

# MDTransform User Guide

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**Data Transformation Add-on for MDChange**

*Midrange Dynamics*

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# 1. MDTransform

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## 1.1 Welcome to MDTransform

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This is User Guide for the MDTransform Licensed Add-on for the MDChange Product Suite from Midrange Dynamics.

This guide is comprised of these sections:

- [Data Copy Templates](#)
- [Data Copy Template Conditions](#)
- [Data Copy Template Transformations](#)
- [Data Transformation during RFP Deployment](#)

You can download a PDF version of this guide [here](#).

## 1.2 MDTransform - Data Copy Templates

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A Data Copy Template defines a set of libraries for the copying of data from one environment to another. This is typically used to refresh test libraries with some or all data located in production libraries, without losing format and object changes made in the test environment.

There are 2 levels of capabilities available with a Data Copy Template:

1. Basic capabilities - the files to copy from must be in a library on the local system and CPYF is used to copy all records in the file. If the format of the target file is different, \*MAP/\*DROP is used.
2. MDTransform capabilities (MDTransform License on the target partition is required):
  - The files to copy from can be in a library on a different system or logical partition (DDM read access to the data library and to the QSYS2 library must be allowed on that system).
  - SQL is used for the copy for better handling of modified field types
  - Validation can be performed to ensure the copy will function at run-time
  - Record Conditions can be defined for files so that only a subset of data will be copied
  - Custom field value Transformation, such as to synthesize confidential data, can be performed on specific field columns.

### 1.2.1 Data Copy Template Maintenance

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The Data Copy templates can be modified or executed from the MDCMS Setup Menu option 5=Templates->option 21=Data Copy. Execution of Data Copy Templates can also be performed using command MDCPYDATA (see section MDCPYDATA below).

MDSEC Authority to code md/7 (Template Maintenance) required to add or modify Data Copy templates.

#### List Data Copy Templates

This panel lists all defined Data Copy Templates used to update data on the same partition you are currently connected to.

Filter Field	Description
Pos	the cursor will be positioned to the closest match in the list
From Location	include row only if the Template includes a library mapping with the name of the from location containing the value in the filter
From Library	include row only if the Template includes a library mapping with the name of the from library containing the value in the filter
Target Library	include row only if the Template includes a library mapping with the name of the target library containing the value in the filter

Option	Description
2=Edit	Edit the Library Mappings for the Template
3=Copy	Copy all properties of a Template to a new Template name
4=Delete	Delete the Template
5=View	View the Template
7=Rename	Rename the Template
C=Conditions	View/Manage/Execute any template-level condition definitions. <a href="#">More Info</a>
S=Status	View the Execution Status for any actively running jobs for a Template
T=Transformations	View/Manage any template-level Transformation definitions. <a href="#">More Info</a>
V=Validate	Prompt to Execute the data copy for all defined files in the template in validation mode. This means that connectivity, authority and SQL syntax validation will be performed, but no data will actually be copied
W=Wildcards	View/Manage any wildcards defined for the Template.
X=Execute	Prompt to Execute the data copy for all defined data areas and files in the template

Function Key	Description
F3/F12=Exit	return to previous screen
F4=Browse	Browse list of available values for the field where cursor is positioned
F5=Refresh	Refresh the Listing
F6=Add	Add a new Template
F8=Desc/Info	Toggle the Listing between library mappings and Template Descriptions
F11=View Output	View the MD Report Output listing
F21=Sys Cmd	access the system command line

### Data Copy Template Properties

Press F6 from the Data Copy Template listing to add a new template, or use options 2, 3, or 4 to manage an existing template.

Field	Description
Template	a 10 character ID to use as the key for the Template
Description	a description of the Template
Dft #Jobs	The number of parallel copy jobs that should be started by default when a data copy is executed. The valid range is between 1 and 9. For large sets of data, the recommended number of jobs is 5. If enough memory and CPU is available, then the full 9 jobs is recommended.
Dft Job Queue	The name of the job queue that the data copy jobs will be submitted to by default. Press F4 to browse from a list. At the time of the execution, the job queue must be released and the subsystem of the job queue must be active. It is recommended that the subsystem have its own shared processor pool to reduce impact to other jobs running on the system.
Library	The library where the job queue object exists Press F4 to browse from a list.

## Data Copy Template Library Mapping

Library Mapping Property	Description
From Location	The location of the library to be copied from Press F4 to browse from a list. *LOCAL - the library to copy from is on this partition Otherwise, the location ID of the from location. Locations are defined from the MDCMS Setup Menu option 6=IBMi Locations. DDM connectivity is required when copying from a remote partition.
From Library	The library to be copied from Press F4 to browse from a list. The from library does not have to exist at the time of defining the mapping.
Target Library	The library on this partition to be copied to Press F4 to browse from a list. The target library does have to exist at the time of defining the mapping.
Sort Sequence	The sequence in the list to process the library mapping. The sort can be used, for example, to pull data from production for a primary test environment and then copy from that environment to other environments on the same system.

Option	Description
2=Edit	Edit the Library Mapping
3=Copy	Copy all properties of a Library Mapping to a new mapping
4=Delete	Delete the Library Mapping
5=View	View the Library Mapping
O=Objects	View/Manage/Execute the list of data areas and tables/physical files in the target library
V=Validate	Prompt to Execute the data copy for all defined files in the library mapping in validation mode. This means that connectivity, authority and SQL syntax validation will be performed, but no data will actually be copied
X=Execute	Prompt to Execute the data copy for all defined data areas and files in the library mapping

Function Key	Description
F3/F12=Exit	return to previous screen
F4=Browse	Browse list of available values for the field where cursor is positioned
F5=Refresh	Refresh the Listing
F6=Add	Add a new Library Mapping
F11=View Output	View the MD Report Output listing
F21=Sys Cmd	access the system command line

### Data Copy Template Target Library Objects

The list of all physical files and data areas currently in a target library for a Data Copy Template Library Mapping can be viewed by using option O=Objects for a Library Mapping entry.

Filter Field	Description
Object	include row only if the object name contains the value in the filter
Description	include row only if the object description contains the value in the filter
Omit	Y - include row only if the object is omitted from the data copy process N - include row only if the object is included in the data copy process
Cond	Y - include row only if conditions are defined for the file N - include row only if conditions are not defined for the file
Transform	Y - include row only if Data Transformations are defined for the file N - include row only if Data Transformations are not defined for the file

Option	Description
C=Conditions	View/Manage any file-level condition definitions. <a href="#">More Info</a>
I=Include	Include object in the data copy process
O=Omit	Omit object from the data copy process
Q=Query	Query the contents of the target object
S=SQL	View the SQL string that will be used to insert records into the target file
T=Transform	View/Manage any file-level Data Transformation definitions. <a href="#">More Info</a>
V=Validate	Prompt to Execute the data copy for the specific object in validation mode. This means that connectivity, authority and SQL syntax validation will be performed, but no data will actually be copied
X=Execute	Prompt to Execute the data copy for the specific object.

Function Key	Description
F3/F12=Exit	return to previous screen
F5=Refresh	Refresh the Listing
F11=View Output	View the MD Report Output listing
F13=Include all	Include every object in the data copy process that is currently displayed in the list, based on the filters
F14=Omit all	Omit every object from the data copy process that is currently displayed in the list, based on the filters
F15=Print	Generate a report of all objects currently displayed in the list, based on the filters. Press F11 to view the report.
F21=Sys Cmd	access the system command line

### 1.2.2 MDCPYDATA Command – Copy Data to Target Library

The MDCPYDATA command is provided to run a Data Copy process. This command is prompted when using option V=Validate or X=Execute at the Template level, Library Mapping level or for a specific object in a library mapping.

The MDCPYDATA command can also be executed from a command line or scheduling tool.



Parameter	Description
Data Copy Template	The ID of an existing Data Copy Template
Logging Level	A log report can optionally be generated. The report is made available from the MD Reports screen, which is accessible with F11 from most MD screens. 0 - nothing is logged 1 - logs any data areas or files that could not be copied due to errors 2 - log level 1 + any files that had a different record format 3 - log level 2 + all copied objects 4 - log level 3 + all objects not copied because they are on the omit list
Validate Only	*NO - the data is copied *YES - the process is validated but the data itself isn't copied *SQL - the process is validated and the SQL syntax is returned for troubleshooting purposes (if for a specific file), but the data itself isn't copied
Submit Job	*YES - the copy process will be submitted as a new batch job *NO - the copy process will run immediately within the same job
Job queue	The name of the job queue to submit the job to, if requested *DFT - the default job queue defined for the template. If undefined, then *JOBQ will be used *JOBQ - the job description assigned to the user profile for the job submitting the command
Job queue Library	The location of the job queue to submit the job to, if requested
Specific From Location	The location to copy from *NO - copy from all locations for the template
Specific From Library	The library to copy from *NO - copy from all libraries for the template
Specific Target Library	The library to copy to *NO - copy to all libraries for the template
Specific Object Name	The specific object to copy *NO - copy all included objects for the template
Specific Object Type	The specific object type to copy *NO - copy all types of included objects for the template *DTAARA - copy only data areas *FILE - copy only physical files
Specific Template Condition	Specifies if the list of objects to copy should be limited to the list of files that are applied to a specific Template Condition. 0 - the objects to be copied aren't limited to a Template Condition Otherwise, specify the numeric ID of the condition, which is visible from the detail screen for the condition.
# Parallel Copy Jobs	Specifies the number of jobs to be submitted for parallel copying of the data. If only performing validation or copying a specific object, then this parameter is ignored and 1 job will be used. If 1, then just 1 job is submitted. If more than 1, then 1 control job + n copy jobs are submitted. Ensure that the job queue used allows for the number of jobs selected + 1 (when > 1). A maximum of 9 copy jobs can be used. 0=use the default number defined for the template. If undefined, 1 will be used.
Lock Wait in Seconds	The amount of time, in seconds, that MDCMS will wait to get the necessary lock on an object before timing out. If a time-out occurs, the object will be logged as an error and the data copy process will move on to the next object in the list.

Parameter	Description
Environment ID	The name of the MDCMS instance (or suffix) *DFT - the default instance of MDCMS, which doesn't have a suffix. For a different library suffix, this would be entered for the environment ID.

### The Data Copy Process

For each Target object that is not omitted and exists in both the From Library and the Target Library, the following occurs:

1. Automatically increase maximum number of members if less than current number of members in From Library
2. Adds or Removes members as necessary if the From File has <> 1 member
3. Automatically increase maximum number of records if less than current number of records in From Library
4. Automatically handle differing record formats
5. Apply any defined record conditions to limit records copied
6. Perform any defined column transformations during the copy process
7. clear member if from member is empty
8. adjust the next value of an Identity Column in SQL Tables
9. temporarily disable constraints and triggers in a target file during the copy process

## 1.3 MDTransform - Data Copy Template Conditions

A Data Copy condition provides the rules for determining which records in a physical file should be copied. A condition can be defined for a specific file from the Objects listing, or it can be defined at the Template level and then applied to any number of files within the libraries defined for the template. Multiple conditions can be used together (bound by the AND operator) for a file.

Conditions can also be used to define a subset of files to be included for copy when the X=Execute option is used for the specific condition number.

MDTransform must be licensed to use Conditions.

If a condition isn't applied to a file, then all records will be copied.

### 1.3.1 Template Conditions Listing

This panel is reached with option C for a Data Copy Template. The panel lists all Template-Level Conditions.

Filter Field	Description
Description	include row only if the description of the Condition contains the value in the filter
Condition	include row only if the SQL string of the Condition contains the value in the filter
Used by File	include row only if the Condition is applied to a specific file name

Option	Description
2=Edit	Edit the Condition definition
3=Copy	Copy all properties of a Condition to a new Condition
4=Delete	Delete the Condition definition
5=View	View the Condition definition
F=Files	View/Manage all Files that the Condition definition is applied to
V=Validate	Prompt to Execute the data copy for all files assigned to the condition definition in validation mode. This means that connectivity, authority and SQL syntax validation will be performed, but no data will actually be copied
X=Execute	Prompt to Execute the data copy for all files assigned to the condition definition

Function Key	Description
F3/F12=Exit	return to previous screen
F5=Refresh	Refresh the Listing
F6=Add	Add a new Condition Definition
F11=View Output	View the MD Report Output listing
F21=Sys Cmd	access the system command line

**Condition Properties**

Press F6 from the Condition listing to add a new Condition Definition, or use options 2, 3, or 4 to manage an existing definition.

Field	Description
Template	the Template to contain the definition
Condition Desc	a description of the Condition
Records to Replace	<p>1 - All Records in File - all existing records in the target file will be removed before any records matching the condition are copied from the originating location/library</p> <p>2 - Records matching Condition - only the records in the target file that match the condition will be removed before any records matching the condition are copied from the originating location/library. This provides a way to add certain use cases for testing without removing the other cases in the file(s). If multiple conditions are applied to the same file, then if at least one of the included conditions is set to 2, then option 2 will be used for all of the included conditions for that file.</p>
Always include Condition	<p>1 - Yes - the condition will be appended to the WHERE clause with an AND operator, even when executing the copy for other condition numbers or for no specific condition number.</p> <p>2 - the condition will only be appended to the WHERE clause if the execution is running for the specific condition number. When adding an object specific condition from the object listing within the library listing for the template, option 2 will mean that the condition will only be appended to the WHERE clause if the execution is not running for a specific condition number.</p>
Join File	<p>A join file can be defined for the condition in order to limit the records to be copied by those matching certain column values in the join file.</p> <p>The join condition is specified as part of the condition string in the Condition parameter which is then included in the WHERE clause.</p> <p>By using the AND predicate, additional conditions beyond the Join conditions can be included in the Condition parameter.</p> <p>Due to DDM constraints, the Join file must be on the same partition as the file that is being copied from. The library containing the join file is specified in parameter Remote Library.</p> <p>*FROM special value for the Remote library can be used and will be replaced by the actual from library at runtime.</p> <p>*TARGET special value for the Remote library can be used and will be replaced by the actual target library at runtime.</p> <p>If the Records to Replace option is set to 2=Records matching Condition, then the condition is also run as a subquery on the local delete statement.</p> <p>In this case, the join file must also be on the local partition and the Local Library parameter must be defined.</p> <p>If the from library is also on the local partition, then the join file can be the same object, but when the from library is on a remote partition, then a copy of the join file of the same name must exist in some library on each partition.</p>
File ID	<p>The file ID (prefixed qualifier) of the join file to use in the Condition statement.</p> <p>For example, if the File ID is set to S, then the referenced column in the condition statement must start with S followed by a period.</p> <p>When multiple conditions are applied to same file and each condition uses a different join file, then each join file should have a distinct File ID to ensure that the final WHERE clause can be interpreted correctly.</p>
Condition	<p>The rules to determine which records should be included.</p> <p>Technically, this is the SQL where clause for a select statement and any syntactically correct and allowed where clauses may be used, including functions.</p> <p>If the name of a column in the file is used in the condition, the file identifier F should be used to ensure that the column will be properly identified at runtime.</p> <p>For example, use F.CUSTNO instead of CUSTNO.</p> <p>The name of a column in the join file used in the condition should start with the file identifier defined in parameter File ID.</p> <p>String constants should be delimited with a single quote '.</p>

Field	Description
	<p>Wildcards can be used in the SQL string and will be replaced with the actual value for the wildcard at execution time.</p> <p>Additionally, the ? symbol can be used as a replacement value for specific characters in a field name. At execution time, the data copy process will replace the complete field name with the first system or SQL long name that matches the field name string containing one or more ? symbols.</p> <p>This is helpful when the field name has a different prefix or suffix, depending on the file, so that the same condition can be applied in spite of the variation.</p> <p>The condition can be left blank if it is used just to create a subset of files to be updated within the template.</p>

### Files for Data Copy Template Condition

Once a Template Condition has been defined, option F can be used to select which files should use that Condition.

If the Condition is not yet applied to any files, the Filters panel will be automatically displayed. The Filters can also be adjusted at any time by pressing F7 from the File Listing.

The File Listing can be toggled using F8 (see the Function Key table).

Filter Field	Description
Target Library	include row only if the target library name matches the generic pattern
File System Name	include row only if the system name of a file in the target library matches the generic pattern
File SQL Name	include row only if the SQL long name of a file in the target library matches the generic pattern
File Description	include row only if the file description matches the generic pattern
Contains Field	include row only if the file in the target library contains a field whose system name or SQL long name matches the generic pattern
and Contains Field	include row only if the file in the target library contains a field whose system name or SQL long name matches the generic pattern of both the first field and second field

Option	Description
1=Apply Condition	1 - apply the Condition to the file in the listing remove the 1 to no longer apply to a file
Q=Query File	Query the data in the target file

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<b>Function Key</b>	<b>Description</b>
F3/F12=Exit	return to previous screen
F5=Refresh	Refresh the Listing
F7=Filters	Bring up filter parameters. Any files already applied to the Condition Definition will continue to be applied even if the filter is changed.
F8=Toggle View	Toggle the listing between: Only Files assigned to the Condition Only Files matching current Filter values Files assigned or matching current Filter values
F9=SQL Name/ Description	Toggle the listing between SQL naming for the tables or descriptions of the files
F13=Select All	Select every file in the current list
F14=Unselect All	Remove the selection from every file in the current list

## 1.3.2 File-Specific Conditions

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Conditions can also be defined directly for a specific file. To do so: - use option O=Objects for the Library Mapping definition of a Template and then - use option C=Conditions for the file



Field	Description
Records to Replace	<p>1 – All Records in File – all existing records in the target file will be removed before any records matching the condition are copied from the originating location/library</p> <p>2 – Records matching Condition – only the records in the target file that match the condition will be removed before any records matching the condition are copied from the originating location/library. This provides a way to add certain use cases for testing without removing the other cases in the file(s). If multiple conditions are applied to the same file, then if at least one of the included conditions is set to 2, then option 2 will be used for all of the included conditions for that file.</p>
Always include Condition	<p>1 – Yes – the condition will be appended to the WHERE clause with an AND operator, even when executing the copy for other condition numbers or for no specific condition number.</p> <p>2 – the condition will only be appended to the WHERE clause if the execution is running for the specific condition number. When adding an object specific condition from the object listing within the library listing for the template, option 2 will mean that the condition will only be appended to the WHERE clause if the execution is not running for a specific condition number.</p>
Join File	<p>A join file can be defined for the condition in order to limit the records to be copied by those matching certain column values in the join file.</p> <p>The join condition is specified as part of the condition string in the Condition parameter which is then included in the WHERE clause.</p> <p>By using the AND predicate, additional conditions beyond the Join conditions can be included in the Condition parameter.</p> <p>Due to DDM constraints, the Join file must be on the same partition as the file that is being copied from. The library containing the join file is specified in parameter Remote Library.</p> <p>*FROM special value for the Remote library can be used and will be replaced by the actual from library at runtime.</p> <p>*TARGET special value for the Remote library can be used and will be replaced by the actual target library at runtime.</p> <p>If the Records to Replace option is set to 2=Records matching Condition, then the condition is also run as a subquery on the local delete statement.</p> <p>In this case, the join file must also be on the local partition and the Local Library parameter must be defined.</p> <p>If the from library is also on the local partition, then the join file can be the same object, but when the from library is on a remote partition, then a copy of the join file of the same name must exist in some library on each partition.</p>
File ID	<p>The file ID (prefixed qualifier) of the join file to use in the Condition statement.</p> <p>For example, if the File ID is set to S, then the referenced column in the condition statement must start with S followed by a period.</p> <p>When multiple conditions are applied to same file and each condition uses a different join file, then each join file should have a distinct File ID to ensure that the final WHERE clause can be interpreted correctly.</p>
WHERE	<p>The rules to determine which records should be included.</p> <p>Technically, this is the SQL where clause for a select statement and any syntactically correct and allowed where clauses may be used, including functions.</p> <p>If the name of a column in the file is used in the condition, the file identifier F should be used to ensure that the column will be properly identified at runtime.</p> <p>For example, use F.CUSTNO instead of CUSTNO.</p> <p>The name of a column in the join file used in the condition should start with the file identifier defined in parameter File ID.</p> <p>String constants should be delimited with a single quote '.</p> <p>Wildcards can be used in the SQL string and will be replaced with the actual value for the wildcard at execution time.</p> <p>Additionally, the ? symbol can be used as a replacement value for specific characters in a field name. At</p>

<b>Field</b>	<b>Description</b>
	<p>execution time, the data copy process will replace the complete field name with the first system or SQL long name that matches the field name string containing one or more ? symbols.</p> <p>This is helpful when the field name has a different prefix or suffix, depending on the file, so that the same condition can be applied in spite of the variation.</p> <p>The condition can be left blank if it is used just to create a subset of files to be updated within the template.</p>

## 1.4 MDTransform - Data Copy Template Data Transformations

A Data Copy Transformation provides the ability to manipulate the values in table columns as they are copied from one location/library to another. A transformation can be defined for a specific file column from the Objects listing, or it can be defined at the Template level and then applied to any number of file columns within the libraries defined for the template.

MDTransform must be licensed to use Transformations.

If a transformation isn't applied to a file column, then the value for each row in the from library will be copied without alterations.

### 1.4.1 Template Transformations Listing

This panel is reached with option T for a Data Copy Template. The panel lists all Template-Level Transformations.

Filter Field	Description
Description	include row only if the description of the Transformation contains the value in the filter
Transformation	include row only if the SQL string of the Transformation contains the value in the filter
Used by File	include row only if the Transformation is applied to a specific file name
Used by Field	include row only if the Transformation is applied to a specific field name

Option	Description
2=Edit	Edit the Transformation Description and Result Value
3=Copy	Copy all properties of a Transformation to a new Transformation
4=Delete	Delete the Transformation definition
5=View	View the Transformation definition
F=Fields	View/Manage all Fields that the Transformation definition is applied to

Function Key	Description
F3/F12=Exit	return to previous screen
F5=Refresh	Refresh the Listing
F6=Add	Add a new Transformation Definition
F11=View Output	View the MD Report Output listing
F21=Sys Cmd	access the system command line

**Data Transformation Properties**

Press F6 from the Transformation listing to add a new Transformation Definition, or use options 2, 3, or 4 to manage an existing definition.

Field	Description
Template	the Template to contain the definition
Transformation Description	a description of the Transformation
Transformation Result Value	<p>The SQL syntax to transform the current value in the from library and then insert that value into the target library.</p> <p>Any syntactically correct SQL expression that is allowed for a column in an SQL statement may be used, including functions.</p> <p>NULL - set the value to NULL</p> <p>*GEN - for columns that contain the Generated clause, *GEN can be used to indicate that the system should generate a new value in the target library at copy execution time.</p> <p>Wildcards can be used in the SQL string and will be replaced with the actual value for the wildcard at execution time.</p> <p>Additionally, the ? symbol can be used as a replacement value for specific characters in a field name.</p> <p>At execution time, MDCMS will replace the complete field name with the first system or SQL long name that matches the field name string containing one or more ? symbols.</p> <p>This is helpful when the field name has a different prefix or suffix, depending on the file, so that the same transformation can be applied in spite of the variation.</p>

**Transformation Example Result Value: Make Customer Identifying Data Anonymous**

```
CASE WHEN ++FLDNAM++ = ' ' THEN ' ' ELSE '++FLDNAM++' CONCAT LTRIM(DIGITS(CSTNBR), '0') END
```

This is an example showing how a Transformation Template could easily be used to mask customer identifying data when copying from production to test.

If the current value for the field is blank, then the field will remain blank in the target library. However, if it isn't blank, then the value is replaced with the name of the field concatenated by the customer number with leading zeroes stripped off. This is just one example, but the transformation can be as elaborate as necessary, including by using a user-defined function to prepare the value.

**Fields for Data Copy Template Transformation**

Once a Template Transformation has been defined, option F can be used to select which file fields should use that transformation.

If the Transformation is not yet applied to any fields, the Filters panel will be automatically displayed. The Filters can also be adjusted at any time by pressing F7 from the Field Listing.

The Field Listing can be toggled using F8 (see the Function Key table). The Sts column in the listing has the following possible values: - NO - the field doesn't have Transformation defined for it - YES - the field uses the selected Transformation definition - OTH - the field uses a different Transformation definition - CST - the field uses a custom result value specifically defined for it

A field can only contain 1 Result value, either from a Template-Level Transformation definition or a field-level value.

Filter Field	Description
Target Library	include row only if the target library name matches the generic pattern
File System Name	include row only if the system name of a file in the target library matches the generic pattern
File SQL Name	include row only if the SQL long name of a file in the target library matches the generic pattern
File Description	include row only if the file description matches the generic pattern
Contains Field	include row only if the file in the target library contains a field whose system name or SQL long name matches the generic pattern
Field System Name	include row only if the system name of a field matches the generic pattern
Field SQL Name	include row only if the SQL long name of a field matches the generic pattern
Field Description	include row only if the description of a field matches the generic pattern
Field Types	include row only if the SQL field type (up to 4 types) match. Press F4 to select a type from a list
Field Length	include row only if the field length is within the minimum and/or maximum range
Field Decimals	include row only if the number of decimal places for a field is within the minimum and/or maximum range

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Option	Description
1=Apply Transformation	1 - apply the transformation to the field in the listing remove the 1 to no longer apply to a field
5=Field Info	view all of the primary properties of a field
Q=Query File	Query the data in the target file

Function Key	Description
F3/F12=Exit	return to previous screen
F4=Browse	Browse list of available values for the field where cursor is positioned
F5=Refresh	Refresh the Listing
F7=Filters	Bring up filter parameters. Any fields already applied to the Transformation Definition will continue to be applied even if the filter is changed.
F8=Toggle View	Toggle the listing between: Only Fields assigned to the Transformation Only Fields matching current Filter values Fields assigned or matching current Filter values
F9=SQL Name/ Description	Toggle the listing between SQL naming for the tables and columns or descriptions of the files and fields
F13=Select All Undefined	Select every field in the current list that isn't currently defined to have Transformation at the Template or File level
F14=Unselect All	Remove the selection from every field in the current list
F18=Select All including Defined	Assign every field in the current list to this Transformation definition, even if the field is currently assigned to a different definition or has Transformation defined at the File level

## 1.4.2 Field-Specific Transformation Result Value

A transformation value can also be defined directly for a specific field. To do so: - use option O=Objects for the Library Mapping definition of a Template and then - use option T=Transform for the file containing the field(s) - use option 2=Edit for a field

The Result Value is the SQL syntax to transform the current value in the from library and then insert that value into the field in the target library for each row of copied data.

Any syntactically correct SQL expression that is allowed for a column in an SQL statement may be used, including functions. - NULL - set the value to NULL - \*GEN - for columns that contain the Generated clause, \*GEN can be used to indicate that the system should generate a new value in the target library at copy execution time.

Use option 4=Remove Custom Result to revert the field to not using any custom transformation.

## 1.5 MDTransform - Data Transformation during RFP Deployment

The File Data Transformation option is available for Physical Files or SQL Tables that are requested in MDCMS/MDOpen on a partition where MDTransform is licensed.

If the object is requested for update, MDRapid must first be enabled for the request as MDRapid must be used for transformation of data when the file isn't modified or recompiled. Enable MDRapid by editing the Object Request and setting parameter "Use MDRapid" to \*YES.

Data Transformation is used, by default, to map the data in a file from the prior format for the file to the new format during the installation of the file.

Data Transformation performs a dynamic SQL insert to populate the new version. The results for each column, by default, are the contents of the same column name in the prior version, if the prior column type can be cast to the new column type. For new or invalid columns, MDCMS automatically fills with blank, 0 or null, depending on column properties.

In order to view/customize the data transformation values for a file, the new and old version of the file must exist. MDCMS will attempt to create the new version of the file if it doesn't exist in the developer's library when requested for a check-out level. For higher levels, the file must exist in the from level to use the Data Transformation option.

### 1.5.1 Data Transformation Listing

Within the MDCMS Object Manager, the option is F - File Data Transformation. Within MDOpen for Object Requests, the option is Data Transformation.

The panel lists all fields in the new version of the file.

Filter Field	Description
Field Name	include row only if the field name contains the value in the filter
Description	include row only if the field description contains the value in the filter
Field Type	include row only if the field type matches the value in the filter
New/Diff/Custom only	include row only if the field is new, has a different format or contains a custom result value

Row Option	Description
Edit (click on Field Name)	Edit the Result Value
Remove Custom Transformation	Reset the Result Value back to the default
Add/Remove Key for MDRapid	<p>If MDRapid will be used to minimize downtime during deployment of the file, keys can be defined to designate the columns that combined would uniquely identify each record in the file.</p> <p>If the file has a unique key or primary key constraint on it, those fields will automatically be designated as the key fields.</p> <p>If key fields are not defined, MDRapid will map the records by relative record number instead, which is a bit slower and takes more overhead during the journal syncing process.</p> <p>If using MDRapid to transition a table from single-membered to partitioned, the designation of key fields is required. Up to 99 fields can be designated as a key field. If a field is marked in error, or relative record mapping should be used, remove the key from the field(s).</p>

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File Option	Description
Enable	Enable MDTransform for the copy of data from the old version to new version (default)
Disable	Disable MDTransform for the copy of data from the old version to new version. CPYF will be used instead.
SQL Statement	View the SQL syntax for the INSERT statement that will be used for the copy based on the current transformation definitions for the file. This can then be copied to an interactive SQL session for troubleshooting purposes.

### SQL Result Value

The SQL result is the value that will be inserted into the field for each row of the new version of the file. By default, the value will be the same as the value in the old version of the file or the default value for the field when new.

A custom result value is any valid SQL syntax, including functions, to transform the current value in the prior version of the file.library. Special values: - NULL - set the value to NULL - \*GEN - for columns that contain the Generated clause, \*GEN can be used to indicate that the system should generate a new value in the target library at copy execution time.