Partitioned	VB	300
Criteria	Partitioned	VB	300
Business Rules	Partitioned	FB	80
EURO RATE	Sequential, Partitioned	FB	80
TABLE DATASET	Sequential, Partitioned Translation table dataset may be a VSAM KSDS.	FB or VB	Any
File Override	Sequential, Partitioned	FB VB	156 or greater 160 or greater

* Must conform to the requirements for a valid Panvalet/Librarian file or a valid COBOL or PL/I copybook.

Specifying a Dataset Name

Enter the dataset name you want to process in the Dataset name field of a screen. A qualified dataset name is enclosed in single quotes (' '); an unqualified dataset name is not enclosed in single quotes. Data Solutions concatenates the TSO prefix to the front of an unqualified dataset name. Dataset name fields accept qualified (quoted) and unqualified (non-quoted) dataset names.

Qualified Dataset Names

A qualified dataset name is enclosed in single quotes (' '). The quotes specify that no other information is used as a prefix to the qualified name. Since the trailing quote is not required, a single leading quote can signify a qualified dataset name.

Unqualified Dataset Names

An unqualified dataset name is not enclosed in single quotes. The user prefix is concatenated to the beginning of the entered value.

Unqualified VSAM dataset names are prefixed with the installation-defined optional VSAM high-level name (see the *File-AID Single Install Image Installation and Configuration Guide*). Also, a user-defined VSAM intermediate name default can be set in the System Parameters (Option 0.1). When a search fails for an unqualified dataset name, the VSAM name is constructed and the catalog is re-searched to see if the cluster can be located. For example, if *userprefix.DATASET.NAME* is not found, Data Solutions constructs the following dataset name for the cluster search:

```
vsam-high-level.vsam-intermediate-name.DATASET.NAME
```

Pattern Dataset Names

You can enter a pattern name in any Dataset name field to produce a list of datasets that match the pattern. You can select a dataset from this list with the S (Select) line command.

The pattern dataset name is used most often as a dataset name prefix. This means that all datasets whose high-level qualifiers match the pattern are listed and there are no restrictions on the remaining qualifiers. See Figure 1.

When used, the / (slash) and + (plus) pattern characters limit the number of remaining qualifiers that are listed.

Figure 1. Pattern Dataset Name Prefix Example

```
Dataset name ==> 'USERID1.TEST.*'
```

In this example, Data Solutions lists all the datasets that have a first-level qualifier of USERID1, a second-level qualifier of TEST, and one or more subsequent qualifiers.

The first-level qualifier of the pattern dataset name must be an explicit qualifier with no pattern characters. Valid pattern characters for pattern dataset names include: * (asterisk), / (slash), + (plus), ? (question mark), and % (percent sign).

- The * (asterisk) pattern character is a qualifier-name wildcard. It represents any single-level qualifier, or partial-level qualifier when preceded by 1 to 7 explicit characters. When used as the last character it represents one or more remaining qualifiers.
- The ? (question mark) and the % (percent sign) pattern characters are both single-character wild cards. Either character represents a single character in the specified position of the qualifier. You can use a single-character qualifier up to 8 times within a qualifier, but a character must exist in that position.
- The / (slash) pattern character specifies the number of levels in the dataset name. Dataset names with more levels than those specified in the pattern dataset name are not listed. The / must be the last element in the pattern dataset name.
- The + (plus) pattern character tells Data Solutions to ignore any intermediate-level qualifiers. Use the + after the high-level qualifier and before the lowest-level qualifier to have Data Solutions ignore any intermediate qualifiers. In effect, it matches zero or more qualifiers in the name.

You can use only one + per name. The portion of the name before the + represents a pattern for the high-level qualifier(s) of the dataset name; the portion after the + represents a pattern for the low-level qualifier(s). When the + is used, only dataset names that begin and end exactly as the pattern does are displayed.

You cannot use both the / and the + in the same pattern dataset name. The + implies a / at the end of the pattern dataset name.

Pattern Member Names

You can specify pattern characters in a Member name field to limit the members listed for selection. You cannot specify pattern characters in both the dataset name and member name fields at the same time. The * (asterisk), ? (question mark), and % (percent sign) are valid pattern characters for the member name field. The member name must be enclosed in parentheses (()) when entered in the Dataset name field.

The ? and the % function as single-character wildcards. An * can represent a partial or entire member name. It functions as a blank when used to represent the entire member name and produces a complete member list. When the asterisk is entered along with explicit characters, it functions as a single-character wildcard unless it is the last character in the pattern member name and then it matches any valid number of remaining characters.

Specifying a File-AID Data Privacy Project

To specify a File-AID Data Privacy project, select Option D, Data Privacy - Dynamic Privacy Rule from the Primary Option Menu. Enter the File-AID Data Privacy repository name and the project name you want to process in the Specify Dynamic Privacy Rule Information fields of the Input Dataset Specification screen.

File-AID Data Privacy Repository Name

Specify the name of the repository to use for the File-AID Data Privacy Dynamic Privacy Rules project you specify in the “Project name” field.

The repository name field is 128 bytes and is case sensitive. It is entered in free form text. The repository name will be used exactly as entered.

Or enter an asterisk (*) by itself which will present a list of all File-AID Data Privacy repositories, if more than one exists. Then, you can select the desired repository from the list.

File-AID Data Privacy Project Name

The File-AID Data Privacy project name field is 128 bytes, case sensitive, and can be entered in free form text.

The project name will be used exactly as entered. Do NOT use beginning and/or ending quotes. They will be considered part of the project name.

Entering a pattern will display a list of File-AID Data Privacy projects. The following wildcard characters are available in a pattern: *, %, and ?.

The specified project must exist in the repository you specified in the “Repository name” field or Data Solutions displays an error message.

Date Aging

Formatted aging criteria controls the date aging process. Optionally, you may specify a business rule member to validate your aging results. Specify the following information to create formatted aging criteria:

- Choose a date field from the displayed record layout.
- Enter a relational operator (RO) to the right of the date field.
- Enter a numeric value in the C (century), Y (year), M (month), and/or D (days) field.
- Enter a valid date pattern or choose the appropriate date pattern from the Available Date Pattern screen.

Date Aging Guidelines

File-AID/Data Solutions uses the following guidelines for processing date aging (plus or minus):

- Increases to dates are processed in the order: Century and Year (together), Month, and then Day.
- Decreases to dates are processed in the order: Day, Month, and then Century and Year (together).
- Increases/decreases of CCYY are executed on the date format (Gregorian or Julian) passed by the date pattern exit. If the result is not a leap year, 0229 is adjusted to 0228 (Gregorian) and 366 is adjusted to 365 (Julian).
- When you have a 2-digit year (no century is specified), Data Solutions must make an assumption regarding century. If the year is 60 or greater, Data Solutions assumes the date is 20th century (19yy). If the year is 59 or less, Data Solutions assumes the date is 21st century (20yy). The century assumption takes place in the COBOL exit (AGER0000 - AGER9999) so you can customize your own exits.
- When processing date formats without a century (2-digit year), you may override the default pivot year value, 60, by entering a new pivot year value in the -C- (Century) field.
- Month processing is based on the Gregorian format, regardless of the date format passed by the exit. When a date result is not a valid Gregorian date, the date is adjusted downward. For example, April 31 becomes April 30.
- Day processing is based on the Julian date format, regardless of the date format passed by the exit. The result is always valid.
- Necessary date adjustments to correct invalid dates are made after CCYY and MM date values are applied.
- If you want to produce the original date after processing total equal plus and minus values, you must specify the date change values exclusively in Days and the record date must include a century value. The exclusive use of Days eliminates the possibility of Data Solutions adjusting invalid dates. Unless the date includes a century value, Data Solutions must make assumptions regarding century which may produce an end date different by one day from the start date.

Creating Your Own Date Pattern Exit

File-AID/Data Solutions uses date pattern exits to define and process the various date formats. The exit converts your date to one of two standard formats (Gregorian or Julian) and then converts the date back to its original format. Since File-AID/Data Solutions is distributed with more than 50 date exits, it handles the vast majority of the date formats you encounter in your data.

If you want to add your own date pattern exits for processing by File-AID/Data Solutions, you need to do the following:

If you want to add your own date pattern exits for processing by Data Solutions, you need to do the following:

1. Use one of the File-AID/Data Solutions-provided COBOL date exits, *AGERmmm*-named members in the sample library (*hlq.CPWR.MXVJA20.SXVJSAMP*), as a model. Look for an exit that is similar to your date pattern. Save it under a new date exit name, use *AGER0700* – *AGER0999* if the exit is non-LE enabled or *AGER1000* – *AGER9999* if the exit is LE enabled. Make any modifications or adjustments required for your date pattern. Use *UDAEXITL* to compile and link your new date pattern exit.
2. Identify your environment library names (refer to “Step 9. Specify External Files” on page 2-13 in the *Compuware Installer Mainframe Products SMP/E Installation Guide*).
3. Update *DATELIST* in *SXVJSAMP* to add your new date pattern exit.
4. Use sample *JCL UDADLIST* in the sample library (*hlq.CPWR.MXVJA20.SXVJSAMP*) to assemble and link to *LOAD* module *DATELIST* in your Configuration *LOAD* library (*hlq.CPWR.MXVJA20.CXVJLOAD*).

Each entry in the Date Pattern Exit Table consists of the following six fields:

Data type : Specify **B** (Binary), **C** (Character), **G** (Graphic, Double Byte Character Set), **N** (Numeric), **P** (Packed), **V** (Variable length Character), or **W** (Variable length Graphic, Variable length Double Byte Character Set). The data type is determined by the record layout specified for the Formatted aging criteria. It has a length of one byte. If your exit handles more than one data type, add a date entry for each data type to the Date Pattern Exit Table (*DATELIST*).

Date pattern name : Specify a unique name alphanumeric 1 to 15 characters. The date pattern name is the name that you specify on the Formatted Aging Criteria screen or select from the Available Date Patterns screen.

Note: The combination of name and data type must be unique. If multiple entries have the same name and data type, only the load module of the first entry will be executed.

Date length : Specify the number of bytes (not digits) that Data Solutions will pass to and return from the date pattern exit. For example, packed 7 digits is 4 bytes.

Load module name : Specify the load module name of your new exit (*AGER0700* – *AGER0999* if the exit is non-LE enabled or *AGER1000* – *AGER9999* if the exit is LE enabled). It must begin with “*AGER*” and end with a four-digit number from 0700 to 9999. Numbers from 0000 to 0699 are reserved for date pattern exits written by Compuware.

Description : Specify up to 30 characters describing your new date pattern exit. This description is displayed on the Available Date Patterns screen.

Filler : Specify a 3 byte filler.

Hint

A suggestion to avoid assembling and linking DATELIST every time anyone at your site wants to add a new date exit is to add a group of new entries at one time and assign one or more to each programmer. Once the assigned date exit entry (hook) is linked into Data Solutions, each programmer can modify and test their date pattern exits without requiring a systems programmer to modify DATELIST.

Note: To manually compile and link your new COBOL date exit, use the JCL that is appropriate for your COBOL version.

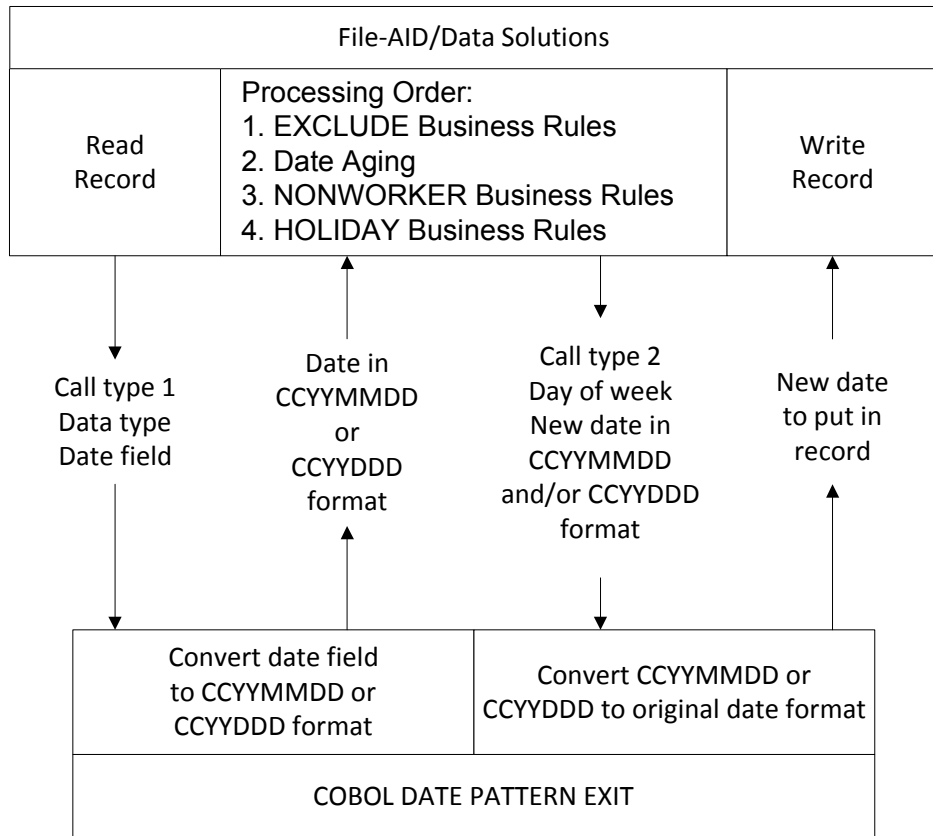
Table 1. Date Exit Compile/Link JCL

COBOL Version	Use JCL:
LE 370 / COBOL for MVS	UDAEXITL

Add the appropriate information (in Table 1) for your COBOL date exit to the Date Pattern Exit Table in Sample PDS member DATELIST. Use UDADLIST to reassemble and link edit the table.

Date Aging Flow

Figure 2. Data Solutions and COBOL Date Pattern Exit Flow



Available Date Patterns

The Available Date Patterns screen, shown in Figure 3, allows you to select the name of the date pattern exit for Data Solutions to use to process the indicated date field.

It is displayed when you enter a RO (Relational Operator) and date information without a Date Pattern or use the PATTERN primary command on the Aging Criteria screen.

File-AID/Data Solutions is packaged with more than 50 common date patterns. For any dates that cannot be handled by the supplied date pattern exits, you may add your own date pattern exits. See "Creating Your Own Date Pattern Exit" on page 9 for information on adding your own date pattern exit.

Figure 3. Available Date Patterns

```

Action Sets Display Show Options Menu Help
----- Available Date Patterns -----
F      Command ==>                               Row 1 to 9 of 56
C      Scroll ==> PAGE                           =====
R
S      Select Date Pattern for field EMP-NUMBER   N SEL = N
-                                             TTERN-- R
*                                             *****
5
5      Date Pattern   Data
5      Type Description                               Module
5 -----
5  _ MMDDYY          C   6 CHAR/6 BYTE 090197         UDAA0100
5  _ MM*DD*YY       C   8 CHAR/8 BYTE 09/01/97         UDAA0101
5  _ MMDDCCYY       C   8 CHAR/8 BYTE 09011997         UDAA0102
5  _ MM*DD*CCYY     C  10 CHAR/10 BYTE 09/01/1997         UDAA0103
5  _ YYMMDD         C   6 CHAR/6 BYTE 970901         UDAA0104
5  _ YY*MM*DD       C   8 CHAR/8 BYTE 97/09/01         UDAA0105
5  _ CCYYMMDD       C   8 CHAR/8 BYTE 19970901         UDAA0106
5  _ CCYY*MM*DD    C  10 CHAR/10 BYTE 1997/09/01         UDAA0107
5  _ DDMYY         C   6 CHAR/6 BYTE 010997         UDAA0108

Command ==>                               Scroll ==> PAGE
-----
Valid RO: +, -, R, FM - For list of patterns,leave PATTERN blank.

```

Date Calculator

The Date Calculator screen, shown in Figure 4, calculates the difference between two dates and gives the answer in number of days. It also identifies the day of the week of the end date. You may overwrite the default start date (current system date).

File-AID/Data Solutions displays the Date Calculator screen when you enter:

- Option 2 on the Aging Tools Menu.
- An * (asterisk) in any of the date fields on the Aging Criteria screen.
- The CALC primary command or selecting the Date Calculator from the action Bar on the Aging Criteria screen.

If the Date Calculator is accessed by entering an * (asterisk) in a date field, the Field name is displayed at the top of the Date Calculator screen and the difference is carried over to the appropriate Day field on the Aging Criteria screen. If the difference is negative, Data Solutions switches the RO (Relational Operator) on the Aging Criteria screen to compensate for the negative value. Use the CANCEL command to exit the Date Calculator without calculating a date.

If the Date Calculator is accessed from the Aging Tools Menu (option 2), with the CALC primary command or from the Action Bar on the Aging Criteria screen, then there is no Field name to display and the difference that is calculated is not returned to the Aging Criteria screen. Use the CANCEL or END command to exit the Date Calculator without calculating a date.

Figure 4. Date Calculator

```

Command ===>

Field name:

      Year  Month  Day
Start: 1997  08   _13
End:  ____  __   __

For Julian format, leave month blank.

Difference in days: 0
End date day of week:

```

Business Rules

Business Rules specify dates that require special processing when aging them. Weekday and holiday processing rules are supported. NONWORK and HOLIDAY processing enables you to instruct Data Solutions to roll dates forward or backward to a valid business day. EXCLUDE processing enables you to instruct Data Solutions to bypass validation and aging for the specified date value. Sample business rules are provided in DASAMP.BUSINESS.RULES.

Euro Conversion and Triangulation

The Euro Conversion and Triangulation functions allow you to manipulate data associated with the euro. The Euro Conversion function enables you to convert to and from the euro. The Euro Triangulation function allows you to convert from one currency to another by first converting the source currency to the euro, then from the euro to the target currency. This is required to assure that everyone is using the same published currency rates.

The Euro Conversion Criteria screen enables you to enter currency conversion criteria to convert the specified field to or from the EURO (or ECU (European Currency Unit)).

Specify the following information to create a formatted EURO conversion criteria:

- You must specify the dataset name of an existing European currency rate file (i.e. DASAMP.EURORATE.FACTORS) in the EURO RATE DATASET field. See the *File-AID/Data Solutions Reference* manual for a description of the EURO rate dataset format.
- Enter the EX relational operator (RO) to the right of the rate field you want to modify.
- In the FROM/TO field, enter whether you are converting from or to the NON-ECU currency specified in the CURRENCY field.

- Enter a valid three-character name of the NON-ECU currency. This currency name must match a record in the specified currency rate file.
- Optionally, you may enter a decimal point adjustment to increase (+) or decrease (-) the number of retained decimal point positions (1, 2, 3, and 4 are valid entries). For example, if the calculated value is 1.2468, a +3 in this field changes the value to 1247 (with an assumed decimal point between the 1 and 2). If the calculated value is 1234567, a -3 in this field changes the value to 1235.

Date Analysis

The Date Analysis feature simplifies the identification of date fields. By automatically comparing date values against a list of date patterns, File-AID/Data Solutions can produce a report that lists the percentage of times a valid date is present and the number of times each date format is valid. You can compare your files to the date patterns provided or to those you've specifically created.

Specify the EX relational operator (RO) to the right of the date field you want to analyze to create formatted date analysis criteria.

Data Validation

Data Validation enables you to validate data based on data type or the actual values within the record. You may specify the valid values for a field online or in an external file. Validation processes include alpha, alphanumeric, and numeric data checking. When invalid data is found in any of the fields of a record, a return code of 04 is set indicating that not all data was valid.

Specify the following information to create formatted data validation criteria:

- Specify the TA (table) or LI (list) relational operator (RO) to the right of the field for which you want to create data validation criteria.
- File-AID/Data Solutions displays a Criteria pop-up window based on the relational operator (RO) that you specified. Enter the appropriate parameters.

Data Analysis

The Data Analysis function analyzes the data in a particular field by comparing the data to its record layout field definition and reports whether the data is valid or invalid. The Data Analysis report is divided into the following informational sections:

Statistics : Reports the number of unique values, number of valid values, and the range of values found in the selected field.

Occurrence : Reports each unique value and the number of times each value occurs within the selected field.

Invalid Data : Reports whether invalid data was found in the selected field.

When invalid data is found, Data Solutions lists the number of invalid values and the highest, lowest, and most common invalid value found.

On the Data Analysis Specification screen, you can specify how the values are analyzed. You may choose to not produce the Statistics or Occurrence section of the report. You can set a maximum number of unique occurrences to report.

You can use a “filter dataset” to limit the values that Data Solutions lists in the occurrence report. This is useful when there are numerous records and a wide range of data values. Include the values that you want analysis information on in the filter dataset. Data Solutions limits the occurrence report to the “filtered” values found within the field.

Specify the following information to create formatted data analysis criteria:

- Specify the EX relational operator (RO) to the right of the data field you want to analyze to create formatted data analysis criteria.
- File-AID/Data Solutions displays the Data Analysis Specification pop-up window. Enter the appropriate parameters.

Data Translator

This feature allows translating data values in one or more fields based on a translate table containing lookup and/or result values. The Translator function accesses the translate table based on values from the fields specified on the formatted panel. When the corresponding row is determined, it returns the result values and uses them to replace the specified output field value.

Specify the following information to create formatted data translation criteria:

- You must specify the dataset name of an existing translation table file (i.e. DASAMP.AREACODE.CONVERT) in the TABLE DATASET field.

Enter S (Binary search Field), K (Key search field), D (Direct row pointer search field), H (Hash to a key search field), R (Result field), SR (Binary search and Result field), KR (Key search and Result field), DR (Direct row pointer search and Result field), HR (Hash to a key search and Result field), U (Unique search field), UR (Unique search and result field), or FM (Field mask) in the Relational Operator (RO) field to the right of the field you want to create formatted data translator criteria.

- File-AID/Data Solutions displays a Parameter pop-up window based on the relational operator (RO) that you specified. Enter the appropriate parameters.

Data Generation

Data Generation is used to fill fields with new data values. It can be used for new fields that need test data, or to replace live data that may be sensitive production information that should not be used in test. Data can be generated for numeric and character fields by using one of four methods: sequential, random, pattern

masking, or by picking valid values from another file. An object of an ODO/REFER is non-selectable.

The Data Generation function can also be used to generate complete records (as opposed to only specific fields) into a new file, or an empty file, without specifying an input file from which to model the records. A layout containing an ODO/REFER cannot be used.

Specify the following information to create formatted data generator criteria:

- Specify the SE (sequence), RA (random), MA (mask), or TA (table) relational operator (RO) to the right of the field for which you want to create data generator criteria. When you use the TA (table) relational operator, you must specify a data generation table file in the TABLE DATASET field.
- File-AID/Data Solutions displays a Criteria pop-up window based on the relational operator (RO) that you specified. Enter the appropriate parameters. XREF usage is not allowed.

Data Pattern Generation

Use the Data Pattern Generator to fill new fields with test data, or to replace live data that may be sensitive production information that should not be used in test. Data can be generated for unsigned numeric and character fields by using one of two methods:

1. **Random Data Generation** - a replacement value is selected at random.

Options include:

- Unique values = N/Y
- Percent of values to be blank/zero

2. **Sequential Data Generation** - a replacement value is generated in succession from one value to the next.

Options include:

- Initial Value to start with
- Unique values = N/Y
- Percent of values to be blank/zero

The Data Pattern Generation function can also generate new records into a new file without specifying an input file from which to model the records. This function is not available for record layouts containing an ODO/REFER.

Field Exits

Formatted field exits define the business modifications for Data Solutions's Copy, Update, and Analysis functions. Specify the following information to create a formatted field exit criteria:

- Choose a field from the displayed record layout.

- Enter the EX relational operator (RO) to the right of the field.
- Enter the appropriate parameter information.
- Enter the name of the field exit.

For information on the appropriate parameter information for each of Data Solutions's sample field exits, see the *File-AID/Data Solutions Reference* manual or use HELP (PF1).

Creating Your Own Field Exit

File-AID/Data Solutions uses field level exits to define and process both Data Solutions-defined and user-defined business function data conversions. Data Solutions takes the specified data field, passes it to the field level exit for conversion, and returns the new value to the data field. File-AID/Data Solutions is distributed with the field-level exits.

Table 2. Data Solutions Field-Level Exits

Name	Description	Load module Name
ADD	Add	UDAE0104
DATA ANALYSIS	Analyze field for valid data	UDAE0110
DATE ANALYSIS	Analyze field for date pattern	UDAE0001
DATE DIFFERENCE	Calculate difference	UDAE0113
DIVIDE	Divide	UDAE0107
ENCRYPT	Encryption/Decryption	UDAE0101
ENCRYPTN	Treat numeric CHAR as NUMERIC	UDAE0121
EURO-DATE	European Currency Conversion based on dates entered by user	UDAE0117
EURORATE	European Currency Conversion	UDAE0100
EURORATE-USER	European Currency Conversion	UDAE1000
GENDATE	Test Date Generator	UDAE0102
GLOBAL	Use Global Area	UDAE0108
MOD-10	Non-standard Check Digit Numeric MOD-10	UDAE0114
MOD-10 LUHN	Standard Check Digit Numeric MOD-10 (LUHN algorithm - used to validate identification numbers, such as credit card numbers, IMEI numbers, National Provider Identifier numbers in US and Canadian Social Insurance Numbers.)	UDAE0118
MOD-11	Check Digit Numeric MOD-11	UDAE0115
MOD-ALPHA	Check Digit Alphanumeric	UDAE0116
MOVE FIELD	Move field	UDAE0003
MULTIPLY	Multiply	UDAE0106

Table 2. Data Solutions Field-Level Exits (Continued)

Name	Description	Load module Name
REPLACE	Field Replacement	UDAEO200
RESEQ	Resequencing	UDAEO103
SUBTRACT	Subtract	UDAEO105

Note: Source code is not provided for DATA ANALYSIS (EXIT0110), DATE ANALYSIS (EXIT0001), ENCRYPTN (EXIT0121), EURO-DATE (EXIT0117), EURORATE (EXIT0100), MOVE FIELD (EXIT0003), and DATE DIFFERENCE (EXIT0113).

If you want to add your own field-level exits for processing by File-AID/Data Solutions, you need to do the following:

1. Use one of the File-AID/Data Solutions-provided COBOL field-level exits, EXIT mmm -named members in the sample library (*hlq.CPWR.MXVJA20.SXVJSAMP*), as a model. Save it under a new exit name EXIT0700 – EXIT0999 if the exit is non-LE enabled or EXIT1000 – EXIT9999 if the exit is LE enabled. Make your modifications. Use UDAEXITL to compile and link your new field exit.
2. Identify your environment library names (refer to “Step 9. Specify External Files” on page 13 in the *Compuware Installer Compuware Product SMP/E Installation Guide*).
3. Update EXITLIST in SXVJSAMP to add your new field exit.
4. Use sample JCL UDAELIST in the sample library (*hlq.CPWR.MXVJA20.SXVJSAMP*) to assemble and link to LOAD module EXITLIST in your Configuration LOAD library (*hlq.CPWR.MXVJA20.CXVJLOAD*).

Each entry in the Field-Level Exit Table consists of the following fields:

Data type : Specify **B** (Binary), **C** (Character), **G** (Graphic, Double Byte Character Set), **N** (Numeric), **P** (Packed), **V** (Variable length Character), or **W** (Variable length Graphic, Variable length Double Byte Character Set). The data type is determined by the record layout specified for the field exit criteria. It has a length of one byte. If your exit handles more than one data type, add an entry for each data type supported to the Field-Level Exit Table (EXITLIST).

Field-level exit name : Specify a unique name alphanumeric 1 to 15 characters. The exit name is the name that you specify on the Formatted Field Exit Criteria screen or select from the Available Field Exits screen.

Note: The combination of name and data type must be unique. If multiple entries have the same name and data type, only the load module of the first entry will be executed.

Field length : Specify the *maximum* number of bytes (not digits) that Data Solutions will pass to and return from the field exit. For example, packed 7 digits is 4 bytes. (An exit can process fields of various lengths.)

Load module name : Specify the load module name of your new exit (EXIT0700 – EXIT0999 if the exit is non-LE enabled or EXIT1000 – EXIT9999 if the exit is LE enabled). It must begin with “EXIT” and end with a four-digit number from 0700 to 9999. Numbers from 0000 to 0699 are reserved for field-level exits written by Compuware.

Description : Specify up to 30 characters describing your new field-level exit. This description is displayed on the Available Field Exits screen.

Filler : Specify a 3 byte filler.

Note: For encryption/decryption exit the first byte of “Filler” is used for an exit type descriptor of E. This allows File-AID/Data Solutions to differentiate when displaying Available Field Exits for Option 6 (Field Exits) and Available Encryption/Decryption Exits for Option 7 (Data Encryption).

Hint

A suggestion to avoid assembling and linking EXITLIST every time anyone at your site wants to add a new field exit is to add a group of new entries at one time and assign one or more to each programmer. Once the assigned field-level exit entry (hook) is linked into Data Solutions, each programmer can modify and test their field exits without requiring a systems programmer to modify EXITLIST.

Note: To compile and link edit your new COBOL field-level exit, use the JCL that is appropriate for your COBOL version.

Table 3. Field-Level Exit Compile/Link JCL

COBOL Version	Use JCL:
LE 370 / COBOL for MVS	UDAEXITL

Add the appropriate information (listed above) for your COBOL field-level exit to the Field-Level Exit Table in Sample PDS member EXITLIST. Use UDAELIST to reassemble and link edit the table.

Available Field Exits

The Available Field Exits screen, shown in Figure 5, allows you select the name of the field exit for Data Solutions to use to process the indicated field.

Note: This screen displays only the names of non-encryption/decryption exits. However, you can specify unlisted encryption/decryption exit names on the Field Exit Criteria screen (see Figure 5).

The Available Field Exits screen is displayed on the Field Exit Criteria screen when you do one of the following:

- Select FIELD EXIT LIST from the Action Bar

- Enter the EXITS primary command
- Enter a RO (Relational Operator) of EX and parameter information without specifying a field exit.

Figure 5. Available Field Exits Screen

```

Command ==>                               Scroll ==> CSR
Select Field Exit for field FIRST-ACTIVITY-DATE
Data
Exit Name Type Description Module
-----
- EURORATE B CONVERT TO/FROM EURO CURRENCY UDAE0100
- EURORATE N CONVERT TO/FROM EURO CURRENCY UDAE0100
- EURORATE P CONVERT TO/FROM EURO CURRENCY UDAE0100
- ENCRYPT B ENCRYPT/DECRYPT UDAE0101
- ENCRPYT C ENCRYPT/DECRYPT UDAE0101
- ENCRYPT N ENCRYPT/DECRYPT UDAE0101
- ENCRYPT P ENCRYPT/DECRYPT UDAE0101
- GENDATE B GENERATE SERIAL DATES UDAE0102
- GENDATE C GENERATE SERIAL DATES UDAE0102
- GENDATE N GENERATE SERIAL DATES UDAE0102

```

Data Encryption

The Data Encryption function simplifies the process of encrypting and decrypting a data file. File-AID/Data Solutions uses encryption/decryption exits to define and process both Data Solutions-defined and user-defined encryption routines. Simply choose a routine for a particular field from Data Solution's list of Available Encryption/Decryption Exits. With the use of selection criteria, you can assign an encryption routine to a field based on the data in that field or on the data in another field in the record.

The Key Encrypt/Decrypt Exits (both ENCRYPT and ENCRYPTN) are Data Solutions-defined encryption exits.

Besides the Key Encrypt/Decrypt Exits, two sample encryption/decryption routines are provided with Data Solutions. You can use one of the sample encryption/decryption routines or create your own routine.

Specify the following information to create formatted data encryption criteria:

- Choose a field from the displayed record layout.
- Enter the EX relational operator (RO) to the right of the field.
- Specify an E for Encryption or a D for Decryption in the Parameters field.
- Specify the Encryption exit name in the Encryption Name field.

Data Replace

The Data Replace function allows you to replace a value or source for the specified field(s). You can enter criteria to replace the value or source of a specified field with a constant, global field value, or the value of another field.

These two relational operators are available:

R : (Replace) Specify a single replacement value in the same way you would enter a value for selection criteria.

FF : (Field-to-Field) FF displays the Field-to-Field Change Criteria screen which allows you to specify one (1) or more fields and/or constants as a source for the replacement value.

Data Privacy

The File-AID/Data Solutions Data Privacy function executes any Dynamic Privacy Rules you defined using the File-AID Data Privacy plugin of the Compuware Workbench.

File-AID Data Privacy allows you to define Dynamic Privacy Rules that disguise data elements consistently across different data sources. The Data Solutions Data Privacy function fully supports the disguise criteria created with Compuware's File-AID Data Privacy. To disguise a dataset, simply specify the Dynamic Privacy Rules Project (DPR) that includes the privacy rules you want applied to the matching data elements in the dataset.

Utilities

The Utilities function enables you to:

- Print Change Criteria and Audit Trail reports created during the update process
- Generate overrides for a criteria member and update criteria

Change Criteria

Change criteria consists of any combination of formatted field changes (date aging, European currency conversion, date analysis, data translation, data generation, data replace, and field-level exit modifications), record selection options (start at, select every Nth, max limits), global fields, and formatted record selection rules.

Change criteria can be created, maintained, and, saved with option S Criteria. In addition, change criteria can be created, maintained, executed, and, optionally, saved from within the product functions.

Use the INPUT, INSERT, or REPEAT primary commands to create multiple sets of formatted criteria. Use the SELECT command to specify Selection Criteria for the current Change Criteria.

Selection Options

Selection Criteria Options enable you to control record selection based on starting record key, RBA, or RRN or record counts which determine how selection processing is executed and when it stops.

Global Fields

The Global Fields option allows you to define global fields (user variables) which you can reference in any of the change or selection criteria sets using the GBL primary command.

Selection Criteria

Records and members can be changed selectively, based on formatted selection criteria that is attached to your change criteria. The Selection Criteria screen is displayed when you enter the SELECT (SEL) primary command on any change criteria screen (aging, EURO, date analysis, translator, generator, field exit, and encryption).

Formatted selection criteria enables you to change records based on specific field values displayed with a record layout or XREF (record layout cross reference). Data Solutions uses the same record layout or XREF for formatted change criteria and selection criteria.

Relational Operators (RO)

Formatted Aging Criteria

Note: If you use **R** as the RO, field content and field length will not be validated. If you use + or - as the RO, field length will not be validated.

Valid relational operators for aging criteria are:

- + Add to date (default).
- Subtract from date.
- R** Replace with the specified new date.
- = Replicates last entered criteria.
- FM** Field mask. See the *File-AID/Data Solutions Reference* manual for more information.

EURO Conversion and Triangulation Criteria

Valid relational operators for EURO conversion and triangulation criteria are:

- EX** Execute (default)
- = Replicates last entered criteria.
- FM** Field mask.

Date Analysis Criteria

Valid relational operators for formatted date analysis criteria are:

- EX** Execute (default)
- = Replicates last entered criteria.
- FM** Field mask.

Data Validation Criteria

Valid relational operators for formatted data validation criteria are:

- TA** Validate using the table list dataset. Data Solutions displays the Field Validation using Table Dataset screen.
- LI** Validate using the table list. Data Solutions displays the Field Validation using List screen.
- FM** Field mask.

Data Analysis Criteria

Valid relational operators for formatted data analysis criteria are:

- EX** Execute (default). Displays the Data Analysis Specification screen.
- = Replicates last entered criteria.
- FM** Field mask.

Data Translator Criteria

Valid relational operators for formatted data translator criteria are:

- S** Binary search field
- K** Key search field
- D** Direct row pointer search field
- H** Hash to key search field
- U** Unique key search field
- R** Result field
- SR** Binary search and result field

- KR** Key search and result field
- DR** Direct row pointer search and result field
- HR** Hash to a key search and result field
- UR** Unique key search and result field
- EP** Edit parameters
- FM** Field mask.

Data Generator Criteria

Valid relational operators for data generator criteria are:

- SE** Field sequence
- RA** Random
- MA** Mask
- TA** Table
- EP** Edit parameters
- FM** Field mask.

Pattern Data Generator Criteria

Valid relational operators for pattern data generator criteria are:

- PS** Pattern Sequential
- PR** Pattern Random
- EP** Edit parameters
- FM** Field mask.

Formatted Field Exit Criteria

Valid relational operators for field exit criteria are:

- EX** Execute
- EP** Edit parameters (displays Field Exit Parameters screen).
- =** Replicates last entered criteria.
- FM** Field mask.

Data Encryption Criteria

Valid relational operators for data encryption criteria are:

- EX** Execute
- EP** Edit parameters (displays Field Exit Parameters screen).

- = Replicates last entered criteria.
- FM** Field mask.

Data Replace Criteria

Valid relational operators for data replace criteria are:

- FF** Field-to-Field operation.
- R** Replace.
- FM** Field mask.

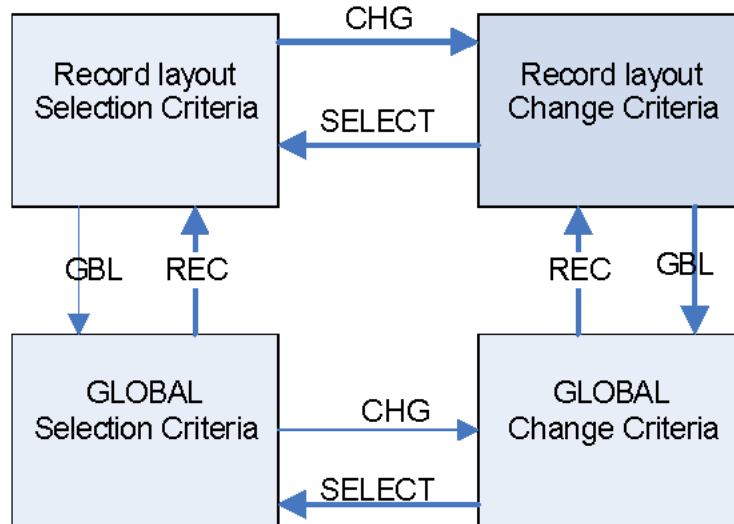
Selection Criteria

Valid relational operators for formatted selection criteria are:

- EQ, =** Equal to
- NE, \neq , !=** Not equal to
- GT, >** Greater than
- GE, >=** Greater than or equal to
- LT, <** Less than
- LE, <=** Less than or equal to
- CO** Contains; scans the specified field for the presence of a data value. CO works on an equal condition.
- NC** Not contains; scans the specified field for the absence of a data value. NC works on a not equal condition.
- BT** Between; within a range of two values (endpoints inclusive). The value is greater than or equal to the first endpoint and less than or equal to the last endpoint.
- NB** Not between; outside a range of two values (endpoints exclusive). The value is less than the first endpoint or greater than the last endpoint.
- VA** Valid numeric or packed data based on the field format.
- NV** Not valid numeric or packed data based on the field format.
- FM** Field mask.
- FF** Field-to-Field operation.
- DF** Disguise failed. Change criteria in the specified set is to be processed, if the preceding non-data translation set failed.
- TF** Translation failed. Change criteria in the specified set is to be processed, if the preceding data translation set failed to find a search or key value.

Change and Selection Criteria Navigation

Figure 6. Criteria Navigation with Global Fields



Change criteria can contain Selection Criteria and Formatted Date Aging, EURO Conversion and Triangulation, Date Analysis, Date Validation, Data Analysis, Data Translator, Date Generator, Formatted Field Exit, Data Replace, and/or Data Encryption criteria in the order in which it was entered.

If you have multiple criteria sets, use the BACK or LEFT (PF10) and FORWARD or RIGHT (PF11) commands to navigate between criteria sets.

Primary Commands

This section summarizes the primary commands available in File-AID/Data Solutions. Primary commands are entered in the COMMAND field.

Member List Processing Commands

Scrolling and the following primary commands are available on member selection lists:

CANCEL

The CANCEL command cancels current member selection and returns to the previous display.

▶▶—Cancel—▶▶

LOCATE

The LOCATE command scrolls to the specified string.

▶▶—Locate—*string*—▶▶

RESET

The RESET command reconstructs the current display with the entire member list, negating any processing or selection options, condense operations, and exclude line commands that have been specified.

▶▶—RESet—▶▶

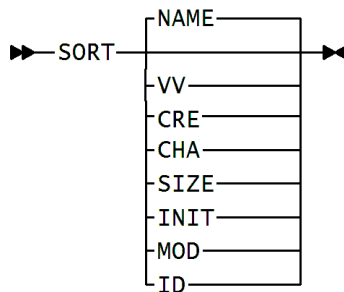
SELECT

The SELECT command selects the specified member name for processing.

▶▶—select—*member-name*—▶▶

SORT

The SORT command sorts the member list. Any column header on the member list display is a valid keyword parameter for SORT.



File-AID Data Privacy List Processing Commands

Scrolling and the following primary commands are available on the File-AID Data Privacy repository and project lists:

CANCEL

The CANCEL command cancels the current File-AID Data Privacy repository or project list and returns to the previous display.

▶▶ CANCEL —▶▶

FIND

The FIND command displays the first File-AID Data Privacy repository or project name containing the entered unquoted character string. To repeat the FIND operation, use the RFIND command. You will be scrolled to the next File-AID Data Privacy repository or project name containing the character string.

▶▶ Find — *string* —▶▶

LOCATE

The LOCATE command scrolls to the File-AID Data Privacy repository or project name that you specified. If the name specified is not in the list, the previous name is displayed first. To repeat the LOCATE operation, use the RLOCATE command. You will be scrolled to the next File-AID Data Privacy repository or project name containing the character string.

▶▶ Locate — *string* —▶▶

RESET

The RESET command reconstructs the current display with the entire File-AID Data Privacy repository or project list, and excludes line commands that have been specified.

▶▶—RESet——▶▶

SORT

The SORT command sorts the File-AID Data Privacy project list. The column headers PROJECT NAME and Description on the File-AID Data Privacy Project List screen are valid keyword parameters for SORT. Any abbreviations of the headers are also valid.

▶▶—SORT—
 ┌──PROJECT NAME──┐
 └──DESCRIPTION──┘

Change Criteria Commands

The following primary commands are available in all Formatted Change Criteria, unless otherwise noted in the command description.

AGING

Switches from the current Change Criteria panel to the Date Aging Change Criteria panel.

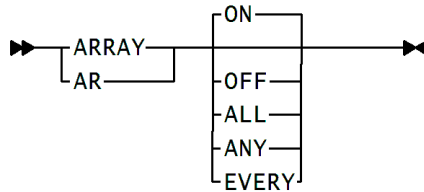
ALIGN

Controls display of ALIGNED/UNALIGNED term for PL/I data. Synonym for SYNC.

▶▶—ALi gn—
 ┌──ON──┐
 └──OFF──┘

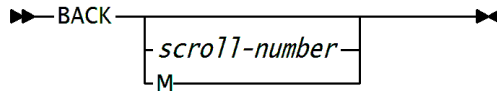
ARRAY

Controls display of array declaration information for PL/I data. Applies to selection criteria and change criteria functionality.



BACK

Scrolls display to the previous criteria of the same type (selection or change).
Synonym for LEFT.

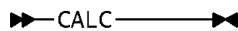


scroll-number : Number of criteria to scroll back. Attempts to scroll before the first criteria are treated as a maximum scroll.

M (maximum) : Scrolls the display to the first criteria of the file.

CALC

Displays the Date Calculator screen. This command is available only in Formatted Aging Criteria.



CANCEL

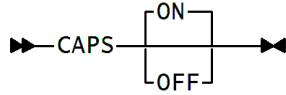
Exits current panel without saving current updates.



CAPS

Controls handling of entered characters as upper or mixed (upper and lower) case. This command is valid only on a new criteria display. Once you have specified any character fields for the current logical set (criteria), resetting of

CAPS ON/OFF is ignored for that logical set unless you first blank out the character fields.

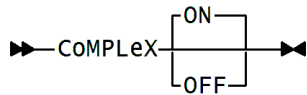


CHANGE (CHG or C)

Switch from the Selection Criteria to the Change Criteria panels. This command is only valid on the Record Layout Selection Criteria and Global Selection Criteria panels.

COMPLEX

Controls display of COMPLEX term for PL/I data.



DATAENCR

Switches from the current Change Criteria panel to the Data Encryption Criteria panel.

DATAGEN

Switches from the current Change Criteria panel to the Data Generation Criteria panel.

DATANALY

Switches from the current Change Criteria panel to the Data Analysis Criteria panel.

DATAPGEN

Switches from the current Change Criteria panel to the Pattern Data Criteria panel.

DATAREPL

Switches from the current Change Criteria panel to the Data Replace Criteria panel.

DATATRAN

Switches from the current Change Criteria panel to the Data Translator Criteria panel.

DATAVALD

Switches from the current Change Criteria panel to the Validate Criteria Criteria panel.

DATEANLY

Switches from the current Change Criteria panel to the Date Pattern Analysis Criteria panel.

DELETE

Deletes the current criteria set (change and selection criteria). The set or subset preceding the deleted set or subset becomes the current criteria set or subset. When deleting the first set or subset, then the following set or subset is displayed. If the deleted criteria was the last (and only) formatted criteria, all conditions are cleared and the entry (SET 1 OF 1) is re-initialized.

When DELETE is entered on change criteria, the entire set (including all selection criteria in all subsets) is deleted.

For subset processing: The DELETE command deletes the subset and renumbers the subsets (if any), following the deleted subset. Any existing change criteria remains intact, and is associated with the last selection criteria subset.

►► DELETE ◄◄

DISPLAY

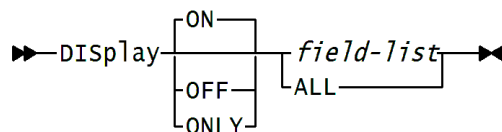
The DISPLAY command has three purposes:

Field Selection: Specifies the fields of the record that are displayed.

Data Format Specification: Specifies the display format for individual layout fields.

REFER Specification: Used with a PL/1 layout that has a REFER clause. Specifies the number of occurrences to display in the layout.

Field Selection Syntax



ON, OFF, ONLY : Controls the display of specified fields as follows:

- ON** Displays fields specified by the field-list parameter along with the fields that are already displayed.
- OFF** Prohibits display of fields specified by the field-list parameter.
- ONLY** Displays only the specified fields.

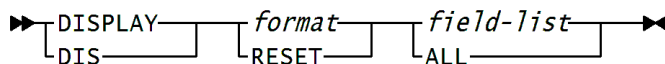
Data Solutions displays all fields defined in the record layout. To eliminate fields from the display, enter either **DISPLAY OFF** or **DISPLAY ONLY**.

field-list : Specifies any combination of field numbers and/or field number ranges. Field numbers are separated by either blanks or commas.

Field number ranges are specified by two field numbers separated by a dash (-), and represent the two range bounds and all intervening fields.

ALL : Selects every field in the record. Enter **DISPLAY ALL** to display all fields. Enter **DISPLAY OFF ALL** to eliminate all fields from the display. The **ALL** parameter is mutually exclusive with the field-list parameter.

Data Format Specification Syntax:



format : Specifies the format of the data to be displayed. Valid values, results, and any field size limitations are listed below. Abbreviations of the values are shown in parentheses.

BINARY or **(BIN)**: Causes File-AID/Data Solutions to interpret the data field as a binary number and display the integer (base 10) value of the binary number. Limited to 1, 2, 3, or 4 bytes.

BIT: Displays the actual bit pattern.

CHAR or **DISPLAY (AN, DISP)**: Displays data as alphanumeric characters. Invalid characters are displayed in hexadecimal format.

DECIMAL (DEC): Interprets data as packed decimal data. Limited to 1-16 bytes.

FLOAT: Interprets the data field as a decimal floating point number. Limited to 4, 8, or 16 bytes.

GRAPHIC: Displays data as DBCS characters. Invalid characters are displayed in hexadecimal format.

HEX (X): Displays data in hexadecimal format.

For any format value other than **BIT**, data items must be aligned on a byte boundary. If the format value is incompatible with any of the listed fields, any incompatible fields retain their prior formats.

If none of the listed fields are compatible with the specified format, File-AID/Data Solutions displays the message: **ITEM NOT MODIFIABLE**. If none of the listed fields are elementary data items, File-AID/Data Solutions

displays the message: **NOT AN ELEMENTARY DATA ITEM**. If the field-list value is omitted, File-AID/Data Solutions displays the message: **MISSING OPERAND**. No error message is displayed if the specified format can be applied to at least one of the listed fields.

During the session, File-AID/Data Solutions retains and automatically uses field display formats specified for a particular record layout whenever a record corresponding to the same record layout is displayed. If multiple record layouts are in use, Data Solutions maintains a separate set of field display formats for each record layout.

The format parameter is mutually exclusive with the RESET parameter.

RESET (RES) : Restores the display of each listed field to the format specified by the record layout. The RESET parameter is mutually exclusive with the format parameter.

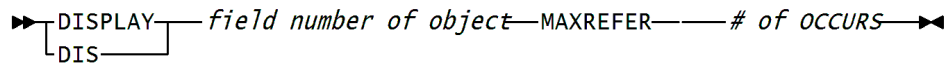
field-list : Specifies any combination of field numbers and/or field number ranges. Field numbers are separated by either blanks or commas.

Field number ranges are specified by two field numbers separated by a dash (-), and represent the two range bounds and all intervening fields. The second field number must be equal to or higher than the first; otherwise, File-AID/Data Solutions displays the error message: **INVALID RANGE** and ignores the command. If the two endpoints are equal (for example, 4-4), File-AID/Data Solutions treats the range as a single field number.

Up to nine field numbers/field number ranges can be specified. Duplicate entries are ignored. Field number ranges and individual field numbers may be listed in any order.

ALL : Selects every field in the current layout. Enter **DISPLAY format ALL** to set the format of all fields to the specified format.

REFER Specification Syntax:

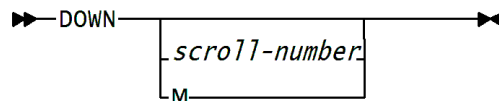


field-number of object : specifies the object of a PL/1 REFER clause.

#- of OCCURRS : specifies the number of occurrences to be displayed.

DOWN

Scrolls the display down. Default is the value in the SCROLL field. Scroll values include CSR, DATA, HALF, and PAGE.



scroll-number : Specifies the number of lines or fields to scroll down.

M : Scrolls down the maximum amount to display the last fields of the record layout.

END

Terminates the current Formatted Change or Selection Criteria display.

▶▶—END—◀◀

EUROCNV

Switches from the current Change Criteria panel to the Euro Conversion Criteria panel.

EUROTRI

Switches from the current Change Criteria panel to the Currency Triangulation Criteria panel.

EXITS

Displays the Available Field Exits screen. This command is available only in Formatted Field Exit Criteria.

▶▶—EXITS—◀◀

FILLER

Controls display of FILLER fields.

▶▶—FILLer—

ON
OFF

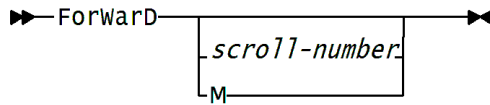
—◀◀

FLDEXITS

Switches from the current Change Criteria panel to the Field Exits Criteria panel.

FORWARD

Scrolls the display to the next criteria of the same type (selection or change).
 Synonym for RIGHT.



scroll-number : Number of criteria to scroll forward. Attempts to scroll past the last criteria are treated as a maximum scroll.

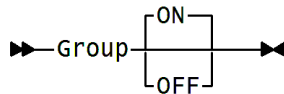
M (maximum) : Scrolls the display to the last criteria.

GLOBAL (GBL)

Allows you to enter Change or Selection Criteria on Global fields. It displays the GLOBAL Selection or Change Criteria panel listing all defined variables. Valid on the Change or Selection Criteria panels when Global fields have been defined.

GROUP

Controls the display of occurrences of group-level items.

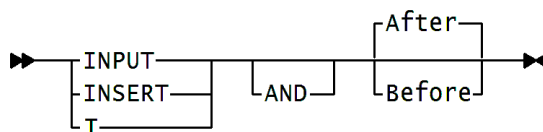


INPUT / INSERT

This command inputs/inserts a new selection or change criteria set or subset. A new criteria set or subset is inserted either after (default) or before the current criteria. The number of criteria sets or subsets is incremented and the newly inserted set or subset is presented for editing; each field in the layout is set to null values. A confirmation message appears: SELECTION LEVEL INSERTED.

Any set you specify by completing the RO and data value for one or more fields will be ORed with all other criteria sets.

There must be at least one condition specified on the current selection or change criteria set or subset before you may INSERT another set or subset.



AND : Inserts an ANDed subset of selection criteria after (default) or before the current criteria subset. The criteria set number is NOT incremented but the subset number is (AND SET x.y of z (e.g. SET 1.2 of 1).). The newly created subset is presented for editing, with each field in the layout set to null values. A confirmation message appears: SELECTION LEVEL INSERTED. Any conditions you specify by completing the RO and data value for one or more fields will be ANDed with the other subsets. There must be at least one condition specified on the current selection criteria subset before you may use INSERT AND for another subset.

The number of subsets is limited to 255 for any one SET. Any existing change criteria within the same set is associated with the last selection criteria subset.

After : Inserts a set or subset after (default) the current criteria set or subset.

Before : Inserts a set or subset before the current criteria set or subset.

IMPORT

The IMPORT command copies and inserts an existing change criteria set, following the set being displayed at the current formatted criteria screen. If there is not a current criteria set, then the first set imported becomes the first set.

The IMPORT command is valid from any change criteria screen, but not from the Selection Criteria screen. The set being imported will be stored in a PDS.

When the set is imported, any differences in data type and length are resolved by the user.

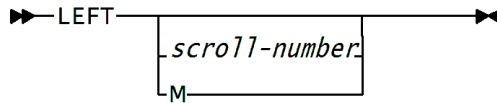


Guidelines

- You can select a single PDS member to be imported. You must identify the location of the PDS member to be imported.
- The IMPORT command functions at the set level, not at the member level. If all criteria sets within a member are to be imported, then you must select all of the sets.
- When a set is imported, the set is used as a model for the new set. The original criteria is adjusted for the current object and the adjusted set is stored like any other set in the criteria. There is no tracking back to the original set. If the original set is changed it does not affect the criteria that used it as a model. Since the set is imported and stored as part of the new criteria, the imported set can be changed just like any other set within the criteria.

LEFT

Scrolls the display to the previous criteria of the same type (selection or change).
Synonym for BACK.

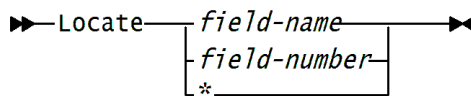


scroll-number : Specifies the number of criteria to scroll back. Attempts to scroll before the first criteria are treated as a maximum scroll.

M (maximum) : Scrolls the display to the first criteria.

LOCATE

Scrolls directly to the specified record layout line.

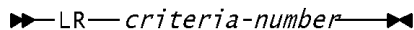


field-name, field-number : Searches for the specified field name or a field number. If found, File-AID positions the field to the top of the display.

*** (asterisk)** : Used in place of the *field-name* or *field-number* parameter to reuse the field name or field number supplied from the previous LOCATE command.

LR

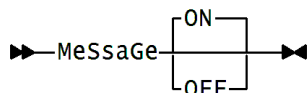
Scrolls forward or backward to a specified criteria number.



criteria-number : Specifies the criteria to which you want to scroll. You can enter a record number of up to 10 digits.

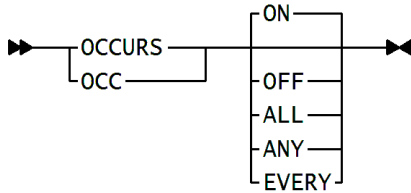
MESSAGE

Controls the display of the message line available at the bottom of the criteria screens.



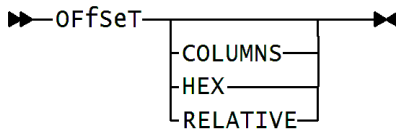
OCCURS

Controls the display of array declaration lines. Applies to selection criteria and change criteria functionality.



OFFSET

Use the SHOW OFFSET command to display the field offsets. Then use the OFFSET primary command to set the format for the display of field offset information.



COLUMNS (COL, C) : Lists the column in which each data field begins, starting in record column 1. Changes the field description heading to COLUMNS. The offset of the first field is displayed as 1, and the offsets of all fields that follow are also greater by 1 than the offsets displayed when the OFFSET option is set to REL(HEX).

HEX (H, X) : Displays the offset of each field from the beginning of the record in hexadecimal form. Changes the field description heading to REL(HEX).

RELATIVE (REL, R) : Displays the offset of each field from the beginning of the record. Changes the field description heading to RELATIVE. The offset of the first field is zero.

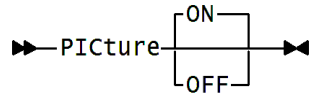
PATTERN

Displays the Available Date Patterns screen. This command is available only in Formatted Aging Criteria.



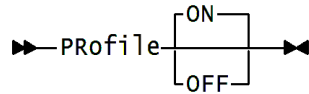
PICTURE

Controls the display of the PICTURE or DISPLAY line for numeric data.



PROFILE

Displays profile information lines. Use the RESET primary command to delete the profile information lines from the display.



ON : Sets the PROFILE display function to ON. Profile lines are displayed after the four lines in the header area.

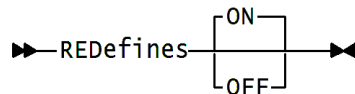
OFF : Sets the profile display function to OFF.

RECORD (REC)

Closes the Global Change or Selection Criteria panel and returns to the Record Selection or Change Criteria panel. Valid on the Global Selection Criteria or Global Change Criteria panels.

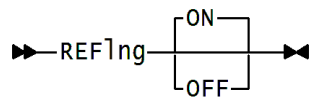
REDEFINES

Controls the display of data item redefinitions.



REFLNG

Controls the display of BIT/CHAR VARYING field length reference lines for PL/I data.



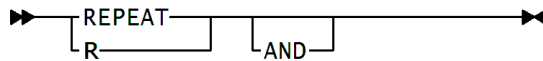
REPEAT

The REPEAT command inserts a copy of the current criteria set after the current criteria. REPEAT by itself copies a whole set, including any subsets. REPEAT AND copies only the current selection criteria subset.

When REPEAT is used alone, the number of criteria sets is incremented (SET 3 of 3 increments to SET 4 of 4; AND SET 3.2 of 3 increases to AND SET 4.2 of 4), and the newly inserted set is presented for editing; each field in the layout is set to the same values as the copied criteria. A confirmation message appears: SELECTION LEVEL INSERTED.

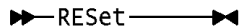
Any set you specify by completing the RO and data value for one or more fields will be ORed with all other criteria sets.

There must be at least one condition specified on the current selection or change criteria set or subset before you may REPEAT another set or subset.



RESET

Clears the display of any ==>PROF lines.



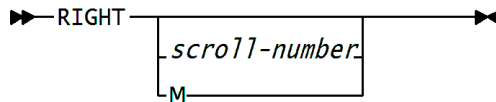
RETURN

Returns to the Primary Option Menu.



RIGHT

Scrolls the display to the next criteria of the same type (selection or change).
Synonym for FORWARD.



scroll-number : Specifies the number of criteria to scroll forward.

M (maximum) : Scrolls the display to the last criteria.

SAVE

Saves change criteria to a PDS. The SAVE command is only available from the Criteria Menu.

▶▶ SAVE ◀◀

SELECT

Displays the Selection Criteria screen.

▶▶ SElect ◀◀

SHOW

Displays LEVEL, NUMBER, FORMAT, OFFSET, or PICTURE information for a record.

Field Name Syntax:

▶▶ Show ◀◀

```

┌───────────┐
│ LEVEL ────┘
│ NUMBER ───┘
└───────────┘

```

LEVEL (L) : Displays the record's hierarchical level number at the left of each data item name, and changes the heading of the Field Name area to FIELD LEVEL/NAME. Indents each successive level two character positions to emphasize the record structure. When this parameter is used, the Field Name area closely resembles the original (source) record layout declaration.

NUMBER (N) : Displays the field numbers assigned by Data Solutions, and changes the heading of the Field Name area to FIELD NUMBER/NAME. Field numbers are assigned sequentially, beginning at the top of the record layout. Each elementary or group data item name is assigned a unique field number. Each occurrence of a data item that has multiple occurrences is assigned the same field number, since all occurrences share the same data name.

Field Description Syntax:

▶▶ Show ◀◀

```

┌─── FORMAT ───┐
│                │
│─── OFFSET ───┘
│                │
└─── PICTURE ──┘

```

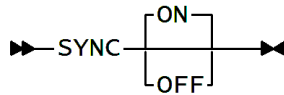
FORMAT (F) : Displays field length and current field format, separated by a slash (/), and changes the heading of the Field Description area to FORMAT. The field length is expressed in bytes.

OFFSET (O) : Displays the offset of each field from the beginning of the record. The offset can be expressed in three ways: relative, hexadecimal, or columns. Specify the offset format with the OFFSET command.

PICTURE (P) : Displays a representation of the original data declaration for each elementary item, and changes the heading of the Field Description area to PICTURE.

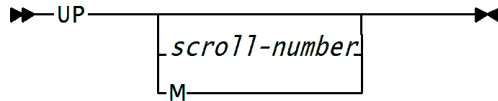
SYNC

Controls the display of the SYNC term for fields in a COBOL record layout. Synonym for ALIGN.



UP

Scrolls the display up. Default is the value in the SCROLL field. Scroll values include CSR, DATA, HALF, and PAGE.



scroll-number : Number of lines to scroll up.

M : Scrolls up the maximum amount to display the first line of the current layout at the top of the screen.

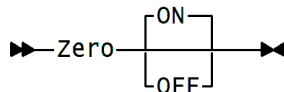
VIEW

Displays the View Criteria screen summarizing all the current sets and subsets, if any, of Formatted Change and Selection Criteria in a scrollable display. The View command is also available from the Criteria Menu.



ZERO

Controls the display of leading zeros in numeric data fields. This command is available only in Formatted Selection Criteria.



JCL Specification Commands

When batch processing is specified for any of the online functions, Data Solutions displays the JCL Specification screen. It supports the following primary commands:

CANCEL

The CANCEL command cancels the function and returns to the original screen.

▶▶ CANCEL ◀◀

JCL

The JCL command displays the Generated JCL Edit screen with the Job Control Language that File-AID generates to process the function. This enables you to edit the JCL.

▶▶ JCL ◀◀

SUBMIT

The SUBMIT command submits the batch job.

▶▶ SUBMIT ◀◀

Business Rule Edit Primary Commands

The following primary commands are valid on the Business Rule Edit screen:

CANCEL

The CANCEL command cancels the business rule edit without saving the member and returns to the original screen.

▶▶-CANce|————▶▶

COPY

The COPY command copies the specified member from the same business rule dataset into the current empty member.

▶▶-COPY—*member-name*————▶▶

END

Saves the member, terminates the business rule edit, and returns to the previous screen.

▶▶-END————▶▶

SAVE

Saves the business rule member.

▶▶-SAVE————▶▶