



# IBM File Manager for z/OS DB2 Feature

Program number 5655-V52

## Tutorial

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This is the tutorial for the DB2<sup>®</sup> feature of IBM's File Manager for z/OS<sup>®</sup>, one of the IBM zSeries<sup>®</sup> problem determination tools.

- File Manager DB2 utilities

- Print
- Object list
- Copy
- Export and import



In this section you will see how to use the File Manager DB2 Export and Import utilities.

## The export and import utilities



- Use [export](#) to copy a table to file
  - Create a transportable file
  - Select rows to be copied
  - Write to a sequential (QSAM) or VSAM file
  - Select the output file format:
    - Default File Manager export format
    - DB2 Unload Utility, or DB2 DSNTIAUL format
    - User-defined formats
- Use [import](#) to copy a file to a table
  - Read File Manager export files or user-defined files
  - Select records to be copied
  - Optionally provide a REXX program to modify data and select rows

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Export and Import are often used together to copy data from a table to a sequential file, and then copy it back to another table. One advantage of doing this is that you can transport data from one DB2 subsystem to another.

You can use the Export utility to export to either a sequential or VSAM file. You can use a template to select which rows are copied. And you can choose from several output formats, including File Manager's own default export format, the DB2 Unload Utility format, or to DB2 DSNTIAUL format. There is also a “user defined” format you can customize, and you can even provide your own copybook to lay out the output records. When you create output files in any of these formats, File Manager automatically generates a template that the Import utility can use as a map to read the file back in.

You can also generate comma-delimited files, which might be used to download for spreadsheet programs or other workstation utilities.

The import utility is used to copy records from a file into a DB2 table. It can read a file created by the export utility, or you can use your own file, and provide a copybook that lays out the records. You can use a template to select which records are imported, and if you need even more control, you can write a REXX program that can select records and even create or modify data before it is written into the table.

## Export



Example: export to a file that can be imported

- Specify input table
- Generate and save a template (that can be used for import)
- Create output file

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In this example, the export utility will be used to create a file that can be used as input to the import utility. The input table will be specified, the utility will generate a template that will be used by the import utility, and an output export file will be created.

## Export to a file



```
Process  Options  Utilities  Help
-----
FM/DB2 (D91F)          Utility Functions
Command ==> 7_
-----
1 Print      Print DB2 table or view
2 Objects   Create and drop DB2 objects
3 Copy      Copy data within DB2
4 Object List  Display and process DB2 object lists
5 Privileges Manage DB2 privileges
6 Import    Import sequential or VSAM data into DB2
7 Export    Export DB2 data to sequential or VSAM data set
8 Create    Create DB2 test data
9 Utilities DB2 utility job generation
10 Audit trail Print audit trail report
11 Print browse Browse FM/DB2 print data set
```

In this example, data from a DB2 table will be exported to a file that will be then be imported



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Access the export utility panels by selecting the export option from the utilities menu. Navigate to the utilities menu from the File Manager DB2 primary option menu, selection 3. From the utility functions menu, select option 7, Export. Press Enter.

## Enter the name of the file to be exported Generate the template from the table



```
Process  Options  Utilities  Help
-----
FM/DB2 (D91F)                               Export Utility
Command ==> _____

From DB2 Object:
Location . . . . . _____ Database . . . . . _____ (optional)
Owner . . . . . ALLANSC + Table Space . . _____ (optional)
Name . . . . . EMP +
Export count . . . ALL Number of rows to export

From Template:
Data set name . . . _____
Member . . . . . _____

Processing Options:
Template usage
3 1. Above
2. Previous
3. Generate from table
4. Generate/Replace

Enter "/", "A" always to select option
/ Edit options
- Edit template

Enter
```

The Export Utility panel is displayed. In the “From DB2 Object” fields, enter the name of the table to be exported. Export count will default to ALL, so all rows will be exported. This can be modified. If a template is being used, enter the name in the “From Template” field. In this example, all rows will be copied. So in the “template usage” option, 3 is selected to generate the template automatically from the table. Optionally, you can review your edit export options by entering a slash in the “edit options” field. A slash has been entered to review the export edit options. Press Enter.

## Export options are displayed



```
Process  Options  Utilities  Help
-----
FM/DB2 (D91F)          Export Options - (1 of 3)
Command ==>

Data Format:
  1. FM/DB2 (SQLDA) format
  2. DB2 UNLOAD format
  3. DSNTIAUL format
  4. User defined
  5. Delimited variables (CSV)

Execution options:
Select option
  1. Online           Enter "/" to select option
  2. Batch            -->   Batch data set creation
  3. Batch, using DB2 UNLOAD --> Edit DB2 UNLOAD options

More Options:
Enter "/" to select option
Null indicators / CSV options  (For user-defined, CSV data formats)
Data type format               (For user-defined data format)

F3
```

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On the export options panel, you can select the default output data format. In this example, the File Manager DB2 format, option 1, is selected. That is a good format if you plan to use the File Manager DB2 import utility to copy the file to another table. You can specify that the output records are compatible with the DB2 Load Utility, or the DB2 DSNTIAUL utility. The “User Defined” option gives you additional formatting control. Or you can generate a “delimited” output file. For example, you can create a comma delimited file.

You can also choose to run the export utility in batch. If you are exporting a large table, you might prefer that, so your TSO session is free while the export runs. In this example, Execution option 1, online, has been entered. PF3 to exit from the options panel and continue.

## Enter 'To' output and template data set names



```
Process  Options  Utilities  Help
-----
EXPORT      From ALLANSC.EMP
Command ==> _____

To Partitioned, Sequential or VSAM Data Set:
Data set name . . . 'TSS13.EMP.EXPORT'
Member . . . . .
Volume . . . . .

To Copybook or Template:
Data set name . . . 'TSS13.ADLAB.TEMPLATE'
Member . . . . . XPRTEMP

Processing Options:
Template usage          Disposition
 4 1. Above             1 1. Old or Reuse
   2. Previous          2. Mod
   3. Generate from table
   4. Generate/Replace
   5. None. (CSV output)

Enter "/", "A" always to select option
- View options
- Edit template mapping

Enter
```

The 'To' export panel is displayed. Specify the name of the output file. You can re-use an existing file, but if you do make sure that it has appropriate file attributes. It can be simpler to specify a file name that does not already exist, and File Manager will automatically create it with the correct attributes.

Next comes a very important part of the process. In this scenario, a file is being created that will be read later by the import utility. Import will need a layout of the records it reads. Import can use a template that the Export utility creates for that purpose.

Specify the name of the new template to be created in the "To Copybook or Template" field. This is typically a PDS member. Template PDSes have 80 byte blocked records. Under "Template Usage", specify option 4, "Generate and Save" to automatically create and save a Template. This is important. If you do not have a template that maps the records in the file, you will not be able to run the import utility. No template, no import.

Press Enter.



## Select new data set organization



```
Process  Options  Help
Allocate TSS13.EMP.EXPORT
Command ==>

New Data Set Organization:
Select option      Instructions
6 1. KSDS          The above data set does not exist.
2. ESDS           To define or allocate a new data set select a data
3. RRDS           set organization and press ENTER. Press F12/EXIT
4. VRRDS          or PF12/CANCEL to
5. LDS
6. Non VSAM

For a new data set, enter a data set name
below to copy existing allocation attributes.

Existing Data Set:
Like data set . . . . .
Volume serial . . . . .

Enter
```

This panel is displayed if the file needs to be created

It is easiest to use a sequential (non VSAM) file for output

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Since the output, or "to" file did not already exist, this panel is displayed to walk you through the creation of the file. You can create different types of files, such as VSAM, KSDS or ESDS files. It is easiest to use a sequential (non-VSAM) file for output. Option 6 Non VSAM is selected. Press Enter.

## The allocation panel is displayed with default values



```
Process  Options  Help
-----
Allocate TSS13.EMP.EXPORT
Command ==> _____ More: +
Specify a model data set, volume, SMS class names, or leave blank for defaults:
Like data set . . . _____
Volume serial . . . _____ (Blank for system default volume)
Device type . . . _____ (Generic unit or device address)
Data class . . . _____ (Leave blank for default)
Storage class . . . _____
Management class _____

Space Requirements:
Space unit . . . CYLS BLKS, TRKS, CYLS, KB, or MB
Primary units . . . 1 quantity of above units
Secondary units . . . 5 quantity of above units
Directory blocks 0 leave blank for SMS default
Record format . . . FB if new format: U,F,V, or D, with B,S,A,M
Record length . . . 144
Block size . . . _____ physical output block size
Data set type . . . _____ LIBRARY, PDS, BASIC, EXTR, EXTP
Allocate EAS . . . _____ Blank, NO or OPT
Release unused . . . _____ enter YES to free unused space,

Enter
```

For a non VSAM file, File Manager automatically calculates the minimum record length needed.

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On this panel, you can control the file attributes. The record length has already been calculated by the export utility. This is why it is easiest to let it create its own output file, because you do not have to guess about the required record length. Review the primary and secondary allocations, and ensure that the file will be large enough to hold all of the data. Press Enter to continue.

## Export completed successfully



```
Process  Options  Utilities  Help
-----
FM/DB2 (D91F)                               Export Utility
Command ==> _____ 42 rows exported

From DB2 Object:
Location . . . . . _____ Database . . . . . _____ (optional)
Owner . . . . . ALLANSC + Table Space . . _____ (optional)
Name . . . . . EMP _____ +

Export count . . . ALL _____ Number of rows to export

From Template:
Data set name . . . _____
Member . . . . . _____

Processing Options:
Template usage          Enter "/", "A"lways to select option
3 1. Above              - Edit options
  2. Previous           - Edit template
  3. Generate from table
  4. Generate/Replace
```

The export has completed successfully. The number of rows exported is displayed on the right, above the command line. Forty two rows were exported.

## Access File Manager View panel Select the exported 'To' data set



```
Process  Options  Help
-----
File Manager          View Entry Panel
Command --->

Input Partitioned, Sequential or VSAM Data Set, or HFS file:
  Data set/path name 'tss13.emp.export' +
  Member . . . . . (Blank or pattern for member list)
  Volume serial . . (If not cataloged)
  Start position . . +
  Record limit . . . Record sampling _

Copybook or Template:
  Data set name . .
  Member . . . . . (Blank or pattern for member list)

Processing Options:
Copybook/template  Start position type  Enter "/" to select option
3 1. Above          - 1. Key              - Edit template _ Type (1,2,S)
  2. Previous       - 2. RBA             - Include only selected records
  3. None           - 3. Record number  - Binary mode, reclen 80
  4. Create dynamic

Enter
```

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File Manager DB2 was exited and File Manager Base view option was accessed. In the input file name, enter the name of the newly created export file and press Enter.

## The export file is displayed in View format



Process		Options		Help	
View		TSS13.EMP.EXPORT		Top of 42	
Command ==>				Scroll PAGE	
Col 1	Insert	Length 144	Record AT TOP	Format CHAR	
-----+-----10-----+-----2-----+-----3-----+-----4-----+-----5-----+-----6-----+-----7-----					
***** **** Top of data ****					
000001	000010	CHRISTINE	I..HAAS	..A00..3978..	1965-01-01..PRES
000002	000020	MICHAEL	L..THOMPSON	..B01..1111..	1973-10-10..MANAGER
000003	000030	SALLY	A..KWAN	..C01..4738..	1975-04-05..MANAGER
000004	000050	JOHN	B..GEYER	..E01..6789..	1949-08-17..MANAGER
000005	000060	IRVING	F..STERN	..D11..6423..	1973-09-14..MANAGER
000006	000070	EVA	D..PULASKI	..D21..7831..	1980-09-30..MANAGER
000007	000090	EILEEN	W..HENDERSON	..E11..5498..	1970-08-15..MANAGER
000008	000100	THEODORE	Q..SPENSER	..E21..0972..	1980-06-19..MANAGER
000009	000110	VINCENZO	G..LUCCHESI	..A00..3490..	1958-05-16..SALESREP
000010	000120	SEAN	..O'CONNELL	..A00..2167..	1963-12-05..CLERK
000011	000130	DOLORES	M..QUINTANA	..C01..4578..	1971-07-28..ANALYST
000012	000140	HEATHER	A..NICHOLLS	..C01..1793..	1976-12-15..ANALYST
000013	000150	BRUCE	..ADAMSON	..D11..4510..	1972-02-12..ENGINEER
000014	000160	ELIZABETH	R..PIANKA	..D11..3782..	1977-10-11..ENGINEER
000015	000170	MASATOSHI	J..YOSHIMURA	..D11..2890..	1978-09-15..ENGINEER
000016	000180	MARILYN	S..SCOUTTEN	..D11..1682..	1973-07-07..ENGINEER
000017	000190	JAMES	H..WALKER	..D11..2986..	1974-07-26..ENGINEER

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Here is the export file. It has a columnar format, and there are some special binary fields that are needed for things like null indicators and to hold the length of variable length columns. This file can be used as input to the import utility.

## Import



Example: import data from a file created with the Export utility


- Specify the input file
- Describe the format of the input file by specifying the template that was generated when the data was exported
- Import data to the output table

Next, the import utility will be used. The name of the file and its format will be specified, and the data will be imported into a table.

## Select 6 Import from the utility functions panel



```
Process  Options  Utilities  Help
-----
FM/DB2 (D91F)                Utility Functions
Command ==> 6_
-----
1 Print          Print DB2 table or view
2 Objects       Create and drop DB2 objects
3 Copy          Copy data within DB2
4 Object List   Display and process DB2 object lists
5 Privileges    Manage DB2 privileges
6 Import        Import sequential or VSAM data into DB2
7 Export        Export DB2 data to sequential or VSAM data set
8 Create        Create DB2 test data
9 Utilities     DB2 utility job generation
10 Audit trail  Print audit trail report
11 Print browse Browse FM/DB2 print data set
```



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In some cases you may need to switch to a different subsystem, so you can import the data into a table on another DB2 subsystem. You can do that with an SSID command, or by returning to the File Manager DB2 main menu and changing the subsystem ID there.

But in this case, the output table is in the same subsystem, so there is no need to switch. Select option 6, Import, from the utilities menu. Press Enter.

## Enter the name of the Export file and the template



```
Process  Options  Utilities  Help
-----
FM/DB2 (D91F)                               Import Utility
Command ==> _____

From Partitioned, Sequential or VSM Data Set:
Data set name . . . 'TSS13.EMP.EXPORT'
Member . . . . .
Volume . . . . .

Import Count . . . ALL          Number of rows to import

From Copybook or Template:
Data set name . . . 'TSS13.ADLAB.TEMPLATE'
Member . . . . . XPRTEMP

Processing Options:
Template usage      Enter "/", "A" always      Data format
 1 1. Above         _ Edit template          1 1. FM/DB2 (SQLDA) format
 2 2. Previous                                     2. DB2 UNLOAD format
                                                3. DSNTIAUL format
                                                4. User defined

Enter
```

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First, specify the name of the file that the Export utility created in the “from data set” fields. The “import count” field will default to “ALL”. This can be modified.

You MUST provide a template or copybook to lay out the input records. Remember when the export utility was used, a template was automatically created, and the template name has been entered into the “From Copybook or Template” field.

You can optionally edit the template to provide selection criteria if you need to control which records are processed. Or you can use your own input file. If you do, provide a copybook as a layout.

Specify the “Data Format” option to match the input file. The File Manager DB2 Format was selected when the export was done, so the same format is selected here by entering a one in the “Data format” field. Press Enter.



## Enter the name of the DB2 object to be imported to



```
Process  Options  Utilities  Help
-----
IMPORT      From TSS13.EMP.EXPORT
Command ==> _____

To DB2 Object:
Location . . . . . _____ Database . . . . . _____ (optional)
Owner . . . . . TSS13 + Table Space . . _____ (optional)
Name . . . . . EMP2 _____ +

To Template: _____ From TSS13.ADLAB.TEMPLATE(XPRTEMP)
Data set name . . . _____
Member . . . . . _____

Processing Options:
Template usage          Enter "/", "A"lways to select option
3 1. Above             - Edit template mapping
  2. Previous          - Batch execution
  3. Generate from table - Use REXX proc
  4. Generate/Replace  REXX proc name . . _____
Duplicate row options  - Delete existing rows
1 1. Ignore
  2. Update
Duplicate count . . ALL _____
```



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Next, specify information about the output table in the “To DB2 object” fields. Typically, you do not specify a template for the output table. You can use an output template if you need to perform column mapping. You only have to do that if your output column names are different from the input column names.

Keep in mind that you can map columns, which means that your input and output tables are not required to have exactly the same column definitions.

In the “Duplicate row options”, you control the action taken when there are duplicate keys. We have specified “1 Ignore” for duplicate row options. The “Delete existing rows” option, if selected, tells File Manager to delete ALL of the rows in the output table before it imports any data. This option has not been selected.

If you select the “batch execution” option, JCL will be generated to run the utility in batch. Or leave that option blank, as in this example, to run the utility online. Press Enter.

## Import completed successfully



```
Process Options Utilities Help
FM/DB2 (D91F) Import Utility 42 rows imported
Command ==>

From Partitioned, Sequential or VSAM Data Set:
Data set name . . . 'TSS13.EMP.EXPORT'
Member . . . . .
Volume . . . . .

Import Count . . . ALL Number of rows to import

From Copybook or Template:
Data set name . . . 'TSS13.ADLAB.TEMPLATE'
Member . . . . . XPRTEMP

Processing Options:
Template usage Enter "/", "A"lways Data format
1 1. Above _ Edit template 1 1. FM/DB2 (SQLDA) format
2. Previous 2. DB2 UNLOAD format
3. DSNTIAUL format
4. User defined
```

The import is done, and data from the input file was written to the table. File Manager DB2 has issued a message indicating that 42 rows were imported. This message is displayed in the right corner of the screen. The export function exported 42 rows, so all rows were successfully imported.

As you have seen there are a lot of different ways you can use the Export and Import utilities. If you plan to Export data and then Import it again, it is typically easiest to use the default File Manager data format.

Also, consider generating JCL for an export and import pair. Put them both in the same job, and you can submit the job whenever you need to copy a table.

This ends the section on using the File Manager DB2 export and import utilities.

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