IBM

MVS/DFP Version 3 Release 2

Planning Guide

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MVS/DFP Version 3 Release 2

SC26-4561-0

Planning Guide

First Edition (December 1989)

This edition applies to Version 3 Release 2 of MVS/DFP™, Program Number 5665-XA3, and to any subsequent releases until otherwise indicated in new editions or technical newsletters.

Information in this edition was previously contained in SC26-4513-1.

The changes for this edition are summarized under "Summary of Changes" following the table of contents. Specific changes are indicated by a vertical bar to the left of the change. A vertical bar to the left of a figure caption indicates that the figure has changed. Editorial changes that have no technical significance are not noted.

Changes are made periodically to this publication; before using this publication in connection with the operation of IBM systems, consult the latest *IBM System/370, 30xx, 4300, and 9370 Processors Bibliography*, GC20-0001, for the editions that are applicable and current.

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Summary of Changes

First Edition, December 1989

New Programming Support for Release 2.0

Support has been added for installation of the MVS/DFP Version 3 Release 2 system on an MVS/DFP Version 3 system. This includes reference material for:

- The aggregate group construct in Chapter 5, "Storage Management Subsystem Configurations" on page 31
- A discussion of a new type of data set in Chapter 6, "Planning for Partitioned Data Set Extended" on page 39

Support has been added for the following device:

- IBM 3480 Magnetic Tape Subsystem with Improved Data Recording Capability

Service Changes

The publications in the MVS/DFP Version 3 Release 2 library have new titles and order numbers. Publications listed in the preface reflect these new titles and order numbers. The MVS/DFP Version 3 Release 2 library contains support only for MVS/ESA.

Other minor technical and editorial changes have been made.

Previous Edition of Source Publication

New Programming Support for Release 1

Chapter 1 has been updated to reflect JES and ISPF requirements for MVS/DFP Version 3 Release 1.

Chapter 3 has been updated to reflect changes in the allocation parameters for the execution libraries. Information has been added about the new access authority of the storage administrator.

Chapter 5 has been added and describes planning for converting data to SMS data.

Also, information has been added on the cataloging of SMS data sets.

Preface

About This Book

This book is intended to help you plan the installation of MVS/DFP.

This book describes the steps a planner needs to consider when:

- Installing MVS/DFP
- Converting data to Storage Management Subsystem (SMS) managed data

Unless specifically stated otherwise, the information in this book is not intended for programming purposes. However, this book also provides general-use and product-sensitive interface information in Appendix A.

General-use programming interfaces are included to help you write programs employing the services of MVS/DFP.

Product sensitive interfaces such as installation exits allow you to perform tasks such as product tailoring, monitoring, modification, or diagnosis. They are dependent on the detailed design or implementation of the product. Because of their dependencies on detailed design and implementation, programs written to such interfaces may need to be changed to run with new product releases, or as a result of maintenance.

Organization

This publication contains the following major parts:

- "Part 1. Planning for MVS/DFP Installation" describes the environment required to install MVS/DFP and indicates what information needs to be planned in advance.
- "Part 2. Planning for Storage Management Subsystem Data" describes the considerations and steps necessary to plan for converting to SMS-managed data.
- Appendix A, "Macro Distribution Libraries" on page 45, describes the general-use and product sensitive interfaces.
- Appendix B, "Object Code Only Components" on page 51, lists components that are provided as object code only.
- "Glossary" on page 55 defines the terms and abbreviations in this book.

Required Product Knowledge

To use this book effectively, you should be familiar with:

- Software installation procedures
- Data set catalog environments
- VTOCs and DASD space utilization

- VSAM (virtual storage access method)
- Storage Management Subsystem

Required Publications

You should be familiar with the information presented in the following publications:

Publication Title	Order Number
MVS/DFP Version 3 Release 2: Managing Catalogs	SC26-4555
MVS/DFP Version 3 Release 2: Managing Non-VSAM Data Sets	SC26-4557
MVS/DFP Version 3 Release 2: Managing VSAM Data Sets	SC26-4568
MVS/DFP Version 3 Release 2: Storage Administration Reference	SC26-4566
MVS/ESA Storage Management Library: Storage Management Subsystem Migration Planning Guide	SC26-4659
MVS/ESA System Generation	GC28-1825

Related Publications

Some publications from the MVS/SP Version 3 library are referenced in this book. *MVS/ESA Library Guide for System Product Version 3*, GC28-1563, contains a complete listing of the MVS/SP Version 3 publications and their counterparts for the prior version.

MVS/DFP Version 3 Release 2: Guide and Master Index, GC26-4553, contains both an index to the MVS/DFP library and a summary of the changes made to the library. You can use it to:

- Find information in other MVS/DFP publications
- Determine how new programming support changes information in the MVS/DFP library
- Determine which MVS/DFP publications have been changed

For information on the device support that MVS/DFP provides, and for information on the newest devices that MVS/DFP supports, see *MVS/DFP Version 3 Release 2: Device Support Reference*, SC26-4674.

Referenced Publications

Within the text, references are made to the publications listed in Chapter 4, "Publications" on page 21. This chapter lists and briefly describes MVS/DFP and related publications.

Part 1. Planning for MVS/DFP Installation

Chapter 1. Establishing a Base for MVS/DFP

Chapters 1 through 3 contain information on planning for the installation of MVS/DFP Version 3 Release 2 (3.2). An overview of MVS/DFP features and functions is contained in *MVS/DFP: General Information*.

The task of installing MVS/DFP Version 3 Release 2 is similar to the task of installing MVS/DFP Version 3 Release 1. The most significant difference is the addition of partitioned data set extended as a new data set type. If you have already installed MVS/DFP Version 3 Release 1, you might want to focus on Chapter 6, "Planning for Partitioned Data Set Extended" on page 39.

The planning process assumes that a decision has been made to install MVS/DFP Version 3 Release 2 on an existing MVS system. The installation and migration tasks are more complex for non-MVS users; migration to MVS or MVS/XA from OS/VS1, DOS, or other operating systems is not discussed here.

The following terms are used throughout this book:

MVS/XA Refers to the OS/VS2 MVS base system with MVS/SP Version 2, MVS/XA DFP Version 1, Version 2, or MVS/DFP Version 3 (5665-284, 5665-XA2, or 5665-XA3), and appropriate device and programming support software installed.

MVS/ESA An MVS operating system environment comprising MVS/SP Version 3 and MVS/DFP Version 3.

DFSMS The complementary functions of MVS/DFP and other individual products of the Data Facility family which, together with RACF, provide a system-managed, administrator controlled storage environment.

Sysgen Refers to the generation of an MVS/XA or MVS/ESA operating system environment as described in *MVS/ESA System Generation*.

For a detailed discussion of the installation process for MVS/DFP and for the latest information on installation requirements, see the program directory.

Operating Systems

This book contains planning information for the installation of MVS/DFP Version 3 Release 2. MVS/DFP must be installed on an MVS/ESA system. To define a Source Control Data Set as part of the Storage Management Subsystem (SMS), MVS/XA DFP Version 2 Release 3 or higher level of DFP must be used.

Considerations for Multi-Host Environments

If SMS-managed DASD are configured as shared by multiple systems, then MVS/DFP Version 3 must be installed on all sharing systems. **Catalogs containing system-managed data set entries will be damaged if they are shared with systems that do not have MVS/DFP Version 3 installed.**

In a non-SMS environment, if DASD is configured as shared by multiple systems, then either MVS/DFP Version 3 or MVS/XA DFP Version 2 must be installed on all sharing systems. Toleration PTFs must be installed for all MVS/XA DFP Version 2 systems that share DASD with MVS/DFP Version 3 systems. See the MVS/DFP Version 3 Program Directory for information regarding toleration PTFs. The toleration PTFs are required because an integrated catalog facility catalog that is accessed by MVS/DFP Version 3 is modified and thus is incompatible with all previous releases of DFP. The toleration PTFs for non-SMS catalog use will only be provided for MVS/XA DFP Version 2. **Catalog damage will occur if the toleration PTFs are not installed**.

Devices

A working MVS/ESA operating system requires at least one processing unit, printer, console, and system input device, in addition to adequate DASD and tape devices for storage.

Figure 1 on page 5 summarizes the most common IBM I/O devices. For the latest information on device support, see *MVS/DFP Version 3 Release 2: Device Support Reference*.

Some devices may require a specific level of hardware maintenance to operate correctly on an MVS/ESA system. If you have a question about support for a device not listed, or want information about hardware maintenance levels, contact your IBM marketing representative.

MVS/ESA supports up to 4096 attached devices. The hardware configuration of your processors and I/O devices determines how many devices you can attach to your system.

DASD

2305 Fixed Head Storage Model 2
3330 Disk Storage Models 1, 2, 11
3333 Disk Storage and Control Models 1, 11
3340 Disk Storage
3344 Disk Storage
3350 Direct Access Storage
3375 Direct Access Storage
3380 Direct Access Storage

Storage Control Unit

3880 Storage Control Models 1, 2, 3, 4
3880 Storage Control Model 3 with
3380 AJ4/AK4 Attachment (feature 3005)
3990 Storage Control Models 1, 2

Cache Storage Control Unit

3880 Storage Control Models 11, 13, 21, 23
3880 Storage Control Model 23 with
3380 AJ4/AK4 Attachment (feature 3010)
3990 Storage Control Model 3

Console

2250 Display Unit Model 3
3251 Display Station
3277 Display Station Models 1, 2
3278 Display Station Models 1, 2, 2A, 3, 4
3279 Color Display Station Models 2A, 2B,
2C, 3A, 3B
5080 High Function Graphics System

Tape

3420 Magnetic Tape Unit Models 3, 4, 5,
6, 7, 8
3422 Magnetic Tape Subsystem
3424 Magnetic Tape Subsystem[1]
3430 Magnetic Tape Subsystem
3480 Magnetic Tape Subsystem[2]

Printer

1403 Printer Models 2, 7, N1
3203 Printer Model 5
3211 Printer
3262 Line Printer Model 5
3284 Printer Models 1, 2
3286 Printer Models 1, 2
3800 Printing Subsystem Model 1
3800 Printing Subsystem Model 3[3]
4245 Line Printer
4248 Printer

Other

2501 Card Reader Models B1, B2
2540 Card Read Punch Models 1, 2
3505 Card Reader
3525 Card Punch
3705 Communications Controller
3838 Array Processor
3848 Cryptographic Unit
3851 Mass Storage Facility
3890 Document Processor
| MVS/ESA Direct Attachment RPQ 8B6004 [4]
| 9246 Optical Library Unit RPQ 8B6001 [4]
| 9247 Optical Disk Drive RPQ 8B6003 [4]

Figure 1. Common IBM I/O Devices Supported by MVS/ESA

Note: Storage Management Subsystem data sets can only reside on DASD, specifically all 3330 models, 3340/3344, 3350, 3375, and 3380 (with and without cache storage control 3880 and 3990).

[1] The 3424 Magnetic Tape Unit is available only in Brazil, S.A.

[2] The 3480 Magnetic Tape Subsystem is supported both in full function and in 3420 compatibility modes.

[3] The 3800 Printing Subsystem Model 3 is supported both in full function (all points addressable) and in compatibility mode.

| [4] This feature or device is supported by the object access method.

Devices in Compatibility Mode

Most devices attached to the system operate in **full function** mode; that is, all features on the device are compatible with and usable on the operating system.

Some devices also operate in **compatibility** mode, which allows you to simulate the function of another device or model. Compatibility mode causes the device to function as a different device, ignoring some or all of the additional features the device might have. This allows you to migrate between devices with minimum impact on user programs.

The devices discussed below are available in either compatibility or full function mode on the MVS/ESA system.

3800 Printing Subsystem Model 3

The IBM 3800 Printing Subsystem Model 3 can be used in compatibility mode. It must be generated as a 3800 Model 3 or else it will not have the proper device support, including error recovery support.

The 3800 Model 3 can also be used in full function mode when generated as a 3800 Model 3; full function mode uses all-point addressability and provides access to the advanced printing capabilities of the Model 3. Full function mode for the 3800 Model 3 is sometimes called **page mode** or **all-points-addressable mode**.

To use the full capabilities of the 3800 Model 3, some programming support is required in addition to MVS/DFP. For more information on the functions, see *IBM 3800 Printing Subsystem Programmer's Guide*.

3480 Magnetic Tape Subsystem

The IBM 3480 Magnetic Tape Subsystem may be generated as a 3480 and used in full function mode under MVS/Data Facility Product Version 1 Release 1.2 , Version 2 and Version 3. Under these releases, the 3480 can also be used in 3420 compatibility mode and generated as a 3420C; this provides only the functions of the 3420, and requires no change to user programs.

The 3420C supports the following 3480 features:

- Tape write-immediate mode (OPTCD=W)
- Full error recovery (ERP) support
- Buffered write mode

The 3420C does not support these 3480 features:

- High-speed positioning (block locate)
- Message display feature (MSGDISP macro)
- Dynamic device reconfiguration (DDR)
- Data compaction

The 3480 in full function mode, and the 3480 in 3420 compatibility mode, cannot both be generated in the same sysgen on the same system. If you are generating a 3480 in full function mode, you cannot maintain compatibility mode for any other 3480s on the system. However, catalog entries for both the 3480 and the 3420C are synonymous, and both entries may exist in the same catalog. This allows you to share catalogs among systems or migrate to a full function

3480 without changing catalog entries. Each system will use the catalog entry appropriate to the 3480 device type that was generated on that system.

If you plan to use the 3480 in 3420 compatibility mode, you should define an esoteric name for the device (using the UNITNAME sysgen macro) and use this name in the UNIT parameter of the DD cards in your JCL. This will allow you to install the full function 3480 without changes to JCL.

For more information on the functions of the 3480 in full function or compatibility mode, see *IBM 3480 Magnetic Tape Subsystem Introduction*.

IBM Licensed Programs

MVS/DFP requires several licensed programs for the installation process. You can also install *optional* licensed programs in preparation for using MVS/DFP; this section discusses both the required and optional programs.

Programs Required to Install MVS/DFP Version 3 Release 2

The following licensed programs and their prerequisites are required to install MVS/DFP Version 3 Release 2. For information on installing these programs, see their respective program directories.

- A base MVS system of MVS/XA DFP (5664-XA2) or MVS/DFP Release 3 Version 1 (5665-XA3) and their prerequisites
- Assembler H Version 2 Release 1.0 (5668-962) with PTF[5]
- System Modification Program Extended Release 4 (5668-949)

MVS/DFP Compatibility with MVS/SP and JES

The system-managed storage functions of MVS/DFP 3.2 are designed to operate with MVS/SP Version 3. The minimum level of JES2 required to exploit the services of the Storage Management Subsystem is JES2 3.1.1[5]; the minimum level of JES3 required is JES3 3.1.2.

Program Requirements for MVS/DFP 3.2 Full Function Support

The licensed programs listed in Figure 2 or their functional equivalents are required for full function support in the MVS/ESA environment.

[5] See the MVS/DFP Program Directory and the RETAIN PSP Install information to identify a requisite PTF for this program.

Figure 2 (Page 1 of 2). Licensed Program Release Levels for Full Function Support

Licensed Program	Product No.	Rel.	Notes
MVS/DFP Version 3 with APAR OYxxxxxx	5665-XA3	2.0	New support in access method services for data collection using the DCOLLECT command
Customer Information Control System (CICS/MVS) Version 2	5740-XX1	1.0	For data control and terminal-oriented transaction programming.
Data Facility Data Set Services (DFDSS) Version 2	5665-327	5.0	New support for data movement (dump, restore, copy, move) between volumes on like or unlike DASD devices, space management, and conversion of data sets or volumes to Storage Management Subsystem control. DFDSS 2.5, with MVS/DFP 3.2 can perform these functions against PDSEs. DFDSS can also convert partitioned data sets to and from PDSE format.
Data Facility Hierarchical Storage Manager (DFHSM) Version 2	5665-329	5.0	New support for space management, data set migration and backup, and data collection through Storage Management Subsystem classes and groups
Data Facility Sort (DFSORT)	5740-SM1	11.0	For sorting, merging, and copying files.
Device Support Facilities (ICKDSF)	5655-257	11.0	New support for initialization of system-managed volumes.
Environmental Record Editing and Printing (EREP) Version 3	5658-260	3.2	For error analysis and recording, and for the 3380 Models AD4, BD4, AE4, BE4, AJ4, AK4, BJ4, BK4, and CJ2.
Information Management System/Virtual Storage (IMS/VS) Version 1	5740-XX2	3.0	Data base system for data sharing; the compatibility feature is required for MVS/ESA
Information Management System/Virtual Storage (IMS/VS) Version 2	5665-332	2.0	Data base system for data sharing.
Interactive System Productivity Facility (ISPF) Version 3	5685-054	2	Dialog manager for interactive applications; required for ISMF with MVS/DFP 3.2.
Interactive System Productivity Facility/Program Development Facility (ISPF/PDF) Version 3	5665-504	2	New support for edit and browse features of ISMF and DFSMS functions.
Print Services Facility	5665-275	1.0	Required for full function 3800 Model 3.

Figure 2 (Page 2 of 2). Licensed Program Release Levels for Full Function Support

Licensed Program	Product No.	Rel.	Notes
Programmed Cryptographic Facility	5740-XY5	1.0	For data encryption using a programmed algorithm.
Resource Access Control Facility (RACF) Version 1	5740-XXH	8.1	New support for authorization and protection of data and system resources under DFSMS.
Resource Measurement Facility (RMF) Version 4	5685-029	1.0	New support for I/O device activity reporting by storage group.
TSO Extensions (TSO/E) Version 2	5685-025	1.0[6]	New support for creation of data sets using new allocation parameters, and display of DFSMS information.

Programs Not Supported by MVS/DFP

There are several programs that are not supported by MVS/DFP. These programs, and their suggested alternatives, are listed in the table below.

Old Program	Function	Alternative
Analysis Program-1 (AP-1)	Analyze DASD errors	Device Support Facilities (ICKDSF)
Direct Access Storage Dump Restore (DRWDASDR)	A licensed program used to dump and restore disks	Data Facility Data Set Services (DFDSS) Note that neither dump format produced by DRWDASDR can be restored by DFDSS.
IBCDASDI utility	Initialize DASD	Device Support Facilities (ICKDSF)
IBCDMPRS utility	Dump and restore disks in a stand-alone environment	Data Facility Data Set Services (DFDSS): restore functions only
IEHDASDR utility	Initialize disks and dump or restore disks in a VS1 or VS2 MVS environment	Device Support Facilities: disk initialization Data Facility Data Set Services (DFDSS): dump/restore
IEHATLAS utility	Assign alternative tracks	Device Support Facilities (ICKDSF)

[6] Requires this release with the ESA feature.

Chapter 2. Storage and Installation Requirements for MVS/ESA

The MVS/ESA operating system requires storage for MVS/DFP, for MVS/SP JES2 or JES3, for all licensed programs installed on the system, and for the various distribution and target libraries supported by each product. Storage requirements vary depending upon the products installed on your system and the DASD you choose to store on. Consult the general information and/or installation manuals for your products, and the program directories for MVS/DFP and MVS/SP for detailed information on storage requirements.

The procedure for generating an MVS/ESA system may vary depending upon the release level of MVS/DFP you are installing, and the types of devices you plan to generate on your system. A discussion of system generation requirements can be found in the MVS/DFP Program Directory. More details on the system generation process will be found in *MVS/ESA System Generation*.

MVS/DFP Version 3

Storage Requirements

Detailed information about storage requirements for MVS/DFP Version 3 will be found in the Program Directory.

Installation Requirements

Assembler H Version 2, SMP/E, and the MVS/DFP linkage editor (as provided with MVS/DFP, MVS/XA DFP, or MVS/370 DFP) are required to install MVS/DFP Version 3.

A sysgen can be performed on a system with MVS/SP JES2 Version 3 or JES3 Version 3 distribution libraries. The product and its prerequisites are required for execution.

The MVS/DFP Program Directory provides two complete installation scenarios. In each case, it is assumed that the installation will take place on copies of existing target, DLIB and SMP/E data sets. Using SMP/E, you can:

- Install on an existing MVS/SP 3.1.1 System

  This procedure assumes that MVS/DFP 3.2 is being applied to an existing MVS/SP Version 3 target system. A sysgen is not necessary for this process. The SMP/E installation procedure may be summarized as follows:

  1. RECEIVE MVS/DFP and PTFs into temporary libraries.
  2. Using the APPLY function, install MVS/DFP on the target system and execute the MVS configuration program (MVSCP). You may now IPL and run the system.
  3. ACCEPT the product into distribution libraries.

- Install on an existing MVS/SP Version 2 system

This procedure assumes that MVS/DFP 3.2 is being applied to an existing MVS/SP Version 2 target system and requires a Stage I sysgen. The SMP/E installation procedure may be summarized as follows:

1. RECEIVE MVS/DFP and PTFs into temporary libraries.
2. Update your existing distribution libraries for MVS/DFP using the ACCEPT function of SMP/E.
3. Execute a Stage I sysgen with GENTYPE=ALL.
4. Using the JCLIN and APPLY functions of SMP/E, update your system libraries. Then, execute the MVS configuration program (MVSCP) to update your configuration, adding new devices to the system at this time.

For details on planning and performing a complete sysgen, see *MVS/ESA System Generation*. For information about how to use the MVS configuration program, see *MVS/ESA MVS Configuration Program Guide and Reference*.

MVS/SP JES2 or JES3

Information on storage and sysgen requirements for MVS/SP JES2 or JES3 is contained in the program directory for MVS/SP JES2 or MVS/SP JES3.

Corequisite Licensed Programs

The following section lists additional programs that are required to install and operate MVS/DFP.

System Modification Program Extended

The System Modification Program Extended (SMP/E) is required to incorporate new products and service into your system libraries.

SMP/E must be installed on the generating system before the MVS/ESA system can be installed. In addition, modifications to the new MVS system should be made in the SMP/E installation format, in order to simplify future maintenance. For more information on SMP/E, see *System Modification Program (SMP) General Information* .

Storage is required for SMP/E Release 4, as well as for the SMP/E data sets required for installation of MVS/DFP. Storage estimates for the SMP/E product are provided in the SMP/E Program Directory.

Storage requirements for SMP/E data sets used in MVS/DFP installation process are discussed in the MVS/DFP Program Directory.

Note that installation of MVS/DFP requires a large amount of space in the SMP/E data sets. To ensure that sufficient space is available, you should plan to perform a space analysis of your SMP data sets prior to installation and between installation steps.

Because of the large number of macros distributed with MVS/DFP, you may want to use a temporary SMPMTS data set during MVS/DFP installation; it can then be deleted after installation is complete. For more information on using a temporary SMPMTS data set, see the MVS/DFP Program Directory.

Device Support Facilities

The Device Support Facilities system control program requires approximately 512K bytes of storage. See the Device Support Facilities Program Directory for details on storage requirements for Device Support Facilities.

Before sysgen, you must initialize the DASD volumes that are to contain the new system data sets. DASD volume initialization, as performed by Device Support Facilities, includes the following:

- Varying the volumes offline
- Executing the Device Support Facilities commands INIT, BUILDIX, and REFORMAT to write home addresses, volume labels, VTOCs (with or without an index), and IPL text on the volumes
- Mounting the volumes.

Device Support Facilities User's Guide and Reference describes how to initialize DASD volumes under OS/VS2 MVS, MVS/XA, and MVS/ESA.

Data Facility Data Set Services

The Data Facility Data Set Services licensed program requires a minimum of 430K bytes of virtual storage. The exact amount of virtual storage required depends upon the operation performed with DFDSS, and ranges from approximately 430K to 900K bytes. For details on how to estimate the amount of storage a specific DFDSS operation will require, see "Storage Requirements—System DFDSS" in *Data Facility Data Set Services: Reference*.

Chapter 3. Interactive Storage Management Facility

The Interactive Storage Management Facility (ISMF) helps you manage data and storage interactively. It is designed to use the functions provided by Resource Access Control Facility (RACF), Device Support Facilities (ICKDSF), and the Data Facility family of products to perform a variety of data and storage management tasks.

As an ISPF application, the ISMF structure is modeled after ISPF. ISMF is menu-driven with fast paths for many of its functions and can be customized to fit the needs of the users within an organization. Functions can be restricted using the RACF program control feature. ISMF uses the ISPF log to record errors and successful task completion. For more information on tailoring ISMF to your needs, refer to *MVS/DFP Version 3 Release 2: Customization*.

Other Products Needed for ISMF

To use ISMF, you must have the following products installed on your system, at the given release level or higher:

- Interactive System Productivity Facility (ISPF) Version 2 Release 3
- Time Sharing Option Extensions (TSO/E) Version 1 Release 2

To make full use of ISMF, you need:

- Interactive System Productivity Facility/Program Development Facility (ISPF/PDF) Version 3 Release 2
- Time Sharing Option Extensions Version 2 Release 1
- Data Facility Hierarchical Storage Manager (DFHSM) Version 2 Release 5
- Data Facility Data Set Services (DFDSS) Version 2 Release 5
- Resource Access Control Facility Version 1 Release 8.1
- DFSORT Release 11
- Device Support Facility Release 11

Data Sets Used by ISMF

Before you can begin to plan for ISMF, you need to understand how to use the following data sets:

- Temporary data sets (TLIBs)
- Distribution data sets (DLIBs)
- Execution data sets

For additional information on planning for installation and execution of ISMF, see *Data Facility Data Set Services/Interactive Storage Management Facility: Installation Planning Guide* and the DFHSM Program Directory.

Temporary Data Sets

ISMF is received on tape in SMP RELFILE format. SMP RECEIVE processing takes the RELFILEs off the tape and puts them in temporary data sets (TLIBs). SMP RECEIVE processing automatically allocates the space for the TLIBs and names the data sets for you. If you choose, you can increase the size of the data set or modify the data set name by changing the prefix. For more informa-

tion on changing the prefix or allocating parameters, refer to the MVS/DFP Program Directory. The TLIBs location is specified along with the volume information.

Distribution Data Sets

Distribution data sets are used for maintenance of ISMF. Figure 3 lists the DLIBs that are used during SMP ACCEPT processing. You can defer the allocation of these data sets until that time.

Figure 3. DLIBs Used during SMP ACCEPT Processing

Distribution Data Set Name	Distribution Library	DDNAME
SYS1.ADGTLLIB	ISMF load module library	ADGTLLIB
SYS1.ADGTPLIB	ISMF panel library	ADGTPLIB
SYS1.ADGTMLIB	ISMF message library	ADGTMLIB
SYS1.ADGTTLIB	ISMF table library	ADGTTLIB
SYS1.AGENLIB	MVS sysgen library	AGENLIB
SYS1.ADGTSLIB	ISMF skeleton library	ADGTSLIB
SYS1.ADGTCLIB	ISMF CLIST library	ADGTCLIB

SMP ACCEPT processing loads the temporary data sets to the following distribution libraries:

- Load module library contains the executable load modules for ISMF.
- Panel library contains data entry panels, online help panels, and confirmation panels.
- Message library contains the text for short and long messages.
- Table library contains the ISMF command tables and the application profile pool tables.
- Sysgen library contains the sysgen macros for ISMF.
- Skeleton library contains the ISMF skeleton files.
- CLIST library contains the ISMF CLISTs.

For more information, refer to *MVS/ESA System Generation, Data Facility Data Set Services/Interactive Storage Management Facility: Installation Planning Guide*, and the DFHSM Program Directory.

The program directory distributed with MVS/DFP 3.2 contains the most accurate and current information on requirements for the various libraries. You may want to allocate more than the required amount of space to allow for future expansion.

Where to Put the DLIBs

You need to consider some important issues before deciding where to put the distribution libraries. These include cost, performance, and recovery.

Cost: The DLIBs are used for maintenance purposes only. Therefore, you should put them on a direct access storage device that is used for long-term storage. The main concern with storing the DLIBs is to ensure that they can be recovered easily.

Performance: Performance is not a major concern for DLIBs. Rather, it is important that they have long-term integrity because they are used only for maintenance and backup.

Recovery: It is recommended that you put the new DLIBs with your other DLIBs so you can apply your existing backup and recovery procedures.

Execution Data Sets

Execution data sets, or target libraries, are required to execute ISMF. SMP APPLY processing uses the data sets listed in Figure 4.

Figure 4. Execution Data Sets Used during SMP APPLY Processing

Execution Data Set Name	Execution Library	DDNAME
SYS1.DGTLLIB	ISMF load module library	DGTLLIB
SYS1.DGTPLIB	ISMF panel library	DGTPLIB
SYS1.DGTMLIB	ISMF message library	DGTMLIB
SYS1.DGTTLIB	ISMF table library	DGTTLIB
SYS1.DGTSLIB	ISMF skeleton library	DGTSLIB
SYS1.DGTCLIB	ISMF CLIST library	DGTCLIB

How Much Space to Allocate for Execution Libraries

Figure 5 on page 18 shows the sample allocation parameters for the execution libraries that you need to allocate. This includes record format, logical record length, block size, total space required (shown as equivalent number of IBM 3380 tracks), and the number of partitioned data set directory blocks required.

Note: The figures provided are for planning purposes only. The MVS/DFP Program Directory distributed with the product contains the most accurate and current information on requirements for the various libraries.

Figure 5. Sample Allocation Parameters for Required Execution Libraries

Execution Data Set Name	RECFM	LRECL	BLKSIZE	3380 Tracks	PDS Directory Blocks
SYS1.DGTLLIB	U	—	23400	120	81
SYS1.DGTPLIB	FB	80	3120	417	187
SYS1.DGTMLIB	FB	80	3120	28	16
SYS1.DGTTLIB	FB	80	3120	3	2
SYS1.DGTSLIB	FB	80	3120	4	1
SYS1.DGTCLIB	FB	80	3120	4	1

Where to Put the Execution Libraries

You need to consider some important issues before deciding where to put the execution libraries. These include cost, performance, and recovery.

Cost: The execution data sets are used for execution purposes only. Therefore, you may want to put them on a direct access storage device that is used for high performance and quick recovery. However, performance should be weighed against the amount of usage you expect for the execution data sets.

Performance: Performance is the primary concern in placing execution data sets. If you choose to make the load modules part of the link pack area, you will have better performance. However, you will not be able to use RACF Version 1, Release 8.1 to control authorization of ISMF functions. For more information on RACF 1.8.1, see *Resource Access Control Facility (RACF) General Information*.

Recovery: It is recommended that you put the new execution data sets in a place where your existing backup and recovery procedures will apply.

Making ISMF Available to TSO Users

Before TSO users can invoke ISMF, they must be able to allocate the execution data sets. To make these execution libraries available to them, you must either modify an existing TSO LOGON procedure, create a new TSO LOGON procedure, or set up a CLIST that allocates these data sets. For information on how to accomplish each of these tasks, see *MVS/ESA System Generation*.

ISPF Table Libraries

In addition to the execution data sets, you should ensure that each ISMF user has a personal partitioned data set (PDS) available as a table output library. The ISMF SAVE command stores the saved list in this PDS using ISPF table services. This data set must be allocated with the DDNAME of ISPTABL; only one PDS may be used in this allocation because concatenated PDSs are not allowed on output. The data set name you choose might be of this form:

```
DSN=&userid.ISMF.DGTTABL
```

Be sure also to place this data set name in the concatenation for the ISPF table input library (ISPTLIB) so that the output of the SAVE command is available for subsequent use.

The DD statements for the table output library would then look like:

```
ISPTABL  DD DSN=&userid.ISMF.DGTTABL,DISP=OLD
```

For the table input libraries, they would look like:

```
ISPTLIB  DD DSN=&userid.ISMF.DGTTABL,DISP=SHR
         DD DSN=SYS1.DGTTLIB,DISP=SHR
         . . .
```

The table output library, *&userid*.ISMF.DGTTABL, has a fixed block record format and a record length of 80. The block size must be a multiple of 80 and be compatible with the other data sets in the concatenation.

Placement Considerations for the Load Modules

When you have completed sysgen processing, you will have several choices of where to place the load module libraries. The choice you make will affect the performance of your system. For example, there are maintenance considerations if the load modules exist anywhere other than SYS1.DGTLLIB. In this case, you must notify SMP of the location of these modules. For more information on performance issues, see the preceding section, "Where to Put the Execution Libraries" on page 18.

You can choose from one of the following:

1. Leave SYS1.DGTLLIB where it is and add the data set name to the LOGON JCL, or to a new or existing CLIST for use with TSO.
2. Leave SYS1.DGTLLIB where it is and add the data set name to the link library list (LNKLSTxx) or to the LPA library list (LPALSTxx) of the SYS1.PARMLIB. For information on setting up the link library list or the LPA library list, see *MVS/ESA System Programming Library: Initialization and Tuning*.
3. Make the load modules a part of either the system link library or the link pack area.

If you are not using SYS1.DGTLLIB at execution time and you have backed up and copied all the load modules, you can delete the SYS1.DGTLLIB data set.

For more information on placement, see *MVS/ESA System Generation*, *Data Facility Data Set Services/Interactive Storage Management Facility: Installation Planning Guide*, the DFHSM Program Directory, and *Data Facility Hierarchical Storage Manager: Version 2 Release 5 Installation and Customization Guide*.

Authorization Considerations

You can use RACF 1.8.1 to protect and report on ISMF. Using the program control feature, you can set up authorization levels for ISMF function: either all of ISMF, or individual line operators and commands.

Because program control allows you to determine who can execute which ISMF function, you can use it to set up an authorization scheme that applies to both individual users and user groups. If you plan to use RACF 1.8.1 to restrict ISMF functions, you must make the load module library a part of the system link library.

In addition to authorizing ISMF functions, you can use standard RACF authorization checking to limit access to individual data sets, volumes, or catalogs. Used in conjunction with program control, authorization checking will ensure that appropriate ISMF data and function are accessible to the users when needed. For detailed information on how to restrict ISMF functions, see *MVS/DFP Version 3 Release 2: Interactive Storage Management Facility User's Guide*.

Chapter 4. Publications

The MVS/DFP library contains detailed information on the subjects discussed in this book. The tables below are organized by general tasks. For each manual, the table shows the title, order number, and a brief description of the book's contents.

The MVS/DFP Version 3 Release 2 library is based on the library previously published for MVS/DFP Version 3 Release 1, MVS/XA DFP Version 2, MVS/XA DFP Version 1, and for OS/VS2 MVS. For a summary of changes made to these books for MVS/DFP Version 3 Release 2, see the introduction in the publication *MVS/DFP Version 3 Release 2: Guide and Master Index*.

Manuals for MVS/DFP are shipped to MVS/DFP Version 3.2 license holders in a package from the IBM Distribution Center. All publications required to use MVS/DFP Version 3 Release 2 are shipped with the MVS/DFP program tapes and program directory as part of the distribution package. Additional copies of all manuals can be ordered through your IBM representative.

Note: Publications supporting MVS/DFP Version 3.2 may be ordered using the order numbers listed in this chapter. These manuals can be ordered from the IBM Distribution Center or from your local branch office when the MVS/DFP Version 3 Release 2 licensed program is available. *MVS/DFP Version 3 Release 2: Diagnosis Guide* and *MVS/DFP Version 3 Release 2: Diagnosis Reference* contain information on diagnosing DFP-related problems. They also contain return and reason code information useful in diagnosing application programs and JCL problems and errors.

MVS/DFP Version 3 Release 2 Publications

MVS/DFP Publication	Order No.	Description of Contents
Evaluation and Information Retrieval		
MVS/DFP Version 3 Release 2: General Information	GC26-4552	Overview of MVS/DFP and its requirements
MVS/DFP Version 3 Release 2: Guide and Master Index	GC26-4553	Guide and index to subjects in MVS/DFP manuals
MVS/DFP Version 3 Release 2: Licensed Program Specifications	GC26-4554	Warranty for MVS/DFP
Planning		
MVS/DFP Version 3 Release 2: Planning Guide	SC26-4561	Planning for installation and DFSMS
Customization		
MVS/DFP Version 3 Release 2: Customization	SC26-4560	Information pertinent to enhancing or extending MVS/DFP
Administration: Program Management		
MVS/DFP Version 3 Release 2: Checkpoint/Restart	SC26-4556	Taking checkpoints and restarting programs
MVS/DFP Version 3 Release 2: Linkage Editor and Loader	SC26-4564	Link-editing and loading programs
Administration: Device Management		
MVS/DFP Version 3 Release 2: Device Support Reference	SC26-4674	Current DFP device information
MVS/DFP Version 3 Release 2: Using Magnetic Tape Labels and File Structure	SC26-4565	Using magnetic tape labels
MVS/DFP Version 3 Release 2: Object Access Method Application Programmer's Reference	SC35-0119	Provides reference information about the OAM interface used by applications to manipulate objects.
MVS/DFP Version 3 Release 2: Object Access Method Planning, Installation, and Storage Administration Guide	SC35-0120	Introduces OAM and provides planning, installation, operation, and storage administration information.
Administration: Data Management		
MVS/DFP Version 3 Release 2: Access Method Services for the Integrated Catalog Facility	SC26-4562	Using access method services commands for integrated catalog facility catalogs
MVS/DFP Version 3 Release 2: Access Method Services for VSAM Catalogs	SC26-4570	Using access method services commands for VSAM catalogs
MVS/DFP Version 3 Release 2: Macro Instructions for Non-VSAM Data Sets	SC26-4558	Using data management macro instructions for QSAM, BSAM, BDAM, BPAM, and ISAM

MVS/DFP Publication	Order No.	Description of Contents
MVS/DFP Version 3 Release 2: Macro Instructions for VSAM Data Sets	SC26-4569	Using VSAM macro instructions for VSAM data sets
MVS/DFP Version 3 Release 2: Managing Catalogs	SC26-4555	Using integrated catalog facility catalogs, VSAM catalogs, and OS CVOLs
MVS/DFP Version 3 Release 2: Managing Non-VSAM Data Sets	SC26-4557	Using QSAM, BSAM, BDAM, BPAM, and ISAM to manage data
MVS/DFP Version 3 Release 2: Managing VSAM Data Sets	SC26-4568	Using VSAM to manage VSAM data sets
MVS/DFP Version 3 Release 2: Summary of Access Method Services for the Integrated Catalog Facility	SX26-3776	Summary of access method services commands for integrated catalog facility catalogs
MVS/DFP Version 3 Release 2: System Programming Reference	SC26-4567	Extending MVS/DFP data management capabilities
MVS/DFP Version 3 Release 2: Utilities	SC26-4559	Using MVS/DFP utility programs for program, device, and data management
Administration: Storage Management		
MVS/DFP Version 3 Release 2: Interactive Storage Management Facility User's Guide	SC26-4563	Using the Interactive Storage Management Facility to define and manage data and processing resources to meet system-managed storage goals
MVS/DFP Version 3 Release 2: Storage Administration Reference	SC26-4566	Describes storage administrator applications
Diagnosis (Restricted Materials)		
MVS/DFP Version 3 Release 2: Diagnosis Guide	LY27-9570	Building a keyword string to search any MVS/DFP component for known failures
MVS/DFP Version 3 Release 2: Diagnosis Reference	LY27-9571	MVS/DFP diagnostic tools and aids that support the tasks described in *MVS/DFP Version 3 Release 2: Diagnosis Guide*

Microfiche (Restricted Materials)[7]	Order No.	Description of Contents
MVS/DFP Version 3 Release 2: Module Listings	LJB6-0196	Information on MVS/DFP modules

[7] No microfiche is available for components that are object-code only. See Appendix B for a list of those components.

Related Publications

The following publications are not part of the MVS/DFP library, but provide information on MVS/ESA and related products.

MVS/SP Version 3

MVS/ESA Publication	Order No.	Description of Contents
MVS/ESA Application Development Guide	GC28-1821	Writing programs that use MVS services available to all programs
MVS/ESA Conversion Notebook for System Product Version 3, Volumes 1 and 2	GC28-1567 and GC28-1568	Migrating to a new release
MVS/ESA General Information for System Product Version 3	GC28-1359	Overview of MVS/SP Version 3 and its requirements
MVS/ESA JCL User's Guide	GC28-1830	Guidance in using MVS/ESA job control language
MVS/ESA JCL Reference	GC28-1829	Reference information for MVS/ESA job control language
MVS/ESA Library Guide for System Product Version 3	GC28-1563	Using the MVS library and understanding how the books interrelate
MVS/ESA Message Library: System Messages, Volumes 1 and 2	GC28-1812 and GC28-1813	All MVS/ESA messages, including MVS/DFP messages
MVS/ESA MVS Configuration Program Guide and Reference	GC28-1817	Describes how to use the MVS configuration program to define devices to MVS/ESA
MVS/ESA Operations: System Commands	GC28-1826	Commands to control devices
MVS/ESA System Programming Library: Application Development Guide	GC28-1852	Writing Assembler language programs that use MVS services restricted to programs with special authority
MVS/ESA System Programming Library: Application Development—31-Bit Addressing	GC28-1820	Using 31-bit addressing in programs
MVS/ESA System Generation	GC28-1825	Performing a sysgen

Related Products

Publication	Order No.	Description of Contents
Assembler H Version 2 Application Programming: Language Reference	SC26-4037	Using Assembler H commands to write application programs
Assembler H Version 2 General Information	GC26-4035	Overview of Assembler H V2 and its requirements
DASD Migration Aid: General Information	GC26-3972	Using DASD Migration Aid to migrate between DASD devices
Data Facility Data Set Services: General Information	GC26-4123	Overview of DFDSS and its requirements
Data Facility Data Set Services/Interactive Storage Management Facility: Installation Planning Guide	SC26-4129	Planning information about ISMF data sets
Data Facility Hierarchical Storage Manager: Version 2 Release 5 Installation and Customization Guide	SH35-0084	Load module placement information
Data Facility Hierarchical Storage Manager: Version 2 Release 5 General Information	GC35-0092	Overview of DFHSM Version 2 and its requirements
Device Support Facilities User's Guide and Reference	GC35-0033	Initializing DASD volumes, recovering from track errors
Data Facility Hierarchical Storage Manager: Version 2 Release 5 User's Guide	SH35-0093	Using DFHSM to migrate or recall
DFSORT General Information	GC33-4033	Overview of DFSORT and its requirements
EREP User's Guide and Reference	GC28-1378	Using EREP to record, edit, and print error records
ISPF and ISPF/PDF V2 R2 General Information MVS	GC34-4041	Overview of ISPF, ISPF/PDF, and their requirements
Resource Access Control Facility (RACF) General Information	GC28-0722	Overview of RACF and its requirements
RMF General Information	GC28-1028	Overview of RMF and its requirements
System Modification Program (SMP) General Information	GC28-1106	Overview of SMP/E and its requirements

Storage Management Library

The Storage Management Library (SML) provides guidance in establishing storage management practices, and in moving toward system-managed storage.

SML is designed to work with the libraries that document the various storage-related hardware and software products. The SML does not replace these other publications, but provides a framework for determining when information in another library is relevant to a particular task.

MVS Publication	Order No.	Description of Contents
MVS Storage Management Library: Configuring Storage Subsystems	SC26-4409	Evaluating current hardware configurations, developing capacity plans, and configuring hardware for desired performance, availability, and space utilization
MVS/ESA Storage Management Library: Focus on Storage Management	GC26-4655	Introduction to efficient storage management
MVS/ESA Storage Management Library: Leading an Effective Storage Administration Group	SC26-4658	Setting up a storage administration group and planning for system-managed storage
MVS/ESA Storage Management Library: Managing Data Sets and Objects	SC26-4657	Communicating with user groups, managing active and inactive data sets, managing catalogs and control data sets, establishing and enforcing data set policies and providing data set security
MVS/ESA Storage Management Library: Managing Storage Pools	SC26-4656	Determining storage requirements for groups of data sets, designing storage pools making the transition to pooled storage, maintaining and monitoring the effectiveness of storage pools
MVS/ESA Storage Management Library: Storage Management Reader's Guide	GC26-4654	Listing of titles, order numbers, and brief descriptions of publications in MVS/DFP as well as in other licensed programs pertinent to storage management
MVS/ESA Storage Management Library: Storage Management Subsystem Migration Planning Guide	SC26-4659	Describes migration to Storage Management Subsystem and coexistence of Storage Management Subsystem-managed storage with non-Storage Management Subsystem-managed storage

The Storage Management Library may be ordered as a complete package with order number SBOF-3126.

Storage Subsystem Library

The Storage Subsystem Library provides comprehensive hardware and software information about storage management for DASD and storage control units (with or without cache). Storage Subsystem Library manuals are shipped to all customers who order that device (and may also be ordered separately). The following lists some of the manuals in the Storage Subsystem Library. For other manuals, see your IBM representative or your local IBM branch office.

Publication	Order No.	Description of Contents
Cache Device Administration	GC35-0101	Using a cache device under MVS
IBM 3380 Direct Access Storage Direct Channel Attach Model CJ2 Introduction and Reference	GC26-4497	Introduction and reference
IBM 3380 Direct Access Storage Introduction	GC26-4491	Overview of all IBM 3380 Models
IBM 3990 Storage Control Introduction	GA32-0098	Introduction to 3990
IBM 3990 Storage Control Planning, Installation, and Storage Administration Guide	GA32-0100	Planning, installing, and operating the 3990
Storage Subsystem Library Master Bibliography, Index, and Glossary	GC26-4496	Locating storage subsystem information
Using the IBM 3380 Direct Access Storage in an MVS Environment	GC26-4492	Planning, installing, and operating 3380s in MVS

Part 2. Planning for Storage Management Subsystem Data

Chapter 5. Storage Management Subsystem Configurations

This chapter addresses several areas to consider when converting to a Storage Management Subsystem (SMS) environment. Using this information, you will be able to plan an SMS configuration tailored to your site's storage management needs. Through effective planning, you can make the best use of SMS to improve availability of data, performance, use of space, device installation, and system-wide function as you move toward a storage environment that is managed by the system and controlled by a storage administrator.

The following manuals contain information to help you implement SMS:

MVS/DFP Version 3 Release 2: General Information provides a high-level overview of SMS components and their value.

MVS/DFP Version 3 Release 2: Interactive Storage Management Facility User's Guide describes the storage management tasks an end user can perform under SMS.

MVS/DFP Version 3 Release 2: Managing Catalogs addresses SMS cataloging considerations.

MVS/DFP Version 3 Release 2: Managing Non-VSAM Data Sets addresses SMS considerations for non-VSAM data sets.

MVS/DFP Version 3 Release 2: Managing VSAM Data Sets addresses SMS considerations for VSAM data sets.

MVS/DFP Version 3 Release 2: Storage Administration Reference describes the components and function of SMS and tells how to use ISMF to implement a configuration.

MVS/ESA SML Storage Management Library provides detailed information about migrating to and using SMS.

Integrated Catalog Facility Catalogs and SMS

All data sets managed by the Storage Management Subsystem must be cataloged, and only integrated catalog facility catalogs are supported for SMS-managed data sets. Catalogs in OS CVOL and VSAM may not be managed by SMS.

If your current catalog environment is not positioned for SMS (you have OS CVOLs or VSAM user catalogs), migration to SMS may take longer.

A few simple guidelines should help you prepare your catalog environment for SMS:

- Discourage the use of JOBCAT and STEPCAT statements (except as required for certain catalog management functions); they are not allowed for SMS-managed data sets.
- Protect catalogs of SMS-managed data sets with RACF rather than through password protection (passwords are ignored for SMS-managed data sets).

- Centralize the responsibility for the control of your installation's configuration of catalogs. This job may be appropriate for your storage administrator.

For the details of converting from OS CVOLS and information pertinent to integrated catalog facility catalogs, see *MVS/DFP Version 3 Release 2: Managing Catalogs*.

SMS and the Indexed VTOC

An indexed volume table of contents (VTOC) is a combination of a VTOC in OS format and an index for direct access into that VTOC. The SMS environment requires indexed VTOC volumes, so as you plan to convert VTOCs to indexed VTOCs, take into consideration which volumes you want to be managed by SMS.

Further information about the VTOC and its index can be found in *MVS/DFP Version 3 Release 2: System Programming Reference*.

Developing an SMS Implementation Plan

Because converting to an SMS environment is an important move, it is necessary to build an appropriate configuration for your installation. Spend some time prior to implementation to plan and develop an SMS environment that will best meet your storage management needs. A starter set (a simple model configuration) is provided with MVS/DFP 3.2 and may help you begin this process.

It is important to note that just as SMS configurations will differ from site to site, the planning needs for different installations vary as well. Some installations moving to an SMS environment may already be in position to exploit the full potential of SMS—they may have installed the Data Facility family of products and their data may be fully pooled. Other installations may not be in the same position and their move to system managed/administrator controlled storage will be more gradual.

The following steps will help you prepare for SMS implementation. Major planning items are listed as tasks, and more specific planning information is listed under the Subtask heading. The manuals that are most appropriate for the corresponding tasks are listed under the heading, References.

Planning Tasks	Subtasks	References
Understand product requirements and system considerations	Determine appropriate product prerequisites and corequisites	*MVS/DFP Version 3 Release 2: General Information*
	Understand multi-host considerations for SMS and non-SMS coexistence	*MVS/ESA Storage Management Library: Storage Management Subsystem Migration Planning Guide*
	Understand JES3 considerations	*MVS/ESA JES3 Introduction*
Establish implementation responsibilities	Establish project team responsibilities for: Storage administration Software and hardware planning User group interaction	*MVS/ESA Storage Management Library: Leading an Effective Storage Administration Group*
	Determine prerequisites (for example, data set naming standards and other installation policies)	*MVS/ESA Storage Management Library: Storage Management Subsystem Migration Planning Guide* *MVS/ESA Storage Management Library: Managing Data Sets and Objects* *MVS/ESA Storage Management Library: Managing Storage Pools*
Determine education needs for users	Inform users of the features of SMS	*MVS/DFP Version 3 Release 2: General Information* *MVS/ESA Storage Management Library: Storage Management Subsystem Migration Planning Guide*
	Inform them of prerequisites, if any	*MVS/ESA Storage Management Library: Storage Management Subsystem Migration Planning Guide* *MVS/ESA Storage Management Library: Managing Data Sets and Objects*

Planning Tasks	Subtasks	References
Determine data set requirements	Determine which data sets will be SMS managed and when	*MVS/DFP Version 3 Release 2: Storage Administration Reference* *MVS/ESA Storage Management Library: Storage Management Subsystem Migration Planning Guide*
	Understand requirements for performance, availability, and security of SMS-managed user data	*MVS/ESA Storage Management Library: Storage Management Subsystem Migration Planning Guide* *MVS/ESA Storage Management Library: Managing Data Sets and Objects* *MVS/ESA Storage Management Library: Managing Storage Pools* *MVS Storage Management Library: Configuring Storage Subsystems* *MVS/ESA SML Storage Management Library*
	Determine catalog requirements	*MVS/DFP Version 3 Release 2: Managing Catalogs* *MVS/DFP Version 3 Release 2: Managing VSAM Data Sets*
	Determine which PDSs to convert to PDSEs	*MVS/DFP Version 3 Release 2: Managing Non-VSAM Data Sets* *MVS/ESA Storage Management Library: Managing Data Sets and Objects*
	Determine use of passwords (SMS does not support them for SMS-managed data sets)	*MVS/ESA SML: Managing Data Sets and Objects*
	Evaluate JCL considerations Although no changes are required for SMS conversion, plan for strategic changes (for example, remove the UNIT parameter)	*MVS/ESA JCL User's Guide* *MVS/ESA Storage Management Library: Storage Management Subsystem Migration Planning Guide*

Planning Tasks	Subtasks	References
Determine data set requirements (continued)	Plan for coexistence of SMS and non-SMS data	*MVS/ESA Storage Management Library: Storage Management Subsystem Migration Planning Guide*
	Consider use of optical devices	*MVS/ESA Storage Management Library: Storage Management Subsystem Migration Planning Guide* *MVS/ESA Storage Management Library: Managing Storage Pools* *MVS/DFP Version 3 Release 2: Storage Administration Reference*
Set up storage groups, aggregate groups, storage classes, management classes, and data classes	Determine the volumes to be contained in each storage group Consider pooling requirements	*MVS/ESA Storage Management Library: Storage Management Subsystem Migration Planning Guide* *MVS/ESA Storage Management Library: Managing Storage Pools*
	Determine how many aggregate groups will be required Evaluate which data sets to back up and recover for disaster recovery Determine a method of recovery	*MVS/DFP Version 3 Release 2: Storage Administration Reference*
	Determine storage classes Consider performance and availability requirements	*MVS/ESA Storage Management Library: Storage Management Subsystem Migration Planning Guide* *MVS/ESA Storage Management Library: Managing Data Sets and Objects* *MVS/ESA Storage Management Library: Managing Storage Pools* *MVS/DFP Version 3 Release 2: Storage Administration Reference*

Planning Tasks	Subtasks	References
Set up storage groups, aggregate groups, storage classes, management classes, and data classes (continued)	Determine management classes Consider space management needs Verify that DFHSM (a functional corequisite product) is installed	*MVS/ESA Storage Management Library: Storage Management Subsystem Migration Planning Guide* *MVS/ESA Storage Management Library: Managing Data Sets and Objects* *MVS/ESA Storage Management Library: Managing Storage Pools* *MVS/DFP Version 3 Release 2: Storage Administration Reference*
	Define data class requirements and determine data classes	*MVS/DFP Version 3 Release 2: Storage Administration Reference*
Design Automatic Class Selection (ACS) routines	Determine the system input variables routines will use as filter criteria to assign storage groups, storage classes, management classes, data classes, and aggregate groups	*MVS/DFP Version 3 Release 2: Storage Administration Reference* *MVS/ESA Storage Management Library: Storage Management Subsystem Migration Planning Guide* *MVS/ESA Storage Management Library: Managing Data Sets and Objects*
	Determine requirements for user specification of management class, storage class, data class, and aggregate groups	*MVS/DFP Version 3 Release 2: Storage Administration Reference* *MVS/ESA Storage Management Library: Storage Management Subsystem Migration Planning Guide* *MVS/ESA SML: Managing Data Sets and Objects*

Planning Tasks	Subtasks	References
Design Automatic Class Selection (ACS) routines (continued)	Determine how to assign RACF (corequisite product) authorization to use management class, storage classes, data classes, and aggregate groups	*MVS/DFP Version 3 Release 2: Storage Administration Reference* *Resource Access Control Facility (RACF) General Information*
	Understand how to assign management classes, storage classes, data classes, and aggregate groups using RACF defaults	*MVS/DFP Version 3 Release 2: Storage Administration Reference* *Resource Access Control Facility (RACF) General Information*
Implement the planned configuration	Storage Administrator uses ISMF to define storage groups, storage classes, management classes, data classes, and aggregate groups	*MVS/DFP Version 3 Release 2: Storage Administration Reference*
	Storage Administrator writes and then translates ACS routines using the ISMF ACS application	*MVS/DFP Version 3 Release 2: Storage Administration Reference*
	After validating and testing, the Storage Administrator activates a Control Data Set (CDS) through ISMF or an operator command	*MVS/DFP Version 3 Release 2: Storage Administration Reference*
Consider use of optical devices	Determine how many optical libraries are needed	*MVS/ESA Storage Management Library: Managing Storage Pools*
	Determine how to define objects, libraries, and pseudo libraries. Also, determine how to define an optical drive to MVS and how to create an optical backup.	*MVS/DFP Version 3 Release 2: Object Access Method Application Programmer's Reference*
Choose method of migration	Use DFDSS in-place conversion	*Data Facility Data Set Services: User's Guide*
	Use DFDSS data set copy	*Data Facility Data Set Services: User's Guide*
	Use ICKDSF	*Device Support Facilities User's Guide and Reference*
	Use DFHSM migrate/recall	*Data Facility Hierarchical Storage Manager: Version 2 Release 5 User's Guide*

Planning Tasks	Subtasks	References
Migrate to PDSEs	Choose the PDSs to be migrated to PDSEs	*MVS/ESA Storage Management Library: Storage Management Subsystem Migration Planning Guide* *MVS/ESA Storage Management Library: Managing Data Sets and Objects* *MVS/DFP Version 3 Release 2: Managing Non-VSAM Data Sets*
	Plan to allocate and create new PDSEs	*MVS/DFP Version 3 Release 2: Managing Non-VSAM Data Sets*
Maintain and monitor SMS	Monitor space usage through ISMF	*MVS/DFP Version 3 Release 2: Storage Administration Reference*
	Evaluate performance	*MVS Storage Management Library: Configuring Storage Subsystems*
Back out of SMS	Plan for moving data sets from SMS to non-SMS status	*MVS/DFP Version 3 Release 2: Storage Administration Reference* *MVS/ESA Storage Management Library: Storage Management Subsystem Migration Planning Guide* *MVS/ESA Storage Management Library: Managing Data Sets and Objects*
Recover SMS and SMS-managed data	Plan for recovery of SMS	*MVS/DFP Version 3 Release 2: Storage Administration Reference*
	Plan for recovery of SMS-managed data	*MVS/DFP Version 3 Release 2: Storage Administration Reference* *MVS/ESA Storage Management Library: Storage Management Subsystem Migration Planning Guide* *MVS/ESA Storage Management Library: Managing Data Sets and Objects*

Chapter 6. Planning for Partitioned Data Set Extended

Perhaps the most significant planning consideration for the site that is migrating from a fully SMS-managed MVS/DFP 3.1 environment to MVS/DFP 3.2 concerns the Partitioned Data Set Extended (PDSE). PDSEs extend the capabilities of DFP's SMS component to improve system performance as well as productivity.

This chapter provides planning details to consider as you replace PDSs with PDSEs.

What is a PDSE?

Externally, a PDSE appears similar to a partitioned data set (PDS); most PDS and PDSE interfaces are indistinguishable. A PDSE is an SMS-managed data set divided into multiple members, each described by one or more directory entries. Member and directory data is stored on a device in 4096-byte physical blocks. Each member has a unique name, 1 to 8 characters long, and can have several aliases. Member records of a PDSE are written or retrieved sequentially.

You can use a PDSE in place of a partitioned data set to store data, however, you cannot use PDSEs to store load modules. PDSEs and PDSs are processed using the same access methods (BSAM, QSAM, BPAM) and macros.

Advantages of PDSEs

The main advantage of using a PDSE over a partitioned data set is that PDSEs use DASD space more efficiently. The size of a partitioned data set directory is fixed regardless of the number of members in it, while the size of a PDSE directory is flexible and expands to fit the members stored in it. Also, the system reclaims space automatically whenever a member is deleted, or replaced, and returns it to the pool of space available for allocation to other members of the same PDSE. The space can be reused without performing an IEBCOPY compress. Space is not freed for updated members.

Other advantages of PDSEs are:

1. Reduced directory search time. The PDSE directory is indexed and is searched using that index. The directory can also be cached.
2. Creation of multiple members at the same time.
3. Sharing occurs at both member and data set levels. This makes it easier to maintain the integrity of the PDSE when modifying separate members at the same time.
4. PDSEs can contain up to 123 extents. An extent is a continuous area of space on a DASD storage volume, occupied by or reserved for a specific data set.
5. When read, records in a PDSE are restored to their original block size.

PDSEs and partitioned data sets share some important similarities. They are processed using the same macros and access methods; records are stored in members that are described in the directory.

Significant differences between PDSEs and partitioned data sets are listed in Figure 6.

Figure 6. Differences Between PDSEs and PDSs

PDSE Characteristics	PDS Characteristics
Data set has a 123-extent limit	Data set has a 16-extent limit
Directory is open-ended and indexed by member name; faster to search directory	Fixed size directory searched sequentially
Records are logically reblockable in a device-independent manner. Track record address (TTR) is simulated as a system key.	Device-dependent TTR addressing and block size
Dynamic space allocation and reclaim	Must use IEBCOPY COMPRESS to reclaim space
Data sets and members can be shared	Only data sets can be shared
Create multiple members at the same time	Create one member at a time

Structure of a PDSE

Directory Structure

When accessed sequentially, the PDSE directory appears to be constructed of 256-byte blocks containing sequentially ordered entries. (The PDSE directory is presented like a PDS directory even though its internal structure of 4096-byte blocks is different.) Directory entries are arranged by name in alphanumeric collating sequence. You can use BSAM or QSAM to read the directory sequentially. The directory is searched and maintained by the BLDL, FIND, and STOW macros.

The starting location of each member is recorded by the system as a TTR. A TTR points to the beginning of a member. For PDSEs, the TTR is a token that simulates the track or record location. It does not represent the actual track or record location. The TTRs in the directory may change if you move the PDSE.

The PDSE directory is indexed permitting faster searches for members. It does not use hardware-defined keys to search for members; instead, the name and the TTR of a member are used as search keys.

The PDSE directory has a limit of 524 286 members. The directory is expandable—you can keep adding entries up to the directory's limit or until the data set runs out of space. You need to determine the projected directory size when allocating space for a PDSE. The system acquires the space it needs for the directory entries from the storage available to the data set.

Note: For a PDS, the size of the directory is determined when the data set is allocated. There can be fewer members in the data set than the directory can contain, but when the preallocated directory space is full, the partitioned data set must be copied to a new data set before new members can be added.

Record Processing

PDSE and PDS members are accessed sequentially. Each member can contain a maximum of 15 728 639 logical records. PDSE members are reblockable. Logical records are written to DASD in 4096-byte physical blocks and can span physical records. The user- or system-defined block size is saved in the DSCB when the data is written and becomes the default block size for input. The system reconstructs the original user- or system-defined block size when reading the PDSE members. These reconstructed blocks are called *simulated blocks*. There is a logical end-of-file mark at the end of each PDSE member.

You can either calculate the block size yourself and specify it in the BLKSIZE parameter of the DCB or let the system determine it for you. The block size makes no difference in space usage for PDSEs but it does affect the buffer size of a job using the PDSE.

PDSE Processing Restrictions

The following restrictions apply to PDSEs:

- You cannot store load modules in a PDSE.
- Do not use PDSEs if your application depends on the system returning short blocks as they were written or SAM record null segments. You can create short blocks for PDSE members, but their block boundaries are not shown when the data set is written. For example, if you use the TRUNC macro with QSAM to create short blocks, the block boundaries are not saved when the data set is read. If the TRUNC macro is used, a message is written to the job log and an indicator is set in record type 15 of the SMF data set. See *MVS/ESA System Programming Library: System Management Facilities (SMF)* for more information on SMF.
- Null record segments, only created with variable blocked spanned records, are not saved when the data set is written. On the first write of a null record segment, a message is written to the job log and an indicator is set in record type 15 of the SMF data set. See *MVS/ESA System Programming Library: System Management Facilities (SMF)* for more information on SMF.
- You can use the BSP macro to backspace the current member one simulated block; however, you cannot backspace beyond the start of a PDSE member nor backspace within the PDSE directory. Issuing the BSP macro while pointing to the middle of a spanned record moves the pointer to the beginning of the record. If the pointer is at the beginning of a record when the BSP macro is issued, the pointer will skip to the beginning of the previous record.
- You can use keyed BSAM for reading the PDSE directory only if the key length specified in the DCB is 0 or 8. You cannot use keyed BSAM for writing PDSE members.
- You cannot write or update the PDSE directory using BSAM or QSAM. To do so, you must use the STOW macro. This maintains integrity by preventing users from accidentally destroying the directory.
- Aliases for members must point to the beginning of the member.
- Deleting the primary member name deletes all aliases.
- EXCP and XDAP are not supported except for authorized callers.

- You cannot back down an MVS/DFP 3.2 system to an MVS/DFP 3.1 system and still read a PDSE. PDSEs can only be accessed form a system with MVS/DFP 3.2 installed.
- Do not specify a PDSE in the master JCL (MSTJCL00 in SYS1.LINKLIB).
- Note lists are not supported for PDSEs. When using STOW with a PDSE, do not supply a list of TTRs in the user data field of the directory.
- The CHECK macro does not guarantee that the data has been synchronized to DASD. Use the SYNCDEV macro or the storage class parameter SYNCDEV=YES to guarantee synchronizing data when open for update.
- The OPTCD DCB parameter (write-check) is ignored for PDSEs.
- Do not use the TRKCALC macro because results could be inaccurate, although processing is allowed to continue.

Defining PDSEs

If you install MVS/DFP 3.2 while SMS is active, you can allocate PDSEs in SMS storage groups. To define PDSE data set types, specify DSNTYPE=LIBRARY in a DATACLAS definition, in a JCL DD statement, in the LIKE keyword, or in a TSO/E ALLOCATE command. Your storage administrator may also assign DSNTYPE=LIBRARY as an installation default value. This default value is assigned in the SYS1.PARMLIB member IGDSMSxx.

Figure 7. Defining a PDSE using the DSNTYPE keyword

DSNTYPE in JCL or TSO/E	DSNTYPE in DATACLAS	Installation Default	Resulting Data Set Type
none	none	LIBRARY	PDSE
none	LIBRARY	not used	PDSE
LIBRARY	not used	not used	PDSE
LIBRARY	PDS	not used	PDSE

Figure 7 shows how SMS checks DSNTYPE in the JCL, the LIKE keyword in the DATACLAS, and the installation default to determine whether to make a data set a PDSE or a PDS. If no DSNTYPE is found or if a DSNTYPE of PDS is processed first, the resulting data set type will be PDS.

Allocating Space for a PDSE

This section explains how to use the SPACE JCL keyword to allocate primary and secondary storage space amounts for a PDSE. The PDSE directory can extend into secondary space. A PDSE may have a maximum of 123 extents but cannot extend beyond one volume. Note that a fragmented volume might exhaust extents more quickly because you get less space with each extent.

For example, this data set will be allocated as a PDSE. With a SPACE=(CYL,(1,1,1)) specification, the data set can extend to 123 cylinders (if space is available).

```
//NEWLIB DD UNIT=SYSDA,VOL=SER=SMSPAC,DISP=(NEW,KEEP),
// DSN=SOME.DATA,DSNTYPE=LIBRARY,SPACE=(CYL,(1,1,1))
```

Because directory space is not preallocated for PDSEs (as it is for partitioned data sets), you do not need to estimate the number of PDSE members to be created. While the number of directory blocks specified on the SPACE keyword is not used for PDSEs, it is saved and is available for conversion utilities. If you specify DSORG=PO when allocating the data set, omit the directory quantity.

See *MVS/DFP Version 3 Release 2: Managing Non-VSAM Data Sets* for examples of the SPACE keyword and *MVS/ESA JCL User's Guide* for more information on how to allocate space.

PDSE Storage Requirements

When planning for PDSE processing, consider the following storage requirements:

- The storage necessary for directory information is obtained from storage that is available to the data set. Because the directory expands dynamically, storage for the directory is obtained as needed. Directory storage need not be limited to the primary extent, but can be obtained from any available storage.
- Information (such as attributes, statistics, and status) is retained in the directory for each PDSE member. The directory storage required to support any single member is variable as is the storage required to support alias names. For a medium-sized PDSE consisting of 150 members, approximately 12 pages (4096 bytes per page) of directory storage is required.
- Deleting a PDSE member can, in some cases, actually increase the amount of directory space used by the remaining members.

Migrating Data From PDSs to PDSEs

You can use IEBCOPY or DFDSS to convert PDSs to PDSEs. You can convert the entire data set or individual members, and also back up and restore PDSEs. To copy one or more specific members, use the SELECT control statement.

In this example, IEBCOPY copies members A, B, and C from USER.PDS.LIBRARY to USER.PDSE.LIBRARY.

```
//INPDS   DD  DSN=USER.PDS.LIBRARY
//OUTPDSE DD  DSN=USER.PDSE.LIBRARY
//SYSIN   DD  DD *
          COPY OUTDD=OUTPDSE
          INDD=INPDS
          SELECT (A,B,C)
```

In the following example, DFDSS COPY copies all partitioned data sets beginning with the qualifier of TEST from volume AAAAAA to volume BBBBBB and converts them to PDSEs. You must specify INDY and OUTDY for the input and output volumes unless the DDnames are defined for the volumes.

Note: Once you have migrated to a PDSE, you cannot access the data from a system without MVS/DFP 3.2 installed. This might affect disaster-recovery plans.

```
COPY DATASET (INCLUDE(TEST.**)) -
             BY(DSORG = PDS))  -
    INDY(AAAAAA)               -
    OUTDY(BBBBBB)              -
    CONVERT(PDSE(**))          -
    DELETE
```

See *Data Facility Data Set Services: User's Guide* for more information on using DFDSS and *MVS/DFP Version 3 Release 2: Utilities* on using IEBCOPY to convert PDSs to PDSEs.

There may be situations where you want to convert a PDSE to a partitioned data set:

- Shipping the PDSE to a system that does not support PDSEs.
- An application does not run against a PDSE.
- Sharing the PDSE (using shared DASD) with a system that does not support PDSE access.

You can use IEBCOPY or DFDSS to convert a PDSE to a PDS. Specify a DSNTYPE of PDS in the JCL or data class definition.

Conversion Problems

If you attempt to copy members of partitioned data sets containing user TTRs or note lists to a PDSE, you will get an error message.

If the application to be converted uses the SYNCDEV macro make sure the application can process the return and reason codes for partitioned data sets. The correct return code is 4, indicating that SYNCDEV does not support partitioned data sets.

More PDSE Planning Considerations

To fully exploit the benefits of using PDSEs and to make a smooth transition as you convert your PDSs, you will want to be familiar with topics such as:

Processing, retrieving, and modifying a PDSE member
Reading a PDSE directory
Concatenating PDSEs and PDSs
Using the SYNCDEV macro to synchronize data to DASD

Details on these topics and others are provided in *MVS/DFP Version 3 Release 2: Managing Non-VSAM Data Sets*.

Appendix A. Macro Distribution Libraries

Two types of macros are provided for constructing DFP programming interfaces: general-use and product-sensitive programming macros. The general-use macros and the product-sensitive macros are found in the SYS1.AMACLIB and SYS1.AMODGEN libraries, respectively.

General-use programming macros let you write programs that use the services of MVS/DFP. Unlike product-sensitive programming macros, they do not have significant dependencies on detailed product design and implementation.

The product-sensitive macro interfaces are provided to allow your installation to perform tasks such as product tailoring, monitoring, modification, and diagnosis. They are dependent on the design and implementation of the product. These interfaces should be used only for the intended purposes. Because of their dependencies on detailed design and implementation, programs written to such interfaces may require modification to run with new product releases or versions, or as a result of maintenance.

Information describing the functions and use of the macros can be found in:

MVS/DFP Version 3 Release 2: Customization
MVS/DFP Version 3 Release 2: Linkage Editor and Loader
MVS/DFP Version 3 Release 2: Macro Instructions for Non-VSAM Data Sets
MVS/DFP Version 3 Release 2: Macro Instructions for VSAM Data Sets
MVS/DFP Version 3 Release 2: Managing Catalogs
MVS/DFP Version 3 Release 2: System Programming Reference

SYS1.AMACLIB Distribution Library

SYS1.AMACLIB contains both macros for general use programming interfaces and inner macros that are not programming interfaces.

† Not a programming interface

ACB

Note: *The CATALOG and CRA parameters are not intended to be programming interfaces for customers. The CNV and ICI parameters are product-sensitive interfaces.*

ACBVS†
ATLAS
BLDL
BLDVRP
BSP
BUILD
BUILDRCD
CAMLST
CATALOG
CHECK
CHKPT
CHKPT7†
CLOSE

CNTRL
DCB
DCBD

Note: *Only the fields as documented in Appendix F of the Data Administration: MIR are intended to be programming interfaces for customers, with the exception of fields DCBNTRA and DCBEOB, which are not interfaces.*

DEBCHK
DEVTYPE
DLVRP
ENDREQ
EOV
ERASE
ESETL
EXLST
EXLVS†
FEOV
FIND
FREEBUF
FREEDBUF
FREEPOOL
GENCB

Note: *The CATALOG and CRA parameters are not intended to be programming interfaces for customers. The CNV and ICI parameters are product-sensitive interfaces.*

GET
GETBUF
GETPOOL
IDACBACB†
IDACBEXL†
IDACBNIB†
IDACBOPT†
IDACBPRC†
IDACBRPL†
IDACB1†
IDACB2†
IDACB3†
IDAERMAC†
IDARMRCD
IDAVSACB†
IDAVSCB1†
IDAVSCB3†
IDAVSOPT†
IDAVSRPL†
IECOENTE
IECOEVSE
IEZDEB

Note: *IEZDEB should only be used with EXCP and EXCPVR.*

IEZIOB

Note: *IEZIOB should only be used with EXCP and EXCPVR.*

IFASMFI6

Note: *The fields SMF60CRC, SMF61CRC, SMF65CRC and SMF66CRC are not intended to be programming interfaces for customers.*

IGGERMAC†
IGGSHWPL
IHAARL
IHADFA

Note: *The field DFADFVAD is not intended to be a programming interface for customers.*

IHADVA
IHBRDWRD†
IHBRDWRK†
IHBRDWRS†
IHB01†
IHB03†
INDEX
LOCATE
MODCB

Note: *The CATALOG and CRA parameters are not intended to be programming interfaces for customers. The CNV and ICI parameters are product-sensitive interfaces.*

MRKBFR
MSGDISP
NOTE
OPEN
PARTREL
PDAB
PDABD

Note: *The fields PDAGRTNA, PDADCBAI, and PDAECBIX are not intended to be programming interfaces for customers.*

POINT
PROTECT
PRTOV
PUT
PUTX
RDJFCB
READ
RELEX
RELSE
RENAME
RPL

Note: *The CNV parameter is a product-sensitive interface.*

RPLVS†
SCHBFR
SCRATCH
SEGLD
SEGWT

SETL
SETPRT
SHOWCAT
SHOWCB
STOW
SYNADAF
SYNADRLS
SYNCDEV
TESTCB

Note: *The CATALOG and CRA parameters are not intended to be programming interfaces for customers. The CNV and ICI parameters are product-sensitive interfaces.*

TRKCALC
TRUNC
VERIFY
WRITE
WRTBFR
XDAP
XLATE

SYS1.AMODGEN Distribution Library

SYS1.AMODGEN contains both macros for product-sensitive programming interfaces and macros that are not programming interfaces.

† Not a programming interface

CVAFDIR
CVAFDSM
CVAFFILT
CVAFSEQ
CVAFTST
CVAFVOL†
CVAFVRF†
DFPCPYRT†
DFPEPLOG†
DMABCOND†
EWDMAP†
EWDURMAP†
GETIX
ICVAFBFL
ICVAFMAP†
ICVAFPL
ICVFCL
ICVVIER†
ICYMMIB†
ICYMMRE†
IDAELEM†
IDAGENC†
IDAMODC†
IDASHOW†
IDATEST†
IDAVSERR†

IECALLWA†
IECANWA†
IECCRSA†
IECDDCE†
IECDDPCT†
IECDSECS†
IECDSECT
IECDUCBD†
IECDUCBT†
IECDUCBU†
IECEQU†
IECEXTWA†
IECIEPRM
IECIEXPL
IECLSPWA†
IECOBTWA†
IECOIEXL
IECPDINI†
IECPDSCB
IECPDSCT†
IECPRLWA†
IECRENWA†
IECRES†
IECSCRWA†
IECSDSL1
IECUCBCX

Note: *Fields UCBCXACC, UCBCXVER, UCBCXOWN are product sensitive; all others are not intended to be programming interfaces for customers.*

IECVRFDA†
IECVTCWA†
IEZCTGCV†
IEZCTGVL†
IFGACB†
IFGACBVS†
IFGACB35†
IFGEXLST†
IFGEXLVS†
IFGRPL†
IFGRPLVS†
IFGRPLVT†
IGBDCSIE†
IGDACERO
IGDACERW
IGDACSPM
IGDIDONS†
IGDMCSMG†
IGDSCHRL†
IGDVLD†
IGGBISAM†
IGGBISAV†
IGGCPOPS†
IGGCP1†
IGGCP10A†

IGGCP10B†
IGGCP11A†
IGGCP11B†
IGGCP12A†
IGGCP12B†
IGGCP12C†
IGGCP123†
IGGCP13A†
IGGCP13B†
IGGCP13C†
IGGCP14†
IGGCP15†
IGGCP16†
IGGCP17†
IGGCP2†
IGGCP22†
IGGCP23†
IGGCP24†
IGGCP25†
IGGCP26†
IGGCP4†
IGGCP47†
IGGCP5†
IGGCP6†
IGGCP7†
IGGCP8†
IGGCP9A†
IGGCP9B†
IGGCP9C†
IGGDACRE†
IGGDAREN
IGGDASCR
IGGDAVLL†
IGGDCBFA†
IGGDEBD†
IGGIOBD†
IGGLDCP†
IGGLOAD†
IGGPDC†
IGGSCAN†
IGGUCSIT†
IGGUCS5†
IGGUCS6†
IGGWKNCP†
IGWCISM†
IHADECB†
IHADFVT†
IHADVCT†
IHAFETWK†
IHAPDS†
IHASETSU†
IHASPP†
IHAUDA†
IMGLIB
LSPACE

MMCALL†
OBTAIN
PUTIX
REALLOC
TERMRPL†
XCTLTABL†

Appendix B. Object Code Only Components

The following components are object code only; no source code is provided:

Asynchronous Operations Manager
Buffer Management Facility
Common Adapters
Common Data Manager
Common Lock Manager
Device Console Services
DFP Common Services
File and Attribute Management Services
Index Management Facility
Interactive Storage Management Facility
Object Access Method
Program Management
Storage Management Subsystem
System Services Facilities

Abbreviations

The following abbreviations are defined as they are used in the MVS/DFP library. If you do not find the abbreviation you are looking for, see the publication *Dictionary of Computing*, SC20-1699 (formerly published as *IBM Vocabulary for Data Processing, Telecommunications, and Office Systems*, GC20-1699).

This list includes acronyms and abbreviations developed by the American National Standards Institute (ANSI) and the International Organization for Standardization (ISO). Some of this material is reproduced from the *American National Dictionary for Information Processing*, copyright 1977 by the Computer and Business Equipment Manufacturers American National Standards Institute, 1430 Broadway, New York, New York 10018.

ACDS. Active control data set.

BCS. Basic catalog structure.

CAS. Catalog address space.

CDS. Control data set.

CSA. Common service area.

CVAF. Common VTOC access facility.

DADSM. Direct access device space management.

DFDSS. Data Facility Data Set Services.

DFHSM. Data Facility Hierarchical Storage Manager.

DFSORT. Data Facility Sort.

EDT. Eligible device table.

edtgen. Eligible device table generation.

ELPA. Extended link pack area.

EPLPA. Extended pageable link pack area.

ESDS. Entry-sequenced data set.

FIPS. Federal Information Processing Standard.

FLPA. Fixed link pack area.

ICKDSF. Device Support Facilities.

iogen. I/O device generation.

ISMF. Interactive Storage Management Facility.

K. Kilobyte.

KSDS. Key-sequenced data set.

MLPA. Modified link pack area.

NVR. Non-VSAM volume record.

OAM. Object Access Method.

OCO. Object code only.

PDSE. Partitioned data set extended.

PLPA. Pageable link pack area.

RMF. Resource Management Facility.

RMODE. Residence mode.

RRDS. Relative record data set.

RSECT. Read-only control section.

SCDS. Source control data set.

SMS. Storage Management Subsystem.

UCB. Unit control block.

VSCR. Virtual storage constraint relief.

VVDS. VSAM volume data set.

Glossary

The following terms are defined as they are used in the MVS/DFP library. If you do not find the term you are looking for, see the publication *Dictionary of Computing*, SC20-1699, (formerly published as *IBM Vocabulary for Data Processing, Telecommunications, and Office Systems*, GC20-1699).

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A

activate. To load the contents of a source control data set (SCDS) into Storage Management Subsystem address space storage and into an active control data set (ACDS), or to load the contents of an existing ACDS into subsystem address space storage. This establishes a new storage management policy for the subsystem complex.

active configuration. The most recently activated SCDS, which now controls storage management for the Storage Management Subsystem complex.

active control data set (ACDS). A VSAM linear data set that contains a copy of the most recently activated configuration (SCDS). All systems in a DFSMS complex use the configuration contained in the ACDS to manage storage.

addressing mode (AMODE). An attribute of an entry point in a load module that identifies the addressing range in virtual storage which the module is capable of addressing. Below the 16-megabyte line, only 24-bit addresses can be used.

aggregate group. A named collection of data sets with identical backup attributes (such as medium, retention period, or destination) that have been pooled to meet a defined backup or recovery strategy.

always call. See *RACF always call*.

AMBLIST. A service program used to print formatted listings of modules and system storage areas to aid in problem diagnosis.

automatic class selection (ACS). A mechanism for assigning Storage Management Subsystem classes and storage groups to data sets.

automatic class selection routine. A program written in the automatic class selection language that assigns a Storage Management Subsystem class or storage group.

automatic dump. In DFHSM, the process of using DFDSS to automatically perform a full volume dump of all allocated space on primary volumes to designated tape dump volumes.

B

base configuration information. The base information for a Storage Management Subsystem configuration, which includes default device geometry, default unit, system names for the complex, Storage Management Subsystem resource status token, default management class, and data set status.

basic catalog structure (BCS). The name of the catalog structure in the integrated catalog facility environment. The integrated catalog facility catalog is composed of a BCS and its related volume tables of contents (VTOCs) and VSAM volume data sets (VVDSs).

block count. The number of data blocks on a magnetic tape volume.

C

catalog address space (CAS). A separate address space in virtual storage that contains catalog management modules and control blocks.

cluster. In VSAM, a named structure consisting of a group of related components. For example, if the data is key-sequenced, the cluster contains both the data and the index components; for data that is entry-sequenced, the cluster contains only a data component.

common VTOC access facility (CVAF). An MVS/DFP component used to retrieve information from indexed and nonindexed VTOCs.

configuration (Storage Management Subsystem). A base configuration, definitions of Storage Management Subsystem classes and storage groups, and automatic class selection routines that DFSMS uses to manage storage.

control data set (CDS). With respect to the Storage Management Subsystem, a VSAM linear data set containing configurational, operational, or communication information. The Storage Management Subsystem introduces three types of control data sets, which guide the execution of the Storage Management Subsystem: the source control data set, the active control data set, and the communications data set.

D

data class. A list of allocation attributes and their values, used when allocating a new Storage Management Subsystem-managed or non-Storage Management Subsystem-managed data set.

Data Facility Data Set Services (DFDSS). An IBM licensed program used to copy, move, dump, and restore data sets and volumes.

Data Facility Hierarchical Storage Manager (DFHSM). An IBM licensed program used to back up, recover, and manage volumes.

Data Facility Sort (DFSORT). An IBM licensed program used for sorting, merging, and copying data set records.

default device geometry. Part of the base configuration, it identifies the number of bytes per track and the number of tracks per cylinder for converting TRK and CYL requests into bytes, when no generic UNIT exists. Storage Management Subsystem uses the converted value to determine how many tracks or cylinders to allocate to the data set.

default management class. Part of the base configuration, it identifies the management class that DFHSM is to apply to Storage Management Subsystem-managed data sets that do not have a management class explicitly specified.

default unit. Part of the base configuration, it identifies an esoteric (such as SYSDA) or generic (such as 3380) device name. If an end user fails to specify the UNIT parameter on their JCL, the Storage Management Subsystem applies the default unit to all data sets having a disposition of either MOD or NEW that are *not* subsystem-managed.

device management. The task of defining input and output devices to the operating system, and then controlling the operation of these devices.

Device Support Facilities (ICKDSF). An IBM system control program used to initialize DASD and to recover from DASD errors caused by defective tracks.

DFSMS. The complementary functions of MVS/DFP and other individual products of the Data Facility family, which, together with RACF, provide a system-managed, administrator-controlled storage environment.

direct access device space management (DADSM). An MVS/DFP component used to control space allocation and deallocation on DASD.

double-byte character set (DBCS). A 2-byte hexadecimal value which can be used to represent a single character for languages that contain too many characters or symbols for each to be assigned a 1-byte hexadecimal value.

dummy storage group. A type of storage group that contains the serial numbers of volumes that no longer reside on a system but that end users still refer to in their JCL. These volumes are treated as Storage Management Subsystem-managed volumes. Dummy storage groups allow old JCL to function without having to be changed.

dump class. A DFHSM-named set of characteristics that describe how volume dumps are managed.

E

eligible device table (EDT). A table that maps unit names to sets of physical devices on the operating system.

eligible device table generation (edtgen). A type of system generation that formerly could be performed on an existing operating system to modify the eligible device table. Edtgen is no longer supported; its function has been replaced by the MVS configuration program. See also *MVS configuration program*.

erase-on-scratch. The physical erasure of data on a DASD data set when the data set is deleted (scratched).

ESA/370. A series of computer hardware systems and control programs.

expanded storage. A feature available on some processors that improves system performance by reducing virtual storage paging I/O.

extended link pack area (ELPA). The extension of the link pack area that resides above 16 megabytes in virtual storage. See also *link pack area*.

extended pageable link pack area (EPLPA). The extension of the pageable link pack area that resides above 16 megabytes in virtual storage. See also *pageable link pack area*.

external symbol dictionary (ESD). See *composite external symbol dictionary*.

F

Federal Information Processing Standard (FIPS). An organization which establishes voluntary industry standards for federal information processing, particularly for magnetic tape labels.

File and Attribute Management Services (FAMS). A feature of MVS/DFP 3.2 that allows you to control backup and recovery of data sets even if they are open for update.

filter list (FILTLIST). An inclusion/exclusion pair of lists that define filter criteria. FILTLISTs simplify comparison operations in automatic class selection routines.

G

gigabyte. 1 073 741 824 bytes.

guaranteed space. A storage class attribute indicating that DFSMS is to honor user-specified VOL=SER= parameters, and that the Storage Management Subsystem is to fail the request if space is not available on the requested volumes. You can use this attribute to preallocate space on all volumes that you specify. If you do not supply volume serials, the Storage Management Subsystem selects volumes and preallocates space on as many of them as you requested, either explicitly by being specified on the JCL or implicitly from the "volume count" field of the data class.

H

Hiperspace. A high performance space backed by either expanded storage or auxiliary storage, which provides high performance storage and retrieval of data.

I

inactive configuration. A configuration contained in an SCDS. A configuration that is not currently being used by the Storage Management Subsystem.

indexed sequential access method (ISAM). An access method that retrieves or updates blocks of data using an index to locate the data set.

INITIAL. A physical volume status indicating that some data sets on a given volume lack an associated storage class or are not cataloged in an integrated catalog facility catalog.

in-place conversion. The process of bringing a volume and the data sets it contains under the control of DFSMS, without requiring a second volume to serve as an intermediary holding place during the conversion.

Interactive Storage Management Facility (ISMF). An interactive MVS/DFP facility for defining and viewing the policy of how the Storage Management Subsystem manages storage.

I/O device generation (iogen). A type of system generation that formerly could be performed on an existing operating system to add or delete I/O devices, change device group names, or change console specifications. Iogen is no longer supported; its function has been replaced by the MVS configuration program.

ISO/ANSI/FIPS. When referring to magnetic tape labels and file structure, any tape which conforms to the standards established in ISO 1001-1979 level 4, ANSI X3.27-1978 level 4, and FIPS 79. Tapes meeting these standards are sometimes called *Version 3 tapes*. See also *MVS configuration program*.

K

key-sequenced data set (KSDS). A VSAM data set whose records are loaded in ascending key sequence and controlled by an index. Records are retrieved and stored by keyed access or by addressed access, and new records can be inserted in key sequence because of free space allocated in the data set. Relative byte addresses can change, because of control interval or control area splits.

L

library. A partitioned data set containing a related collection of named members.

linear data set (LDS). A VSAM data set that contains data but contains no control information. A linear data set can be accessed as a byte-addressable string in virtual storage.

logical storage. With respect to data, the attributes that describe the data and its usage, as opposed to the physical location of the data.

M

management class. A list of the migration, backup, and retention parameters and their values, for a Storage Management Subsystem-managed data set.

migration. In DFHSM, the process of moving a cataloged data set from a primary volume to a level 1 volume or level 2 volume, from a level 1 volume to a level 2 volume, or from a volume not managed by DFHSM to a level 1 or level 2 volume.

modified link pack area (MLPA). An area of virtual storage containing reenterable routines from the SYS1.LINKLIB, SYS1.SVCLIB, or SYS1.LPALIB system data sets that are to be part of the pageable extension of the link pack area during the current IPL. See also *link pack area*.

MVS configuration program. A program that is used to define I/O configurations to MVS/ESA. MVSCP replaces the I/O definition functions of iogen and edtgen. See also *eligible device table generation* and *I/O device generation*.

MVS/DFP. An IBM licensed program which is the base for the Storage Management Subsystem.

MVS/ESA. An MVS operating system environment that supports ESA/370.

MVS/SP. An IBM licensed program used to control the MVS operating system and establish a base for the MVS/ESA environment.

MVS/370. An MVS operating system environment that supports 24-bit real and virtual storage addressing, based on the OS/VS2 MVS operating system environment.

O

object access method (OAM). An access method used to store and retrieve optical objects, which are stored on IBM 9247 Optical Disk Drives.

object code only (OCO). Licensed programs for which source materials are not made available to licensees.

OS control volume (OS CVOL). A volume that contains one or more indexes of the catalog.

P

pageable link pack area (PLPA). An area of virtual storage containing SVC routines, access methods, and other read-only system and user programs that can be shared among users of the system. See also *link pack area*.

paging. A technique in which blocks of data (pages), are moved back and forth between main storage and auxiliary storage. Paging is the implementation of the virtual storage concept.

partitioned data set directory. A set of records in a partitioned data set, used to relate member names to locations on the DASD volume.

partitioned data set extended (PDSE). A Storage Management Subsystem-managed, page-formatted data set. PDSEs contain an indexed directory and members, similar to the directory and members of partitioned data sets. PDSEs can be used instead of partitioned data sets.

physical storage. With respect to data, the actual space on a storage device that is to contain data.

physical volume status. Relationship between a pool storage group and each of its individual volumes, indicating if all data sets on a given volume have an associated storage class and are cataloged in an integrated catalog facility catalog.

pool. See *storage pool*.

pool storage group. A type of storage group that contains the serial numbers of Storage Management Subsystem-managed volumes. Pool storage groups allow groups of volumes to be managed as a single entity.

program management. The task of preparing programs for execution, storing the programs in load libraries, and executing them on the operating system.

R

RACF always call. A term for the procedure used by MVS/DFP to check all data sets automatically for discrete or generic RACF profiles to verify access authority.

read-only control section (RSECT). A control section (CSECT) in the nucleus that can be read but not altered.

read-only variable. An automatic class selection language variable that contains data set or system-derived information. It can be referenced, but not altered in an automatic class selection routine.

read-write variable. An automatic class selection language variable that is assigned a value within an automatic class selection routine. Each automatic class selection routine assigns a value to its own, unique read-write variable.

relative record data set (RRDS). A VSAM data set whose records are loaded into fixed-length slots.

relocation dictionary (RLD). See *RLD*.

residence mode (RMODE). The attribute of a load module that identifies where in virtual storage the program is to reside (above or below 16 megabytes).

Resource Access Control Facility (RACF). An IBM licensed program that provides access control by identifying and verifying users to the system. RACF authorizes access to DASD data sets, logs unauthor-

ized access attempts, and logs accesses to protected data sets.

Resource Management Facility (RMF). A licensed program that monitors the availability and activity of an MVS system.

RLD count. The number of RLD records in a load module that follow the text block that the RLD count references.

RLD record. A record in a relocation dictionary that contains information on relocatable address constants for that object or load module.

S

sequential access method (SAM). An access method for storing or retrieving data blocks in a continuous sequence, using either a sequential access or a direct access device.

service level (Storage Management Subsystem). A set of logical characteristics of storage required by a Storage Management Subsystem-managed data set (for example, performance, security, availability).

source control data set (SCDS). A VSAM linear data set containing the Storage Management Subsystem class and storage group definitions, automatic class selection routines, and system information that together represent a Storage Management Subsystem configuration.

storage administrator. A person in the data processing installation who is responsible for defining, implementing, and maintaining storage management policies.

storage class. A list of DASD storage performance, security and availability service level requirements for a Storage Management Subsystem-managed data set.

storage group. A list of attributes that DFSMS applies to groups of storage volumes having similar migration, backup, and dump needs. Only the storage administrator can access storage group definitions.

storage management complex. A set of up to eight intercommunicating DFSMS systems within an installation that are defined as such to MVS/ESA through the IEFSSNnn member of SYS1.PARMLIB.

Storage Management Subsystem. An operating environment that helps automate and centralize the management of storage. To manage storage, DFSMS provides the storage administrator with control over data class, storage class, management class, storage group, and automatic class selection routine definitions.

Storage Management Subsystem-managed data set. A data set that has been assigned a storage class.

storage pool. A predefined set of DASD volumes used to store groups of logically related data according to user requirements for service or according to storage management tools and techniques.

system-managed storage. The approach to DASD storage management in which the system, by means of the Storage Management Subsystem, determines data placement and an automatic data manager handles data backup, movement, space, and security.

system management facilities (SMF). Programs used to gather, measure, and record information about system actions and performance.

T

translate (Storage Management Subsystem). To check automatic class selection routine source code for syntactic and semantic errors. If no errors exist, the translation process generates an object table from the source code and places the object table into a specified SCDS.

U

unit control block (UCB). A control block in storage that describes the characteristics of a particular I/O device on the operating system.

universal character set (UCS). A printer feature that permits the use of a variety of character arrays. Character sets used for these printers are called *UCS images*.

V

validate. To check the completeness and consistency of an individual automatic class selection routine or an entire SCDS.

version 3 tape. Any magnetic tape conforming to ISO/ANSI/FIPS standards. See *ISO/ANSI/FIPS*.

VIO storage group. A type of storage group that allocates data sets to paging storage, which simulates the activity of a DASD volume. VIO storage groups do not contain any actual DASD volumes.

virtual input/output (VIO). A facility that pages data into and out of external page storage.

virtual storage constraint relief (VSCR). The use of extended areas in virtual storage to store system programs, buffers, and control blocks, leaving more space below 16 megabytes for user programs.

VSAM volume data set (VVDS). A data set that describes the characteristics of VSAM data sets residing on a given volume; part of an integrated catalog facility catalog. In an SMS emvironment, the VVDS also contains information about non-VSAM data sets on a volume. See also *basic catalog structure*.

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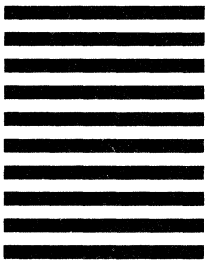

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