IBM File Manager for z/OS IMS feature

Program number 5655-V52

Tutorial

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This is the tutorial for the IMS™ feature of IBM's File Manager for z/OS®, one of the IBM zSeries® problem determination tools.

File Manager IMS version 10 tutorial

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- **Introduction**

- **File Manager IMS option settings**
  - Option settings

- **Edit and browse access modes**
  - Using BMP or DLI access
  - Using a dynamic or static PSB

- **Browsing or editing an IMS database**
  - Starting browse
  - Database navigation
  - Display database information
  - Display formats without a template

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Take these tutorials to learn how File Manager IMS will help you work with IMS databases on z/OS systems.

By taking this tutorial, you will understand the various capabilities of File Manager IMS, and how you can use it to work more effectively with your IMS databases. File Manager IMS is designed to address the needs of application developers working with complex databases.

Take a look at how the course is structured. It is broken down into sections. If you have not already used File Manager IMS, you should take each section in order. But if you have already been using it and want to learn more about a particular topic, you can go directly to that section.

This is the introduction, and it will describe the most frequently used functions in File Manager and how to you can get the manuals from the IBM website.

The next section, "File Manager IMS options settings" describes the options that you can customize.

In the "Edit and Browse access modes", you will learn how IMS databases can be accessed using different access modes, and how to specify the use of an existing static PSB, or a dynamic PSB that File Manager creates automatically.

In "Browsing or editing an IMS database", you can learn how to start the database browser or editor, how to navigate to see the segments and data in your database, how to get information about the database, and some of your choices for how you want to have the data formatted.

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- **Creating templates**
  - About templates and views
  - Create or update a template

- **Browse or edit an IMS database with a template**
  - Starting the editor
  - The display formats and zoom
  - Display different segment types
  - Find, change, scope, and locate data
  - Insert, repeat, repeat all, and delete segments
  - Print from the editor
  - End, quit, save, undo and cancel

View the "Creating Templates" section to see how to create a new template. Templates are used to format your segments into fields and control how data is displayed. You will learn how to map COBOL or PL/I copybooks to segments to define the fields in the segments.

In the next section, "Browse or edit an IMS database with a template", you will learn how to specify the use of a template, and several topics are presented that describe in detail how to control formatting, work with data in a database, and use commands to control the editor.

- **Using a view**
  - Selecting segment types to display
  - Selecting segments to display based on data content
  - Save a view
  - Customize how data is displayed
  - Use edit or browse to format and generate a report

- **Extract and Load utilities**
  - Extract utility
    - Extract using a key values file
    - Working with criteria sets
    - Extract using a criteria set
  - Delete / define utility
  - Load utility

In the "Using a view" section, you will learn how to use something called a "view" to select segments to be displayed, and how you can further control how segment data is displayed in browse and edit.

Take the next section to see how to use the extract utility to copy segments from an IMS database to a file. There are topics that describe the various ways to select the segments to be extracted. You can use the load utility to read a data file created by the extract utility and copy segments from it into an IMS database.

What is File Manager?

- One product, four features
  - File Manager Base
  - File Manager DB2®
  - File Manager IMS
  - File Manager CICS®

This training module

z/OS

| File Manager Base | File Manager DB2 | File Manager IMS | File Manager CICS |

DB2 System

IMS System

CICS System

VSAM QSAM PDSE

DB2 Tables

DLI | BMP

IMS

VSAM | TDQ

TSQ
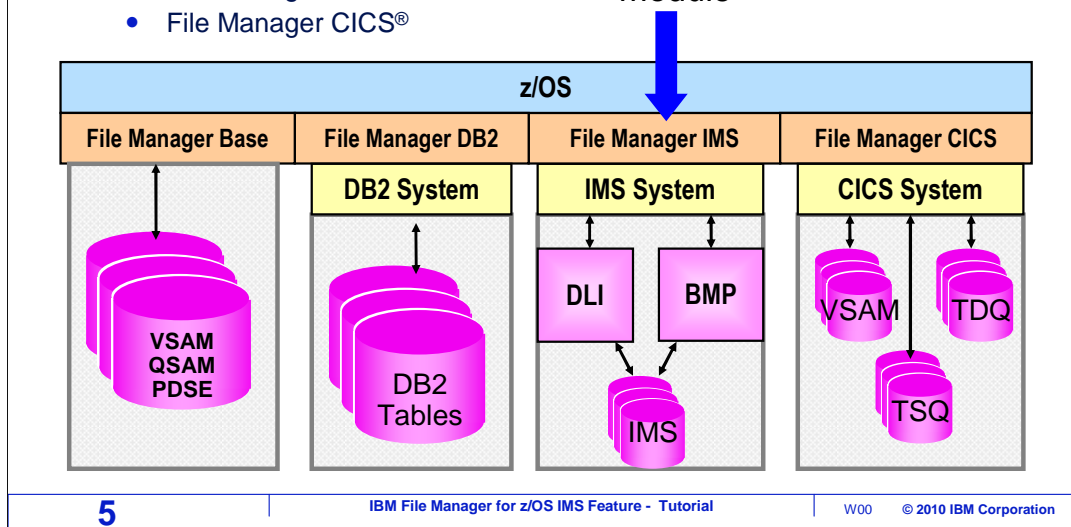
File Manager is a single product with four features, each of which can be configured separately. When an organization purchases File Manager, they get all four parts. They can then choose which feature or features they want to install.

File Manager base gives you functions for working with z/OS data sets, such as VSAM and sequential files, PDSes, and tapes. File Manager DB2 gives you functions to work with data in DB2 databases and tables. File Manager CICS lets you work with files and queues in CICS. And, File Manager IMS helps you work with IMS databases.

This training module will describe the functions of File Manager IMS.

- A set of tools for working with data in IMS databases

- **Edit** and **browse**
  - Interactively work with IMS databases
  - Insert, update, and delete IMS segments
  - Find and fix data
  - Audit changes made while editing
  - *Easy to learn!:*
    - Use familiar ISPF editor / browser commands
  - *Powerful!:*
    - Edit or browse IMS physical or logical databases
    - Use a dynamic or static PSB
    - Access IMS databases in either BMP or DLI mode
    - Optionally use a secondary index

The File Manager IMS feature is a set of tools and utilities for working with data in IMS databases.

Edit and browse allow you to interact with, review, and modify data in IMS segments. You can update, insert, and delete segments, find and fix data, and it can even keep an audit log of your changes.

It is designed to use many of the same commands as the ISPF editor, to make it easier to learn. It provides powerful features that let you work with either logical or physical databases. You can use your own PSB to control the segments you work with, or it can automatically generate its own PSB to let you work with all segments in a database. You can use either BMP or DLI access mode, and it can use your secondary indexes.

What is the File Manager IMS feature?

- Database extract and load utilities
  - Copy the contents of an IMS database to file
  - Load the contents of an extract file into an IMS database
  - Select segments to be copied
  - Modify / reformat segments during the extract
  - Reload the data to another IMS database
- Print utility
  - Print selected data or entire databases
  - Choose from several report formats
  - Customize fields and headings

The File Manager IMS extract and load utilities are panel-driven utilities that walk you through creating an IMS database and populating it with all or a subset of data from a similar IMS database. You can quickly create a new database by modeling an existing one. You can copy all of the segments, or select segments to be extracted.

The print utility lets you print data from IMS database segments. You can choose different report formats, and you can select specific fields and segments.

- IMS is a family of IBM software products that provides database and transaction management

- IMS DB is a hierarchical database manager
  - File Manager IMS provides utilities to work with IMS DB
  - The IMS Database Manager supports:
    - databases using IMS's own hierarchical database model
    - multiple tasks (batch and online) to access and update databases, while retaining data integrity
    - recoverability of databases
  - Database data is stored on disk using normal operating system access methods

- IMS TM is a message-based transaction processor
  - File Manager / IMS does not require IMS TM

Before getting into more detail about File Manager IMS, here is a little background about IMS itself. IMS is a family of IBM software products that provide database and transaction management functions.

IMS/DB is the database feature of IMS. It provides for the management and access of hierarchical databases. File Manager IMS is designed to work with these IMS databases. Multiple tasks or jobs can access the same database with integrity, and extensive recovery capabilities are provided. IMS databases are typically stored on disk volumes in z/OS files.

IMS/TM is the transaction manager feature of IMS, and it is a message-based transaction manager. File Manager IMS does not require IMS/TM.

IMS Database

- Each individual segment is like a record
- Each segment type is like a table – there can be multiple segments
- The top segment in the hierarchy is known as the root segment
- Segment relationships are parent, child and twin
- Lower segments are dependent upon their parent segments

Level 1 Root segment	**Part**	Parent of Stock and Purchase Order
Level 2 segments	**Stock** **Purchase Order**	Child of Part and Parent of Detail
Level 3 segments	**Detail** **Detail**	Child of Purchase Order
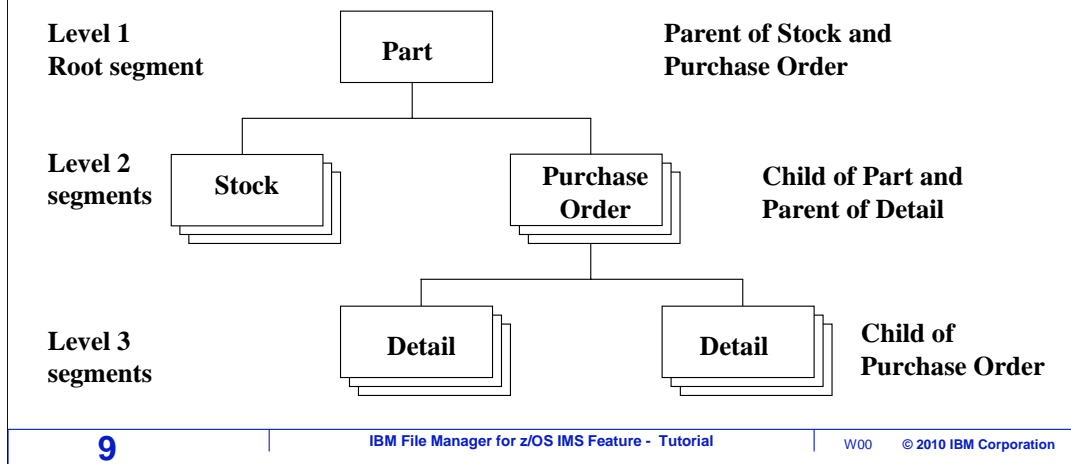
An IMS database is a logical collection of segments, arranged in a hierarchy. At each level, there can be any number of segments. Each individual segment is like a record in a file, and consists of a long string of data that can be logically processed as fields. Each type of segment is similar to a table, in that there can be multiple segments.

In the overall database structure, the topmost type of segment is known as the root segment. The root segment is the only segment type at level one. Below level one is level two. All segments at level two are child segments of the root, and the root segment type is the parent of all segment types at level two. Multiples of a segment type are called twins. For a child segment type, twin segments are all of the multiples that are under the same parent segment.

Lower segments are dependent upon their parent segments, they cannot exist if their parent segments do not exist all the way up to a root segment.

DLI and BMP modes in File Manager IMS

- From File Manager IMS access an IMS database in either:
    - DLI (Data Language One) mode, or
    - BMP (Batch Messaging Processing) mode
- DLI mode
    - File Manager IMS allocates the IMS database data sets in the TSO address space
    - DLI mode is often used when working in a test environment, each user can have a copy of the databases
    - If Internal Resource Lock Manager (IRLM) is in use, multiple users can update the same databases
    - The installation process provides default DLI mode settings, which can be overridden by the user

IMS databases can be accessed in either DLI mode or BMP mode. File Manager IMS can access databases in either mode, and you can control which mode it uses.

When DLI mode is used, File Manager allocates the IMS database datasets to your TSO address space. DLI mode can, in theory, be used for any type of database. It is often used in test environments to allow you to have your own copies of the databases.

If the Internal Resource Lock Manager (IRLM) is in use, multiple users can update the same databases. When File Manager is installed, the installer provides default DLI mode settings, although you can override the default settings if needed.

DLI and BMP modes in File Manager IMS

- BMP mode
  - In BMP mode, File Manager IMS connects to an IMS subsystem, which connects to an IMS "control region"
  - Database data sets are allocated to the control region, allowing multiple users to access the same databases
  - BMP mode is often used in a "live" or production environment with shared databases
  - The File Manager IMS system administrator must provide IMS subsystem information during installation
  - Control regions:
    - DB/DC control region
      - Required for the IMS/TM transaction manager
      - Used when both the transaction manager and database manager components are installed
    - DBCTL control region
      - Used when only the database manager component installed

When you access a database in BMP mode, File Manager connects to something called an IMS subsystem and communicates with an IMS control region. The database data sets are owned by the control region, which allows multiple users to access the same databases.

  This mode is often used in live or production environments because it ensures that all users are accessing the same data. When File Manager is installed, the installer provides default BMP mode settings. To use BMP mode, File Manager must be configured to use it, and the IMS control regions have to be up and running.

  When you access a database in File Manager, you can specify whether you want to access it in DLI or BMP mode.

IMS definition of terms

- DBD – Database Descriptor Block
  - A DBD defines the physical or logical definition of an IMS database
  - Resides in a DBD library
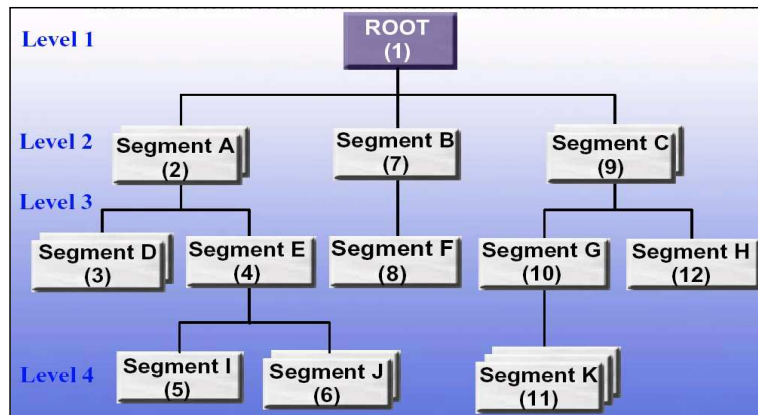
Level 1 — ROOT (1)

Level 2 — Segment A (2), Segment B (7), Segment C (9)

Level 3 — Segment D (3), Segment E (4), Segment F (8), Segment G (10), Segment H (12)

Level 4 — Segment I (5), Segment J (6), Segment K (11)

There are a few IMS terms that you should know to get the most out of File Manager IMS. The first one is DBD, or database descriptor block. A DBD is typically set up by a database administrator. It defines the physical or logical definition and hierarchical structure for an IMS database. A DBD describes each of the segments in a database, and their relationship to each other. It resides in a DBD library.

IMS definition of terms

- ■ PSB: Program Specification Block
  - • Is used by an application program or File Manager to access databases
  - • Contains one or more PCBs

- ■ PCB: Program Communication Block
  - • defines a subset of segments of a DBD
  - • also defines the processing options (Get, Insert, Update)

- ■ Static PSB
  - • a pre-defined PSB

- ■ Dynamic PSB
  - • a PSB automatically generated by File Manager from a DBD

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The next IMS term is PSB. This is the program specification block, and it is typically set up by a database administrator. An application program uses a PSB to access an IMS database. A PSB contains one or more PCBs.

A PCB, or program communication block, defines a subset of segments in a database. An application program uses a PCB as a "map" of the segments in the database. A PCB also defines the processing options that are allowed, such as get, insert, or update.

Just like other programs, File Manager uses PSBs and the PCBs in them to access databases and see a map of segments. If you already have a PSB that you want to use with File Manager, you can. When you provide your own PSB, File Manager calls that a "static" PSB.

However, it can be easier to make File Manager use a dynamic PSB. That way, you do not have to provide a PSB. When you specify the use of a dynamic PSB, File manager will automatically generate its own PSB with access to every segment in the database.

Access the File Manager manuals
from the IBM website

http://www.ibm.com/software/awdtools/filemanager/

Information and manuals for File Manager are available on the IBM website. The URL is:
http://www.ibm.com/ software/awdtools/filemanager/

From the File Manager page there is a link to the File Manager library. Click the word
"library" on the left side of the screen.
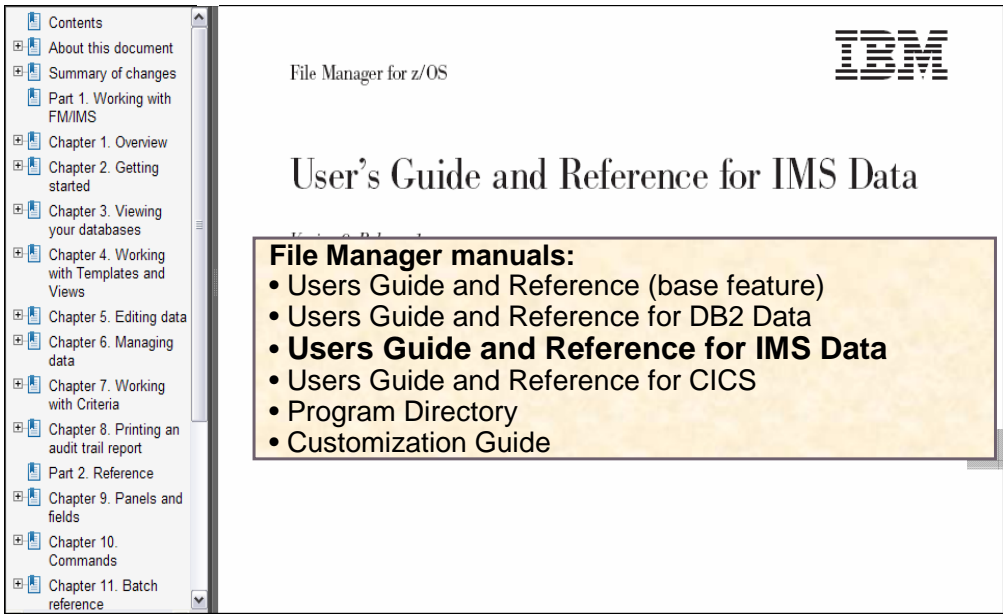
Access the File Manager manuals
from the IBM website

http://www.ibm.com/software/awdtools/filemanager/

The publications for recent versions of File Manager are displayed. You can view a manual by clicking on the View link in the View Book column. Or you can download a manual by right clicking the link in the Download Book column. The manuals are updated periodically. When new features are added to the product, the manuals will be updated as necessary. You can always view the online copy to get the most current information.

View or download manuals

File Manager for z/OS

User's Guide and Reference for IMS Data

File Manager manuals:
• Users Guide and Reference (base feature)
• Users Guide and Reference for DB2 Data
• **Users Guide and Reference for IMS Data**
• Users Guide and Reference for CICS
• Program Directory
• Customization Guide

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There are several File Manager manuals. There are separate User's Guides for the base feature, and for the DB2, IMS, and CICS features. You may want to download the "User's Guide and Reference for IMS Data", so that it is always available on your workstation. If you are responsible for installing File Manager, then you will also want the Customization Guide.

That is the end of this section, an introduction to the File Manager IMS feature.

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Tutorial

This is the tutorial for the IMS feature of IBM's File Manager for z/OS, one of the IBM zSeries problem determination tools.

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