DFSMS Using the Interactive Storage Management Facility

Version 2 Release 2
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About This Book

This book is intended to help the general user manage data sets and storage using the Interactive Storage Management Facility (ISMF). It contains information on the different types of ISMF options and provides information on how to use them.

As a general introduction to ISMF, this book is meant to be used in conjunction with the ISMF help panels. The help panels provide reference information about specific commands and fields in ISMF panels; help panels supplement the material presented in this manual.

Storage administrators should refer to z/OS DFSMSdfp Storage Administration for information dealing with storage administration tasks.

Note: The term end user refers to one of the two ISMF user profiles (end user or storage administrator), whereas the term general user is used to describe the expertise level of the user.

Required Product Knowledge

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

• Data and storage management concepts and the functions provided by DFSMS™
• Interactive System Productivity Facility (ISPF) and ISPF/Program Development Facility (ISPF/PDF).

Referenced Publications

In the text, references are made to the following publications:

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<thead>
<tr>
<th>Publication Title</th>
<th>Order Number</th>
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<tr>
<td>z/OS DFSORT: Getting Started</td>
<td>z/OS DFSORT: Getting Started</td>
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For information about the accessibility feature of z/OS, for users who have a physical disability, see Appendix D, “Accessibility,” on page 215.
How to send your comments to IBM

We appreciate your input on this publication. Feel free to comment on the clarity, accuracy, and completeness of the information or provide any other feedback that you have.

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- Call IBM technical support.
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Summary of changes for z/OS Version 2 Release 2 (V2R2)

The following changes are made for z/OS Version 2 Release 2 (V2R2).

New

- A new variable has been added to the table for Variable Names, Attributes and Lengths for the Data Class List Data Columns. See "Variables That Supply Information about the List Entries" on page 171 for more information.

Summary of changes for z/OS Version 2 Release 1

See the following publications for all enhancements to z/OS Version 2 Release 1 (V2R1):

- z/OS V2R2 Migration
- z/OS Planning for Installation
- z/OS Summary of Message and Interface Changes
- z/OS V2R2 Introduction and Release Guide
The Interactive Storage Management Facility (ISMF) is the interactive interface of DFSMS that allows you to access the storage management functions, helping you to analyze and manage data and storage.

ISMF is designed to use the storage management, data management, space management, and availability management (backup/recovery) functions that are provided by DFSMSdfp™, DFSMShsm™, DFSMSdss™, DFSMSrmm™.

ISMF is an Interactive System Productivity Facility (ISPF) application. ISMF works with the following products, with which you should be familiar:
- Interactive System Productivity Facility/Program Development Facility (ISPF/PDF), which provides the edit, browse, Data Set, and Library utility functions
- TSO/Extensions (TSO/E), TSO CLISTs and commands
- Data Facility SORT (DFSORT™), which provides the record-level functions
- RACF, a component of the Security Server for z/OS, which provides the access control function for data and services
- Device Support Facilities (ICKDSF,) which provide the storage device support and analysis functions

ISMF provides access to the functions of the DFSMS family of products, as represented in Figure 1.

What You Can Do with ISMF

ISMF is a panel-driven interface. You can use the panels in an ISMF application to perform the following tasks:
- Display and print lists of information about specific data sets, DASD volumes, mountable optical volumes, and mountable tape volumes
Generate lists of data, storage, and management classes to find out how data sets are being managed
Display and manage lists saved from various ISMF applications

To determine which data sets will appear in a data set list or which volumes will appear in a volume list, you complete selection entry panels. ISMF generates a list based on your selection criteria. Once the list is built, you can use ISMF entry panels to perform space management or backup and recovery tasks against the entries in the list.

As a user performing data management tasks against individual data sets or against lists of data sets or volumes, you can use ISMF to:
- Edit, browse, and sort data set records
- Delete data sets and backup copies
- Protect data sets by limiting their access
- Recover unused space from data sets and consolidate free space on DASD volumes
- Copy data sets or DASD volumes to the same device or another device
- Migrate data sets to another migration level
- Recall data sets that have been migrated so that they can be used
- Back up data sets and copy entire volumes for availability purposes
- Recover data sets and restore DASD volumes, mountable optical volumes, or mountable tape volumes

Each site can control who can use certain functions described in this book. Your organization might require you to have authorization to use certain functions. Your security administrator can explain any restrictions your site has established.

You cannot allocate data sets from ISMF. Data sets are allocated from ISPF, from TSO, or with job control language (JCL) commands. ISMF provides the DSUTIL command, which enables users to get to ISPF and toggle back to ISMF.

For more information on what you can do with ISMF, see "Customizing the Interactive Storage Management Facility," on page 189.

Using NaviQuest with ISMF

ISMF also works with NaviQuest, allowing more automation of storage management tasks. NaviQuest is a testing and reporting tool that speeds and simplifies the tasks that are associated with DFSMS initial implementation and ongoing ACS routine and configuration maintenance. NaviQuest provides the following functions:
- Familiar ISPF panel interface to functions
- Fast, easy, bulk testcase creation
- ACS routine and DFSMS configuration testing automation
- Storage reporting assistance
- Additional tools to aid with storage administration tasks
- Batch creation of data set and volume listings
- Printing of ISMF LISTS
- Batch ACS routine translation
- Batch ACS routine validation
More information on NaviQuest can be found in z/OS DFSMSdfp Storage Administration.
Chapter 2. Accessing ISMF

This chapter explains the following basics of the Interactive Storage Management Facility (ISMF):

- Navigating through ISMF without using the action bar
- Navigating through ISMF using the action bar
- Accessing ISMF
- Selecting an option from the ISMF primary option menu
- ISMF panel concepts
- Navigating through functional panels
- Types of functional panels
- Navigating through help panels
- Using the three types of help panels

ISMF provides an action bar–driven interface that exploits many of the usability features of Common User Access™ (CUA™) interfaces. The panels will look different than in previous releases: all screens will be mixed case and most will have action bars at the top.

Navigating through ISMF without Using the Action Bar

You can still navigate through ISMF using the standard method of typing in a selection number and pressing Enter.

Navigating through ISMF Using the Action Bar

Most ISMF panels have action bars at the top. The choices display in white (by default).

The Action Bar gives you another way to move through ISMF. If the cursor is located somewhere on the panel, there are several ways to move the cursor to the action bar:

- Using the keyboard’s tab key
- Using mouse button
- Using the cursor manually

After you have chosen an Action, press ENTER to open the menu.

Figure 2 on page 6 shows the List pull-down menu for the Data Set List panel. Notice the input field in the upper left corner. In the input field, type the number of the action you want. Press ENTER.
Accessing ISMF

How you access ISMF depends on your site. This example assumes you have logged onto TSO and the ISPF Primary Option Menu is displayed.

To access ISMF type I after the arrow on the Option command line. Figure 3 shows the default ISPF Primary Option Menu.

To access ISMF directly from TSO, use the command

```plaintext
ISPSTART PGM(DGTFMD01) NEWAPPL(DGT)
```

The ISMF Primary Option Menu appears, and you can begin the ISMF session. Figure 4 on page 7 shows the ISMF Primary Option Menu for end users.
There are two Primary Option Menus: one for end users and one for storage
administrators. The menu for storage administrators includes additional
applications not available to end users. Option 0, ISMF PROFILE, controls the user
mode or the type of Primary Option Menu that is displayed. Refer to “Specifying a
User Mode” on page 108 for information on how to change the user mode.

Prerequisite: The ISMF Primary Option Menu example in Figure 4 assumes that
DFSMS is at the latest release level. For information about adding the DFSORT
option to your Primary Option Menu, refer to z/OS DFSORT Installation and
Customization.

Selecting an Option from the ISMF Primary Option Menu

The following options are available from the ISMF Primary Option Menu:

- **0**—ISMF Profile
  This option displays the ISMF Profile Option Menu. Use this menu to control the
  way ISMF runs during the session. You can select these options:
  - Change the user mode from end user to storage administrator or from storage
    administrator to end user. For more information, refer to “Specifying a User
    Mode” on page 108.
  - Control ISMF’s error logging and recovery from abends. For more
    information, see “Controlling Logging and Recovery from Abends” on page
    109.
  - Define statements for ISMF to use in processing your jobs. Examples include
    JOB statements, DFSMSdss™, Device Support Facilities (ICKDSF), Access
    Method Services (IDCAMS), and PRINT execute statements in your profile.
    You can select ISMF or Interactive System Productivity Facility (ISPF) JCL
    statements for processing batch jobs. For more information, see “Setting Up
    Background Job Information” on page 110.

- **1**—Data Set
  The Data Set Application constructs a list of data sets. Use line operators to do
tasks with individual data sets. Use list commands to do tasks with a group of
data sets. These tasks include editing, browsing, recovering unused space,
copying, migrating, deleting, backing up, and restoring of data sets. TSO
commands and CLISTs can also be used as line operators or list commands. You can save a copy of a data set list and reuse it later.

This option displays the Data Set Selection Entry Panel. For information about when to select the data set option and tasks you can do using the Data Set Application, see Chapter 3, “Generating Lists,” on page 23, Chapter 4, “Using the Data Set or Volume List,” on page 47, and Chapter 6, “Performing Data and Storage Management Tasks,” on page 93.

- **2—Volume**

  The Volume Application constructs a list of DASD volumes, mountable optical volumes, or mountable tape volumes. Use **line operators** to do tasks with an individual volume. These tasks include consolidating or recovering unused space, copying, backing up, and restoring volumes. TSO commands and CLISTs can also be line operators or list commands. You can save a copy of a volume list and reuse it later. With the list of mountable optical volumes or mountable tape volumes, you can only browse the list.

  This option displays the Volume List Selection Menu. For information about when to select the Volume option and tasks you can do using the Volume Application, see Chapter 3, “Generating Lists,” on page 23, Chapter 4, “Using the Data Set or Volume List,” on page 47, and Chapter 6, “Performing Data and Storage Management Tasks,” on page 93.

- **3, 4, and 5—Management, Data and Storage Classes**

  These options display the Storage Management Subsystem (SMS) attributes assigned to your data sets or objects. They also construct a list of the available management, data, and storage classes. If you have authorization, you can change the management and storage classes assigned to your data sets or objects from the Data Set Application. A limited set of **line operators** and **list commands** can locate the information you need or tailor the list itself.

  These options display an application selection panel. For information about when to select these options and tasks you can do using these classes, see Chapter 8, “Using Data Facility Storage Management Subsystem (DFSMS),” on page 119.

- **9—Aggregate Group**

  This option displays the Aggregate Group Application Selection panel. You can select these options from the panel:

  - Select option 1 to generate a list of all selected Aggregate Groups, and issue **line operators** and **list commands** against the entire list.
  - Select option 2 and fill in the Aggregate Group Name field to display attributes for a particular Aggregate Group.

- **L—List**

  The List Application displays a list of all lists saved from ISMF applications. Each entry in the list represents a list that was saved. When you select the List option, the Saved ISMF Lists Panel is displayed if there are any saved ISMF lists. If there are no saved lists to be found, the Primary Option Menu is redisplayed with the message that the list is empty.

  You can reuse and delete saved lists. From the List Application, you can reuse lists as if they were created from the corresponding application. You can then use **line operators** and **commands** to tailor and manage the information in the saved lists. For more information, see Chapter 4, “Using the Data Set or Volume List,” on page 47.

- **R—Removable Media Manager**

  This option displays the Primary Option Menu of the Removable Media Manager Application.

- **X—Exit**
Use this option when you finish the ISMF session. If you invoked ISMF from ISPF, you return to ISPF. If you used ISPSTART to invoke ISMF from TSO, you return directly to TSO.

You can also exit by using the END command or associated PF key.

**ISMF Panel Concepts**

ISMF is a panel-driven program for interacting in the DFSMS environment. ISMF is structured as a series of: (1) menu panels and data entry panels on which users indicate their selections; (2) output panels that display the results of the user-selected actions. Default values are provided on all data entry panels. You use selection numbers, commands, and program function keys to navigate through the panels. You can use either uppercase or lowercase characters to enter information into the input fields of the data entry panels.

All ISMF panels are formatted for use by the ISPF Dialog Manager. The standard screen is 24 lines deep and 80 characters wide.

ISMF also supports screens of the following depths and widths:
- 31 by 160
- 27 by 132
- 32 by 80
- 43 by 80

The 31 by 160 format is actually a 31 by 160 window on a 62 by 160 screen.

Only list displays occur in these additional formats. The list panels shown in this book are in the standard 24 by 80 format. All ISMF panels other than lists are always in 24 by 80 format.

There are two basic types of ISMF panels: functional panels and help panels.

*Functional panels* enable you to display information about your applications and to do tasks. You can either fill in fields to select an application and indicate values, or enter commands in the command area of certain panels.

*Help panels* provide context-sensitive help for functional panels, usually task-oriented snapshot descriptions of functional panel data entry fields or application attributes. For a detailed description of these panel types, see “Types of Functional Panels” on page 12 and “Using the Three Types of Help Panels” on page 16.

**Navigating Through Functional Panels**

There are different types of functional panels, but they all use the same navigation commands. You can use commands that you enter on the command line or program function (PF) keys that are preset with defaults.

**Controlling Functional Panel Flow**

Table 1 on page 10 shows the keys and commands that control the functional panel flow. Enter the commands explicitly on the command line. You can also set up these commands as program function (PF) keys. For an explanation of the default PF key settings and how to change them, see “Program Function (PF) Key Assignments” on page 11.
Tip: The descriptions and examples in this book assume that the command line appears at the top left of the screen. The command line on your screen might appear at either the top left or bottom left. You can control the command line location by using the ISPF Primary Option Menu and selecting Option 0.4, Display Characteristics.

Table 1. Navigation Commands for Functional Panels

<table>
<thead>
<tr>
<th>Command or Key</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENTER</td>
<td>This key either takes you to the next sequential panel or verifies the panel fields and does the specified operation.</td>
</tr>
<tr>
<td>HELP PF1</td>
<td>This command provides a long message. Then, use HELP again to go to a message help panel.</td>
</tr>
<tr>
<td></td>
<td>If an error message is not displayed, Help panels give more information about a particular ISMF functional panel or function.</td>
</tr>
<tr>
<td></td>
<td>For a more detailed explanation of how to use HELP, see “Using Help Panels for Functional Panels” on page 16.</td>
</tr>
<tr>
<td>END PF3</td>
<td>This command takes you back to the previous panel in logical sequence.</td>
</tr>
<tr>
<td></td>
<td>If you are using HELP, END takes you back to the panel from which you invoked HELP.</td>
</tr>
<tr>
<td></td>
<td>If you are looking at a list, END takes you back to the selection panel.</td>
</tr>
<tr>
<td></td>
<td>When you use END, ISMF completes the current task. In some cases, END is a save and exit operation. The instruction area for the panel describes the use of END. On some panels, the CANCEL command ends the task; END saves the data and returns you to the selection panel.</td>
</tr>
<tr>
<td>RETURN PF4</td>
<td>This command takes you back to the ISMF Profile Option Menu if you are within the Profile Application; to the ISMF Primary Option Menu if you are in any other application; or to the functional panel from which you originally asked for HELP if you are on an ISMF help panel. If you are on an ISMF functional panel, RETURN is equivalent to repeatedly entering the END command until a menu panel is reached. Therefore, it will normally save the data when you exit an application.</td>
</tr>
<tr>
<td>CANCEL</td>
<td>This command returns you to the previous dialog without performing any of the current dialog functions. A dialog in this context is a set of related panels, such as the set of pages for generating a list or the set of pages for the created list for example. Use this command to exit the current dialog without saving the values you entered in the input fields. The command is valid from the Mountable Optical and Mountable Tape Volume Applications, the SMS applications, and the List Application.</td>
</tr>
<tr>
<td>UP PF7</td>
<td>This command enables you to go back to the previous panel usually when you have used the DOWN command to access the current panel.</td>
</tr>
<tr>
<td>DOWN PF8</td>
<td>This command enables you to access additional selection panels, usually panels on which you narrow down your selections rather than use defaults.</td>
</tr>
<tr>
<td>PROFILE</td>
<td>This command takes you to the ISMF Profile Option Menu. From this menu, you can change the characteristics of your ISMF user profile. Enter the PROFILE command from any ISMF panel except the menu panels and the panels listed under the ISMF Profile Option Menu.</td>
</tr>
</tbody>
</table>
Table 1. Navigation Commands for Functional Panels (continued)

<table>
<thead>
<tr>
<th>Command or Key</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERTB</td>
<td>This command takes you to the Error Table. ISMF passes detailed information to the Error Table when an ISMF error occurs. This information provides further explanation to help diagnose an ISMF error message. You can enter the ERTB command as soon as the error occurs. Enter the ERTB command on any functional panel except the ISMF Primary Option Menu or the ISMF Profile Option Menu. You cannot enter the ERTB command when you are in PDF BROWSE or EDIT. For more information, see Figure 30 on page 43.</td>
</tr>
</tbody>
</table>

Program Function (PF) Key Assignments

ISMF supports one set of PF key assignments for the Primary Option Menu and one for each of the ISMF applications. When you install ISMF, the Primary Option Menu and the ISMF applications have common PF key assignments. Table 2 shows the initial PF key assignments.

Table 2. Initial PF Key Assignments

<table>
<thead>
<tr>
<th>Key</th>
<th>Assignment</th>
<th>Key</th>
<th>Assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>PF1/13</td>
<td>HELP</td>
<td>PF7/19</td>
<td>UP</td>
</tr>
<tr>
<td>PF2/14</td>
<td>SPLIT</td>
<td>PF8/20</td>
<td>DOWN</td>
</tr>
<tr>
<td>PF3/15</td>
<td>END</td>
<td>PF9/21</td>
<td>SWAP</td>
</tr>
<tr>
<td>PF4/16</td>
<td>RETURN</td>
<td>PF10/22</td>
<td>LEFT</td>
</tr>
<tr>
<td>PF5/17</td>
<td>not assigned</td>
<td>PF11/23</td>
<td>RIGHT</td>
</tr>
<tr>
<td>PF6/18</td>
<td>not assigned</td>
<td>PF12/24</td>
<td>CURSOR</td>
</tr>
</tbody>
</table>

Displaying PF Key Assignments

The ISPF PFSHOW command displays the current PF key settings at the bottom of your screen. Once you enter PFSHOW, the PF key assignments remain until you enter the PFSHOW OFF command.

Changing PF Key Assignments

Use the KEYS command to change the PF key assignments. Because the ISMF Primary Option Menu and the ISMF applications all have their own sets of PF keys, the KEYS command affects only the menu panel or application in use when you enter the command. The new PF key assignments remain in effect until you alter them again.

Simply enter the KEYS command on the menu panel or any page of the application you want:

Command ===> KEYS

ISMF displays a PF Key Definition Panel with the current PF key settings for the ISMF Primary Option Menu or application. Change the PF key definitions on the PF Key Definition Panel to suit your needs.

Related Reading: For more information on customizing PF keys, refer to z/OS V2R2 ISPF Services Guide.
Types of Functional Panels

The basic types of functional panels are:
- Menu panels
- Data entry panels
- List panels
- Display panels
- Confirmation panels

Figure 9 on page 15 gives descriptions and examples of each type of panel.

Menu Panels

A menu panel displays the available ISMF applications or functions. Select an option and press enter.

Figure 5 is an example of a menu panel. To look at or change your logging and abend control settings, enter a 1 on the command line.

![Panel Help](https://example.com/panel-help)

Use HELP Command for Help; Use END Command to Exit.

Figure 5. Example of an ISMF Menu Panel

Data Entry Panels

A data entry panel contains fields that you must fill in with information that ISMF needs to do a task. ISMF primes mandatory fields with default values or with previously specified values.

Figure 6 on page 13 is an example of a data entry panel. Input fields are preceded by an input arrow (===>). Fields that are preceded by a colon show output data that cannot be written over.
List Panels

A list panel is a tabular display of information about data sets, volumes, or SMS classes. List panels contain status information for each item in the list. Use a list panel to do tasks for an individual item or for the entire list.

Figure 7 is an example of a list panel. This panel shows total amount of space allocated, amount of space actually used, percentage of allocated space not currently used, and whether the data set is in compressed format.

Figure 6. Example of an ISMF Data Entry Panel

Chapter 3, “Generating Lists,” on page 23 explains how to construct a list containing only the items you want. Chapter 4, “Understanding the Format and Contents of the Lists” on page 47 explains the format of list panels and how to use the panels.
Display Panels

A display panel shows the attributes of one data class, management class, or storage class. You cannot change the information on a display panel.

Figure 8 is an example of a display panel.

<table>
<thead>
<tr>
<th>Panel Utilities</th>
<th>Scroll Help</th>
</tr>
</thead>
<tbody>
<tr>
<td>Command =/&gt;</td>
<td></td>
</tr>
<tr>
<td>CDS Name ........ : ACTIVE</td>
<td></td>
</tr>
<tr>
<td>Management Class Name : ACCTDSN4</td>
<td></td>
</tr>
</tbody>
</table>

Backup Attributes

- Backup frequency ........... : 1
- Number of backup versions ....... : 2
  (Data Set Exists)
- Number of backup versions ....... : 1
  (Data Set Deleted)
- Retain days only backup version .... : 30
  (Data Set Deleted)
- Retain days extra backup versions ... : 60

- Admin or User Command Backup ....... : BOTH
- Auto Backup ................. : YES
- Backup copy technique ........... : STANDARD

Use UP Command to View previous Panel; Use Down Command to View next Panel; Use HELP Command for Help; Use END Command to Exit.

Figure 8. Example of an ISMF Display Panel

Chapter 8, “Using Data Facility Storage Management Subsystem (DFSMS),” on page 119, discusses data classes, management classes, and storage classes.

Confirmation Panels

A confirmation panel is a warning that ISMF displays before beginning some operations, usually a delete. The confirmation panel asks you to verify that you really want ISMF to do the specified operation.

Figure 9 on page 15 is an example of a confirmation panel. Press the ENTER key to continue or use the END command to cancel the operation.
Navigating Through Help Panels

Although there are different types of ISMF help panels, they all use the same basic navigation commands.

The following keys and commands control the flow of the help panels. They are the same as the keys and commands ISPF uses for HELP. You can abbreviate these commands by using enough letters to distinguish the command from others. The minimal abbreviations you may use are printed in bold characters in Table 3.

Table 3. Navigation Commands for Help Panels

<table>
<thead>
<tr>
<th>Command or Key</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENTER</td>
<td>This key takes you to the next sequential help panel associated with a particular panel.</td>
</tr>
<tr>
<td>END PF3</td>
<td>This command takes you to the functional panel from which you originally asked for help.</td>
</tr>
<tr>
<td>UP PF7</td>
<td>This command takes you to the previous help selection list. From the selection list you can choose another related topic.</td>
</tr>
<tr>
<td>BACK</td>
<td>This command takes you to the help panel you looked at last.</td>
</tr>
<tr>
<td>SKIP</td>
<td>This command takes you to the help panel for the next related topic. In some cases, using the SKIP command is the same as pressing ENTER.</td>
</tr>
<tr>
<td>INDEX</td>
<td>This command takes you to the index for the ISMF help panels. Within the ISMF help index, use the ENTER key to continue with the index or the END command to return to the data entry panel. For more information, see &quot;Using the Help Panel Index&quot; on page 21.</td>
</tr>
<tr>
<td>HELP PF1</td>
<td>This command in HELP takes you to an ISPF tutorial panel about these HELP commands.</td>
</tr>
</tbody>
</table>
Using the Three Types of Help Panels

There are three types of ISMF help panels:

- Help panels for functional panels
  These help panels describe the data attributes of the output panel currently displayed, or the data entry fields, commands, and line operators for the data entry panel currently displayed. In general, they tell you how to interpret output panels and how to complete a task from the data entry panels. Help panels also give overviews of the different applications.

- Help panels for error messages
  This type of help panel explains error messages and informational messages encountered on an ISMF functional panel.

- Help panel index
  A Help Index is available from ISMF Help. It explains the terms and attributes encountered on an ISMF functional panel.

Tip: You can use the ISPF Help and ISPF Tutorial to get additional information on how to use the panels. From an ISMF help panel, use PF1 (Help) to get to an ISPF tutorial page, which lists some of the navigation commands for ISMF help panels. To view the complete tutorial, you can either create a second session using PF2 to split the screen or leave ISMF and use your current ISPF session to run the tutorial.

Using Help Panels for Functional Panels

ISMF help panels offer immediate online reference information to help you interpret and complete the ISMF panels. ISMF HELP is similar to ISPF HELP. Any time an ISMF panel is displayed, you can invoke HELP for that panel by entering HELP on the command line or pressing the associated PF key. You can also invoke help for a particular field in a panel by placing the cursor in the field and pressing the PF key.

Figure 10 on page 17 shows page 1 of the Data Set Selection Entry Panel. Enter the HELP command (or use the associated PF key) on this panel.
When there is no error message, ISMF takes you to a panel containing an overview of how the Data Set Selection Entry Panel works (Figure 11). This panel lists specific entry fields you can select for more information.

Read the help panels in sequence by pressing the ENTER key. Or read about a specific topic by entering its selection number on the command line. For example, after typing in 5 on the help panel in Figure 11, ISMF takes you to a panel explaining the DATA SET NAME field (Figure 12 on page 18).
Use the END command to go back to the Data Set Selection Entry Panel.

Use the UP command to go back to the help menu and choose another topic.

**Using Help Panels for Error Messages**

ISMF also provides HELP for the ISMF messages displayed on your screen. When ISMF detects an error, you see a short error message in the upper right corner of the screen. For more information, use the HELP command. ISMF displays a long error message that further describes the problem. The long error message appears just below the command line. If your ISPF user profile sets the command line to the bottom of the screen, the long message appears just above the command line.

If you invoke HELP again, ISMF displays a message help panel. This panel contains both the short and long messages and suggests how to correct the problem.

Figure 12 on page 19 through Figure 15 on page 20 shows this sequence when the command RSETORE (instead of RESTORE) is entered on the command line of the Data Set List panel in Figure 13 on page 19.
The short message \texttt{INVALID COMMAND} appears in the upper right corner indicating that ISMF did not recognize the command.

Use the \texttt{HELP} command. ISMF displays the long message shown on the third line of Figure 14.

\begin{figure}
\begin{center}
\begin{tabular}{lllll}
\hline
\textbf{LINE} & \textbf{OPERATOR} & \textbf{DATA SET NAME} & \textbf{ALLOC} & \textbf{ALLOC} & \textbf{\% NOT} \\
\hline
\text{-(-1)-} & \text{RSETORE} & \text{USER1.DEB.LISTING1} & \text{USER1.ISMF.SYSIN.D880125.} & \text{46K} & \text{40K} & \text{13} \\
& & & \text{T105441} & & & \\
& & \text{USER1.ISPFFILE} & \text{139K} & \text{93K} & \text{33} \\
& & \text{USER1.ISPPROF} & \text{185K} & \text{185K} & \text{0} \\
& & \text{USER1.SPFLOG1.LIST} & \text{371K} & \text{371K} & \text{0} \\
& & \text{USER1.SPFTEMP1.CNTL} & \text{---------} & \text{---------} & \text{---} \\
& & \text{USER1.SPF3.LIST} & \text{788K} & \text{788K} & \text{0} \\
\hline
\end{tabular}
\end{center}
\caption{Figure 13. Example of a Short Error Message}
\end{figure}

\begin{figure}
\begin{center}
\begin{tabular}{lllll}
\hline
\textbf{LINE} & \textbf{OPERATOR} & \textbf{DATA SET NAME} & \textbf{ALLOC} & \textbf{ALLOC} & \textbf{\% NOT} \\
\hline
\text{-(-1)-} & \text{RSETORE} & \text{USER1.DEB.LISTING1} & \text{USER1.ISMF.SYSIN.D880125.} & \text{46K} & \text{40K} & \text{13} \\
& & & \text{T105441} & & & \\
& & \text{USER1.ISPFFILE} & \text{139K} & \text{93K} & \text{33} \\
& & \text{USER1.ISPPROF} & \text{185K} & \text{185K} & \text{0} \\
& & \text{USER1.SPFLOG1.LIST} & \text{371K} & \text{371K} & \text{0} \\
& & \text{USER1.SPFTEMP1.CNTL} & \text{---------} & \text{---------} & \text{---} \\
& & \text{USER1.SPF3.LIST} & \text{788K} & \text{788K} & \text{0} \\
\hline
\end{tabular}
\end{center}
\caption{Figure 14. Example of a Long Error Message}
\end{figure}

The long message gives a further explanation of the error, suggesting that you check the syntax.

If you invoke \texttt{HELP} again, ISMF displays the message help panel shown in Figure 15 on page 20, which tells you how to proceed.
Some message help panels link back to the help panels for ISMF panels. If a panel is linked, the bottom instruction line tells you to use ENTER to look at the next ISMF help panel.

Because ISMF is an ISPF application, ISMF also displays ISPF error messages. If you receive an ISPF error message, you will always see a short error message and an associated long error message. However, you will not always see a message help panel.

**MESSAGE Line Operator**

When you are working with list panels, use the **MESSAGE** line operator to display messages resulting from a previously used line operator. The resulting messages can help diagnose errors that occur when ISMF processes line operators. Line operators are commands you use in the line operator field of a list panel to perform functions on individual entries in the list. For more information about line operators, see “Line Operators” on page 77.

ISMF saves the information from the last operation performed on a specific list entry even if this operation was not the last one that ISMF did. However, ISMF only saves the information from the last operation performed for line operators that update the message history. **SECURITY** is an example of a line operator that does not update the message history.

Enter **MESSAGE** in the line operator column over the original line operator that failed. Be sure to delete at least the first character that remains from the original line operator.

A short message appears in the upper right corner of the list panel. If you invoke HELP after the short message is displayed, a longer version of the message appears just below the command line. If you invoke HELP a second time, ISMF takes you to a help panel similar to the one shown in Figure 15. This MESSAGE help panel provides information about the line operator that failed.
Figure 16 shows an example of the MESSAGE line operator.

In this example, the COMPRESS line operator was entered and processed for three individual data sets. However, the third COMPRESS command was misspelled. Typing in the MESSAGE line operator on top of the line operator causing the error gives information about the last operation done on that data set.

Using the Help Panel Index

There is an online index for ISMF help panels. From any help panel, type INDEX on the command line. To find a topic from the index, enter the first letter or special character of the topic on the command line. Index entries starting with that character appear. Select the index entry you want by typing in the number of the entry on the command line.

Figure 17 on page 22 shows one page of the help panel index. Enter the topic identifier 31 as shown.
ISMF displays the ALLOCATED SPACE (ALLOC SPACE) help panel, as shown in Figure 18.

Use the ENTER key to go back to the help panel index. Use the END command from either the index or help panel to return to the functional panel you were using when you invoked HELP.
Chapter 3. Generating Lists

You can construct a list of information about specific data sets, volumes, or SMS classes. This list can help you manage your data and storage. To generate a list of data sets, volumes, or SMS classes, select the appropriate ISMF application and supply the required information on the application selection entry panels.

This chapter gives an overview of the following topics:

- The basics of generating lists
- Generating each type of list
- List generation error messages
- Redisplaying a list during an ISMF session

Some Basics of Generating Lists: Listing Data Sets and Volumes

As mentioned, the goal of list generation is to provide a list of data sets, volumes, or SMS classes and their attributes. Through these lists, you may directly manage your data for space, availability, and performance.

To generate a list, you must describe to ISMF which data sets or volumes to include. You can generate a list of your data sets using the defaults, or a list containing only a few narrowly selected entries by entering more specific information about the entries on the appropriate selection entry panel. The more entries you select, the longer it will take to generate the list.

**Rule:** If you limit more than one field on a selection entry panel, the list contains only the data sets meeting *all* of the selection criteria. If ISMF cannot determine whether a data set meets your selection criteria, the data set will be included in the list. Values of dash (-), question mark (?), less-than (<), and greater-than (>) always meet any selection criteria.

The Data Set and DASD Volume Applications have more than one page for entering selections. Page 1 is mandatory. The other pages of these applications are optional. They include only fields that you may use as criteria to limit the types of data sets or volumes you wish to appear in the final list. All of these optional selection criteria correspond to the informational data attributes provided in the generated lists. Use the following scrolling commands to move back and forth through the pages of selection entry panels:

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOWN</td>
<td>Takes you to the next page of the selection entry panel.</td>
</tr>
<tr>
<td>UP</td>
<td>Takes you to the previous page of the selection entry panel.</td>
</tr>
</tbody>
</table>

Scroll back and forth through the pages of a selection entry panel until you have finished filling in all the fields you need. Press the ENTER key to create the list.

Specifying Information in Input Fields

To fill out a selection entry panel, enter information in the input fields. As mentioned, some fields are mandatory and some are optional. When a selection entry panel is first used, ISMF displays default values in the mandatory fields. The optional fields are blank. ISMF online help describes each field.
The input fields on the selection entry panels hold their values from the last time you generated a list. Change an existing value by typing over it. Erase an existing value by spacing over it with blanks.

Use the CLEAR command to reset all fields on a selection entry panel to their default settings. Enter CLEAR on the command line in one of the following ways:

- **CLEAR PAGE**
  Clears the current page of the selection entry panel.

- **CLEAR PAGE x**
  Clears page x of the selection entry panel.

- **CLEAR ALL**
  Clears all pages of the selection entry panel.

**Tip:** CLEAR PAGE is the only valid CLEAR command that you can use for applications with only one selection entry panel page.

### Limiting Entries in the List and Partial Qualification

The information you supply on a selection entry panel limits the entries appearing on a list. Each input field on a selection entry panel corresponds to a data column in the corresponding list panel. For example, specify a single data set name on the Data Set Selection Entry Panel. The corresponding list panel contains a single entry for that data set. Or, if you specify a partial data set name, the corresponding list panel contains all data sets whose name matches the partial name. The process of selecting data sets and volumes using partial names is called *partial qualification.*

### Partially Qualifying Data Set Names

To qualify data set names, use asterisks and percent signs as global file-name characters within a qualifier:

- Use a percent sign as a global file-name character for a single position:

  **Data Set Name ===> TEST%**

  ISMF selects data sets whose name is exactly five characters and starts with the letters TEST. This example could include TEST1 to TEST9 or TESTA to TESTZ, or both.

- Use an **asterisk** as a global file-name character for zero or more characters.

  For example, when you specify the following data set name, ISMF selects data sets whose name consists of only one qualifier and begins with the letters TEST. This could include: TEST, TESTX, and TEST1 through TEST1000:

  **Data Set Name ===> TEST**

- When specifying a data set name, use a **double asterisk** as a global file-name character for any number of qualifiers. A *qualifier* is one of the parts connected by periods that constitute a data set name. A data set name consists of one or more qualifiers.

  For example, when you specify the following partial data set name, ISMF selects data sets with any number of qualifiers:

  **Data Set Name ===> 'SYS1.**'**

  The first qualifier must be SYS1. The other qualifiers can be anything. ISMF could select the following data sets: SYS1.TEST.TEST, SYS1.LIST.XMP, SYS1.MEMO.EMPL.A.

  You can use and mix several global file-name characters to qualify data sets. For example:
Data Set Name ===> 'SYS*%.B*%%%%%.C'

In the first qualifier, SYS*%, the percent sign means that there must be at least one character after the letters SYS. In the second qualifier, B*%%%%%, the five percent signs mean that there must be at least five characters after the letter B. The asterisk between the letter B and the first percent sign indicates that zero or more characters can be inserted in this position.

**Partially Qualifying DASD Volume Names**

Use an asterisk sign as a global file-name character for zero or more characters.

For example, when you specify the following partial volume serial number, ISMF lists all volume names whose first three characters are SYS.

Volume Serial Number ===> SYS*

The list might include SYS1, SYSA, SYS, or SYSLIB.

In a later discussion of selection entry panels (starting with ["Generating a Data Set List"](#)), the instructions for each field explain how the global file-name characters work in different situations.

**Other Ways of Limiting Entries**

For many fields on the selection entry panels, you can specify ranges of acceptable values. For example, use the Data Set Selection Entry Panel to ask for data sets created between two selected dates. Or, use the Volume Selection Entry Panel to ask for volumes with more than 100 free extents.

You can combine selection criteria to produce highly selective lists. For example, use the Data Set Selection Entry Panel to ask for all data sets on a specific volume last referenced more than six months ago. Or, use the Volume Selection Entry Panel to ask for a list of volumes with less than 20% free space and a high fragmentation index.

**Generated List Panel**

The output generated from the selection entry panels is displayed in a list panel. Please refer to ["Understanding the Format and Contents of the Lists" on page 47](#) for a description of the list panels.

### Generating a Data Set List

Select option 1, Data Set Application, from the ISMF Primary Option Menu. ISMF then displays the first page of the Data Set Selection Entry Panel. Page 1 contains several mandatory and optional fields. The other pages contain optional fields. The following sections explain how to fill in each of the pages.

### Completing Page 1 of the Data Set Selection Entry Panel

Only DASD data sets, or data sets originally allocated on DASD and migrated to tape, are included in the data set lists. Use the fields on page 1 of the Data Set Selection Entry Panel to set up your basic selection criteria: the names of the data sets to include in the list and the source ISMF uses to generate the list.

[Figure 19 on page 26](#) shows page 1 with its default values.
Here is an overview of each field:

**For a Data Set List, Select Source of Generated List**

In this mandatory field, indicate whether to create a new list or use a list previously saved with the SAVE command.

**Option Meaning**

1. **Use a list previously saved with the SAVE command.** When selecting this option, you must complete the field under Generate from a Saved List. See “Saving a Copy of the List” on page 70 for more information.

2. **Create a new list.** When selecting this option, you must complete the fields under Generate a New List from Criteria Below.

**1 Generate from a Saved List**

Complete the following field if you selected option 1 for Select Source of Generated List:

**List Name**

Enter the name of a list previously saved with the SAVE command. The list name can be up to 8 alphanumeric characters long and must follow naming conventions for members of partitioned data sets.

**2 Generate a New List from Criteria Below**

Complete the following fields if you selected option 2 for Select Source of Generated List:

**Data Set Name**

The name entered in this field determines which data sets appear in the list. Enter a fully qualified name and the list contains only that data set. Enter a partially qualified name and the list contains all data sets whose name matches the specified criteria.

Use up to 46 characters, including periods used as delimiters and single quotation marks. If you put single quotation marks around the data set name (for example, 'K665941.CLIST.CLIST'), ISMF uses the name exactly as entered.
To partially qualify a data set name, use asterisks and percent signs as global file-name characters. "Limiting Entries in the List and Partial Qualification" on page 24 explains how to use these.

Use a percent sign, a single asterisk, or a double asterisk to ask ISMF to select multiple data sets. The effect of this request depends on whether you use single quotation marks with the asterisks.

**Asterisks used without single quotation marks.**

Use single or double asterisks to select data sets with your TSO prefix or userid.

If you enter a single asterisk:

Data Set Name ===> *

ISMF uses your TSO prefix or userid as the first qualifier and lists all data sets with two qualifiers. The first qualifier must be your prefix. The second qualifier can be anything.

If you enter a double asterisk:

Data Set Name ===> **

ISMF uses your TSO prefix or userid and lists all data sets with your prefix as the first qualifier and any number of additional qualifiers.

**Asterisks used with single quotation marks**

Use single quotation marks with a single asterisk or double asterisk. You can do this if you generate the list from the VTOC (by selecting option 1 for Specify the Source of the New List) or from a catalog (by selecting option 2 for Specify the Source of the New List and providing a catalog name in the Catalog Name field). Use a single asterisk to take the place of a single qualifier, including a high-level qualifier:

Data Set Name ===> '*.LOAD'

Use a double asterisk to take the place of any number of qualifiers. Here is an example showing how to specify a double asterisk along with all the other necessary options:

Data Set Name ===> '**'

Specify Source of the New List ===> 2 (1 - VTOC, 2 - Catalog)

; 2 Generate List from Catalog
Catalog Name ===> SYS1.ICFCAT.ABC0D1

If you specify SYS1 as your first data set qualifier and do not use a global file-name character at the end of the qualifier, ISMF checks only the catalog where SYS1 is cataloged. If instead of the character 1 you use an asterisk as a global file-name character at the end of the first data set qualifier, ISMF checks all the catalogs that include data sets starting with the SYS characters. Thus, if you generate a list using 'SYS*.VDS.*' you may retrieve more entries starting with SYS1 than if you use 'SYS1.VDS.*'. This is because ISMF supports aliases.

If a 'SYS1' data set is allocated using an indirect volser ('*****'), any action against it will result in the indirect volser being resolved to the current system sysres volume. This is regardless if the list was generated using a catalog name in another system.
**Generate Exclusive List**

In this field, indicate whether you want to generate an exclusive list or an inclusive list. The exclusive list has only the criteria entered in the selection entry panel. The inclusive list has those entries that include the values of dash (-), question mark (?), less-than (<), and greater-than (>), along with entries in the exclusive list.

**Option Meaning**

/ or any non-blank character  
Generates exclusive list

Blank  
Generates inclusive list

**Specify Source of the New List**

In this field, indicate where ISMF must gather information about the data sets you specified in the Data Set Name field. Refer to Appendix A, “Special Considerations,” on page 163 for special considerations about what source you should choose.

**Option Meaning**

1  
ISMF gathers data set names from the volume table of contents (VTOC) without going through the catalog. Also use this option when you want to gather information about uncataloged data sets. When you select this option, you must complete the fields under Generate List from VTOC.

2  
ISMF goes to the integrated catalog facility catalog to retrieve information. When you select this option, you must complete the fields under Generate List from Catalog.

If you want ISMF to access the VTOC in addition to the catalog, enter Y in the Acquire Data from Volume field. If you want ISMF to retrieve information about migrated data sets, enter Y in the Acquire Data if DFSMSshm Migrated field.

If you choose the catalog as the only source for the list, the following information appears in the data set list:

- Data set name
- Volume serial number
- Device type
- Creation date
- Expiration date
- Whether the data set is multivolume
- Storage Management Subsystem information
- Entry type
- Data set environment
- Owner
- Number of Stripes
- Data set name type
- Whether the data is in compressed format
- Percentage of user data reduction (if in compressed format)
- Whether DDM attributes exist for the data set
- Code Character Set ID description

**See Also:** For a list of CCSIDs and default LOCALNAMEs, see z/OS DFSMSdfp Storage Administration
1 Generate List from VTOC

Complete one of the following fields if you selected option 1 for Specify the Source of the New List.

Volume Serial Number
Enter a full or partial serial number of the volume or volumes whose VTOC ISMF must search for information about the data sets specified in the Data Set Name field.

Complete the Volume Serial Number field with either a full or partial volume serial number of one to six characters. To specify a partial volume serial number, use an asterisk in any position as a global file-name character. For example:

1 Generate List from VTOC
   Volume Serial Number ===> SYS*

You can specify six asterisks for the system residence volume (SYSRES):

1 Generate List from VTOC
   Volume Serial Number ===> *****

The generated list contains all the data sets on the SYSRES volume that meet your other selection criteria. The actual volume serial number of each data set appears in the volume serial number data column.

Note: Volume Serial Number is not allowed when Storage Group Name is specified.

Storage Group Name
Enter the name of a storage group that contains the volume or volumes whose VTOC ISMF must search for information about the data sets specified in the Data Set Name field.

The generated list contains all the data sets on the SYSRES volumes specified by the storage group that meet your other selection criteria. The actual volume serial number of each data set appears in the volume serial number data column.

Note: Storage Group Name is not allowed when Volume Serial Number is specified.

2 Generate List from Catalog

Complete the following fields if you selected option 2 for Specify the Source of the New List.

Catalog Name
In this optional field, enter without quotation marks a fully qualified, integrated catalog facility catalog name of up to 44 characters: If you specify a catalog name, ISMF searches only that catalog for data sets that meet your selection criteria. In the SMS environment, you will need the proper level of directed catalog search authority to access the data sets of this catalog. If not specified, ISMF searches in the standard catalog order of search (usually user catalogs, then master catalog).

Volume Serial Number
Enter a full or partial volume serial number. When generating the list, ISMF includes only those data sets residing on the volumes you choose. The volumes must be mounted in order to be accessed.

You can enter a specific volume serial number of one to six characters:
Volume Serial Number ====> SYS001

Or enter a partial volume serial number by using a single asterisk as a global file-name character:
Volume Serial Number ====> SYS*

To specify the system residence volume (SYSRES), use six asterisks:
Volume Serial Number ====> ******

Or specify the actual SYSRES volume serial number:
Volume Serial Number ====> RESI01

If you use six asterisks for the SYSRES volume, only data sets cataloged with this notation (instead of a specific volume serial number) appear in the data set list. If you specify the actual SYSRES volume serial number, only data sets cataloged using the actual volume serial number appear in the list.

Use a single asterisk to specify all cataloged data sets that fit your other selection criteria, regardless of the volume they reside on:
Volume Serial Number ====> *

**Acquire Data from Volume**

Indicate whether to retrieve information from the volume in addition to information retrieved from the catalog:

**Option Meaning**

Y ISMF first accesses the catalog to gather as much information as possible. ISMF then goes to the volume to retrieve additional information for the list. If the data set has not been migrated, you gain the following additional information:
- Amount of allocated space
- Amount of used space
- Data set environment (VSAM data and index component)
- Percentage of allocated space not used (only for non-VSAM data sets)
- Number of extents
- Allocation unit
- Secondary allocation
- Data set organization
- Record format
- Record length
- Block size or control interval size
- Optimal block or control interval size
- Blocks unused
- Last reference date
- Change indicator
- Reblockable indicator
- Last backup date

N ISMF does not access information in the volume.
Acquire Data if DFSMShsm Migrated

Indicate whether to retrieve information from the migration control data set in addition to information retrieved from the catalog:

**Option Meaning**

**Y** ISMF goes to the DFSMShsm migration control data set (MCDS) for information about migrated data sets. The expiration date is also obtained. Gathering information about migrated data sets increases the time it takes to generate the list. For more information about migrated data sets, see “Using ISMF for Migrated Data Sets” on page 164.

**N** ISMF does not gather information about migrated data sets.

Once you complete page 1 of the Data Set Selection Entry Panel, use the next pages to specify additional selection criteria for your list. You can bypass any or all of the next pages. However, ISMF checks for values on these pages. If values are present from a previous session, ISMF displays the short message OTHER VALUES PRESENT.

**Completing Optional Pages of the Data Set Selection Entry Panel**

You can limit the number of entries you retrieve by further defining your selection criteria on the optional pages of the application. Please refer to the online help panels for more information.

**Final Step: Generating the List**

After completing the five pages of the Data Set Selection Entry Panel, you are ready to generate the data set list. Press the ENTER key. ISMF displays the data sets that meet your selection criteria, as shown in Figure 20.

---

**Panel List Dataset Utilities Scroll Help**

---

**DATA SET LIST**

Command ===> Scroll ===> HALF

Entry Line Operators below:

Data Columns 3-5 of 41

---(1)---- ------------(2)------------ ---(3)--- ---(4)--- -(5)-

SYS1.ADFMAC1 --------- --------- ---
SYS1.BROADCAST --------- --------- ---
SYS1.CBRDORB1I --------- --------- ---
SYS1.CNSLIB --------- --------- ---
SYS1.CLIST --------- --------- ---
SYS1.CMOLIB --------- --------- ---
SYS1.COB2LIB --------- --------- ---
SYS1.CSSLIB --------- --------- ---
SYS1.COBPSLIB.PARMLIB --------- --------- ---
SYS1.COBPSLIB PROCLIB --------- --------- ---
SYS1.DAE --------- --------- ---
SYS1.DBBLIB --------- --------- ---
SYS1.DFPSHDS.PLX2ACT. --------- --------- ---

VCV0PX1

---

**Figure 20. Generated Data Set List Panel**

**Tips:**
1. If you limit more than one field on a selection entry panel, the list contains only the data sets meeting all of the selection criteria. If ISMF cannot determine whether a data set meets your selection criteria, the data set will be included in the list. Values of dash (-), question mark (?), less-than (<), and greater-than (>), always meet any selection criteria. If the exclusive list field contained in the panel is specified, the list generated will contain only the entries that meet the specified selection criteria. If this field is not specified, the list will be inclusive. You can use the filter command with the same selection criteria to exclude entries with the special characters.

2. When dealing with VSAM data sets, it is best to include all selection criteria because some selection criteria are not in the cluster, causing them to be excluded if exclusive is specified. Few of the line operators will function only against clusters.

Related Reading: After creating a list, you can sort and tailor it to your needs before beginning storage management tasks. See Chapter 4, “Using the Data Set or Volume List,” on page 47.

3. To save a new list that you have generated, enter the SAVE command followed by the name you want to use to identify the list. Read about “Saving a Copy of the List” on page 70.

---

Generating a DASD Volume List

Select option 2, Volume Application, from the ISMF Primary Option Menu. ISMF then displays the Volume List Selection Menu (Figure 21).

![Figure 21. The Volume List Selection Menu](image)

To generate a list of DASD volumes, select option 1, as shown in Figure 21. ISMF then displays the first of three pages of the Volume Selection Entry Panel. Page 1 contains several mandatory fields, and the others contain optional fields. The following sections explain how to fill in each of the pages.

Completing Page 1 of the Volume Selection Entry Panel

Use the fields on page 1 of the Volume Selection Entry Panel to set up your basic selection criteria: the serial numbers of the volumes to include in the list and the source ISMF uses to generate the list.

![Figure 22 on page 33](image) shows page 1 with its default values.
Here is an overview of each field:

**Select Source to Generate Volume List**

In this mandatory field, indicate whether to create a new list or use a list previously saved using the SAVE command.

**Option Meaning**

1. Use a list previously saved with the SAVE command. When selecting this option, you must complete the field under **Generate from a Saved List**. See "Saving a Copy of the List" on page 70 for more information.

2. Create a new list. When selecting this option, you must complete the fields under **Generate a New List from Criteria Below**.

**1 Generate from a Saved List**

Complete the following field if you selected option 1 for **Select Source to Generate Volume List**:

**List Name**

Enter the name of a list previously saved with the SAVE command. The list name can be up to 8 alphanumeric characters long and must follow naming conventions for members of partitioned data sets.

**2 Generate a New List from Criteria Below**

Complete the following fields if you selected option 2 for **Select Source to Generate Volume List**:

**Specify Source of the New List**

Indicate where ISMF must look or go to generate the volume list.

**Option Meaning**

1. Generate the list from volumes physically known (either online or off-line) to the system. To get non-SMS-managed volumes, the storage group name and control data set (CDS) name must be blank.

2. Generate the list from volumes defined to a storage group of a
specified CDS. The retrieved volumes can be either online or off-line DASD, but only online DASD will contain information.

**Generate Exclusive List**

In this field, indicate whether you want to generate an exclusive list or an inclusive list. The exclusive list has only the criteria entered in the selection entry panel. The inclusive list has those entries that include the values of dash (-), question mark (?), less-than (<), and greater-than (>), along with entries in the exclusive list.

**Option Meaning**

/ or any non-blank character  
Generates exclusive list

Blank  
Generates inclusive list

**Type of Volume List**

Use this optional field to choose online or off-line volumes, or both.

**Option Meaning**

1  
Include only online volumes.

2  
Include only offline volumes.

3  
Include all volumes, online and offline.

**Restriction:** An "end user" can generate only online volume lists. Creating offline lists (option 2 or 3) requires "system administrator" mode.

**Volume Serial Number**

Enter a full or partial serial number of the volume or volumes to include in the list.

Use this optional field to restrict the list to volumes with a specific volume serial number or range of volume serial numbers. To include a single volume, enter a fully qualified volume serial number of one to six characters:

Volume Serial Number ===> SYS001

To include a range of volumes, enter a partially qualified volume serial number by using a single asterisk as a global file-name character:

Volume Serial Number ===> SYS*

Use six asterisks to specify the system residence volume (SYSRES):

Volume Serial Number ===> *****

Use a single asterisk to specify all mounted volumes that fit your other selection criteria:

Volume Serial Number ===> *

**Device Type**

Use this optional field to restrict the list to volumes of a particular type. The device type must be between one and eight characters. Use a generic name (such as 3390) or an esoteric name (such as SYSDA). The name can be fully or partially qualified.

To specify a fully qualified name, enter:

Device Type  
3390

To specify a partial name, use a single asterisk as a global file-name character:
Device Type ===> 33*

To indicate all device types, use a single asterisk:
Device Type ===> *

Device Number
Use this optional field to restrict the list to volumes on a single device or range of devices. Device number is sometimes called unit address. You must specify each device number in one to four hexadecimal characters.

For a single device number, enter:
Device Number ===> 4CD7
To Device Number ===> 

For a range of device numbers, enter:
Device Number ===> 4CD7
To Device Number ===> 4CDF

Acquire Physical Data
Use this optional field to add additional information to the volume list. The information consists of the physical characteristics of the DASD on which the volumes reside.

Option Meaning
Y Include information from the DASD. This option gathers information for the following data columns in your volume list:
- Cache fast write status
- DASD fast write status
- Device type
- Device number
- Duplex status
- MVS™ system status
- Read cache status
- Other device
- Subsystem identifier
- Shared DASD
- Use attributes

N Do not include information from the DASD.

Acquire Space Data
Use this optional field to add additional information to the volume list. The additional information describes the space characteristics of the volume.

Option Meaning
Y Include information about the volume space. This option gathers information for the following data columns in your volume list:
- Allocated space
- Fragmentation index
- Free DSCBs
- Free extents
- Free space
- Free VLRs
- Index status
- Largest extent
- Percent free space
- Physical status
Do not include information about the volume space.

**Storage Group Name**
Use this optional field to restrict the list to volumes belonging to an SMS storage group.

Enter an asterisk in this field to bring up the volume list and then find a specific storage group name in column 23. Or, ask the storage administrator.

If you specified option 1 for Specify Source of the New List, this field is primed with blanks and defaults to blanks.

If you specified option 2 for Specify Source of the New List, this field defaults to an asterisk to include volumes associated with all storage group names.

Storage Group Name ===> *

**CDS Name**
Use this optional field in conjunction with the Storage Group Name field to limit the list to volumes managed by SMS.

**Tip:** To get a list of non-SMS-managed volumes, leave the Storage Group Name and the CDS Name fields blank.

Enter the name of the control data set (CDS) containing the SMS information. A CDS name can be up to 44 characters long. When the name is enclosed in single quotation marks, you can use up to 46 characters. ISMF processes quoted and unquoted data set names using TSO conventions.

If you specified option 1 for Specify Source of the New List, this field defaults to blanks.

If you specified option 2 for Specify Source of the New List, this field defaults to ‘ACTIVE’ to list volumes in the active control data set.

CDS Name ===> ‘ACTIVE’

**Completing Optional Pages of the Volume Selection Entry Panel**

Pages 2 and 3 of the DASD Volume Selection Entry Panel are optional and enable you to limit the number of entries you retrieve by further defining your selection criteria. Please refer to the online help panels for more information.

**Final Step: Generating the List**

After entering the information you want on the Volume Selection Entry Panel, you are ready to generate the list. Press the ENTER key. ISMF displays the volumes that meet your selection criteria, as shown in Figure 23 on page 37.
If you limit more than one field on a selection entry panel, the list contains only the data sets that meet all of the selection criteria. If ISMF cannot determine whether a data set meets your selection criteria, the data set will be included in the list. Values of dash (-), question mark (?), less-than (<), and greater-than (>) always meet any selection criteria.

If the exclusive list field contained in the panel is specified, the list generated will contain only the entries that meet the specified selection criteria. If this field is not specified, then the list will be inclusive. You can use the filter command with the same selection criteria to exclude entries with the special characters.

After creating a list, you can sort and tailor it to your needs before beginning storage management tasks. See Chapter 4, “Using the Data Set or Volume List,” on page 47 for more information.

Generating a Mountable Optical Volume List

Select option 2, Volume Application, from the ISMF Primary Option Menu. ISMF displays the Volume List Selection Menu (Figure 24).

To generate a list of mountable optical volumes, select option 2, as shown in Figure 24, ISMF displays the Mountable Optical Volume Selection Entry Panel.
Completing the Mountable Optical Volume Selection Entry Panel

Use the fields on the Mountable Optical Volume Selection Entry Panel to set up basic selection criteria: the serial numbers of the volumes to include in the list and the source ISMF uses to generate the list.

Figure 25 shows the Mountable Optical Volume Selection Entry Panel with its default values.

<table>
<thead>
<tr>
<th>Figure 25. Mountable Optical Volume Selection Entry Panel</th>
</tr>
</thead>
</table>

Here is an overview of each field:

**Select Source to Generate Volume List**
In this mandatory field, indicate whether to create a new list or use a list previously saved with the SAVE command.

**Option Meaning**

1. **Generate from a Saved List**
   - Use a list previously saved with the SAVE command. When selecting this option, you must complete the field under Generate from a Saved List. See “Saving a Copy of the List” on page 70 for more information.

2. **Generate a New List from Criteria Below**
   - Create a new list. When selecting this option, you must complete the fields under Generate a New List from Criteria Below.

1. **Generate from a Saved List**
   - Complete the following fields if you selected option 1 for Select Source to Generate Volume List:
     - **List Name**
       - Enter the name of a list previously saved with the SAVE command. The list name can be up to eight alphanumeric characters long and must follow naming conventions for members of partitioned data sets.

2. **Generate a New List from Criteria Below**
   - Complete the following fields if you selected option 2 for Select Source to Generate Volume List:
Volume Serial Number
Enter a full or partial serial number of the volume or volumes to include in
the list. Use this field to restrict the list to volumes with a specific volume
serial number or range of volume serial numbers.

To include a single volume, enter a fully qualified volume serial number of
1 to 6 characters:
Volume Serial Number ===> SYS001

For a partially qualified name, use asterisks as global file-name characters.
See “Limiting Entries in the List and Partial Qualification” on page 24 for
more information.

For example, to include a range of volumes, enter a partially qualified
volume serial number by using one or two asterisks as global file-name
characters:
Volume Serial Number ===> SYS*

Two asterisks are the maximum number of global file-name characters
allowed.

Use a single asterisk to specify all mounted volumes that fit your other
selection criteria:
Volume Serial Number ===> *

Library Name
Enter the one- to eight-character name of an optical disk library. Specify
the library name the same way you specify the volume serial number.

Storage Group Name
Enter the one- to eight-character name of an SMS storage group. Specify
the storage group name the same way you specify the volume serial
number.

All SMS-managed volumes belong to a storage group. Non-SMS volumes
do not belong to storage groups.

Optical Media Type
Enter the three- to eight-character type of optical media on which the volume
resides. ALL (default) for all available optical media types. ALL is the default
value. This field is primed with the last value used. See the z/OS DFSMS OAM
Planning, Installation, and Storage Administration Guide for Object Support for
valid optical media types.

Respecify View Criteria
In this mandatory field, you can choose to display the Mountable Optical
Volume View Entry Panel to select the columns and the order of the columns
to display on the list panel. If you specify not to VIEW criteria, leave this field
blank, the Mountable Optical Volume List Panel is displayed, using the default
VIEW criteria (display all columns in alphabetical order) or the criteria that
were last specified to ISMF, if any. This may result in a restricted view.

Option Meaning
/ Display the Mountable Optical Volume View Entry Panel before
creating the volume list.

blank Do not display the Mountable Optical Volume View Entry Panel before
creating the volume list. Blank is the default.
Respecify Sort Criteria

In this mandatory field, you can choose to display the Mountable Optical Volume Sort Entry Panel to sort the resulting volume list according to the values in its data columns.

Option Meaning

/ Display the Mountable Optical Volume Sort Entry Panel before creating the volume list.

blank Do not display the Mountable Optical Volume Sort Entry Panel before creating the volume list. Blank is the default.

For example, sort the list by specifying descending order for the values in the volume type column. Specify a secondary sort to arrange the free space column in ascending order. The volumes sort in reverse alphabetic order by volume type. Volumes of the same type sort by their amount of free space, from lowest to highest.

If you specify / for both VIEW and SORT criteria, the Mountable Optical Volume View Entry Panel is displayed, followed by the Mountable Optical Volume Sort Entry Panel.

Final Step: Generating the List

After entering the information you want on the Mountable Optical Volume Selection Entry Panel, you are ready to generate the list. Press the ENTER key. ISMF displays the volumes that meet your selection criteria. Figure 26 shows a completed Mountable Optical Volume List.

If you entered information in more than one field on a selection entry panel, the list contains only the volumes meeting all of the specified parameters.

You can sort and tailor a list to your needs with the View and Sort options on the selection panel. You can also tailor a list after you create it. See Chapter 4, “Using the Data Set or Volume List,” on page 47 for more details.
Generating a Mountable Tape Volume List

Select option 3, Volume Application, from the ISMF Primary Option Menu. ISMF displays the Volume List Selection Menu (Figure 27).

To generate a list of mountable tape volumes, select option 3, as shown in Figure 27. ISMF then displays the Mountable Tape Volume Selection Entry Panel. Refer to Figure 28.

Completing the Mountable Tape Volume Selection Entry Panel

Use the fields on the Mountable Optical Volume Selection Entry Panel to set up basic selection criteria: the serial numbers of the volumes to include in the list and the source ISMF uses to generate the list.

Figure 28 shows the Mountable Tape Volume Selection Entry Panel with its default values.

Here is an overview of each field:

Select Source to Generate Volume List

In this mandatory field, indicate whether to create a new list or use a list previously saved with the SAVE command. Option 2 is the default.
Option Meaning

1. Use a list previously saved with the SAVE command. When selecting this option, you must complete the field under Generate from a Saved List. See “Saving a Copy of the List” on page 70 for more information.

2. Create a new list. When selecting this option, you must complete the fields under Generate a New List from Criteria Below.

1 Generate from a Saved List
Complete the following fields if you selected option 1 for Select Source to Generate Volume List:

List Name
Enter the name of a list previously saved with the SAVE command. The list name can be up to eight alphanumeric characters long and must follow naming conventions for members of partitioned data sets.

2 Generate a New List from Criteria Below
Complete the following fields if you selected option 2 for Select Source to Generate Volume List:

Volume Serial Number
Enter a full or partial serial number of the volume or volumes to include in the list. Use this field to restrict the list to volumes with a specific volume serial number or range of volume serial numbers.

Restriction: If the cartridge containing the volume is to be mounted on an IBM® TotalStorage™ Enterprise Automated Tape Library (3495), do not use special characters and national characters to define the volume serial number.

To include a single volume, enter a fully qualified volume serial number of one to six characters:
Volume Serial Number ===> SYS001

To include a range of volumes, enter a partially qualified volume serial number by using an asterisk or percent sign as a global file-name character. For example:
Volume Serial Number ===> SYS*

You can use up to two asterisks as global file-name characters. For example, for tape volumes numbered 800100 through 890599, you can enter the following to include only those that end in 430 through 439:
Volume Serial Number ===> 8*043*

Restriction: Do not use two asterisks next to each other (**).

Use a single asterisk to specify all mounted volumes that fit your other selection criteria:
Volume Serial Number ===> *

Library Name
Enter the one- to eight-character name of an automated tape library.

Specify the library name the same way you specify the volume serial number, but start the name with a non-numeric character. Do not use special characters.

Storage Group Name
Enter the one- to eight-character name of an SMS storage group. Specify
the storage group name the same way you specify the volume serial
number, but start the name with an alphabetic or national character.

To select volumes that belong to a blank storage group, specify ‘ ’ in this
field.

Volumes assigned to a blank storage group are in an SMS-managed tape
library and should be distinguished from non-SMS-managed tape volumes
that are not supported by the Mountable Tape Volume Application.

Respecify View Criteria
In this mandatory field, you can choose to display the Mountable Tape Volume
View Entry Panel to select the columns and the order of the columns to display
on the list panel. If you leave VIEW criteria blank, the Mountable Tape Volume
List Panel is displayed using the default VIEW criteria (display all columns in
alphabetical order) or the criteria that were last specified to ISMF, if any. This
may result in a restricted view.

Option Meaning

/ Display the Mountable Tape Volume View Entry Panel before creating
the volume list.

blank Do not display the Mountable Tape Volume View Entry Panel before
creating the volume list. Blank is the default.

Respecify Sort Criteria
In this mandatory field, you can choose to display the Mountable Tape Volume
Sort Entry Panel to sort the resulting volume list according to the values in its
data columns.

Option Meaning

/ Display the Mountable Tape Volume Sort Entry Panel before creating
the volume list.

blank Do not display the Mountable Tape Volume Sort Entry Panel before
creating the volume list. Blank is the default.

For example, sort the list by specifying ascending order for the values in the
volume serial column. In the resulting volume list, the volumes sort in numeric
order by volume serial number.

If you specify Y for both VIEW and SORT criteria, the Mountable Tape Volume
View Entry Panel is displayed, followed by the Mountable Tape Volume Sort
Entry Panel.

Final Step: Generating the List
After entering the information you want on the Mountable Tape Volume Selection
Entry Panel, you are ready to generate the list. Press the ENTER key. ISMF
displays the volumes that meet your selection criteria. Figure 29 on page 44 shows
a completed Mountable Tape Volume List.
If you entered information in more than one field on a selection entry panel, the list contains only the volumes meeting all of the specified parameters.

You can sort and tailor a list to your needs with the View and Sort options on the selection panel. You can also tailor a list after you have created it. See Chapter 4, “Using the Data Set or Volume List,” on page 47 for more details.

List Generation Error Messages

ISMF uses short error messages to document errors in generating a list. The short error message appears on the first panel displayed after the error is detected. For more information, use the HELP command to display the long error message. Use the HELP command again to see the help panel associated with the error message.

If ISMF cannot complete the requested list, you may get a partial list to work with.

If ISMF cannot determine whether a data set meets your selection criteria, the data set will be included in the list and the data columns that represent information ISMF could not obtain or calculate will contain a series of special characters.

When ISMF cannot display a value in a data column, it displays a series of special characters instead:

A series of

Means

Dashes (–)

ISMF cannot obtain information for the data column.

Question marks (?)

ISMF encountered an error in obtaining the information for the data column.

In addition to the above symbols, less-than and greater-than symbols may appear in data set and DASD volume lists:

A series of

Means
Less-than symbols (<)
The value is less than one but greater than zero.

Greater-than symbols (>)
The value is too large to display.

When creating a volume list by collecting information about the device on which
the volumes reside (by choosing option Y for Acquire Physical Data), your
selection criteria may include a dismounted volume. In this case, the volume serial
number is not available. ISMF includes the volume in the volume list but leaves
question marks in the Volume Serial data column.

When ISMF cannot access a volume to gather information for a data set, it displays
a message next to the data set name field. The error message in Figure 30 indicates
that ISMF cannot access the volume on which data set USER230.ISMF.ROOT.DATA
resides. ISMF cannot display any information for that data set.

![Panel List Dataset Utilities Scroll Help](image)

---(1)---- ------------(2)------------ ---(3)--- ---(4)--- -(5)-
USER230.ISMF.LKED 93K 93K 0
USER230.ISMF.MACLIB 185K 185K 0
USER230.ISMF.OBJ 139K 93K 33
USER230.ISMF.PLIST 1020K 1020K 0
USER230.ISMF.PLS3 1020K 1020K 0
USER230.ISMF.ROOT.DATA CANNOT ACCESS VOLUME: D64DLB
USER230.ISMF.SRC --------- --------- ---
USER230.ISMF.TESTCOPY --------- --------- ---
USER230.ISMF.TESTHMI1 --------- --------- ---
USER230.ISMF.TESTHMI2 --------- --------- ---
USER230.ISMF.TESTHMI3 --------- --------- ---
USER230.ISMF.TESTJCL 46K 46K 0
USER230.ISMFA.RELEASE --------- --------- ---

Figure 30. Data Set List with Information about a Volume ISMF Cannot Access

**Redisplaying a List during a Session**

When you return to a selection entry panel from a list panel, the selection entry
panel still contains the previously specified values. If you press the ENTER key
without changing the selection criteria, ISMF redisplays the original list without
reaccessing the data sets or volumes in the list. A message appears in the upper
right corner of the list panel to remind you of this:

---(1)---- ------------(2)------------ ---(3)--- ---(4)--- -(5)-
USER230.ISMF.LKED 93K 93K 0
USER230.ISMF.MACLIB 185K 185K 0
USER230.ISMF.OBJ 139K 93K 33
USER230.ISMF.PLIST 1020K 1020K 0
USER230.ISMF.PLS3 1020K 1020K 0
USER230.ISMF.ROOT.DATA CANNOT ACCESS VOLUME: D64DLB
USER230.ISMF.SRC --------- --------- ---
USER230.ISMF.TESTCOPY --------- --------- ---
USER230.ISMF.TESTHMI1 --------- --------- ---
USER230.ISMF.TESTHMI2 --------- --------- ---
USER230.ISMF.TESTHMI3 --------- --------- ---
USER230.ISMF.TESTJCL 46K 46K 0
USER230.ISMFA.RELEASE --------- --------- ---

If you do not change the selection criteria, the same list will be displayed during a
single ISMF session until you exit from the Data Set or Volume Application used to
create the list. On the selection entry panel, press ENTER to regenerate the list.
There is no redisplay for the Mountable Optical and the Mountable Tape Volume
Lists.
You can use the REFRESH command from the list panel of any application to regenerate the list without exiting the application.

To save a copy of the list, use the SAVE command (see “Saving a Copy of the List” on page 70).
Chapter 4. Using the Data Set or Volume List

Once you have created a list of data sets or volumes, you can use ISMF commands to gather specific information from the list and prepare the list to perform storage management tasks efficiently. This chapter explains the list format and contents. In addition, it shows you how to perform the following tasks:

- View the list
- Tailor the list
  - Tailor the list entries
  - Tailor the data columns
- Save a copy of the list
- Print the list
- List saved lists
- Reuse a previously saved copy of the list
- Modify a data set in the list
- Use line operators and list commands
- Understand list processing rules

Related Reading: Although the descriptions of viewing and tailoring generated lists are directed primarily toward data set and volume lists, most of the commands that are used for these tasks also apply to SMS constructs. Chapter 8, “Using Data Facility Storage Management Subsystem (DFSMS),” on page 119 provides more information about these lists and how to display specific attributes. Table 12 on page 157 and Table 13 on page 159 include a summary of customization commands and their applications.

Understanding the Format and Contents of the Lists

The output generated from the selection entry panels is displayed in a list panel. A list panel displays information about your data sets, volumes, or SMS classes in tabular form. The first column is a line operator column. The other columns of information are data columns. Each of these columns has a heading (often an abbreviated form of the name) and a number to identify it.

Format of the List Panels

Figure 31 on page 48 shows the format of a typical ISMF list panel.
Every list panel contains five standard elements: a fixed area, a warning line, data column headings, the list area, and one or two instruction lines.

[1] Fixed Area

Information in the fixed area helps you keep track of your location in the list and how you are navigating through the list.

The fixed area contains the following elements:

- The panel title.
- A short message area, which appears in the upper right corner of the screen when ISMF detects an error.
- The command line.
- A scroll field, which shows how far the list entries shift each time you use a scrolling command.
- A long message area, which appears when you use the HELP command to further explain a short error message.
- An entries statement, which shows how many entries are in the list and which ones are currently on display.
- A data columns statement, which shows how many data columns appear in the list panel and the numbers of the data columns currently displayed. Use the LEFT and RIGHT commands to look at columns that extend to the left or right of the columns displayed. The data columns statement is overlaid with a View in Use statement if selected data columns are being displayed.
- A directional line (ENTER LINE OPERATORS BELOW).


The warning line is just above the data column headings. This line indicates any special processing conditions that are in effect. Examples are a list filtered by the FILTER command or a list with entries hidden by the HIDE line operator. "Filtering the List" on page 54 explains the FILTER command. "Using the HIDE Line Operator" on page 60 explains the HIDE line operator.
[3] Data Column Headings

The data column headings identify the type of information presented in a particular column of the list. When using ISMF commands, use the number beneath the heading to reference the individual data columns. For example, to reference the VOLUME SERIAL field on the data set list in Figure 31 on page 48, specify the column tag 17.

Both data set and volume lists have more columns than can be displayed at one time. The data columns statement in the fixed area identifies the subset of data columns currently displayed. "Viewing the List" on page 51 describes the commands used to scroll through all the data columns.

[4] List Area

The list area contains:

- The LINE OPERATOR column (column 1), where you enter line operators to do storage management tasks against individual data sets or volumes. This column is always displayed on the panel.
- The object name column (column 2), which may be called data set name, volume serial number, or some SMS class name depending on the application you are using. The particular objects that you are working with are listed here. For example, the DATA SET NAME column lists the data sets that you are working with. This column is always displayed on the panel.
- The informational columns (the columns to the right of column 2), which describe the data sets or volumes. "Viewing the List" on page 51 describes the commands used to scroll through all the data columns.
- The BOTTOM OF DATA line, which follows the last entry in the list.

Contents of the List Panels

The data columns represent the different categories of information ISMF can gather for the entries in a list. Table 4 shows the data columns included in data set and volume lists.

The attributes SYSTEM1 through SYSTEM8 of the DASD Volume Application represent the system name or system group name defined in the active CDS. If there are fewer than eight systems defined, the heading RESERVED appears for the unused data columns.

The format used by ISMF to display attribute values might differ from the one used by other products. For example, a fragmentation index of 90 in ISMF is displayed as .090 by DFSMSdss.

<table>
<thead>
<tr>
<th>Table 4. Data Columns in Data Set, Volume, Mountable Optical Volume, or Mountable Tape Volume Lists.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data Set List Data Columns</strong></td>
</tr>
<tr>
<td>LINE OPERATOR (1)</td>
</tr>
<tr>
<td>DATA SET NAME (2)</td>
</tr>
<tr>
<td>ALLOC SPACE (3)</td>
</tr>
<tr>
<td>ALLOC USED (4)</td>
</tr>
<tr>
<td>% NOT USED (5)</td>
</tr>
<tr>
<td>COMPRESSED FORMAT (6)</td>
</tr>
</tbody>
</table>

Chapter 4. Using the Data Set or Volume List
<table>
<thead>
<tr>
<th>Data Set List Data Columns</th>
<th>Volume List Data Columns</th>
<th>Mountable Optical Volume List Data Columns</th>
<th>Mountable Tape Volume List Data Columns</th>
</tr>
</thead>
<tbody>
<tr>
<td>% USER DATA REDUCTION (7)</td>
<td>LARGEST EXTENT (7)</td>
<td>LIBRARY NAME (7)</td>
<td>STORAGE GRP NAME (7)</td>
</tr>
<tr>
<td>NUM EXT (8)</td>
<td>FREE EXTENTS (8)</td>
<td>SLOT NAME (8)</td>
<td>MEDIA TYPE (8)</td>
</tr>
<tr>
<td>ALLOC UNIT (9)</td>
<td>INDEX STATUS (9)</td>
<td>STORAGE GRP NAME (9)</td>
<td>RECORDING TECHNOLOGY (9)</td>
</tr>
<tr>
<td>SEC ALLOC (10)</td>
<td>FREE DSCBs (10)</td>
<td>LAST WRITTEN DATE (10)</td>
<td>COMPACT (10)</td>
</tr>
<tr>
<td>DS ORG (11)</td>
<td>FREE VRs (11)</td>
<td>VOLUME MOUNT DATE (11)</td>
<td>SPECIAL ATTRIBUTES (11)</td>
</tr>
<tr>
<td>REC FMT (12)</td>
<td>DEVICE TYPE (12)</td>
<td>VOLUME EXPIRE DATE (12)</td>
<td>LAST WRITTEN DATE (12)</td>
</tr>
<tr>
<td>RECORD LENGTH (13)</td>
<td>DEV NUM (13)</td>
<td>VOLUME LOCATION (13)</td>
<td>LAST MOUNT DATE (13)</td>
</tr>
<tr>
<td>BLK SZ CI SIZE (14)</td>
<td>SHR DASD (14)</td>
<td>SHELF LOCATION (14)</td>
<td>LAST ENTRY OR EJECT DATE(14)</td>
</tr>
<tr>
<td>OPTIMAL SIZE (15)</td>
<td>USE ATTR (15)</td>
<td>MEDIA TYPE (15)</td>
<td>VOLUME EXPIRE DATE (15)</td>
</tr>
<tr>
<td>BLOCK UNUSED (16)</td>
<td>RD CACHE STATUS (16)</td>
<td>VOLUME ERROR STATUS (16)</td>
<td>VOLUME CREATE DATE (16)</td>
</tr>
<tr>
<td>VOLUME SERIAL (17)</td>
<td>DASD FW STATUS (17)</td>
<td>CAPACITY (IN MB) (17)</td>
<td>WRITE PROTECT (17)</td>
</tr>
<tr>
<td>MULT VOL (18)</td>
<td>CACHE FW STATUS (18)</td>
<td>VOLUME CREATE DATE (18)</td>
<td>VOLUME LOCATION (18)</td>
</tr>
<tr>
<td>DEVICE TYPE (19)</td>
<td>DUALPLEX STATUS (19)</td>
<td>ENTER OR EJECT DATE (19)</td>
<td>SHELF LOCATION (19)</td>
</tr>
<tr>
<td>CREATE DATE (20)</td>
<td>OTHER DEVICE (20)</td>
<td>PSEUDO LIBRARY NAME (20)</td>
<td>OWNER INFORMATION (20)</td>
</tr>
<tr>
<td>EXPIRE DATE (21)</td>
<td>SUBSYS ID (21)</td>
<td>OAM INSTANCE MEMBER NAME (21)</td>
<td></td>
</tr>
<tr>
<td>LAST REF DATE (22)</td>
<td>PHYSICAL STATUS (22)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LAST BACKUP DATE (23)</td>
<td>STORAGE GRP NAME(23)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHG IND (24)</td>
<td>CF VOLUME STATUS (24)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DATA CLASS NAME (25)</td>
<td>SYSTEM1 SMS (25)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MANAGEMENT CLASS NAME (26)</td>
<td>SYSTEM1 MVS” (26)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>STORAGE CLASS NAME (27)</td>
<td>SYSTEM2 SMS (27)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OWNER (28)</td>
<td>SYSTEM2 MVS (28)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DATA SET ENVIRONMENT (29)</td>
<td>SYSTEM3 SMS (29)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DATA SET NAME TYPE (30)</td>
<td>SYSTEM3 MVS (30)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NUM OF STRIPES (31)</td>
<td>SYSTEM4 SMS (31)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENTRY TYPE (32)</td>
<td>SYSTEM4 MVS (32)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>REBLK IND (33)</td>
<td>SYSTEM5 SMS (33)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DDM ATTR (34)</td>
<td>SYSTEM5 MVS (34)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CCSID DESCRIPTION (35)</td>
<td>SYSTEM6 SMS (35)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CFSTATUS INDICATOR (36)</td>
<td>SYSTEM6 MVS (36)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CF MONITOR STATUS (37)</td>
<td>SYSTEM7 SMS (37)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CF CACHE STRUCTURE NAME (38)</td>
<td>SYSTEM7 MVS (38)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CF CACHE SET NAME (39)</td>
<td>SYSTEM8 SMS (39)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CF LOCK STRUCTURE NAME (40)</td>
<td>SYSTEM8 MVS (40)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CF LOCK SET NAME (41)</td>
<td>FREE SPACE TRK-MANAGD (41)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EATTR (42)</td>
<td>ALLOC SP TRK-MANAGD (42)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>LARGEST EXT TRK-MANAGD (43)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>INIT AS RESERVED (44)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>OWNERID (45)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Viewing the List

A data set or volume list may contain more entries and data columns than you can display on one screen. To see all the information contained in a list, use ISMF scrolling commands to move through the list from top to bottom and from side to side.

Scrolling through Data Columns

Use the following commands to control the data columns displayed on the screen:

<table>
<thead>
<tr>
<th>Command</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEFT</td>
<td>Shows data columns that extend to the left of the current screen display.</td>
</tr>
<tr>
<td>RIGHT</td>
<td>Shows data columns that extend to the right of the current screen display.</td>
</tr>
<tr>
<td>FIND</td>
<td>Locates a data column that is not currently displayed.</td>
</tr>
</tbody>
</table>

When you use the FIND command, ISMF scrolls to that column and positions the column to the right of column 2, which is the column that identifies the data set or volume. For example, if you want to look at the amount of space allocated when extending an individual data set, enter:

```
Command ====> find 16
```

ISMF locates column 16 and positions it next to the data set names in column 2. The LEFT, RIGHT, and FIND commands reposition the data columns but columns 1 and 2 always appear on the left side of the list panel. Scrolling commands do not affect the position of these two columns when you display a list. Figure 32 shows the result.

```
Panel List Dataset Utilities Scroll Help
----------------------------------------------
Command ===>                      SCROLL ===> DATA
Enter Line Operators Below:     Entries 1-3 of 3
                                 Data Columns 16-19 of 42
<table>
<thead>
<tr>
<th>LINE</th>
<th>OPERATOR</th>
<th>DATA SET NAME</th>
<th>BLOCK</th>
<th>VOLUME</th>
<th>MULT</th>
<th>DEVICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>---1-</td>
<td>--------</td>
<td>--------------</td>
<td>------</td>
<td>-------</td>
<td>-----</td>
<td>-------</td>
</tr>
<tr>
<td>USER1.DEB.LISTING1</td>
<td>--------</td>
<td>3380001</td>
<td>NO</td>
<td>3380</td>
<td></td>
<td></td>
</tr>
<tr>
<td>USER1.SPFTMP1.CNTL</td>
<td>--------</td>
<td>3380001</td>
<td>NO</td>
<td>3380</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
```

Figure 32. Using the FIND Command to Locate Data Column 16

If the column you specify with the FIND command is already displayed on the screen, the column is not repositioned. Specifying the parentheses is optional.
Scrolling through List Entries

The following commands control the entries displayed on the screen:

<table>
<thead>
<tr>
<th>Command</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>UP</td>
<td>Shows list entries that extend above the current screen display.</td>
</tr>
<tr>
<td>DOWN</td>
<td>Shows list entries that extend below the current screen display.</td>
</tr>
<tr>
<td>TOP</td>
<td>Scrolls to the first page of a list of entries. Using the TOP command is the same as using the UP MAX command.</td>
</tr>
<tr>
<td>BOTTOM</td>
<td>Scrolls to the last page of a list of entries. Using the BOTTOM command is the same as using the DOWN MAX command.</td>
</tr>
</tbody>
</table>

Scrolling Amounts

You can specify the following scrolling amounts:

<table>
<thead>
<tr>
<th>Amount</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>$mmm$</td>
<td>A number from 1 to 9999—scrolls the number of list entries or data columns you specify.</td>
</tr>
<tr>
<td>PAGE</td>
<td>Scrolls a screen of data, either list entries or data columns.</td>
</tr>
<tr>
<td>HALF</td>
<td>Scrolls a half page of list entries or data columns.</td>
</tr>
<tr>
<td>MAX</td>
<td>Displays the first or last list entry or data column.</td>
</tr>
<tr>
<td>CSR</td>
<td>Positions the list entry pointed to by the cursor at the top, bottom, left or right of the screen.</td>
</tr>
<tr>
<td>DATA</td>
<td>Scrolls one entry or one column less than a full page of data. Entering DATA as a scrolling amount is the same as entering PAGE when there is only one data column other than columns 1 and 2 displayed on the screen.</td>
</tr>
</tbody>
</table>

You can abbreviate the PAGE, HALF, MAX, CSR, and DATA amounts by entering the first letter in the scroll field on a panel.

Enter scrolling amounts in one of the following ways:

- Enter the amount in the scroll field. This new scrolling amount remains in effect until you change the amount in the scroll field again.
  
  Exception: Following a MAX scroll, the scroll field reverts to its previous value.

- Enter LEFT, RIGHT, UP, or DOWN on the command line followed by the scrolling amount. This results in a one-time override of the scrolling amount.

- Enter the scrolling amount on the command line and press a PF key previously set to a scrolling command. This results in a one-time override of the scrolling amount.
Folding the Data Set List

Use the FOLD command to maximize the number of entries or data columns displayed on a single screen.

You can use FOLD only in the Data Set Application. FOLD controls the width of the DATA SET NAME data column on the Data Set List Panel.

Enter FOLD on the command line of the Data Set List Panel. This command lets you toggle between a list in folded mode or unfolded mode. For example, when you enter the FOLD command on a list in folded mode, ISMF redisplay the list in unfolded mode. To see the list in its original mode, enter FOLD again.

When your list is in folded mode, the DATA SET NAME data column is 27 characters wide. If the data set names of your list entries have more than 27 characters, a second screen line is used to accommodate each entry. When your list is in unfolded mode, the DATA SET NAME data column increases to 44 characters. This increase in size lets long data set names fit on a single line instead of two.

Your list in unfolded mode may contain more list entries on a single screen than when it is in folded mode. However, the list in folded mode accommodates more data columns.

Figure 33 shows a data set list in folded mode with the FOLD command specified on the command line. Some of the entries in this list have a data set name that is too long to fit on a single line of the DATA SET NAME data column.

<table>
<thead>
<tr>
<th>Panel List Dataset Utilities Scroll Help</th>
<th>DATA SET LIST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Command === fold</td>
<td>SCROLL ====&gt; DATA</td>
</tr>
<tr>
<td>Enter Line Operators Below:</td>
<td>Entries 1-11 of 14</td>
</tr>
<tr>
<td></td>
<td>Data Columns 3-5 of 42</td>
</tr>
<tr>
<td>LINE OPERATOR</td>
<td>DATA SET NAME</td>
</tr>
<tr>
<td>---(1)------</td>
<td>--------------</td>
</tr>
<tr>
<td>USER1.ARCH.LISTING1.PGM</td>
<td>67K</td>
</tr>
<tr>
<td>USER1.BKUP.PGM,STATLINK</td>
<td>132K</td>
</tr>
<tr>
<td>USER1.DEB.LISTING1</td>
<td></td>
</tr>
<tr>
<td>USER1.FEMRQ</td>
<td></td>
</tr>
<tr>
<td>USER1.FITMS.MSGFL.LIST</td>
<td>435K</td>
</tr>
<tr>
<td>USER1.ISMF.SYSIN.D880125.</td>
<td>46K</td>
</tr>
<tr>
<td>TI0541</td>
<td></td>
</tr>
<tr>
<td>USER1.ISPFILE</td>
<td>139K</td>
</tr>
<tr>
<td>USER1.ISPFILE.032545</td>
<td>32K</td>
</tr>
<tr>
<td>USER1.ISPPROF</td>
<td>185K</td>
</tr>
<tr>
<td>USER1.P799.RECVBL.S.21489.</td>
<td>1066K</td>
</tr>
<tr>
<td>LIST</td>
<td></td>
</tr>
<tr>
<td>USER1.SPFTEMP1.CNTL</td>
<td></td>
</tr>
</tbody>
</table>

Figure 33. Data Set List Panel in Folded Mode

The Data Set List Panel in Figure 33 shows 11 data sets on the screen. This list displays six data columns. After the FOLD command is executed, this list looks like the one shown in Figure 34 on page 54, which displays all 14 data set entries but only four data columns.
Tailoring the List Entries

ISMF allows you to tailor your list to include only the entries you want, displayed in the order you want. Usually, you will need to customize your list entries before attempting to execute a command against all the entries in your list (list processing). To tailor the list entries, use the FILTER command, the HIDE line operator, or the SORT command.

Filtering the List

With the FILTER command, you use the data columns to set up filter criteria that identify a subset of your list. ISMF then displays the modified list with only those entries that meet your filter criteria.

Once you have used the FILTER command to define a subset of the list, the commands you specify are performed against only the entries in the subset, without affecting the other entries in the original list.

Like the list you originally selected, the subset of the list that you create with the FILTER command can be many pages long. You can use the scroll commands to move through it. FILTER is active only in the Data Set, DASD Volume, and List Applications.

For example, you might want to compress all partitioned data sets in a data set list. Using data column 9, DS ORG, on the data set list, you can set up filter criteria to create a subset of the list that contains only partitioned data sets. Then, if you enter the COMPRESS list command, it affects only the subset containing partitioned data sets.

Filtering and performing tasks against a subset of the list does not alter the makeup of the list that you originally selected. The original list remains intact.
with the original values in all of the data columns, regardless of the tasks that might be performed against some of the data sets in the list. You can filter many times with different filter criteria and use each subset you construct for a different task. However, keep in mind that each time you specify new filter criteria, ISMF filters the data sets and values that are in the original list.

**Entering the FILTER Command**

There are several ways to enter the FILTER command:

- You can enter the FILTER command without parameters on the command line of a list panel.
- You can enter the FILTER command with parameters on the command line of a list panel. This sets up a single value and data column as filter criteria. ISMF filters the list and displays a new list made up of only those entries that meet the filter criteria you specified.
- You can enter the FILTER CLEAR command (with or without other parameters) on the command line of a list panel to clear all or some of the existing filter criteria.

**Using the FILTER Command without Parameters**

When you enter the FILTER command without parameters, ISMF displays the Filter Entry Panel for the list you are viewing. The Data Set Filter Entry Panel has four pages of input fields. The DASD Volume Filter Entry Panel has four pages of input fields. The Saved List Filter Entry Panel has only one page. The fields correspond to the data columns on the list panel.

On the Filter Entry Panel, you use relational operators for each field you want to limit. You can specify a single value, a list of values, or a range of values a particular data column must have, in order to include the list entry in the filtered list.

The following example creates a subset of a data set list that contains only data sets that have been referred to since September 10, 1992, and were created on or after May 29, 1992. You can filter a DASD volume list in a similar manner by using the Volume Filter Entry Panel.

To display the Data Set Filter Entry Panel, enter FILTER on the command line of the data set list, as shown in Figure 35 on page 56.
ISMF displays page 1 of the Data Set Filter Entry Panel (Figure 36). Use the relational operators $EQ$ or $NE$ for a single value or a list of values to complete the fields on this panel. To include only changed data sets in the filtered list, use the relational operator $EQ$ to complete the CHANGE INDICATOR field, as shown in Figure 36.

Next, use the DOWN command to scroll to page 3 of the Filter Entry Panel. Complete the fields on page 3 of the panel (Figure 37 on page 57) using the relational operators $EQ$ and $NE$ to specify a single value, or the relational operators $GT$, $GE$, $LT$, and $LE$ to specify a range of values.

**Related Reading:** More information about relational operators is available in the online help panels. See “Navigating Through Help Panels” on page 15 to find out
how to use the help panels.

To filter the data set list based on the creation date and the last reference date, enter the relational operators and values as shown in Figure 36 on page 56 and Figure 37. For this example you do not need to enter anything on pages 2 or 4.

When you press the ENTER key, ISMF filters the list using the filter criteria you chose. Figure 38 shows the result. Only changed data sets referenced on and after September 10, 1995, and created after May 29, 1995, appear in the filtered list.

The message on the warning line, **FILTERED LIST**, reminds you that you now have a subset of the original list.
Specifying and Clearing Filter Input Fields

When you use the FILTER command without parameters, you work with the Filter Entry Panel. The Filter Entry Panel retains all the filter criteria that you specified the last time you used the FILTER command. These previously specified values remain on the Filter Entry Panel whether you specified them using FILTER without parameters from the Filter Entry Panel or you specified them using FILTER with parameters from the list panel.

ISMF uses all the filtering criteria to limit your list even when the values are from a previous session. ISMF reminds you when there are values already specified on the Filter Entry Panel by displaying an OTHER VALUES PRESENT warning in the top right corner of the panel. If you do not want to use these values as criteria for filtering, you must change or erase the input fields.

You can use the CLEAR command to set all the input fields to blanks. CLEAR is entered from the command line on any page of the Filter Entry Panel. There are three different ways to use CLEAR:

CLEAR PAGE
Sets all the input fields to blanks on the page where you enter the command.

CLEAR PAGE\(x\)
Sets all the input fields to blanks on the page specified by \(x\).

CLEAR ALL
Sets all the input fields to blanks on every page of the Filter Entry Panel.

Filter parameters can also be cleared from the list panel by entering the following command:

FILTER CLEAR
Sets either some or all the input fields to blanks depending on the parameters you specify with the command. For more information about FILTER CLEAR, see "Using the FILTER CLEAR Command" on page 59.

Using the FILTER Command with Parameters

If you have a single value and data column that you want to use as filter criteria, you can use the FILTER command with parameters to perform the filter without leaving the displayed list. Enter the FILTER command from the command line of the list panel. The syntax of the FILTER command is:

\[
\text{FILTER } [\text{column-tag} \{\text{EQ|NE|LT|LE|GT|GE}\} \text{value}] \\
\]

where:

- \text{FILTER}
  is the command name.
- \text{column-tag}
  is the tag associated with a particular data column (for example, 20 would provide the CREATE DATE information in Figure 38 on page 57). Specifying the parentheses is optional.
- \text{EQ|NE|LT|LE|GT|GE}
  indicates the relationship between the value in the specified data column and the value specified in the \text{value} parameter.
value indicates the value to be compared to the value in the data column to determine if an entry should be included in the list.

Restriction: Not all relational operators are valid for all data columns. For instance, the only valid relational operators for the VOLSER data column are 'EQ' and 'NE'. The online help panels give a complete listing of the valid relational operators for each data column.

An example of the FILTER command with parameters is shown in Figure 39. This example filters the list and displays a new list made up of data set names that have expiration dates equal to NEVER.

Using the FILTER CLEAR Command

If you want to clear or blank out some or all the filter criteria without going to the Filter Entry Panels, you can specify FILTER CLEAR from the list panel. The syntax of FILTER CLEAR is:

FILTER CLEAR [ALL] (column-tag column-tag...)

where:

FILTER CLEAR
is the command

ALL tells ISMF to clear all entry fields. ALL is the default and does not need to be specified.
column-tag column-tag ...
corresponds to data columns, for example 5. You can clear the filter criteria
(operands and values) associated with one or more data columns. Specifying
the parentheses is optional.

Unfiltering the List

To redisplay the original list, enter the CLEAR ALL command from any page of
the Filter Entry Panel to clear all input fields. (You can also use FILTER CLEAR to
blank out some or all of the filter criteria.)

The line operators and list commands you used appear with a history symbol in
column 1 for the data set or volume affected by the line operator or list command.
If you filter the list many times and use it to perform many tasks, the history
symbol becomes a valuable tracking tool. When you redisplay the original list, you
have a record of what you have done to the individual entries. Figure 40 shows a
redisplayed list with history symbols. History symbols are lost when you exit or
refresh a list.

Using the HIDE Line Operator

The HIDE line operator allows you to temporarily exclude one or more entries
from the list. Once the HIDE line operator has been performed, the warning line
contains the reminder **ENTRIES HIDDEN**. Hidden entries are not affected by list
commands.

Depending on the number of entries you want to hide, there are two ways you can
specify the HIDE line operator:

**HIDE**  Hides an individual list entry. Enter HIDE in the line operator field,
column 1, of the entry you want to hide. H, HI, and HID are acceptable
abbreviations.

Hnnnnn  Hides a number of list entries, starting with the entry against which you
entered H. You can enter a number from 1 to 99999. Enter H and the number of entries you want to hide (for example, H9) in column 1 of the first list entry you want to hide.

Restriction: Do not add a blank space between H and the number of entries you want to hide. ISMF interprets a blank as the end of the HIDE line operator and hides only one entry.

Reshowing Hidden Entries

Specify RESHOW on the command line when you want to redisplay all the data sets or volumes you have hidden. The line operator history for hidden entries is also redisplayed.

If you sorted the list while entries were hidden, the entries appear in the appropriate order when you reshow the list. If you filtered the list while entries were hidden, hidden entries that do not meet the filter criteria are not included in the list when you reshow it. These entries are not redisplayed until you either unfilter the list, specify new selection criteria on the selection entry panel, or refresh the list using the REFRESH command.

Sorting the List

The SORT command reorders list entries in the desired sequence in a specific data column. To sort a list, you must follow these steps:
1. Identify the data columns that you want to use for sort criteria.
2. Specify the sorting order as either ascending or descending. (Ascending order is the default.)

Restriction: You can only sort columns that are displayed in the current view.

The list entries are sorted first by the major field. If two or more entries have the same value in the data column you used as a major sort field, ISMF uses the minor fields to complete the sort.

For example, when sorting a group of data sets according to ALLOC SPACE (3), some data sets might have the same amount of allocated space. You can sort these data sets further by specifying ALLOC USED (4) as the first minor field. To sort even further, you can specify COMPRESSED FORMAT (6) as the second minor field.

Thus, if two data sets have the same amount of allocated space, they are sorted by allocated used space. If they also have the same amount of allocated used space, they are sorted by the number of extents.
Entering the SORT Command

There are two ways to enter the SORT command:

- Enter the SORT command without parameters on the command line of the list panel to display the ISMF Sort Entry Panel for the application you are using. Completing the Sort Entry Panel is discussed in “Using the SORT Command without Parameters.”

- Enter the SORT command with parameters on the command line of the list panel. ISMF copies the parameters to the Sort Entry Panel without displaying the panel. The list entries are sorted in the order specified.

If you know the parameters you want to use, you can use this method as a fast path to perform the sort. Entering the SORT command with parameters is discussed in “Using the SORT Command with Parameters” on page 64.

Tip: Refer to ISMF help panels for details about sort order.

Using the SORT Command without Parameters

When you enter the SORT command without parameters on an ISMF list, ISMF displays the Sort Entry Panel. On the Sort Entry Panel, you enter values for major and minor sort fields and specify whether you want the list entries sorted in ascending or descending order.

The following example shows how to use the Sort Entry Panel to reorder a data set list using two levels of sort criteria: one major field and one minor field. You use the same process to sort a volume list from all the other lists.

To display the Sort Entry Panel, enter SORT on the command line of the Data Set List, as shown in Figure 41. Press the ENTER key.

<table>
<thead>
<tr>
<th>Panel</th>
<th>List</th>
<th>Dataset</th>
<th>Utilities</th>
<th>Scroll</th>
<th>Help</th>
</tr>
</thead>
<tbody>
<tr>
<td>Command === sort</td>
<td>DATA SET LIST</td>
<td>SCROLL === PAGE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enter Line Operators Below: <strong>FILTERED LIST</strong> <strong>ENTRIES HIDDEN</strong></td>
<td>Entries 1-14 of 18</td>
<td>Data Columns 20-22 of 42</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LINE OPERATOR</td>
<td>DATA SET NAME</td>
<td>CREATE</td>
<td>EXPIRE</td>
<td>LAST REF</td>
<td></td>
</tr>
<tr>
<td>(1)</td>
<td>(2)</td>
<td>(20)</td>
<td>(21)</td>
<td>(22)</td>
<td></td>
</tr>
<tr>
<td>USER230.ISMF.ALIST</td>
<td>1998/09/08 0000/00/00 1998/09/10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>USER230.ISMF.CLIST</td>
<td>1996/04/29 NEVER 1998/09/11</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>USER230.ISMF.DGTLLIB</td>
<td>1998/04/12 NEVER 1998/09/11</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>USER230.ISMF.DGTMLIB</td>
<td>1998/05/08 NEVER 1998/09/11</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>USER230.ISMF.DGTPLIB</td>
<td>1998/04/05 NEVER 1998/09/11</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 41. Sorting a List Using the SORT Command

ISMF displays page 1 of 2 of the Data Set Sort Entry Panel, as shown in Figure 42 on page 63.

Tip: If any of the columns on your list are not in the current view, their tag numbers will not appear on the Sort Entry Panels.
Enter DOWN on the command line to view page 2 of the Data Set Sort Entry Panel, as shown in Figure 43.

You can specify the major and minor sort fields, in ascending or descending order on either page 1 or page 2 of the Data Set Sort Entry Panel. The major sort field on the Sort Entry Panel in Figure 43 is the CREATION DATE (20). The minor sort field 1 is the LAST REF DATE (22). The minor sort field 2 is the DATA SET NAME (2).

When you press ENTER, ISMF reorders the entire list using the sort criteria you chose. The SORT command sorts the entire list, including entries that extend beyond the screen and those that have been hidden or excluded. Hidden or excluded entries remain hidden or excluded.
In this example, the major field, 20, and the first minor field, 22, are sorted in descending order. The second minor field, 2, is sorted in ascending order. The data set with the most recent creation date appears first on the sorted list. When two data sets have the same creation date, the data set with the most recent last reference date appears first. When two data sets have the same creation date and last reference date, the sort is alphabetical by data set name. The sorted list appears as shown in Figure 44.

Using the SORT Command with Parameters

You can use the SORT command with parameters to sort your list without leaving the list display. The syntax of the SORT command is:

```
SORT [column-tag [IN [A|D]]] [column-tag [IN [A|D]]] [column-tag [IN [A|D]]]
```

where:

- **SORT** is the command name.
- **column-tag** is the tag associated with a particular data column, for example, 18. You can specify up to three levels of sort order. The first data column is the major field value. The second data column is the first minor field value. The third data column is the second minor field value.

```
IN [A|D]
```

indicates ascending or descending sort order. The default is ascending order. The IN keyword is required if you specify sort order.

An example of the SORT command is shown in Figure 45 on page 65.
This command reorders the list with two levels of sort criteria. The major field (column 20) and the minor field (column 22) will be sorted in descending order.

When you enter the SORT command with parameters, ISMF saves the values you specify. The next time you invoke the Sort Entry Panel, the panel is primed with these values. For more information on the concept of priming, see Chapter 5, “Understanding How Data Entry Panels Work,” on page 87.

Tip: SORT criteria are saved only while you are in an application. Default values are reset upon each entry to an application.

Refreshing the List

To see an updated version of your list without going back to the selection panel, enter REFRESH on the command line of any list panel. When you specify REFRESH, ISMF lets you know that a new list is being generated from your current selection criteria. REFRESH cancels your current tailoring operations for list entries. If you have sorted the list, hidden entries from the list, or filtered out list entries, the new list reinstates these list entries in the default order. Upon completion of the command, ISMF displays the list panel with the updated list and a message indicating that the list is refreshed.

Tailoring the Data Columns

ISMF allows you to tailor your list to display only the data columns you want, in the order you want. To tailor the list data columns, use the VIEW command. View names and Views in use are unique to the application in which they are defined.

Selecting List Display Columns

The VIEW command lets you select and reorder the columns of application attributes to display on any application list panel by specifying a sequence of column (tag) numbers. VIEW is available in any ISMF application with a list. You can use the VIEW command in two ways:

• Enter the VIEW command directly on a list panel. VIEW can be abbreviated to VI. See “Entering the VIEW Command” on page 66.

• Choose the Y option for RESPECIFY VIEW CRITERIA on a mountable optical volume, mountable tape volume, or SMS class application selection panel. See page 38 of Chapter 3, “Generating Lists,” on page 23 for a description of the option. The Data Set and DASD Volume Applications do not include the VIEW option on their selection panels. Therefore, you can only build a VIEW after creating a list from these applications.
You can name and save a VIEW, select a VIEW, and delete a VIEW on a View Entry Panel. You can save VIEW across ISMF sessions and manage it on the View Entry Panel List of Saved Views. When you invoke the VIEW command, you see the last VIEW that you used for each list. See “Using the VIEW Command without Parameters” for more information on how to display and use the View Entry Panel.

**Entering the VIEW Command**

There are two ways to enter the VIEW command:

- Enter the VIEW command without parameters on the command line of the list panel to display the View Entry Panel. See “Using the VIEW Command without Parameters” to find out how to complete the View Entry Panel.

- Enter the VIEW command with parameters on the command line of the list panel. ISMF copies the parameters to the View Entry Panel without displaying the panel. The selected columns are displayed in the order specified by the VIEW parameters.

If you know the parameters you want to use, you can use this method as a fast path to get the specific view that you want. See “Using the VIEW Command with Parameters” on page 68 for more information.

The view criteria that you specify either on the View Entry Panel or directly on the list panel with parameters are saved for the next time you use the VIEW command. To recover the default view, simply specify VIEW * on the command line of the application list or specify an asterisk on the View Entry Panel in the field in which you would normally enter column numbers. See the ISMF help panels for details about the VIEW command.

**Using the VIEW Command without Parameters**

When you enter the VIEW command without parameters on the data set or volume list, ISMF displays the View Entry Panel. On the View Entry Panel, you specify a series of column tags or an asterisk for the VIEW that you want to see.

The order in which the tags are entered is the order in which the columns appear on the list panel. If a column tag is not entered, the column will not appear on the list panel.

**Exception:** You cannot specify the LINE OPERATOR (1) and DATA SET NAME (2) columns on the SPECIFY TAGS field because they always appear as the first two columns on a list panel.

You can reference column names and their tags on an entry panel, as shown in Figure 46 on page 67 the Data Set View Entry Panel.
Enter DOWN on the command line to see page 2 of the Data Set View Entry Panel, as shown in Figure 47.

When the View Entry Panel is first displayed, the SPECIFY TAGS field is primed with an asterisk, indicating that all columns are to display in the ISMF default order.

If you enter an asterisk at the end of a sequence of tags, the columns you specify appear in the order you choose followed by all remaining columns in their default order.

For example, enter 19 6 8 * in the SPECIFY TAGS field. Press the ENTER key. The list panel displays columns 1, 2, 19, 6, and 8, followed by the remaining columns in the ISMF default order (3, 4, 5, 7, 9,...).
The criteria on the View Entry Panel are saved between uses of the command.

You can save, select, or delete views on the View Entry Panel by choosing one of the following options:

**Option Meaning**

1. The **SELECT** option retrieves criteria from the view specified in the VIEW NAME field. You do not have to choose this option to specify view criteria in the SPECIFY TAGS field.

2. The **SAVE** option saves the criteria from the SPECIFY TAGS field of the current view using the view name you specify. If the view already exists, it is replaced by the criteria that you specify the SAVE option for. A message is displayed to tell you that the previous view has been replaced with the view you specified.

3. The **DELETE** option deletes the view that you specify from the list of saved views. If you select the DELETE option and enter an asterisk in the VIEW NAME field, all saved views are deleted.

If you specify an option but leave the VIEW NAME field blank or the view you specify does not exist, a List of Saved Views is displayed with saved view names and tag sequence information. Figure 48 shows an example of the List of Saved Views format for the View Entry Panel.

For more details about managing your saved views, refer to the ISMF online help panels.

**Using the VIEW Command with Parameters**

Use the VIEW command with parameters to select and reorder the columns to appear on your list panel without leaving the list display. The VIEW command can be followed by a series of tags or an asterisk. This causes the list panel to be redisplayed in the order specified by the view criteria.
You can enter the VIEW command with the following optional parameters:

**VIEW** *column tags*

Enter the VIEW command followed by a sequence of tags, separated by blanks. Column tags or an asterisk are used as new view criteria to reorder the list on the list panel display.

**VIEW DELETE** *viewname*

Enter this parameter to delete a previously saved view. The DELETE parameter can be abbreviated as DE. Viewname must be one to eight alphanumeric characters and must begin with an alphabetic, $, @, or # character.

**VIEW SELECT** *viewname*

Enter this parameter to retrieve a previously saved view. The SELECT parameter can be abbreviated as SE. Viewname must be one to eight alphanumeric characters and must begin with an alphabetic, $, @, or # character.

**VIEW SAVE** *viewname*

Enter this parameter to save the current view criteria using the specified view name. The SAVE parameter can be abbreviated as SA. Viewname must be one to eight alphanumeric characters and must begin with an alphabetic, $, @, or # character. If the specified view name already exists, it is replaced and a display message indicates that the previously saved view is replaced.

Press the ENTER key after specifying the VIEW command parameters. Without displaying the View Entry Panel first, the list panel displays with the columns appearing in the order specified by your view criteria. When you enter the VIEW command with parameters, ISMF saves the values you specify. The next time you invoke the View Entry Panel with the VIEW command, the panel is primed with these values. The view criteria are saved across ISMF sessions.

You can enter existing line operators and commands for all list panels with some changes when VIEW is in use:

- The SORT command only sorts columns in the current view.
- The FIND command only locates columns in the current view.
- Entering the FILTER command first determines which entries are to appear on the filtered list panel using the ISMF list of columns. The resulting list is selected and reordered according to the current view criteria. All columns are used in the filter process but may not display on the list panel.

### Error Handling during the Tailoring of a List

ISMF uses short and long error messages to document errors in tailoring a data set or volume list. ISMF informs you of errors by displaying a short error message describing the problem. You can still continue working with the displayed list, but the list might contain some entries that do not meet your filter or sort criteria. If the short error message does not give you enough information, use the HELP command to display the long error message. Use the HELP command again to see the message help panel.

If an error in sorting or filtering makes it impossible to redisplay the list, ISMF displays the selection entry panel. The panel is primed with the selection criteria you chose when you built the list. If you press the ENTER key, the list you originally created is displayed and you can continue working with it.
Saving a Copy of the List

The SAVE command allows you to save a copy of the list for future use. The saved list contains as many entries as the currently displayed list. Any tailoring you do with the SORT command, FILTER command, VIEW command, and the HIDE line operator determines the content of the saved list.

For example, if the entries statement reads as follows, the saved list will have 85 entries and 39 data columns:

To save a list, enter SAVE on the command line followed by the name you want to use to identify the list (see Figure 49). Do not use a name that begins with DGT, ISP, or ISR. These prefixes are reserved for ISMF and ISPF tables. If you use other dialogs under ISPF, do not choose a list name that duplicates the name of any table used by the dialog.

If a saved list or any other ISPF table you specify already exists, you have two options: you can choose another name or specify the REPLACE option with the SAVE command. With the REPLACE option, the SAVE command looks like this:

```
COMMAND ===> save thislist replace
```

Once you have saved a list, you can use ISPF services against it. For example, using ISPF file tailoring and table services, you can read, scan, and update the list. You can also format the list for printing. The list can be accessed in both the foreground and the background.

Related Topic: That the variable names used in saved lists are the same as the ones used for CLISTs and user commands. For more information on CLIST variables, see "Contents of the List Panels" on page 49 and Appendix B, "Acquiring Data for a User-Created CLIST," on page 169. However, the first character of a variable name is changed when it occurs in a saved list:

- The first character for data set list variables is X.
- The first character for DASD volume list variables is Y.
- The first character for mountable optical volume list variables is K.
- The first character for mountable tape volume list variables is J.
- The first character for management class variables is R.
- The first character for data class variables is Q.
- The first character for storage class variables is U.
Printing a List

To print a copy of a list being viewed or a copy of a saved list, use the ISMF LISTPRT command. With LISTPRT, you can generate the list in standard format or in roster format, store the list in a new or existing data set, and specify which columns are printed.

You can also use ISPF PRINT or PRINT–HI to print what is currently being displayed. See “Printing a List Using the ISPF PRINT or PRINT–HI Command” on page 75 for information on how to use these commands.

Printing a List Using the LISTPRT Command

With LISTPRT, you can print lists generated by various ISMF applications. You can print saved lists or lists that are currently being displayed.

There are two ways to use the LISTPRT command:
- You can enter LISTPRT without parameters on the command line of a list panel.
- You can enter LISTPRT with parameters on the command line of a list panel.

Using the LISTPRT Command without Parameters

From the Data Set or Volume List panels enter LISTPRT on the command line to display the Print Entry panel, as shown in Figure 50.

Figure 50. Printing a List Using the LISTPRT Command

From the Print Entry panel, you can specify the report format, the columns that should be printed, the number of lines to be printed on each page, and the data set in which the output should be stored.

Rule: If you specify an existing output data set, you must also specify whether or not the contents should be replaced by the new list.

Specify one or more of the following options:
Parameter Description

Select Format Type
Enter this parameter to specify the format of the report as either STANDARD or ROSTER. If you specify STANDARD, information for each entry in the list is printed by column, just as it is in the list panel. If you specify ROSTER, information for each list entry printed one after the other, by row.

Report Data Set Name
Enter this parameter to specify the name of the data set in which the report should be stored. If you enter a data set name you must also enter Y or N in the Replace Report Contents field. If you enter a new data set name, the system will create a data set with that name along with these characteristics:
- Physical sequential
- LRECL=133
- RECFM=FBA

Requirement: If you specify an existing data set name, you must also use the Replace Report Contents parameter to specify whether or not the contents should be replaced by the new list.

Replace Report Contents
Enter this parameter to specify whether or not you want the existing contents of the named data set to be replace by the new list. Entry in this field is required if you specify a data set name in the Report Data Set Name parameter. A value of Y, yes, replaces the contents. A value of N, no, does not replace the contents. The default is N.

Lines/Page
Use this parameter to specify the number of lines that should be printed on each page of the report. The header information occupies the first eleven lines. The default value is 55 lines.

Specify Tags to be Printed
Enter column numbers in the order you want them printed. The * character represents the column tags in default order. Place an * as the final element in your tag sequence to print all remaining columns in default order (19 6 8 *).

Exception: You cannot specify the LINE OPERATOR (1) and DATA SET NAME (2) columns on the Specify Tags field because they always appear as the first two columns on a list panel.

Enter DOWN on the command line to display page 2 of the Data Set Print Entry Panel, as shown in Figure 51 on page 73.
Press ENTER to display the Job Submission Entry panel, as shown in Figure 52.

Press ENTER to display the Print Execute Statement Entry panel, as shown in Figure 53 on page 74.
When you use LISTPRT with parameters, you bypass the Print Entry Panel.

Enter LISTPRT from the command line of the list panel, using the following syntax:

```
LISTPRT [listname format tags]
```

where:

- **LISTPRT** is the command name.
- **listname** is the name of a saved list (for example, SAMPLIST).
- **format**
  - format STANDARD (STD) or ROSTER (RST).
- **tags**
  - can specify column order or * for default order.

Figure 54 on page 75 shows an example the LISTPRT command with parameters:
If the Print Entry Panel is primed with values from the last time you used the LISTPRT command, these values are used as print criteria along with the parameters you specify with the LISTPRT command. The message OTHER VALUES ALSO USED is displayed to remind you that ISMF filtered the list using values from the entry panel as well as those you specified from the list panel.

**Printing a List Using the ISPF PRINT or PRINT-HI Command**

If you want to print only the portion of the list that is currently displayed on the screen, you can use the ISPF commands PRINT or PRINT-HI.

Enter the PRINT command on the command line of the list panel to print the screen without highlighting any of the fields. If you enter the PRINT-HI command, overstriking simulates the highlighted fields. When you enter either the PRINT or PRINT-HI command, the screen display is formatted for output and placed in the ISPF list data set.

For more information on PRINT and PRINT-HI, see *ISPF and ISPF/PDF Reference: Summary.*

**Listing Saved Lists**

The List Application lets you manage saved ISMF lists. An application selection on the ISMF Primary Option Menu, LIST displays a comprehensive list of the names of the lists saved from other applications.

When you choose the List Application, the Saved ISMF Lists Panel is displayed if there are any saved ISMF lists. Figure 55 on page 76 shows an example of the Saved ISMF Lists Panel.
If no saved lists are found, the Primary Option Menu is redisplayed with the message that the list is empty.

ISMF line operators and commands can be used in the List Application to help you manage your saved lists. You can sort columns on the Saved ISMF Lists Panel with the SORT command or reorder the display columns with the VIEW command. The FILTER command can be used to select list entries from the displayed list. Any of the currently displayed columns, except for the LINE OPERATOR column, can be used for filtering. You can also delete a saved list from the Saved ISMF Lists Panel using the DELETE line operator.

For a complete list of line operators and commands that you can use to perform operations on the Saved ISMF Lists Panel, see Table 12 on page 157 and Table 13 on page 159.

### Reusing a Previously Saved List

To reuse a previously saved data set list or volume list, enter the name of the saved list on the selection entry panel. The saved list is displayed and becomes the current list.

If the list being reused was saved in a previous release of ISMF, any new data columns on the Data Set List Panel display nulls (-------).

If you are in the List Application, the LIST line operator displays the saved list as if list reuse was selected from the corresponding application. The appropriate list is displayed using the saved information.

**Restriction:** Saved SMS class lists are not reusable.
Modifying a Data Set in the List

ISMF uses the ISPF/PDF browse and edit facilities and DFSORT sort facilities to allow you to look at or change the contents of a data set from the data set list. The data set must be sequential, partitioned, or partitioned extended.

Browsing or Editing a Data Set

To use browse or edit, enter the BROWSE or EDIT line operator in the line operator column next to the data set you want to display. Figure 56 shows an example of entering the BROWSE line operator.

When you enter either BROWSE or EDIT, ISMF transfers control to ISPF/PDF to display the data set. Using BROWSE, you can look at the data set without altering it. With EDIT, you can also make changes to the data set.

When you have finished working with the data set, use the END command to return to the list. Any changes you make to the data set using the EDIT line operator are saved.

For more information on BROWSE and EDIT, refer to ISPF and ISPF/PDF Reference Summary.

Tip: If your list is generated from the catalog, the BROWSE or EDIT line operator forces a recall of the data set.

Using Line Operators and List Commands

This section provides information on how to use line operators and list commands.

Entering Line Operators and List Commands

Whereas line operators work with the individual entries in a data set or volume list, list commands allow you to perform an operation against all the entries in a list at one time. Enter line operators in the line operator field and list commands on the command line.

Line Operators

Line operators work with the individual entries in a data set or volume list. You enter line operators in the line operator field, column 1, next to the data set or volume entries you want to affect. For example, to tailor your list and exclude a data set from the list, enter the HIDE line operator next to the name of the data set you want to exclude (see Figure 57 on page 78). The entry is hidden, and the
warning line contains the reminder **ENTRIES HIDDEN**. A hidden entry is not affected by list commands.

If you have entered a storage management command, such as the COMPRESS line operator, ISMF then displays the COMPRESS Entry Panel, which lets you display and change processing options for the COMPRESS line operator.

**List Commands**

List commands allow you to perform an operation against all the entries in a list at one time. You enter list commands on the command line of the list panel. For example, if you want to build a job to compress all the data sets in the list instead of a single data set, you can use COMPRESS as a list command (see Figure 58).

When you enter a list command, ISMF displays the entry panel associated with the list command. Like the entry panels for line operators, the entry panels for storage management list commands allow you to display and change the processing options for executing the command. The entry panels for list customization commands such as FILTER, VIEW, or SORT, for example, allow you to change the selection criteria for the command.

Each time you enter a storage management list command, ISMF scans the entire list to make sure that each entry is correct before attempting to process the command. For example, when you issue the COMPRESS list command, ISMF checks to make sure that the list consists of only partitioned data sets before displaying the entry panel associated with COMPRESS. The list command is not executed if there are any entries in error or if you try to use a list command and line operator at the same time.

**Abbreviating Line Operators and List Commands**

When you enter a line operator or a list command, you can use the full word or you can abbreviate it by specifying enough of the word to make the command
identifiable. ISMF scans from left to right in the line operator field or on the command line until any ambiguity is resolved. You can enter COP for COPY, COM for COMPRESS, REST for RESTORE, and REL for RELEASE.

Table 12 on page 157 and Table 13 on page 159 lists the minimum abbreviations for line operators and list commands. TSO CLIST names, such as CATLIST, cannot be abbreviated.

**Short Ways of Entering Line Operators**

This section applies to line operators only.

**Entering More Than One Line Operator on an Entry**

If you want to perform several operations on one data set or volume, you can do so by entering the new line operator, or abbreviation, followed by a single blank space. ISMF recognizes the new line operator even if you do not blank out the remaining characters of the previous line operator.

For example, if you want to replace COMPRESS with DUMP, you do not need to erase the remaining characters in COMPRESS. Just enter DUMP (or DU) followed by one or more blank spaces (see Figure 59).

**Repeat Line Operator**

Use the repeat line operator to respecify a line operator against an entry that follows later in the list. ISMF repeats the last line operator executed when it finds an equal sign (=) in the line operator column. By using the equal sign, you do not have to reenter the same line operator for each list entry.

For example, Figure 60 on page 80 shows how you can execute the same line operator over a number of data sets with the repeat line operator. A line operator is entered against all but one of the list entries. ISMF processes the COMPRESS line operator against the first, second and fourth list entries and the DELETE line operator against the next four entries.
The repeat line operator can be used in last-use mode. See “Repeat Line Operator in Last-Use Mode” on page 81.

Line Operator Mode

There are two ways to enter line operators: normal mode and last-use mode. List commands can only be entered in normal mode.

In **normal mode**, enter the line operator by itself in the line operator field (for example, COMPRESS in Figure 60). ISMF displays the entry panel associated with the line operator you specify. You can then display or change the processing options on the entry panel.

In **last-use mode**, enter the line operator followed by an equal sign in the line operator field. ISMF does not display the entry panel for the line operator. Instead, the line operator is processed with the values present on the entry panel the last time the line operator was executed. In Figure 61, COMPRESS is specified in last-use mode.

Instead of displaying the COMPRESS Entry Panel and the background job submission panels, ISMF uses the processing options that you specified the last time you used the COMPRESS line operator.

If you chose to submit the last job immediately, the new job is sent to the job queue. If you chose to save the job stream in a data set the last time you submitted a background job, the new job is also saved. However, the new job is added to the end of the data set regardless of the option you specified the last time you used the Job Submission Entry Panel.
Repeat Line Operator in Last-Use Mode

You can use the repeat line operator in last-use mode. Two equal signs together in the line operator column repeat the previous line operator in last-use mode. Figure 62 shows an example of the repeat line operator.

Figure 62. Specifying a Repeat Line Operator in Last-Use Mode

In Figure 62, the first three data sets are compressed using last-use mode. The last three data sets are compressed using normal mode. The COMPRESS Entry Panel is displayed for the last three data sets. For information on the repeat line operator, see “Repeat Line Operator” on page 79.

Using Parameters with Line Operators and List Commands

You can use TSO commands and CLISTs as line operators to perform functions against single list entries, and as list commands to perform functions against all entries in the list. These commands often require parameters. You can specify TSO commands and CLISTs with parameters from any application. Refer to “Invoking TSO Commands and CLISTs” on page 103 for more information.

Line Operator and List Command Feedback and Fixes

ISMF provides feedback for both successful completion or submission of line operators and for error conditions.

Getting Feedback

ISMF informs you upon successful or unsuccessful completion of a command.

Successful Completion of Line Operators and List Commands

When a line operator is successful, ISMF inserts an asterisk before the line operator in the line operator field. When a list command is successful, all the entries in the list are preceded with an asterisk and the command. In both cases, a short message in the upper right corner of the screen indicates that the operation has completed successfully. Abbreviations are replaced with the full word. Figure 63 on page 82 shows the feedback for the DUMP line operator entered in Figure 59 on page 79. The asterisk represents a return code of 0.
If the COMPRESS command issued in Figure 58 on page 78 is successful, the data set list will contain the asterisk history symbols next to each data set entry and the short message shown in Figure 64.

Tips

- Because ISMF does not process line operators preceded by an asterisk, the asterisk history symbol gives you a record of the line operators you have used.
- You can also use an asterisk as the first character for any comments you want to place in the line operator field. The information following the asterisk (both comments and successful line operators) remains in the line operator field until you perform one of the following actions:
  - Blank out the field.
  - Enter the CLEAR command on the command line. CLEAR erases pending line operators and line operator history symbols for all entries in the list except those hidden or excluded by filtering.
  - Refresh the list or construct another list using different selection criteria.
  - Exit the application.

Error Condition that Affects a Line Operator or List Command

When there is an error during the execution of a line operator or list command, and the error is not severe enough to keep ISMF from processing the rest of the list, ISMF displays the line operator or command next to the list entry that failed and prefixes them with a not sign (¬). The list entry is bypassed, and processing continues for the rest of the line operators or entries in the list, as shown in Figure 65 on page 83. The not sign prefix represents a return code of 4.

Figure 65 on page 83 shows a data set list where all the list entries except the fifth one have been processed successfully.
Error Condition that Affects the List Processing

If there is an error during the execution of a line operator or list command that is so severe that ISMF cannot continue with the rest of the list, ISMF prefixes the line operator with a question mark. For a list command, ISMF displays the command next to the list entry that failed and prefixes the command with a question mark. A question mark represents a return code greater than 4.

For example, ISMF could not continue processing the list shown in Figure 66 once the error occurred on the fourth line operator.

Figure 65. Not Sign Showing Unsuccessful Completion of a List Command

Figure 66. Example of a Question Mark Return Code Symbol for a Line Operator
Correcting Errors for Line Operators and List Commands

You have several options to correct an error for a line operator prefixed with either a not sign (¬) or a question mark (?):

- Correct any obvious spelling errors, erase the history symbol, and retry the line operator.
- Use the HELP command to display the long error message and the message help panel for information to help you correct the error.
- Enter the MESSAGE line operator on top of the line operator with the error. ISMF displays a message on the particular line operator that can help you diagnose the problem. For more information, see “MESSAGE Line Operator” on page 20.
- Hide the list entry and continue working with the list.
- Erase the line operator field in error and continue working with the list.
- Enter the CLEAR command on the command line. This clears the entire line operator column and cancels any pending line operators. Then retry the line operator that caused the error.
- Press ENTER again to continue working with the list.

You have several options to correct errors for list commands:

- Use the HELP command to display the long error message and the message help panel for information to help you correct the error.
- Blank out the command line and issue the MESSAGE line operator against the list entry causing the problem. ISMF displays a series of messages that can help you diagnose the problem. See “MESSAGE Line Operator” on page 20 for more information.
- Use the HIDE line operator to exclude the entry causing the error from the list. Enter H followed by a blank space in the line operator field of the entry you want to hide. ISMF executes the HIDE line operator and continues processing the list beginning with the first entry on the list. If there are no other entries in error, the entry panel for the list command is displayed.
- Clear the command line by blanking out the list command. This cancels the list command.

List Panel Processing Rules

ISMF follows a set sequence for list panel processing:

1. ISMF executes TSO and ISPF commands (for example, KEYS) before ISMF line operators.
2. ISMF executes the ISMF commands CLEAR, END, and RETURN before line operators. Entering these commands cancels pending line operators.
3. ISMF executes line operators before the ISMF commands for scrolling and tailoring (UP, DOWN, TOP, BOTTOM, LEFT, RIGHT, FIND, VIEW, SORT, FILTER, FOLD), and before the PROFILE, SAVE, REFRESH, and RESHOW commands.

For example, if you entered COPY as a line operator and FILTER on the command line, as shown in Figure 67 on page 85, ISMF executes the line operator first. The COPY Entry Panel is displayed and the COPY command is performed before the FILTER Entry Panel is displayed.
4. If more than one line operator is specified, ISMF starts processing at the top of the list and continues down until it has processed all the line operators. For example, in Figure 68, COPY executes first, then DUMP, and finally COMPRESS.

Figure 67. Processing Sequence for Commands and Line Operators

```
Panel List Dataset Utilities Scroll Help
---------------------------------------------
Command ===> FILTER
Enter Line Operators Below:

<table>
<thead>
<tr>
<th>LINE OPERATOR</th>
<th>DATA SET NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>COPY</td>
<td>USER230.ISMF.ALIST</td>
</tr>
<tr>
<td></td>
<td>USER230.ISMF.CLIST</td>
</tr>
<tr>
<td></td>
<td>USER230.ISMF.DGTLLIB</td>
</tr>
</tbody>
</table>
```

Figure 68. Processing Sequence for More than One Line Operator

```
Panel List Dataset Utilities Scroll Help
---------------------------------------------
Command ===> FILTER
Enter Line Operators Below:

<table>
<thead>
<tr>
<th>LINE OPERATOR</th>
<th>DATA SET NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>COPY</td>
<td>USER230.ISMF.ALIST</td>
</tr>
<tr>
<td>DUMP</td>
<td>USER230.ISMF.CLIST</td>
</tr>
<tr>
<td>COMPRESS</td>
<td>USER230.ISMF.DGTLLIB</td>
</tr>
</tbody>
</table>
```
Chapter 5. Understanding How Data Entry Panels Work

This chapter provides additional information on how to use data entry panels. The information is especially useful before using the commands that perform data and storage management tasks.

A data entry panel is a display of labeled fields that you fill in to perform a task. Typical tasks performed through data entry panels include list tailoring or data and storage management tasks. The panel can be displayed in response to the following input:

- An option you chose on a selection panel
- An ISMF command
- A line operator or list command entered on a list panel

For example, when you enter the DELETE line operator on a list panel, the DELETE Entry Panel is displayed. The DELETE Entry Panel allows you to specify information ISMF needs to delete a data set.

Default Values

ISMF provides default values for most required fields when performing functions against Data Set and Volume Applications. ISMF supplies the default value for a field on a data entry panel when you blank the field. When you press ENTER, ISMF redisplay the panel with the default values and the short message DEFAULT PRIMING DONE.

For example, if you want to compress a data set that is not passwordprotected, you can use the default values for the COMPRESS line operator. When you enter the COMPRESS line operator on a data set list, ISMF displays the COMPRESS Entry Panel primed with the name of the data set you want to compress and the values from the last time you used the line operator, as shown in [Figure 69 on page 88](#).
To see the default values, blank out the fields on the COMPRESS Entry Panel and press ENTER. ISMF displays the COMPRESS Entry Panel primed with the default values, as shown in Figure 70.

Figure 69. Example of a Data Entry Panel with Default Values

To see the default values, blank out the fields on the COMPRESS Entry Panel and press ENTER. ISMF displays the COMPRESS Entry Panel primed with the default values, as shown in Figure 70.

Figure 70. Data Entry Panel Primed with Default Values

When you install ISMF, you can accept the defaults ISMF supplies, or you can customize them to suit your installation or personal needs. For information on changing default values, refer to z/OS DFSMS Installation Exits.

Fields Primed with Last-Used Values

ISMF saves the values you enter on data entry panels between each use of the panel, and from one session to the next. When you choose an option on a selection panel or enter a line operator or list command, the data entry panel ISMF displays
will appear with values filled in from the last time you used the function. This is called priming. Password fields are also primed but only for one session. These fields appear blank because they are masked for security.

For repetitive tasks, where the values you enter are consistently the same, priming helps avoid errors and saves time. For example, when you use the DELETE line operator, you may always choose to delete a data set even if it has not reached its expiration date. When ISMF displays a data entry panel, you can accept the primed values by pressing the ENTER key. If the data entry panel has more than one page, you may want to scroll through all the pages to verify the primed values.

To alter the primed values, enter new values in any of the fields on the data entry panel. If you supply new values, these values are used to prime the data entry panel the next time you use it.

**Entering Values on Data Entry Panels**

The values you enter on data entry panels determine the way ISMF performs a specific task. ISMF data entry panels are just like ISPF data entry panels. On each data entry panel, input fields are preceded by an input arrow (=>). Output fields are preceded by a colon (:). Some of the fields are required and others are optional. If you fail to complete a required field, or enter an invalid value, ISMF prompts you with a short error message. ISMF Data Entry Panels may have several pages.

For the Data Set Application, depending on the type of data set you use, you may not be able to display all the options and specify values. ISMF automatically bypasses the pages that do not apply to the data set type you are using. For example, if you are trying to delete a data set that has not been backed up, ISMF displays an entry panel that does not include the option to delete the backup copy.

Figure 71 on page 90 shows a data entry panel displayed when you enter the DELETE line operator on a data set list. The name of the data set you want to delete appears on the panel along with any additional instructions. The example shows how you can instruct ISMF to delete a data set and its DFSMSshm backup versions even if the retention period for the data set has not expired.
Moving through Data Entry Panels

Like other types of ISMF panels, data entry panels may consist of more than one page. The scroll commands UP and DOWN allow you to move through them. Press the ENTER key to perform the function. The END command takes you back to the list panel or to a selection panel without saving the values entered on the panel. If you enter the END command on a data entry panel for a list command or line operator, ISMF returns to the list. If you enter the END command on a data entry panel that was displayed from a selection panel (the ISMF Profile Option Menu, for example), ISMF returns to the associated selection panel.

Data entry panels are structured to provide a fast path for most of the line operators and list commands. The other pages are grouped so that related values are shown together. The pages you complete vary with each task you perform; the values you enter on the first page of the panel determine the sequence and number of additional pages ISMF displays. Furthermore, after completing the first page of a panel, you often have the option of bypassing the optional fields on the other pages. This saves you the time it takes to display options that are not applicable to the specific task you want to perform.

For example, when you use the DUMP line operator during a Data Set Application, you might look at all seven pages of the entry panel. Figure 72 on page 91 is the first page.
The values you enter on this page determine which of the remaining six pages you display, and the path you take through them. You can make five choices:

- The number of copies you want to dump
- Whether you are using tape or DASD for the output data set
- The type of dump
- Whether you want to see the current allocation values for the output data set
- Whether you want to see the other options you can specify with the DUMP command

Your choices determine which additional pages ISMF displays. If you choose to see the current allocation values for the output data set, and specify tape as the media type, you see one group of pages; if you specify DASD, you see another. If you choose to make more than one copy, ISMF displays a panel that allows you to specify the data set names, target volumes, and unit for the additional copies.

**How Input Errors on a Data Entry Panel Are Handled**

The information on a data entry panel is not processed until the input fields on the panel are completed correctly. If there is an error, ISMF points to it, prompting you to supply the correct information.

ISMF uses short and long error messages to indicate input errors on data entry panels. When there is an input error (for example, a required field left blank, or a field incorrectly specified), a short error message appears in the upper right corner, and the cursor is positioned at the beginning of the field containing the error. The short message briefly describes the error. If the short message does not give you enough information to correct the error, you can use the HELP command to display the long error message. Specifying HELP again displays the help panel associated with the error message, or, in some cases, the help panel associated with the data entry panel. The help panel gives you more information to help you complete the data entry panel.
You can display a record of error tracing by entering the ERTB command. This command can be issued from any ISMF application and it results in the display of the ISMF Error Table.

The display panel consists of a command line, the address of the error table, and the current entry address of the ERTB. The error can be found in the ISPF log data. The ERTB entry will be gone when you exit the ISMF application, but the ISPF log will remain. You can enter DOWN or UP on the command line to look at previous and subsequent entries. Figure 73 is an example of the ERTB.

---

**Figure 73. An Example Error Table (ERTB) Display**

If your ISMF profile has been used to set up an automatic display of the ERTB, every log record matching the values specified in the profile generates an ERTB display. In some cases, ISMF may detect, log, and display more than one record per error. It may seem that ISMF redisplays the same entry over and over, but the Module or Proc name and the entry address indicate that the entries are distinct. The rightmost entry is the most recent entry.
Chapter 6. Performing Data and Storage Management Tasks

This chapter helps you perform six general types of data and storage management tasks:
1. Recovering unused space
2. Migrating and moving data
3. Backing up and recovering data sets
4. Protecting data
5. Altering data set characteristics
6. Invoking TSO commands and CLISTs

To perform these tasks, you enter line operators or list commands on a data set list or a DASD volume list and then complete data entry panels. By passing the information you have supplied to DFSMSHsm, DFSMSdss, ICKDSF, RACF, or an existing TSO command or CLIST, ISMF helps you use these products or CLISTs.

Recovering Unused Space

You can use ISMF to recover the following kinds of unused space:

- Space occupied by members of a partitioned data set that have been updated or deleted
- Unused space at the end of a data set
- Space occupied by data sets that you no longer need.

Table 5 summarizes the DFSMSHsm and DFSMSdss functions that ISMF uses to perform these tasks.

<table>
<thead>
<tr>
<th>Task</th>
<th>Function</th>
<th>Scope</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recover unused space at the end of a data set.</td>
<td>CONDENSE</td>
<td>Single data set</td>
<td>Frees unused space at the end of a data set. Compresses partitioned data sets. Performed in the foreground by DFSMSHsm.</td>
</tr>
<tr>
<td>Recover unused space occupied by members of partitioned data sets.</td>
<td>COMPRESS</td>
<td>Single data set, group of data sets, or volume</td>
<td>Works only with partitioned data sets. Reclaims embedded unused space. Performed in the background by DFSMSdss.</td>
</tr>
<tr>
<td>Recover unused space at the end of data sets.</td>
<td>RELEASE</td>
<td>Single data set, group of data sets, or volume</td>
<td>Frees unused space at the end of data sets or frees all allocated, unused space on a specified volume. Performed in the background by DFSMSdss.</td>
</tr>
<tr>
<td>Recover space occupied by data sets that are no longer needed.</td>
<td>DELETE /ERASE</td>
<td>Single data set</td>
<td>Deletes or erases online or DFSMSHsm-migrated data sets. Performed in the foreground by TSO or DFSMSHsm.</td>
</tr>
<tr>
<td>Reduce or eliminate free space fragmentation.</td>
<td>DEFRAG</td>
<td>Volume</td>
<td>Relocates non-VSAM and integrated catalog facility cataloged VSAM data set space to reduce free space fragmentation. Performed in the background by DFSMSdss.</td>
</tr>
</tbody>
</table>
Recovering Unused Space from Partitioned Data Sets

There are two ways to reclaim space occupied by members of a partitioned data set that have been updated or deleted. You can use the CONDENSE line operator or the COMPRESS line operator or list command. CONDENSE is performed in the foreground. COMPRESS is performed in the background.

CONDENSE can be used for individual entries in a data set list. The data sets can be either partitioned or sequential. For partitioned data sets, CONDENSE reclaims all embedded unused space. For both partitioned and sequential data sets with secondary allocation, the CONDENSE line operator causes DFSMShsm to free the unused space at the end of the data set by migrating and recalling the data set. For data sets with secondary allocation, CONDENSE might also reduce the number of extents the data set occupies; when DFSMShsm recalls the data set, it reallocates only the amount of space the data requires. CONDENSE does not change the allocation unit. If the data set was originally allocated in cylinders, some unused tracks might remain at the end of the data set after it is condensed.

On the CONDENSE Entry Panel, you can specify a volume serial number and device type for a specific volume to receive the condensed data set, or you can blank out the field and let DFSMShsm choose the volume. You can also indicate whether you want to wait for the command to execute or return immediately to the list panel. If you choose to wait, ISMF displays the CONDENSE Entry Panel until the CONDENSE is completed. When the data set has been condensed, the list panel is displayed again.

COMPRESS can be used as a line operator or a list command on a data set list and as a line operator on a volume list. You can compress a single partitioned data set, a group of partitioned data sets, or a volume containing partitioned data sets. COMPRESS causes DFSMSdss to reclaim all embedded unused space from the specified data sets. However, COMPRESS does not release unused space at the end of a data set. COMPRESS works only with partitioned data sets. If you try to compress a data set that is not partitioned, ISMF displays an error message.

On the COMPRESS Entry Panel, you provide information to control access to the data sets you wish to compress. You can specify the maximum number of times DFSMSdss should attempt to compress the data set and the number of seconds between each attempt. You can also indicate that you want DFSMSdss to use dynamic allocation instead of enqueue to coordinate use of the data set. If the data set is password protected, you must supply the password on this panel.

If you are performing a task against a volume, you can also list the data set names you do not wish to compress.

Recovering Unused Space from Data Sets

Both the CONDENSE line operator and the RELEASE line operator (or list command) free unused space at the end of a data set. When used for a volume, RELEASE frees all allocated, unused space for partitioned and sequential data sets on the volume.

As noted in "Recovering Unused Space from Partitioned Data Sets," you can use CONDENSE to free unused space at the end of individual sequential or partitioned data sets. CONDENSE also compresses partitioned data sets.
**RELEASE** is a DFSMSdss command that you can use against a single data set, a group of sequential or partitioned data sets, or a volume. RELEASE frees space that has been allocated but not used at the end of data sets. Because RELEASE frees only space at the end of data sets, you might want to compress partitioned data sets before releasing the space. Like CONDENSE, RELEASE does not change the allocation unit for a data set. If the data set was originally allocated in cylinders, some unused tracks might remain after the unused space has been released. RELEASE is performed in the background.

On the RELEASE Entry Panel, you can specify a minimum amount of unused space and a minimum secondary allocation that the data set must have for DFSMSdss to execute the command. You can specify the maximum number of times DFSMSdss should attempt to release the unused space and the number of seconds between each attempt. You can also indicate that you want DFSMSdss to use dynamic allocation instead of enqueue to coordinate use of the data set. If the data set is password-protected, you must supply the password on this panel.

If you are performing a task against a volume, you can list names of data sets not to be released.

### Deleting or Erasing Data Sets

The **DELETE** line operator is performed in the foreground by TSO for cataloged data sets, by SVC 29 for uncataloged data sets, and by DFSMShsm for migrated data sets. You can delete individual data sets that have been migrated by DFSMShsm, and data sets that are online. If you enter the DELETE line operator for a data set that has been migrated, ISMF translates the DELETE line operator to an HDELETE and continues processing. You can delete a data set without being certain it is online. You can also delete the DFSMShsm backup versions of a data set.

A TSO message confirms each DELETE. The DELETE line operator is supported for cataloged data sets as well as data sets generated from the VTOC. However, for VSAM data sets in a catalog-generated list, you can issue DELETE only against the cluster entry.

On the DELETE Entry Panel you have the following options:

- Delete the data set from the VTOC as well as the catalog.
- For VSAM data sets, replace the data with binary.
- Delete the data set even if its retention period has not expired.
- Delete any or all backup versions. (If you choose to do this, the HBDELETE panel is displayed.)

If the data set is password protected, you must supply the password on the DELETE Entry Panel.

**Tip:** You can use the **ERASE** line operator on all application list panels as a synonym for DELETE. The line operator erases single data sets that are online or have been migrated by DFSMShsm.

### Defragmenting a Volume

The **DEFRAG** line operator applies only to volume applications. You can use it to relocate non-VSAM and integrated catalog facility data set extents on a DASD volume to reduce or eliminate free-space fragmentation. When protected data sets
or data sets defined with the ERASE option are relocated, information in the old locations is erased for security. DEFRAG is performed in the background by DFSMSdss.

On the DEFRAG Entry Panel, you can specify the number of times DFSMSdss should attempt to gain control of the volume, the number of seconds between each attempt, and the password for protected data sets. You can also specify an index value to control the amount of fragmentation. You can choose among three defragmentation techniques: one minimizes fragmentation, one minimizes data movement, and one minimizes volume involvement. You can list any data sets you wish to exclude from the relocation in the last field on the DEFRAG Entry Panel.

**Migrating and Moving Data**

ISMF uses both DFSMShsm and DFSMSdss commands to help you perform these tasks:

- Migrate less active data sets from primary storage to other devices (like or unlike).
- Recall data sets when you need them again.
- Move data sets to DASD volumes of like or unlike device types.

Table 6 summarizes the DFSMShsm and DFSMSdss commands that ISMF uses for migration and data movement.

<table>
<thead>
<tr>
<th>Task</th>
<th>Function</th>
<th>Scope</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Move or copy less active data sets from primary storage to other devices (like or unlike).</td>
<td>HMIGRATE</td>
<td>Single data set</td>
<td>Migrates a data set to a DFSMShsm level 1 or level 2 volume. Performed in the foreground by DFSMShsm.</td>
</tr>
<tr>
<td>Recall data sets that have been migrated by DFSMShsm.</td>
<td>HRECALL</td>
<td>Single data set</td>
<td>Recalls a single data set that has been migrated by DFSMShsm. Performed in the foreground by DFSMShsm.</td>
</tr>
<tr>
<td>Move or copy data sets to DASD volumes of like or unlike device type.</td>
<td>COPY</td>
<td>Single data set, group of data sets, or volume</td>
<td>Copies data sets to DASD volumes of like or unlike device type. Performed in the background by DFSMSdss.</td>
</tr>
</tbody>
</table>

**Using DFSMShsm for Migration of Data**

When DFSMShsm migrates data, it uses a hierarchy of storage devices that have different costs for storing data and different speeds of accessing the data. Less active data is stored further down in the hierarchy. The hierarchy consists of three levels of devices and volumes:

**Level 0**

Storage devices that contain data directly accessible to you. Level 0 volumes are always mounted and online.

**Level 1**

Storage devices that contain data compressed by DFSMShsm. These devices may provide cheaper storage, but the access time is usually slower. Level 1 volumes contain data sets that DFSMShsm has moved from level 0 volumes. They are usually permanently mounted and online.

**Level 2**

Storage devices that contain data compressed by DFSMShsm. Like level 1,
these devices may provide cheaper storage, but the access time is usually slower. Level 2 volumes contain data sets that DFSMSHsm has moved from level 1 or level 0 volumes. They are normally not mounted or online.

Both migration and recall are usually performed automatically by DFSMSHsm space maintenance. However, you can choose to perform space maintenance yourself. For example, if you know that certain data sets will not be used for some time, you can migrate them immediately. You might also need to recall a data set before DFSMSHsm is scheduled to do so. With the HMIGRATE and HRECALL line operators you can manually make use of the DFSMSHsm storage hierarchy.

HMIGRATE allows you to migrate individual data sets to level 1 or level 2 volumes. When you enter HMIGRATE in the line operator column of the data set you want to move, ISMF displays the HMIGRATE Entry Panel. On the data entry panel, you can specify the migration level you want DFSMSHsm to use and the password if the data set is password-protected. Because HMIGRATE is performed in the foreground, you can choose to wait for completion. If you choose to wait, ISMF displays the HMIGRATE Entry Panel until the data set has been migrated. When the HMIGRATE is completed, the list panel is displayed again.

HRECALL recalls individual data sets that have been migrated to level 1 or level 2 volumes. On the HRECALL Entry Panel, you can direct the recall by specifying the volume serial number and device type for DFSMSHsm to use. If you do not choose a specific volume and device type, DFSMSHsm chooses a volume for the recall. Like HMIGRATE, the HRECALL line operator is performed in the foreground. You have the option of returning to the list panel immediately or waiting for the data set to be recalled before continuing.

Using COPY as a Device Migration Aid

With COPY you can copy or move a single data set, a group of data sets, or a volume to a DASD volume of like or unlike device type. For example, you can use COPY to move data sets from a 3380 to a 3390 or from one model 3390 to another. COPY is a valuable tool for device conversion.

When you enter the COPY line operator or list command, ISMF displays the data entry panel for COPY. On the COPY Entry Panel, you can specify the following options:

- Delete the original data sets after they have been copied.
- Rename the data sets as they are copied.
- Control the replacement of duplicate copies of data sets.
- Reblock sequential or partitioned data sets.
- Specify where to catalog the new data set.
- Specify the volume to receive the new data set and how much space to allocate on the volume.
- Provide the name of a RACF model data set to use to define the RACF profile for the new data set.
- Specify a maximum number of attempts DFSMSdss should make to serialize the data set and the number of seconds between each retry.
- Copy the data set even if it is being used by another program.
- Copy data sets that were allocated as unmovable.
- Use dynamic allocation instead of enqueue to serialize the use of the data set.
• Allow other programs read access to the data sets while the data sets are being copied.
• Copy all allocated space or only space that has actually been used.
• Verify the data after the COPY.
• Stop the COPY after the first I/O error or after 100 errors.
• Copy basic direct access method (BDAM) data set by relative block or TTR.

If you are performing a task against a volume, you also have the following options:
• Specify a logical or physical copy.
• Copy multivolume data sets.

The online help describes how to complete each field on the COPY Entry Panel. Defaults are provided for many of the options.

### Backing up and Recovering Data Sets

ISMF uses DFSMShsm and DFSMSdss to help you make, store, and recover backup copies of your data sets. From the data set list, you can perform the following tasks:
• Create backup versions of a single data set or group of data sets.
• Control the frequency of backup and the number of backup versions made.
• Delete backup versions that you no longer need.
• Recover backup versions of data sets that you have stored on tape, DASD, or a mass storage volume.

Table 7 summarizes the DFSMShsm and DFSMSdss commands that ISMF uses for backup and recovery.

<table>
<thead>
<tr>
<th>Task</th>
<th>Function</th>
<th>Scope</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create a backup version of a data set.</td>
<td>HBACKDS</td>
<td>Single data set</td>
<td>Creates a backup version of a data set. Performed in the foreground by DFSMShsm.</td>
</tr>
<tr>
<td>Create backup versions of data sets.</td>
<td>DUMP</td>
<td>Single data set, group of data sets, or volume</td>
<td>Dumps data sets to tape, DASD, or mass storage volumes. Performed in the background by DFSMSdss.</td>
</tr>
<tr>
<td>Control the frequency of backup and number of backup versions.</td>
<td>HALTERDS</td>
<td>Single data set</td>
<td>Changes the number of backup versions of a data set and controls the frequency of backup. Performed in the foreground by DFSMShsm.</td>
</tr>
<tr>
<td>Delete a backup version of a data set.</td>
<td>HBDELETE</td>
<td>Single data set</td>
<td>Deletes backup version of a data set. Performed in the foreground by DFSMShsm.</td>
</tr>
<tr>
<td>Delete migrated version of a data set.</td>
<td>HDELETE</td>
<td>Single data set</td>
<td>Deletes a migrated version of a data set. Performed in the foreground by DFSMShsm.</td>
</tr>
<tr>
<td>Recover the backup version of a data set.</td>
<td>HRECOVER</td>
<td>Single data set</td>
<td>Recovers a backup version of a data set. Performed in the foreground by DFSMShsm.</td>
</tr>
</tbody>
</table>
Creating Backup Versions of Data Sets or Volumes

ISMF provides two ways to create backup versions of your data sets: the HBACKD line operator or the DUMP line operator or list command.

HBACKD can be used against individual entries in a data set list. The data set must be cataloged. In a DFSMShsm environment, backing up data sets can be done automatically. However, if you do not want to wait, you can request an immediate backup using the HBACKD line operator. When you use HBACKD, DFSMShsm creates and stores a backup version of the specified data set. You do not need to identify the volume for DFSMShsm to store the data set. DFSMShsm chooses a volume.

HBACKD is performed in the foreground. When you enter the line operator on the data set list, ISMF displays the HBACKD Entry Panel. On the entry panel you can indicate whether you want to wait for the command to execute or return immediately to the list panel. If you choose to wait, ISMF displays the HBACKD Entry Panel until the backup version of the data set has been created.

DUMP can be used for a single data set, a group of data sets, or a volume. It is performed as a background job by DFSMSdss. If you enter DUMP in the line operator field, DFSMSdss places a backup copy of a single data set or volume on the media you choose: tape, DASD, or a mass storage volume. If you enter DUMP as a list command on the command line of the data set list, DFSMSdss makes backup copies of each data set in the list.

When you enter DUMP as either a line operator or list command, ISMF displays the associated data entry panels. On the data entry panels, you can specify the following options:

- Dump single volume, multivolume, and VSAM data sets.
- Dump to tape or DASD.
- Specify allocation values for the new data set.
- Determine the disposition of the output data set when the dump is successful or if it is unsuccessful.
- Dump multiple copies of data sets.
- Automatically compress the data when it is dumped.
- Specify a maximum number of attempts DFSMSdss should make to dump the data set and the number of seconds between each retry.
- Dump the data set even if it is being used by another program.
- Use dynamic allocation instead of enqueue to coordinate the use of the data set.
- Allow other programs read access to the data set while it is being dumped.
- Dump all allocated space or only space that has actually been used.
- Stop the DUMP after the first I/O error or after 100 errors.
- Specify the amount of I/O buffering DFSMSdss should use.
- Reset change indicators in the DSCB for all data sets successfully dumped.

Many of the previous DUMP capabilities also apply to the entry panel displayed during a Volume Application. In addition, when performing tasks against volumes, you can choose between a physical and a logical dump, and you can specify from which volumes allocated space is dumped.

The online HELP explains the individual fields on the DUMP data entry panels and the different options you have when you use DUMP. ISMF supplies defaults for many of these options.

**Controlling the Number of DFSMSHsm Backup Versions and the Frequency of Backup**

**HALTERDS** allows you to control the number of backup versions DFSMSHsm maintains of a DFSMSHsm-managed data set. With HALTERDS you can also change the default value for the frequency of creating backup versions. When you enter the HALTERDS line operator, ISMF displays the HALTERDS Entry Panel primed with the data set name. On the entry panel, you can specify how often you want DFSMSHsm to create backup versions of the data set and the number of backup versions you want to keep. HALTERDS is performed in the foreground. You cannot use this line operator in last-use mode. It works only in normal mode. This command cannot be used on SMS-managed data sets that are controlled by the data set’s management class parameters.

**Deleting Backup Versions of Data Sets**

Use **HBDELETE** when you want to erase backup versions of data sets that have been made using DFSMSHsm. When you enter the HBDELETE line operator, ISMF displays the HBDELETE Entry Panel for the data set you indicated. You can use the entry panel to delete all the backup versions of the data set or you can delete only specific versions by number. HBDELETE works in normal mode and is performed in the foreground by DFSMSHsm.

**Recovering Backup Versions of Data Sets and Volumes**

There are two ways to recover backup versions of data sets. You can use the **HRECOVER** line operator for data sets backed up by using HBACKDS. You can also use the **RESTORE** line operator or list command for data sets backed up by using DUMP. The RESTORE line operator can also be used for volumes.

**HRECOVER** recovers a backup version of an individual cataloged data set from a DFSMSHsm-managed volume. When you enter HRECOVER, ISMF displays the HRECOVER Entry Panel. The entry panel is primed with the name of the data set you want to recover. On the entry panel, you can specify the generation number or
date of the backup version you want to recover as well as the serial number of the
target volume. You can also choose to rename the data set as it is recovered or to
replace the existing data set with the backup version.

HRECOVER is performed in the foreground by DFSMShsm. You can wait for the
data set to be recovered before you return to the list panel. If you choose to wait
for completion, the HRECOVER Entry Panel is displayed until the command has
been performed. Otherwise, you return to the list immediately.

RESTORE allows you to restore data sets dumped by DFSMSdss to a DASD
volume. RESTORE is performed in the background. When you enter RESTORE,
ISMF displays data entry panels for you to complete. The information you provide
allows you to perform these tasks:

- Restore multivolume data sets.
- Restore VSAM data sets.
- Rename data sets as they are restored.
- Replace the original data set with the dumped data set.
- Catalog data sets as they are restored.
- Specify target volumes.
- Retain RACF protection for restored data sets that were originally
  RACF-protected.
- Specify a maximum number of attempts DFSMSdss should make to restore the
data set and the number of seconds between each retry.
- Determine the disposition of the original data set when the RESTORE command
  is successful or unsuccessful.
- Restore the data set even if it is being used by another program.
- Restore data sets that were allocated as unmovable.
- Use dynamic allocation instead of enqueue to coordinate the use of the data set.
- Allow other programs read access to the data sets while they are being restored.
- Verify the data after the RESTORE.
- Stop the RESTORE after the first I/O error or allow all errors.

You can restore an individual data set or a list of data sets. To restore an individual
data set, use the RESTORE line operator or the RESTORE DATASET command.
To restore a list of data sets, use the RESTORE or the RESTORE LIST list
commands.

When you enter RESTORE in the line operator field of the list panel, ISMF
recognizes it as a line operator and restores the corresponding data set. RESTORE
DATASET also restores an individual data set, but unlike the RESTORE line
operator, the data set you want to restore need not appear on the list panel. For
example, you may want to restore a data set that has been deleted. You can enter
the RESTORE DATASET command on the command line of either the Data Set
Selection Entry Panel or the Data Set List Panel. When you enter RESTORE
DATASET, ISMF displays the first page of the Data Set RESTORE Entry Panel so
that you can supply the name of the dumped data set you want to restore.

On the Data Set Selection Entry Panel, RESTORE is also an acceptable form of the
RESTORE DATASET command. When you enter RESTORE on the command line
of the Data Set Selection Entry Panel, ISMF assumes you want to restore an
individual data set. You can also specify RESTORE on the DASD Volume Selection
Entry Panel. You can select either a logical or a physical RESTORE and you will see a confirmation panel if you choose to replace the volume serial number.

RESTORE LIST restores an entire list of data sets that have been dumped by DFSMSdss. You enter the RESTORE LIST command on the command line of the Data Set List. RESTORE is also an acceptable form of the RESTORE LIST command. When you enter RESTORE on the command line of the Data Set List, ISMF assumes that you want to restore the entire list of data sets. RESTORE LIST is not a valid command on the Data Set Selection Entry Panel.

### Protecting Data with RACF

You can use the SECURITY line operator to invoke a RACF panel and provide security for a data set. Table 8 summarizes the security command ISMF uses to protect data sets.

<table>
<thead>
<tr>
<th>Task</th>
<th>Function</th>
<th>Scope</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protect a data set</td>
<td>SECURITY</td>
<td>Single data set</td>
<td>Invokes a RACF panel</td>
</tr>
</tbody>
</table>

See RACF V2 Security Administrator’s Guide for more information on RACF.

### Altering Data Set Characteristics

You can change the following Storage Management Subsystem (SMS) attributes of a data set depending on its characteristics:

- For SMS-managed generation data sets (GDS), you can change these attributes:
  - Alter the expiration date.
  - Alter the management class.
  - Alter the storage class.
  - Roll in deferred generation data set.

- For generation data groups, you can change these attributes:
  - Alter the expiration date.
  - Assign a new generation data group (GDG) limit.
  - Uncatalog generation data sets.
  - Scratch generation data sets.

- For SMS-managed non-generation data sets, you can change these attributes:
  - Alter the expiration date.
  - Alter the management class.
  - Alter the storage class.

- For non-SMS-managed non-generation data sets you can change these attributes:
  - Alter the expiration date.
  - Roll in deferred generation data set (GDS).

- For SMS-managed data sets with Data Set Entry Type 'UNKNOWN', you can change these attributes:
  - Alter the expiration date.
  - Assign a new GDG limit.
  - Uncatalog generation data sets.
  - Scratch generation data sets.
  - Roll in deferred generation data set.
  - Alter the management class.
  - Alter the storage class.
When Data Set Environment is ‘UNKNOWN’ and the Data Set Type is also ‘UNKNOWN’, you can change these attributes:
- Alter the expiration date.
- Assign a new GDG limit.
- Uncatalog generation data sets.
- Scratch generation data sets.
- Roll in deferred generation data set.

You can use the ALTER line operator to perform these tasks. Table 9 summarizes the line operator that ISMF uses to change data set characteristics.

Table 9. Summary of Commands to Alter Data Set Characteristics

<table>
<thead>
<tr>
<th>Task</th>
<th>Function</th>
<th>Scope</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alter data set characteristics.</td>
<td>ALTER</td>
<td>Single cataloged data set</td>
<td>Invokes a panel that you use to change the Management or Storage Class, GDG limit, and expiration information.</td>
</tr>
</tbody>
</table>

See "Using the Data Set ALTER Line Operator" on page 145 for more information. ISMF help panels from each of the ALTER panels describe the attribute fields in detail.

Invoking TSO Commands and CLISTs

You can invoke TSO commands and CLISTs from the list panel in any application. TSO commands and CLISTs can be entered on list panels as line operators or list commands. There is also a CLIST line operator.

Invoking TSO Commands and CLISTs from the Command Line

You can directly invoke TSO commands and CLISTs from the command line of any list panel. The command or CLIST is invoked for every entry in the list.

Entering TSO Commands or CLISTs with Parameters

Because these commands and CLISTs often require parameters, the command lines on the list panels allow you to extend parameters to the end of the screen. Figure 74 shows an example of the XMIT command entered from the command line of a data set list panel.

Figure 74. Entering a TSO Command from the Command Line

All the entries in the list shown in Figure 74 are sent to the user ID IBMUSER at the node STLVM27.
The parameter for the command shown in Figure 74 on page 103 requires you to specify the data set name. Since the data set name changes for each entry in the list, you can use a slash character as a substitute for the data set name. Each data set name in the list replaces the slash when the list entry is processed. ISMF replaces only the first occurrence of the slash character with the data set name. For example, there are several slash characters used in the following command:

```
COMMAND ==> setdate / newdate(88/01/12)
```

If the data set name for a particular data set is TEST.PLI, ISMF translates the command as follows:

```
COMMAND ==> SETDATE 'TEST.PLI' NEWDATE(88/01/12)
```

You can invoke a user CLIST from the command line just like a TSO command. If you do not want the CLIST to be executed as a repeated line operator, prefix the CLIST with the TSO command. To improve performance, you can use a percent character as a prefix to the CLIST name. Figure 75 shows a CLIST with a percent character prefix.

```
Command ==> %clistname stlvm27.ibmuser dsn(/)
```

*Figure 75. Entering a CLIST from the Command Line*

The percent character is optional.

It causes ISPF to bypass its search through the program libraries and search only the CLIST libraries for the commands. This method of locating the commands specified by the CLIST speeds up execution time by limiting the number of libraries ISPF searches.

**Invoking TSO Commands and CLISTs from the Line Operator Column**

You can invoke TSO commands and CLISTs for individual data set and volume list entries. These commands and CLISTs are entered just as you would enter them from the command line except that you enter them from the line operator column. When entered as a line operator, they are only invoked for a single entry. From the command line, the CLIST processes each entry in the list.

To enter parameters for these line operators, you can type over the data columns to the right of the line operator column. These data columns can act as input fields for the parameters as far as the right margin of the screen. You cannot scroll right to add more parameters.

You can use the slash character in the parameter of a TSO command or CLIST and the optional percent character prefix with a CLIST as described in “Invoking TSO Commands and CLISTs from the Command Line” on page 103. Figure 76 on page 105.
shows a CLIST with a percent character prefix entered as a line operator.

Using the CLIST Line Operator

The CLIST line operator allows you to invoke the CLIST Entry Panel. From the CLIST Entry Panel, you can call an existing TSO command procedure (CLIST) or issue a single TSO command. You may enter the CLIST line operator from a data set or volume list panel. Using the CLIST line operator, you can leave the list to perform tasks against individual list entries. The CLIST you call is executed in the foreground. When the CLIST is completed, control returns to ISMF so that you can continue working with the list.

For example, you can use a CLIST to rename a data set or query the DFSMSHsm status of a data set. The CLIST name should use a naming convention consistent with the application to which you want to pass data. Table 10 summarizes the CLIST line operator.

Table 10. Summary of the CLIST Line Operator

<table>
<thead>
<tr>
<th>Task</th>
<th>Function</th>
<th>Scope</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perform any function for which there is a CLIST.</td>
<td>CLIST</td>
<td>Single data set or volume</td>
<td>Invokes a TSO CLIST. Performed in the foreground.</td>
</tr>
</tbody>
</table>

Using ISMF Support for CLISTS

ISMF provides support for user-created commands with a system of variables. You can use these variables in your CLIST to perform the following functions:
- Control the processing of your CLIST.
- Acquire data on the list panel where your CLIST is invoked.
- Save message text while your CLIST is in control.
- Acquire data on the list panel entries.
- Acquire data on the list panel selection criteria.

Appendix B, “Acquiring Data for a User-Created CLIST,” on page 169 describes how to use these variables in your CLIST.

Related Reading: For information on coding user-created CLISTS, refer to z/OS TSO/E Programming Guide.
Chapter 7. Setting Up Your ISMF Profile

Your ISMF profile determines the way ISMF runs during your session. The information that is stored in your profile controls these processes:

- The user mode
- The logging of trace and error data
- The way ISMF recovers from abends
- The way background jobs are processed

ISMF provides initial settings for your profile, but you can modify the settings to fit your needs.

This chapter shows you how to perform the following tasks:

- Invoke the Profile option.
- Specify a user mode.
- Change the initial ISMF settings to:
  - Control logging errors and recover from abends.
  - Submit background job information.

Invoking the ISMF Profile Option

You can invoke the profile option by:

- Choosing option 0, ISMF Profile, on the ISMF Primary Option Menu (Figure 4 on page 7)
- Entering the PROFILE command on the command line of any ISMF panel except an ISMF menu panel, such as the ISMF Profile Option Menu, the Volume List Selection Menu, an abend panel, or any panel listed in the ISMF Profile Option Menu

In either case, ISMF displays the ISMF Profile Option Menu (see Figure 77).

```
Panel Help
----------------------------------------------------------
ISMF PROFILE OPTION MENU
Enter Selection or Command ===>
Select one of the following options and Press Enter:

0 User Mode Selection
1 Logging and Abend Control
2 ISMF Job Statement
3 DFSMSdss Execute Statement
4 ICKDSF Execute Statement
5 Data Set Print Execute Statement
6 IDCAMS Execute Statement
X Exit

Use HELP command for Help; Use END command or X to Exit.
```

Figure 77. The Profile Option Menu

From the ISMF Profile Option Menu, you can select these options:
- Change user mode from end user to storage administrator or from storage administrator to end user.
  - When user mode is specified as storage administrator, the following commands are invoked as storage administrator commands in the background:
    
    HRECOVER (HSEND RECOVER)
    HALTERDS (HSEND ALTERDS)
    HBACKDS (HSEND BACKDS)
    HDDELETE (HSEND DELETE)
    HBDELETE (HSEND BDELETE)
    HMIGRATE (HSEND MIGRATE)
    HRECALL (HSEND RECALL)
  - When user mode is specified as end user, HRECOVER, HALTERDS, HBACKDS, HDDELETE, HBDELETE, HMIGRATE, HRECALL are invoked as user commands.
  - Both user commands and storage administrator can be protected using RACF FACILITY profiles. See Protecting DFSMShsm storage administrator commands with RACF FACILITY class profiles in z/OS DFSMShsm Implementation and Customization Guide.

- Display and change your profile parameters for logging and error recovery.
- Display and change the job statements and execute statements that ISMF uses to submit background jobs.

**Tip:** For background jobs, you can also change the job statements and the DFSMSdss execute statement each time you submit a job. Tailoring these statements for individual commands and line operators is discussed in “Specifying Job Statements when Submitting Jobs” on page 114.

Other options on the ISMF Profile Option Menu access ICKDSF, IDCAMS, DFSMSdss, and IEBPTPCH (option 5) execute statement information. These options affect line operators and commands that are available to storage administrators. Refer to z/OS DFSMSdfp Storage Administration for more information.

### Specifying a User Mode

Enter option 0, USER MODE, on the ISMF Profile Option Menu (Figure 77 on page 107). Press ENTER.

On the User Mode Entry Panel (Figure 78 on page 109), select a user status: end user or storage administrator.
If you change the user mode during a session, you must exit ISMF and reenter it to get the new ISMF Primary Option Menu.

### Controlling Logging and Recovery from Abends

To display or change the ISMF profile parameters for logging and the way ISMF handles abends, enter option 1, LOGGING AND ABEND CONTROL, on the ISMF Profile Option Menu (Figure 77 on page 107). ISMF displays the Logging/Abend Control Entry Panel (Figure 79).

The options on the Logging/Abend Control Entry Panel allow you to determine and change the following options:
• The kind of logging ISMF performs for your session (the first three options on the panel)
• How ISMF attempts to recover from abend conditions
• Whether the error table is displayed when the record you specify is logged

For more information on how to use the ISPF log and determining how ISMF handles abends, please refer to z/OS DFSMSdfp Diagnosis.

Setting Up Background Job Information

ISMF stores Job Control Language (JCL) and execute statements in your profile. Each time you use a line operator or list command in normal mode that generates a background job, ISMF draws on this information to prime the job statement on the Job Submission Entry Panel.

ISMF does not do any validity checking of the JCL statements.

If you want to modify the job statements, you can specify this information in either of two ways:
• From the ISMF Profile Option Menu. This procedure is described in "Specifying Job Statements from the ISMF Profile Option Menu."
• Before you submit your background job. This procedure is described in "Specifying Job Statements when Submitting Jobs" on page 114.

When you exit ISMF successfully, the JCL you enter for ISMF job statements is stored in your profile.

Specifying Job Statements from the ISMF Profile Option Menu

All the information that ISMF uses to process your background jobs is available from the ISMF Profile Option Menu (see Figure 77 on page 107). With the options that are available, you can access the following information:
• ISMF job statement information, option 2
• DFSMSdss execute statement information, option 3
• ICKDSF execute statement information, option 4
• Data set print execute statement information, option 5
• IDCAMS execute statement information, option 6

Specifying JCL on the ISMF Job Statement Entry Panel

Use the ISMF JOB STATEMENT option on the ISMF Profile Option Menu to establish a standard set of JCL statements for background jobs. Because this information is stored by ISMF in your profile, you only enter it once rather than each time you submit a job.

To set up the job statements in your profile, enter option 2, ISMF JOB STATEMENT, on the ISMF Profile Option Menu (shown in Figure 77 on page 107). ISMF displays your ISMF Job Statement Entry Panel, as shown in Figure 80 on page 111.
You can choose the source of your job control statements by selecting either ISMF or ISPF job control statements. If you select option 1, ISMF uses ISPF job statements to prime the Job Submission Entry Panel when submitting background jobs. If you choose option 2, the set of ISMF job control statements listed in the ISMF Job Statement Information field is used. Source 1 using ISPF job statements is the default.

The first time you invoke the Job Statement Entry Panel, ISMF provides a skeleton job statement for you to complete with ISMF JCL information. See Figure 80 for the format of the statement. ISPF job control statements are for display only and cannot be modified here. You can change them by using ISPF option 0.

Your user ID followed by the letter A appears as the job name. The A is an identifier for the current job. Each time you submit a background job the letter is incremented. For example, if the current job name is USER230A, the next job name will be USER230B. If you choose to substitute a number for the alphabetic identifier, 0 through 9 is used for the cycle. If you want to use a job name other than your user ID you can do so, but the following events will occur:

- The name of each job you submit is not incremented by ISMF.
- Your jobs cannot be found by the TSO STATUS command.

In addition, you might end up with jobs having the same name.

**Restriction:** Do not blank out the job name, because TSO does not generate a default job name.

The words ACCOUNT and NAME indicate the proper positions for you to supply accounting information and your name.

You can add up to six additional ISMF JCL statements to complete the Job Statement Entry Panel. These statements can be JOBLIB, JES2, JES3, or comment statements. [Figure 81 on page 112](#) shows an example of the JCL you can use to set up your profile for the ISMF version.
When you enter a list command or line operator and submit that job for background processing, the information from this profile panel is used to prime the Job Submission Entry Panel. See “Specifying Job Statements when Submitting Jobs” on page 114 for more information on the Job Submission Entry Panels.

**Specifying an Execute Statement for a DFSMSdss Background Job**

To set up the DFSMSdss execute statement in your profile, enter option 3, DFSMSdss EXECUTE STATEMENT, on the ISMF Profile Option Menu [Figure 77 on page 107]. ISMF displays the DFSMSdss Execute Statement Entry Panel shown in Figure 82 on page 113.
The first time you invoke the DFSMSdss Execute Statement Entry Panel, ISMF provides a skeleton DFSMSdss EXEC statement for you to complete. The format of this statement is shown in Figure 82.

You can tailor this statement for your own use. You can add parameters to the DFSMSdss execute statement and up to five additional job steps before the DFSMSdss EXEC step. Make certain that the region size parameter is appropriate for your job and change it as necessary.

Figure 83 shows an example of how you can tailor the DFSMSdss execute statement to suit your needs.

Figure 82. Skeleton Provided for the DFSMSdss Execute Statement

The first time you invoke the DFSMSdss Execute Statement Entry Panel, ISMF provides a skeleton DFSMSdss EXEC statement for you to complete. The format of this statement is shown in Figure 82.

You can tailor this statement for your own use. You can add parameters to the DFSMSdss execute statement and up to five additional job steps before the DFSMSdss EXEC step. Make certain that the region size parameter is appropriate for your job and change it as necessary.

Figure 83 shows an example of how you can tailor the DFSMSdss execute statement to suit your needs.

Figure 83. Completed DFSMSdss Execute Statement
The execute statement information in Figure 83 on page 113 contains both an EXEC statement with added parameters and a data definition (DD) statement. The first line of the EXEC statement names the step (S1DFDSS), identifies DFSMSdss(PGM=ADRDSSU), and specifies the region size (REGION=2048K):

```
//S1DFDSS EXEC PGM=ADRDSSU,REGION=2048K,
```

The second line contains parameter information:

```
// PARM='UTILMSG=YES,TYPRUN=SCAN'
```

In the second line, UTILMSG=YES specifies that utility messages are to be printed in the SYSPRINT listing. TYPRUN=SCAN specifies that the JCL syntax for the job is checked and verified without actually executing the DFSMSdss function.

The last line contains a SYSPRINT statement that specifies that the SYSOUT class is the same as the MSGCLASS on the job statement:

```
//SYSPRINT DD SYSOUT=* 
```

When you enter a list command or line operator that is submitted to DFSMSdss for processing, ISMF uses the information on the DFSMSdss Execute Statement Entry Panel to construct the DFSMSdss job stream. See “Specifying Job Statements when Submitting Jobs” for more details on submitting jobs for processing. To learn more about the DFSMSdss execute statement, see z/OS DFSMSdss Storage Administration.

**Recommendation:** Use the information from the DFSMSdss background job as a reference when you specify the ICKDSF, Data Set Print, and IDCAMS execute statements from the options listed on the ISMF Profile Option Menu (Figure 77 on page 107).

**Specifying Job Statements when Submitting Jobs**

The Job Submission Entry Panel is primed with values from the Job Statement Entry Panel in your profile if you chose ISMF (option 2) as the job statement source. If you selected ISPF (option 1) from the Job Statement Entry Panel, the Job Submission Entry Panel is primed with values from the ISPF source job statements, which are displayed on the Job Statement Entry Panel for reference only.

The panel title of the Job Submission Entry Panel indicates the command or line operator you have specified. You can accept job statements, whether they are ISPF or ISMF job statements, or modify them for your immediate needs. When you press ENTER, the job is submitted using the JCL with any changes made.

Figure 84 on page 115 is an example of the Job Submission Entry Panel you might see when you use the COPY command.
After you complete the COPY Entry Panels, ISMF displays the COPY Job Submission Entry Panel. ISMF uses the information supplied on this panel to submit the COPY job to DFSMSdss. The fields on the panel and your options for completing them are:

**SELECT ONE OF THE FOLLOWING**

In this field, specify whether you want to submit a job immediately or to save the generated job stream in a data set.

<table>
<thead>
<tr>
<th>Option</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ISMF uses the values you supplied on the data entry panels for the line operator or command and the information on the Job Submission Entry Panel and the DFSMSdss Execute Statement Entry Panel to generate the job stream and submit the job immediately for background processing.</td>
</tr>
<tr>
<td>2</td>
<td>ISMF generates the job stream and stores it in a data set. Saving a data set gives you the opportunity to look at the job stream before you actually submit the job.</td>
</tr>
</tbody>
</table>

If you choose option 2, you must complete the following fields:

**DATA SET NAME**

The data set must be preallocated, cataloged, and either physical sequential or partitioned. It may be a PDS member, a PDSE, or a relative generation data set. The data set must be fixed or fixed block and have a logical record length of 80.

**REPLACE CONTENTS**

This field specifies whether you want to replace any existing data with the new job stream or add the new job to the end of the data set.

**JOB STATEMENT INFORMATION**

The entries in this section of the panel can be either ISMF or ISPF job control statements depending on the source you specified on the ISMF Job Statement Entry Panel (see Figure 80 on page 111). The entries provide processing parameters and accounting information, and identify ownership. With the
ISMF version, you can add JOBLIB, JES2, JES3, or comment statements. You can have up to seven ISMF job control statements.

**Guideline:** While any changes made to ISMF job statements (source 2) are stored in your profile and used the next time you submit a background job, the changes made to ISPF job statements (source 1) are not saved in your profile. Changes to ISPF job statements are used only for current job submissions. A message about the status of your profile is displayed.

**VIEW OR CHANGE EXECUTE STATEMENTS FROM PROFILE**

In this field, indicate whether you want to display the DFSMSdss Execute Statement Entry Panel from your profile.

**Option Meaning**

/ ISMF displays the DFSMSdss Execute Statement Entry Panel. You can verify or change the DFSMSdss execute statements before submitting the job.

blank ISMF submits the job with the execute statements stored in your profile without showing them to you.

The DFSMSdss Execute Statement Entry Panel, shown in Figure 85, contains an example of an execute statement entry panel.

```
Panel Utilities Help
-----------------------------------------------
DFSMSdss EXECUTE STATEMENT ENTRY PANEL
Command ===>

Specify DFSMSdss Execute Statement Information:

===>/*
===>/*
===/>**NOTE - THE REGION SIZE IS MINIMUM AND MAY BE CHANGED
===/>STEP1 EXEC PGM=ADRDSSU,REGION=2048K
===/>/*
===/>SYSPRINT DD SYSOUT=* 

Use HELP Command for Help; Use END Command to Save and Exit.
```

**Figure 85. An Example of a DFSMSdss Execute Statement**

For individual jobs, you can add other steps before the execute statement (EXEC) and additional parameters to the EXEC step. Some useful parameters include:

**TYPRUN=SCAN**
Checks the JCL syntax without executing the DFSMSdss function.

**UTILMSG=YES**
Prints utility messages in the SYSPRINT listing.

**PAGENO=nnnn**
Indicates the starting page number for the SYSPRINT data set. nnnn can be any 1- to 4-digit number.
LINECNT=nnn
Indicates the number of lines to print per page. nnn can be any 1- to 3-digit number.

XABUFF=ABOVE16|BELOW16
Specifies whether the I/O buffer used for COPY, DUMP, and RESTORE is to be above or below the 16-megabyte virtual storage line.

For example, in Figure 85 on page 116, the parameters on the EXEC statement specify that the listing should start on page 8 with 57 lines per page, and utility messages printed. z/OS DFSMSdss Storage Administration describes all the parameters that you can use.

Restriction: ISMF does not check the job statement or the DFSMSdss execute statement for validity. If you have a question about the correct way to specify a parameter, consult z/OS DFSMSdss Storage Administration.

Job Submission for Line Operators and Commands Entered in Last-Use Mode

If you enter a line operator in last-use mode (for example, COPY=), ISMF does not display the Job Submission Entry Panel. The processing options stored in your profile are used instead. If you chose to submit the last job immediately, the new job is sent directly to the job queue. If you chose to save the job stream in a data set the last time you submitted a background job, the new job is also saved. However, the new job is added to the end of the data set regardless of the option you specified the last time you used the Job Submission Entry Panel.
Chapter 8. Using Data Facility Storage Management Subsystem (DFSMS)

This topic gives you a brief overview of DFSMS, and explains ISMF applications.

ISMF has a number of applications that the storage administrator uses to automate and simplify storage and data management tasks. These applications form DFSMS and provide a user interface to many DFSMSdfp, DFSMShsm, DFSMSdss, DFSMSrmm, and ICKDSF functions.

The ISMF applications include:
- Aggregate Group
- Automatic Class Selection
- Control Data Set
- Data Class
- Data Collection
- Library Management
- Management Class
- Storage Class
- Storage Group

As an end user, you have access to information about the Data Class, Management Class, Storage Class and Aggregate Group applications of DFSMS. The other DFSMS applications are available only to your storage administrator, and therefore they are not discussed in this manual. For more information about these other applications refer to [z/OS DFSMSdfp Storage Administration](#).

What is DFSMS?

DFSMS is a component of DFSMSdfp. Your storage administrator uses DFSMS to assign various attributes to your data sets and objects so that the system can automatically assume storage management tasks that were previously done manually. DFSMS helps your storage administrator simplify storage management and makes more efficient use of your system space and resources. For more information about DFSMS, refer to [z/OS DFSMSdfp Storage Administration](#).

The ISMF applications to which you have access control different aspects of a data set's allocation or object's creation and performance:

**Application**

**Controls**

**Aggregate Group**
- Primary and recovery locations for backing up and recovering specific applications.

**Data Class**
- A data set's organization, format, space allocation, and other storage attributes.

**Storage Class**
- A data set's or object's device availability or a data set's response times for direct and sequential access, secondary lock structure, and other performance factors.
Management Class
Expiration date, backup specifications, migration characteristics, and other data management considerations.

To use DFSMS, your storage administrator designs a configuration that contains sets of attributes, which are called constructs, of the various class and group applications. The storage administrator can create any number of constructs for each DFSMS application, giving each construct a unique name. For example, the storage administrator can define a storage class for data sets or objects that require high performance and another storage class for standard performance. The storage administrator can add, delete, copy, or alter classes as needs change.

After defining the necessary constructs, the storage administrator writes automatic class selection (ACS) routines to assign constructs to data sets and objects and to manage data sets and objects.

When a new data set is allocated or an object is to be written, DFSMS invokes ACS routines to assign a configuration of DFSMS classes to the data set or object. The attributes from the DFSMS classes then govern the space management, performance, and availability of the data set or object from its creation to its deletion.

You can display a list of the available data classes, storage classes, and management classes. You can look at the attributes associated with any specific class, but you cannot change any of the attributes. If you have authorization, you can change the name of a storage class and management class associated with any of your DFSMS-managed data sets. If you need to make any other changes, you must ask your storage administrator to make them for you.

The rest of this topic gives you a closer look at each of the three applications to which you have access.

The Aggregate Group Application

An aggregate group is an SMS construct that uses control information and data set lists to define an application or other group. It consists of backup criteria and a group of data sets selected for backup by the storage administrator according to application or other requirements. Information on how to define aggregate groups can be found in z/OS DFSMSdfp Storage Administration.

The aggregate group application allows you to:
- Generate a list of aggregate groups.
- Display the attributes of a single aggregate group.
- Delete aggregate groups.
- Edit and browse the selection data sets associated with an aggregate group.
- Edit and browse the instruction data sets associated with an aggregate group.
- Backup the selected aggregate group.
- Recover an aggregate group that has been backed up.
- Specify the number of local copies of aggregate backup (ABACKUP) output files that is to be created. (15 maximum)
- Assign aggregate backup attributes to an aggregate group by giving it a management class name.
The Data Class Application

A data class defines the way data sets are allocated. A data class cannot be assigned to an object.

Data class attributes are assigned to a data set when it is created. Data class attributes apply to both DFSMS-managed and non-DFSMS-managed data sets. Attributes specified in JCL or equivalent allocation statements override those specified in a data class. Individual attributes in a data class can be overridden by JCL, TSO, IDCAMS, and dynamic allocation statements.

You can display a list of available data classes and look at the attributes of a given class. See “Listing and Displaying Class Information” on page 126.

A data class defines the following attributes:

- Compaction
- Data Set Organization
- Record Format
- Record Size
- Key Length/Offset
- Space
  - Average Record
  - Average Value
  - Primary
  - Secondary
  - Directory
- Data Set Name Type
- Media Type
- Recording Technology
- Retention Period or Expiration Date
- Volume Count
- Additional Volume Amount
- Control Interval Size
- Percent Free Space
- Share Options
- Reuse
- Initial Load
- Spanned or Nonspanned
- BWO
- Log
- Logstream Id
- Log Replicate
- Space Constraint Relief
- Dynamic Volume Count
- RLS CF Cache Value
- RLS Above the 2-GB Bar
- FRLog
- Extent Constraint Removal
- Performance Scaling
- System Managed Buffering
- CA Reclaim
- Block Size Limit
- Override Space
- System Determined Blocksize
- EATTR
- Record Access Bias
Data Class Examples

The following attributes and their corresponding values show how a data class for general data sets might be defined by your storage administrator. These data class attributes control characteristics typically specified on JCL DD statements, TSO ALLOCATE commands, and elsewhere. This data class might be defined for all system CNTL, DATA, JCL, and OBJ data sets:

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>DATA CLASS NAME</td>
<td>DCDATA</td>
</tr>
<tr>
<td>RECFM</td>
<td>FB</td>
</tr>
<tr>
<td>LRECL</td>
<td>80</td>
</tr>
<tr>
<td>AVG VALUE</td>
<td>80</td>
</tr>
<tr>
<td>AVG REC</td>
<td>U</td>
</tr>
<tr>
<td>SPACE PRIMARY</td>
<td>1000</td>
</tr>
<tr>
<td>SPACE SECONDARY</td>
<td>100</td>
</tr>
<tr>
<td>DATA SET NAME TYPE</td>
<td>EXTENDED PREFERRED</td>
</tr>
</tbody>
</table>

A data set with these attributes would be fixed-block and have 80 bytes per record. The allocated primary space would be 80000 bytes and allocated secondary space would be 8000 bytes. The data set would be allocated as an extended sequential data set if possible and would be striped. However, if it were not possible, the data set would be allocated as a non-extended data set and would not be striped.

The following example shows the definition of DCVAR, a data class for variable-length text files. This data class might be defined for all system FOIL, SCRIPT, TEXT, and VSBASIC data sets:

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>DATA CLASS NAME</td>
<td>DCVAR</td>
</tr>
<tr>
<td>RECFM</td>
<td>VB</td>
</tr>
<tr>
<td>LRECL</td>
<td>255</td>
</tr>
<tr>
<td>AVG VALUE</td>
<td>255</td>
</tr>
<tr>
<td>AVG REC</td>
<td>U</td>
</tr>
<tr>
<td>SPACE PRIMARY</td>
<td>1000</td>
</tr>
<tr>
<td>SPACE SECONDARY</td>
<td>100</td>
</tr>
</tbody>
</table>

A data set with these characteristics is variable-block and has a record length and average value of 255. The allocated primary space is 255000 and the allocated secondary space is 25500.

The Management Class Application

By using the management class for a given data set, DFSMSHsm can decide how data sets should be backed up, when they should be migrated, and when backup copies should be deleted. The management class attributes for data sets are used each time DFSMSHsm is run.

Some management class attributes apply to objects and are used during each object storage management cycle. These attributes assign an expiration date, specify if
objects are backed up automatically, and specify when to perform a class transition according to object class transition criteria.

You can display a list of available management classes and look at the attributes of a given class. See “Listing and Displaying Class Information” on page 126 for more information.

To assign and change the management class associated with your data set, see “Assigning Classes to Data Sets” on page 126 and “Using Line Operators on DFSMS Lists” on page 131.

A management class defines the following attributes:

- **Partial Release**
- **Expiration Attributes**
  - Expire After Date/Days
  - Expire After Days Non-Usage
  - Retention Limit
- **Migration Attributes**
  - Command or Auto Migrate
  - Level 1 Days Non-Usage
  - Primary Days Non-Usage
- **Generation Data Group Management Attributes**
  - Number of GDG Elements on Primary
  - Rolled-off GDS Action
- **Backup Attributes**
  - Administrator or User Command Backup Versions
  - Auto Backup
  - Backup Copy Technique
  - Backup Frequency
  - Number of Backups (Data Set Deleted)
  - Number of Backups (Data Set Exists)
  - Retain Days Extra Backups
  - Retain Days Only Backup Versions
- **Class Transition Attributes**
  - Object Class Transition Criteria
- **Aggregate Backup**
  - Abackup Copy Technique
  - Copy Serialization
  - Number of Versions
  - Retain Extra Versions
  - Retain Extra Versions Unit
  - Retain Only Version
  - Retain Only Version Unit

ISMF's online HELP describes each attribute in detail.

**Management Class Examples**

The following attributes and their corresponding values show how a management class for standard priority application data sets might be defined by your storage administrator:

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>MANAGEMENT CLASS NAME</td>
<td>MCNORM</td>
</tr>
<tr>
<td>EXPIRE AFTER DAYS NON-USAGE</td>
<td>NOLIM</td>
</tr>
<tr>
<td>EXPIRE AFTER DATE/DAYS</td>
<td>NOLIM</td>
</tr>
<tr>
<td>Attribute</td>
<td>Value</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>MAXIMUM RETENTION PERIOD</td>
<td>NOLIM</td>
</tr>
<tr>
<td>PARTIAL RELEASE</td>
<td>YES</td>
</tr>
<tr>
<td>PRIMARY DAYS NON-USAGE</td>
<td>15</td>
</tr>
<tr>
<td>LEVEL 1 DAYS</td>
<td>60</td>
</tr>
<tr>
<td>CMD/AUTO MIGRATE</td>
<td>BOTH</td>
</tr>
<tr>
<td>BACKUP FREQUENCY</td>
<td>0</td>
</tr>
<tr>
<td>NUMBER OF BACKUPS (DS EXISTS)</td>
<td>2</td>
</tr>
<tr>
<td>NUMBER OF BACKUPS (DS DELETED)</td>
<td>1</td>
</tr>
<tr>
<td>ONLY BACKUP RETAIN DAYS</td>
<td>60</td>
</tr>
<tr>
<td>RETAIN DAYS EXTRA BACKUP</td>
<td>30</td>
</tr>
<tr>
<td>ADM/USER BACKUP</td>
<td>BOTH</td>
</tr>
<tr>
<td>AUTO BACKUP</td>
<td>YES</td>
</tr>
<tr>
<td>COPY SERIALIZATION</td>
<td>CONTINUE</td>
</tr>
<tr>
<td>NUMBER OF VERSIONS</td>
<td>NOLIMIT</td>
</tr>
<tr>
<td>RETAIN ONLY VERSION</td>
<td>9999</td>
</tr>
<tr>
<td>RETAIN ONLY VERSION UNIT</td>
<td>DAYS</td>
</tr>
<tr>
<td>RETAIN EXTRA VERSIONS</td>
<td>100</td>
</tr>
<tr>
<td>RETAIN EXTRA VERSIONS UNIT</td>
<td>MONTHS</td>
</tr>
<tr>
<td>BACKUP COPY TECHNIQUE</td>
<td>CONCURRENT PREFERRED</td>
</tr>
<tr>
<td>ABACKUP COPY TECHNIQUE</td>
<td>CONCURRENT PREFERRED</td>
</tr>
</tbody>
</table>

A data set with these management class attributes:

- Never expires
- Has no unused space
- Migrates 15 days after last use
- Migrates from level 1 to level 2 storage 60 days after last use.
  
  The data set can be migrated either manually or automatically and by either an end user or storage administrator.

- Backups are created whenever the volume is backed up. Two backups are kept. One automatic backup is kept for 60 days after the data set is deleted. An older backup is kept for 30 days.

The copy operation should not be interrupted if an enqueue failure is encountered. The number of versions that can be maintained for an aggregate group cannot exceed 9999 versions. NOLIMIT indicates that the aggregate backup and recovery function will not roll-off old versions if the system attempts to exceed the 9999 version limit. If your installation does not expire old versions and 9999 versions already exist, the ABACKUP operation fails when the system attempts to create a new version. The last remaining version of the aggregate group will be kept for 9999 days. The other versions of the aggregate group will be kept one hundred months. Data sets associated with this management class, whether part of an aggregate group or not, are backed up using the concurrent copy technique if it is available. Otherwise, they are backed up using the standard backup copy technique.

The following example shows how the management class for an object might be defined:

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>MANAGEMENT CLASS NAME</td>
<td>MCOBJ</td>
</tr>
</tbody>
</table>
An object assigned this management class would be automatically backed up and would expire after seven years (2555 days). Class transition would occur one month after creation.

The Storage Class Application

The Storage Class Application lets the storage administrator specify performance objectives and availability attributes that characterize a collection of data sets. For objects, the storage administrator can define the performance attribute Initial Access Response Seconds. A data set or object must be assigned to a storage class in order to be managed by DFSMS.

You can display a list of available storage classes and look at the attributes of a given class. For more information, see “Listing and Displaying Class Information” on page 126, “Assigning Classes to Data Sets” on page 126, and “Using Line Operators on DFSMS Lists” on page 131.

A storage class defines the following attributes:
- Storage Class Name
- Description
- Performance Objectives
  - Direct Bias
  - Direct Millisecond Response
  - Initial Response Seconds
  - Sequential Bias
  - Sequential Millisecond Response
  - Sustained Data Rate
  - OAM Sublevel
- Availability Objectives
  - Accessibility
  - Backup
  - Versioning
  - Availability
- Guaranteed Space
- Guaranteed Synchronous Write
- CF Cache Set Name
- CF Direct Weight
- CF Sequential Weight
- CF Lock Set Name

ISMF’s online help describes each attribute in detail.

Storage Class Examples

The following attributes and their corresponding values represent a typical storage class, SCNORM, for most application data sets:

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXPIRE AFTER DATE/DAYS</td>
<td>2555</td>
</tr>
<tr>
<td>AUTO BACKUP</td>
<td>YES</td>
</tr>
<tr>
<td>CLASS TRANSITION</td>
<td></td>
</tr>
<tr>
<td>TIME SINCE CREATION</td>
<td></td>
</tr>
<tr>
<td>MONTHS</td>
<td>1</td>
</tr>
<tr>
<td>Attribute</td>
<td>Value</td>
</tr>
<tr>
<td>---------------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>STORAGE CLASS NAME</td>
<td>SCNORM</td>
</tr>
<tr>
<td>DIRECT BIAS</td>
<td>READ</td>
</tr>
<tr>
<td>SEQUENTIAL BIAS</td>
<td>READ</td>
</tr>
<tr>
<td>AVAILABILITY</td>
<td>STANDARD</td>
</tr>
<tr>
<td>GUARANTEED SPACE</td>
<td>NO</td>
</tr>
<tr>
<td>ACCESSIBILITY</td>
<td>CONTINUOUS</td>
</tr>
<tr>
<td>SUSTAINED DATA RATE (MB/SEC)</td>
<td>2</td>
</tr>
</tbody>
</table>

The majority of input and output for these data sets will be READ. Processing of a data set stops if a device failure occurs with the volume that contains the data set. Placement of the data set depends on available pool space. DFSMS allocates volumes. Data sets in this storage class will be allocated on a volume that is supported by concurrent copy. The data transfer rate of the extended sequential data sets in this storage class will be 2 MB/sec.

The following attributes and their corresponding values represent a storage class for an object:

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>STORAGE CLASS NAME</td>
<td>SCOBJ</td>
</tr>
<tr>
<td>PERFORMANCE OBJECTIVES</td>
<td></td>
</tr>
<tr>
<td>INITIAL ACCESS RESPONSE SECONDS</td>
<td>60</td>
</tr>
</tbody>
</table>

An object assigned to this storage class has to be accessible from any storage source within 60 seconds.

**Assigning Classes to Data Sets**

As a TSO or ISPF/PDF user, you can assign classes to your data sets.

As a TSO user, when you allocate an DFSMS-managed data set by using the TSO ALLOCATE command, you can have classes defaulted for you or you can specify the names of the data class, management class, and storage class to be retained with the data set definition. For details on how to specify a class name on the TSO ALLOCATE command, refer to *TSO/E V2 Command Reference*.

As an ISPF/PDF user, when you allocate an DFSMS-managed data set by using the ISPF/PDF DEFINE command, you can have classes defaulted for you or you can specify names of classes to be retained with the data set. For more information on this command, refer to *ISPF and ISPF/PDF Reference Summary*.

**Assigning Classes to Objects**

Users cannot assign classes to objects. The storage administrator specifies when objects are assigned classes by DFSMS ACS routines.

**Listing and Displaying Class Information**

To display information about data classes that are available for your data sets or management and storage classes that are available for your data sets or objects, you must start with the ISMF Primary Option Menu (Figure 4 on page 7). Select the appropriate application from the menu, and the corresponding application...
selection panel is displayed. You can then specify the class whose attributes you want to look at, or you can display a list of available classes of a single type.

**Example: Creating a Data Class List**

To create a data class list, complete each field on the Data Class Application Selection panel, shown in Figure 86.

![Figure 86: Data Class Application Selection Panel](image)

Complete each field on the Data Class Application panel, as follows:

**CDS NAME**

Enter the 1- to 44-character name (46 characters including quotation marks) of a control data set (CDS). ISMF processes quoted and unquoted CDS names using TSO conventions.

The CDS contains information about the configuration. To specify the active control data set (ACDS), enter 'ACTIVE' as the CDS name. The ACDS contains the current configuration for your installation.

This field is primed with the CDS name last referenced in ISMF, and the default is 'ACTIVE'.

**DATA CLASS NAME**

Enter a fully or partially specified class name (in this case, a data class name). This field is primed with the last-used value, and the default is an asterisk (*).

When an asterisk is specified, ISMF generates a list of all the classes in the control data set you indicated.

If you want to list the classes, you can enter a partially specified name so that the list contains only the classes you are looking for.

Use an asterisk for zero or more non-blank characters. For example, to list all data classes with a 't' in the name, specify:

**DATA CLASS NAME ===> *t***
Use a percent sign (%) for 1 non-blank character each. For example, to list all 7-character class names beginning with 'script', specify:

```plaintext
DATA CLASS NAME ===> script%
```

This field is primed with the last-used value, and the default is an asterisk (*). If you enter a fully specified class name you can generate a list containing the information about only one class, or you can display the attributes of one class.

**SELECT ONE OF THE FOLLOWING OPTIONS**

Complete this field by entering a '1' or '2'. The field is primed with '1' and defaults to '1'.

Enter '1' to generate a list that contains the classes you specified, as shown in [Figure 87](#).

Tip: If you want to display the data class attributes after you generate the data class list, enter the DISPLAY command on the Data Class List panel next to the name of the class whose attributes you wish to view.

Enter '2' to display the attributes of the class you specified, as shown in [Figure 88 on page 129](#).
You can choose the columns and the order of the columns to appear on the Data Class Application List panel. This field is always primed with a blank.

- Leave this field blank to generate a data class list using the default VIEW criteria (display all columns in alphabetical order) or the criteria that were last specified to ISMF, if any.

**Restriction:** This might result in a restricted view.

- Specify a slash (/) to first display a Data Class View Entry panel, as shown in Figure 89.

If you specify tag numbers 26, 5 and 3 on the Data Class View Entry panel, only columns 1, 2, 26, 5 and 3 will be displayed on the Data Class List panel,
as shown in Figure 90 (Columns 1 and 2, Line Operator and Data Class Name, cannot be specified because these columns always appear as the first two columns on the list panel.)

**Tip:** If you want to view the list after it is generated, enter the VIEW command, with or without parameters, on the command line of the list panel. For more information about selecting and reordering columns on an application list, see “Selecting List Display Columns” on page 65.

**RESPECIFY SORT CRITERIA**

The RESPECIFY SORT CRITERIA field on an application selection panel allows you to change the major and minor fields and the order in which the entries are sorted. This field is always primed with a blank space.

- Leave this field blank to generate a data class list using the default SORT criteria.
- If you request a list and specify a slash (/), the Data Class Sort Entry panel is displayed first, as shown in Figure 91 on page 131. Only the column tags specified as view criteria are displayed on the Sort Entry panel. Complete this entry panel just as you would other Sort Entry panels.
Tip: If you want to sort the list after it is constructed, enter the SORT command, with or without parameters, on the command line of the list panel. For more information about sorting a list see “Sorting the List” on page 61.

Displaying and Tailoring DFSMS Lists

You can use a number of commands and line operators to scroll through and tailor class lists. See Chapter 10, “ISMF Command and Line Operator Reference Summary,” on page 157 for a list of available commands and line operators. Since you can modify a class list as you would a data set list, refer also to “Tailoring the List Entries” on page 54 for more information.

Using Line Operators on DFSMS Lists

You can specify the DISPLAY line operator next to any class name on a class list to generate a panel that displays values associated with that particular class. This information can help you decide whether you need to assign a new DFSMS class to your data set or object.

If you determine that a data set you own should be associated with a different management class or storage class, and if you have authorization, you can use the ALTER line operator against a data set list entry to specify another storage class or management class. See page “Using the Data Set ALTER Line Operator” on page 145 for an example of using the ALTER line operator.

Table 11 on page 132 summarizes line operators you can use to facilitate system-managed storage.
<table>
<thead>
<tr>
<th>Task</th>
<th>Function</th>
<th>Scope</th>
<th>Application</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display the attributes associated with an SMS class</td>
<td>DISPLAY</td>
<td>A data, management, or storage class.</td>
<td>Use the line operator from the Data, Management, or Storage Class Lists.</td>
<td>Displays the entry selected from the list panel. Performed in the foreground by DFSMSdfp.</td>
</tr>
<tr>
<td>Associate a new management class or storage class with an SMS-managed data set</td>
<td>ALTER</td>
<td>A single cataloged data set.</td>
<td>Use the line operator from the Data Set List.</td>
<td>Assign a new management class or storage class to a single cataloged data set. Performed in the foreground by DFSMSdfp.</td>
</tr>
</tbody>
</table>
Chapter 9. Examples of ISMF

This chapter contains examples of using ISMF to perform storage management tasks. These tasks include:
- Generating a data set list
- Recovering unused space with the COMPRESS line operator
- Copying a list of data sets from one device to another
- Using the DUMP line operator to back up a data set
- Restoring a data set that has been mistakenly deleted
- Deleting data sets that are no longer needed
- Using the Data Set ALTER line operator
- Generating a DASD volume list
- Defragmenting a DASD volume
- Generating a mountable optical volume list
- Generating a mountable tape volume list
- Generating a data class list
- Displaying a data class

Generating a Data Set List

This example shows how to generate a data set list. Invoke ISMF and choose the Data Set Application (option 1) from the ISMF Primary Option Menu.
1. Complete the Data Set Selection Entry Panel with the values shown in Figure 92.
   - Figure 92. Completing Page 1 of the Data Set Selection Entry Panel

   These values specify that the list is generated from the master catalog, the user catalog, data acquired from the VTOC for data sets that have not been migrated by DFSMShsm, and data from the MCDS for migrated data sets.
2. Verify that pages 2, 3, and 4 of the Data Set Selection Entry Panel are blank. If they are not blank, you receive the short informational message OTHER VALUES PRESENT.
3. Press the ENTER key. ISMF generates and displays the data set list shown in Figure 93. This list conforms to the selection criteria.

Recovering Unused Space with the COMPRESS Line Operator

This example shows how to use the COMPRESS line operator to compress a data set.

Note: COMPRESS, which is a line operator, differs from COMPRESSED FORMAT, which is a data column.

1. Enter the COMPRESS line operator in the line operator column next to the data set USER1.ISPFILE, as shown in Figure 94.
2. **Press the ENTER key.** ISMF displays the COMPRESS Entry Panel, as shown in Figure 95.

![Figure 95. Completing the COMPRESS Entry Panel](image)

Complete the COMPRESS Entry Panel with the values shown.

3. **Press the ENTER key.** ISMF displays the COMPRESS Job Submission Entry Panel shown in Figure 96. This panel is primed with values from your profile.

![Figure 96. Completing the COMPRESS Job Submission Entry Panel](image)

Complete the COMPRESS Job Submission Entry Panel with the values shown. Enter / in the **VIEW OR CHANGE EXECUTE STATEMENTS FROM PROFILE** field to verify the DFSMSdss execute statements ISMF will use to submit the job for background processing.
4. Press the ENTER key. ISMF then displays the DFSMSdss Execute Statement Entry Panel shown in Figure 97.

```
Panel Utilities Help
*****************************************************************************
DFDSS EXECUTE STATEMENT ENTRY PANEL
Command ===>
*****************************************************************************
Specify DFDSS Execute Statement Information:
===/>*
===/>*
===/>**NOTE - THE REGION SIZE IS MINIMUM AND MAY BE CHANGED
===/>STEP1 EXEC PGM=ADRDSSU,REGION=2048K
===/>*
===/>*
===/>SYSPRINT DD SYSOUT=* 
*****************************************************************************
Use ENTER to Continue;
Use HELP Command for Help; Use END Command to Exit.
```

Figure 97. Verifying the DFSMSdss Execute Statement

5. Press the ENTER key. ISMF submits the job and redisplays the data set list, as shown in Figure 98.

```
Panel List Dataset Utilities Scroll Help
*****************************************************************************
DATA SET LIST
Command ===> SCROLL ===> DATA
Enter Line Operators Below:
Data Columns 3-5 of 41
LINE OPERATOR DATA SET NAME ALLOC ALLOC % NOT
---(1)---- ------------(2)------------ ---(3)--- ---(4)--- -(5)-
USER1.DEB.LISTING1 --------- --------- ---
USER1.ISMF.SYSIN.D880125. 46K 40K 13
T105441
*compress
USER1.ISPFFILE 139K 93K 33
USER1.ISPPROF 185K 185K 0
USER1.SPFLOG1.LIST 371K 371K 0
USER1.SPFTEM1.CNTL ------- ------- ---
USER1.SPF3.LIST 788K 778K 0
---------- ------ ----------- BOTTOM OF DATA ---------- ------ ----
```

Figure 98. Successful Submission for COMPRESS

The asterisk next to the COMPRESS line operator in the line operator column indicates that USER1.ISPFFILE has been successfully submitted for background processing.

**Copying a List of Data Sets with the COPY List Command**

This example shows how to use the COPY list command to move a list of data sets from one device to another.
1. Enter the COPY list command on the command line of the Data Set List Panel, as shown in Figure 99.

   ![](Figure 99. Entering the COPY Command)

2. Press the ENTER key. ISMF displays the first page of the COPY Entry Panel as shown in Figure 100.

   ![](Figure 100. Completing Page 1 of the COPY Entry Panel)

3. Press the ENTER key. ISMF displays the Job Submission Entry Panel, as shown in Figure 101 on page 138.
Verify the job statements on the COPY Job Submission Entry Panel. Enter / in the VIEW OR CHANGE EXECUTE STATEMENTS FROM PROFILE field.

4. Press the ENTER key to submit the job. ISMF displays the data set list, as shown in Figure 102.

The asterisks next to each COPY command in the line operator column and the short informational message COPY JOB CREATED indicate that the job has been successfully submitted.

**Backing Up a Data Set with the DUMP Line Operator**

This example shows how to generate a job that dumps a copy of the ISPF profile.
1. Enter the DUMP line operator next to the data set USER1.ISPPROF, as shown in Figure 103.

2. Press the ENTER key. ISMF displays page 1 of the DUMP Entry Panel as shown in Figure 104. Complete page 1 of the DUMP Entry Panel with the values shown.

3. Press the ENTER key. ISMF displays the Job Submission Entry Panel, as shown in Figure 105 on page 140.
Complete the Job Submission Entry Panel with the values shown.

Enter / in the VIEW OR CHANGE EXECUTE STATEMENTS FROM PROFILE field to bypass the DFSMSdss Execute Statement Entry Panel.

4. Press the ENTER key. ISMF submits the job and redisplays the data set list, as shown in Figure 106.

The asterisk next to the DUMP line operator in the line operator column and the short informational message DUMP JOB CREATED indicate that the job has been successfully submitted.
Restoring a Data Set with the RESTORE Line Operator

This example shows how to restore the data set dumped in the previous example. The job is submitted again for background processing.

1. Enter the RESTORE line operator next to the data set USER1.ISPPROF, as shown in Figure 107.

2. Press the ENTER key. ISMF displays the RESTORE Entry Panel, as shown in Figure 108.

   Figure 107. Entering the RESTORE Line Operator

<table>
<thead>
<tr>
<th>LINE</th>
<th>DATA SET NAME</th>
<th>ALLOC</th>
<th>ALLOC</th>
<th>% NOT</th>
</tr>
</thead>
<tbody>
<tr>
<td>---(1)---</td>
<td>--------------(2)---</td>
<td>---(3)---</td>
<td>---(4)---</td>
<td>---(5)---</td>
</tr>
<tr>
<td>*COPY</td>
<td>USER1.DEB.LISTING1</td>
<td>---------</td>
<td>---------</td>
<td>---</td>
</tr>
<tr>
<td>*COPY</td>
<td>USER1.ISMF.SYSIN.D880125.</td>
<td>46K</td>
<td>40K</td>
<td>13</td>
</tr>
<tr>
<td>*COPY</td>
<td>T105441</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*COPY</td>
<td>USER1.ISPFILE</td>
<td>139K</td>
<td>93K</td>
<td>33</td>
</tr>
<tr>
<td>restore</td>
<td>USER1.ISPPROF</td>
<td>185K</td>
<td>185K</td>
<td>0</td>
</tr>
<tr>
<td>*COPY</td>
<td>USER1.SPFLG01.LIST</td>
<td>371K</td>
<td>371K</td>
<td>0</td>
</tr>
<tr>
<td>*COPY</td>
<td>USER1.SPFTEMP1.CNL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*COPY</td>
<td>USER1.SPF3.LIST</td>
<td>788K</td>
<td>788K</td>
<td>0</td>
</tr>
</tbody>
</table>

   Figure 108. Completing the RESTORE Entry Panel

   Complete page 1 of the RESTORE Entry Panel using the same options used in the DUMP example.
Enter N in the VIEW OR CHANGE OUTPUT DATA SET OPTIONS, the VIEW OR CHANGE INPUT ALLOCATION VALUES, and the VIEW OR CHANGE ADDITIONAL RESTORE OPTIONS fields.

3. Press the ENTER key. ISMF displays the RESTORE Job Submission Entry Panel, as shown in [Figure 109].

Panel Utilities Help
-----------------------------------------------
JOB SUBMISSION ENTRY PANEL
Command ===>
Select One of The Following
1 1. Submit Job for Background Processing
2. Save Generated Job in a Data Set
If Save option is selected above, Specify:
Data Set Name ... Replace Contents .. N (Y or N)
Job Statement Information: (Verify before Proceeding)
//USER10A JOB (USER10,'B=050,D=M86,D=GAB'),
// MSGCLASS=Z,NOTIFY=USER10,USER=USER10,
// TIME=(0.5),MSGLEVEL=(1,1)
//*
//*
//*
//*
Enter */ to select option
View or Change Execute Statements from Profile
Use ENTER to Continue;
Use HELP Command for Help; Use END Command to Exit.

Figure 109. Verifying the RESTORE Job Statement Information

Enter option 1 to submit the job for background processing.

Enter / in the VIEW OR CHANGE EXECUTE STATEMENTS FROM PROFILE field to bypass the DFSMSdss execute statement.

4. Press the ENTER key. ISMF generates the RESTORE job and displays the data set list, as shown in [Figure 110].

Panel List Dataset Utilities Scroll Help
-----------------------------------------------
DATA SET LIST
Command ===>
Scroll ===>
RESTORE JOB CREATED DATA
Entries 1-7 of 7
Enter Line Operators Below:
Data Columns 3-5 of 41

<table>
<thead>
<tr>
<th>LINE</th>
<th>OPERATOR</th>
<th>DATA SET NAME</th>
<th>ALLOC</th>
<th>ALLOC</th>
<th>% NOT</th>
</tr>
</thead>
<tbody>
<tr>
<td>---(1)---</td>
<td>---(2)---</td>
<td>---(3)---</td>
<td>---(4)---</td>
<td>---(5)---</td>
<td></td>
</tr>
<tr>
<td>COPY</td>
<td>USER1.ISMF.SYSIN.D880125.</td>
<td>46K</td>
<td>40K</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>COPY</td>
<td>T105441</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COPY</td>
<td>USER1.ISPFILE</td>
<td>139K</td>
<td>93K</td>
<td>33</td>
<td></td>
</tr>
<tr>
<td>RESTORE</td>
<td>USER1.ISPPROF</td>
<td>165K</td>
<td>165K</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>COPY</td>
<td>USER1.SPFLOG1.LIST</td>
<td>371K</td>
<td>371K</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>COPY</td>
<td>USER1.SPFTEMP1.CNTL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COPY</td>
<td>USER1.SPF3.LIST</td>
<td>788K</td>
<td>788K</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Figure 110. Successful Completion of the RESTORE Line Operator
The asterisk next to the RESTORE line operator in the line operator column and the short informational message RESTORE JOB CREATED indicate that the job has been successfully submitted.

Deleting Data Sets with the DELETE Line Operator

This example shows how to use the DELETE line operator to delete two data sets.

1. Enter the DELETE line operator in the line operator column of the data sets that you want to delete. Enter the first line operator in normal mode so that you see the DELETE Entry Panel. Enter the second line operator in last-use mode, as shown in Figure 111.

2. Press the ENTER key. ISMF displays the DELETE Entry Panel as shown in Figure 112 on page 144.
Assume that backup versions exist for both of the cataloged data sets being deleted. Complete the DELETE Entry Panel with the values shown.

3. Press the ENTER key. ISMF deletes the data set on the list with the DELETE line operator entered against it and displays the DELETE Confirmation Panel for the second data set, as shown in Figure 113.

4. Press the ENTER key. ISMF deletes the data set with the DELETE line operator in last-use mode. When both data sets have been deleted, the list is redisplayed, as shown in Figure 114 on page 145.
The asterisks in front of the DELETE line operators in the line operator column indicate that the data sets have been successfully deleted.

Using the Data Set ALTER Line Operator

This example shows how to use the ALTER line operator to change the name of the SMS management class associated with a cataloged data set.

Generate a data set list and verify that the list has SMS-managed entries. Enter FIND 23 on the command line to display SMS columns. If a storage class name is listed for a given data set, that data set is SMS managed.

1. Enter ALTER line operator in the line operator column next to the data set for which you want to assign a new management class, as shown in Figure 115 on page 146.
2. Press the ENTER key. ISMF displays the Data Set ALTER Entry Panel as shown in Figure 116. Complete the Data Set ALTER Entry Panel with the values shown.

3. Press the ENTER key. ISMF submits the job and redisplays the list, as shown in Figure 117 on page 147.
4. To verify that the new management class will be used for the data set, refresh the list with the REFRESH command and display the management class column to make sure the new management class name is there. Figure 118 shows the refreshed data set list, which verifies the successful data set alter.

The asterisk next to the ALTER line operator in the line operator column indicates that the operation has completed successfully.

Generating a DASD Volume List

This example shows how to generate a DASD volume list. Generating a volume list is similar to generating a data set list.

Choose the Volume Application (option 2) from the ISMF Primary Option Menu. Once this is done, select DASD (option 1) on the Volume List Selection Menu.
1. **Complete** the Volume Selection Entry Panel with the values shown in Figure 119.

![Figure 119. Completing Page 1 of the Volume Selection Entry Panel](image)

In this example, a new list of SMS volumes is generated from a partially specified volume serial number.

2. **Verify** that pages 2 and 3 of the Volume Selection Entry Panel are blank. If they are not blank, you receive the short informational message OTHER VALUES PRESENT.

3. Press the ENTER key. ISMF generates and displays the completed volume list shown in Figure 120. This list conforms to the selection criteria.

![Figure 120. Completed Volume List](image)
Defragmenting a DASD Volume

This example shows how to use the DEFRAG line operator to reduce the free space fragmentation of a DASD volume.

1. Enter the DEFRAG line operator in the line operator column next to the item in the DASD volume list that you are interested in, as shown in Figure 121.

2. Press the ENTER key. ISMF displays the DEFRAG Entry Panel as shown in Figure 122.

3. Press the ENTER key. ISMF submits the job and redisplays the list, as shown in Figure 123 on page 150. The asterisk next to the DEFRAG line operator in the list indicates that defragmentation has been requested.
Generating a Mountable Optical Volume List

This example shows how to generate a mountable optical volume list. Generating a mountable optical volume list is similar to generating a DASD volume list or a data set list.

1. Choose the Volume Application (option 2) from the ISMF Primary Option Menu. ISMF displays the Volume List Selection Menu shown in Figure 124.

2. Press the ENTER key. ISMF displays the Mountable Optical Volume Selection Entry Panel, as shown in Figure 125 on page 151.
Complete the Mountable Optical Volume Selection Panel with the values shown.

3. Press the ENTER key. ISMF displays the completed mountable optical volume list of volumes shown in Figure 126. This list conforms to the selection criteria.

![Figure 125. Completing the Mountable Optical Volume Selection Entry Panel](image)

Complete the Mountable Optical Volume Selection Entry Panel

![Figure 126. Completed Volume List](image)

Generating a Mountable Tape Volume List

This example shows how to generate a mountable tape volume list. Generating a mountable tape volume list is similar to generating a mountable optical volume list.

1. Choose the Volume Application (option 2) from the ISMF Primary Option Menu. ISMF displays the Volume List Selection Menu shown in Figure 127 on page 152.
Select mountable tape (option 3).

2. Press the ENTER key. ISMF displays the Mountable Tape Volume Selection Entry Panel, as shown in Figure 128.

3. Press the ENTER key. ISMF displays the completed mountable tape volume list of volumes shown in Figure 129 on page 153. This list conforms to the selection criteria.
Generating a Data Class List

This example shows how to generate a data class list. Generating a data class list is similar to generating a data set list or a volume list.

From the ISMF Primary Option Menu, choose the data class application (option 4). This takes you to the Data Class Application Selection Panel shown in Figure 130.

1. Complete the Data Class Application Selection Panel with the values shown in Figure 130.

This generates a list of data classes with names that begin with DC*.
2. Press the ENTER key. ISMF generates and displays the completed data class list shown in Figure 131. This list conforms to the selection criteria.

Panel List Utilities Scroll Help
-------------------------------------------------------------------------------
DATA CLASS LIST
-------------------------------------------------------------------------------
Command ===> Scroll ===> HALF
Entries 1-9 of 16
Data Columns 43-47 of 47
CDS Name : ACTIVE
Enter Line Operators below:

<table>
<thead>
<tr>
<th>LINE</th>
<th>DATACLAS</th>
<th>RLS</th>
<th>CF</th>
<th>EXT CON</th>
<th>RLS ABOVE</th>
<th>OVERRIDE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DCA1</td>
<td>ALL</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td>DCA11</td>
<td>NONE</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td>DCA7</td>
<td>UPDATESONLY</td>
<td>NO</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td>DCC1</td>
<td>ALL</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td>DCC7</td>
<td>ALL</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>DCT1</td>
<td>ALL</td>
<td>NO</td>
<td>NO</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td>DC1</td>
<td>NONE</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td>DC11</td>
<td>ALL</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td>DC2</td>
<td>NONE</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
</tbody>
</table>

Figure 131. Completed Data Class List

Displaying a Data Class

This example shows how to use the DISPLAY line operator to display the attributes of one of the data classes in the Data Class List built in the previous example.

1. Enter DISPLAY in the line operator column next to the data class whose attributes you want to display, as shown in Figure 132.

Panel List Utilities Scroll Help
-------------------------------------------------------------------------------
DATA CLASS LIST
-------------------------------------------------------------------------------
Command ===> Scroll ===> HALF
Entries 1-10 of 10
Data Columns 39-43 of 47
CDS Name : ACTIVE
Enter Line Operators below:

<table>
<thead>
<tr>
<th>LINE</th>
<th>DATACLASS</th>
<th>REDUCE</th>
<th>REC ACC</th>
<th>BLOCK SIZE</th>
<th>RLS CF</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>display</td>
<td></td>
<td>ABC1</td>
<td>--------</td>
<td></td>
<td>ALL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DCA1</td>
<td>--------</td>
<td></td>
<td>ALL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DCA7</td>
<td>--------</td>
<td>REDO</td>
<td>UPDATESONLY</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DCC1</td>
<td>102400</td>
<td></td>
<td>ALL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DCC7</td>
<td>50</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>DCT1</td>
<td>--------</td>
<td></td>
<td>ALL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DC1</td>
<td>NONE</td>
<td></td>
<td>ALL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DC11</td>
<td>NONE</td>
<td></td>
<td>ALL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ESV0005 0</td>
<td>USER</td>
<td></td>
<td>NONE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ESV0006 0</td>
<td>SYSTEM</td>
<td></td>
<td>NONE</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 132. Entering the DISPLAY Line Operator on the Data Class List Panel

2. Press the ENTER key. ISMF displays the first page of the Data Class Display Panel shown in Figure 133 on page 155. This panel shows the attributes of the data class.
Panel Utilities Scroll Help
DATA CLASS DISPLAY Page 1 of 5

Command =>>

CDS Name . . . : ACTIVE
Data Class Name : ABC1

Description :

Recfm . . . . . . : 
Lrecl . . . . . . : 
Override Space . . . . : NO 
Space Avgrec . . . . : 
  Avg Value . . . : 
  Primary . . . : 
  Secondary . . . : 
  Directory . . . : 
Retpd Or Expdt . . . . : 
Volume Count . . . . : 1
Add'l Volume Amount . . : 

Use DOWN Command to View next Panel;
Use HELP Command for Help; Use END Command to Exit.

Figure 133. Page 1 of the Data Class Display Panel
Chapter 10. ISMF Command and Line Operator Reference

Summary

This chapter describes ISMF line operators and commands. The minimum abbreviations you can use are also given.

- Line operators are listed in Table 12.
- Commands are listed in Table 13 on page 159.

The ISMF application in which each line operator or command can be used is listed. The following list shows the abbreviations that are used for applications:

- DC  Data Class
- DS  Data Set
- DVOL  DASD Volume
- LA  List Application
- MC  Management Class
- OVOL  Mountable Optical Volume
- TVOL  Mountable Tape Volume
- SC  Storage Class

**ISMF End User Line Operators**

Table 12 lists ISMF line operators.

<table>
<thead>
<tr>
<th>Line Operator</th>
<th>Minimum Abbreviation</th>
<th>Description</th>
<th>Application</th>
<th>Processed By</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALTER</td>
<td>AL</td>
<td>Alter the management class, the storage class name, the GDG limit, limit disposition, and expiration date assigned to a cataloged data set.</td>
<td>DS</td>
<td>DFSMSdfp</td>
</tr>
<tr>
<td>BROWSE</td>
<td>B</td>
<td>Look at a sequential data set or a member of a PDS.</td>
<td>DS</td>
<td>DFSMSdfp</td>
</tr>
<tr>
<td>CATLIST</td>
<td></td>
<td>Obtain an IDCAMS LISTCAT output for a particular data set.</td>
<td>DS</td>
<td>DFSMSdfp</td>
</tr>
<tr>
<td>CGCREATE</td>
<td>CGCREATE</td>
<td>Allow I/O activity to resume on the volumes residing in the logical subsystems receiving the command.</td>
<td>DVOL</td>
<td>DFSMSdss</td>
</tr>
<tr>
<td>CLIST</td>
<td>CLI</td>
<td>Call a TSO CLIST.</td>
<td>DS, DVOL, OVOL, TVOL</td>
<td>DFSMSdfp</td>
</tr>
<tr>
<td>COMPRESS</td>
<td>COM</td>
<td>Reclaim embedded, unused space from a PDS.</td>
<td>DS, DVOL</td>
<td>DFSMSdss</td>
</tr>
<tr>
<td>CONDENSE</td>
<td>CON</td>
<td>Free unused space at the end of a data set; compress a PDS.</td>
<td>DS</td>
<td>DFSMSHsm</td>
</tr>
<tr>
<td>Line Operator</td>
<td>Minimum Abbreviation</td>
<td>Description</td>
<td>Application</td>
<td>Processed By</td>
</tr>
<tr>
<td>---------------</td>
<td>----------------------</td>
<td>-------------</td>
<td>-------------</td>
<td>--------------</td>
</tr>
<tr>
<td>CONSOLID</td>
<td>CONS</td>
<td>Enables you to perform extent reduction of data sets by combining multi-extent data sets residing on a single volume.</td>
<td>DVOL</td>
<td>DFSMSdss</td>
</tr>
<tr>
<td>COPY</td>
<td>COP</td>
<td>Copy a data set or volume to a DASD volume of like or unlike device type.</td>
<td>DS, DVOL</td>
<td>DFSMSdss</td>
</tr>
<tr>
<td>DEFRAG</td>
<td>DEF</td>
<td>Reduce fragmentation on a volume.</td>
<td>DVOL</td>
<td>DFSMSdss</td>
</tr>
<tr>
<td>DELETE</td>
<td>DEL</td>
<td>Delete an online, backup, or DFSMShsm-migrated data set.</td>
<td>DS, LA</td>
<td>DFSMSdfp or DFSMShsm</td>
</tr>
<tr>
<td>DISPLAY</td>
<td>DI</td>
<td>Display the attributes of a class or group.</td>
<td>MC, DC, SC</td>
<td>DFSMSdfp</td>
</tr>
<tr>
<td>DUMP</td>
<td>DU</td>
<td>Dump a data set or volume to tape, DASD, or mass storage volumes.</td>
<td>DS, DVOL</td>
<td>DFSMSdss</td>
</tr>
<tr>
<td>EDIT</td>
<td>E</td>
<td>Edit a sequential data set or member of a PDS.</td>
<td>DS</td>
<td>DFSMSdfp</td>
</tr>
<tr>
<td>ERASE</td>
<td>ERA</td>
<td>Erase or delete an online, backup, DFSMShsm-migrated data set, or a saved list.</td>
<td>DS, LA</td>
<td>DFSMSdfp or DFSMShsm</td>
</tr>
<tr>
<td>HALTERDS</td>
<td>HA</td>
<td>Change the number of backup versions of a data set; change frequency of backup.</td>
<td>DS</td>
<td>DFSMShsm</td>
</tr>
<tr>
<td>HBACKDS</td>
<td>HBA</td>
<td>Create a backup version of a data set.</td>
<td>DS</td>
<td>DFSMShsm</td>
</tr>
<tr>
<td>HBDELETE</td>
<td>HBD</td>
<td>Delete backup versions of a data set.</td>
<td>DS</td>
<td>DFSMShsm</td>
</tr>
<tr>
<td>HDELETE</td>
<td>HDE</td>
<td>Delete a migrated data set.</td>
<td>DS</td>
<td>DFSMShsm</td>
</tr>
<tr>
<td>HIDE</td>
<td>H</td>
<td>Hide a list entry.</td>
<td>DS, DVOL, OVOL, TVOL, MC, DC, SC, LA</td>
<td>DFSMSdfp</td>
</tr>
<tr>
<td>HMIGRATE</td>
<td>HM</td>
<td>Migrate a data set to a DFSMShsm level 1 or level 2 volume.</td>
<td>DS</td>
<td>DFSMShsm</td>
</tr>
<tr>
<td>HRECALL</td>
<td>HRECA</td>
<td>Recall a data set that has been migrated by DFSMShsm.</td>
<td>DS</td>
<td>DFSMShsm</td>
</tr>
<tr>
<td>HRECOVER</td>
<td>HRECO</td>
<td>Recover a backup version of a data set.</td>
<td>DS</td>
<td>DFSMShsm</td>
</tr>
<tr>
<td>LIST</td>
<td>LI</td>
<td>Reuse a previously saved list.</td>
<td>LA</td>
<td>DFSMSdfp</td>
</tr>
<tr>
<td>MESSAGE</td>
<td>MES</td>
<td>Display message text for the last operation performed on a list entry.</td>
<td>DS, DVOL, OVOL, TVOL, MC, DC, SC, LA</td>
<td>DFSMSdfp</td>
</tr>
<tr>
<td>RELEASE</td>
<td>REL</td>
<td>Free unused space at the end of data sets.</td>
<td>DS, DVOL</td>
<td>DFSMSdss</td>
</tr>
</tbody>
</table>
Table 12. ISMF Line Operators (continued)

<table>
<thead>
<tr>
<th>Line Operator</th>
<th>Minimum Abbreviation</th>
<th>Description</th>
<th>Application</th>
<th>Processed By</th>
</tr>
</thead>
<tbody>
<tr>
<td>=</td>
<td></td>
<td>Repeat the last line operator that was executed.</td>
<td>DS, DVOL, OVOL, TVOL, MC, DC, SC, LA</td>
<td>DFSMSdfp</td>
</tr>
<tr>
<td>RESTORE</td>
<td>REST</td>
<td>Restore data sets that have been dumped by DFSMSdss.</td>
<td>DS, DVOL</td>
<td>DFSMSdss</td>
</tr>
<tr>
<td>SECURITY</td>
<td>SE</td>
<td>Invoke a RACF panel to protect data sets.</td>
<td>DS, MC, SC</td>
<td>RACF</td>
</tr>
<tr>
<td>STATUS</td>
<td>ST</td>
<td>Displays up to 32 SMS and MVS volume statuses.</td>
<td>DVOL</td>
<td>DFSMSdfp</td>
</tr>
<tr>
<td>TSO commands and CLISTs</td>
<td></td>
<td>Invoke TSO commands and CLISTs.</td>
<td>DS, DVOL, OVOL, TVOL, MC, DC, SC, LA</td>
<td>DFSMSdfp</td>
</tr>
<tr>
<td>VTOCLIST</td>
<td></td>
<td>Obtain an IEHLIST LISTVOC for a selected data set.</td>
<td>DS</td>
<td>DFSMSdfp</td>
</tr>
</tbody>
</table>

**Tip:** If you specify an equal sign after any DFSMSdss or DFSMShsm line operator, processing occurs in last-use mode, and ISMF does not display an entry panel. See "Line Operator Mode" on page 80 for more information.

**ISMF End User Commands**

Table 13 lists ISMF end user commands.

Table 13. ISMF Commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Minimum Abbreviation</th>
<th>Description</th>
<th>Application</th>
<th>Processed By</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOTTOM</td>
<td>BOT</td>
<td>Scroll to the last page of a list of entries.</td>
<td>DS, DVOL, OVOL, TVOL, MC, DC, SC, LA</td>
<td>DFSMSdfp</td>
</tr>
<tr>
<td>CANCEL</td>
<td>CA</td>
<td>Return to the previous dialog without performing any of the current dialog functions.</td>
<td>OVOL, TVOL, MC, DC, SC, LA</td>
<td>DFSMSdfp</td>
</tr>
<tr>
<td>CLEAR</td>
<td>CL</td>
<td>Clear line operator history.</td>
<td>DS, DVOL, OVOL, TVOL, MC, DC, SC, LA</td>
<td>DFSMSdfp</td>
</tr>
<tr>
<td>CLEAR ALL</td>
<td>CL ALL</td>
<td>Clear the fields on all pages of a selection entry panel or filter panel.</td>
<td>DS, DVOL</td>
<td>DFSMSdfp</td>
</tr>
<tr>
<td>CLEAR PAGE</td>
<td>CL PA</td>
<td>Clear the fields on the current page of a selection entry panel or filter panel.</td>
<td>DS, DVOL, OVOL, TVOL, LA</td>
<td>DFSMSdfp</td>
</tr>
<tr>
<td>CLEAR PAGEx</td>
<td>CL PAX</td>
<td>Clear the fields on a designated page of a selection entry panel or filter panel.</td>
<td>DS, DVOL</td>
<td>DFSMSdfp</td>
</tr>
<tr>
<td>COMPRESS</td>
<td>COM</td>
<td>Reclaim embedded, unused space from a list of PDSs.</td>
<td>DS</td>
<td>DFSMSdss</td>
</tr>
<tr>
<td>COPY</td>
<td>COP</td>
<td>Copy a list of data sets to a DASD volume of like or unlike device type.</td>
<td>DS</td>
<td>DFSMSdss</td>
</tr>
<tr>
<td>Command</td>
<td>Minimum Abbreviation</td>
<td>Description</td>
<td>Application</td>
<td>Processed By</td>
</tr>
<tr>
<td>---------</td>
<td>----------------------</td>
<td>-------------</td>
<td>-------------</td>
<td>--------------</td>
</tr>
<tr>
<td>DOWN</td>
<td>DO</td>
<td>Scroll down one page or a specified amount of list entries.</td>
<td>DS, DVOL, OVOL, TVOL, MC, DC, SC, LA</td>
<td>DFSMSdfp</td>
</tr>
<tr>
<td>DSUTIL</td>
<td></td>
<td>Invoke the PDF Data Set Utility to allocate, rename, delete, catalog, and uncatalog entire data sets.</td>
<td>DS</td>
<td>DFSMSdfp</td>
</tr>
<tr>
<td>DUMP</td>
<td>DU</td>
<td>Dump a list of data sets to tape, DASD, or mass storage volumes.</td>
<td>DS, DVOL</td>
<td>DFSMSdss</td>
</tr>
<tr>
<td>END</td>
<td>END</td>
<td>Exit the current ISMF function or panel.</td>
<td>DS, DVOL, OVOL, TVOL, MC, DC, SC, LA</td>
<td>DFSMSdfp</td>
</tr>
<tr>
<td>ERTB</td>
<td>ER</td>
<td>Display the ISMF Error Table.</td>
<td>DS, DVOL, OVOL, TVOL, MC, DC, SC, LA</td>
<td>DFSMSdfp</td>
</tr>
<tr>
<td>FILTER</td>
<td>FIL</td>
<td>Tailor the list to include only specific entries.</td>
<td>DS, DVOL, LA</td>
<td>DFSMSdfp</td>
</tr>
<tr>
<td>FILTER CLEAR</td>
<td>FIL C</td>
<td>Clear the filter entries but bypass the entry panel.</td>
<td>DS, DVOL, LA</td>
<td>DFSMSdfp</td>
</tr>
<tr>
<td>FIND</td>
<td>FIN</td>
<td>Find a specific data column.</td>
<td>DS, DVOL, OVOL, TVOL, MC, DC, SC, LA</td>
<td>DFSMSdfp</td>
</tr>
<tr>
<td>FOLD</td>
<td>FO</td>
<td>Extend or shorten the data set name data column.</td>
<td>DS</td>
<td>DFSMSdfp</td>
</tr>
<tr>
<td>HELP</td>
<td>H</td>
<td>Obtain information about an ISMF panel or an error.</td>
<td>DS, DVOL, OVOL, TVOL, MC, DC, SC, LA</td>
<td>DFSMSdfp</td>
</tr>
<tr>
<td>LEFT</td>
<td>L</td>
<td>Scroll left one page or a specified amount of data columns.</td>
<td>DS, DVOL, OVOL, TVOL, MC, DC, SC, LA</td>
<td>DFSMSdfp</td>
</tr>
<tr>
<td>LIBRARY</td>
<td></td>
<td>Invoke the PDF Library Utility to browse, print, rename, and delete members of a PDS or PDSE.</td>
<td>DS</td>
<td>DFSMSdfp</td>
</tr>
<tr>
<td>PROFILE</td>
<td>P</td>
<td>Invoke the ISMF profile. (This command cannot be invoked from ISMF menu panels, the panels listed under the ISMF Profile Option Menu, and abend panels.)</td>
<td>DS, DVOL, OVOL, TVOL, MC, DC, SC, LA</td>
<td>DFSMSdfp</td>
</tr>
<tr>
<td>REFRESH</td>
<td>REF</td>
<td>Display the updated list.</td>
<td>DS, DVOL, OVOL, TVOL, MC, DC, SC, LA</td>
<td>DFSMSdfp</td>
</tr>
<tr>
<td>RELEASE</td>
<td>REL</td>
<td>Free unused space at the end of a list of data sets.</td>
<td>DS</td>
<td>DFSMSdss</td>
</tr>
<tr>
<td>RESHOW</td>
<td>RESH</td>
<td>Redisplay hidden list entries.</td>
<td>DS, DVOL, OVOL, TVOL, MC, DC, SC, LA</td>
<td>DFSMSdfp</td>
</tr>
<tr>
<td>Command</td>
<td>Minimum Abbreviation</td>
<td>Description</td>
<td>Application</td>
<td>Processed By</td>
</tr>
<tr>
<td>-------------</td>
<td>----------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>-------------</td>
<td>--------------</td>
</tr>
<tr>
<td>RESTORE</td>
<td>REST</td>
<td>Restore a list of data sets that have been dumped by DFSMSdss.</td>
<td>DS</td>
<td>DFSMSdss</td>
</tr>
<tr>
<td>RIGHT</td>
<td>RI</td>
<td>Scroll right one page or a specified amount of data columns.</td>
<td>DS, DVL, OVL, TVOL, MC, DC, SC, LA</td>
<td>DFSMSdfp</td>
</tr>
<tr>
<td>SAVE</td>
<td>SA</td>
<td>Save a copy of a list.</td>
<td>DS, DVL, OVL, TVOL, MC, DC, SC, LA</td>
<td>DFSMSdfp</td>
</tr>
<tr>
<td>SORT</td>
<td>SO</td>
<td>Reorder list entries based on entries in specific data columns.</td>
<td>DS, DVL, OVL, TVOL, MC, DC, SC, LA</td>
<td>DFSMSdfp</td>
</tr>
<tr>
<td>TOP</td>
<td>TOP</td>
<td>Scroll to the first page of a list of entries.</td>
<td>DS, DVL, OVL, TVOL, MC, DC, SC, LA</td>
<td>DFSMSdfp</td>
</tr>
<tr>
<td>TSO commands and CLISTs</td>
<td></td>
<td>Invoke TSO commands and CLISTs.</td>
<td>DS, DVL, OVL, TVOL, MC, DC, SC, LA</td>
<td>DFSMSdfp</td>
</tr>
<tr>
<td>UP</td>
<td>U</td>
<td>Scroll up one page or a specified amount of list entries.</td>
<td>DS, DVL, OVL, TVOL, MC, DC, SC, LA</td>
<td>DFSMSdfp</td>
</tr>
<tr>
<td>VIEW</td>
<td>VI</td>
<td>Select and reorder the columns to display on list panels.</td>
<td>DS, DVL, OVL, TVOL, MC, DC, SC, LA</td>
<td>DFSMSdfp</td>
</tr>
</tbody>
</table>
Appendix A. Special Considerations

This section contains preliminary information about listing your data sets and using the data set list to perform storage management tasks (see Figure 134 on page 164 and Figure 135 on page 165). The topics covered include: differences between lists generated from the catalog and lists generated from the VTOC, information about migrated data sets, considerations about VSAM data sets, and temporary data sets.

Using a List Generated from the Catalog or the VTOC

There are several considerations to keep in mind when you decide whether to generate a list from the catalog or the VTOC. The source of the list affects the job streams ISMF generates for DUMP and COPY and the way ISMF determines if a data set is multivolume.

Differences between a VTOC List and a Catalog List

Both the DUMP and COPY commands are sensitive to the type of list you use.

If you enter DUMP or COPY on a list generated from the VTOC, ISMF builds a job stream that contains input DD statements for every volume on which the data sets in the list reside. If the data set to be processed is cataloged on another volume, DFSMSdss ignores the cataloged volume and processes the data set from the specified volume. The output is a physical dump in the case of the DUMP operation.

If you use either command on a list generated from the catalog, ISMF does not provide input DD statements for individual volumes. When the DFSMSdss background job executes, DFSMSdss uses a catalog search to determine which volumes the data set resides on. DFSMSdss dumps or copies the data set from all volumes indicated in the catalog. The output is a logical dump in the case of the DUMP operation.

For more information on the difference between a physical and logical dump, refer to z/OS DFSMSdss Storage Administration.

Multivolume Data Sets

The way ISMF determines if a data set is multivolume depends on the source of the list (VTOC or catalog).

A list generated from the VTOC

If you generate the list from the VTOC, ISMF uses the VTOC entry to determine if a data set is multivolume. However, the multivolume information could be incorrect in the following cases:

- Data sets that have been defined but unopened can appear in the list as multivolume.
- Data sets defined as multivolume can appear as single volume if the second volume has not been used.
VSAM data sets can appear as multivolume data sets since VSAM does not update the FMT1 Data set control block (DSCB).

**A list generated from the catalog**

If you generate the list from the catalog, ISMF determines if the data set is multivolume by the way the data set is defined in the catalog. ISMF checks for multiple volume serial number entries in the catalog. When the list is built, a data set with more than one volume serial number appears as multivolume. If you define a VSAM data set with the IMBED option, it may appear as multivolume.

ALLOC SPACE value in a catalog generated data set list shows only the prime volser. The candidate volser with guaranteed space is not shown. This is because catalog does not return any space value to ISMF. Catalog returns a space value of zero. ISMF will show the candidate volser when there is data on the volume and catalog returns a space value.

**Using ISMF for Migrated Data Sets**

You may choose to generate a data set list and obtain information about migrated data sets. When completing page 1 of the Data Set Selection Entry Panel, generate a list from the catalog (as opposed to the VTOC) and complete the ACQUIRE DATA IF DFSMSshm MIGRATED field. (See “Completing Page 1 of the Data Set Selection Entry Panel” on page 25 for details.) This field lets you choose whether to retrieve information about data sets that DFSMSshm has migrated. Whether you select Y (yes) or N (no), the VOLUME SERIAL data column indicates MIGRAT.

**When Data Is Not Acquired from the Migrated Version of the Data Set**

If a data set is migrated and you specify an N, the processing time will be reduced. The devices ISMF generates for the DEVICE TYPE column are the device types (mostly tapes) after migration occurred. See [Figure 134](#).

---

<table>
<thead>
<tr>
<th>Panel List Dataset Utilities Scroll Help</th>
</tr>
</thead>
<tbody>
<tr>
<td>Command ===&gt; SCROLL ===&gt; HALF</td>
</tr>
<tr>
<td>----------------------------------------</td>
</tr>
<tr>
<td>Enter Line Operators Below:</td>
</tr>
<tr>
<td>Entries 1-9 of 9</td>
</tr>
<tr>
<td>Data Columns 16-19 of 41</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LINE OPERATOR</th>
<th>DATA SET NAME</th>
<th>BLOCK</th>
<th>VOLUME SERIAL</th>
<th>MULT</th>
<th>DEVICE TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>---------------</td>
<td>--------------</td>
<td>-------</td>
<td>---------------</td>
<td>------</td>
<td>-------------</td>
</tr>
<tr>
<td>----------</td>
<td>--------------</td>
<td>-------</td>
<td>---------------</td>
<td>------</td>
<td>-------------</td>
</tr>
</tbody>
</table>

---

[Figure 134. Data Set List When N Is Specified for the ACQUIRE DATA IF DFSMSshm MIGRATED Field](#)
When Data Is Acquired from the Migrated Version of the Data Set

If a data set is migrated and you specify a Y for the ACQUIRE DATA IF DFSMShsm MIGRATED field, the devices in the DEVICE TYPE column are DASD device types before migration occurred. See Figure 135.

In addition to the columns shown in Figure 135, ISMF also retrieves data for a number of other columns, including: ALLOCATED SPACE, DATA SET ORGANIZATION, RECORD FORMAT, BLOCK/CI SIZE, LAST REFERENCE DATE, and CHANGE INDICATOR. RECORD FORMAT is not completed for VSAM data sets.

Migrating an Entire List of Data Sets

The MIGRATE CLIST, along with the RECALL CLIST and SENDC CLIST, is included with ISMF to show some of the functions that can be created with ISMF CLIST support.

MIGRATE is invoked as a list command from the Data Set List Panel. MIGRATE issues the HMIGRATE line operator for each data set in the list. Using DFSMShsm for Migration of Data on page 96 describes the HMIGRATE line operator.

MIGRATE migrates each data set in the list panel. If a data set is already migrated, the CLIST sets the history symbol prefix to a not sign (^) and continues processing the list. See Line Operator and List Command Feedback and Fixes on page 81 for information on history symbols. If a serious error occurs while MIGRATE is executing, the CLIST stops processing.

You can use the MESSAGE line operator to review the result of the CLIST for each data set. (See MESSAGE Line Operator on page 20.)
Recalling an Entire List of Migrated Data Sets

The RECALL CLIST is used as a list command from the Data Set List Panel. RECALL issues the HRECALL line operator for each data set in the list. "Using DFSMSHsm for Migration of Data" on page 96 describes the HRECALL line operator.

RECALL recalls each migrated data set in the list panel. If a data set is not migrated, the CLIST sets the history symbol prefix to a not sign (^) and continues processing the list. If a serious error occurs while RECALL is executing, the CLIST halts processing.

You can use the MESSAGE line operator to review the result of the CLIST for each data set.

Sending a Data Set to Another User

The SENDC CLIST is invoked as a line operator from the Data Set List Panel. SENDC performs the XMIT function on a single data set. When you invoke SENDC against a data set, the panel shown in Figure 136 is displayed.

```
Panel Utilities Help
--------------------------------------------
XMIT OPTIONS PANEL

Optionally Specify One or More for USER10.HCD.TERM:

Type of Xmit . . . (1-entire data set, 2-member only, 3-a note)
Data Set Name . . USER10.HCD.TERM

If Type of Xmit is '2', then Specify:
  Member Name . . (1 to 8 character member name)

To User Id . . .
  At Node Id . .

Enter "/" to select option Log Xmit Notification

Use ENTER to Perform Xmit;
Use HELP Command for Help; Use END Command to Exit.
```

Figure 136. Data Entry Panel for the SENDC CLIST

The data set name is already filled in when the panel is displayed. With the other fields on the panel you can:
- Send the entire data set or just a member
- Log the transaction
- Receive notification that the data set or member was transmitted.

If the data set is not transmitted, the CLIST sets the history symbol prefix to a question mark (?) for the data set. You can use the MESSAGE line operator to review the result of the SENDC execution.
Using ISMF with VSAM Data Sets

ISMF handles VSAM data sets differently from other types of data sets. When you generate a list that contains VSAM data sets, you should understand the following processes:

- How VSAM data sets appear in the list
- How the last reference date is determined
- How COPY, DUMP, and RESTORE work with VSAM data sets.

How VSAM Data Sets Appear in the List

In general, all of the components of a VSAM data set appear in the list. When the list is originally displayed, it is sorted by data set name. If all the components have the same high-level qualifier, they are grouped together in the list. If any of the components have different names, they could appear separately depending on the names of the other data sets in the list.

Specifying a User Catalog

If you generate the list from a user catalog and specify the user catalog in the catalog name, only the data component of the user catalog appears in the list. If you specify "**" as the data set name, both the data component and the cluster appear.

Last Reference Date

The last reference date is based on date stamp processing. However, VSAM provides a date stamp control module that causes date stamp processing to be skipped for VSAM data sets. Because of this, the data set list does not contain last reference dates for VSAM data sets unless you have substituted your own module to perform date stamp processing. For more information about providing a date stamp routine for VSAM data sets, refer to [z/OS DFSMS Using Data Sets].

DUMP, RESTORE, and COPY Considerations

Special considerations apply when you generate the list from the Catalog or the VTOC.

If the list is generated from the VTOC,

you can enter COPY, DUMP, and RESTORE against either the data or index component. ISMF tries to find the associated cluster name to perform the line operator or command. However, if the index component name of a user catalog appears in the list, you will not be able to use COPY, DUMP, or RESTORE against this list entry because ISMF cannot locate the index component cluster name. The cluster name is system generated; it is not in the default order of search.

If the list is generated from the catalog,

COPY, DUMP, and RESTORE can only be entered against the cluster name of a VSAM data set.
Temporary Data Sets Created When Using ISMF

Two types of temporary data sets are created when you use ISMF to generate the background jobs for DFSMSdss line operators and list commands:

- Filter data sets
- ISPF work data sets

These data sets are automatically deleted when they are no longer needed, but while they are still in use they can appear as entries in the data set list.

Filter Data Sets

A filter data set is a sequential data set created for DFSMSdss list commands. It is deleted when the job runs. For all the commands except RELEASE the data set consists of the INCLUDE keyword and all the data set names from the list. For RELEASE, ISMF creates a separate filter data set for each different device type.

If a filter data set appears in the data set list, it looks like this:

K665941.ISMF.COMP.D860309.T073029

The data set name identifies your TSO prefix or user ID (or both, if you use a TSO prefix different from your user ID), the name of the list command, the date, and the time. For RELEASE, you also get the last two characters of the generic device name. For a 3380, the filter data set looks like this:

K665941.ISMF.R80.D86039.T073029

ISPF Work Data Sets for Background Jobs

The other temporary data sets that can appear in a data set list are ISPF work data sets created as part of generating a background job. These data sets are deleted when you exit ISPF. However, if ISPF ends abnormally, the temporary data sets might not be deleted. If an ISPF work data set appears in the list, it looks like this:

K665941.SPFTEMP0.CNTL
Appendix B. Acquiring Data for a User-Created CLIST

This topic contains general-use programming interface and associated guidance information.

As part of the support ISMF provides for user-created CLISTs, there is a shared variable pool. You can use the variables in this pool to control processing and supply information to your CLIST. There are five different sets of variables:
- Variables that control processing
- Variables that supply information about the list panel
- Variables that save message text
- Variables that supply information about the list panel entries
- Variables that supply information about the selection criteria

For detailed information on how to write CLISTs, see TSO Programming and ISPF/PDF Guide and Reference.

Variables That Control Processing

The control variables allow your CLIST to direct the processing of a command. The following list describes the control variables and their valid values.

**DGTCONTN**

This variable directs the processor to either continue or stop processing the list depending on the return code. DGTCONTN has a character attribute with a length of one character. You can set this variable to one of the following values:

- '' The default value for this variable is a blank. This value directs the processor to continue processing the list entries until all the entries have been processed or until an error occurs. The processor reacts to the different error codes as described in "Line Operator and List Command Feedback and Fixes" on page 81.
- N This value directs the processor to stop processing the list entries. No entries are processed after a DGTCONTN with a value of N is found.
- Y This value directs the processor to continue processing the list entries regardless of the return code. The list entries that cause the error are not processed. However, processing continues until all the entries have been processed.

You can also code your CLIST to be interruptible. This support allows you to interrupt a CLIST with your ATTN key when the CLIST is invoked as a list command. See TSO Programming for an example of how to code this attention support.

**DGTLISTC**

This variable affects the line operator history for the current list entry. DGTLISTC has a character attribute with a length of one character. You can set this variable to one of the following values:

- Y This value updates the line operator history for the current list entry. This value is the default.
This value does not update the line operator history for the current entry.

Variables That Supply Information about the List Panel

The informational variables supply your CLIST with information about the list panel. They do not affect processing. These variables resolve to a certain value that you can use to provide your CLIST with this information.

ZAPPLID

This ISPF variable indicates to your CLIST which application is running. ZAPPLID has a character attribute with a length of eight characters. See ISPF Dialog Management Services for more information on this variable.

DGTCOUNT

This variable contains the number of the list entry that the CLIST is being invoked against.

DGTTOTAL

This variable contains the total number of entries in the list. This number does not include hidden entries or entries that have been filtered out of the list. DGTTOTAL has a character attribute with a length of six characters.

DGTLASTU

This variable indicates whether the command was invoked in last-use mode or normal mode. DGTLASTU has a character attribute with a length of one character. This variable can hold one of the following values:

Y   This value indicates last-use mode.
N   This value indicates normal mode.

DGTTYPEC

This variable indicates the type of command in control. DGTTYPEC has a character attribute with a length of one character. This variable can hold one of the following values:

C   This value indicates that the command in control was invoked as a list command.
L   This value indicates that the command in control was invoked as a line operator.

DGTCMDNM

This variable contains the name of the current list command. DGTCMDNM has a character attribute with a length of eight characters.

DGTGDRBA

This variable contains the GDRB address in zoned format.
Variables That Save Message Text

The message variables allow your CLIST to save the long and short message text for any command or line operator. The following variables contain the message information supplied by your CLIST.

**DGTMSGID**

This variable can contain a message ID if one is supplied by your CLIST. DGTMSGID has a character attribute with a length of eight characters.

**DGTCSMSG and DGTCLMSG**

These variables allow your CLIST to save message text while the CLIST is in control.

- **DGTCSMSG**
  - This variable saves the short message text. DGTCSMSG has a character attribute and can hold 35 characters.

- **DGTCLMSG**
  - This variable saves the long message text. DGTCLMSG has a character attribute and can hold 79 characters.

The message text is saved depending on the conditions described in **Table 14**.

<table>
<thead>
<tr>
<th>Is message text supplied?</th>
<th>Is message ID supplied?</th>
<th>The CLIST will:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>No</td>
<td>Save messages from DGTCSMSG and DGTCLMSG.</td>
</tr>
<tr>
<td>Yes</td>
<td>Yes</td>
<td>Save messages from DGTCSMSG and DGTCLMSG.</td>
</tr>
<tr>
<td>No</td>
<td>Yes</td>
<td>Obtain a message by using the message ID supplied through DGTMSGID.</td>
</tr>
<tr>
<td>No</td>
<td>No</td>
<td>Use default messages.</td>
</tr>
</tbody>
</table>

Variables That Supply Information about the List Entries

All the data on the list panel entries is available through the shared variable pool. A variable is assigned to each of the data columns on the list panel. These variables resolve to the value in the data column for the current list entry. The tables on pages **Contents of the List Panels** on page 49 through **Table 23 on page 179** list the variables for the data columns on an application list panel.

**Tip:** If you print a list saved from a previous release, you might see fields that no longer exist in the current release.

**Variable Names, Attributes, and Lengths for the Data Set List**

**Table 15 on page 172** lists the variable names, attributes, and lengths for the Data Set List data columns.
Table 15. Variable Names, Attributes and Lengths for the Data Set List Data Columns

<table>
<thead>
<tr>
<th>Column Tag</th>
<th>Column Name</th>
<th>Variable Name</th>
<th>Attribute</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>LINE OPERATOR</td>
<td>CLINEOP</td>
<td>character</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>DATA SET NAME</td>
<td>COBJ</td>
<td>character</td>
<td>44</td>
</tr>
<tr>
<td>3</td>
<td>ALLOC SPACE</td>
<td>CALLOCSP</td>
<td>character</td>
<td>7</td>
</tr>
<tr>
<td>4</td>
<td>ALLOC USED</td>
<td>CALLOCUS</td>
<td>character</td>
<td>7</td>
</tr>
<tr>
<td>5</td>
<td>% NOT USED</td>
<td>CALLOCNU</td>
<td>character</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>COMPRESSED FORMAT</td>
<td>CCMPRSFT</td>
<td>character</td>
<td>3</td>
</tr>
<tr>
<td>7</td>
<td>% USER DATA REDUCTION</td>
<td>CPUDRDUUC</td>
<td>character</td>
<td>11</td>
</tr>
<tr>
<td>8</td>
<td>NUM EXT</td>
<td>CNUMEXT</td>
<td>character</td>
<td>3</td>
</tr>
<tr>
<td>9</td>
<td>ALLOC UNIT</td>
<td>CALLOCUT</td>
<td>character</td>
<td>5</td>
</tr>
<tr>
<td>10</td>
<td>SEC ALLOC</td>
<td>CSECALLO</td>
<td>character</td>
<td>8</td>
</tr>
<tr>
<td>11</td>
<td>DS ORG</td>
<td>CDSORG</td>
<td>character</td>
<td>3</td>
</tr>
<tr>
<td>12</td>
<td>REC FMT</td>
<td>CRECFMT</td>
<td>character</td>
<td>5</td>
</tr>
<tr>
<td>13</td>
<td>RECORD LENGTH</td>
<td>CRECLLEN</td>
<td>character</td>
<td>7</td>
</tr>
<tr>
<td>14</td>
<td>BLK SZ CI SIZE</td>
<td>CBLKSIZE</td>
<td>character</td>
<td>7</td>
</tr>
<tr>
<td>15</td>
<td>OPTIMAL SIZE</td>
<td>OPTIMAL</td>
<td>character</td>
<td>7</td>
</tr>
<tr>
<td>16</td>
<td>BLOCK UNUSED</td>
<td>CBLKNU</td>
<td>character</td>
<td>7</td>
</tr>
<tr>
<td>17</td>
<td>VOLUME SERIAL</td>
<td>CVOLSER</td>
<td>character</td>
<td>6</td>
</tr>
<tr>
<td>18</td>
<td>MULT VOL</td>
<td>CMULTV</td>
<td>character</td>
<td>4</td>
</tr>
<tr>
<td>19</td>
<td>DEVICE TYPE</td>
<td>CDEVTYPE</td>
<td>character</td>
<td>7</td>
</tr>
<tr>
<td>20</td>
<td>CREATE DATE</td>
<td>CCREATD2</td>
<td>character</td>
<td>10</td>
</tr>
<tr>
<td>21</td>
<td>EXPIRE DATE</td>
<td>CEXPIRD2</td>
<td>character</td>
<td>10</td>
</tr>
<tr>
<td>22</td>
<td>LAST REF DATE</td>
<td>CLASTRE2</td>
<td>character</td>
<td>10</td>
</tr>
<tr>
<td>23</td>
<td>LAST BACKUP DATE</td>
<td>CLASBKDT</td>
<td>character</td>
<td>10</td>
</tr>
<tr>
<td>24</td>
<td>CHG IND</td>
<td>CCHNGIND</td>
<td>character</td>
<td>3</td>
</tr>
<tr>
<td>25</td>
<td>DATA CLASS NAME</td>
<td>CDATACLS</td>
<td>character</td>
<td>8</td>
</tr>
<tr>
<td>26</td>
<td>MANAGEMENT CLASS NAME</td>
<td>CMGMTCLS</td>
<td>character</td>
<td>8</td>
</tr>
<tr>
<td>27</td>
<td>STORAGE CLASS NAME</td>
<td>CSTORCLS</td>
<td>character</td>
<td>8</td>
</tr>
<tr>
<td>28</td>
<td>OWNER</td>
<td>COWNERID</td>
<td>character</td>
<td>8</td>
</tr>
<tr>
<td>29</td>
<td>DATA SET ENVIRONMENT</td>
<td>CDSENVIR</td>
<td>character</td>
<td>9</td>
</tr>
<tr>
<td>30</td>
<td>DATA SET NAME TYPE</td>
<td>CDSONTYPE</td>
<td>character</td>
<td>8</td>
</tr>
<tr>
<td>31</td>
<td>NUM OF STRIPES</td>
<td>CNOSTRPS</td>
<td>character</td>
<td>7</td>
</tr>
<tr>
<td>32</td>
<td>DATA SET ENTRY TYPE</td>
<td>CENTRTRY</td>
<td>character</td>
<td>8</td>
</tr>
<tr>
<td>33</td>
<td>REBLOCK INDICATOR</td>
<td>CREBLOCK</td>
<td>character</td>
<td>3</td>
</tr>
<tr>
<td>34</td>
<td>DDM ATTRIBUTES</td>
<td>CDDMAATTR</td>
<td>character</td>
<td>3</td>
</tr>
<tr>
<td>35</td>
<td>CCSID DESCRIPTION</td>
<td>CCCSID</td>
<td>character</td>
<td>17</td>
</tr>
<tr>
<td>36</td>
<td>CF STATUS INDICATOR</td>
<td>CCFSTI</td>
<td>character</td>
<td>16</td>
</tr>
<tr>
<td>37</td>
<td>CF MONITOR STATUS</td>
<td>CCFMNST</td>
<td>character</td>
<td>3</td>
</tr>
<tr>
<td>38</td>
<td>CF CACHE STRUCTURE NAME</td>
<td>CCFSTNM</td>
<td>character</td>
<td>16</td>
</tr>
<tr>
<td>39</td>
<td>CF CACHE SET NAME</td>
<td>CCFCSET</td>
<td>character</td>
<td>8</td>
</tr>
<tr>
<td>40</td>
<td>CF LOCK STRUCTURE NAME</td>
<td>CFCSLNM</td>
<td>character</td>
<td>16</td>
</tr>
<tr>
<td>41</td>
<td>CF LOCK SET NAME</td>
<td>CCFSET</td>
<td>character</td>
<td>3</td>
</tr>
<tr>
<td>42</td>
<td>EATTR</td>
<td>CCEATTR</td>
<td>character</td>
<td>3</td>
</tr>
</tbody>
</table>

Related reading: See [z/OS DFSMSdfp Storage Administration](https://www.ibm.com/support/docview.wss?uid=swg27046527) for a list of CCSIDs and default LOCALNAMEs.
Variable Names, Attributes, and Lengths for the DASD Volume List

Table 16 lists the variable names, attributes and lengths for the DASD Volume List data columns.

<table>
<thead>
<tr>
<th>Column Tag</th>
<th>Column Name</th>
<th>Variable Name</th>
<th>Attribute</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>LINE OPERATOR</td>
<td>CLINEOP</td>
<td>character</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>VOLUME SERIAL</td>
<td>COBJ</td>
<td>character</td>
<td>6</td>
</tr>
<tr>
<td>3</td>
<td>FREE SPACE</td>
<td>CFREESPA</td>
<td>character</td>
<td>8</td>
</tr>
<tr>
<td>4</td>
<td>% FREE</td>
<td>CFREE</td>
<td>character</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>ALLOC SPACE</td>
<td>CALLOCSP</td>
<td>character</td>
<td>8</td>
</tr>
<tr>
<td>6</td>
<td>FRAG INDEX</td>
<td>CFRAGIND</td>
<td>character</td>
<td>5</td>
</tr>
<tr>
<td>7</td>
<td>LARGEST EXTENT</td>
<td>CLGSTEXT</td>
<td>character</td>
<td>8</td>
</tr>
<tr>
<td>8</td>
<td>FREE EXTENTS</td>
<td>CFREEEXTN</td>
<td>character</td>
<td>7</td>
</tr>
<tr>
<td>9</td>
<td>INDEX STATUS</td>
<td>CINDXSTS</td>
<td>character</td>
<td>8</td>
</tr>
<tr>
<td>10</td>
<td>FREE DSCBs</td>
<td>CFREDSCB</td>
<td>character</td>
<td>7</td>
</tr>
<tr>
<td>11</td>
<td>FREE VIRS</td>
<td>CFREVIRS</td>
<td>character</td>
<td>7</td>
</tr>
<tr>
<td>12</td>
<td>DEVICE TYPE</td>
<td>CDEVTYPE</td>
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<td>CFSTWRST</td>
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<td>CSTORGRP</td>
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<td>CCFVLST</td>
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Table 16. Variable Names, Attributes and Lengths for the DASD Volume List Data Columns (continued)

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<th>Length</th>
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</thead>
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<td>38</td>
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<td>CSY07MVS</td>
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<td>39</td>
<td>RESERVED SYSTEM8 SMS</td>
<td>CSY08SMS</td>
<td>character</td>
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<td>40</td>
<td>RESERVED SYSTEM8 MVS</td>
<td>CSY08MVS</td>
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<td>CFRSPTRK</td>
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<td>43</td>
<td>LARGEST EXTENT TRK-MANAGED</td>
<td>CLGEXTRK</td>
<td>character</td>
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</tbody>
</table>

Variable Names, Attributes, and Lengths for the Mountable Optical Volume List

Table 17 lists the variable names, attributes and lengths for the Mountable Optical Volume List data columns.

Table 17. Variable Names, Attributes and Lengths for the Mountable Optical Volume List Data Columns

<table>
<thead>
<tr>
<th>Column Tag</th>
<th>Column Name</th>
<th>Variable Name</th>
<th>Attribute</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>LINE OPERATOR</td>
<td>CLINEOP</td>
<td>character</td>
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<tr>
<td>2</td>
<td>VOLUME SERIAL</td>
<td>COBJ</td>
<td>character</td>
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</tr>
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<td>% USED</td>
<td>CVPUSED</td>
<td>character</td>
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</tr>
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<td>5</td>
<td>FULL STATUS</td>
<td>CVFULLST</td>
<td>character</td>
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</tr>
<tr>
<td>6</td>
<td>VOLUME TYPE</td>
<td>CVVOLTYP</td>
<td>character</td>
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</tr>
<tr>
<td>7</td>
<td>LIBRARY NAME</td>
<td>CVLIBNAM</td>
<td>character</td>
<td>8</td>
</tr>
<tr>
<td>8</td>
<td>SLOT NAME</td>
<td>CVSLOTNM</td>
<td>character</td>
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</tr>
<tr>
<td>9</td>
<td>STORAGE GRP NAME</td>
<td>CVSTGPNM</td>
<td>character</td>
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<tr>
<td>10</td>
<td>LAST WRITTEN DATE</td>
<td>CVLWRITD</td>
<td>character</td>
<td>10</td>
</tr>
<tr>
<td>11</td>
<td>VOLUME MOUNT DATE</td>
<td>CVVOLMDT</td>
<td>character</td>
<td>10</td>
</tr>
<tr>
<td>12</td>
<td>VOLUME EXPIRE DATE</td>
<td>CVVOLEXD</td>
<td>character</td>
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<td>13</td>
<td>VOLUME LOCATION</td>
<td>CVVOLLOC</td>
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<tr>
<td>14</td>
<td>SHELF LOCATION</td>
<td>CVSHLFLLO</td>
<td>character</td>
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<tr>
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<td>17</td>
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<tr>
<td>18</td>
<td>CAPACITY</td>
<td>CVCPCITY</td>
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<tr>
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<td>ENTER OR EJECT DATE</td>
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Variable Names, Attributes, and Lengths for the Mountable Tape Volume List

Table 18 on page 175 lists the variable names, attributes and lengths for the Mountable Tape Volume List data columns.
### Table 18. Variable Names, Attributes and Lengths for the Mountable Tape Volume List Data Columns

<table>
<thead>
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<th>Column Tag</th>
<th>Column Name</th>
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<th>Attribute</th>
<th>Length</th>
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</thead>
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<td>1</td>
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<tr>
<td>2</td>
<td>VOLUME SERIAL</td>
<td>COBJ</td>
<td>character</td>
<td>6</td>
</tr>
<tr>
<td>3</td>
<td>USE ATTRIBUTE</td>
<td>CVUSEATT</td>
<td>character</td>
<td>7</td>
</tr>
<tr>
<td>4</td>
<td>VOLUME ERROR STATUS</td>
<td>CVVERRSTA</td>
<td>character</td>
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<td>CVCHCKPT</td>
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</tr>
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<td>LAST ENTRY/EJECTDATE</td>
<td>CVLEJEND</td>
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</table>

### Variable Names, Attributes, and Lengths for the Management Class List

Table 19 lists the variable names, attributes and lengths for the Management Class List data columns.

### Table 19. Variable Names, Attributes and Lengths for the Management Class List Data Columns

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<th>Attribute</th>
<th>Length</th>
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<td>MGMTCLAS NAME</td>
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<td>CEXPIRNU</td>
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<td>EXPIRE DATE/DAYS</td>
<td>CEXPIRDD</td>
<td>character</td>
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<td>PRIMARY DAYS</td>
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<tr>
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<td>RETAIN DAYS ONLY BACKUP</td>
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</table>
Table 19. Variable Names, Attributes and Lengths for the Management Class List Data Columns (continued)

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<th>Variable Name</th>
<th>Attribute</th>
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<td>TIME SINCE CREATION MONTHS</td>
<td>CTIMESCM</td>
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<td>25</td>
<td>TIME SINCE LAST USE YEARS</td>
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<tr>
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<td>CBKCOPY</td>
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</tbody>
</table>

Variable Names, Attributes, and Lengths for the Data Class List

Table 20 lists the variable names, attributes and lengths for the Data Class List data columns.

Table 20. Variable Names, Attributes and Lengths for the Data Class List Data Columns

<table>
<thead>
<tr>
<th>Column Tag</th>
<th>Column Name</th>
<th>Variable Name</th>
<th>Attribute</th>
<th>Length</th>
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</thead>
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<td>CDS NAME</td>
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<td>LINE OPERATOR</td>
<td>CLINEOP</td>
<td>character</td>
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</tr>
<tr>
<td>2</td>
<td>DATACLAS NAME</td>
<td>COBJ</td>
<td>character</td>
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<td>3</td>
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<td>5</td>
<td>LRECL</td>
<td>CLRRECL</td>
<td>character</td>
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<td>6</td>
<td>KEYLEN</td>
<td>CKEYLEN</td>
<td>character</td>
<td>6</td>
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<tr>
<td>7</td>
<td>KEYOFF</td>
<td>CKEYOFF</td>
<td>character</td>
<td>6</td>
</tr>
<tr>
<td>8</td>
<td>AVGREC</td>
<td>CAVGREC</td>
<td>character</td>
<td>6</td>
</tr>
<tr>
<td>9</td>
<td>AVG VALUE</td>
<td>CAVGVALU</td>
<td>character</td>
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<tr>
<td>10</td>
<td>SPACE PRIMARY</td>
<td>CSPCPRIM</td>
<td>character</td>
<td>7</td>
</tr>
<tr>
<td>11</td>
<td>SPACE SECONDARY</td>
<td>CSPCSEC</td>
<td>character</td>
<td>9</td>
</tr>
<tr>
<td>12</td>
<td>SPACE DIRECTORY</td>
<td>CSPCDIR</td>
<td>character</td>
<td>9</td>
</tr>
<tr>
<td>13</td>
<td>RETPD OR EXPDTE</td>
<td>CRETEXP</td>
<td>character</td>
<td>10</td>
</tr>
<tr>
<td>Column Tag</td>
<td>Column Name</td>
<td>Variable Name</td>
<td>Attribute</td>
<td>Length</td>
</tr>
<tr>
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<td>----------------------</td>
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<td>VOLUME COUNT</td>
<td>CVOLCNT</td>
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<td>15</td>
<td>ADDITIONAL VOLUME AMT</td>
<td>CADDLVOL</td>
<td>character</td>
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<td>16</td>
<td>DYNAMIC VOLUME COUNT</td>
<td>CMVCNT</td>
<td>character</td>
<td>6</td>
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<tr>
<td>17</td>
<td>VSAM SMB</td>
<td>CSMBSP</td>
<td>character</td>
<td>8</td>
</tr>
<tr>
<td>18</td>
<td>CISIZE DATA</td>
<td>CCISIZE</td>
<td>character</td>
<td>6</td>
</tr>
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<td>19</td>
<td>% FREE SPACE CA</td>
<td>CSPACECA</td>
<td>character</td>
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<tr>
<td>20</td>
<td>% FREE SPACE CI</td>
<td>CSPACECI</td>
<td>character</td>
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<td>SHARE XREGION</td>
<td>CXREGION</td>
<td>character</td>
<td>7</td>
</tr>
<tr>
<td>22</td>
<td>SHARE XSYSTEM</td>
<td>CXSYSTEM</td>
<td>character</td>
<td>7</td>
</tr>
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<td>23</td>
<td>LAST MOD USERID</td>
<td>CLUSERID</td>
<td>character</td>
<td>8</td>
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<tr>
<td>25</td>
<td>LAST TIME MODIFIED</td>
<td>CLTIME</td>
<td>character</td>
<td>8</td>
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<td>DATA SET NAME TYPE</td>
<td>CDSNTYPE</td>
<td>character</td>
<td>18</td>
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<td>27</td>
<td>EXTENDED ADDRESSABILITY</td>
<td>CVSAMEXT</td>
<td>character</td>
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<td>28</td>
<td>COMPACTION</td>
<td>CCOMPACT</td>
<td>character</td>
<td>4</td>
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<tr>
<td>29</td>
<td>MEDIA TYPE</td>
<td>CMEDINT</td>
<td>character</td>
<td>6</td>
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<td>30</td>
<td>RECORDING TECHNOLOGY</td>
<td>CRECTEC</td>
<td>character</td>
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<td>31</td>
<td>PERFORMANCE SCALING</td>
<td>CPF5C</td>
<td>character</td>
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<td>REUSE</td>
<td>CVSREUSE</td>
<td>character</td>
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<td>33</td>
<td>INITIAL LOAD</td>
<td>CVSLOAD</td>
<td>character</td>
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<td>34</td>
<td>SPANNED/NONSPANNED</td>
<td>CSPANNED</td>
<td>character</td>
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<td>35</td>
<td>BWO</td>
<td>CBWO</td>
<td>character</td>
<td>8</td>
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<td>36</td>
<td>LOG</td>
<td>CLOG</td>
<td>character</td>
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<td>37</td>
<td>LOGSTREAM ID</td>
<td>CLOGSMID</td>
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<tr>
<td>38</td>
<td>SPACE CONSTRAINT RELIEF</td>
<td>CSCR</td>
<td>character</td>
<td>3</td>
</tr>
<tr>
<td>39</td>
<td>REDUCE SPACE UP TO</td>
<td>CRSU</td>
<td>character</td>
<td>2</td>
</tr>
<tr>
<td>40</td>
<td>RECORD ACCESS BIAS</td>
<td>CRAB</td>
<td>character</td>
<td>6</td>
</tr>
<tr>
<td>41</td>
<td>BLOCK SIZE LIMIT</td>
<td>CBLMT</td>
<td>character</td>
<td>10</td>
</tr>
<tr>
<td>42</td>
<td>FRLOG</td>
<td>CFRLOG</td>
<td>character</td>
<td>4</td>
</tr>
<tr>
<td>43</td>
<td>RLSCFCACHE</td>
<td>CCFS</td>
<td>character</td>
<td>11</td>
</tr>
<tr>
<td>44</td>
<td>EXTENT CONSTRAINT REMOVAL</td>
<td>CEXTC</td>
<td>character</td>
<td>3</td>
</tr>
<tr>
<td>45</td>
<td>RLS ABOVE THE 2-GB BAR</td>
<td>CA2GB</td>
<td>character</td>
<td>3</td>
</tr>
<tr>
<td>46</td>
<td>OVERRIDE SPACE</td>
<td>COVRD</td>
<td>character</td>
<td>3</td>
</tr>
<tr>
<td>47</td>
<td>SDB</td>
<td>CSDB</td>
<td>character</td>
<td>3</td>
</tr>
<tr>
<td>48</td>
<td>EATTR</td>
<td>CEATTR</td>
<td>character</td>
<td>3</td>
</tr>
<tr>
<td>49</td>
<td>CA RECLAIM</td>
<td>CCAR</td>
<td>character</td>
<td>3</td>
</tr>
<tr>
<td>50</td>
<td>GUARANTEED SPACE REDUCTION</td>
<td>CGSR</td>
<td>character</td>
<td>3</td>
</tr>
</tbody>
</table>

Variable Names, Attributes, and Lengths for the Storage Class List

Table 21 on page 178 lists the variable names, attributes and lengths for the Storage Class List data columns.
Variable Names, Attributes, and Lengths for the Storage Class List Data Columns

<table>
<thead>
<tr>
<th>Column Tag</th>
<th>Column Name</th>
<th>Variable Name</th>
<th>Attribute</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDS NAME (OUTPUT)</td>
<td>FMUVCDSN</td>
<td>character</td>
<td>44</td>
<td></td>
</tr>
<tr>
<td>LINE OPERATOR</td>
<td>CLINEOP</td>
<td>character</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>STORCLAS NAME</td>
<td>COBJ</td>
<td>character</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>DIR RESP (MSEC)</td>
<td>CDIRRESP</td>
<td>character</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>DIR BIAS</td>
<td>CDIRBIAS</td>
<td>character</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>SEQ RESP (MSEC)</td>
<td>CSEQRESP</td>
<td>character</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>SEQ BIAS</td>
<td>CSEQBIAS</td>
<td>character</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>AVAILABILITY</td>
<td>CAVAIL</td>
<td>character</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>GUARANTEED SPACE</td>
<td>CGUARSP</td>
<td>character</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>LAST MOD USERID</td>
<td>CLUSERID</td>
<td>character</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>LAST DATE MODIFIED</td>
<td>CLDATE</td>
<td>character</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>LAST TIME MODIFIED</td>
<td>CLTIME</td>
<td>character</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>GUARANTEED SYNC WRITE</td>
<td>CGUARSYN</td>
<td>character</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>INIT ACC RES</td>
<td>CACCRESP</td>
<td>character</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>ACCESSIBILITY</td>
<td>CACCESS</td>
<td>character</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>SUSTAINED DATA RATE</td>
<td>CSUSTAIN</td>
<td>character</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>CF CACHE SET NAME</td>
<td>CCSET</td>
<td>character</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>CF DIRECT WEIGHT</td>
<td>CDIRW</td>
<td>character</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>CF SEQUENTIAL WEIGHT</td>
<td>CSEQW</td>
<td>character</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>MULTI TIERED SG</td>
<td>CMLTISG</td>
<td>character</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>PARALLEL ACCESS VOLUME</td>
<td>CPAVCAP</td>
<td>character</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>OAM SUBLEVEL</td>
<td>COAMSL</td>
<td>character</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>CF LOCK SET NAME</td>
<td>CCLSET</td>
<td>character</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>DISCONNECT SPHERE AT CLOSE</td>
<td>CDCSP</td>
<td>character</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

Variable Names, Attributes, and Lengths for the Saved ISMF Lists

Table 22 lists the variable names, attributes and lengths for the Saved ISMF Lists data columns.

Table 22. Variable Names, Attributes and Lengths for the Saved ISMF Lists Data Columns

<table>
<thead>
<tr>
<th>Column Tag</th>
<th>Column Name</th>
<th>Variable Name</th>
<th>Attribute</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>LINE OPERATOR</td>
<td>CLINEOP</td>
<td>character</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>LIST NAME</td>
<td>COBJ</td>
<td>character</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>LIST TYPE</td>
<td>CLLTYPE</td>
<td>character</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>LAST DATE MODIFIED</td>
<td>CLDATE</td>
<td>character</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>LAST TIME MODIFIED</td>
<td>CLTIME</td>
<td>character</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>LAST MOD USERID</td>
<td>CLUSERID</td>
<td>character</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>LIST ROW COUNT</td>
<td>CLLRCNT</td>
<td>character</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>LIST UPDATES</td>
<td>CLLUPD</td>
<td>character</td>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>

The first character of the special symbols used to represent errors in the data columns is replaced with the hexadecimal value listed in Table 23 on page 179.
Table 23. Characters for Special Symbols that Represent Errors

<table>
<thead>
<tr>
<th>Symbol</th>
<th>First Character</th>
</tr>
</thead>
<tbody>
<tr>
<td>–</td>
<td>X'13'</td>
</tr>
<tr>
<td>?</td>
<td>X'11'</td>
</tr>
<tr>
<td>&gt;</td>
<td>X'FB'</td>
</tr>
<tr>
<td>&lt;</td>
<td>X'14'</td>
</tr>
</tbody>
</table>

Variables That Supply Information about Selection Criteria

The shared variable pool contains variables that allow your CLIST to access the selection criteria information. There is a variable assigned to each of the data entry fields on the selection panels for every application. The selection variables resolve to the value entered in the field. You can use these variables in your CLIST to supply this information. The tables on pages Table 24 through Table 37 on page 187 list the variables for the data entry fields on an application selection or entry panel.

Table 24 lists the variable names, attributes and lengths for the data columns on page 1 of the Data Set Selection Panel.

Table 24. Variable Names, Attributes, and Lengths for the Data Columns for Page 1 of the Data Set Selection Panel

<table>
<thead>
<tr>
<th>Selection Criteria</th>
<th>Variable Name</th>
<th>Attribute</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOURCE OF GENERATED LIST</td>
<td>FDDSSSGL</td>
<td>character</td>
<td>1</td>
</tr>
<tr>
<td>SAVED LIST NAME</td>
<td>FDDSGSLN</td>
<td>character</td>
<td>8</td>
</tr>
<tr>
<td>DATA SET NAME</td>
<td>FDDDSDSNM</td>
<td>character</td>
<td>46</td>
</tr>
<tr>
<td>SPECIFY SOURCE OF NEW LIST</td>
<td>FDDSSSNL</td>
<td>character</td>
<td>1</td>
</tr>
<tr>
<td>LIST FROM VTOC VOLUME SERIAL NUMBER</td>
<td>FDDSVSN1</td>
<td>character</td>
<td>6</td>
</tr>
<tr>
<td>CATALOG NAME</td>
<td>FDDSCTLN</td>
<td>character</td>
<td>44</td>
</tr>
<tr>
<td>CATALOG PASSWORD</td>
<td>FDDSCTLP</td>
<td>character</td>
<td>8</td>
</tr>
<tr>
<td>VOLUME SERIAL NUMBER UNDER CTLG</td>
<td>FDDSVSN2</td>
<td>character</td>
<td>6</td>
</tr>
<tr>
<td>ACQUIRE DATA FROM VOLUME</td>
<td>FDDSAADV</td>
<td>character</td>
<td>1</td>
</tr>
<tr>
<td>ACQUIRE DATA IF DFSMShsm MIGRATED</td>
<td>FDDSAADHM</td>
<td>character</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 25 lists the variable names, attributes and lengths for the data columns on page 2 of the Data Set Selection Panel.

Table 25. Variable Names, Attributes, and Lengths for Page 2 of the Data Set Selection Panel

<table>
<thead>
<tr>
<th>Selection Criteria</th>
<th>Field</th>
<th>Variable Name</th>
<th>Attribute</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALLOCATED SPACE</td>
<td>REL OP 1</td>
<td>FDDSASR1</td>
<td>character</td>
<td>2</td>
</tr>
<tr>
<td>VALUE 1</td>
<td>FDDSASV1</td>
<td>character</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>CONNECTOR</td>
<td>FDDSAS1</td>
<td>character</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>REL OP 2</td>
<td>FDDSASR2</td>
<td>character</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>VALUE 2</td>
<td>FDDSASV2</td>
<td>character</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>BLOCK/CI SIZE</td>
<td>REL OP 1</td>
<td>FDDSBMR1</td>
<td>character</td>
<td>2</td>
</tr>
<tr>
<td>VALUE 1</td>
<td>FDDSBMV1</td>
<td>character</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>CONNECTOR</td>
<td>FDDSB1</td>
<td>character</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>REL OP 2</td>
<td>FDDSBMR2</td>
<td>character</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>VALUE 2</td>
<td>FDDSBMV2</td>
<td>character</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>BLOCK UNUSED</td>
<td>REL OP 1</td>
<td>FDDSBUR1</td>
<td>character</td>
<td>2</td>
</tr>
<tr>
<td>VALUE 1</td>
<td>FDDSBUV1</td>
<td>character</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>CONNECTOR</td>
<td>FDDSB3</td>
<td>character</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>REL OP 2</td>
<td>FDDSBUR2</td>
<td>character</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>VALUE 2</td>
<td>FDDSBUV2</td>
<td>character</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>
### Table 25. Variable Names, Attributes, and Lengths for Page 2 of the Data Set Selection Panel (continued)

<table>
<thead>
<tr>
<th>Selection Criteria</th>
<th>Field</th>
<th>Variable Name</th>
<th>Attribute</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>CREATION DATE</td>
<td>REL OP 1</td>
<td>FDDSCDR1</td>
<td>character</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>VALUE 1</td>
<td>FDDSCDV1</td>
<td>character</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>CONNECTOR</td>
<td>FDDS1I</td>
<td>character</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>REL OP 2</td>
<td>FDDSCDR2</td>
<td>character</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>VALUE 2</td>
<td>FDDSCDV2</td>
<td>character</td>
<td>10</td>
</tr>
<tr>
<td>EXPIRATION DATE</td>
<td>REL OP 1</td>
<td>FDDSEDRI</td>
<td>character</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>VALUE 1</td>
<td>FDDSEDV1</td>
<td>character</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>CONNECTOR</td>
<td>FDDS15</td>
<td>character</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>REL OP 2</td>
<td>FDDSEDRI</td>
<td>character</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>VALUE 2</td>
<td>FDDSEDV2</td>
<td>character</td>
<td>10</td>
</tr>
<tr>
<td>LAST BACKUP DATE</td>
<td>REL OP 1</td>
<td>FDDSBDR1</td>
<td>character</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>VALUE 1</td>
<td>FDDSBDV1</td>
<td>character</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>CONNECTOR</td>
<td>FDDS1D</td>
<td>character</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>REL OP 2</td>
<td>FDDSBDR2</td>
<td>character</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>VALUE 2</td>
<td>FDDSBDV2</td>
<td>character</td>
<td>10</td>
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Table 26 on page 181 lists the variable names, attributes and lengths for the data columns on page 3 of the Data Set Selection Panel.
### Table 26. Variable Names, Attributes, and Lengths for Page 3 of the Data Set Selection Panel

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Table 27 lists the variable names, attributes and lengths for the data columns on page 4 of the Data Set Selection Panel.

### Table 27. Variable Names, Attributes, and Lengths for Page 4 of the Data Set Selection Panel

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Table 27. Variable Names, Attributes, and Lengths for Page 4 of the Data Set Selection Panel (continued)

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</table>

Table 28 lists the variable names, attributes and lengths for the data columns on page 5 of the Data Set Selection Panel.

Table 28. Variable Names, Attributes, and Lengths for Page 5 of the Data Set Selection Panel

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Table 28. Variable Names, Attributes, and Lengths for Page 5 of the Data Set Selection Panel (continued)

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Variable Names, Attributes, and Lengths for DASD Volume Selection Panels

Table 29 lists the variable names, attributes and lengths for the data columns on page 1 of the DASD Volume Selection Panel.

Table 29. Variable Names, Attributes, and Lengths for Page 1 of the DASD Volume Selection Panel

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<th>Length</th>
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Table 30 on page 184 lists the variable names, attributes and lengths for the data columns on page 2 of the DASD Volume Selection Panel.
### Table 30. Variable Names, Attributes, and Lengths for Page 2 of the DASD Volume Selection Panel

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[Table 31 on page 185](#) lists the variable names, attributes and lengths for the data columns on page 3 of the DASD Volume Selection Panel.
Table 31. Variable Names, Attributes, and Lengths for Page 3 of the DASD Volume Selection Panel

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</table>

Variable Names, Attributes, and Lengths for the Mountable Optical Volume Lists

Table 32 lists the variable names, attributes and lengths for the data columns on the Mountable Optical Volume List Selection Panel.

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Table 32. Variable Names, Attributes, and Lengths for the Mountable Optical Volume List Selection Panel (continued)

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<thead>
<tr>
<th>Selection Criteria</th>
<th>Variable Name</th>
<th>Attribute</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>VOLUME SERIAL NUMBER</td>
<td>FVOVVMSN</td>
<td>character</td>
<td>6</td>
</tr>
<tr>
<td>LIBRARY NAME</td>
<td>FVOVLBN</td>
<td>character</td>
<td>8</td>
</tr>
<tr>
<td>STORAGE GROUP NAME</td>
<td>FVOVSTGP</td>
<td>character</td>
<td>8</td>
</tr>
<tr>
<td>OPTICAL MEDIA TYPE</td>
<td>FVOVMDTP</td>
<td>character</td>
<td>8</td>
</tr>
<tr>
<td>RESPECIFY SORT CRITERIA</td>
<td>FVOVSORT</td>
<td>character</td>
<td>1</td>
</tr>
<tr>
<td>RESPECIFY VIEW CRITERIA</td>
<td>FVOVVIEW</td>
<td>character</td>
<td>1</td>
</tr>
</tbody>
</table>

Variable Names, Attributes, and Lengths for the Mountable Tape Volume Lists

Table 33 lists the variable names, attributes and lengths for the data columns on the Mountable Tape Volume List Selection Panel.

Table 33. Variable Names, Attributes, and Lengths for the Mountable Tape Volume List Selection Panel

<table>
<thead>
<tr>
<th>Selection Criteria</th>
<th>Variable Name</th>
<th>Attribute</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>SELECT SOURCE TO GENERATE VOLUME LIST</td>
<td>FTTVSSLG</td>
<td>character</td>
<td>1</td>
</tr>
<tr>
<td>LIST NAME</td>
<td>FTTVLTMN</td>
<td>character</td>
<td>8</td>
</tr>
<tr>
<td>VOLUME SERIAL NUMBER</td>
<td>FTTVVMSN</td>
<td>character</td>
<td>6</td>
</tr>
<tr>
<td>LIBRARY NAME</td>
<td>FTTVLBN</td>
<td>character</td>
<td>8</td>
</tr>
<tr>
<td>STORAGE GROUP NAME</td>
<td>FTTVSTGP</td>
<td>character</td>
<td>8</td>
</tr>
<tr>
<td>RESPECIFY SORT CRITERIA</td>
<td>FTTVSORT</td>
<td>character</td>
<td>1</td>
</tr>
<tr>
<td>RESPECIFY VIEW CRITERIA</td>
<td>FTTVVIEW</td>
<td>character</td>
<td>1</td>
</tr>
</tbody>
</table>

Variable Names, Attributes, and Lengths for the Saved ISMF Lists

Table 34 lists the variable names, attributes and lengths for the data columns on the Saved List Filter Entry Panel.

Table 34. Variable Names, Attributes, and Lengths for the Saved List Filter Entry Panel

<table>
<thead>
<tr>
<th>Selection Criteria</th>
<th>Field</th>
<th>Variable Name</th>
<th>Attribute</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIST NAME</td>
<td>REL OP</td>
<td>FLFILSNM</td>
<td>character</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>VALUE 1</td>
<td>FLFILUSR1</td>
<td>character</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>VALUE 2</td>
<td>FLFILUSV1</td>
<td>character</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>VALUE 3</td>
<td>FLFILUSRV2</td>
<td>character</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>VALUE 4</td>
<td>FLFILUSRV3</td>
<td>character</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>VALUE 5</td>
<td>FLFILUSRV4</td>
<td>character</td>
<td>8</td>
</tr>
<tr>
<td>LIST TYPE</td>
<td>REL OP</td>
<td>FLFITPR1</td>
<td>character</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>VALUE 1</td>
<td>FLFITPV1</td>
<td>character</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>VALUE 2</td>
<td>FLFITPV2</td>
<td>character</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>VALUE 3</td>
<td>FLFITPV3</td>
<td>character</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>VALUE 4</td>
<td>FLFITPV4</td>
<td>character</td>
<td>8</td>
</tr>
<tr>
<td>LAST MOD USERID</td>
<td>REL OP 1</td>
<td>FLFIDTR1</td>
<td>character</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>VALUE 1</td>
<td>FLFIDTV1</td>
<td>character</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>CONNECTOR</td>
<td>FLFIDTAC</td>
<td>character</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>REL OP 2</td>
<td>FLFIDTR2</td>
<td>character</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>VALUE 2</td>
<td>FLFIDTV2</td>
<td>character</td>
<td>10</td>
</tr>
</tbody>
</table>
Table 34. Variable Names, Attributes, and Lengths for the Saved List Filter Entry Panel (continued)

<table>
<thead>
<tr>
<th>Selection Criteria</th>
<th>Field</th>
<th>Variable Name</th>
<th>Attribute</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>LAST TIME MODIFIED</td>
<td>REL OP 1</td>
<td>FLFITIR1</td>
<td>character</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>VALUE 1</td>
<td>FLFITIV1</td>
<td>character</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>CONNECTOR</td>
<td>FLFITIAO</td>
<td>character</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>REL OP 2</td>
<td>FLFITIR2</td>
<td>character</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>VALUE 2</td>
<td>FLFITIV2</td>
<td>character</td>
<td>5</td>
</tr>
<tr>
<td>LIST ROW COUNT</td>
<td>REL OP 1</td>
<td>FLFIRCR1</td>
<td>character</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>VALUE 1</td>
<td>FLFIRCV1</td>
<td>character</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>CONNECTOR</td>
<td>FLFIRCAO</td>
<td>character</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>REL OP 2</td>
<td>FLFIRCR2</td>
<td>character</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>VALUE 2</td>
<td>FLFIRCV2</td>
<td>character</td>
<td>7</td>
</tr>
<tr>
<td>LIST UPDATES</td>
<td>REL OP 1</td>
<td>FLFIUCR1</td>
<td>character</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>VALUE 1</td>
<td>FLFIUCV1</td>
<td>character</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>CONNECTOR</td>
<td>FLFIUCAO</td>
<td>character</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>REL OP 2</td>
<td>FLFIUCR2</td>
<td>character</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>VALUE 2</td>
<td>FLFIUCV2</td>
<td>character</td>
<td>7</td>
</tr>
</tbody>
</table>

Variable Names, Attributes, and Lengths for Storage Management Subsystem Classes

Table 35 lists the variable names, attributes and lengths for the data columns on the Management Class Selection Panel.

Table 35. Variable Names, Attributes, and Lengths for the Management Class Selection Panel

<table>
<thead>
<tr>
<th>Selection Criteria</th>
<th>Variable Name</th>
<th>Attribute</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDS NAME (with quotation marks)</td>
<td>FMUVCDSQ</td>
<td>character</td>
<td>46</td>
</tr>
<tr>
<td>CDS NAME (with user ID)</td>
<td>FMUVCDSN</td>
<td>character</td>
<td>44</td>
</tr>
<tr>
<td>MANAGEMENT CLASS NAME</td>
<td>FCMCSCN</td>
<td>character</td>
<td>8</td>
</tr>
<tr>
<td>SELECT ONE OF THE FOLLOWING OPTIONS</td>
<td>FCMSLON</td>
<td>character</td>
<td>1</td>
</tr>
<tr>
<td>RESPECIFY SORT CRITERIA</td>
<td>FCMSORT</td>
<td>character</td>
<td>1</td>
</tr>
<tr>
<td>RESPECIFY VIEW CRITERIA</td>
<td>FCMSVIEW</td>
<td>character</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 36 lists the variable names, attributes and lengths for the data columns on the Data Class Selection Panel.

Table 36. Variable Names, Attributes, and Lengths for the Data Class Selection Panel

<table>
<thead>
<tr>
<th>Selection Criteria</th>
<th>Variable Name</th>
<th>Attribute</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDS NAME (with quotation marks)</td>
<td>FMUVCDSQ</td>
<td>character</td>
<td>46</td>
</tr>
<tr>
<td>CDS NAME (with user ID)</td>
<td>FMUVCDSN</td>
<td>character</td>
<td>44</td>
</tr>
<tr>
<td>DATA CLASS NAME</td>
<td>FCDCDCN</td>
<td>character</td>
<td>8</td>
</tr>
<tr>
<td>SELECT ONE OF THE FOLLOWING OPTIONS</td>
<td>FCDCSLON</td>
<td>character</td>
<td>1</td>
</tr>
<tr>
<td>RESPECIFY SORT CRITERIA</td>
<td>FCDCSORT</td>
<td>character</td>
<td>1</td>
</tr>
<tr>
<td>RESPECIFY VIEW CRITERIA</td>
<td>FCDCVIEW</td>
<td>character</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 37 lists the variable names, attributes and lengths for the data columns on the Storage Class Selection Panel.

Table 37. Variable Names, Attributes, and Lengths for the Storage Class Selection Panel

<table>
<thead>
<tr>
<th>Selection Criteria</th>
<th>Variable Name</th>
<th>Attribute</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDS NAME (with quotation marks)</td>
<td>FMUVCDSQ</td>
<td>character</td>
<td>46</td>
</tr>
<tr>
<td>CDS NAME (with user ID)</td>
<td>FMUVCDSN</td>
<td>character</td>
<td>44</td>
</tr>
</tbody>
</table>
Table 37. Variable Names, Attributes, and Lengths for the Storage Class Selection Panel (continued)

<table>
<thead>
<tr>
<th>Selection Criteria</th>
<th>Variable Name</th>
<th>Attribute</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>STORAGE CLASS NAME</td>
<td>FCSCSCN</td>
<td>character</td>
<td>8</td>
</tr>
<tr>
<td>SELECT ONE OF THE FOLLOWING OPTIONS</td>
<td>FCSCSLOP</td>
<td>character</td>
<td>1</td>
</tr>
<tr>
<td>RESPECIFY SORT CRITERIA</td>
<td>FCSCSORT</td>
<td>character</td>
<td>1</td>
</tr>
<tr>
<td>RESPECIFY VIEW CRITERIA</td>
<td>FCSCVIEW</td>
<td>character</td>
<td>1</td>
</tr>
</tbody>
</table>
Appendix C. Customizing the Interactive Storage Management Facility

This appendix contains diagnosis, modification, or tuning information.

General Guidance

Because ISMF was written using the procedures described in *ISPF Dialog Management Services* it can be modified using the same techniques. DFSMSdss/ISMF, DFSMSHsm/ISMF, ICKDSF/ISMF, and DFSORT/ISMF can also be modified with these techniques. IBM provides replaceable modules that allow you to extend the function of ISMF.

Restrictions to Customizing

Before you change ISMF, you must be aware of the following three restrictions:

- Make a backup copy of ISMF before you make any changes. Keep this unmodified version of the product for diagnostic purposes. IBM support and maintenance are provided for only the unmodified version of ISMF.
- Do not delete or rename any of the parts of ISMF. Deleting or renaming a part could severely impact processing, or cause ISMF to fail.
- ISMF is copyrighted. Under the IBM licensing agreement you may modify ISMF for your own use. You may not modify it for commercial resale.

Other restrictions apply to the individual parts. These are presented with the detailed descriptions of how to modify each part throughout the remainder of this section.

The Parts of ISMF That You Can Customize

ISMF allows you to customize the following parts for all ISMF applications:

- Panels
- Messages
- Job skeletons
- Command tables
- CLISTs

The parts are shipped in individual libraries. The changes you can make to each library are discussed in “The Panel Library.”

The Panel Library

ISMF allows you to make the following changes to the panel library:

- Change the initial priming values that ISMF ships
- Change the default values for data entry panels
- Provide additional restrictions to values entered for certain fields on panels
- Remove fields from functional panels
- Change highlighting and color
- Change the format of the panel
- Modify existing functional panel text and help text
- Add new fields to panels
- Add new panels
The Message Library

In the message library you can modify existing messages and add new messages.

The Skeleton Library

In the skeleton library you can modify the job skeletons for ISMF commands and line operators.

The Table Library

In the table library you can modify the ISPF command tables.

The Load Library

In the load library you can modify the ISMF command and line operator tables. The tables are contained in nonexecutable CSECTs in the load library.

The CLIST Library

In the CLIST library you can modify the options on the CLIST CONTROL statement.

Finding the Libraries You Want to Customize

If you are currently running ISMF, you can use the procedures described in this section to find the ISMF libraries you want to customize. If you are not running ISMF, and you need information about linking to the correct libraries, these books will help you:

- z/OS DFSORT Installation and Customization
- ICKDSF System Control Programming Specifications

Once you are linked to ISMF, the method you use to find the ISMF libraries depends on the library you want to modify.

Panel, Message, Skeleton, and Table Libraries

To find the correct libraries for panels, messages, skeletons, and tables, use the TSO LISTALC STATUS command to determine the data set name associated with the DDNAME for the library. Table 38 lists the DDNAMEs that ISMF uses:

<table>
<thead>
<tr>
<th>Library</th>
<th>DDNAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Panel</td>
<td>ISPPLIB</td>
</tr>
<tr>
<td>Message</td>
<td>ISPMLIB</td>
</tr>
<tr>
<td>Skeleton</td>
<td>ISPSLIB</td>
</tr>
<tr>
<td>Table</td>
<td>ISPTLIB</td>
</tr>
</tbody>
</table>

Notes:
1. Input table library
2. Output table library
Load and CLIST Library

The placement of the load library and the CLIST library is determined by the way ISMF is installed. The CLIST library DDNAME is SYSPROC. The load library may be given a DDNAME ISPLLIB or STEPLIB, or it may be made a part of the link pack area or the system link library.

Restriction: You cannot allocate the load library using the ISPF/PDF LIBDEF service because ISMF issues the LOAD macro.

Table 39 lists the DDNAME for the CLIST library and location or DDNAME for the load library.

Table 39. DDNAMEs or Locations for the Load and CLIST Libraries

<table>
<thead>
<tr>
<th>Library</th>
<th>Location/DDNAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Load</td>
<td>ISPLLIB or STEPLIB or System link library or Link pack area</td>
</tr>
<tr>
<td>CLIST</td>
<td>SYSPROC</td>
</tr>
</tbody>
</table>

Making and Testing Changes

The best way to make and test changes in any of the ISMF libraries is to copy the member you want to modify from the ISMF library into a personal library. Add your library to the beginning of the existing concatenation that you or your installation uses. This ensures that you can safely make changes without impacting the other libraries in the concatenation.

Once you’ve tested the changes, you can then change the concatenation to make the modified part available to a larger group of people, your department for example. If you want the change to be used by the entire installation, you can copy the member from your personal library back into the ISMF library.

For members of the panel, message, skeleton, table, and CLIST libraries you can note the changes in the comment section at the beginning of the modified member. Remember to keep an unmodified copy for service and maintenance.

Exception: The load library is an exception to the above guidelines. The methods you can use to modify the static text and ISMF tables in the load library are discussed in "Customizing the ISMF Command and Line Operator Tables" on page 207.

Customizing Panels

This section describes how to customize panels. It explains the changes you can make in the panel library. There are several restrictions to keep in mind both as you plan the way you want to customize panels, and as you use the procedures described in this chapter. They are listed at the beginning of each section.

The panel examples shown on the following pages are scaled for a terminal size of 24 lines by 80 columns.

Before you begin, read the following restrictions.
Restrictions

- If you decide to change the initial priming values or default values on data entry or data selection panels, the new values must be set to run through the same verification code as the values supplied by ISMF. Otherwise, you may pass a value that is invalid.
- If you remove a field from a panel by removing it from the )BODY section of the panel, you still need to supply an acceptable value for it in the )PROC section.
- You can add new fields to existing panels, or create new panels, but ISMF will not have reference to them.
- You cannot move input fields from one panel to another.
- You can change the format of most ISMF panels. However, if you decide to modify the FILTER Entry Panel or the SORT Entry Panel, you should look carefully at the validity checking in the )PROC section. The checking on these panels is done from left to right; changing the order of the input fields on these panels might impact the processing of values entered on the panels.
- ISPF can display screens with a maximum of 24 lines. So, even if you use terminals that can display larger panels, you should be careful not to increase the number of lines in the )BODY section beyond 24. If the )BODY section is larger than 24 lines, the panel display will fail.
- ISMF entry panels for Data Set and Volume Applications are designed to display default values if the user blanks out any of the fields on the panel. ISMF entry panels for all other applications display blanks if user blanks out any of the fields on the panel. In either case, because of the cursor positioning, you should preserve the order of the statements in the )PROC section that control the default redisplay. The )PROC section of each entry panel contains comments that identify the statements that should be kept in order.

Finding the Panel You Want to Change

Most of the changes you can make to ISMF panels are done in the panel library. The member name for an individual panel in the library is the panel ID that appears in the upper left hand corner of the panel when you use the ISPF PANELID command (see Figure 137).

```
Panel Defaults Utilities Scroll Help
---------------------------------------------------------------
DGTD0051 DATA SET SELECTION ENTRY PANEL
COMMAND ===>
```

Figure 137. Displaying the Panel ID

Testing the Changes

There are three ways to test the changes you have made:
- Invoke ISPF in test mode.
  This causes ISPF to refresh the panel when you display it after you’ve made changes.
- Test your changes using the ISPF Dialog Test option.
  This causes ISPF to refresh the panel when you display it after you’ve made changes.
- Make your changes and then exit and reinvoke ISPF.
  When you invoke ISMF the modified panel is displayed.
Changing Initial Priming Values on Data Entry Panels

The initial priming values for data entry panels are controlled by the )INIT section of each panel, with the exception of the profile entry panels. When you invoke a panel, ISPF executes the )INIT section before displaying the panel. The statements in the )INIT section look at the value stored in the application profile pool (APP) for each field on the panel. If the value in the APP is blank, ISPF substitutes the value from the )INIT section of the panel. Because the initial priming values for the profile entry panels are already stored in the APP, they cannot be changed.

To change the priming values for a particular panel, you change the statements in the )INIT section of that panel. For example, Figure 138 is the Delete Entry Panel as it is initially displayed.

Figure 139 on page 194 shows the priming values from the )INIT section of the panel.

For example, the following statement states that if the value for SCRATCH DATA SET is blank in the APP, ISMF substitutes a Y when the )INIT section is executed before the panel is displayed:

```
IF (&FDDLSCDS = '') &FDDLSCDS = 'Y'
```

If you want that field to be primed with an N, you can change the statement to read:

```
IF (&FDDLSCDS = '') &FDDLSCDS = 'N'
```
Changing Default Values for Data Entry Panels

When you blank out fields on a Data Set or Volume Application data entry panel, ISMF supplies the defaults. The defaults come from the statements in the )PROC section of each entry panel. Figure 140 shows the default values in the )PROC section of the Delete Entry Panel.

Restricting Values for Specific Input Fields

The )PROC section also checks each value entered on a panel to make sure that it is valid. Figure 141 on page 195 is the first page of the Data Set Selection Entry Panel. Figure 142 on page 196 shows the validity checking that ISMF does for the values entered on this panel.
For a Data Set List, Select Source of Generated List . . 2 (1 or 2)

1 Generate from a Saved List
   Query Name To
   List Name ... Save or Retrieve

2 Generate a new list from criteria below
   Data Set Name ...**
   Enter */" to select option Generate Exclusive list
   Specify Source of the new list ... 2 (1 - VTOC, 2 - Catalog)
   1 Generate list from VTOC
      Volume Serial Number ...
      (fully or partially specified)
   2 Generate list from Catalog
      Catalog Name ...
      Catalog Password ... (if password protected)
      Volume Serial Number ...
      (fully or partially specified)
   Acquire Data from Volume ...
   Acquire Data if DFSMShsm Migrated ...
   N (Y or N)

Use ENTER to Perform Selection; Use DOWN Command to View next Selection
Use HELP Command for Help; Use END Command to Exit.

Figure 141. Page 1 of the Data Set Selection Entry Panel
If you want to further restrict valid values for any of the fields on the panel, you can add your own statements to the part of the )PROC section that does validity checking. For example, to prevent users from accessing the system residence volume, you could add a statement that makes ‘******’ an invalid entry for the VOLUME SERIAL NUMBER field. The format of the statement would be:

```c
IF (&FDDSVSN1 = '******')
   VER (&FDDSVSN1 LIST '' MSG=XXXXXXXX)
```

The message ID, XXXXXXX, is a message you have added explaining the restriction. In this case the user will not be able to generate a data set list until the value in the VOLUME SERIAL NUMBER field is valid. For more information on creating messages, see “Customizing Messages” on page 203, and ISPF Dialog Management Services.
Removing Fields

You can remove a field from a panel by deleting it from the \texttt{BODY} section of the coding for the panel. However, you should keep in mind that there may be more work involved than simply deleting the field. When you plan to remove a field you should look carefully at the \texttt{INIT} and \texttt{PROC} sections of the panel to see how that field is referenced. To accommodate changes you make to the body of the panel, you may need to modify the statements for defaulting in the \texttt{INIT} and \texttt{PROC} sections, and the verification code in the \texttt{PROC} section. For example, to remove the CATALOG NAME field from the Data Set Selection Entry Panel, you would look at the code from the panel that applies to CATALOG NAME:

1. The initial default value supplied by the \texttt{INIT} section
2. The default supplied by the \texttt{PROC} section if the user enters a blank
3. The verification code that corresponds to the field

Because ISMF does not ship a default for CATALOG NAME in the APP, and both of the default statements supply a blank, as follows, you do not need to modify either of the default statements to remove the field:

\begin{verbatim}
IF (\&FDDSCTLN = '') &FDDSCTLN = '
\end{verbatim}

Changing Verification Code

You need to change the verification code. The code that applies to the CATALOG NAME field is

\begin{verbatim}
IF (\&FDSSSGSL = '2')
  VER (\&FDDSNSM NB)
  VER (\&FDDSNSL NB LIST 1 2)
IF (\&FDDSNSL = '1')
  VER (\&FDSSVSN1 NB)
  IF (\&FDSSVSN1 = 'x')
    VER (\&FDSSVSN1 LIST '' MSG=DGTUV019)
IF (\&FDDSNSNL = '2')
  &DSNCK1 = TRUNC(\&FDDSNSM,',')
  IF (\&DSNCK1 = 'x','**','*','**'')
    VER (\&FDDSCTLN NB)
  IF (\&ZPREFIX = '')
    IF (\&DSNCK1 = 'x','**')
      VER (\&FDDSCTLN NB)
\end{verbatim}

If option 2 is specified for SELECT SOURCE OF GENERATED LIST (the variable \&FDSSSGSL) and the data set name (the variable \&DSNCK1) is either quoted with an asterisk as the high level qualifier ('*.LOAD'), or a quoted double asterisk ('**'), the code checks to ensure that a catalog name has been supplied. Thus to remove the CATALOG NAME field from the panel you need to change the verification code. The new code should refer to a message explaining that for a list generated from the catalog, 'x' and '**' are not valid ways of specifying the data set name:

\begin{verbatim}
IF (\&DSNCK1 = 'x','**','x','**')
  .MSG = XXXXXXX
\end{verbatim}
Highlighting and Color

The highlighting and color on ISMF panels are controlled by the statements in the )ATTR section of the panel.

For highlighting, the attribute characters are set explicitly by ISMF. For example:

```
^ TYPE(INPUT) INTENS(NON)
$ TYPE(INPUT) INTENS(HIGH) JUST(RIGHT)
+ TYPE(TEXT) INTENS(LOW) SKIP(ON)
% TYPE(TEXT) INTENS(HIGH) SKIP(ON)
```

Color is based on ISPF defaults for the protection and intensity attributes specified with the TYPE and INTENS keywords. Color is also dependent on the hardware capabilities of the terminals you use. Table 40 shows the ISPF defaults.

<table>
<thead>
<tr>
<th>Color</th>
<th>Field Type</th>
<th>Intensity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>input</td>
<td>low</td>
</tr>
<tr>
<td>Blue</td>
<td>text/output</td>
<td>low</td>
</tr>
<tr>
<td>Red</td>
<td>input</td>
<td>high</td>
</tr>
<tr>
<td>White</td>
<td>text/output</td>
<td>high</td>
</tr>
</tbody>
</table>

If you want to change the color you can add the COLOR keyword to the statements in the )ATTR section and remove the INTENS keyword. For example, the following statement sets pink as the color for the characters entered in fields with the $ attribute:

```
$ TYPE(INPUT) COLOR(PINK)
```

If you code both the INTENS keyword and the COLOR keyword, the COLOR keyword is ignored. For more information on specifying color and highlighting, and how the two are related, see ISPF Dialog Management Services.

Changing the Format

You can change the format of a panel by changing the position of the fields. If you do there are several things to keep in mind:

- **Field Length**: Each field has its own length. When you move a field you need to make sure that you do not change the length. This will ensure that none of the fields on the panel is truncated.

- **Attribute Characters**: Each field starts with an attribute character and ends with another attribute character, or the end of the line. When you move a field, you need to identify the attribute characters and decide whether to modify them to accommodate the change.

- **Autoskip**: The panels are coded to use autoskip to move from one input field to the next. If you move a field, you may need to adjust the attribute characters that control autoskip.

- **Input Fields**: Many of the input fields are grouped together because they supply related information, or because they are dependent on each other. If you move a field, you may need to move some of the fields around it to preserve the structure and logic of the panel.
Validity Checking: The logic of the validity checking in the )PROC section generally matches the order of the fields on the panel; the checking is done from top to bottom. When you move a field, you should make sure the validity checking parallels the new order.

Double Lines for Input Fields: Whenever you move input fields around on a panel, you need to move all the lines associated with that field. For example, for Data Set Application, both the FILTER Entry Panel and the Data Set Selection Entry Panel have fields that allow input on two lines (DATA SET ORGANIZATION, DEVICE TYPE, and RECORD FORMAT). If you move these fields around, you need to move both lines.

Number of Lines in the )BODY Section: ISPF can display screens with a maximum of 24 lines. So, even if you use terminals that can display larger panels, you should be careful not to increase the number of lines in the )BODY section beyond 24. If the )BODY section is larger than 24 lines, panel display will fail.

Modifying Text

You can modify text on any of the functional panels or help panels by editing the )BODY section. Remember that the attribute character to the left and right of the text you are working with controls the field length, spacing, indentation, and centering.

Adding Fields

When you add a field, you need to look at the )ATTR section of the panel and pick an attribute character to make the new field consistent with the rest of the panel. For example, you could use the ISPF ZTIME and ZDATE system variables to display the current time and date on the Data Set List panel. Figure 143 shows the )ATTR section and the original coding for the top of list panel. Figure 144 on page 200 shows the coding for the added fields. The next time you invoke the list panel, it will display the current date and time. Figure 145 on page 200 is the customized list panel as it is displayed.

Figure 143. Original Version of the List Panel

```
+ AREA(DYNAMIC) EXTEND(OFF) SCROLL(OFF)
  ^ TYPE(INPUT) INTENS(NON)
  $ TYPE(INPUT) INTENS(HIGH) JUST(RIGHT)
  ø TYPE(INPUT) INTENS(HIGH) COLOR(GREEN)
  - TYPE(OUTPUT) INTENS(HIGH) SKIP(ON) JUST(ASIS) CAPS(OFF)
  + TYPE(TEXT) INTENS(HIGH) SKIP(ON)
  # TYPE(TEXT) INTENS(LOW) SKIP(ON)
  ! TYPE(DATAOUT) INTENS(LOW) SKIP(ON) /*@LIA*/
)BODY WIDTH(&$SCREENW) EXPAND(//)
+ +DATA SET LIST
  +COMMAND ===>_ZCMD +SCROLL ===>_ZMT+
  + #&FDDSENTR; +DATA SET LIST
  + #&FDDSOUTR; +SCROLL ===>_ZMT+
+ #ENTER LINE OPERATORS BELOW: &FDDSDCOL;
```

Figure 143. Original Version of the List Panel
Creating Panels

You can use the panel definition procedures described in ISPF Dialog Management Services to add your own panels to those provided by ISMF. When you add panels you should consider:

- Assign unique variable names to make sure the names you use do not conflict with existing names, unless the function that uses the new panel runs from a different ISPF function pool.
- For ease-of-use and to prevent errors, make your new panels consistent with ISMF style. Use the same format and operational characteristics. For example, input fields on ISMF panels are denoted by a white or intensified arrow to the left of the field. To avoid confusion, input fields on panels you add should look the same. Or, for example, if you add a functional panel, the ENTER key should start the function.

Modifying Fields on the List Panel

You may modify the following fields on ISMF's List Panel:

1. Column Headings.
2. “Entries” line in the fixed area located in the upper right corner of the ISMF List Panel. See Figure 146 on page 201.
3. “Data Columns” line in the fixed area.
4. “BOTTOM OF DATA” line located at the end of the list.
Knowing What Files to Change When Modifying Column Headings

You can modify the following members of the message library to change the column headings:

<table>
<thead>
<tr>
<th>Application</th>
<th>Member Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Set</td>
<td>DGTDS05, DGTDS06, DGTDS07, DGTDS08, DGTDS09,</td>
</tr>
<tr>
<td></td>
<td>DGTDS10, DGTDS11, DGTDS12, DGTDS13, DGTDS14,</td>
</tr>
<tr>
<td></td>
<td>DGTDS15, DGTDS16, DGTDS17, DGTDS18</td>
</tr>
<tr>
<td>DASD Volume</td>
<td>DGTVA05, DGTVA06, DGTVA07, DGTVA08, DGTVA09,</td>
</tr>
<tr>
<td></td>
<td>DGTVA10, DGTVA11, DGTVA12, DGTVA13, DGTVA14,</td>
</tr>
<tr>
<td></td>
<td>DGTVA15, DGTVA16, DGTVA17, DGTVA18</td>
</tr>
<tr>
<td>Management Class</td>
<td>DGTML00, DGTML01, DGTML02, DGTML03, DGTML04,</td>
</tr>
<tr>
<td></td>
<td>DGTML05, DGTML06, DGTML07, DGTML08, DGTML09,</td>
</tr>
<tr>
<td></td>
<td>DGTML10, DGTML11, DGTML12, DGTML13</td>
</tr>
<tr>
<td>Data Class</td>
<td>DGTBL00, DGTBL01, DGTBL02, DGTBL03, DGTBL04,</td>
</tr>
<tr>
<td></td>
<td>DGTBL05, DGTBL06, DGTBL07, DGTBL08, DGTBL09,</td>
</tr>
<tr>
<td></td>
<td>DGTBL10, DGTBL11, DGTBL12, DGTBL13, DGTBL14</td>
</tr>
<tr>
<td>Storage Class</td>
<td>DGTSC01, DGTSC02, DGTSC03, DGTSC04, DGTSC06</td>
</tr>
<tr>
<td></td>
<td>DGTSC07</td>
</tr>
<tr>
<td>Storage Group</td>
<td>DGTGL00, DGTGL01, DGTGL02, DGTGL03, DGTGL04,</td>
</tr>
<tr>
<td></td>
<td>DGTGL05, DGTGL06, DGTGL07, DGTGL08, DGTGL09,</td>
</tr>
<tr>
<td></td>
<td>DGTGL10, DGTGL11, DGTGL12, DGTGL13</td>
</tr>
<tr>
<td>Aggregate Group</td>
<td>DGTAG05, DGTAG06, DGTAG07, DGTAG08, DGTAG09,</td>
</tr>
<tr>
<td></td>
<td>DGTAG10, DGTAG11, DGTAG12</td>
</tr>
<tr>
<td>Optical Volume</td>
<td>DGTOV01, DGTOV02, DGTOV03, DGTOV04, DGTOV05,</td>
</tr>
<tr>
<td></td>
<td>DFTOV06</td>
</tr>
<tr>
<td>Tape Volume</td>
<td>DGTTV11, DGTTV12, DGTTV13, DGTTV14, DGTTV15,</td>
</tr>
<tr>
<td></td>
<td>DFTTV16, DGTTV17</td>
</tr>
<tr>
<td>Optical Library Configuration</td>
<td>DGTLC01, DGTLC02, DGTLC03, DGTLC04, DGTLC05,</td>
</tr>
<tr>
<td></td>
<td>DGTLC07, DGTLC08</td>
</tr>
<tr>
<td>Optical Drive Configuration</td>
<td>DGTRC01, DGTRC02, DGTRC03, DGTRC04, DGTRC05</td>
</tr>
<tr>
<td>Tape Library Configuration</td>
<td>DGTLM10, DGTLM11, DGTLM12, DGTLM13, DGTLM14,</td>
</tr>
<tr>
<td></td>
<td>DGTLM15, DGTLM16, DGTLM17</td>
</tr>
</tbody>
</table>

Figure 146. ISMF Data Set List Panel
The statements in the fixed area can be modified from the member, DGTFO00, of the message library. The fixed areas that can be modified are identified in items 2 on page 200 and 3 on page 200.

There are five panels for each application, based on terminal size. You can modify one or more of the following members of the panel library to change the "BOTTOM OF DATA" line:

<table>
<thead>
<tr>
<th>Application</th>
<th>Screen Size 24x80</th>
<th>Screen Size 27x132</th>
<th>Screen Size 32x80</th>
<th>Screen Size 43x80</th>
<th>Screen Size 31x160</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Set, folded</td>
<td>DGTLGP11</td>
<td>DGTLGP12</td>
<td>DGTLGP13</td>
<td>DGTLGP14</td>
<td>DGTLGP15</td>
</tr>
<tr>
<td>Data Set, unfolded</td>
<td>DGTLGP41</td>
<td>DGTLGP42</td>
<td>DGTLGP43</td>
<td>DGTLGP44</td>
<td>DGTLGP45</td>
</tr>
<tr>
<td>DASD, Optical, or Tape Volume</td>
<td>DGTLGP31</td>
<td>DGTLGP32</td>
<td>DGTLGP33</td>
<td>DGTLGP34</td>
<td>DGTLGP35</td>
</tr>
<tr>
<td>Data Class, Storage Class, Management Class, Storage Group, Aggregate Group, Optical Library Configuration, Optical Drive Configuration, Tape Library Configuration</td>
<td>DGTLGP21</td>
<td>DGTLGP22</td>
<td>DGTLGP23</td>
<td>DGTLGP24</td>
<td>DGTLGP25</td>
</tr>
<tr>
<td>List</td>
<td>DGTLGP51</td>
<td>DGTLGP52</td>
<td>DGTLGP53</td>
<td>DGTLGP54</td>
<td>DGTLGP55</td>
</tr>
</tbody>
</table>

When ISMF is installed, the message library name is SYS1.DGTMLIB, and the panel library is called SYS1.DGTPLIB.

**Recommendations**

Before you begin to modify panels, consider the following recommendations:

- Do not shorten the column headings.
  
  If you change the headings on the List Entry Panel, you should also change the corresponding fields and text on the selection entry panel, the VIEW and SORT Entry Panels. For Data Set, Volume, and List Applications, you should also change the corresponding fields and text on the FILTER Entry Panel. You should also change the help panels and messages that support these entry panels and the list panel.

- Make copy of the library that you modify, because the next time a link-edit or maintenance is performed on the member you have changed, your change will be lost.

- When editing ISMF libraries, do not change the NUM field in the profile and do not issue the RENUM editing command.

- You can change the wording, but you cannot change the order of the columns or the characters to the left or right of the headings. Also, you cannot add or delete columns.

- The widths of the first two columns are fixed, so any textual changes you make will not alter the size of the fields.

- You can increase the lengths of the headings, as well as modify the text, in the third through the last columns. Be sure to update the lengths associated with the text you lengthen.
If, for example, you would like to change column 10 to say RECORD FORMAT
instead of REC FMT, simply perform these tasks:
1. Access member DGTDS08 of the MESSAGE library (see Figure 147).
2. Enter PROFILE on the command line and verify that NUMBER is set OFF.
3. Replace ' REC ' with 'RECORD' and replace ' FMT ' with 'FORMAT'.
4. Replace the decimal length '5' with '6' (the new length).
5. Pad the tag with dashes. In other words, '(10)-' would become '-(10)-'.
6. Compare your results to Figure 148.

Customizing Messages

This section explains how to modify ISMF messages and how to add your own
messages. It is divided into two sections, "Modifying ISMF Messages," and
"Creating New Messages" on page 205.

Modifying ISMF Messages

This section discusses finding, changing, and creating a message. Some restrictions
to keep in mind follow.

Restrictions

- Do not change the names of any of the variables contained in ISMF messages.
- Do not change the message number.
- Short messages cannot exceed 24 characters.
- Long messages cannot exceed 78 characters.
- Message text can be entered in upper and lower case, but the other fields in the
  message—the message number, variables, keywords, and the help panel
  ID—must be in uppercase.
When you change the text of a message you should change the corresponding message help panel.

**Finding the Message You Want to Change**

To find the message you want to change you need to know the message number. The message number is listed at the top of each message help panel (see Figure 149).

![Figure 149. Identifying the Message Number](image)

Related ISMF short and long messages are stored together in members of the message library. To determine where the message you want to change is stored, truncate the last digit of the message number. This will give you the member name. Thus, the message DGTUS009 is stored in DGTUS00 with other messages that begin with DGTUS00.

**Making the Change**

Once you have identified the member where the message is stored, you are ready to make the change. Modify the message and save your changes. Then modify the message help panel that is pointed to by HELP. For example, to change message DGTUS009, you would edit the message itself in member DGTUS00 and the related text in the message help panel DGTMUS09. Figure 150 shows the entry in the message library for DGTUS009. The HELP field is highlighted.

![Figure 150. Changing the Short and Long Messages](image)
Creating New Messages

You can use the procedures for message definition described in ISPF Dialog Management Services to add your messages to those provided by ISMF. When you add messages you should consider:

**Message numbers:** Make sure that the message numbers you assign do not duplicate existing ones.

**Consistency:** ISMF uses short and long messages, and message help panels to identify errors. If you add short messages, you should add the supporting long messages and message help panels. The style of the message help panels should be consistent with ISMF panels.

Customizing Job Skeletons

This section explains how to tailor the job skeletons that ISMF uses to generate the job streams used by DFSMSdss, ICKDSF, IEBPTPCH, and IDCAMS.

**Restrictions**

- You can remove variables from the skeletons, but you should make sure that a variable you remove from one part of a skeleton isn't needed by some other part.
- Do not change any of the variable names in the skeletons. ISMF code is dependent on these names.
- If you add variables, make sure that the names you use do not duplicate existing ones.

**Finding the Skeleton You Want to Change**

The ISMF skeletons for DFSMSdfp and DFSMSdss line operators and list commands are kept in their respective skeleton libraries. DFSMSdfp and DFSMSdss members begin with DGTK. The remaining characters in the name identify the line operator or command. Thus the member DGTKCY01 contains the job skeleton for the COPY line operator.

**Note:** When ISMF is installed, the skeleton library name is SYS1.DGTSLIB.

**Making the Changes**

There are several ways to customize the ISMF skeletons for DFSMSdfp and DFSMSdss jobs:

- You can add statements to imbed skeletons of your own.
- You can modify the variables in the skeletons to override the input that the skeletons get from the values entered on the data entry and job submission panels.
- You can add pre- and postprocessing steps to the job stream.

For example, if you want to imbed your own skeleton in the ISMF skeleton, you begin by creating the skeleton you want to imbed. The new skeleton might contain statements that add new steps. Then you imbed the name of this skeleton in the original skeleton. The job stream that is generated from the tailored skeleton contains the new steps.
Customizing Tables

This section describes how to customize command tables. It is divided into two sections, "Customizing the ISPF Command Tables" and "Customizing the ISMF Command and Line Operator Tables" on page 207. Restrictions to customizing the tables are listed at the beginning of each section.

Customizing the ISPF Command Tables

This section explains the additions you can make to the ISPF command tables in the table library.

Restrictions

- Do not delete any of the entries in the command tables
- Do not delete any of the tables

Finding the Table You Want to Change

The ISPF command tables are kept in the table library. The tables you can change have a name that ends in CMDS.

Making the Changes

You can make changes to the table library using the ISPF command table utility (option 3.9). Figure 151 is an example of a table displayed using option 3.9.

<table>
<thead>
<tr>
<th>VERB</th>
<th>T</th>
<th>ACTION</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CLEAR</strong></td>
<td>0</td>
<td>PASSTHRU</td>
<td></td>
</tr>
<tr>
<td><strong>COMPRESS</strong></td>
<td>0</td>
<td>PASSTHRU</td>
<td></td>
</tr>
<tr>
<td><strong>COPY</strong></td>
<td>0</td>
<td>PASSTHRU</td>
<td></td>
</tr>
<tr>
<td><strong>DOWN</strong></td>
<td>0</td>
<td>PASSTHRU</td>
<td></td>
</tr>
<tr>
<td><strong>DUMP</strong></td>
<td>0</td>
<td>PASSTHRU</td>
<td></td>
</tr>
<tr>
<td><strong>FILTER</strong></td>
<td>0</td>
<td>PASSTHRU</td>
<td></td>
</tr>
<tr>
<td><strong>FIND</strong></td>
<td>0</td>
<td>PASSTHRU</td>
<td></td>
</tr>
<tr>
<td><strong>LEFT</strong></td>
<td>0</td>
<td>PASSTHRU</td>
<td></td>
</tr>
<tr>
<td><strong>PROFILE</strong></td>
<td>0</td>
<td>PASSTHRU</td>
<td></td>
</tr>
<tr>
<td><strong>RELEASE</strong></td>
<td>0</td>
<td>PASSTHRU</td>
<td></td>
</tr>
<tr>
<td><strong>RESHOW</strong></td>
<td>0</td>
<td>PASSTHRU</td>
<td></td>
</tr>
</tbody>
</table>

Figure 151. Using Command Table Utility to Update ISPF Tables

The command table utility reads the table from ISPTLIB and writes it out to ISPTABL. If you use the utility to update a command table, you should make sure that both libraries use the same data set for the table you want to change. When you add a command to the ISPF command tables, you should also add it to the ISMF tables. The method you use to do this is described in "Customizing the ISMF Command and Line Operator Tables" on page 207.
Controlling Truncation

Truncation is determined by the ZCTTRUNC and the ZTACT fields in the command table. All ISMF commands in the ISPF table are set with a truncation of 0 and an action of PASSTHRU. This passes the entire command to the ISMF dialog for resolution. When you add a command, you should coordinate the truncation value you specify with the values specified for the existing commands in the ISPF tables, the system tables, and the tables for ISMF commands. For more information on the structure of ISPF command tables, and how to alter them, see ISPF Dialog Management Services.

Customizing the ISMF Command and Line Operator Tables

This section explains the changes and additions you can make to the ISMF command and line operator tables in the load library.

Restrictions

- Do not change the name of the command or line operator. You can, however, change the name of the routine that gets control.
- You can replace one of the empty command or line operator tables that ISMF ships with a table of your own, but your table should use the same format as the ISMF tables. The control block, DGTMCTAP, in ISMF Command Table Format DGTMCTAP, contains the format for the command tables. The control block, DGTMLPAP, in ISMF Line Operator Table Format DGTMLPAP, contains the format for the line operator tables. If new commands are added to the tables, ISMF will recognize them.

ISMF Command Table Format DGTMCTAP

<table>
<thead>
<tr>
<th>CTAP</th>
<th>Offsets</th>
<th>Type</th>
<th>Length</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMMAND TABLE - APPLICATION TABLE (CTAP)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 (0) CHARACTER</td>
<td>CTAP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 (0) CHARACTER</td>
<td>CTAPMAIN</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 (0) CHARACTER</td>
<td>CTAPVID</td>
<td>VISUAL ID: 'CTAP'</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 (4) FIXED</td>
<td>CTAPLEN</td>
<td>LENGTH OF CTAP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 (6) FIXED</td>
<td>CTAPCNT</td>
<td># OF COMMAND ENTRIES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 (8) CHARACTER</td>
<td>CTAP(*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 (8) CHARACTER</td>
<td>CTAPNAME</td>
<td>COMMAND NAME</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16 (10) FIXED</td>
<td>CTAPTRUN</td>
<td>MIN. # OF CHARACTERS USED IN TRUNCATION</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17 (11) BITSTRING</td>
<td>CTAPFLAG</td>
<td>FLAG FIELD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1... ....</td>
<td>CTAPST</td>
<td>COMMAND STATUS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>.1... ....</td>
<td>CTAPIMED</td>
<td>IMMEDIATE COMMAND</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>...1 ....</td>
<td>CTAPLIST</td>
<td>LIST COMMAND</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>...1 ....</td>
<td>CTAPACMD</td>
<td>ALTERNATE COMMAND</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>.... 111</td>
<td>CTAPRESERVED</td>
<td>RESERVED</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 (12) CHARACTER</td>
<td>CTAPRTN</td>
<td>COMMAND ROUTINE NAME</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>26 (1A) CHARACTER</td>
<td>CTAPENDM</td>
<td>CMD TERMINATION ROUTINE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>34 (22) BITSTRING</td>
<td></td>
<td>FILL UP END OF WORD</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Constants

<table>
<thead>
<tr>
<th>Length</th>
<th>Type</th>
<th>Value</th>
<th>Name</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>END OF COMMAND TABLE - APPLICATION TABLE (CTAP)</td>
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<td></td>
</tr>
<tr>
<td>BIT 1</td>
<td>CMNDENABL</td>
<td>COMMAND STATUS IS ENABLE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIT 1</td>
<td>CMNDISABL</td>
<td>COMMAND STATUS IS DISABL</td>
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</tr>
</tbody>
</table>

ISMF Line Operator Table Format DGTMLPAP
**Finding the Tables**

The ISMF tables for line operators and commands are kept in the load library. They are grouped by function. Table 41 lists the application member names for line operators. Table 42 on page 210 lists the application member names for commands.

<table>
<thead>
<tr>
<th>Table 41. Member Names for Line Operator Tables</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Function:</strong></td>
</tr>
<tr>
<td><strong>Data Set Member</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>DASD Volume Member</strong></td>
</tr>
<tr>
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<tr>
<td></td>
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<td></td>
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<tr>
<td></td>
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<tr>
<td><strong>Management Class Member</strong></td>
</tr>
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<tr>
<td></td>
</tr>
<tr>
<td><strong>Data Class Member</strong></td>
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<tr>
<td></td>
</tr>
<tr>
<td><strong>Storage Class Member</strong></td>
</tr>
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<td></td>
</tr>
</tbody>
</table>
**Table 41. Member Names for Line Operator Tables (continued)**

<table>
<thead>
<tr>
<th>Function:</th>
<th>DFSMSdfp ISMF</th>
<th>DFSMSHsm ISMF</th>
<th>DFSMSdss ISMF</th>
<th>ICKDSF ISMF</th>
<th>unused</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Storage Group Member</strong></td>
<td>DGTTLPG1</td>
<td>none</td>
<td>none</td>
<td>none</td>
<td>DGTTLPG2</td>
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<tr>
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<td></td>
<td></td>
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<td>DGTTLPG6</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>DGTTLPG7</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td>DGTTLPG8</td>
</tr>
<tr>
<td><strong>Aggregate Group Member</strong></td>
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<td>none</td>
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<td>none</td>
<td>DGTTLPH2</td>
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<td><strong>Optical Volume Member</strong></td>
<td>DGTTLPO1</td>
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<td>none</td>
<td>DGTTLPO2</td>
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<tr>
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<td><strong>Optical Library</strong></td>
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<td>none</td>
<td>none</td>
<td>DGTTLPL2</td>
</tr>
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<td>DGTTLPL8</td>
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<td><strong>Optical Drive</strong></td>
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<td>none</td>
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<td>DGTTLPR2</td>
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<tr>
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<td><strong>Tape Library</strong></td>
<td>DGTTLPY1</td>
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<td>none</td>
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<td>DGTTLPY2</td>
</tr>
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<td>DGTTLPY8</td>
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<tr>
<td><strong>List Application Member</strong></td>
<td>DGTTLPZ1</td>
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<td>none</td>
<td>none</td>
<td>DGTTLPZ2</td>
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<td>DGTTLPZ8</td>
</tr>
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</table>
### Table 41. Member Names for Line Operator Tables (continued)

<table>
<thead>
<tr>
<th>Function:</th>
<th>DFSMSdfp ISMF</th>
<th>DFSMSShm ISMF</th>
<th>DFSMSdss ISMF</th>
<th>ICKDSF ISMF</th>
<th>unused</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mountable Tape Volume Member</td>
<td>DGTTLPT1</td>
<td>none</td>
<td>none</td>
<td>none</td>
<td>DGTTLPT2 DGTTLPT3 DGTTLPT4 DGTTLPT5 DGTTLPT6 DGTTLPT7 DGTTLPT8</td>
</tr>
</tbody>
</table>

### Table 42. Member Names for Command Tables

<table>
<thead>
<tr>
<th>Function:</th>
<th>DFSMSdfp ISMF</th>
<th>DFSMSdss ISMF</th>
<th>NaviQuest</th>
<th>unused</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Set Member</td>
<td>DGTCTD1</td>
<td>DGTCTD2</td>
<td>DGTCTD6</td>
<td>DCTCTD3 DCTCTD4 DCTCTD5 DCTCTD7 DCTCTD8</td>
</tr>
<tr>
<td>DASD Volume Member</td>
<td>DGTCTV1</td>
<td>none</td>
<td>DGTCTV6</td>
<td>DGTCTV2 DCTCTV3 DGTCTV4 DGTCTV5 DGTCTV7 DGTCTV8</td>
</tr>
<tr>
<td>Management Class Member</td>
<td>DGTCTM1 DGTCTM2</td>
<td>none</td>
<td>none</td>
<td>DGTCTM3 DGTCTM4 DGTCTM5 DGTCTM6 DGTCTM7 DGTCTM8</td>
</tr>
<tr>
<td>Data Class Member</td>
<td>DGTCTB1 DGTCTB2</td>
<td>none</td>
<td>none</td>
<td>DGTCTB3 DGTCTB4 DGTCTB5 DGTCTB6 DGTCTB7 DGTCTB8</td>
</tr>
<tr>
<td>Storage Class Member</td>
<td>DGTCTS1 DGTCTS2</td>
<td>none</td>
<td>none</td>
<td>DGTCTS3 DGTCTS4 DGTCTS5 DGTCTS6 DGTCTS7 DGTCTS8</td>
</tr>
<tr>
<td>Storage Group Member</td>
<td>DGTCTG1 DGTCTG2</td>
<td>none</td>
<td>none</td>
<td>DGTCTG3 DGTCTG4 DGTCTG5 DGTCTG6 DGTCTG7 DGTCTG8</td>
</tr>
<tr>
<td>Aggregate Group Member</td>
<td>DGTCTH1 DGTCTH2</td>
<td>none</td>
<td>none</td>
<td>DGTCTH3 DGTCTH4 DGTCTH5 DGTCTH6 DGTCTH7 DGTCTH8</td>
</tr>
<tr>
<td>ACS Member</td>
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<td>none</td>
<td>none</td>
<td>DGTCTA3 DGTCTA4 DGTCTA5 DGTCTA6 DGTCTA7 DGTCTA8</td>
</tr>
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</table>
### Table 42. Member Names for Command Tables (continued)

<table>
<thead>
<tr>
<th>Function</th>
<th>CDS Member</th>
<th>Optical Volume Member</th>
<th>Optical Library Configuration Member</th>
<th>Optical Drive Configuration Member</th>
<th>Tape Library Configuration Member</th>
<th>List Application Member</th>
<th>Mountable Tape Volume Member</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DGTTCTC1 DGTTCTC2 none none</td>
<td>DGTTCTO1 none none</td>
<td>DGTTCTL1 none none</td>
<td>DGTTCTR1 none none</td>
<td>DGTTCTY1 none none</td>
<td>DGTTCTZ1 none none</td>
<td>DGTTCTT1 none none</td>
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<td></td>
<td>DGTTCTC3</td>
<td></td>
<td>DGTTCTL2</td>
<td>DGTTCTR2</td>
<td>DGTTCTY2</td>
<td>DGTTCTZ2</td>
<td>DGTTCTT2</td>
</tr>
<tr>
<td></td>
<td>DGTTCTC4</td>
<td></td>
<td>DGTTCTL3</td>
<td>DGTTCTR3</td>
<td>DGTTCTY3</td>
<td>DGTTCTZ3</td>
<td>DGTTCTT3</td>
</tr>
<tr>
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<td>DGTTCTC5</td>
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<td>DGTTCTL5</td>
<td>DGTTCTR5</td>
<td>DGTTCTY5</td>
<td>DGTTCTZ5</td>
<td>DGTTCTT5</td>
</tr>
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<td>DGTTCTC7</td>
<td></td>
<td>DGTTCTL6</td>
<td>DGTTCTR6</td>
<td>DGTTCTY6</td>
<td>DGTTCTZ6</td>
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</tr>
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<td>DGTTCTL7</td>
<td>DGTTCTR7</td>
<td>DGTTCTY7</td>
<td>DGTTCTZ7</td>
<td>DGTTCTT7</td>
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<td></td>
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<td></td>
<td></td>
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</tr>
</tbody>
</table>

Table 43 lists the member names for the profile application command tables. The tables are used for all applications.

### Table 43. Member Names for Profile Application Command Tables

<table>
<thead>
<tr>
<th>Function</th>
<th>Member Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>DFSMSdfp ISMF commands</td>
<td>DGTTCTP1</td>
</tr>
<tr>
<td>DFSMSdss ISMF commands</td>
<td>DGTTCTP2</td>
</tr>
<tr>
<td>unused</td>
<td>DCTTCTP3</td>
</tr>
<tr>
<td>unused</td>
<td>DGTTCTP4</td>
</tr>
</tbody>
</table>
Making the Changes

There are two ways to change the ISMF tables for line operators and commands. You can add new entries to the existing tables or to one of the unused tables ISMF ships. If you add entries to the ISMF tables, you should also update the ISPF command table.

Whenever a new command is added to an application in ISMF, it must be added to the command table for all applications in ISMF, not only for the application affected.

Modifying the Existing Tables

Because the tables are stored in the load library, you cannot edit them directly.

If you want to make extensive changes

- Create your own table following the format that ISMF uses. See “ISMF Line Operator Table Format DGTMLPAP” on page 207 for the format of the line operator tables.
- Enter the line operators along with the ISMF entries in the new table.
- Link-edit the new table under the original member name. This will overlay the original table with your new table.

If you want to make minor changes

you can SUPERZAP the member that contains the table you want to change. However, the next time a link-edit or maintenance is performed on the member, the change will be lost. For information on how to use SUPERZAP, see the publication, *z/OS MVS Diagnosis: Tools and Service Aids*.

Using One of the Unused Tables

ISMF ships some unused command and line operator tables in the load library. You can use the line operator tables to add your own entries. Table 41 on page 208, Table 42 on page 210, and Table 43 on page 211 list the member names for the unused tables. To make entries in one of the unused tables:

- Create a table following the format that ISMF uses.
- Enter the new line operators in the table. For new commands, set the CTAPACMD bit to 1. Also, be sure to update the count value in CTAPCNT to reflect the number of entries in the table. See “ISMF Command Table Format DGTMCCTAP” on page 207.
- Link-edit the table using the member name for the unused table that you want to overlay.
Customizing the ISMF CLIST

This section explains how to change the CONTROL statement on the ISMF CLISTs.

Restrictions

Do not alter the CLISTs themselves. Changes to the logic may create problems with job submission. For example, jobs may be submitted incorrectly, or not submitted at all. Logging of submission may fail, or it may be incorrect. Changing the CLISTs could also cause incorrect feedback for job submission. If you wish to modify the job streams, you can do so by tailoring the job skeletons. The method you use to do this is described in "Customizing Job Skeletons" on page 205. It is easier than changing the CLISTs, and less error prone.

Finding the CLIST

CLISTs are stored in the CLIST library. The member names include, for example, DGTQSU01 for the DFSMSdss CLIST, DGTQSF01 for the DFSMSdfp CLIST, ICESRCFG for the DFSORT CLIST, and DGTQCB01 for SETCACHE.

Note: When ISMF is installed, the CLIST library name is SYS1.DGTCLIB.

Making the Changes

You can change the CONTROL statement that ISMF ships with the CLIST using any of the operands for CONTROL listed in TSO V2 Command Reference. Figure 152 shows the CONTROL statement in the DFSMSdss ISMF CLIST. It is located at the beginning of the data set, immediately after the comment section.

```
/* *
/ *  PROCESSOR:  ISPF *
/ *  *
/ *  CHANGE ACTIVITY:  LEVEL 0 *
/ *  $L0=ISMFREL,JAE2211,,PRGRMA: *
/ *  *
/ *******************************************************
CONTROL NOFLUSH PROMPT
/ *******************************************************
/ ** BEGIN CLIST MAINLINE **
/ *******************************************************
```

Figure 152. Control Statement in the ISMF CLIST

To change the CONTROL statement you need to edit the CLIST member in the CLIST library. For example, to change the CONTROL statement for DFSMSdss, you need to edit the DGTQSU01 member in the CLIST library. You could add the LIST operand as shown in Figure 153 on page 214.
Figure 153. Changing the Control Statement
Appendix D. Accessibility

Accessible publications for this product are offered through IBM Knowledge Center (http://www.ibm.com/support/knowledgecenter/SSLTBW/welcome).

If you experience difficulty with the accessibility of any z/OS information, send a detailed message to the Contact z/OS or use the following mailing address.

IBM Corporation
Attention: MHVRCFS Reader Comments
Department H6MA, Building 707
2455 South Road
Poughkeepsie, NY 12601-5400
United States

Accessibility features

Accessibility features help users who have physical disabilities such as restricted mobility or limited vision use software products successfully. The accessibility features in z/OS can help users do the following tasks:
- Run assistive technology such as screen readers and screen magnifier software.
- Operate specific or equivalent features by using the keyboard.
- Customize display attributes such as color, contrast, and font size.

Consult assistive technologies

Assistive technology products such as screen readers function with the user interfaces found in z/OS. Consult the product information for the specific assistive technology product that is used to access z/OS interfaces.

Keyboard navigation of the user interface

You can access z/OS user interfaces with TSO/E or ISPF. The following information describes how to use TSO/E and ISPF, including the use of keyboard shortcuts and function keys (PF keys). Each guide includes the default settings for the PF keys.
- z/OS TSO/E Primer
- z/OS TSO/E User’s Guide
- z/OS V2R2 ISPF User’s Guide Vol 1

Dotted decimal syntax diagrams

Syntax diagrams are provided in dotted decimal format for users who access IBM Knowledge Center with a screen reader. In dotted decimal format, each syntax element is written on a separate line. If two or more syntax elements are always present together (or always absent together), they can appear on the same line because they are considered a single compound syntax element.

Each line starts with a dotted decimal number; for example, 3 or 3.1 or 3.1.1. To hear these numbers correctly, make sure that the screen reader is set to read out punctuation. All the syntax elements that have the same dotted decimal number
(for example, all the syntax elements that have the number 3.1) are mutually
exclusive alternatives. If you hear the lines 3.1 USERID and 3.1 SYSTEMID, your
syntax can include either USERID or SYSTEMID, but not both.

The dotted decimal numbering level denotes the level of nesting. For example, if a
syntax element with dotted decimal number 3 is followed by a series of syntax
elements with dotted decimal number 3.1, all the syntax elements numbered 3.1
are subordinate to the syntax element numbered 3.

Certain words and symbols are used next to the dotted decimal numbers to add
information about the syntax elements. Occasionally, these words and symbols
might occur at the beginning of the element itself. For ease of identification, if the
word or symbol is a part of the syntax element, it is preceded by the backslash (\)
character. The * symbol is placed next to a dotted decimal number to indicate that
the syntax element repeats. For example, syntax element *FILE with dotted decimal
number 3 is given the format 3 \* FILE. Format 3* FILE indicates that syntax
element FILE repeats. Format 3* \* FILE indicates that syntax element * FILE
repeats.

Characters such as commas, which are used to separate a string of syntax
elements, are shown in the syntax just before the items they separate. These
characters can appear on the same line as each item, or on a separate line with the
same dotted decimal number as the relevant items. The line can also show another
symbol to provide information about the syntax elements. For example, the lines
5.1*, 5.1 LASTRUN, and 5.1 DELETE mean that if you use more than one of the
LASTRUN and DELETE syntax elements, the elements must be separated by a comma.
If no separator is given, assume that you use a blank to separate each syntax
element.

If a syntax element is preceded by the % symbol, it indicates a reference that is
defined elsewhere. The string that follows the % symbol is the name of a syntax
fragment rather than a literal. For example, the line 2.1 %OP1 means that you must
refer to separate syntax fragment OP1.

The following symbols are used next to the dotted decimal numbers.

? indicates an optional syntax element
The question mark (?) symbol indicates an optional syntax element. A dotted
decimal number followed by the question mark symbol (?) indicates that all
the syntax elements with a corresponding dotted decimal number, and any
subordinate syntax elements, are optional. If there is only one syntax element
with a dotted decimal number, the ? symbol is displayed on the same line as
the syntax element, (for example 5? NOTIFY). If there is more than one syntax
element with a dotted decimal number, the ? symbol is displayed on a line by
itself, followed by the syntax elements that are optional. For example, if you
hear the lines 5 ?, 5 NOTIFY, and 5 UPDATE, you know that the syntax elements
NOTIFY and UPDATE are optional. That is, you can choose one or none of them.
The ? symbol is equivalent to a bypass line in a railroad diagram.

! indicates a default syntax element
The exclamation mark (!) symbol indicates a default syntax element. A dotted
decimal number followed by the ! symbol and a syntax element indicate that
the syntax element is the default option for all syntax elements that share the
same dotted decimal number. Only one of the syntax elements that share the
dotted decimal number can specify the ! symbol. For example, if you hear the
lines 2? FILE, 2.1! (KEEP), and 2.1 (DELETE), you know that (KEEP) is the
default option for the FILE keyword. In the example, if you include the FILE
keyword, but do not specify an option, the default option KEEP is applied. A
default option also applies to the next higher dotted decimal number. In this
element, if the FILE keyword is omitted, the default FILE(KEEP) is used.
However, if you hear the lines 2? FILE, 2.1, 2.1.1! (KEEP), and 2.1.1
(DELETE), the default option KEEP applies only to the next higher dotted
decimal number, 2.1 (which does not have an associated keyword), and does
not apply to 2? FILE. Nothing is used if the keyword FILE is omitted.

* indicates an optional syntax element that is repeatable
The asterisk or glyph (*) symbol indicates a syntax element that can be
repeated zero or more times. A dotted decimal number followed by the *
symbol indicates that this syntax element can be used zero or more times; that
is, it is optional and can be repeated. For example, if you hear the line 5.1*
data area, you know that you can include one data area, more than one data
area, or no data area. If you hear the lines 3* , 3 HOST, 3 STATE, you know
that you can include HOST, STATE, both together, or nothing.

Notes:
1. If a dotted decimal number has an asterisk (*) next to it and there is only
   one item with that dotted decimal number, you can repeat that same item
   more than once.
2. If a dotted decimal number has an asterisk next to it and several items
   have that dotted decimal number, you can use more than one item from the
   list, but you cannot use the items more than once each. In the previous
   example, you can write HOST STATE, but you cannot write HOST HOST.
3. The * symbol is equivalent to a loopback line in a railroad syntax diagram.

+ indicates a syntax element that must be included
The plus (+) symbol indicates a syntax element that must be included at least
once. A dotted decimal number followed by the + symbol indicates that the
syntax element must be included one or more times. That is, it must be
included at least once and can be repeated. For example, if you hear the line
6.1+ data area, you must include at least one data area. If you hear the lines
2+, 2 HOST, and 2 STATE, you know that you must include HOST, STATE, or
both. Similar to the * symbol, the + symbol can repeat a particular item if it is
the only item with that dotted decimal number. The + symbol, like the *
symbol, is equivalent to a loopback line in a railroad syntax diagram.
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