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Cincom Systems, Inc.
55 Merchant Street
Cincinnati, Ohio 45246-3732
U. S. A.

PHONE: (513) 612-2300
FAX: (513) 612-2000
WORLD WIDE WEB: http://www.cincom.com

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Release information for this manual

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We welcome your comments

We encourage critiques concerning the technical content and organization of this manual. Please take the survey provided with the online documentation at your convenience.

Cincom Technical Support for AD/Advantage

FAX: (513) 612-2000
Attn: MANTIS Support

E-mail: helpna@cincom.com

Phone: 1-800-727-3525

Mail: Cincom Systems, Inc.
Attn: MANTIS Support
55 Merchant Street
Cincinnati, OH 45246-3732
U. S. A.

Contents

About this book xi

Using this document xi
Document organization xi
Revisions to this manual xiv
Conventions xv
MANTIS documentation series xviii
Educational material xix

MANTIS overview 21

Signing on to MANTIS 22
Facility selection menu 23

Screen design facility 25

Accessing the screen design facility 27
Create or update a screen 31
Screen design considerations 32
Numeric edit masks 36
Screen design edit keys 46
Drawing boxes 50
Sample screen design 51
Update field specifications 52
Selecting fields for update 53
Field attributes 56
List field specifications 89
Update repeat specifications 92
Identify fields 93
Number of repeats 94
List repeat specifications 97
Display completed design 98
Library functions 100
Screen attributes 102
Library commands 110
Directory of screens 113

Print completed design 115
Exit screen design 115

MANTIS file design 117

Accessing the file design facility 117
Create or update file profiles 121
Update record layout 125
Library functions 132
Directory of file profiles 137
Print completed design 138
Exit file design 139

ULTRA file view design 141

Accessing the ULTRA file view design facility 143
Create or update views 147
Update view layout 152
Library functions 160
Directory of views 164
Print completed view 166
Exit ultra file view design 166

External file view design 167

Accessing the external file view design facility 169
Create or update file views 172
Update file view layout 181
Data structure and array definitions 190
Variable-length record definitions 193
Packed records and machine independence 195
Library functions 197
ACCESS options 201
Directory of file views 204
Print completed design 205
Exit external file design 206

Prompter design 207

Accessing the prompter design facility 208
Create or update a prompter 212
Set tabs 216
Library functions 218
Directory of prompters 224
Display completed design 226
Print completed design 226
Exit prompter design 226

Interface design 227

Accessing the interface design facility ... 228
Create or update interface profile ... 232
Update area layout ... 238
Library functions ... 246
Directory of interfaces ... 250
Print completed design ... 252
Exit interface design ... 252
Interface program description ... 253
Storage area definition and access ... 255
OpenVMS interface program examples ... 259
Debugging considerations ... 265
UNIX interface program examples ... 265
COBOL example ... 266
COBOL linkage ... 267
UNIX COBOL example consideration ... 268
C example ... 268
C linkage ... 269

Prototyping 271

Introduction to prototyping ... 271
Prototype designs ... 273
The prototyping life cycle ... 273
MANTIS prototyping tools ... 274
MANTIS run system facility ... 275
Accessing the MANTIS run system facility ... 275
Select system to run ... 277
Customizing applications ... 278
Portability considerations ... 289
Notes ... 289

Program design 291

Program design facility menu ... 291
Program design options ... 294
Update program ... 295
Programming fundamentals ... 296
MANTIS program design commands ... 301
ALTER ... 303
BIND ... 305
CHANGE ... 307
CLEAR BREAK ... 310
COPY ... 311
DOWN ... 314
EDIT ... 315

EDITRCV 318
ERASE 321
GO 323
HELP 324
KILL 326
LIST 327
LOAD 329
NEW 331
PURGE 332
QUIT 333
REPLACE 334
RUN 336
SAVE 338
SEQUENCE 340
SET BREAK 342
SHOW 344
UP 345
USAGE 346
Directory of programs 349
Library functions 353
Print program 359
Bind program 360
Unbind program 361
Purge program 362
Purge program source 362
Edit program 363
Exit program design 363

Entity transfer **365**

Accessing the transfer facility 366
Create a new bin 368
Copy from library to bin 368
Copy selected entities 369
Copy screen to bin 373
Copy user file data 375
Copy all user entities 377
Copy from bin to library 377
Copy selected entities 378
Copy user file data 385
Copy all user entities 387
Delete from bin 387
Delete selected entities 388
Delete user file data 392
List contents of bin 393
Change password for bin 395

Directory of bins ... 396
Turn print ON/OFF ... 397
Help ... 397
Delete entire bin ... 397

Universal export facility 399

Universal export facility menu ... 401
UEF file selection ... 405
Universal export facility options ... 479
Export directory ... 487

MANTIS search facility 489

Accessing the MANTIS search facility ... 490
Saving and recalling searches ... 493
Deleting searches ... 495
Sample search ... 497

MANTIS print utility 501

MPR input and output ... 501
Operation ... 502
MPR commands ... 505
ATTRIBUTES ... 507
BRIEF ... 507
DIRECTORY ... 508
GO ... 508
HELP ... 508
MATCH ... 509
OUTPUT ... 510
PRINT ... 511
SEARCH ... 511
SELECT ... 512
TYPE ... 513
USER ... 513
XREF ... 514
OpenVMS examples ... 515
UNIX examples ... 516
Error handling ... 517
Special considerations ... 518
Screen designs ... 518

Options compiler 519

MANTIS options compiler ... 519
MOP input and output ... 520

Operation 523
OpenVMS and UNIX examples 527
OpenVMS examples 527
UNIX examples 527
MANTIS options 528
MANTIS options table 529

Additional facilities 645

Accessing other MANTIS facilities 645
Run a program 647
Display a prompter 649
Sign on as another user 652
Directory facility 653
SPECTRA 654

SUPRA relational data manager 655

Overview of SUPRA relational data manager 656
Using MANTIS to access the RDM 657
Missing fields 658
Directory of logical views 658

Recovery and data integrity considerations 663

The concept of logical unit of work 664
User-specified synchronization points 666
Enqueuing on resources 667
Concurrent updating of database files 668
Concurrent updating of resources accessible through the interface 668
Transaction recovery after system failure 668
Transaction recovery after application failure 669

Color support extensions 671

Getting colors in your screen design 672
How MANTIS displays your color screens 674

FDL for UNIX 675

FDL statements 675
Examples 680

Index 681

About this book

Using this document

MANTIS® is an application development system that consists of design facilities (for example, screens and files) and a programming language. This manual provides instructions for using the MANTIS facilities.

Document organization

The information in this manual is organized as follows:

Chapter 1—MANTIS overview
Gives an overview of the facilities in MANTIS, character sets, reserved words, names, keyboard operations, and how to sign on.

Chapter 2—Screen design facility
Describes how to create and update screens, list and repeat field specifications, and display and print the completed design.

Chapter 3—MANTIS file design
Describes the File Design facility, how to create or update file profiles, use library functions, and print the completed design.

Chapter 4—ULTRA file view design
Describes how to design an ULTRA file view, a selective view of a SUPRA PDM file that maps unto the physical file elements of a specified PDM file in a specified RDM database.

Chapter 5—External file view design
Describes how to design file views for external files using the External File View Design Facility.

Chapter 6—Prompter design
Describes how to create and maintain HELP text in a MANTIS file using the Prompter Design facility.

Chapter 7—Interface design
Describes how to design and save new interface profiles and update and maintain existing profiles.

Chapter 8—Prototyping
Provides an overview of prototyping and describes two MANTIS facilities you can use to prototype your applications.

Chapter 9—Program design
Describes options to create, maintain, view, print, bind, unbind, and edit MANTIS programs.

Chapter 10—Entity transfer
Describes the Transfer Facility option, which allows users to share MANTIS entities, such as screens, files, programs, or views.

Chapter 11—Universal export facility
Describes the Universal Export Facility, which allows users to migrate one or more entities from one MANTIS file to another.

Chapter 12—MANTIS search facility
Describes the MANTIS Search Facility, which allows programmers to search through the text of MANTIS entities and find matches for supplied criteria.

Chapter 13—MANTIS print utility
Describes the MANTIS Print Utility, which lets you view MANTIS file entities without signing on to MANTIS.

Chapter 14—Options compiler
Describes how to compile a source options file into a binary options file, list the contents of a binary options file, and produce an options patch for changing defaults built into an image.

Chapter 15—Additional facilities
Describes other facilities available from the MANTIS Facility Selection Menu.

Appendix A—SUPRA relational data manager
Provides information on accessing RDM logical views through your MANTIS program.

Appendix B—Recovery and data integrity considerations
Provides considerations for user-specified synchronization points, enqueuing on resources, concurrent updates, and transaction recovery.

Appendix C—Color support extensions
Describes how to use MANTIS color support to address your terminal’s color capabilities.

Appendix D—FDL for UNIX

Describes the MANTIS External File Definition Language (FDL) for UNIX.

Index

Revisions to this manual

The following changes have been made for this release:

- Changed title from AD/Advantage Facilities User Guide –MANTIS for VMS/UNIX to AD/Advantage MANTIS Facilities Open VMS/UNIX.
- Updated publication titles and numbers under “MANTIS documentation series” on page xviii and the entire document.
- Changed screen in “Signing on to MANTIS” on page 22 to reflect new revision number and year information.
- Updated screen in “Facility selection menu” on page 23 to include Search Facility.
- Added BOXGRAPHICS Information under PF13 of “Screen design edit keys” on page 46.
- Added UNIX description for Considerations of Internal Interface in “Create or update interface profile” on page 232.
- Changed “COBOL example” on page 266 from DSIZE PIC 9 COMP to DSIZE 9999 COMP.
- Added “UNIX COBOL example consideration” on page 268.
- Changed screen in “Universal export facility menu” on page 401.
- Added Chapter 12 “MANTIS search facility” beginning on page 489.
- Added BOXGRAPHICS and NOBOXGRAPHICS in “MANTIS options table” on page 529.
- Added descriptions of “BOXGRAPHICS” and “NOBOXGRAPHICS” on page 542.
- Changed Release number of SUPRA from 1.2 to 1.3 under “PDM” and “NOPDM” on page 607.
- Added descriptions of “SLOT” and “NOSLOT” on page 627.
- Updated MANTIS Facility Selection screen in “Additional facilities” on page 645.
- Updated MANTIS Sign-On screen “Sign on as another user” on page 652.

Conventions

The following table describes the conventions used in this document series:

Convention	Description	Example

`Constant width type`	Represents screen images and segments of code.	`Screen Design Facility`
		`GET NAME LAST`
		`INSERT ADDRESS`

Slashed b (ƀ)	Indicates a space (blank). The example indicates that a password can have a trailing blank.	`WRITEPASSƀ`
Brackets [ ]	Indicate optional selection of parameters. (Do not attempt to enter brackets or to stack parameters.) Brackets indicate one of the following situations.	
	A single item enclosed by brackets indicates that the item is optional and can be omitted. The example indicates that you can optionally enter a program name.	`COMPOSE [`*`program-name`*`]`
	Stacked items enclosed by brackets represent optional alternatives, one of which can be selected. The example indicates that you can optionally enter NEXT, PRIOR, FIRST, or LAST. (NEXT is underlined to indicate that it is the default.)	[**NEXT** **PRIOR** **FIRST** **LAST**]

Convention	Description	Example
Braces { }	Indicate selection of parameters. (Do not attempt to enter braces or to stack parameters.) Braces surrounding stacked items represent alternatives, one of which you must select. The example indicates that you must enter FIRST, LAST, or a value for *begin*.	**FIRST** ***begin*** **LAST**
Underlining (In syntax)	Indicates the default value supplied when you omit a parameter. The example indicates that if you do not specify ON, OFF, or a row and column destination, the system defaults to ON.	**SCROLL** [**ON** | **OFF** | [***row***][,***col***]]
	Underlining also indicates an allowable abbreviation or the shortest truncation allowed. The example indicates that you can enter either PRO or PROTECTED.	PROTECTED
Ellipsis points...	Indicate that the preceding item can be repeated. The example indicates that you can enter (A), (A,B), (A,B,C), or some other argument in the same pattern.	(*argument*,...)

Convention	Description	Example
UPPERCASE	Indicates MANTIS reserved words. You must enter them exactly as they appear. The example indicates that you must enter CONVERSE exactly as it appears.	CONVERSE *name*
Italics	Indicate variables you replace with a value, a column name, a file name, and so on. The example indicates that you can supply a name for the program.	COMPOSE [*program-name*]
Punctuation marks	Indicate required syntax that you must code exactly as presented. ( ) parentheses . period , comma : colon ' ' single quotation marks	$[\text{LET}]v\begin{bmatrix}(i)\\(i,j)\end{bmatrix}[\text{ROUNDED}(n)] = e1\ [,e2,e3\ldots]$
UNIX OpenVMS	Information specific to a certain operating system is flagged by a symbol in a shadowed box (e.g., UNIX) indicating which operating system is being discussed. Skip any information that does not pertain to your environment.	UNIX DBA will run on any terminal that supports the cursor library.

MANTIS documentation series

MANTIS is an application development system designed to increase productivity in all areas of application development, from initial design through production and maintenance. MANTIS is part of AD/Advantage®, which offers additional tools for application development. Below are listed the manuals offered with MANTIS in the OpenVMS™ and UNIX® environments, organized by task. You may not have all the manuals that are listed here. For a synopsis of each manual, refer to the *AD/Advantage MANTIS Application Development Tutorial OpenVMS/UNIX*, P39-1340.

Getting started

- *AD/Advantage MANTIS 2.8.x Installation and Startup OpenVMS/UNIX*, P39-0027*

General use

- *AD/Advantage MANTIS Facilities OpenVMS/UNIX*, P39-1300*
- *AD/Advantage MANTIS Language OpenVMS/UNIX*, P39-1310
- *AD/Advantage MANTIS Messages and Codes OpenVMS/UNIX*, P39-1330*
- *AD/Advantage MANTIS Application Development Tutorial OpenVMS/UNIX*, P39-1340
- *AD/Advantage MANTIS SUPRA SQL Programming OpenVMS/UNIX*, P39-1345
- *AD/Advantage MANTIS Rdb Programming*, P39-1350
- *AD/Advantage MANTIS Oracle Programming UNIX*, P39-1355

NOTE

Manuals marked with an asterisk (*) are listed twice because you use them for different tasks.

Master User tasks

- *AD/Advantage MANTIS Facilities OpenVMS/UNIX*, P39-1300*
- *AD/Advantage MANTIS Administration OpenVMS/UNIX*, P39-1320
- *AD/Advantage MANTIS 2.8.x Installation and Startup OpenVMS/UNIX*, P39-0027*

NOTE

Manuals marked with an asterisk (*) are listed twice because you use them for different tasks.

Educational material

MANTIS educational material is available from your regional Cincom education department.

1

MANTIS overview

MANTIS allows users with diverse backgrounds to solve their application development problems simply and quickly with a display terminal—removing the necessity of coding sheets, job control statements, source decks, and, most importantly, the waiting usually associated with the development and implementation of a new program or system. This manual discusses the MANTIS design facilities. (For information on the MANTIS language and the conventions it uses, refer to *AD/Advantage MANTIS Language OpenVMS/UNIX*, P39-1310. For information on the MANTIS programming language refer to *AD/Advantage MANTIS Program Design and Editing OS/390, VSE/ESA*, P39-5013.)

MANTIS is composed of facilities (for creating screens, files, etc.) and a programming language. By using MANTIS, you can:

- Design and create formatted screens.
- Design and create permanent files for storing and manipulating data.
- Create and test programs interactively. MANTIS provides a compatibility mode for creating programs that are compatible with MANTIS for the IBM mainframe. This mode protects execution of statements and features not currently supported by MANTIS for the IBM mainframe.

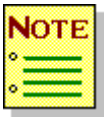
Signing on to MANTIS

Every MANTIS installation has a person designated as the Master User. The Master User has access to certain facilities and information not available to all MANTIS users. Before signing on to MANTIS for the first time, obtain your MANTIS user name and password from your Master User. When you enter 'MANTIS' on your terminal, a sign-on screen similar to the one shown below will appear (unless your Master User has changed the Cincom logo to another display).

```
                              M  A  N  T  I  S

              *****             *****    (C) Cincom Systems, Inc. 2001
          **********         *********   All Rights Reserved
      **************      *************
    ****************    ***************   Use of this software is
   *****************   ****************   governed by a license agreement.
  ******************  *****************   This software contains confiden-
 ******************* *****************   tial and proprietary information
           V2801.nnn.nnn.nnn             of Cincom Systems, Inc. which is
 ******************* *****************   protected by copyright, trade
  ****************** ****************    secret, and trademark law.
   ****************** ***************
    ****************** **************    Username :                  :
      ************** ************        Password :                  :
         ********** *********
              ***** *****
```

Enter your user name and password exactly as they were specified by your Master User and press RETURN. Uppercase and lowercase letters are important, as are trailing blanks. Your Facility Selection Menu will appear when you have successfully signed on to MANTIS.



If the Cincom Logo screen is returned to you with the following message:

"All Licenses are in use, try later"

This indicates that all current User Seat Licenses are being used at this time. Contact Your MANTIS Administrator.

Facility selection menu

The following figure illustrates the standard facilities provided with MANTIS. Your Master User may have omitted some of these facilities or added new facilities to meet the needs of your installation.

```
                              M  A  N  T  I  S


                             FACILITY SELECTION


  Run A Program  ..............  1     Transfer Facility  ..........  12
  Display A Prompter  .........  2     Edit MANTIS Messages  .......  13
  Design A Program  ...........  3     Directory Facility  .........  14
  Design A Screen  ............  4     Universal Export Facility  ..  15
  Design A File Profile  ......  5     Update Shared Entity List  ..  16
  Design A Prompter  ..........  6     Update Language Codes  ......  17
  Design A User Profile  ......  7     MANTIS Maintenance  .........  18
  Design An Interface  ........  8     Spectra  ....................  19
  Design An Ultra File View  ..  9     Search Facility ............   20
  Design An External File View  10     List of Current MANTIS Users.  21
  Sign On As Another User ..... 11     MANTIS Security Patch Info..   22
                                       Exit MANTIS  ............   CANCEL

                                   :    :
```

If you select a Developer type of MANTIS Facility such as “Design a Program”, “Design a Screen”, “Design a Interface” or any of the other Developer type of MANTIS Facilities you are considered a MANTIS Developer User. In order to access a Developer Facility, a Developer Seat License must be free.

If all Developer License Seats are currently being used, the MANTIS Screen shown below will appear. Please hit the ENTER Key to return to the Facility Selection Menu.

```
>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
>                                                                                     >
>                                       NOTE:                                         >
>                                                                                     >
>     All Developer License Seats are currently being used, Please try later.        >
>                                                                                     >
>                                                                                     >
>                                                                                     >
>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
```

The numbers to the right of the facilities displayed in the menu represent the numbers you must enter to select each facility from the menu. The input field at the bottom of the screen is provided for entering these numbers. MANTIS Facilities can be selected as follows:

- TAB to the action field (: :) at the bottom of the screen, type in the corresponding number of the required facility and press RETURN.
- Type in the correct PF key or key sequence for a given program function. "Screen design edit keys" on page 46 provides these PF keys and key sequences (for example, you can enter GOLD/MINUS or GOLD/- to select the CANCEL function). PF keys are the quicker method for selecting facilities, since you do not have to TAB to the input field, type in a number and press RETURN.

NOTE

The directions above can be used to select options from any MANTIS menu.

When you exit from one of the facilities, you always return to this menu where you can select another facility or exit from MANTIS.

To exit MANTIS from the Facility Selection Menu, press CANCEL.

2

Screen design facility

The MANTIS Screen Design Facility enables you to create and save fixed-format screen designs and to update and maintain existing screen designs. This facility provides a design work area or domain that can be up to 255 rows by 255 columns. The size of this work area (called the logical display) determines the size or domain of your screen. You may adjust the size of your screen at any time during the Create or Update process.

Since your screen design can be larger than your physical screen, use your physical screen as a movable window to view different sections of the display.

The screen design is specified by the SCREEN statement and displayed by the CONVERSE statement in the MANTIS program.

By using the MANTIS Program Design Facility, you can build programs that display your screen designs to physical devices (such as terminals and printers). You can display overlaid multiple maps in the logical display area. The logical display may be as large as 32767 rows by 32767 columns and may be composed of several screens. The combination of screen designs forms a map set. Within the map set, you may have screens which fully or partially overlay each other and fields within screens which may be updateable. (For information on how to use the maps that you create in Screen Design, refer to *AD/Advantage MANTIS Language OpenVMS/UNIX*, P39-1310.)

You can specify attributes for data and heading fields in your screen design. Attributes such as intensity and color depend on the capabilities of your terminal. MANTIS Screen Design supports color, underlining, blinking and reverse video. You can also select validation criteria for data-entry [input] fields (see "Update field specifications" on page 52).

NOTE

The window can always be scrolled to the limits of the logical display (the logical display can be bigger than your largest screen design). Use the CONVERSE statement to position your screen designs wherever you want in the logical display. However, the Screen Design Facility only allows you to create one screen design at a time. The current size of the logical display (and the windowing limits) is determined by the position of the screen designs that have been CONVERSED in the logical display.

Accessing the screen design facility

To access the Screen Design Facility, select the Design a Screen option from the MANTIS Facility Selection Menu (see “Facility selection menu” on page 23). The Screen Design Facility Menu appears as shown in the following figure.

```
                    M  A  N  T  I  S

                 SCREEN DESIGN FACILITY

          Create or Update a Screen  ............  1
          Update Field Specifications  ..........  2
          List Field Specifications  ............  3
          Update Repeat Specifications  .........  4
          List Repeat Specifications  ...........  5
          Display Completed Design  .............  6
          Library Functions  ....................  7
          Directory Of Screens  .................  8
          Print Completed Design  ...............  9
          Exit Screen Design  ..............  CANCEL

Load Screen .. :                                                  :
Current Screen :

                              :    :
```

The Load Screen and Current Screen fields on the Screen Design Facility Menu are described on the following pages.

Load Screen

Description *Optional*. Specifies the name of a screen design to load into the work area before executing the selected option; otherwise, all options apply to the current working screen design.

Format 1–30 character, alphanumeric name, optionally prefixed by a user library specification

Considerations

- You can load any unprivileged user's screen design.
- If you press ENTER without specifying a menu option, the specified screen design will be loaded.
- This field does not cause a screen load when the Directory option is selected, but is interpreted as a directory repoint command.

Current Screen

Description

MANTIS displays the fully qualified name of the screen design currently in the work area.

To create a new screen design, follow the sequence of the Screen Design Facility Menu (that is, first create the screen, then update field specifications, and so on). You can load an existing screen design in one of three ways:

- Enter the screen name in the Load Screen field of the Screen Design Facility menu (shown earlier in this section) and then select the action you want to perform.
- Select from the directory selection screen. First, select the Directory Of Screens option from the Screen Design Facility menu (shown earlier in this section).
- Enter the screen name in the Library Functions screen. First, select the Library Functions option from the Screen Design Facility menu (shown earlier in this section), and then select the FETCH option.

You can move among the options listed on the Screen Design Facility Menu without losing the screen design currently in your work area. However, remember to save your screen design or any updates through Library Functions before exiting from the Screen Design Facility to the Facility Selection Menu (see "Facility selection menu" on page 23). If you try to exit from the Screen Design Facility or fetch a new screen into your work area through the Library Function without first saving current changes, MANTIS prompts you to confirm your action.

The remainder of this chapter discusses the Screen Design Facility options. If you are creating a new screen design, proceed through the chapter. If you are updating a screen design, see the section(s) you need. The following table provides an overview of the options in Screen Design and where the option is discussed.

This option	Enables you to	See
Create or Update a Screen	Design a new screen or modify an existing screen design.	"Create or update a screen" on page 31
Update Field Specifications	Define, inspect, or alter attributes for each field on your screen design.	"Update field specifications" on page 52
List Field Specifications	View and modify a list of defined field attributes for your screen design.	"List field specifications" on page 89
Update Repeat Specifications	Specify or alter horizontal or vertical occurrences of one or more fields on your screen design.	"Update repeat specifications" on page 92
List Repeat Specifications	View a list of current repeat specifications for your screen design.	"List repeat specifications" on page 97
Display Completed Design	View the screen design in your work area, displaying field attributes.	"Display completed design" on page 98
Library Functions	Save or import a new screen design, replace fetch, delete, export, or import an existing screen design.	"Library functions" on page 132
Directory of Screens	View a listing of the screen designs in your library.	"Directory of screens" on page 113
Print Completed Design	Print a copy of your current screen design.	"Print completed design" on page 115
Exit Screen Design	Exits Screen Design Facility	"Exit screen design" on page 115

Create or update a screen

The Create or Update a Screen option allows you to create a new screen design or update an existing one. Begin by selecting the Create or Update a Screen option from the Screen Design Facility Menu (see "Accessing the screen design facility" on page 27).

If you are creating a new screen design, MANTIS displays the default screen design size on the bottom line. You may change the values if you wish to change the size of the screen you are designing. When you press RETURN, the following design screen appears. (If a screen design currently exists in your work area, it will be displayed instead of this screen.)

```
-
-
-
-
+
-
-
-
-
1
-
-
-
-
+
-
-
-
-
2
-
-
```

The row scale line in column 1 of the screen is an aid for character positioning. You can remove or display the scale line by pressing PF9. You may also add or remove a column scale line by pressing PF3. ("Screen design edit keys" on page 46 lists Screen Design keys).

Press GOLD/E to invoke the external editor specified by the MANTIS EDITOR option.

NOTE

Use external editors with caution since you can easily lose existing field attribute information, or get field attributes mixed up. See "Field specification matching" on page 44 for more information on moving a field.

If you use tab characters in the external editor, MANTIS converts them to spaces when reading the screen design back from the editor interface. The default tab increment of eight is assumed. If you change the tab increment via your external editor, the results are unpredictable.

To create a new screen design, enter heading and data fields as you want them to appear in your application. The following sections contain guidelines for creating fields on your screen.

Screen design considerations

Screens typically consist of heading fields and data fields. MANTIS screen design supports freeform screen creation, taking into account the following guidelines and rules. (See "Screen design edit keys" on page 46 for a list of PF keys that have special meaning in the Screen Design Facility).

General design considerations

- MANTIS screen design supports screens with a maximum domain of 255 rows by 255 columns and a minimum size of 1 row by 2 columns. Screen designs start in row 1 column 1, but when you use them in a program, you may place them anywhere in the logical display (32767 rows by 32767 columns) using the CONVERSE statement. (The CONVERSE statement is documented in *AD/Advantage MANTIS Language OpenVMS/UNIX*, P39-1310.)

- If your screen design is larger than your physical screen, use the terminal function windowing keys to position your terminal window on the screen design work area. When the row scale line is displayed, it overlays data in column 1. When the column scale line is displayed, it overlays data in the row on which it is displayed. Remember that MANTIS reserves the bottom two lines on the screen for the following: Message Field, Row/Column Coordinates (not displayed during the screen design session), Unsolicited Input Field, and Reply Field. These fields remain on your screen even when you scroll, unless you use the INPUTMAP (GOLD/I) terminal function to remove them. You may want to remove them if your screen domain is greater than 22 rows and if you plan to use the FULL DISPLAY map-level attribute, which removes the capability of using these fields on the final screen. See "Library functions" on page 132 for details concerning the FULL DISPLAY attribute.

- Heading fields and data fields must be separated by one or more blank spaces or a line-drawing character.

- For a repeating data field, enter only the first occurrence. Indicate repeat occurrences (specifying horizontal or vertical repeats) with the Update Field Specifications option ("Update field specifications" on page 52) or the Update Repeat Specifications option ("Update repeat specifications" on page 92.

- Delete heading or data fields by overtyping these fields with the space bar. Repeat specifications and attributes for a deleted field are automatically deleted.

Heading fields

- A heading field may contain any valid MANTIS character except the screen field mask character, (also referred to as the data position character; the default is the hash character (#)) which is reserved for data fields. When you create a MANTIS screen, the mask character is inherited from the FLDMASK MANTIS Option. A screen's mask character may be altered via the help screen that is displayed when you invoke GOLD/H in the Create or Update a Screen option.

- Use the screen's blank-fill character (the default is the vertical bar (|)) to connect words or letters in a heading field for optimal performance. For example, if you enter:

- CUSTOMER DELIVERY DATE

- MANTIS assumes three separate heading fields. If you add the blank-fill character between the words:

- CUSTOMER|DELIVERY|DATE

- MANTIS assumes only one heading field. When you display your screen, the vertical bar appears as a blank space.

- When a MANTIS screen is created, the blank-fill character is inherited from the BLANKFILL MANTIS Option. A screen's blank-fill character may be altered via the help screen that is displayed when you invoke GOLD/H in the Create or Update a Screen option. For example, you may want to alter the blank fill character if you require vertical bars to be displayed as part of heading fields.

- The blank-fill character appears as a space character when your application CONVERSEs the screen, and when you use the Display Completed Design option (see "Display completed design" on page 98).

NOTE

The general rule is that heading fields within five spaces of each other should be connected with blank-fill characters. Doing this causes MANTIS to apply any attribute (such as highlight) specified for one heading field to all heading fields that are connected by blank-fill characters

Data fields

- Specify a text data field with one or more data-fill characters (the default FLDMASK is the hash mark (#)). For example, to create a field of 30 characters, enter 30 data-fill characters in the desired positions on the screen. The data-fill character (#) is the only edit character used to specify a text data field.

- Specify a numeric data field by one or more data-fill characters (#), or by an *edit mask* consisting of one or more of the edit characters described in "Numeric edit masks" on page 36. You must include at least one data-fill character (#) in an edit mask to indicate to MANTIS that the field is not a heading.

NOTE

A field is not a NUMERIC data field unless you specifically give it the NUMERIC attribute through Update Field Specifications (since the default is text). However, if any numeric editing characters appear in an edit mask, Screen Design defaults the data field type to NUMERIC.

- Edit characters embedded in a data field affect the length of that field for automatic skipping, which moves the cursor from one input field to the next. For example, if you enter a field eight characters long that includes two edit characters (##/##/##), only six characters are required for input, but eight characters are required for automatic skipping to the next field.

- As with heading fields, use the blank-fill character (the default BLANKFILL is the vertical bar character (|)) to connect one or more numeric fields into one field (##|##|##).

- Numeric data is displayed left-justified in numeric fields that do not contain edit masks (#####). Numeric data is displayed right-justified in fields that do contain edit masks.

Numeric edit masks

You can specify the format of a numeric data field by using an edit mask of one or more edit characters. (Edit characters include sign characters, decimal points, and so on, and are discussed later in this section.) MANTIS uses the edit mask to display numeric data in the format you specify, and to validate the format of numeric data entered from the keyboard. For data entry, MANTIS fills the mask with keyboard-entered data from right to left. If there are edit characters in the entered data, they must match the edit characters in the mask or you will receive an error message. When you enter data from a program into a field, MANTIS displays the data to fit in the edit mask on the screen.

The simplest edit mask consists entirely of data-fill characters (#). During data entry, MANTIS checks that a valid number is entered in the field on the screen. For example, you may use a colon to separate hours, minutes, and seconds:

```
##:##:##
```

Numbers can be signed or unsigned, with any number of decimal places, in decimal or scientific notation; for example, 32, -16.666, +0.001, 4.6E-4. When displaying a number, MANTIS converts it from internal floating-point format, selecting decimal or scientific notation according to the rules stated in *AD/Advantage MANTIS Language OpenVMS/UNIX*, P39-1310. MANTIS left justifies the number in the field and places a negative sign in front of a negative number. If the field is too small to hold the number (more digits than hash marks), MANTIS fills the entire field with asterisks (*).

When the edit mask consists entirely of data-fill characters MANTIS handles numeric data in free format (as if you had used OBTAIN to obtain the data and SHOW to display it). With all other edit masks, however, MANTIS displays data in fixed format, where digits of each value (units, tens, hundreds, etc.) always occupy the same position in the field. Numeric data is displayed left-justified in numeric fields that do not contain edit masks (#####), but is right-justified in fields that do contain edit masks.

MANTIS aligns a number in the field according to the position of the decimal point indicator. You can specify the position of the decimal point by including a period (.) in your edit mask. The period in your mask is replaced by the DECIMAL MANTIS Option character when the field is displayed. It is used for alignment. If a fixed-format mask does not contain a decimal point indicator, MANTIS assumes that the indicator follows the rightmost character in the edit mask. The DECIMAL Option character is not displayed in the field in this case.

For all tables in this chapter, assume that the FLDMASK, DECIMAL and THOUSANDS MANTIS Options take on their defaults of “#”, “.” and “,” respectively. Some countries use different characters for DECIMAL and THOUSANDS characters for display.

The following table lists display examples of fixed format edit masks.

Edit mask	Data entered	Display
#####.##	12004	12004.00
####.##	120.04	120.04
#######	12004	12004

When converting a number for display with a fixed-format edit mask, MANTIS always uses decimal notation, and never scientific notation. MANTIS rounds the fractional part of the number to the number of decimal places specified after the decimal point in the edit mask. If the edit mask does not contain a decimal point, MANTIS rounds the number to the nearest integer. If the edit mask does not contain enough positions to the left of the decimal point for all the significant digits and the sign, MANTIS fills the field with asterisks.

When you enter a number in a field with a fixed-format edit mask, you do not have to enter the digits in the positions specified by the edit mask. You can even enter the number in scientific notation if you prefer. If you do not enter a decimal point, MANTIS assumes that the decimal point follows the rightmost digit. MANTIS checks that the number you enter can be displayed in the field when aligned according to the edit mask. The check is performed when the cursor is moved out of the field, or at the end of the CONVERSE (for example, when ENTER is pressed). If a numeric field fails this check, MANTIS highlights the invalid data, displays an error message, and waits for you to reenter the data correctly.

MANTIS provides five types of edit characters, as listed in the following table. Each edit character is discussed in detail in the sections that follow. Each edit character is illustrated by examples which show the formats for data entry and data display using some typical edit masks. As a general rule, MANTIS allows data to be entered in exactly the same format as it is displayed, but does not insist on it. During data entry, you need not enter nonnumeric characters, but if you do, they must be in the correct relative position. Otherwise, MANTIS displays an error message.

A good way of testing an edit mask to make sure it displays numeric data in the format you want is to use the FORMAT function in MANTIS programming mode:

```
SHOW FORMAT(number,"mask")
```

for example:

```
SHOW FORMAT (-123.456,"######.##")
-123.46
```

The following table lists the five types of edit characters.

Character type	Valid characters and position
Float	♦ Any character, except for # (FLDMASK character), +, -, or a vertical bar (|). ♦ Repeated in two or more positions at the beginning of a mask. ♦ May be separated by commas. ♦ Example: Currency prefix symbol ($, €)
Fill	♦ Any character, except for # and |. ♦ Not in first position, but occurs more than once in consecutive positions. ♦ Two or more sign characters are treated as fill characters, even when preceded by another + or - in the first position. ♦ Example: *
Sign	♦ + and - in any position of the mask. ♦ CR, DR, and DB can be used in last two positions of the mask.
Fixed Position	♦ Any character, except #, +, -, or a float or fill character. ♦ Vertical bars (|) are the only fixed-position characters that can be repeated in consecutive positions. ♦ Examples: <, (, %
Data Position	♦ # and 0. ♦ Each 0 represents a decimal digit position.

Float characters

A float character is any character (other than a data character, a sign character, or a vertical bar) which is repeated in two or more positions at the start of an edit mask. The repeat characters can be separated by commas.

When displaying a number, MANTIS replaces the float characters in the positions occupied by the leading digits and sign of the number. One float character is always displayed, and 'floats' to the start of the number or to the rightmost float character position. MANTIS replaces any preceding float characters with blanks. Additionally, each comma in the mask is replaced by the THOUSANDS MANTIS Option character.

MANTIS does not display the thousands separator (THOUSANDS option) for superfluous commas which were preceded by float characters in the mask. Instead, MANTIS replaces a superfluous comma with a blank, or with the float character, as appropriate.

The following table lists display examples of the float characters in edit masks.

Edit mask	Data entered	Display
$$$$$$.##	33.90	$33.90
$$$$##.##	-52.45	$-52.45
$$####.##	163.99	$ 163.99
$$,$$$,$$$.##	1000000	$1,000,000.00
$$,$$$,$$$.##	100	$100.00

Fill characters

A fill character is any character (other than a data character or vertical bar) that is repeated in two or more positions that are not at the start of an edit mask. Two or more repeated plus (+) or minus (-) characters are treated as fill characters, even when preceded by another plus (+) or minus (-) used as a sign character in the first position. In this case, the sign character does not float, but is displayed in the first position of the field.

When displaying a number, MANTIS replaces the fill characters in the positions occupied by the digits and sign of the number. All remaining fill characters are displayed in the field.

The following table lists display examples of fill characters in edit masks.

Edit mask	Data entered	Display
$******.##	46.35	$****46.35
#AAABBBCCC	6018	AAABB6018
+++++++.####	24.13	+++++24.1300
+++++++.####	-691.842	-+++691.8420

Sign characters

The sign characters are the plus sign (+), minus sign (-), ‘CR’ (credit), ‘DR’, or ‘DB’ (debit) in any position of an edit mask (‘CR’, ‘DR’, and ‘DB’ must be uppercase; otherwise, they are treated as fixed-position characters).

Generally, CR, DB, or DR are in the last two positions of an edit mask. A mask of #####CR will accommodate only two characters of the CR MANTIS Option string. Having the indicator CR, DB, or DR in the middle of a mask gives more space for the CR, DB, or DR option string, which can be up to 32 characters in length. A mask of #####CR## can accommodate four characters of the CR option string. If the option string is longer than the number of characters allowed for it, it will be truncated accordingly.

MANTIS displays the sign of a number according to the sign character. Displayed values are different depending upon the setting of the CRPOS MANTIS Option. Blank entries for the NOCRPOS case indicate that the results are the same as for the CRPOS case. This allows the differences to be highlighted. The following table illustrates the differences when the CR, DB, and DR options take on their default values of ‘CR’, ‘DB’, and ‘DR’ respectively.

Sign character	Results for “CRPOS”		Results for “NOCRPOS”	
+	123.34+	123.34-		
-	123.34	123.34-		
CR	123.34CR	123.34DR	123.34	123.34CR
DR	123.34	123.34DR	123.34DR	123.34
DB	123.34	123.34DB		

When a plus (+) or minus (-) sign character is specified in any position of an edit mask other than the last position, the sign displayed in the field ‘floats’ to the start of the number. Apart from specifying the sign format, the sign character is treated as a data-position character, and can be replaced by a digit. However, when a sign character is specified in the last position of an edit mask, the sign always stays in the same position in the field, and is never replaced by a digit.

Fixed-position characters

A fixed-position character is any character that is not a data-position character, a sign character, a float character, or a fill character. It follows that vertical bars are the only fixed-position characters which can be repeated in consecutive positions in an edit mask.

When displaying a number, MANTIS always displays fixed-position characters in the positions specified in the edit mask, with one exception:

- MANTIS does not display the thousands separator (THOUSANDS MANTIS Option) in place of the comma in the mask, if it is not preceded by a digit or another fixed-position character. Instead, MANTIS replaces the comma with a blank, or with the float character, as appropriate.

If the decimal point indicator is used *more than once* as a fixed-position character in an edit mask, it no longer indicates the position of the decimal point. MANTIS then assumes that the decimal point follows the rightmost character of the edit mask. The following table lists display examples of fixed-position characters in edit masks.

Edit mask	Data entered	Display
##/##/##	930819	93/08/19
##/##/##	93/01/01	93/01/01
ABC###DE##F	1066	ABC 10DE66F
#,###,###,###	1000000	1,000,000
#,###,###,###	100000	100,000
##.##.##.##	35917.72	3.59.17.72

Data-position characters

Data-position characters are the data-fill character (#) and zero (0). Each character represents the position of a decimal digit. When displaying a number, MANTIS inserts the corresponding digit at each position. MANTIS always inserts trailing zeros, if necessary, to the right of the decimal point. MANTIS only inserts leading zeros to the left of the decimal point if the zero-fill character (0) is present. MANTIS inserts leading zeros, if necessary, as far to the left of the field as the leftmost zero in the edit mask. The zero-fill character (0) is otherwise treated the same as '#'. For compatibility with MANTIS for the IBM mainframe, you can use 'Z' instead of (0), but 'Z' is treated as a fill or float character if repeated in consecutive positions.

The following table lists display examples of data-position characters in edit masks.

Edit mask	Data entered	Display
#####.##	159	159.00
#0###.##	159	0159.00
00000.0#	473.30	00473.30
0#	0	00

Most edit masks display as blank spaces when data associated with the fields is zero (for example, on the first CONVERSE of a screen). Since the (0) and 'Z' data-position characters cause leading zeros to be displayed, leading zeros will be displayed on initial CONVERSEs, even when the initial values of fields are zero.

NOTE

This can be inconvenient during data entry into these fields due to the invalid combination between the characters that were originally displayed, and the characters that were entered. The problem can be overcome by deleting to end of field (DELEOF = GOLD/PF4) after you enter the last input character in each field.

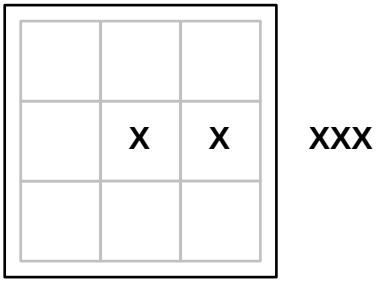
Field specification matching

When you edit an existing screen where the fields have already been assigned names and attributes, and you press RETURN, MANTIS matches field specifications. Matching is performed only when MANTIS is editing an existing screen; that is, where the fields are already assigned names and attributes. Each field and heading inherits the field specifications of the field or heading that was within one column horizontally or within one row vertically last time field matching was performed. This process is illustrated in the following figure. Field *XXXXX* must begin in one of the nine positions indicated to retain its specifications.

To move a field more than one character position you can either:

- Move the field one character position and immediately press RETURN. Repeat this process until the field in the desired position. Each time you press RETURN, MANTIS checks and retains the field specifications. This method is sometimes convenient when moving one or more fields a short distance in the same row of the screen design.

- Use one of the field-moving functions described in "Screen design edit keys" on page 46. With these functions you can move fields to different rows while retaining their assigned attributes.



MANTIS validates any extended editing attributes (described in "Field attributes" on page 56) that may be specified for any field(s) in your screen design.

After you enter all the data, press CANCEL to return to the Screen Design Facility Menu (see "Accessing the screen design facility" on page 27).

Screen design edit keys

The Create or Update a Screen option supports the program function and Screen Design keys shown in the following table. Use these keys when you want to modify your screen design.

Key	Enables you to
PF1	*Insert a line* before the field identified by the current cursor position, provided that there is at least one empty line available in the specified screen domain. (Compare with PF7.)
PF2	*Delete a line* starting with the field identified by the current cursor position. This is not a “Delete to End-Of-Line” function; instead, the deletion wraps to include any field in the next line whose starting column is less than the cursor’s column position when PF2 is pressed. Fields that are left on the second line are brought up to the line which contains the cursor.
PF3	*Remove*, *display*, *or move the column scale line* at the cursor. Position the cursor anywhere in the row where you want the column scale line to appear, and press PF3. The column scale line temporarily overlays the data on this line. You can remove the scale line by positioning the cursor anywhere on the scale line and pressing PF3. The data that was overlaid reappears.
PF4	*Move the field* at the cursor. Position the cursor anywhere on the field and press PF4. MANTIS highlights the field and displays a prompt on the last line of the screen. Position the cursor to the start of the desired new location for the field, and press RETURN. MANTIS moves the selected field to the new location. Pressing any key other than RETURN terminates the operation. The field retains its attribute settings. .
	NOTE Another field must not occupy the new location. MANTIS terminates the request and sounds the bell if the selected destination overlaps another field or is outside the screen domain.
PF5	*Copy the field* at the cursor. This key works the same as PF4, except the selected field is copied instead of moved. The field name and attributes are also copied which can result in two fields with the same name. So, you must change one of the two using the Update Field Specifications option (see “Update field specifications” on page 52).

Key	Enables you to
PF6	*Delete the field* at the cursor.
PF7	*Insert a range of lines*. Position the cursor anywhere on the line after which blank lines are to be inserted and press PF7. MANTIS prompts you for the number of lines to insert. Specify the appropriate number and press RETURN. Pressing any other key terminates the operation. If there are insufficient blank lines in the screen domain, MANTIS inserts as many lines as possible, then terminates the request.

NOTE

Unlike PF1, only complete lines are inserted; therefore, the column position of the cursor within the selected line is not relevant.

PF8	*Delete a range of lines*. Position the cursor anywhere on the line where deletion is to start and press PF8. MANTIS prompts you for the number of lines to delete. Specify the required number and press RETURN. Pressing any other key terminates the operation.

NOTE

Unlike PF2, only complete lines are deleted; therefore, the position of the cursor within the selected line is not relevant.

PF9	*Remove or add the row scale line*. If the row scale line is already displayed, it is removed; if not, it is displayed in column 1, temporarily overlaying any data in column 1.

NOTE

Unless the Field Separators map-level option is set to NO (see "Library functions" on page 100), MANTIS will not allow you to use column 1 for your screen data even when the row scale line is not displayed.

Key	Enables you to
PF10	*Move a range of lines*. Position the cursor anywhere on the first line to be moved and press PF10. MANTIS prompts you to select the last line in the range. Position the cursor anywhere on the last line and press RETURN. When MANTIS prompts you to select the destination line, position the cursor anywhere on the first line of the destination and press RETURN. Pressing any key other than RETURN at any point terminates the operation. MANTIS only moves the selected lines if the entire destination area is blank. The first and last lines selected may be the same line and the last line may precede the first line. The field names and attributes of all fields within the selected range are also moved during this process.
PF11	*Copy a range of lines*. This key works the same as PF10, except that the lines are copied instead of moved. This process produces fields with the same name. You must change one of each pair using the Update Field Specifications option (see "Update field specifications" on page 52).
PF12	*Display the screen domain* on the last line of the screen. You may change this value if you wish and press RETURN. If existing fields fall outside the new domain, MANTIS automatically extends the domain to the minimum size required to contain all fields.
PF13	Convert simulated box characters to box graphics. Simulated box characters are only recognized when there are two or more of them in adjacent positions that could form part of a box. Simulation characters are defined by the BOXCHARS MANTIS Option. Use PF13 after an external edit to restore box graphics. See "MANTIS options" on page 528 for more information on the BOXCHARS MANTIS Option and BOXGRAPHICS MANTIS Option.
	NOTE PF13 key is disabled, if MANTIS Option NOBOXGAPHICS is set to true.
PF14	Convert box graphics to simulated box characters. See PF13 above for more information.

Key	Enables you to
PF15	Equivalent to GOLD/E. Invoke external editor.
GOLD/H	*Display a help screen* that summarizes the Screen Design PF Keys and shows other information such as the current screen's domain size. The current screen's blank-fill and mask character may be updated via this screen.
GOLD/E	*Invoke the external editor* to edit your design. You may want to use this editor when you create a new design. If you use it to edit an existing design and move a field by more than one row or column, you will lose the attributes of that field.
MINUS	Draw boxes using the cursor keys.
COMMA	Erase boxes using the cursor keys.

Drawing boxes

The Create or Update a Screen option allows you to create boxes by using line-drawing characters as part of your screen design. MANTIS treats line-drawing characters as heading data without field separators, unlike other heading characters. To draw a box, press the MINUS key (auxiliary keypad) and use the cursor keys to draw your boxes and lines. As you move the cursor, MANTIS displays the appropriate characters. MANTIS will not overwrite any existing data characters with a box. To terminate box-drawing mode, press either RETURN or ENTER. To erase a box, either blank it out or press the COMMA (auxiliary keypad) and use the cursor keys to trace the parts of the box or lines you wish to erase.

General considerations

- Box graphics are converted to text equivalents when you use GOLD/E to edit your design. After exiting from the external editor, you can restore box graphics using PF13. The text equivalents of box graphics characters are defined by the BOXCHARS MANTIS Option.
- You cannot draw a box around a double-height or double-width field without ruining the effect of the box graphics.
- Simulated box graphics characters resulting from PF14 or GOLD/E are treated the same as ordinary heading data. They are therefore not considered to be field separators (unlike true box graphics).

Sample screen design

Assume that you want to create a screen design that lists customers by customer number. Assume also that you want to include customer name, branch number, credit rating, credit limit, and a message line. Enter this data on the screen as follows:

```
                                 B|U|R|R|Y's
                                Customer|Report

Customer||||||||Customer||||||||||Branch||||||||Credit|||||Credit
 Number||||||||||Name||||||||||||Number||||||||Rating|||||Limit

 ######    ####################     ####           ##       $#####






##################################################################
```

Notice that the vertical bar character (|) connects the double-spaced heading characters (for example, B|U|R|R|Y'S), and the words of the heading fields (for example, CUSTOMER|REPORT).

Press CANCEL to return to the Screen Design Facility Menu (see "Accessing the screen design facility" on page 27). From the Screen Design Facility Menu, proceed to Library Functions and save your design as detailed in "Library functions" on page 132.

Update field specifications

The Update Field Specifications option allows you to examine, define, and alter attributes for each field in your current screen design. When you select the Update Field Specifications option from the Screen Design Facility Menu (see “Accessing the screen design facility” on page 27), the following screen appears.

```
                    M  A  N  T  I  S


          INSPECT OR ALTER FIELD ATTRIBUTES


     Next Undefined Field  ......................  1
     Nominate By Positioning Cursor On Field  ....  2
     Use Cursor To Select A Range Of Fields  .....  3
     Set Common Attributes For All Box Fields  ...  4
     Set Common Attributes For All Headings  .....  5
     Set Common Attributes For All Data Fields  ..  6
     Supply Symbolic Name Of Field  ..............  XXX...
     Exit  ......................................  CANCEL


            :                                  :
```

The options on this menu are described in the following sections.

Selecting fields for update

The Update Field Specifications Menu provides several ways to select fields for definition. Each option is described below. For a new screen design, use the Next Undefined Field option to define each field. To update an existing screen design, use the Nominate by Positioning Cursor option to select the field from your design or, if you know the field name, select the Supply Symbolic Name of Field option. The remaining options are used for special purpose editing of field attributes and are documented together under the heading Select a Range of Fields or Set Common Attributes for Fields. "Field attributes" on page 56 describes the field attributes you can specify.

Next Undefined Field

Description This option enables you to name and assign attributes to an unnamed field. When you select this option from the Update Field Specifications Menu (see "Update field specifications" on page 52), the first undefined field appears in high (bright) intensity. A prompt screen also appears, partially overlaying your screen design. This screen appears in "Selecting a range of fields or setting common attributes for fields" on page 54 followed by a description of the attribute options. Press RETURN after you define all of the attributes for each field. Repeat this procedure for each undefined field on your screen design. Press CANCEL at any time to return to the Update Field Specifications Menu.

Nominate by Positioning Cursor on Field

Description This option allows you to define or alter field attributes and heading intensities by directly selecting a field from your screen design and without specifying a field name. When you select this option from the Update Field Specifications Menu (see "Update field specifications" on page 52), your screen design appears. To nominate a field, move the cursor to any part of that field and press RETURN. You may also position your cursor on heading fields to change their attributes.

Selecting a range of fields or setting common attributes for fields

The next four options allow you to provide attributes for a range or set of fields. Each option is described below.

Use Cursor to Select a Range of Fields

Description This option enables you to specify attributes that will be applied to a range of fields you select by cursor positioning. When you select this option, your screen design appears. Nominate the range of fields by moving the cursor to the first field and pressing RETURN. MANTIS highlights this field in bright intensity. Then, move the cursor to the last field (or the same field if you only want to select one field) and press RETURN. MANTIS highlights all fields in the selected range and displays the prompt shown in the following screen illustration, partially overlaying your screen design.

```
+-------------------------------------------------------------------------+
|                Specify only those attributes you wish to modify         |
|                                                                         |
|                                                                         |
| Intensity    :        :  Data Type       :         :    Auto-Skip   :   : |
| Reverse/FF   :   :   :   Protected       :   :          Uppercase   :   : |
| Underline/FF :   :   :   Prot Input Only :   :          Highlight   :   : |
| Blinking     :   :       Color           :                              |
| Entry Routine :                                                         |
| Field Sensitive Validation / Forced :   :   :                           |
+-------------------------------------------------------------------------+
```

Set Common Attributes for All Box Fields

Description This option enables you to specify attributes that MANTIS will apply to all box fields. When you select this option, your screen design appears with all box fields displayed in bright intensity and with the prompt shown in the preceding screen illustration, partially overlaying your screen design.

Set Common Attributes for All Headings

Description This option enables you to specify attributes that MANTIS will apply to all heading fields. Note that box fields are not considered heading fields for this selection. When you select this option, your screen design appears with all heading fields displayed in bright intensity and with the prompt shown in the preceding screen illustration, partially overlaying your screen design.

Set Common Attributes for All Data Fields

Description This option enables you to specify attributes that are applied to all data fields (that is, not heading or box fields). When you select this option, your screen design is displayed with all data fields in bright intensity and with the prompt shown in the preceding screen illustration, partially overlaying your screen design.

Modifications to any of these attributes will apply to all fields you have selected in the range or by option (for example, all box fields, headings, etc.). Attributes that are not modified will remain unchanged for each field in the range or option. See "Field attributes" on page 56 for a description of these attributes.

Supply Symbolic Name of Field

Description This option enables you to inspect or alter a field by supplying that field's name in the space provided between the colons on the Update Field Specifications Menu (see "Update field specifications" on page 52).

Exit

Description Press CANCEL to return to the Screen Design Facility Menu (see "Accessing the screen design facility" on page 27).

Field attributes

A list of the attributes you can specify for a field is provided as a prompt screen when you select one of the options on the Inspect or Alter Field Attributes Menu.

For a summary of the possible attributes for screens and their fields, see the Screen Attribute Table at the end of this section. You can dynamically change most field attributes (but not field name nor data type) via the ATTRIBUTE statement in programs. For example, this allows you to highlight or change the color of fields in error. Attributes set or changed by the ATTRIBUTE statement will override the default specifications from the Screen Design. Specifying ATTRIBUTE(map)="RESET" will restore the defaults from screen design.

Assume that you are providing field specifications for the Customer Report screen introduced in "Sample screen design" on page 51 . When you select the Next Undefined Field option, the first undefined data field, Customer Number, appears in bright intensity as shown below.

```
                              B|U|R|R|Y'S
                             CUSTOMER|REPORT

 CUSTOMER|||||||||CUSTOMER|||||||||BRANCH|||||||||CREDIT|||||CREDIT
  NUMBER|||||||||||NAME|||||||||||NUMBER|||||||||RATING|||||LIMIT

 ######   ####################    ####            ##       $#####



+-----------------------------------------------------------------------------+
| Field Name    : CUSTOMER_NUMBER                 :  Row/Column :  7  :  4  : |
| Intensity     : NORMAL     Data Type       : NUMERIC :   Auto-Skip  : Y : |
| Reverse/FF    : N: N:      Protected       : N :         Blinking   : N : |
| Underline/FF  : N: N:      Prot Input Only : N :         Uppercase  : N : |
| Extended      : N:         Length          :  6  :       Cursor     : N : |
| Color         :         :  Detectable      : N :         Modified   : N : |
| Left Bar      : N:         Right Bar       : N :         Over Bar   : N : |
| Double Height : N:         Double Width    : N :         Highlight  : N : |
| Vert Rep/Disp :    :    :  Horiz Rep/Disp  :     :    :  Message    : N : |
| Entry Routine :                                 :                          |
|                            Field Sensitive Validation / Forced  : N : N : |
+-----------------------------------------------------------------------------+
```

Notice that MANTIS automatically provides the row and column coordinates, the length of the field, and the default values for other specifications. The attributes are described below. After you define all the fields on your screen design, press CANCEL to return to the Screen Design Facility Menu (see "Accessing the screen design facility" on page 27).

When Extended Editing field attributes are used in a screen in an application, MANTIS performs field validation after input termination (for example, ENTER or a program function key is pressed). If you do not supply a value for the field, MANTIS supplies the default value. Field validation proceeds as if the user entered the value, with MANTIS verifying the value against the specified parameters. If you supply an invalid value (for instance, a value outside the minimum or maximum range or a value that is not in the validation list), MANTIS stops the field validation process and displays a message. You must reenter the field and the field validation process starts again.

The data fields are described on the following pages.

Field Name

Description *Required*. Provides a symbolic name for this field.

Format 1–30 character alphanumeric name

Considerations

- You can assign a field name only to a data field, not to a heading field.
- You must provide a valid MANTIS name. If you do not, you are prompted to correct the name.
- You can move data directly from a screen to a file or an interface by specifying field names here which will correspond exactly with the element names specified in your file design (or interface). MANTIS builds only one data area for each field. MANTIS retrieves and stores data in a unique location for each field and does not move it from screen to file (or interface) or from file (or interface) to screen. By using the same names in your screen and file designs, you are referring to the same storage area. This feature of MANTIS is called *automatic mapping*.
- You can define a field in two different formats with automatic mapping. For example, you may define a text field with a length of 55 in your screen design and define a field with the same name in your external file design with a length of 35. MANTIS uses the first field length it encounters when it executes your program. Therefore, ACCESS and FILE statements should always occur first in your program. This will ensure that you always use the most current field definition and reduces the chances of database field truncation because of incorrect or out-of-date screen definitions.

Row/Column

Description MANTIS identifies the row and column coordinates of the field being defined.

Consideration You cannot modify these values here. To change the position of a field in your screen design, return to the Create or Update a Screen option ("Create or update a screen" on page 31).

Intensity

Description *Optional*. Specifies the brightness of the field.

Default N normal

Options Specify one of the following in the first character position:

B	bright
H	hidden
N	normal

Consideration Hidden fields are often used for passwords; bright fields are used for headings or key fields.

Data Type

Description *Optional*. Indicates whether this field will be used for numeric values or for text only.

Default T text

Options

N	numeric data
T	text data

Consideration All numeric fields allocated by Screen Design are defined as BIG. If a data field is specified as numeric, the input and output edit characteristics described in "Numeric edit masks" on page 36 will be in effect. If you want a field to be SMALL, for example, make sure that your MANTIS program defines it as SMALL before the SCREEN statement is executed.

Auto-Skip

Description *Optional*. Indicates whether the cursor should skip automatically to the next unprotected field when this field is completely filled.

Default Y yes

Options N for no, no auto-skip

Y for yes, cursor should automatically skip

Considerations

- When this option is disabled (N), the operator must always use the TAB key to advance to the next field.
- Autoskip is operative from a batch input stream only if the BATAUTOSKIP MANTIS Option is TRUE.

Reverse/FF

Description *Optional*. Specifies whether the field is to be displayed in reverse video, and if so, whether the reverse video should extend over the full field, or just over the data in the field.

Default N/N No/No

Options Y/N for yes, you want reverse video, and no if it should not extend over the full field

Y/Y for yes, you want reverse video, and yes if it should extend over the full field

N/N for no, you do not want reverse video

Protected

Description *Optional*. Indicates whether you want this field protected (allowing read-only capabilities) or whether you want it unprotected (allowing data to be entered in the field).

Default	N	no for data fields
	Y	yes for heading fields
Options	Y	for yes, you want the field to be protected
	N	for no, you want the field to be unprotected

Considerations

- A field is unprotected only if N (for no) is specified for both the PROTECTED and PROTECTED INPUT ONLY attributes.
- You cannot alter this attribute for heading fields.

Blinking

Description *Optional*. Specifies whether the field should blink when it is displayed.

Default	N	no
Options	Y	for yes, you want blinking
	N	for no, you want no blinking

Underline/FF

Description *Optional*. Specifies whether the field is to be underlined when it is displayed, and if so, whether the underline should extend over the full field, or just over the data in the field.

Default	N/N	No/No
Options	Y/N	for yes, you want underlining, and no if it should not extend over the full field
	Y/Y	for yes, you want underlining, and yes if it should extend over the full field
	N/N	for no, you do not want underlining

Protected Input Only

Description *Optional*. Indicates whether you want this field protected against input only (you can press TAB to move to the field but data cannot be entered in the field).

Default

N	No

Options

Y	for yes, you want the field to be protected against input only
N	for no, you do not want the field to be protected against input only

Considerations

- This attribute may only be applied to a data field.
- You may specify Y (for yes) only if N (for no) has been specified for the PROTECTED field attribute; that is, a data field cannot have both the PROTECTED and PROTECTED INPUT ONLY attributes.

Uppercase

Description *Optional*. Indicates whether MANTIS will convert input data for this field to uppercase. This attribute is meaningful only for text input.

Default

N	no

Options

Y	for yes, you want MANTIS to convert the input data to uppercase letters.
N	for no, for no conversion

Extended

Description Indicates whether this field is to have extended editing.

Default

N	no, unless the field already has one or more of the extended edit attributes

Options

Y	for yes, you want the field to have extended editing
N	for no, you do not want the field to have extended editing

When you select the Extended Edit attribute (see the screen illustration at the beginning of this section), MANTIS displays the following prompt screen on top of the Field Attributes screen shown in the following figure.

```
                            B|U|R|R|Y's
                           Customer|Report

Customer|||||||Customer||||||||Branch|||||||Credit|||||Credit
 Number||||||||||Name||||||||||Number|||||||Rating|||||Limit

######   ####################    ####           ##       $#####



+-------------------------------------------------------------------------------+
|                              Extended Edit                                    |
|     Required : N :  Display Default : N :   Fill: N :   Valid Name: N :       |
|     Validation List : N : Variable :                                   :       |
|     Exit Routine :                                     :                      |
|                                                                               |
|      1-Default Value  2-Low Range Value  3-High Range Value                   |
|  1- :                                                                  :      |
|  2- :                                                                  :      |
|  3- :                                                                  :      |
+-------------------------------------------------------------------------------+
```

The Extended Edit attributes are marked with an (EE) next to the field name in the explanations below.

Required (EE)

Description	*Optional*. Requires users to enter data in this field.	
Default	Y	yes
Options	Y	for yes, you want to require users to supply data
	N	for no, you do not want to require users to supply data
Consideration	MANTIS displays an error message if this field is null or zero after the screen is conversed.	

Display Default (EE)

Description	*Optional*. Indicates whether you want a default value to appear in this field when the screen is displayed.	
Default	Y	yes
Options	Y	for yes, you want a *default* value to appear (see the line numbered 1 on this prompt to enter a value)
	N	for no, you want the field to display a *null* or *zero* value
Consideration	If you do not select this attribute, but specify a default value, the field will appear empty when the screen is conversed (if it has a zero numeric or null text value). If you do not enter a value in the field (or clear it), MANTIS will set the program's field to the default value on input. This value will appear on subsequent displays of the screen (unless it is modified).	

Fill (EE)

Description	*Optional*. Indicates whether you want users to fill the entire field when they enter data.	
Default	N	no
Options	Y	for yes, you want the field to be filled
	N	for no, you do not want the field to be filled

Valid Name (EE)

Description	*Optional*. Indicates whether you want MANTIS to check entered text data for validity as a symbolic name.	
Default	N	no
Options	Y	for yes, you want MANTIS to check the data
	N	for no, you do not want MANTIS to check the data

Validation List (EE)

Description	*Optional*. Indicates whether the value of this field should be validated against a fixed list of values. MANTIS considers the input value valid only if it is equal to one of the values supplied in this list.	
Default	N	no
Options	Y	for yes, you want the value of the field to be validated against a Fixed Validation List
	N	for no, you do not want the value of the field to be validated against a Fixed Validation List

Consideration If you specify Y (yes), MANTIS displays a Fixed Validation List screen (shown in the following screen illustration) when you press RETURN. One of two screens is displayed depending on whether the field is text or numeric. The screens allow up to a screen of validation entries, one entry per line. You may enter values in any order.

```
                          Update Fixed Validation List
 Field Name :                                          :  (length  :  5   :)
   AID  NUM   v---v (NUMERIC)
  :    :     :                                                            :
  :    :     :                                                            :
  :    :     :                                                            :
  :    :     :                                                            :
  :    :     :                                                            :
  :    :     :                                                            :
  :    :     :                                                            :
  :    :     :                                                            :
  :    :     :                                                            :
  :    :     :                                                            :
  :    :     :                                                            :
  :    :     :                                                            :
  :    :     :                                                            :
  :    :     :                                                            :
  :    :     :                                                            :
  :    :     :                                                            :
  :    :     :                                                            :
  :    :     :                                                            :
  :    :     :                                                            :
```

The field name and its length are displayed at the top of this screen for text and numeric fields. Supply data for the following fields:

A-I-D (EE)

Description *Required*. Specifies the action you want to perform on an entry.

Options

A	alter an entry
I	insert an entry
D	delete an entry

Num (EE)

Description MANTIS supplies the entry's number in the list.

Value

Description *Required*. Provides a value for the field.

General considerations

- The “v---v” is displayed to show the length of the data field. The validation data you enter in this column should not exceed the length of the field, since it may represent a value that cannot be entered into the field when the screen is conversed.
- MANTIS does not check to ensure that the values you enter fall within the high and low range specifications of the Extended Edit Facility, or that the values are compatible with the field type or edit mask.
- When you exit from the Fixed Validation List screen, any changes you have made are registered and MANTIS returns to the screen where the field was chosen. At this point, if the fixed list is empty, the VALIDATION LIST field in the Extended Edit Facility is reset to N (no).
- To delete the validation list, you have to delete all entries in the FIXED VALIDATION LIST screen.
- Help is available via the HELP (GOLD/H) program function.
- Editing on the list stops when you press ENTER and there are no action indicators in the AID column.
- You may use CANCEL to override MANTIS field editing (at any point) when a screen has been CONVERSED, and force control to return to the program.
- Use the Extended Edit Attribute terminal function to inspect edit attributes for a field, including the validation list. Position the cursor over the field and press VALID (GOLD/V). You may perform this function at any time during data entry to the screen. When you have finished viewing the attributes, press RETURN to go back to your data entry screen. To exit from a multipage display before the display is complete, use CANCEL.
- Both Validation List and variable name entries may exist for the same field.

Variable

Description *Optional*. Specifies a MANTIS variable to be used for validating the contents of the field.

Format MANTIS variable, numeric or text string, scalar variable, or array

Considerations

- The variable name represents a simple variable, or more commonly, an array of compatible type to the field. This variable holds the value (or values) that are valid for the field. This list of values is specified at run time rather than in Screen Design.
- The named variable is not prefixed if PREFIX is used on the SCREEN statement.

Exit Routine (EE)

Description *Optional*. Specifies the name of a MANTIS subroutine to be used for validating the contents of the field.

Considerations

- The Exit Routine name must be either an *ENTRY-name* (internal subroutine) or *PROGRAM-name* (external subroutine).
- An Exit Routine will always execute last in the field validation process (for example, if a fixed-list is also specified, then the fixed validation will be invoked first).

- Exit Routines may take eight parameters which are specially set up by MANTIS. Parameters *p3* and *p4* are used to return status information about the field's validity, and may be set by the Exit Routine.

  `ENTRY` *`routine-name`* `[ (`*`p1`*`[,`*`p2`*`[,`*`p3`*`[,`*`p4`*`[,`*`p5`*`[,`*`p6`*`[,`*`p7`*`[,`*`p8`*`]]]]]]] ) ]`

  p1: Complex SCREEN variable for the screen containing the field which has this Exit Routine.

  p2: TEXT or Numeric variable associated with the field which has this Exit Routine.

  p3: SMALL variable used for indicating validation success or failure. On entry to the Exit Routine, this has a value of zero (0). Setting this error-flag variable to a nonzero value indicates that the field contents are invalid.

  p4: TEXT(80) variable used for returning an error/informational message to be displayed. On entry to the Exit Routine, this has a NULL ("") value. On returning from the Exit Routine, if this variable has been set but the error-flag variable (*p3*) is 0, then the contents of this variable will be displayed in the message field of the CONVERSE input map for informational purposes only. These informational messages will only appear under Field Sensitive Validation.

  p5: BIG(2) parameter that is relevant only for a repeat field.

  p5(1) contains the field's first dimension.

  p5(2) contains the field's second dimension.

  For a scalar field, both *p5*(1) and *p5*(2) will be zero.

  p6: TEXT(80) parameter that contains the symbolic name of the field, including any screen-name prefix, if applicable.

  p7: TEXT(80) parameter that contains the symbolic name of the screen containing the field.

  p8: SMALL parameter, which is set to FALSE to indicate that the routine is being called as a Field Exit Routine (as opposed to a Field Entry Routine). This parameter allows you to write a single routine that can handle both Field Entry and Field Exit cases.

Extended Edit Data (Items 1–3) (EE)

Description *Optional*. Indicates whether you want to specify a default value, or a low- and high-range check.

Options Specify any or all of the following three entries:

1	default value for the field
2	low-range value (lowest value user can enter)
3	high-range value (highest value user can enter)

Considerations

- If you do not specify a value, MANTIS automatically assumes that you do not want that particular extended edit attribute associated with the field.
- MANTIS does not check to ensure that the default value falls between the low and high range, that the low range is less than the high range, or that the supplied values are compatible with the field type or edit mask.

After the Extended Edit Screen is filled in, the program returns to the Edit Screen. The explanation of the remaining fields, starting with “Length” are as follows..

```
                              B|U|R|R|Y'S
                             CUSTOMER|REPORT

 CUSTOMER|||||||CUSTOMER|||||||||BRANCH|||||||CREDIT|||||CREDIT
  NUMBER|||||||||||NAME|||||||||||NUMBER|||||||RATING|||||LIMIT

 ######   ####################    ####            ##       $#####



+-----------------------------------------------------------------------------+
| Field Name    : CUSTOMER_NUMBER                :  Row/Column :  7  :  4  : |
| Intensity     : NORMAL     Data Type        : NUMERIC :   Auto-Skip  : Y : |
| Reverse/FF    : N: N:      Protected        : N :         Blinking   : N : |
| Underline/FF  : N: N:      Prot Input Only  : N :         Uppercase  : N : |
| Extended      : N:         Length           :  6  :       Cursor     : N : |
| Color         :         :  Detectable       : N :         Modified   : N : |
| Left Bar      : N:         Right Bar        : N :         Over Bar   : N : |
| Double Height : N:         Double Width     : N :         Highlight  : N : |
| Vert Rep/Disp :    :    :  Horiz Rep/Disp   :     :    :  Message    : N : |
| Entry Routine :                                :                            |
|                            Field Sensitive Validation / Forced  : N : N : |
+-----------------------------------------------------------------------------+
```

Length

Description *Optional*. Provides the length of the field.

Default MANTIS displays the length of the selected field based on the mask characters you entered.

Format Number in the range 1–255

Considerations

- You may alter the length at this point to correct a design error, but MANTIS will not allow you to set the length to zero or reduce the size of the field if the mask contains edit characters other than the data-fill character (#).

- If you set the field length to 255, MANTIS automatically adjusts the field length to fill the rest of the screen row (or printer line if OUTPUT PRINTER is in effect) when the SCREEN statement is executed. This feature allows you to design screen fields that extend to the width of the page, regardless of the output device or file page width. This is useful in conjunction with the OUTPUT PRINTER statement.

Cursor

Description *Optional*. Indicates whether MANTIS should put the cursor in this field when you converse the screen.

Default	N	no
Options	Y	for yes, you want MANTIS to position the cursor in this field when you converse the screen
	N	for no, you do not want MANTIS to position the cursor in this field when you converse the screen

Considerations

- If more than one field in a screen has the CURSOR attribute, the first field has the cursor when the screen is conversed (the field with the CURSOR attribute that has lowest row and column coordinates).
- If the ATTRIBUTE (...)=“CUR” statement is executed, the cursor attributes of all other fields in the screen will be canceled. If more than one field is given the cursor attribute by the ATTRIBUTE statement, only the last ATTRIBUTE statement is effective.

Color

Description *Optional*. Specifies a particular color for this field.

Default NO COLOR

Options Underlines indicate abbreviations:

BLUE	RED	C00
GREEN	TURQUOISE	C01
NEUTRAL	YELLOW	C15
PINK		

Considerations

- **OpenVMS** OpenVMS environments support ReGIS color terminals, in particular the VT200 Series and VT300 Series terminals with ReGIS capability. Color support is provided via special TERMTABLE entries supplied with MANTIS. Refer to *AD/Advantage MANTIS Administration OpenVMS/UNIX*, P39-1320, for more information about TERMTABLES.

- **OpenVMS** ReGIS terminals operate in either normal (monochrome) mode or ReGIS (color) mode. Color screen refreshing is much slower than normal refreshing. MANTIS will operate the terminal in normal mode until a screen with at least one color field is CONVERSED. MANTIS switches the terminal into color mode when color is required, and back to normal mode when color is no longer required.

- **OpenVMS** MANTIS detects color capability for a terminal at startup. Color for a terminal can be enabled or disabled using the ATTRIBUTE(TERMINAL) statement.

- **OpenVMS** The screen design session is conducted in normal (monochrome, as opposed to color) mode with the exception of the Display Completed Design option. This option operates in normal or color mode, depending upon the associated screen attributes.

- **OpenVMS** Note that if you are operating in IBM compatibility mode, you must specify IBM-compatible field attributes (one of the first seven colors), or you will receive an IBM compatibility mode exception.

- **OpenVMS** VT241 users have an active palette of four colors. See "Color support extensions" on page 671 for considerations.
- **OpenVMS** MANTIS also supports specification of color by position (that is, C00...C15). See "Color support extensions" on page 671 for more information.
- **UNIX** MANTIS for UNIX color terminal support availability is system dependent.

Detectable

Description *Optional*. For IBM compatibility only and for use with terminals with pen-detectable capabilities only. Indicates whether you want the field to be detectable.

Default N no

Options

Y	for yes, you will be using the screen in your MANTIS for IBM environment, if your terminal provides detectable capabilities, and if you want the field to be detectable
N	for no, you do not want the field to be detectable

Consideration Unless your Master User instructs you otherwise, leave this field as N (no).

Modified

Description *Optional*. For IBM compatibility only. Indicates whether you want the field marked as modified when you converse the screen, whether or not it was modified.

Default N no

Options

Y	for yes, you will be using the screen in your MANTIS for IBM environment and if you want the field marked as modified each time you converse the screen in this environment
N	for no, you do not want the field marked as modified each time you converse the screen

Considerations

- Unless your Master User instructs you otherwise, leave this field as N (no).
- Use MODIFIED(map) or MODIFIED(map,field) to check modified status after a CONVERSE

Left Bar

Description *Optional*. For IBM compatibility only. Indicates whether you want a left bar at the beginning of your field.

Default N no

Options

Y	for yes, you will be using the screen in your MANTIS for IBM environment and if you want the field to start with a left bar
N	for no, you do not want a left bar

Consideration Unless your Master User instructs you otherwise, leave this field as N (no).

Right Bar

Description *Optional*. For IBM compatibility only. Indicates whether you want a right bar at the end of your field.

Default N no

Options

Y	for yes, you will be using the screen in your MANTIS for IBM environment and if you want the field to end with a right bar
N	for no, you do not want a right bar

Consideration Unless your Master User instructs you otherwise, leave this field as N (no).

Over Bar

Description *Optional*. For IBM compatibility only. Indicates whether you want an over bar at the top of your field.

Default N no

Options

Y	for yes, you will be using the screen in your MANTIS for IBM environment and if you want the field to have an over bar
N	for no, you do not want an over bar

Consideration Unless your Master User instructs you otherwise, leave this field as N (no).

Double Height

Description *Optional*. Indicates whether you want the field to double its vertical size.

Default	N	no
Options	Y	for yes, that the field should have double height
	N	for no, that the field should have standard height

Considerations

- Row and column location is independent of displayed character size. The row and column specification for a double-height field is the same as if it were of standard height.
- A double-height field is automatically double width. All double-width considerations apply.
- If a field is designated as double-height, all fields in the same row are displayed as double-height when the screen is conversed. Designating a row as double-height will affect the preceding row in the screen design since this row will be part of the double-height specification. Therefore, you must ensure that there are no fields in the row preceding the row you wish to specify as double-height.
- Avoid boxing double-height fields.
- Data entry into double-height fields is supported, although data is actually only entered in the bottom half of a double-height field. The top half of a double-height field is always protected. Data entry into double-width fields is also supported. Characters are echoed as they are entered.
- If your terminal does not support the double-height attribute, this field attribute will have no effect.
- **UNIX** MANTIS for UNIX does not support Double Height. Setting this attribute will cause double height to be simulated by displaying the field on the two lines of the display that would be used by MANTIS in OpenVMS environments.

Double Width

Description *Optional*. Indicates whether you want the field to double its horizontal size.

Default	N	no
Options	Y	for yes, that the field should have double width
	N	for no, that the field should have standard width

Considerations

- If a field is designated as double-width, all fields in the same row are displayed as double-width when the screen design is conversed.
- Row and column location is independent of displayed character size. The row and column specification for a double-width field is the same as if it were of standard width.
- During screen design, double-width fields are entered and displayed as single-width fields. Therefore, you must ensure that the fields which are designated as double width do not overlap other fields in the same row or exceed the screen domain boundary. If you attempt to save or replace a screen with overlaps, MANTIS will not perform the save or replace operation and will return an error message.
- If your terminal does not support the double-width attribute, this field attribute will have no effect.
- **UNIX** MANTIS for UNIX does not support Double Width. Setting this attribute will cause double width to be simulated by double-spacing the field in the display.

Highlight

Description *Optional*. Indicates whether the field will be highlighted with any highlighting attribute supported by the terminal when it is displayed.

Default	N	no
Options	N	for no, that the field is not highlighted
	Y	for yes, that the field is highlighted

Considerations

- This field should be used with one of the following attributes: BRIGHT, REVERSE VIDEO, BLINKING, or UNDERLINE.
- On a terminal with advanced video options, the HIGHLIGHT has no effect.
- On a terminal without advanced video options, the HIGHLIGHT attribute converts any of the BRIGHT, REVERSE VIDEO, BLINKING, or UNDERLINED attributes to UNDERLINED or REVERSE VIDEO, depending on the physical characteristics of the terminal.

Vertical Repeats/Disp

Description *Optional*. Specifies the vertical repeat count and displacement if you want the field to have multiple occurrences.

Default Repeats = 0. If repeats are specified, you must enter a value for the displacement, or you will get an error message from Screen Design.

Format Two numbers in the range 0–255

Considerations

- The VERTICAL REPEATS/DISP field actually consists of two data entry fields separated by a space. The first field is for the additional repeats, and the second field is for the vertical displacement. For example, if you want total of ten occurrences, you should specify 9 additional repeats.
- Enter the number of additional occurrences of the field (not the total number of occurrences) and the spacing between rows (1 = single spacing, 2 = double spacing, etc.).
- If you enter 255 as the number of repeats, MANTIS will automatically adjust the repeat count to fill the physical screen (or printer page if OUTPUT PRINTER is in effect) when the SCREEN statement is executed. This feature allows you to design repeating screen fields that extend to the bottom of the page, regardless of the output device or file page length. This is useful in conjunction with the OUTPUT PRINTER statement.
- If any of the extra fields overlap any existing fields or extend beyond the domain of the screen design, you will not be permitted to save or replace the design. An error message indicating the problem will be displayed when you try to DISPLAY, SAVE, or REPLACE the completed design.
- Specifying additional repeats creates an array (subscripted) variable for the repeated fields.

Horizontal Repeats/Disp

Description *Optional*. Specifies the horizontal repeat count and displacement for the field.

Default Repeats = 0. If repeats are specified, you must enter a value for the displacement, or you will get an error message from Screen Design.

Considerations

- The HORIZONTAL REPEATS/DISP field actually consists of two data entry fields separated by a space. The first field is for the additional repeats, and the second field is for the horizontal displacement. . For example, if you want total of ten occurrences, you should specify 9 additional repeats.
- Enter the number of additional occurrences of the field (and not the total number of occurrences) and the spacing between the fields (that is, the number of columns from the start of one field to the start of the next).
- MANTIS wraps extra horizontal occurrences of a field to the next line as long as they fit within the screen domain. MANTIS will not break a field when wrapping. If an occurrence of the field does not fit entirely within the width of the map domain, the entire field is moved to the next line.
- If any of the extra fields overlap any existing fields or extend beyond the domain of the screen design, you will not be permitted to save or replace the design. An error message indicating the problem will be displayed when you try to DISPLAY, SAVE, or REPLACE the completed design.
- Specifying additional repeats creates an array (subscripted) variable for the repeated fields.

Message

Description *Optional*. Indicates whether you want MANTIS to use this field for display of system messages (for example, field validation error messages). By default, MANTIS displays system messages in the Message Field of the converse input map.

Default	N	no
Options	Y	for yes, you want MANTIS to use this field for displaying system messages
	N	for no, you do not want MANTIS to use this field for displaying system messages

Considerations

- If more than one field in a screen design has the MESSAGE attribute, the field with the lowest row and column coordinates is considered the MESSAGE field for that screen when the screen is conversed.
- If the ATTRIBUTE(. . .)="MSG" statement is executed, the MESSAGE attribute will be canceled in all other fields in the screen. If more than one field is given the MESSAGE attribute by the ATTRIBUTE statement, only the last ATTRIBUTE statement is effective. ATTRIBUTE(map)="RESET" will restore the screen design default.
- When a system message is to be displayed during a CONVERSE operation, the display field is determined as follows:
  - The map set is searched for a field with the MESSAGE attribute that is visible on the terminal display. The Active Map (that is, the map most recently added to the map set) is searched first, and then the map(s) below it until a visible MESSAGE field is found.
  - If no visible MESSAGE field is found, the Message Field of the converse input map is used.

Entry Routine

Description

Optional. Specifies the name of a MANTIS subroutine to be executed the moment that the field gains the input focus. For example, when:

- the cursor is moved into the field as the result of a TAB operation
- the cursor is moved into the field using the arrow keys
- the cursor autoskips to the field from a previous field
- the field is the first unprotected field on the screen and the cursor first appears in the field when the screen in CONVERSEd
- the cursor is dynamically placed on the field during a CONVERSE as a result of a Field Entry/Exit routine setting the CUR (cursor) attribute on the field
- the cursor is placed at the beginning of the field as the result of a validation error—either due to field sensitive validation, or validation occurring at the end of the CONVERSE

Considerations

- The Entry Routine name must be either an *ENTRY-name* (internal subroutine) or *PROGRAM-name* (external subroutine).
- Entry Routines may take eight parameters which are specially set up by MANTIS. Parameter *p4* may be set in the Entry Routine so that an informational message can be returned. The parameter order is as follows:

```
ENTRY routine-name [ (p1[,p2[,p3[,p4[,p5[,p6[,p7[,p8]]]]]]] ) ]
```

p1: Complex SCREEN variable for the screen containing the field which has this Entry Routine.

p2: TEXT or Numeric variable associated with the field which has this Entry Routine.

p3: SMALL variable, that MANTIS sets to TRUE if the routine was invoked as the result of the cursor being placed on the field due to a field validation error, otherwise it is set to FALSE.

p4: TEXT(80) variable that is used for returning an informational message to be displayed. On execution of the Entry Routine, this has a NULL (“”) value. On returning from the Entry Routine, if this variable has been set, then its contents will be displayed in the message field of the CONVERSE input map.

p5: BIG(2) parameter that is relevant only for a repeat field.

p5(1) contains the index of the field’s first dimension.

p5(2) contains the index of the field’s second dimension.

For a scalar field, both *p5*(1) and *p5*(2) will be zero.

p6: TEXT(80) parameter that contains the symbolic name of the field, including any screen-name prefix, if applicable.

p7: TEXT(80) parameter that contains the symbolic name of the screen containing the field.

p8: SMALL parameter, which is set to TRUE to indicate that the routine is being called as a Field Entry Routine (as opposed to a Field Exit Routine). This parameter allows you to write a single routine that can handle both Field Entry and Field Exit cases.

Field Sensitive Validation / Forced

Description *Optional*. Specifies that the field is to be immediately validated when either:

- The cursor is moved out of the field (for example, by using a TAB operation)
- A program function (except CANCEL) is performed when the cursor is in the field (for example, ENTER or PF1)

Unless Forced is specified, MANTIS will validate the field only if has been modified by data entry.

Default	N/N	no/no
Options	Y/N	for yes, you want field sensitive validation, and no, you don't want the validation to be forced (validation to be performed only if the field has been modified by data entry)
	Y/Y	for yes, you want field sensitive validation, and yes, you want the validation to be forced (validation to be performed regardless of whether the field has been modified by data entry)
	N/N	for no, you do not want MANTIS to perform field sensitive validation.[0]"validated field sensitively," while perhaps grammatically equivalent, is an awkward construction for this section

Considerations

- Field Validation can only occur for fields with Extended Edit Attributes, or for numeric fields (alphabetic character input is invalid).
- After MANTIS has once performed Field Sensitive Validation for a field, MANTIS records that it has been validated so that it will not be validated again unnecessarily. This validation status can only be reset in the following instances:
  - For fields with forced field sensitive validation, by putting the cursor in the field
  - For fields with nonforced field sensitive validation, by re-modifying the field by data entry
- A field with validation attributes will always be validated when the CONVERSE is terminated (for example, ENTER or a program function key is pressed), unless MANTIS has previously performed field sensitive validation during the CONVERSE.

Screen Attributes

The following table displays a summary of the possible attributes for screens and their fields. You can dynamically change most field attributes (but not field name nor data type) via the ATTRIBUTE statement in programs.

Attribute	Specified in
Field attributes: ♦ intensity (normal, bright, hidden) ♦ data type (text, numeric, Kanji) ♦ protected (no, yes) ♦ protected input only (no, yes) ♦ reverse video / full field ((no, no), (yes, no), (yes, yes)) ♦ blinking (no, yes) ♦ underline/full field ((no, no), (yes, no), (yes, yes) ♦ uppercase (no, yes) ♦ autoskip (no, yes) ♦ highlight (no, yes) ♦ extended edit (no, yes) (see below) ♦ length (default provided by mask characters in data field) ♦ cursor (no, yes) ♦ color (no color, blue, green, neutral, pink, red, turquoise, yellow, C*nn*) ♦ detectable (no, yes)* ♦ modified (no, yes)* ♦ left bar (no, yes)* ♦ right bar (no, yes)* ♦ over bar (no, yes)* ♦ vertical/horizontal repeats and displacement ** ♦ double height (no, yes)* ♦ double width (no, yes)* ♦ message (no, yes)* ♦ entry routine ♦ field sensitive validation / forced (no, no), (yes, no), (yes, yes)	Update field specifications (“Update field specifications” on page 52)

Attribute	Specified in
Domain Size	Create or Update a Screen (“Create or update a screen” on page 31)
Extended edit attributes for fields: ♦ required field (yes, no) ♦ display default (yes, no) ♦ field to be filled (yes, no) ♦ valid name (yes, no) ♦ validation list (yes, no) ♦ variable for validating ♦ exit routine ♦ default value ♦ range checking—low and high values	Update field specifications (“Update field specifications” on page 52)
Map attributes: ♦ sound alarm (no, yes) ♦ full display (no, yes) ♦ protect bottom line of screen (no, yes) ♦ automatic windowing (no, yes) ♦ field separators (no, yes) ♦ opaque map (no, yes) ♦ vertical windowing (no, yes) ♦ horizontal windowing (no, yes) ♦ mask character (#) ♦ blank fill character (|)	Library functions (“Library functions” on page 100)

* For compatibility with MANTIS for the IBM mainframe.
** You can also specify repeats using the Update Repeat Specifications option.

List field specifications

The List Field Specifications option allows you to view and optionally select for modification all fields (both data and headings, but not boxes) and their (non-default) attributes. You can use this option at any time during the screen design process to verify field specifications.

When you select the List Field Specifications option from the Screen Design Facility Menu (see “Accessing the screen design facility” on page 27), a screen appears with all field names, field masks, heading text, and non-default attributes listed for the screen currently in your work area. The following figure shows a sample list of field specifications. You may select fields for update from this screen.

```
                            List Field Specifications              Page 1
USERNAME:BURRYS
Sel---------Field Name----------- Row.Col Lwn -------Attribute List--------
   "B U R R Y'S"                   1,30    11
   "CUSTOMER REPORT"               2,28    15
   "CUSTOMER        CUSTOMER   "   4,2     63
   "NUMBER           NAME      "   5,3     61
   CUST_NUMBER                      7,3     6    NRE,BRI,DEF
   CUST_NAME                        7,12    20   NRE
   BRCH_NUMBER_CUST                 7,37    4    NRE
   CUST_CREDIT_RAT                  7,52    2    NRE
   CUST_CREDIT_LIM / $#####         7,59    6    NRE,NUM,MAS
   MESSAGE                          22,3    77   NRE,BRI,PRO









Use <CANCEL> to Exit
```

A description of this screen follows.

Sel

Description *Optional*. Selects the corresponding field for modification.

Format S (select)

Consideration After you select this field, the S is replaced with an asterisk (*). MANTIS redisplays the attribute box. You must remember to save any changes you make.

Field Name

Description MANTIS displays the symbolic name for each field.

Considerations

- If the field has a mask (other than all hash characters), as much as possible of the mask is displayed beside the field name, separated by a slash (/).
- If the field is a heading, as much as possible of the heading text is displayed here. Box fields are not displayed on this listing.

Row,Col

Description MANTIS provides the row and column coordinates of the field.

Len

Description MANTIS displays the field length.

Attribute List

Description MANTIS displays the non-default field attributes of the field in abbreviated 3-character form. The possible attributes (with their underlined abbreviations) are:

Intensity	BRIGHT, HIDDEN
Data type	NUMERIC, HEADING
Protected	PROTECTED
Protected Input Only	PROTECTED INPUT ONLY
Pen detectable*	DETECTABLE

Modified field*	MODIFIED
No autoskip to next field	NO AUTOSKIP
Color	NEUTRAL, BLUE, PINK, GREEN, TURQUOISE, RED, YELLOW, C*nn***
Reverse video	REVERSE, REVERSE FULL FIELD
Blinking	BLINK
Field underlining	UNDERLINE, UNDERLINE FULL FIELD
Position cursor	CURSOR
Highlight field	HIGHLIGHT
Field Sensitive Validation	FIELD SENSITIVE VALIDATION
Forced Field Sensitive Validation	FORCED FIELD SENSITIVE VALIDATION
Field Entry Routine	FIELD ENTRY ROUTINE
Extended edit	REQUIRED, DEFAULT, FILL, VALID NAME, VALIDATION LIST, VARIABLE, FIELD EXIT ROUTINE, SHOW DEFAULT***, RANGE CHECK
Numeric edit mask	MASKED****
IBM field boxing	LEFT BAR, RIGHT BAR, OVERLINE
Double height/width	DHEIGHT, SHEIGHT, DWIDTH, SWIDTH
Message Field	MESSAGE

NOTE

* For MANTIS in the IBM environment compatibility only.
** C*nn* is described in "Color support extensions" on page 671.
*** The default value is displayed when the field contains a zero or a null value.
**** Masked indicates that the field has a numeric edit mask.

Press CANCEL to return to the Screen Design Facility Menu (see "Accessing the screen design facility" on page 27).

Update repeat specifications

The Update Repeat Specifications option enables you to repeat a field or consecutive fields vertically or horizontally on your screen design. (You can also specify repeat specifications in the Update Field Specifications option, as described in "Field attributes" on page 56.) When you select the Update Repeat Specifications option from the Screen Design Facility Menu (see "Accessing the screen design facility" on page 27), the following menu appears.

```
                    M  A  N  T  I  S

              REPEAT RANGE SPECIFICATIONS


              Identify Repeat Range By :

          1) Hitting RETURN to nominate by cursor

       or 2) Entering the name of the leftmost field
             and the name of the rightmost field


:                                 :                                 :
```

Identify fields

From the Update Repeat Specifications Menu, identify which field(s) you want to repeat using one of the following methods:

Hitting RETURN to nominate by cursor

Description Press RETURN and your current screen design appears. To nominate the field(s) you want repeated, move the cursor to the first field and press RETURN. MANTIS highlights this field. Then, move the cursor to the last field to nominate a range of fields (or the same field if you want to repeat only one field) and press RETURN.

Naming Field

Description Enter the name of the field you want to be repeated and press RETURN. To nominate a consecutive range of fields, key in the names of the first and last fields to be repeated and press RETURN.

When you nominate a field, or a range of fields, the screen shown in "Number of repeats" on page 94 appears.

Number of repeats

Once you have selected the field or range of fields you want to repeat, MANTIS displays the nominated fields and a repeat prompt screen in bright intensity. The following figure illustrates specifying repeats for the Burry's Customer Report screen.

```
                              B|U|R|R|Y'S
                            CUSTOMER|REPORT

CUSTOMER|||||||||||CUSTOMER||||||||BRANCH||||||||CREDIT|||||CREDIT
NUMBER||||||||||||NAME||||||||||||NUMBER||||||||RATING|||||LIMIT

######    ####################      ####           ##       $#####


      +-------------------------------------------------------------------+
      |                                                                   |
      |                  Additional vertical repeats?   : 14  :           |
      |                  Displace by how many lines?    : 1   :           |
      |                  Additional horizontal repeats? :     :           |
      |                  Displace by how many columns?  :     :           |
      |                                                                   |
      +-------------------------------------------------------------------+
```

Enter data as described on the following pages.

Additional Vertical Repeats?

Description *Optional*. Indicates the number of additional vertical repeats you want, not the total number of occurrences.

Default 0

Format Number in the range 0–255

Considerations

- If you enter 255, MANTIS will automatically adjust the repeat count to fill the screen window (or printer page if OUTPUT PRINTER is in effect) when the SCREEN statement is executed.
- If any of the extra fields overlap any existing fields or extend beyond the domain of the screen design, you will not be permitted to save, display or replace the design. An error message indicating the problem will be displayed when you try to display the screen using the Display Completed Design option.

Displace By How Many Lines?

Description *Required* (if Additional Vertical Repeats are specified). Specifies the spacing you want between vertically repeated lines (1 = single space, 2 = double space, etc.).

Default 0

Format Number in the range 0–255

Additional Horizontal Repeats?

Description Specifies the number of additional horizontal repeats you want, not the total number of occurrences.

Default 0

Format Number in the range 0–255

Displace By How Many Columns?

Description Indicates the displacement you want between repeated columns, from the start of the first field to the start of the desired location (for example, if you want to repeat a 3-character field with two characters between fields, the column displacement would be five columns).

Default 0

Format Number in the range 0–255

Considerations

- MANTIS wraps extra horizontal occurrences of a field to the next line as long as they fit within the map domain. MANTIS will not break a field when wrapping. If an occurrence of the field does not fit entirely within the width of the screen, the entire field is moved to the next line.
- The combination of occurrences and displacement should not exceed the capacity of the screen domain. If it does, MANTIS will issue an error when you select the Display Completed Design option or when you attempt to save or replace the screen. The screen domain size can be viewed only by pressing PF12 in basic screen update mode.

After you have entered your repeat specifications, press RETURN. MANTIS accepts the specifications and returns the Update Repeat Specifications Menu (see “Update repeat specifications” on page 92).

List repeat specifications

The List Repeat Specifications option enables you to view all existing repeat specifications. You may use this option at any time during the screen design process to verify any repeat specifications you have defined currently in your work area in the Update Field Specifications option (“Update field specifications” on page 52) or in the Update Repeat Specifications option (“Update repeat specifications” on page 92).

When you select the List Repeat Specifications option from the Screen Design Facility Menu (see “Accessing the screen design facility” on page 27), the screen displays all existing repeat specifications associated with the current screen design, as shown in the following screen illustration. Heading fields that are not repeated are not listed. To view their attributes, use the nominate by cursor option in Update Repeat Specifications (see “Update repeat specifications” on page 92). To return to the Screen Design Facility Menu (see “Accessing the screen design facility” on page 27), press CANCEL.

```
                              List Repeat Specifications              Page 1
USERNAME:BURRYS
   Field Name             Row   Column   Size      Vertical      Horizontal
                                              Repeat   Disp   Repeat  Disp


CUST_NUMBER             7     3       6         14    1
CUST_NAME               7     12      20        14    1
BRCH_NUMBER_CUST        7     37      4         14    1
CUST_CREDIT_RAT         7     52      2         14    1
CUST_CREDIT_LIM         7     59      6         14    1









<CANCEL> to Exit
```

Display completed design

The Display Completed Design option enables you to view the current screen design, showing all repeated fields as they appear when the screen is used. Fields are displayed with any attributes you have specified, including color values if your terminal supports them. This option enables viewing only. To modify attributes, return to the Update Field Specifications option (“Update field specifications” on page 52).

When you select the Display Completed Design option from the Screen Design Facility Menu (see “Accessing the screen design facility” on page 27), the screen appears as shown in the following screen illustration (assuming that you specified the same fields and vertical repeats defined in the Customer Report sample in “Field attributes” on page 56).

NOTE

The scale line down the left side of the screen and the vertical bars (both present in design phases) are not displayed. Also, default values are not displayed.

```
                              B U R R Y'S
                             CUSTOMER REPORT

 CUSTOMER          CUSTOMER            BRANCH        CREDIT     CREDIT
  NUMBER             NAME              NUMBER        RATING     LIMIT

  ######     ####################       ####          ##       $#####
  ######     ####################       ####          ##       $#####
  ######     ####################       ####          ##       $#####
  ######     ####################       ####          ##       $#####
  ######     ####################       ####          ##       $#####
  ######     ####################       ####          ##       $#####
  ######     ####################       ####          ##       $#####
  ######     ####################       ####          ##       $#####
  ######     ####################       ####          ##       $#####
  ######     ####################       ####          ##       $#####
  ######     ####################       ####          ##       $#####
  ######     ####################       ####          ##       $#####
  ######     ####################       ####          ##       $#####
  ######     ####################       ####          ##       $#####
  ######     ####################       ####          ##       $#####
#############################################################################
```

MANTIS checks that the completed design is consistent, without any fields overlapping one another or extending beyond the screen domain. A message will describe any inconsistency.

If your map domain is larger than the physical screen, you can use the terminal function window keys to view the entire design.

Use this option to test tab settings by checking that fields which should be protected are correctly specified (tab positions exist only at the beginning of unprotected fields). You can also test cursor positioning, keystrokes as well, without entering programming mode.

NOTE

MANTIS does not enforce either the NUMERIC attribute nor any of the extended editing options in this option of Screen Design.

After examining your screen design, press RETURN to return to the Screen Design Facility Menu (see "Accessing the screen design facility" on page 27).

Library functions

The Library Functions option allows you to save or import new screen designs and to retrieve, replace, delete, import, and export existing screens. When you complete the specified activity, MANTIS returns to the Screen Design Facility Menu and displays a confirmation message in the lower left portion of the screen.

When you select the Library Functions option from the Screen Design Facility Menu (see “Accessing the screen design facility” on page 27), the following screen appears.

```
                              M  A  N  T  I  S

                      SCREEN DESIGN LIBRARY FACILITY

    Screen Name ....... :                                                  :
    Description ....... :                                                 :
    Language .......... : ENGLISH         :
    Screen Size ....... : 24 x 80  : (Rows x Columns)
    Export File Name .. :                                        :

    Save  ....................  1            Sound Alarm ........... : N :
    Replace  .................  2            Full Display .......... : N :
    Fetch  ...................  3            Protect Bottom Line ... : N :
    Delete  ..................  4            Field Separators ...... : N :
    Clear Work Area  .........  5            Opaque Map ............ : N :
    Export  ..................  6            Automatic Windowing ... : Y :
    Import  ..................  7            Horizontal Windowing .. : Y :
                                             Vertical Windowing .... : Y :
    Exit  ...............  CANCEL            Mask Character ........ : # :
                                             Blank Fill Character .. : | :
                :    :
```

When the Library Functions request confirmation of an action, you are required to repeat the same key sequence. This key sequence is always a PF key or ENTER, depending on how the Library Function option was entered. FETCH requires confirmation if modifications to the current working design will be lost. REPLACE requires confirmation if you attempt to replace a different screen in your library. DELETE and CLEAR WORK AREA always require a confirmation. IMPORT requires confirmation if unsaved modifications to the current working design exist because the screen will be imported into the work area. EXPORT requires no confirmation since the work area is not affected.

Screen attributes

Enter data as described in the screen attributes section that follows.

Screen Name

Description *Required*. Specifies the name of the screen design.

Format 1–30 character alphanumeric name, optionally prefixed by a user library specification

Considerations

- You can load any unprivileged user's screen design.
- This field initially displays the name of the current working screen design.
- If the work area does not contain anything, you can export a MANTIS file (named in the Screen Name field) provided that it exists and you have access to it.

Description

Description *Optional*. Provides a description for your screen design.

Format 0–48 character text description

Considerations

- When you are updating an existing screen design, MANTIS displays the description.
- To change the description of a screen design, type over the existing description and replace it using the REPLACE option.

Language

Description *Optional*. Specifies a language attribute for the screen design.

Default The language that is provided in your user profile

Considerations

- The SCREEN statement to locate the correct screen uses the language attribute saved with the screen. MANTIS first attempts to locate the screen with the user's current language attribute (obtained from the user profile during sign on, and modifiable by the LANGUAGE statement). Failing that, MANTIS attempts to locate the same screen with the ENGLISH language attribute.
- MANTIS validates the language field and displays an error message if necessary.
- The valid languages are stored in the Language file controlled by the Master User. See "Language" on page 650 for more description.

Screen Size

Description *Optional*. Indicates the size of the screen.

Default Size of device used to create the screen

Format Row and column specifications for the screen based on the size of the terminal (or terminal emulator) where you plan to display the screen. The following screen sizes are allowed:

43x80, 32x80, 27x132, 24x132, 24x80

Considerations

- The SCREEN statement uses the screen size saved with the screen to locate the correct screen. MANTIS first attempts to locate the screen with the size most approximating the size of the display device. Failing that, the list of sizes shown above in the Format section indicates the order MANTIS uses in scanning the Library of Screens for the specified screen, that is, MANTIS first attempts to locate a 43x80 screen, then a 32x80, and so on.
- If MANTIS does not recognize the new screen size, it uses the default.
- **OpenVMS** For screen sizes of 24x80 and 24x132, MANTIS will alter the physical terminal display width as required to match the screen size.

Export File Name

Description *Optional*. Indicates the name of the file to be used for Importing/Exporting entities.

Default *screen_name*.msd

Format A valid file specification

Sound Alarm

Description *Optional*. Indicates whether you want the terminal to beep each time the screen is conversed.

Default	N	no
Options	Y	for yes, you want MANTIS to beep on the terminal each time the screen is conversed
	N	for no, you do not want MANTIS to beep on the terminal each time the screen is conversed

Full Display

Description *Optional*. Indicates whether you want MANTIS to expand the screen size to the size of the current terminal, including the bottom two lines of the screen design prohibiting unsolicited input.

Default	N	no
Options	Y	for yes, you want MANTIS to expand the display
	N	for no, you do not want MANTIS to expand the display

Considerations

- If you select this option, you cannot enter data in any of the fields in the input map. If MANTIS detects an error in a field, it highlights the field, but you will not be able to see the associated error message unless one of the fields in the screen design has been given the MSG attribute. However, you may at any time use the INPUTMAP (GOLD/I) terminal function to add the last two lines, if required. When displayed, the lines simply overlay your data displayed on the bottom two lines.
- The Protect Bottom Line attribute is also available through Library Functions and allows you to protect the last line (Unsolicited Input Field and Reply Field) from input. This attribute has no effect if you have already specified the Full Display attribute.

Protect Bottom Line

Description *Optional*. Indicates whether you want MANTIS to protect the bottom line of your screen (Unsolicited Input and Reply Field) from input.

Default N no

Options

Y	for yes, you want MANTIS to protect the bottom line of your screen
N	for no, you do not want MANTIS to protect the bottom line of your screen

Consideration The REPLY field is part of the bottom line and is protected.

> Programs may be terminated using CTRL-C, if the CTRLC MANTIS Option is TRUE.

Field Separators

Description *Optional*. Indicates whether you want each field to be preceded by a field separator.

Default Y yes

Options

N	for no, you do not want each field to be preceded by a field separator (a blank). Screen fields may be contiguous.
Y	for yes, you want each field to be preceded by a field separator (a blank). This is for IBM compatibility.

Considerations

- Selecting N (no) allows you to use column 1 for data in your screen design, and allows you to create fields using horizontal repeats that are not separated by at least one blank. However, in the Create or Update a Screen option, MANTIS still requires a blank to separate fields.
- If IBM compatibility mode is on and this option is N (no), when the screen is saved or replaced, MANTIS issues a warning message that the screen will not migrate.

Opaque Map

Description Indicates whether you want your map to be opaque rather than transparent.

Default N no

Options

Y	for yes, you want your map to be opaque when it is conversed so that it overlays another map in the logical display
N	for no, you do not want your map to be opaque when it is conversed so that it overlays another map in the logical display

Consideration When an opaque map overlays another in a composite mapset, fields in the map below will not show through in those areas of your map domain which do not have fields or headings defined. Do not select this option unless you specifically require this feature because it increases the amount of data transmitted when the screen is conversed. (refer to the CONVERSE statement in *MANTIS Language OpenVMS/UNIX*, P39-1310.

Automatic Windowing

Description *Optional*. Indicates whether you want MANTIS to protect any field that is only partially displayed on the screen and to prevent MANTIS from automatically windowing your screen when tabbing to a field that is not displayed on your screen.

Default Y yes

Options

Y	for yes, you do not want MANTIS to protect any fields partially displayed on the screen or to prevent automatic windowing when tabbing to a field not displayed on your screen
N	for no, you want MANTIS to protect any fields partially displayed on the screen or to prevent automatic windowing when tabbing to a field not displayed on your screen

Consideration Selecting N (no) provides compatibility with the way MANTIS in an IBM environment handles maps which are larger than the screen and in field occlusion in map sets. By conversing screen designs on top of one another, you can get partial field occlusion, and IBM does not allow updates to these partially occluded (displayed) fields.

Horizontal Windowing

Description *Optional*. Specifies whether horizontal windowing is enabled or disabled.

Default Y yes

Options Y for yes, MANTIS should allow horizontal windowing

N for no, MANTIS should disable horizontal windowing

Considerations

- If horizontal windowing is disabled, a map does not move horizontally when a windowing operation is performed.
- A map with disabled windowing “floats” above the other maps in the logical display (for example, the map has a fixed vertical and/or horizontal position relative to the window).
- Refer to the CONVERSE statement in *AD/Advantage MANTIS Language OpenVMS/UNIX*, P39-1310 for more details on positioning floating maps.

Vertical Windowing

Description *Optional*. Specifies whether vertical windowing is enabled or disabled.

Default Y yes

Options Y for yes, MANTIS should allow vertical windowing

N for no, MANTIS should disable vertical windowing

Considerations

- If vertical windowing is disabled, a map does not move vertically when a windowing operation is performed.
- A map with disabled windowing “floats” above the other maps in the logical display (for example, the map has a fixed vertical and/or horizontal position relative to the window).
- Refer to the CONVERSE statement in *AD/Advantage MANTIS Language OpenVMS/UNIX*, P39-1310 for more details on positioning floating maps.

Mask Character

Description *Protected*. Displays the character you want to use as the mask character to identify data fields.

Default # hash character

Considerations

- When a new screen is created, it inherits the mask character from the FLDMASK MANTIS Option. The default value for the FLDMASK option is the hash character (#).
- A screen's mask character may be altered via the help screen that is displayed when GOLD/H is invoked in the Create or Update a Screen option.

Blank Fill Character

Description *Protected*. Displays the character you want to use to connect words or letters in a heading field.

Default | vertical bar

Considerations

- When a new screen is created, it inherits the blank-fill character from the BLANKFILL MANTIS Option. The default value for the BLANKFILL option is the vertical bar character (|).
- A screen's blank-fill character may be altered via the help screen that is displayed when GOLD/H is invoked in the Create or Update a Screen option.

Library commands

Save

Description Saves a new screen design from your current work area into your library.

Considerations

- Use this option only when you save a new screen design for the first time; that is, it is not already in your library.
- To rename a screen, save the current screen design with a new name and then delete the old screen.
- MANTIS performs the same consistency checks as are performed for Display Completed Design, before saving it.

Replace

Description Replaces the screen design in your library with the updated version currently in your work area.

Considerations

- Use this option only when you replace a screen design that is already in your library.
- MANTIS performs the same consistency checks as are performed for Display Completed Design, before replacing it.

Fetch

Description Retrieves a screen design from your library and places it in your work area.

Consideration If a modified design already exists in your work area and has not been saved or replaced, you will be prompted to confirm your action. If you confirm your fetch by pressing PF3 (or ENTER) again, the screen design will be retrieved. To cancel your action, press CANCEL or any other key. (Then, you can save the screen design currently in your work area before fetching another screen design from your library.)

Delete

Description Deletes a screen design from your library.

Consideration When you select DELETE, MANTIS displays a message and prompts you to confirm your action. If you confirm your delete by pressing PF4 (or ENTER) again, the modified design will be lost. To cancel the deletion, press CANCEL.

Clear Work Area

Description Select this option to clear your current work area.

Consideration If a design already exists in your work area and has not been saved or replaced, MANTIS displays a message and prompts you to confirm your action. To clear the work area, press PF5 (or ENTER) again. To cancel your action, press CANCEL.

Export

Description Select this option to export a screen design from your library.

Considerations

- You can specify only a single screen design to be exported. This option will export the entity which is currently in the work area.
- If the work area does not contain anything, you can export a screen (named in Screen Name field) provided that it exists and you have access to it.
- The default output file is of the form *screen_name*.msd.
- You can also Export multiple screens and other entities by using the Universal Export Facility.

Import

Description Select this option to import a screen design to your work area.

Considerations

- You can specify only a single design to be imported. This entity will be imported into the work area only. You will need to SAVE or REPLACE it if you want to keep it in your library.
- If unsaved changes exist, you will be asked to confirm the import since the unsaved changes will be lost.
- The default input file is of the form *screen_name*.msd.
- You can also Import multiple screens and other entities by using the Universal Export Facility.

The current screen design remains in your current work area until you Fetch another screen design, Clear the Work Area, or Exit from the Screen Design Facility.

Exit

Description Pressing the “Cancel” allows you to exit the Screen Design Facility. You can exit the Screen Design Facility at any time by pressing the cancel key and return to the MANTIS Facility Selection Menu.

NOTE

Before exiting or canceling any function, it is good practice to save and or replace your work.

Directory of screens

The Directory of Screens option allows you to view an alphabetic listing of all screen designs in your library. When you select this option from the Screen Design Facility Menu (see “Accessing the screen design facility” on page 27), the following screen appears.

```
   USERID                        Directory Of Screens                YYYY/MM/DD
   REPOINT                                                           HH:MM:SS
SEL-------------NAME------------- -----------------DESCRIPTION-----------------_
BURRYS_                        BURRYS CUSTOMER REPORT
```

Entering an S next to a screen name selects that screen to Fetch into the Screen Design work area. You will be required to confirm this action if unsaved changes to the current working design would be lost. Press RETURN to make your selection, or to page through the directory listing. Press CANCEL to return to the Screen Design Facility Menu (see “Accessing the screen design facility” on page 27).

USERID

Description MANTIS displays the user's sign-on name; that is, the owner of the directory.

REPOINT

Description *Optional*. Specify a directory reposition command. The directory is repositioned at or after the specified position.

Consideration Enter a space to reposition at the start of the directory.

SEL

Description *Optional*. Enter S next to the screen name with which you want to work. You will be returned to the Screen Design main menu with the selected design Fetched into the work area.

Considerations

- The directory does not support multiple entity selection. Entering a second S will override the previous selection.

DESCRIPTION

Description The screen description field includes language and device version particulars if they are not the default values. For example, if there are two screens titled SETUP, with an English and a French version, "(FRENCH)" is appended to the description of the French screen version, or overlays the trailing part of the description if necessary.

Print completed design

The Print Completed Design option allows you to obtain a hard copy of your current screen design. You can return to the Screen Design Facility Menu (see "Accessing the screen design facility" on page 27) at any time during the screen design phase and select this option. This routes the current screen design field specifications, repeat range specifications, and completed design to your designated printer.

Exit screen design

The exit screen design allows you to exit the Screen Design Facility. You can exit the Screen Design Facility at any time by pressing the cancel key and return to the MANTIS Facility Selection Menu.

NOTE

Before exiting or canceling any function, it is good practice to save and or replace your work.

3

MANTIS file design

The File Design facility provides a menu of options to create, maintain, view, or print new file profiles which allow you to access MANTIS (internal) files using the FILE statement.

Accessing the file design facility

When you select the Design a File Profile option from the MANTIS Facility Selection Menu (see “Facility selection menu” on page 23), the following menu appears.

```
                              M  A  N  T  I  S


                           FILE DESIGN FACILITY


                  Create Or Update File Profiles  .......  1
                  Update Record Layout  ................  2
                  Library Functions  ...................  3
                  Directory Of File Profiles  ..........  4
                  Print Completed Design  ..............  5
                  Exit File Design  ................  CANCEL


   Load File .. :                                                    :
   Current File :

                                    :    :
```

The Load File and Current File fields on the File Design Facility Menu are described below:

Load File

Description *Optional*. Specifies the name of a file profile to load into the work area before executing the selected option; otherwise, all options apply to the current working file profile.

Format 1–16 character alphanumeric name, optionally prefixed by a user library specification

Considerations

- You can load any unprivileged user's file profile provided that one of the following conditions is met:
  - One of the passwords in the specified file design is null.
  - Your sign-on password or one of the current working design passwords matches one of the passwords stored in the specified file design.
- If ENTER is pressed without specifying a menu option, the specified file profile will be loaded.
- This field does not cause a file design load when the Directory option is selected, but is interpreted as a directory repoint command.

Current File

Description

MANTIS displays the fully qualified name of the file profile currently in the file area.

To create a new file design, follow the sequence on the File Design Facility Menu (first create the file, then update record layouts, and so on). You can load an existing file profile in one of three ways:

- Enter the file name in the Load File field of the File Design Facility menu (shown at the beginning of this section) and then select the action you want to perform.
- Select from the directory selection screen. First, select the Directory Of File Profiles option from the File Design Facility menu (shown at the beginning of this section).
- Enter the file name in the Library Functions screen. First, select the Library Functions option from the File Design Facility menu (shown at the beginning of this section), and then select the FETCH option.

You can move among the facilities listed on this screen without losing the file design currently in your work area. Remember to save your file design or any updates via the Library Functions option before exiting from this facility to the MANTIS Facility Selection Menu (see "Facility selection menu" on page 23). If you try to exit from the File Design Facility without saving current changes, MANTIS prompts you to confirm your exit.

To choose a new File Design Facility option, you must always return to this menu. The following table provides an overview of the options on this menu.

When you select this option	Details on how you can	appear in
Create or Update File Profiles	Create a new MANTIS file design or update an existing one.	"Create or update file profiles" on page 121
Update Record Layout	Create a new record layout or update an existing record layout for a MANTIS file.	"Update record layout" on page 125
Library Functions	Save or import new file designs, and fetch, replace, delete, export, or import existing file designs.	"Library functions" on page 132
Directory of File Profiles	View an alphabetic listing of all existing MANTIS files in your library.	"Directory of file profiles" on page 137
Print Completed Design	Print a hard copy of your current file design.	"Print completed design" on page 138

Create or update file profiles

The Create or Update File Profiles option enables you to create a new MANTIS file profile or update the profile of an existing file. When you select this option from the MANTIS File Design Facility Menu (see "Accessing the file design facility" on page 117), the following screen appears.

```
                    M  A  N  T  I  S

                 FILE DESIGN FACILITY

File Name :

Associated Record Layout  ............... :                  :
Password For Viewing  ................... :                  :
Password For Altering  .................. :                  :
Password For Deleting/Inserting  ........ :                  :
Status  ................................ :                  :

Date Of Last Profile Update  ........... :          :
Time Of Last Profile Update  ........... :          :

Field Count  ........................... :          :
```

If you are updating an existing file profile, or returning to this option after performing other functions, the name of the file design currently in your work area will be displayed above (after you fetch the file from your library).

To create a new file profile, enter data as described below:

File Name

Description MANTIS displays the fully qualified name of the current working file design. Use Library Functions to supply a new design name and description.

Associated Record Layout

Description *Optional*. Identifies an existing record profile if your file will use a record layout identical to an existing file. In this case, do not redefine the record layout; simply enter the name of the existing file with the same record layout.

Format Name of an existing file profile containing the associated record layout

Considerations

- Do not redefine the record layout; simply enter the name of the existing file profile.
- If the file design will not use an associated record layout, leave this field empty; if you enter NONE, MANTIS will search for a file named NONE.
- Do not delete the associated record layout design while the current file design remains ACTIVE.
- Do not change the associated record layout while it is in use by this file design.

Password For Viewing

Description *Optional*. Enables GET for records in this file.

Format 1–16 alphanumeric characters

Considerations

- Programs using this password cannot update, insert, or delete records.
- If this field is left null, programs must use the Alter or Delete/Insert passwords.
- If you do not want a View Password, do not use “NONE” or any other such text, as that will be taken as a valid password.

Password For Altering

Description *Optional*. Enables updates to records in this file.

Format 1–16 alphanumeric characters

Considerations

- Programs using this password can view and update records, but cannot insert or delete records.
- If this field is left null, programs must use the View or Delete/Insert passwords.
- If you do not want an Alter Password, do not use “NONE” or any other such text, as that will be taken as a valid password.

Password For Deleting/Inserting

Description *Optional*. Enables deletions and insertions of records in this file.

Format 1–16 alphanumeric characters

Considerations

- Programs using this password can get, update, insert and delete records.
- If this field is left null, programs must use the View or Alter passwords. No program will be able to delete or insert records.
- If you do not want a Deleting/Inserting Password, do not use “NONE” or any other such text, as that will be taken as a valid password.

Status

Description *Required*. Specifies the status of the file.

Format ACTIVE

Consideration Anything other than ACTIVE prohibits all access to this file from a program (for example, do not enter ACTIVE1). For example, you can set to “Obsolete”.

MANTIS maintains the following entries:

Date of Last Profile Update

Description Shows the date when the file profile was last updated.

Time of Last File Profile Update

Description Shows the time when the file profile was last updated.

Field Count

Description FIELD COUNT is the total number of fields defined in this file profile.

Enter the appropriate data for your file design and press RETURN. MANTIS accepts your design and returns to the File Design Facility Menu (see “Accessing the file design facility” on page 117).

Before you can save this file profile via the Library Functions, you must create a record layout (see “Update record layout” on page 125) unless you specified an associated record layout.

Update record layout

The Update Record Layout option allows you to create a new, or update an existing record layout for a file. Your record layout may contain up to 64 fields. Each page displays 16 fields.

When you select the Update Record Layout option from the File Design Facility Menu (see "Accessing the file design facility" on page 117), the screen appears as shown in the following screen illustration. Each underline (_) character represents a built-in tab that moves your cursor from field to field on this screen.

```
Page No : 1 :                 Update Record Layout                 YYYY/MM/DD
                                                                   HH:MM:SS
 Element Count :                                              Size : 32
 ELEM  -------------NAME-------------  TYPE   DIMENSIONS  ----ATTRIBUTES----
 _¯_ ¯_   ¯                           _     ¯ _    _   ¯ _ ¯      ¯

                              PF1-PF4 Page; CANCEL Exit
```

If you are updating an existing file profile, or returning to this option after performing other functions, your current record layout appears.

MANTIS maintains the following entries:

Userid:Name

Description MANTIS displays the fully qualified name of the current working file design.

Date And Time

Description MANTIS displays the current date and time.

Page *n*

Description Indicates the page of the record layout currently displayed.

Consideration You can use the relevant PF keys (1–4) to page through your record layout, or you can specify the required page number over the current page number at the top of the screen and press RETURN.

Element Count *m*

Description Supplies the total number of elements currently in your record layout.

Size x

Description MANTIS provides the current record length in bytes. This length is determined by totaling 32 characters for the key field(s), 10 characters for each occurrence of a nonkey BIG element, 6 characters for each occurrence of a nonkey SMALL, or INTEGER element, and the length plus 2 characters for each occurrence of a nonkey TEXT or DECIMAL element.

A MANTIS file profile describes a set of records stored in the MANTIS file. This file is identified by its key range in the MANTIS file, and each file profile is given a unique file code at the beginning of the key. You do not have to make provisions for the file code when designing your file record layout, since MANTIS handles the file code internally.

Fields in a MANTIS file record can only be INTEGER, SMALL, BIG, DECIMAL, or TEXT. External files must be used to store PACKED, ZONED, BINARY or other format data (see “ULTRA file view design” on page 141). The first fields in the record layout comprise the file’s key, and so they must be given the KEY attribute. This is a key of up to 32 bytes in the INDEXED MANTIS file. (If your total key length is less than 32 bytes in length, MANTIS will blank-pad your key field to 32 bytes.)

Unlike external file designs, MANTIS file profiles do not provide data independence through selective viewing of a record (for example, you cannot specify the field position in the record). This means that the specified record layout actually maps out the physical record structure (except for the key field as stated above).

Enter the record layout as described on the following pages.

ELEMENT

Description *Required*. Identifies each element in the file by number. You manipulate element definitions on the screen by entering an action indicator in the first tab position associated with each detail line to be changed.

First Tab Position

Description Required. Specifies whether you want to alter, insert, or delete the line.

Options

A	Alter this line. Type the new information over the existing data. You must enter A for MANTIS to alter the line.
I	Insert this line. Type the new information over the existing data. You must enter I for MANTIS to insert the line.
D	Delete this line. You must enter D for MANTIS to delete the line.

Second Tab Position

Description Required. Specifies which line you want to alter, insert, or delete.

Format Number between 1 and 64

Considerations

- Key field(s) must be the first element(s) in your record layout.
- You can insert one or more elements between two existing elements (for example, between elements 4 and 5, by inserting the new element as line 4 and pressing RETURN. MANTIS renumbers the new element as line 5, the original line 5 as line 6, 6 as 7 and so on). You may insert before element 1 by keying in element 0.
- If you delete an element during an update, MANTIS will renumber all subsequent element numbers.

NAME

Description *Required*. Identifies each element in the file by name.

Format 1–16 character variable name

TYPE

Description *Required*. Specifies the data type of each element.

Options

T	(TEXT) for all alphanumeric fields (requires you to enter a length under dimensions)
I	(INTEGER) for a signed 4-byte binary field (recommended for whole numbers of up to 9–10 digits).
S	(SMALL) for a small floating point number with up to 6–7 significant digits (not recommended for decimal fraction accuracy).
B	(BIG) for a big floating point number of up to 14–16 significant digits (recommended for normal decimal numbers of up to 14 significant digits).
D	(DECIMAL) for a numeric field of up to 31 significant digits. Specify the precision under DIMENSIONS (recommended for very large numbers or numbers with more than 14 significant digits, or when decimal accuracy is very important).

DIMENSIONS

Description *Required*. Identifies the length of a TEXT or DECIMAL field or the number of occurrences of this field in a list.

Options For *TEXT* fields:

First Tab Position	Specify the length of this field if a scalar (non-array), or the number of occurrences of this field in an array.
Second Tab Position	Specify the length of each occurrence of this field in an array.

For *INTEGER*, *SMALL*, and *BIG* fields:

First Tab Position	Specify the number of occurrences in a one-dimensional array, or the number of rows in a two-dimensional array.
Second Tab Position	Specify the number of columns in a two-dimensional array.

For *DECIMAL* fields:

First Tab Position	For a scalar number specify the precision of the DECIMAL number, which is the maximum number of significant digits that can be stored (at one byte per digit). For a DECIMAL array, specify the number of array elements in this position and use the second tab position to specify the DECIMAL precision.
Second Tab Position	Specify the precision of the DECIMAL number or the precision of each number in the array indicated by the first tab position.

Consideration Key fields cannot be arrays. The following table presents samples of data types and various dimension specifications.

Case number	Data type	Dimensions
1	T	*n*
2	T	*m n*
3	I or S or B	
4	I or S or B	*n*
5	I or S or B	*m n*
6	D	*n*
7	D	*m n*

The specifications in the preceding table are explained as follows:

1. Describes a single text field of *n* characters in length. You may specify the length at either tab position.
2. Describes a text array of *m* entries, each entry having a character length of *n*.
3. Describes a scalar numeric field.
4. Describes a numeric array of *n* entries. You may specify the number of entries in the array in either tab position.
5. Describes a numeric array (or matrix) with *m* rows and *n* columns.
6. Describes a DECIMAL scalar field with precision *n*.
7. Describes a DECIMAL array of *m* elements, each with a precision of *n*.

ATTRIBUTES

Description *Required*. Specifies any special attributes for the element.

Options Allowable abbreviations are indicated by underlines.

KEY	for key fields
SCRAMBLE	scrambles (encrypts) information for storage, and then unscrambles it when it is read by a program

Considerations

- You must specify KEY on the first element of your record layout. The key length may not exceed 32 bytes. You may specify KEY on any contiguous elements which follow, as long as the total length does not exceed 32 bytes for all keyed elements.
- You may also specify SCRAMBLE as an attribute on any nonkey element. SCRAMBLE will scramble the information on the record for storage and unscramble it when read by a program.
- You can assign only one attribute to an element (for example, an element may not be both a key element and scrambled).

NOTE

Use SCRAMBLE only on new elements. If you use SCRAMBLE on existing data, the data will be lost with no means of recovery.

When all data has been entered, press RETURN to store the record layout definition. After you press RETURN, press CANCEL to return to the File Design Facility Menu (see "Accessing the file design facility" on page 117).

NOTE

Warning: If you press CANCEL, any actions entered in the left column (A, I, D) will not be executed, and you will lose those modifications.

Library functions

The Library Functions option enables you to save or import new file designs and to retrieve, replace, delete, import, and export existing file designs. When you select this option from the File Design Facility Menu (see "Accessing the file design facility" on page 117), the following screen appears. If you have a file profile currently in your work area (one previously saved), its name will be displayed on the screen.

```
                              M  A  N  T  I  S


                        FILE DESIGN LIBRARY FACILITY


File Name  :                                                  :
Description:                                                                  :
Export File Name  :                                       :
Export With Data (Y/N)  : N :

                        Save ...................  1
                        Replace  ................  2
                        Fetch  ..................  3
                        Delete  .................  4
                        Export  .................  5
                        Import  .................  6
                        Exit  ..............  CANCEL

                                   :    :
```

Under some circumstances, choosing one of the options on the File Design Library Facility Menu will generate a message requesting confirmation. To confirm the action you have chosen, the same key sequence must be reentered. This key sequence is always a PF key or ENTER, depending on how the Library Function option was entered. FETCH requires confirmation if modifications to the current working design will be lost. REPLACE requires confirmation if you attempt to replace a different screen in your library. DELETE always requires a confirmation. IMPORT requires confirmation if unsaved modifications to the current working design exist because the MANTIS file will be imported into the work area. EXPORT requires no confirmation since the work area is not affected.

Enter data as described below:

File Name

Description *Required* for SAVE, REPLACE, FETCH, and DELETE. Specifies the name of the file design.

Format 1–16 character alphanumeric name, optionally prefixed by a user library specification

Considerations

- You can load any unprivileged user's file design provided that your sign-on password or one of the current working design passwords matches one of the passwords stored in the specified file design; however, you cannot modify another user's library.
- This field initially displays the fully qualified name of the current working file design.

Description

Description Supplies a description of the file design.

Format 1–64 character string

Export File Name

Description Indicates the name of the file to be used for Importing/Exporting entities. If the work area does not contain anything, you can export a MANTIS file (named in the File Name field) provided that it exists and you have access to it.

Default *file_name*.mif

Format A valid file specification

With Data

Description Optional. Specifies whether to import/export the data of the internal file entities.

Default	N	No
Options	N	No Import/export file entity without data
	Y	Yes Import/export file entity with data

Consideration This field applies to internal files only.

Save (Option 1)

Description Saves new file designs and record layouts in your current work area into your library. This function is used only when the file does not already exist in your library.

Considerations

- Use this option only when you save a new screen design for the first time; that is, it is not already in your library.
- To rename a screen, save the current screen design with a new name and then delete the old screen.
- MANTIS performs the same consistency checks as are performed for Display Completed Design, before saving it.

Replace (Option 2)

Description Replaces a file design in your library with an updated version currently in your work area.

Fetch (Option 3)

Description Retrieves a file design from your library and places it in your work area.

Delete (Option 4)

Description Deletes a file design from your library. MANTIS will prompt you to confirm your deletion. When you delete the file design, all associated records are also deleted. The file must be empty (contains no records) in order to perform the deletion. Before you delete a file, make sure that no other file uses the same record layout as the file you are deleting. If another file does reference a file that has been deleted, that file is unusable until a correct file layout is entered. To delete the file design, press RETURN (if you entered 4 in the action field) or press PF4 again. To cancel the deletion, press CANCEL.

Export (Option 5)

Description Select this option to export a file design from your library.

Considerations

- You can specify only a single design to be exported. This option will export the entity which is currently in the work area.
- If the work area does not contain anything, you can export a MANTIS file (named in the File Name field) provided that it exists and you have access to it.
- The default output file is of the form *file_name*.mif.
- You can only export DATA if the work area is empty and you are exporting a MANTIS file from your own library.

Import (Option 6)

Description Select this option to import a file design to your library.

Considerations

- You can specify only a single design to be imported. This entity will be imported into the work area only.
- If unsaved changes exist, you will be prompted to confirm the import since the changes will not be saved.
- The default input file is of the form *file_name*.mif.
- Data cannot be imported for a MANTIS file since the design is only imported into the work area.

After MANTIS saves, replaces, fetches, or deletes a file design, you will return to the File Design Facility Menu (see "Accessing the file design facility" on page 117) where a confirmation message is displayed in the lower left-hand portion of the screen.

Exit (Cancel)

Description Select this option to exit or cancel the file design to your library.

NOTE

Before exiting or canceling any function, it is good practice to save and or replace your work.

Directory of file profiles

The Directory of Files option allows you to view an alphabetic listing of all existing file profiles. When you select the Directory of File Profiles option from the File Design Facility Menu (see “Accessing the file design facility” on page 117), the screen appears as shown in the following screen illustration.

```
   USER                          Directory Of Files                  YYYY/MM/DD
Repoint                                                                HH:MM:SS
SEL-------------NAME------------- -----------------DESCRIPTION------------------
Repoint
```

You are supplied with the name, description, and modification date/time of your file profiles. Notice that passwords are not displayed on the directory listing. Use the WINRIGHT terminal function (KP6) to view the profile modification date/times. You can also select one design to load into the work area by entering an S next to the design name and pressing ENTER. Press ENTER to page through the directory listing. Press CANCEL to return to the File Design Facility Menu (see “Accessing the file design facility” on page 117).

USERID

Description MANTIS displays the user's sign-on name; that is, the owner of the directory.

REPOINT

Description *Optional*. Specify a directory reposition command. The directory is repositioned at or after the specified position.

Consideration Enter a space to reposition at the start of the directory.

SEL

Description *Optional*. Enter S next to the file name with which you want to work. You will be returned to the File Design Facility Menu with the selected design preloaded.

Considerations

- The directory does not support multiple entity selection. Entering a second S will override the previous selection.
- When you exit the File Design Facility, you will not return to the File Design Directory. The directory select function does not recursively call the File Design Facility, but instead returns control to it, optionally with a selected design name to load.

Print completed design

Use the Print Completed Design option to obtain a hard copy of your current MANTIS file design. At any time during the file design process you may return to the File Design Facility Menu (see "Accessing the file design facility" on page 117) and select this option. MANTIS routes the current record layout to your designated printer.

Exit file design

The exit screen design allows you to exit the File Design Facility. You can exit the File Design Facility at any time by pressing the cancel key and return to the MANTIS Facility Selection Menu.

Before exiting or canceling any function, it is good practice to save and or replace your work.

4

ULTRA file view design

An ULTRA file view is a selective view of a SUPRA PDM file that maps onto the physical file elements of a specified PDM file. The ULTRA statement in the MANTIS program specifies the file view.

RDM Logical Views, on the other hand, are part of the SUPRA Directory. There is no MANTIS Logical View Design Facility. A logical view is a set of one or more logical records defined by the DBA. Fields are mapped between the externally constructed logical record and the Physical Data Manager (PDM). The Relational Data Manager (RDM) is the component that allows your MANTIS program to access data from the files. See "SUPRA relational data manager" on page 655 for a more detailed look at the SUPRA Relational Data Manager and the MANTIS connection.

NOTE

ULTRA File View Design is not available on all platforms. Consult your Master User if you are not sure whether ULTRA File View Design is available on your platform.

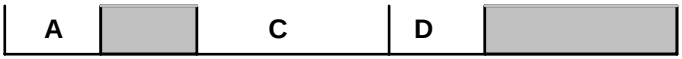
A file view contains detailed information about the contents and format of the data stored in a file and allows you to monitor and control access to that data by password protecting certain functions performed on the file data.

You can assign READ, UPDATE, or DELETE/INSERT access to file data associated with SUPRA PDM files. Three separate passwords are provided for each option. For example, if a user only needs to look at the data in a file, not update it, you can assign a READ password to that file.

To illustrate the selectivity of data viewing through a file view, let's assume that you have a file record containing fields A, B, C, D, and E:

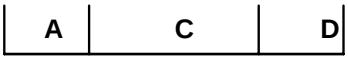
File Record

You want to create a file view that enables another user to see fields A, C, and D, but not B and E:



File View

The person using this file view is oblivious to the fact that fields B and E exist. The user sees the file record as:



File View Through File Record

The ability to lock certain portions of data records from the view of others is central to the concept of file views. This ability results not only in greater data security, but also in greater data independence. Only data necessary for MANTIS program execution should be included in that file view. The MANTIS program is then completely insulated from any changes that may occur to unessential data fields. This, in turn, reduces future maintenance costs.

Fields that are not available to the user are not changed on UPDATE, and are set to an initial value of a null or zero by MANTIS on INSERT.

Accessing the ULTRA file view design facility

The ULTRA File View Design Facility provides a menu of options to create, maintain, view, or print new ULTRA views which may be accessed by the ULTRA statement. When you select the Design an ULTRA File View option from the MANTIS Facility Selection Menu (see "Facility selection menu" on page 23), the following menu appears:

```
                              M  A  N  T  I  S


                       ULTRA FILE VIEW DESIGN FACILITY



                 Create Or Update Views  ...............  1
                 Update View Layout  ...................  2
                 Library Functions  ....................  3
                 Directory Of Views  ...................  4
                 Print Completed View  .................  5
                 Exit Ultra File View Design  .....  CANCEL


    Load Ultra View .. :                                                :
    Current Ultra View :

                                  :    :
```

To create a new ULTRA file view, follow the sequence on the ULTRA File View Design Facility menu (that is, first create the file view, then update the view layout, etc.). You can load an existing ULTRA file view in one of three ways:

- Enter the view name in the Load Ultra View field of the ULTRA File View Design Facility menu (shown in the preceding screen illustration) and then select the action you want to perform.
- Select from the directory selection screen. First, select the Directory Of Views option from the ULTRA File View Design Facility menu (shown in the preceding screen illustration).
- Enter the view name in the Library Functions screen. First, select the Library Functions option from the ULTRA File View Design Facility menu (shown in the preceding screen illustration), and then select the FETCH option.

The Load Ultra View and Current Ultra View fields on the Ultra File View Design Facility menu are described below:

Load Ultra View

Description *Optional*. Specifies the name of an ULTRA file view to load into the work area before executing the selected option; otherwise, all options apply to the current working ULTRA file view.

Format 1–16 character alphanumeric name, optionally prefixed by a user library specification

Considerations

- You can load any unprivileged user's ULTRA file view provided that one of the following conditions is met:
  - One of the passwords in the specified ULTRA file view design is null.
  - Your sign-on password or one of the current working design passwords matches one of the passwords stored in the specified ULTRA file view design.
- If ENTER is pressed without specifying a menu option, the specified ULTRA file view will be loaded.
- This field does not cause an ULTRA file view load when the Directory option is selected, but is interpreted as a directory repoint command.

Current Ultra View

Description MANTIS displays the fully qualified name of the ULTRA file view currently in the work area.

You can move among the facilities listed on this screen without losing the file design currently in your work area. Remember to save your file design or any updates via the Library Functions option before exiting from this facility to the MANTIS Facility Selection Menu (see "Facility selection menu" on page 23). If you try to exit from the ULTRA File View Design Facility without saving current changes, MANTIS prompts you to confirm your exit.

To choose a new option for ULTRA File View Design, you must always return to this menu.

The following table provides an overview of the options on this menu.

When you select this option	Details on how you can	Appear in
Create or Update File Views	Create a new ULTRA file view or update an existing one.	"Create or update views" on page 147
Update View Layout	Create a new ULTRA file view layout definition or update an existing one.	"Update file view layout" on page 152
Library Functions	Save or import new ULTRA file view designs and retrieve, replace, delete, export, and import ULTRA file view designs.	"Library functions" on page 160
Directory of Views	View an alphabetic listing of all existing ULTRA file views.	"Directory of views" on page 164
Print Completed View	Obtain a hard copy of your current ULTRA file view.	"Print completed view" on page 166

Create or update views

The Create or Update File Views option enables you to create a new ULTRA file view or update the definition of an existing ULTRA file view. When you select this option from the ULTRA File View Design Facility Menu, the following screen will appear.

```
                    M  A  N  T  I  S


              ULTRA FILE VIEW DESIGN FACILITY


     View Name:

     Database Description Name  ............. :        :
     Ultra File Name  ....................... :      :
     Password For Viewing  .................. :                  :
     Password For Altering  ................. :                  :
     Password For Deleting/Inserting  ........ :                  :
     Status  ................................ :          :
     Linkage Path For Access (If Related File) :          :
     Reference Variable Name (If Related File) :                  :
     Record Code             (If Related File) :    :
     Last Alteration Date  .................. :          :
     Last Alteration Time  .................. :          :
```

If you are updating an existing ULTRA file view, or returning to this function after performing other functions, the view currently in your work area is displayed.

To create a new ULTRA file view, enter the data described below.

View Name

Description MANTIS displays the fully qualified name of the current working ULTRA view. Use Library Functions to supply a new design name and description.

Database Description Name

Description *Required*. Specifies the name of the SUPRA compiled database description which describes the PDM file.

Format A 6-character name

Considerations

- The compiled database description must exist as *XXXXXX*.MOD, where *XXXXXX* is the 6-character database description name. If *XXXXXX*.MOD does not exist in the default directory, *XXXXXX* must be a logical name which identifies a database description module.
- Refer to the ULTRA statement in *AD/Advantage MANTIS Language OpenVMS/UNIX*, P39-1310, for the interpretation of the database description name with respect to the logical name MANTIS_DBMOD_XXXXXX.

Ultra File Name

Description *Required*. Identifies the PDM file to which this view applies.

Format 4-character name

Consideration The name of the file must currently exist in the SUPRA compiled database description specified in the Database Description Name entry.

Password For Viewing

Description *Optional*. Enables viewing of records in this file view.

Format 1–16 alphanumeric characters

Consideration Programs using this password cannot update, delete, or insert records. If this field is null, the program must use the Alter or Delete/Insert password.

Password For Altering

Description *Optional*. Enables updates to records in this file view.

Format 1–16 alphanumeric characters

Consideration Programs using this password cannot delete or insert records, but can view and update them. If this field is null, the program must use the View or Delete/Insert password.

Password For Deleting/Inserting

Description *Optional*. Enables deletions and insertions of records in this file view.

Format 1–16 alphanumeric characters

Consideration Programs using this password can view, update, delete, and insert records. If this field is null, no program using this view is able to Delete or Insert records. Deletes and Inserts must be done using another ULTRA view or by a non-MANTIS program.

Status

Description *Required*. Specifies a status for your file view.

Format Enter ACTIVE if you want to use the file view.

Consideration If you enter any status other than ACTIVE, MANTIS programs will not be able to use the file.

Linkage Path For Access (If Related File)

Description *Required* for related files. Specifies which linkage path MANTIS will use to retrieve, update, delete, and insert records into your related file.

Format A valid linkage path name

Consideration You are limited to only one linkage path access in your particular view of a PDM related file. In the definition of your ULTRA file view layout (see "Update file view layout" on page 152), you must enter the PDM key element name(s) associated with this linkage path.

Reference Variable Name (If Related File)

Description *Required* for related files. Specifies a name for the variable which MANTIS will create when the ULTRA file view is processed (via the ULTRA statement). The reference variable will be set by MANTIS GET/INSERT statements, and marks the position of the related record in the SET of related records. The reference variable can be used in MANTIS GET and INSERT statements as a positional qualifier (for example, 'GET ... AFTER refer' or 'INSERT ... BEFORE refer').

Format A standard MANTIS variable name

Considerations

- The variable MANTIS creates is TEXT and has a length of four.
- The ULTRA statement will process the variable like any other data variable defined in the same view (that is, it may be PREFIXed and have multiple levels).

Record Code (If Related File)

Description *Optional*. Specifies the record code you want associated with this ULTRA file view.

Format A valid record code

Considerations

- Record codes are for use only with PDM related files with coded records.
- If you do not specify a record code, MANTIS retrieves all records associated with the specified linkage path, irrespective of the record code.
- During retrieval, MANTIS selects PDM file records which match the specified record code and disregards all others. During update or insertion, MANTIS enforces the specified record code. Therefore, you do not have to concern yourself with record codes in your program.

Last Alteration Date

Description MANTIS maintains the date of updates to this ULTRA file view.

Last Alteration Time

Description MANTIS maintains the time of updates to this ULTRA file view.

Enter the appropriate data for your ULTRA file view and press RETURN. MANTIS will automatically return to the ULTRA File View Design Facility Menu (see “Accessing the ULTRA file view design facility” on page 143).

Update view layout

The Update File View Layout option allows you to create a new ULTRA File View Layout Definition or update existing ULTRA File View Layout Definitions. When you select this option from the ULTRA File View Design Facility Menu, the following screen will appear.

```
 Page : 1  :                Update File View Layout                    YYYY/MM/DD
                                     Element Count :                   HH:MM:SS
   ---------M  A  N  T  I  S----------- -------------U  L  T  R  A--------------
ACT-------------NAME------------- TYPE  ELEMENT  FORMAT  SIGN  DEC LEN DIM ATTRI
 _ _                              __    _        _       _    _       _  _

                            PF1-PF12 Page; CANCEL Exit
```

The underline marks (_) represent the built-in tabs for this function. If you are updating an existing view or returning to this function after performing other functions, the ULTRA file view currently in your work area will appear on the screen.

MANTIS maintains the following entries:

Page *n*

Description Supplies the page of the view layout currently being displayed.

Consideration Use the relevant PF key (1–12) to page through your ULTRA file view layout. If no PF keys are available, specify the required page number over the current page number and press RETURN.

Userid:Name

Description MANTIS displays the fully qualified name of the current working ULTRA file view.

Element Count *m*

Description Specifies the total number of elements currently in your ULTRA file view layout.

Consideration The maximum number of elements allowed is 192.

LEN

Description MANTIS maintains the length of the specified data field as found in the database description. Each FORMAT type has a unique maximum length (for example, if TEXT, the maximum is 254 characters). Existing PDM elements greater than 254 bytes must be redefined in the database description as multiple fields or as subdefined fields.

Complete the following entries:

ACT

Description *Required*. Specifies the action to be taken on that line.

Options

A	Alter this line. Type the new information over the existing data. You must enter A for MANTIS to change the line.
I	Insert this line. Type the new information over the existing data. You must enter I for MANTIS to insert the line.
D	Delete this line. You must enter D for MANTIS to delete the line.

NAME

Description *Required*. Specifies a name for your PDM element.

Format A standard MANTIS variable name, 1–30 characters in length

Consideration This name will be used in your program(s) to refer to the physical data set field specified by the ELEMENT.

ELEMENT

Description *Required*. Specifies the name of the PDM element.

Format A standard PDM element, eight characters in length (the first four characters are the data set name; the last four characters are the name given to the field when the database was created)

Consideration This element must currently exist in your SUPRA database description.

TYPE

Description *Optional*. Indicates the data type of the MANTIS variable created for the field.

Options The first character of one of the following:

INTEGER	signed 4-byte integer (for whole numbers)
SMALL	4-byte binary floating point
BIG	8-byte binary floating point
DECIMAL	DECIMAL floating point of specified precision
TEXT	variable length character string up to specified maximum length

Considerations

- If you do not specify a type, MANTIS supplies a type that is compatible with the external FORMAT specified.
- You cannot specify the precision of the DECIMAL variable created. MANTIS calculates the precision required based on the type and length of the external field description.

FORMAT

Description *Optional*. Indicates the format in which the data is stored in the database.

Options The first character of one of the following:

PACKED	for packed decimal (fixed point)
ZONED	for unpacked (zoned) decimal (fixed point)
BINARY	for 1, 2, 4, or 8 byte binary (fixed point)
FLOAT	for 4 or 8 byte binary floating point
TEXT	for a character string

Consideration If you do not specify a format, MANTIS supplies a format that is compatible with the internal TYPE specified.

SIGN

Description *Optional*. Specifies whether the field is signed or not.

Default N no (unsigned)

Options For binary fields, enter Y (yes) to indicate that the field is signed. For zoned fields, use the following values to indicate the numeric decimal field's sign format:

YES	Trailing overpunch
NO	Unsigned numeric (default)
T/S	Trailing separate
L/O	Leading overpunch
L/S	Leading separate
T/Z	Trailing zoned

Considerations

- Packed and float fields are always considered signed.
- For text fields, the value of SIGN is ignored.
- If the value of SIGN for binary and zoned fields is NO, it is not displayed on this layout definition. Remember that NO is also the default value.

DEC

Description *Optional*. Specifies the number of decimal places for packed, zoned, and binary numeric fields.

Default 0

Considerations

- The number of decimal places cannot exceed the number of digits for PACKED, ZONED, and BINARY fields. BINARY fields of 1, 2, 4, and 8 bytes in length are considered to have 2, 4, 9, and 18 digits respectively.
- The precision of a DECIMAL field must be between 1 and 31.
- The length of a DECIMAL field must be at least 2 bytes more than its precision. You may specify a value for either LEN or DEC and MANTIS will calculate the other value if omitted.

DIM

Description *Required*. Specifies the dimension of a simple array for MANTIS and external variables.

Format A value between 1 and 255

Options For *TEXT* fields:

First Tab Position	Specify the length of this field if a scalar (non-array), or the number of occurrences of this field in an array.
Second Tab Position	Specify the length of each occurrence of this field in an array.

For *INTEGER*, *SMALL*, and *BIG* fields:

First Tab Position	Specify the number of occurrences in a one-dimensional array, or the number of rows in a two-dimensional array.
Second Tab Position	Specify the number of columns in a two-dimensional array.

For *DECIMAL* fields:

First Tab Position	For a scalar number specify the precision of the DECIMAL number, which is the maximum number of significant digits that can be stored (at one byte per digit). For a DECIMAL array, specify the number of array elements in this position and use the second tab position to specify the DECIMAL precision.
Second Tab Position	Specify the precision of the DECIMAL number or the precision of each number in the array indicated by the first tab position.

Considerations

- MANTIS automatically adjusts the length field to the PDM element's length divided by the dimension.
- If the ULTRA statement stipulates multiple levels, an additional level of dimension is generated.

ATTRIBUTE

Description *Optional*. Specifies the attributes for this element.

Options Allowable abbreviations are indicated by underlines:

KEY	for key fields
SCRAMBLE	scrambles (encrypts) information for storage, then unscrambles it when a program reads it.

Considerations

- MANTIS will place KEY in the field if it determines that the associated element is a key or part of a key.
- The key can be a key element in a PDM primary file. For related files, the key can be an element associated with the link path defined earlier in the ULTRA File View Design facility.
- Key fields may not be scrambled.

Warning: Use SCRAMBLE only on new elements. If you use SCRAMBLE on existing data, the data will be lost with no means of recovery.

When entering data, remember that each name in this view must correspond to one entire PDM element (that is, you cannot subdefine ULTRA elements in an ULTRA view). When you have entered your information or completed your changes, press RETURN to store the ULTRA File View Layout Definition. To return to the ULTRA File View Design Facility Menu, press CANCEL.

Warning: If you press CANCEL, any actions entered in the left column (A, I, D) will not be executed, and you will lose those modifications.

Library functions

The Library Functions option enables you to save or import new ULTRA file views and to retrieve, replace, delete, import, and export existing file views. When you select this option from the ULTRA File View Design Facility Menu, the following screen will appear.

```
                              M  A  N  T  I  S


                    ULTRA FILE VIEW DESIGN LIBRARY FACILITY


View Name  :                                                  :
Description:                                                                  :
Export File Name :                                      :

                     Save  ...................  1
                     Replace  ................  2
                     Fetch  ..................  3
                     Delete  .................  4
                     Export  .................  5
                     Import  .................  6
                     Exit  ...............  CANCEL


                                  :    :
```

Under some circumstances, choosing one of the options on the ULTRA File View Library Facility Menu will generate a message requesting confirmation. To confirm your action, the same key sequence must be reentered. This key sequence is always a PF key or ENTER, depending on how the Library Function option was entered. FETCH requires confirmation if modifications to the current working design will be lost. REPLACE requires confirmation if you attempt to replace a different screen in your library. DELETE always requires a confirmation. IMPORT requires confirmation if unsaved modifications to the current working design exist because the ULTRA View will be imported into the work area. EXPORT requires no confirmation since the work area is not affected.

Enter data as described below:

View Name

Description *Required* for SAVE, REPLACE, FETCH, and DELETE. Specifies the name of the ULTRA view design.

Format 1–16 character alphanumeric name, optionally prefixed by a user library specification

Considerations

- You can load any unprivileged user's ULTRA view provided that one of the following conditions is met:
  - One of the passwords in the specified ULTRA file view design is null.
  - Your sign-on password or one of the current working design passwords matches one of the passwords stored in the specified ULTRA file view design.
- This field initially displays the fully qualified name of the current working ULTRA view.

Description

Description *Optional*. Supply a description of the ULTRA view.

Format 1–64 character string

Export File Name

Description *Optional*. Indicates the name of the file which is to be used for Importing/Exporting entities.

Default *ultra_view_name*.mpd

Format A valid file specification

Save (Option 1)

Description Saves the new ULTRA file view in your current work area into your library.

Consideration Use the SAVE option only when the ULTRA file view does not already exist in your library.

Replace (Option 2)

Description Replaces a specific ULTRA file view in your library with the updated version currently in your work area.

Fetch (Option 3)

Description Retrieves an ULTRA file view from your library and places it in your work area.

Delete (Option 4)

Description Deletes an ULTRA file view from your library. The current view will remain in your work area until another ULTRA file view is fetched or until you exit from the ULTRA File View Design facility.

Consideration To rename the ULTRA view, first select SAVE and provide a new name, then Delete the old name.

Export (Option 5)

Description Exports an ULTRA file view from your work area.

Considerations

- You can specify only a single design to be exported. This option will export the entity which is currently in the work area.
- If the work area does not contain anything, you can export an ULTRA View provided that it exists and you have access to it.
- The default output file is of the form *ultra_view_name*.mpd.

Import (Option 6)

Description Imports an ULTRA file view to your work area.

Considerations

- You can specify only a single design to be imported. This entity will be imported into the work area only.
- If unsaved changes exist, you will be prompted to confirm the import since the changes will not be saved.
- The default input file is of the form *ultra_view_name*.mpd.

When you complete the specified option in Library Functions, MANTIS exits to the ULTRA File View Design Facility Menu (see "Accessing the ULTRA file view design facility" on page 143) and displays a library confirmation message in the lower left-hand portion of the screen.

Exit (Cancel)

Description Select this option to exit or cancel the Ultra File View Design Library Facility.

NOTE

Before exiting or canceling any function, it is good practice to save and or replace your work.

Directory of views

The Directory of Views option enables you to view an alphabetic listing of all existing ULTRA file views. When you select this option from the ULTRA File View Design Facility Menu, the following screen will appear.

```
   USERID                   Directory Of Ultra File Views              YYYY/MM/DD
   REPOINT                                                             HH:MM:SS
SEL-------------NAME------------- -----------------DESCRIPTION-----------------
 _
```

MANTIS maintains the following entries:

USERID

Description MANTIS displays the user's sign-on name; that is, the owner of the directory.

REPOINT

Description *Optional*. Specifies a directory reposition command. The directory is repositioned at or after the specified position.

Consideration Enter a space to reposition at the start of the directory.

SEL

Description *Optional*. Enter S next to the ULTRA file view name with which you want to work. You will return to the ULTRA File View Design Facility Menu (see "Accessing the ULTRA file view design facility" on page 143) with the selected design preloaded.

Considerations

- The directory does not support multiple entity selection. Entering a second S will override the previous selection.
- When you exit the ULTRA File View Design Facility, you will not return to the ULTRA File View Directory. The directory select function does not recursively call the ULTRA File View Design Facility, but instead returns control to it, optionally with a selected design name to load.

You are supplied with the name, description, and modification date/time of your ULTRA file views. Notice that passwords are not displayed on the directory listing. Use the WINRIGHT terminal function (KP6) to view the profile modification date/times. You can also select one design to load into the work area by entering an S next to the design name and pressing RETURN. Press RETURN to page through the directory listing. Press CANCEL to return to the ULTRA File View Design Facility Menu (see "Accessing the ULTRA file view design facility" on page 143).

Print completed view

The Print Completed View option allows you to obtain a hard copy of the ULTRA file view currently in your work area. You may return to the ULTRA File View Design Facility Menu at any time during the ULTRA file view design phase and select the Print Completed View option. This causes the current ULTRA file view design to be routed to your designated printer.

Exit ultra file view design

Pressing “Cancel” allows you to exit the Ultra File View Design Facility. You can exit the Ultra File View Design Facility at any time by pressing the cancel key and return to the MANTIS Facility Selection Menu.

NOTE

Before exiting or canceling any function, it is good practice to save and or replace your work.

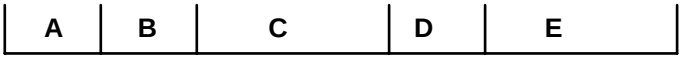
5

External file view design

You can design file views for external files by using the External File View Design Facility. A file view contains detailed information about the contents and format of the data stored in a file and allows you to monitor and control access to that data by password protecting certain functions performed on the file data. The ACCESS statement in the MANTIS program specifies the file view.

You can assign READ, UPDATE, or DELETE/INSERT access to file data associated with external files. Three separate passwords are provided for each option. For example, if a user only needs to look at the data in a file, not update it, you can assign a READ password to that file.

To illustrate the selectivity of data viewing through a file view, let's assume that you have a file record containing fields A, B, C, D, and E:

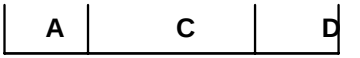


File Record

You want to create a file view that enables another user to see fields A, C, and D, but not B and E:

File View

The person using this file view is oblivious to the fact that fields B and E exist. The user sees the file record as:



File View Through File Record

The ability to lock certain portions of data records from the view of others is central to the concept of file views. This ability results not only in greater data security, but also in greater data independence. Only data necessary for MANTIS program execution should be included in that file view. The MANTIS program is then completely insulated from any changes that may occur to inessential data fields. This, in turn, reduces future maintenance costs.

OpenVMS RMS Journaling is a feature of external files in OpenVMS environments. (ULTRA and SUPRA RDM provide their own journaling capabilities). Logical Unit of Work support is governed by COMMIT and RESET. MANTIS-specific details of interaction with RMS Journaling are provided in "Recovery and data integrity considerations" on page 663 and with the related statements in *AD/Advantage MANTIS Language OpenMVS/UNIX*, P39-1310. Consult your OpenVMS documentation to help you determine which files are best suited for RMS Journaling.

Accessing the external file view design facility

The External File View Design facility provides a menu of options to create, maintain, view, or print new external file views, which enable you to access an external file from a MANTIS program. When you select the Design an External File View option from the Facility Selection Menu, the following screen will appear.

```
                              M  A  N  T  I  S


                     EXTERNAL FILE VIEW DESIGN FACILITY


                Create Or Update File Views  ..........  1
                Update File View Layout  ..............  2
                Library Functions  ....................  3
                Directory Of File Views  ..............  4
                Print Completed Design  ...............  5
                Exit External File Design  .......  CANCEL


    Load File View .. :                                                :
    Current File View :


                                  :    :
```

To create a new external file view, follow the sequence on the External File View Design Facility menu (that is, first create the file view, and then update the file view layout, etc.). You can load an existing external file view in one of three ways:

- Enter the view name in the Load File View field of the External File View Design Facility menu (see the preceding screen illustration) and then select the action you want to perform.
- Select from the directory selection screen. First, select the Directory Of File Views option from the External File View Design Facility menu (see the preceding screen illustration).
- Enter the view name in the Library Functions screen. First, select the Library Functions option from the External File View Design Facility menu (see the preceding screen illustration), and then select the FETCH option.

The Load File View and Current File View fields on the External File View Design Facility menu are described below and on the following pages.

Load File View

Description *Optional*. Specifies the name of a file view to load into the work area before executing the selected option; otherwise, all options apply to the current working file view.

Format 1–16 character alphanumeric name, optionally prefixed by a user library specification

Considerations

- You can load any unprivileged user's file view provided that one of the following conditions is met:
  - One of the passwords in the specified external file view design is null.
  - Your sign-on password or one of the current working design passwords matches one of the passwords stored in the specified external file view design.
- If ENTER is pressed without specifying a menu option, the specified file view will be loaded.
- This field does not cause a file view load when the Directory option is selected, but is interpreted as a directory repoint command.

Current File View

Description MANTIS displays the fully qualified name of the file view currently in the work area.

You can move among the facilities listed on this screen without losing the file design currently in your work area. Remember to save your file design or any updates via the Library Functions option before exiting from this facility to the MANTIS Facility Selection Menu (see "Facility selection menu" on page 23). If you try to exit from the External File Design Facility without saving current changes, MANTIS prompts you to confirm your exit.

To choose a new option for external file view design, you must always return to this menu. The following table provides an overview of the options on this menu.

When you select this option	Details on how you can	Appear in
Create or Update File Views	Create a new external file view design, or update an existing external file view design.	"Create or update file views" on page 172
Update File View Layout	Create a new external file view layout definition or update an existing external file view layout definition.	"Update view layout" on page 181
Library Functions	Save or import new external file view designs and retrieve, replace, delete, export, and import external file view designs.	"Library functions" on page 197
Directory of File Views	View an alphabetic listing of all existing external file views in your library.	"Directory of file views" on page 204
Print Completed Design	Obtain a hard copy of your current external file view design.	"Print completed design" on page 205

Create or update file views

The Create or Update File Views option allows you to create a new external file view or update the definition of an existing external file view. When you select this option from the External File View Design Facility Menu, the following screen will appear.

```
                              FILE  VIEW  DESIGN

Access Name...:
External Name :                                                          :
FDL File Name :                                                          :

    Password For Viewing  ................... :                  :
    Password For Altering ................... :                  :
    Password For Deleting/Inserting  ........ :                  :
    Password For Shared Update  ............ :                  :
    Status  ................................ :                  :
    Indexed,Sequential,Relative,Or Mailbox  . :            :
    Access Method  ......................... : RMS    :
    Maximum Record Size  ................... :       :
    Fixed Or Variable Length  ............... :          :
    Reference Variable Name  ................ :                  :
    Occurrence Controlling Element  ......... :                  :
    First Occurring Element  ................ :                  :
    Mailbox Timeout (Yes/No)  ............... : NO  :
    Key Of Reference (Indexed File Only)  ... :     :
    Last Profile Update Date And Time  ...... :                    :
```

If you are updating an existing file view, or returning to this option after performing other functions, the view currently in your work area is displayed.

To create a new external file view, enter the data described below:

Access Name

Description MANTIS displays the fully qualified name of the current working file view. Use Library Functions to supply a new design name and description.

External Name

Description *Required*. Provides a name by which this file is (or will be) known externally.

Format File specification or a logical name

Consideration If you want MANTIS to create the external file, you can specify an FDL file for doing so (see FDL FILE NAME below).

FDL File Name

Description *Optional*. Provides the name of the FDL file which will be used to create the file.

Default The logical name MANTIS_CREATE

Format File specification or a logical name

Considerations

- MANTIS will create a file if the NEW keyword is specified on the ACCESS statement.
- The FDL default specification is MANTIS_CREATE. This default identifies an FDL file for creating SEQUENTIAL files with variable length records.
- **OpenVMS** The logical name MANTIS_CREATE identifies an FDL to create CARRIAGE RETURN carriage control. In addition MANTIS offers two other logical names: MANTIS_CREFTN and MANTIS_CRENON. These names identify FDL files that describe sequential files that have carriage controls of FORTRAN and NONE. When you create any other type of file, you must supply the FDL file specification in this field.
- **UNIX** "FDL for UNIX" on page 675 specifies the FDL (File Definition Language) syntax. The access method and record attributes are specified by statements you supply in this file.

- UNIX MANTIS_CREATE is an environment variable defined to identify an FDL file for the creation of SEQUENTIAL and RELATIVE files. To create an INDEXED file, you must supply your own FDL file.

Password For Viewing

Description *Optional*. Enables viewing of records accessible through this file view.

Format 1–16 alphanumeric characters

Consideration Programs using this password will not be able to update, delete, or insert records.

Password For Altering

Description *Optional*. Enables updates of records accessible through this file view.

Format 1–16 alphanumeric characters

Consideration Programs using this password will not be able to delete or insert records, but may view and update them.

Password For Deleting/Inserting

Description *Optional*. Enables deletions and insertions of records accessible through this file view.

Format 1–16 alphanumeric characters

Consideration Programs using this password may view, update, delete, and insert records.

Password For Shared Update

Description *Optional*. Enables shared update access through this file view.

Format 1–16 alphanumeric characters

Consideration Programs using this password may view, update, delete, and insert records at the same time as other processes.

Status

Description *Required*. Specifies the status of the field.

Format Enter ACTIVE if you want to use the file view.

Consideration If you enter any other status (for example, ACTIVE0), MANTIS programs will not be able to use the file.

Indexed, Sequential, Relative, Or Mailbox

Description *Required*. Indicates the file type.

Options

INDEXED	for indexed files
SEQUENTIAL	for sequential files
RELATIVE	for files accessed by RRN (Relative Record Number)
OpenVMS MAILBOX	for OpenVMS MAILBOX files

Considerations

- Specify INDEXED if you want random access by key to your file, or if you want your file sorted by key.
- Specify SEQUENTIAL if you want sequential access to the file, with limited random access/update capability by saved byte position.
- Specify RELATIVE if you want random access by RRN (Relative Record Number). RELATIVE files must have fixed length records.
- OpenVMS This field specifies the RMS file type used by MANTIS.
- OpenVMS The MAILBOX file type is for RMS mailbox access and causes MANTIS to use the $CREMBX system service when executing the ACCESS statement.
- UNIX RELATIVE files are a special class of file with FIXED length records. The only difference is in the interpretation of the REFERENCE VARIABLE (see below).
- UNIX MANTIS does not support the MAILBOX file type for UNIX.

Access Method

Description Specifies which access method (software) is to be used to interface between MANTIS and the external data.

Format **OpenVMS** You must specify RMS.

UNIX You must specify one of the following, exactly:

```
BINARY, TEXT, MISAM, CISAM, CIS_TM
```

Considerations

- **UNIX** For SEQUENTIAL and RELATIVE file types, the access method must be one of either BINARY or TEXT.
- **UNIX** For INDEXED file types, the access method must be either MISAM (MANTIS proprietary Indexed Sequential Access Method), or CISAM. If CISAM or CIS_TM is specified, you must have the CISAM package installed on your system.
- **UNIX** BINARY access method is required for any files containing nonprintable characters (especially ‘/0’ and ‘/n’). These files do not have standard carriage control and are unsuitable for editing.
- **UNIX** TEXT access method is required for normal text files; for example, files you want to edit, or pipe through a filter.

NOTE

You must specify VARIABLE length records to obtain normal carriage control (‘/n’).

Maximum Record Size

Description *Required*. Specifies the maximum length of physical records in this file.

Format Arithmetic value between 1 and 32767 bytes

Considerations

- In IBM compatibility mode, the maximum record size is restricted to 18000 bytes.
- For fixed-length records, you should enter the actual record length defined for the file.
- For variable-length records, you should enter the maximum record length to be stored in this file.
- It is very important to specify the correct value since this parameter is also used to check the accuracy of the subsequent file view layout definition.
- CISAM maximum and minimum record lengths are restricted to the CISAM package.

Fixed Or Variable Length

Description *Required*. Enter the types of records in the file.

Options

FIXED	for fixed-length records
VARIABLE	for variable-length records

Considerations

- FIXED length records are padded with spaces prior to INSERT/UPDATE to the maximum length of the record.
- VARIABLE length records are only variable in length when the last field in the record layout ("Update view layout" on page 181) is a TEXT field. Then the current length of the text variable determines the record length.
- VARIABLE length records in TEXT files have records delimited by '/n'. Do not include space in your record layout for the record delimiter; MANTIS handles carriage control for you.
- For RELATIVE files, you must specify FIXED length records.
- UNIX For a TEXT access method with VARIABLE length records, MANTIS appends '/n' to a record before writing it. For a standard text file, you must specify VARIABLE length.
- UNIX For a BINARY access method, VARIABLE length records are implemented by prefixing each binary record with a 2-byte length field which is the number of bytes used by the remainder of the record. The maximum record length is 32767 bytes.

Reference Variable Name

Description *Required*. Provide a record identification for relative files since there is no key defined for these files (as is the case for indexed files). MANTIS also requires a record identification for SEQUENTIAL files if you plan to update or randomly access records in these files.

Format For RELATIVE files, a standard BIG numeric field; for SEQUENTIAL files, a 6-character TEXT field

Considerations

- MANTIS allocates the reference variable (with all the other variables defined in the file view layout) during the processing of the ACCESS statement (described in *AD/Advantage MANTIS Language OpenVMS/UNIX*, P39-1310). This variable has the same multiple buffer allocation and prefixing requirements as all other variables defined in this file view.
- The reference variable contains the Relative Record Number (RRN) for RELATIVE files and the record's byte address for SEQUENTIAL files. You should refer to the descriptions of the GET, UPDATE, INSERT, and DELETE statements (in *AD/Advantage MANTIS Language OpenVMS/UNIX*, P39-1310) for a further explanation of reference variable usage during MANTIS program execution.
- **OpenVMS** The record's byte address in a SEQUENTIAL file is the RFA (Record's File Address) obtained from RMS.

Occurrence Controlling Element

Description *Optional*. Specified only for variable-length records. Indicates the name of an array-controlling element defined in the file view layout which determines the record length.

First Occurring Element

Description *Optional*. Indicates the first element which is part of an occurring data structure or the array name (if not part of a data structure) used by MANTIS to determine the record length.

Consideration This field should only be used in conjunction with the Occurrence Controlling Element.

Mailbox Timeout (Yes/No)

OpenVMS Mailbox timeout is applicable only to the OpenVMS environment.

Description *Optional*. Specifies whether you want your mailbox requests to be asynchronous.

Default NO

Options If the RMS file type is MAILBOX:

YES	Your mailbox requests should be asynchronous.
NO	Your mailbox requests are not asynchronous. If you issue a GET, MANTIS will wait until a record is available and if you issue an INSERT, MANTIS will wait until another process reads the record.

Consideration Mailbox timeout is not supported for RMS operations over DECnet. If timeout is required, it can be implemented through an external program using asynchronous system services.

Key Of Reference (Indexed File Only)

Description *Optional*. Specifies the key of reference for this file view if the external file type is INDEXED and if the file has alternate keys defined.

Default 0 the primary key

Format The primary key is 0; the first alternate key is 1, and so on.

Consideration You may only use the primary key or one of the alternate keys with each file view. If you wish to access a file via more than one key, you must define a view for each key of reference.

Last Profile Update Date And Time

Description MANTIS maintains the date and the time of updates to this file view.

Enter the appropriate data for your file view and press RETURN. MANTIS will automatically return to the External File View Design Facility Menu (“Accessing the external file view design facility” on page 169).

Update file view layout

The Update File View Layout option enables you to create a new External File View Layout Definition or update existing External File View Layout Definitions. When you select this option from the External File View Design Facility Menu, the following screen will appear.

```
 Page No : 1  :           File View Layout Definition                YYYY/MM/DD
 userid:name                             Element Count :             HH:MM:SS
   ----------M  A  N  T  I  S---------- ---------E  X  T  E  R  N  A  L---------
ACT-------------NAME------------- TYPE  POSN  FORMAT  LEN SIGN DEC DIM OFFS ATTR

 _ _                               _    _     _      _   _    _  _   _   _


                              PF1-PF16 Page; CANCEL Exit
```

The underline marks represent the built-in tabs for this function. If you are updating an existing file view or returning to this function after performing other functions, the file view currently in your work area will appear on the screen.

You can begin entering the individual data fields to be included in this file view.

Warning: It is recommended that you first define all data fields in the record and then store the complete view in the library. Later, for each subset of the complete view, you can fetch the originally-designed file view and delete any field not required for the current file view. By doing so, you can ensure a greater degree of accuracy for each defined field and maintain consistency throughout the whole installation.

MANTIS maintains the following entries:

Page *n*

Description *Optional*. Supplies the page of the file view layout currently displayed. Use the relevant PF key (1–9) to page through your external file view layout.

Consideration You can also specify the required page number at the top of the screen and press RETURN.

Userid:Name

Description MANTIS displays the fully qualified name of the current working file view.

Element Count *m*

Description Supplies the total number of elements currently in your external file view layout.

Consideration The maximum number of elements is 254.

Complete the following entries:

ACT

Description *Required*. Specifies whether you want to alter, insert, or delete the line.

Options

A	Alter this line. Type the new information over the existing data. You must enter A for MANTIS to change the line.
I	Insert this line. Type the new information over the existing data. You must enter I for MANTIS to insert the line.
D	Delete this line. You must enter D for MANTIS to delete the line.

NAME

Description *Required*. Identifies the element to be altered, inserted, or deleted.

Format Standard MANTIS variable name, 1–30 characters in length

POSN (Position)

Description *Required*. Supply the position of this field within the file record.

Format 1–5 numeric characters, relative to 1

Considerations

- **OpenVMS** For RMS-indexed files, the position of a key field is specified relative to 0 in the CREATE FDL, but must be relative to 1 here.
- If you do not specify this field, MANTIS uses the next available record position as calculated based on the preceding field lengths
- You can use Position to skip over extraneous or restricted fields (as described above).
- Since MANTIS keeps all of its fields as distinct variables, you should not use Position to overlap, create structures, or re-define fields. MANTIS could construct a file record that could be different than you expect when you do an insert or update.

TYPE

Description *Optional*. Indicates the data type of the MANTIS variable created for the field.

Options The first character of one of the following:

INTEGER	signed 4-byte integer (for whole numbers)
SMALL	4-byte binary floating point
BIG	8-byte binary floating point
DECIMAL	DECIMAL floating point of specified precision
TEXT	variable length character string up to specified maximum length

Consideration If you do not specify a type, MANTIS supplies a type that is compatible with the external FORMAT specified.

FORMAT

Description *Optional*. Indicates the format in which the data is stored on the external file. Only the first character is required.

Options The first character of one of the following:

PACKED	for packed decimal (fixed point)
ZONED	for unpacked (zoned) decimal (fixed point)
BINARY	for 1, 2, 4, or 8 byte binary (fixed point)
FLOAT	for 4 or 8 byte binary floating point
DECIMAL	for DECIMAL floating point
TEXT	for text character string format

Consideration If you do not specify a format, MANTIS supplies a format that is compatible with the internal TYPE specified.

LEN

Description *Required*. The length, in bytes, of the field on the external file.

Format 1–3 numeric characters (field length in bytes)

Considerations

- The length must be in the range 1–254.
- The length can be greater than the number of digits stored for numeric fields but must be at least 2 bytes greater than the precision (DEC) specified for a DECIMAL field.
- MANTIS blank pads Text fields on output (INSERT & UPDATE) and MANTIS removes trailing blanks on input (GET).

SIGN

Description *Optional*. Indicates whether the data field is signed.

Default NO (unsigned)

Options For binary fields, enter YES to indicate that the field is signed. For zoned fields, use the following values to indicate the sign format of the numeric decimal field:

YES	Trailing overpunch
NO	Unsigned numeric (default)
T/S	Trailing separate
L/O	Leading overpunch
L/S	Leading separate
T/Z	Trailing zoned

Considerations

- Packed , float, and decimal fields are always considered signed.
- For text fields, the value of SIGN is ignored.
- If the value of SIGN for binary and zoned fields is NO, it is not displayed on this layout definition. Remember that NO is also the default value.

DEC

Description *Optional*. Specifies the number of decimal places for PACKED, ZONED, and, BINARY numeric fields, or the precision of a DECIMAL field.

Default 0

Considerations

- The number of decimal places cannot exceed the number of digits for PACKED, ZONED, and BINARY fields. BINARY fields of 1, 2, 4, and 8 bytes in length are considered to have 2, 4, 9, and 18 digits respectively.
- The precision of a DECIMAL field must be between 1 and 31.
- For DECIMAL fields, the length (LEN) must be at least 2 bytes more than the precision (DEC). You may specify a value for either LEN or DEC and MANTIS will calculate the other value if omitted.

DIM

Description *Required*. Specifies the dimension of a field (the number of times it occurs).

Format A value between 1 and 255

Options For *TEXT* fields:

First Tab Position	Specify the length of this field if a scalar (non-array), or the number of occurrences of this field in an array.
Second Tab Position	Specify the length of each occurrence of this field in an array.

For *INTEGER*, *SMALL*, and *BIG* fields:

First Tab Position	Specify the number of occurrences in a one-dimensional array, or the number of rows in a two-dimensional array.
Second Tab Position	Specify the number of columns in a two-dimensional array.

For *DECIMAL* fields:

First Tab Position	For a scalar number specify the precision of the DECIMAL number, which is the maximum number of significant digits that can be stored (at one byte per digit). For a DECIMAL array, specify the number of array elements in this position and use the second tab position to specify the DECIMAL precision.
Second Tab Position	Specify the precision of the DECIMAL number or the precision of each number in the array indicated by the first tab position.

Consideration If the ACCESS statement stipulates multiple levels, an additional level of dimension is generated.

OFFS

Description *Required*. Provide the offset of the field. (If a field is part of a data structure that is also part of an array, each occurrence of such a field in the block of data is at an interval (offset) equal to the length of the data structure.)

Default The length of the field

Considerations

- This field should only be entered for variables that are also part of arrays (DIM value greater than 1).
- The value specified here cannot be smaller than the LENGTH field. (See "Data structure and array definitions" on page 190 for further explanation of offset.)
- The value should be the same for all elements of the array (repeating group).
- Specifying a value greater than the defined repeating group length will generate gaps for extraneous or restricted fields (described above).

ATTRIBUTE

Description *Optional*. Provide field attributes.

Options Allowable abbreviations are indicated by underlines:

KEY	for key fields
SCRAMBLE	scrambles (encrypts) information for storage, then unscrambles it when a program reads it

Considerations

- For indexed files only, nominate the key in the record by entering KEY in this field.
- KEY should not be entered for sequential and relative files.
- MANTIS only provides support for either the primary key or one of the alternate keys in each view of an indexed file. If you define more than one field with the KEY attribute, these are treated as segments of the key of reference specified in the Create or Update File Views option. If you wish to access an indexed file with more than one key of reference, you must define a separate view for each key.
- Non-MANTIS programs will not be able to make sense of SCRAMBLED data.
- Key fields cannot be scrambled.
- Use SCRAMBLE only on new elements.

NOTE

If you use SCRAMBLE on existing data, the data will be lost with no means of recovery.

When you have entered your information or completed your changes, press RETURN to store the File View Layout Definition. To return to the External File View Design Facility Menu (see "Accessing the external file view design facility" on page 169), press CANCEL.

NOTE

Warning: If you press CANCEL, any actions entered in the left column (A, I, D) will not be executed, and you will lose those modifications.

Data structure and array definitions

The following defines record layouts in terms of COBOL data structures, a practice which only works on nonaligned machine architectures, or for packed data structures. As long as MANTIS is the only application required to access the file, it is not a problem. But if the external file is accessed or created by another application, and your machine has alignment restrictions for atomic data types, you must ensure that the record layout is consistent between MANTIS and the other application(s). See "Packed records and machine independence" on page 195 for an example.

You may want to express a data structure, an array, or a combination of both through the file view layout. For example, assume that you have the following COBOL record definition of company invoices:

```
01  INVOICES.
      03  CUSTOMER                 PIC 9(6).
      03  BILLING-AMOUNT           PIC S9(7)      COMP-3.
      03  INVOICE-LINES.
          05  ITEM                 PIC X(6).
          05  QUANTITY             PIC S999       COMP.
          05  PRICE                PIC S9(5)V99   COMP-3.
```

To define the same invoice record in MANTIS using the File View Layout Definition, you would enter the data as shown in the following screen illustration.

```
   Page No : 1  :           File View Layout Definition              YYYY/MM/DD
 userid:name                            Element Count :              HH:MM:SS
   ----------M  A  N  T  I  S---------- ---------E  X  T  E  R  N  A  L---------
ACT-------------NAME------------- TYPE  POSN  FORMAT  LEN SIGN DEC DIM OFFS ATTR
 I CUSTOMER                       BIG   1     ZONED    6                    KEY
 I BILLING_AMOUNT                 BIG   7     PACKED   4
 I ITEM                           TEXT  11    TEXT     6
 I QUANTITY                       SMALL 17    BINARY   2  YES
 I PRICE                          BIG   19    PACKED   4       2

                              PF1-PF16 Page; CANCEL Exit
```

NOTE

In the COBOL definition, the two variables INVOICES and INVOICE-LINES have not been specified in the file view layout because they represent data structures and not individual fields (see POSN command above for considerations).

Also note that the hyphen (-) in the COBOL variable BILLING-AMOUNT becomes an underscore (_) in the MANTIS definition BILLING_AMOUNT. MANTIS variables can only be composed of letters, digits, and an underscore. They may not contain any other special characters.

We can now expand the INVOICES record by adding a delivery address field and allowing more than one item to appear on the invoice:

```
01  INVOICES.
      03  CUSTOMER            PIC 9(6).
      03  DEL-ADDRESS         PIC X(30)     OCCURS 3 TIMES.
      03  BILLING-AMOUNT      PIC S9(7)     COMP-3.
      03  INVOICE-LINES                     OCCURS 20 TIMES.
           05  ITEM           PIC X(6).
           05  QUANTITY       PIC S999      COMP.
           05  PRICE          PIC S9(5)V99  COMP-3.
```

The changed INVOICES record using the file view layout looks as follows:

```
 Page No : 1  :             File View Layout Definition              YYYY/MM/DD
 userid-name                              Element Count : 6           HH:MM:SS
   ----------M  A  N  T  I  S---------- ---------E  X  T  E  R  N  A  L---------
ACT-------------NAME------------- TYPE  POSN  FORMAT  LEN SIGN DEC DIM OFFS ATTR
   CUSTOMER                       BIG   1     ZONED   6                      KEY
   DEL_ADDRESS                    TEXT  7     TEXT    30           3    30
   BILLING_AMOUNT                 BIG   97    PACKED  4
   ITEM                           TEXT  101   TEXT    6            20   12
   QUANTITY                       SMALL 107   BINARY  2   YES      20   12
   PRICE                          BIG   109   PACKED  4         2  20   12

                          PF1-PF16 Page; CANCEL Exit
```

The ADDRESS is 30 bytes long and occurs 3 times. Since each occurrence is 30 bytes from the start of the previous one, the OFFSET is 30.

The ITEM, QUANTITY, and PRICE elements each occur 20 times. However, all of them are a part of the data structure INVOICE-LINES. The occurrence of each of these elements is every 12 bytes (the sum of lengths for ITEM, QUANTITY, and PRICE, 6, 2, and 4, respectively). The OFFSET for all of them is, therefore, 12. The new INVOICES record allows for 20 separate items and is 340 bytes long.

Variable-length record definitions

The INVOICES record in "Data structure and array definitions" on page 190 is 340 bytes long. Assuming that on the average each invoice contains only 3 items and that the records are of the fixed-length type, there are 204 bytes of wasted space on each record. To eliminate this waste, many users prefer using the variable-length type records. In this case, each record needs to be long enough to contain only the meaningful invoice information.

This change is achieved by creating another field, NUMBER-OF-ITEMS, which determines the number of times the data structure INVOICE-LINES actually occurs. The adjusted COBOL definition is:

```
01  INVOICES.
      03  CUSTOMER           PIC 9(6).
      03  DEL-ADDRESS        PIC X(30)       OCCURS 3 TIMES.
      03  BILLING-AMOUNT     PIC S9(7)       COMP-3.
      03  NUMBER-OF-ITEMS    PIC 999         COMP.
      03   INVOICE-LINES      OCCURS 20 TIMES
                              DEPENDING ON NUMBER-OF-ITEMS.
           05 ITEM           PIC X(6).
           05 QUANTITY       PIC S999        COMP.
           05 PRICE          PIC S9(5)V99    COMP-3.
```

This is also easy to represent in the File View Layout Definition.

```
 Page No : 1  :             File View Layout Definition              YYYY/MM/DD
 userid-name                              Element Count : 7           HH:MM:SS
   ----------M  A  N  T  I  S---------- ---------E  X  T  E  R  N  A  L---------
ACT-------------NAME------------- TYPE  POSN  FORMAT  LEN SIGN DEC DIM OFFS ATTR
   CUSTOMER                       BIG   1     ZONED   6                      KEY
   DEL_ADDRESS                    TEXT  7     TEXT    30           3    30
   BILLING_AMOUNT                 BIG   97    PACKED  4
   NUMBER_OF_ITEMS                SMALL 101   BINARY  2
   ITEM                           TEXT  103   TEXT    6            20   12
   QUANTITY                       SMALL 109   BINARY  2   YES      20   12
   PRICE                          BIG   111   PACKED  4         2  20   12

                                 PF1-PF16 Page; CANCEL Exit
```

You now have an additional field defined, NUMBER_OF_ITEMS. This is the Occurrence Controlling Element described in “Create or update views” on page 172. ITEM is the First Occurring Element.

Before writing the record to the external file, MANTIS is now directed to check the contents of the NUMBER_OF_ITEMS variable before outputting ITEM, QUANTITY, and PRICE. The length of the record is adjusted to reflect the number of invoice items. Similarly, when reading the record, MANTIS first checks the contents of the Occurrence Controlling Element before deciding how many times to expect the dependent elements.

Sometimes the variable-length records do not have a variable-length array which can be used to adjust the record length at the end. When storing such records, MANTIS assumes that the record length is the sum of the position and the field length of the last element in the File View Layout Definition.

Not all variable-length records fit so neatly into definitions. Many installations use the variable-length technique to store different types of records in the same file. Each record type, in such cases, has a different layout and length. MANTIS can still retrieve and update such combinations of records, provided that you define a separate external file view for each record type.

Packed records and machine independence

Defining record layouts in third-generation languages can cause problems due to the alignment restrictions imposed by many machines and their compilers. Each compiler applies padding between consecutive fields of a structure to satisfy the alignment requirements of the particular machine.

MANTIS does not attempt to figure out the padding requirements in your record layout, nor make any assumptions about how the record fields are referenced by external applications.

The following C example (for the INVOICES record layout) illustrates the approach you should take in designing external programs which share data files with MANTIS. It will make both your external programs and your MANTIS applications more portable, but potentially less efficient.

```
    /* Define the record layout */
    /* Define field sizes       */
#define S_CUSTOMER       6
#define S_BILLING_AMOUNT 4
#define S_ITEM           6
#define S_QUANTITY       2
#define S_PRICE          4
#define S_INVOICE_LINE   (S_ITEM+S_QUANTITY+S_PRICE)
    /* Define field offsets */
#define O_CUSTOMER       O
#define O_BILLING_AMOUNT (O_CUSTOMER+S_CUSTOMER)
#define O_ITEM           (O_BILLING_AMOUNT+S_BILLING_AMOUNT)
#define O_QUANTITY       (O_ITEM+S_ITEM)
#define O_PRICE          (O_QUANTITY+S_QUANTITY)
#define S_RECORD         (O_PRICE+S_PRICE)  /* Record size */
char  record[S_RECORD];
short quantity;
short n;
    /* For example, to obtain the binary quantity field */
    /* from the n'th occurrence of ITEM                 */
memcpy(&quantity,&record[O_QUANTITY+((n-1)*S_INVOICE_LINE),2);
  /* End of example */
```

NOTE

MANTIS uses the function memcpy() (or some equivalent function) when moving all fields to and from the record buffer.

Library functions

The Library Functions option enables you to save or import new file view designs and retrieve, replace, delete, import, and export existing ones. When you select this option from the External File View Design Facility Menu, the following screen will appear.

```
                              M  A  N  T  I  S


                     EXTERNAL FILE VIEW LIBRARY FACILITY


View Name  :                                                  :
Description:                                                                :
Export File Name:                                     :

                                                ACCESS Options
     Save  ....................  1
     Replace  .................  2       Delayed File Open  ........: Y :
     Fetch  ...................  3       Delayed File Create  ......: N :
     Delete  ..................  4
     Export  ..................  5       REPLACE: If non-existent ..: FAULT  :
     Import  ..................  6       DEFAULT: If non-existent ..: FAULT  :
     Exit  ...............  CANCEL       NEW:     If exists ........: CREATE :

                                  :    :
```

Under some circumstances, choosing one of the options on the External File View Library Facility Menu will generate a message requesting confirmation. To confirm your action, the same key sequence must be reentered. This key sequence is always a PF key or ENTER, depending on how the Library Function option was entered. FETCH requires confirmation if modifications to the current working design will be lost. REPLACE requires confirmation if you attempt to replace a different screen in your library. DELETE always requires a confirmation. IMPORT requires confirmation if unsaved modifications to the current working design exist because the External File View will be imported into the work area. EXPORT requires no confirmation since the work area is not affected.

Enter data as described below.

View Name

Description *Required* for SAVE, REPLACE, FETCH, and DELETE. Specifies the name of the file view.

Format 1–16 character alphanumeric name, optionally prefixed by a user library specification

Considerations

- You can load any unprivileged user's file view provided that one of the following conditions is met:
  - One of the passwords in the specified external file view design is null.
  - Your sign-on password or one of the current working design passwords matches one of the passwords stored in the specified external file view design.
- This field initially displays the fully qualified name of the current working file view.

Description

Description *Optional*. Supplies a description of the file view.

Format 1–64 character string

Export File Name

Description *Optional*. Specifies the name of the file which is to be used for Importing/Exporting entities.

Default *external_view_name*.mef

Format A valid file specification

Save (Option 1)

Description *Optional*. Saves the new file view in your current work area into your library. Use the SAVE option only when the file view does not already exist in your library.

Replace (Option 2)

Description *Optional*. Replaces a specific file view in your library with the updated version currently in your work area.

Fetch (Option 3)

Description *Optional*. Retrieves a file view from your library and places it in your work area.

Delete (Option 4)

Description *Optional*. Deletes a file view from your library. The current view will remain in your work area until another file view is fetched or until you exit from the External File View Design facility. To rename the file view, select the SAVE option and provide a new name, then Delete the old name.

Export (Option 5)

Description *Optional*. Select this option to export an external file design from your library.

Considerations

- You can specify only a single design to be exported. This option will export the entity which is currently in the work area.
- If the work area does not contain anything, you can export an External file view provided that it exists and you have access to it.
- The default output file is of the form *external_file_view_name*.mef.

Import (Option 6)

Description *Optional*. Select this option to import an external file design to your work area.

Considerations

- You can specify only a single design to be imported. This option will import the entity into the work area only.
- If unsaved changes exist, you will be prompted to confirm the import since the changes will not be saved.
- The default input file is of the form *external_file_view_name*.mef.

Exit (Cancel)

Description Select this option to exit or cancel the External File View Library Facility.

Before exiting or canceling any function, it is good practice to save and or replace your work.

ACCESS options

Delayed File Open

Description *Required*. Specifies whether a corresponding ACCESS statement should open the external file, or have the file open delayed until the first GET, UPDATE, INSERT, or DELETE operation.

Default	Y	yes
Options	Y	for yes, delay the external file open until the first GET, UPDATE, INSERT, or DELETE operation
	N	for no, open the external file on execution of the ACCESS statement

Delayed File Create

Description *Required*. Specifies whether a corresponding ACCESS statement should create the external file, or have the file creation delayed until the first GET, UPDATE, INSERT, or DELETE operation.

> **NOTE**
> Whether an ACCESS statement creates the external file is determined by the ACCESS statement parameters (such as NEW) and by the ACCESS Options.

Default	N	no
Options	Y	for yes, delay the external file creation until the first GET, UPDATE, INSERT, or DELETE operation
	N	for no, create the external file on execution of the ACCESS statement

REPLACE: If non-existent

Description *Required*. Specifies the action MANTIS will take if the external file does not exist for a corresponding ACCESS statement using the REPLACE parameter.

Default	FAULT	
Options	CREATE	Create the external file if it does not exist.
	FAULT	Fault if the external file does not exist.

Considerations

- You only need to enter the first character (C or F) correctly.
- For new External File View designs, the default value of this ACCESS option is obtained from the value of the ACCESS_REPLACE MANTIS Option.

DEFAULT: If non-existent

Description *Required*. Specifies for a corresponding ACCESS statement, without the NEW or REPLACE parameter, what action MANTIS will take if the external file does not exist.

Default FAULT

Options

CREATE	Create the external file if it does not exist.
FAULT	Fault if the external file does not exist.

Considerations

- You only need to enter the first character (C or F) correctly.
- For new External File View designs, the default value of this ACCESS option is obtained from the value of the ACCESS_DEFAULT MANTIS Option.

NEW: If exists

Description *Required*. Specifies the action MANTIS will take if the external file already exists for a corresponding ACCESS statement using the NEW parameter.

Default CREATE

Options

CREATE	Create a new version of the external file, even if the external file already exists.
FAULT	Fault if the external file already exists.

Considerations

- You only need to enter the first character (C or F) correctly.
- For new External File View designs, the default value of this ACCESS option is obtained from the value of the ACCESS_NEW MANTIS Option.

When the specified option from Library Functions is completed, MANTIS exits to the External File View Design Facility menu (see "Accessing the external file view design facility" on page 169) and displays a library confirmation message in the lower left-hand portion of the screen.

Directory of file views

The Directory of File Views option enables you to view an alphabetic listing of existing file views. When you select this option from the External File View Design Facility Menu, the following screen will appear.

```
   USERID                  Directory Of External File Views            YYYY/MM/DD
   REPOINT                                                             HH:MM:SS
SEL-------------NAME------------- -----------------DESCRIPTION-----------------_
```

You are supplied with the name, description, and modification date/time of your file views. Notice that passwords are not displayed on the directory listing. Use the WINRIGHT terminal function (KP6) to view the profile modification date/times. You can also select one design to load into the work area by entering an S next to the design name and pressing RETURN. Press RETURN to page through the directory listing. Press CANCEL to return to the External File View Design Facility Menu (see “Accessing the external file view design facility” on page 169).

MANTIS maintains the following entries:

USERID

Description MANTIS displays the user's sign-on name; that is, the owner of the directory.

REPOINT

Description *Optional*. Specify a directory reposition command. The directory is repositioned at or after the specified position.

Consideration Enter a space to reposition at the start of the directory.

SEL

Description *Optional*. Enter S next to the external file view name with which you want to work. You will return to the External File View Design Facility Menu with the selected design preloaded.

Considerations

- The directory does not support multiple entity selection. Entering a second S will override the previous selection.
- When you exit the External File View Design Facility, you will not return to the External File View Directory. The directory select function does not recursively call the External File View Facility, but returns control to it, optionally with a selected design name to load.

Print completed design

The Print Completed Design option enables you to obtain a hard copy of the file view currently in your work area. This causes the current file view design screen and any associated file view layout screens to be routed to your designated printer. You can return to the External File View Design Facility Menu at any time during the file view design phase and select the Print Completed Design option.

Exit external file design

Pressing “Cancel” allows you to exit the External File Design Facility. You can exit the External File Design Facility at any time by pressing the cancel key and return to the MANTIS Facility Selection Menu.

Before exiting or canceling any function, it is good practice to save and or replace your work.

6

Prompter design

MANTIS Prompter Design provides a way of creating and maintaining HELP text in the MANTIS File. You can use the MANTIS PROMPT statement to display a specified prompter.

For the display of HELP text, the PROMPT statement provides you with the flexibility to use external help libraries and/or MANTIS prompters. Prompter designs are more limited in terms of capacity and mode of operation than external help libraries, but have the advantage of being compatible with MANTIS for the IBM mainframe (where external help libraries are not available).

Accessing the prompter design facility

The Design a Prompter facility enables you to create and save new prompter designs and to update and maintain existing ones. You can use an external editor to create and maintain prompters (see “Create or update a prompter” on page 212). When you select the Design a Prompter option from the MANTIS Facility Selection Menu (see “Facility selection menu” on page 23), the following menu appears.

```
                              M  A  N  T  I  S


                         PROMPTER DESIGN FACILITY



                 Create Or Update A Prompter  ..........  1
                 Set Tabs  ............................  2
                 Library Functions  ...................  3
                 Directory Of Prompters  ..............  4
                 Display Completed Design  ............  5
                 Print Completed Design  ..............  6
                 Exit Prompter Design  ............  CANCEL


Load Prompter .. :                                                  :
Current Prompter :                                                  :

                                    :    :
```

The Load Prompter and Current Prompter fields on the Prompter Design facility menu are described below:

Load Prompter

Description *Optional*. Specifies the name of a prompter to load into the work area before executing the selected option; otherwise, all options apply to the current working prompter.

Format 1–16 character alphanumeric name, optionally prefixed by a user library specification

Considerations

- You can load any unprivileged user's prompter provided that one of the following conditions is met:
  - The specified prompter's password is NULL.
  - The password of the currently loaded prompter matches the specified prompter's password.
- If ENTER is pressed without specifying a menu option, the specified prompter will be loaded.
- This field does not cause a prompter load when the Directory option is selected, but is interpreted as a directory repoint command.

Current Prompter

Description MANTIS displays the fully qualified name of the prompter currently in the work area.

You can use prompters to:

- Document operational procedures concerning a program, file, or screen design.
- Provide descriptive text explaining certain aspects of company policy or procedures.

To create a new prompter, follow the sequence on the Prompter Design Facility Menu (that is, first create the prompter, then set tab characteristics, and so on). You can load an existing prompter in one of three ways:

- Enter the prompter name in the Load Prompter field of the Prompter Design Facility menu (shown at the beginning of this section) and then select the action you want to perform.
- Select from the directory selection screen. First, select the Directory Of Prompters option from the Prompter Design Facility menu (shown at the beginning of this section).
- Enter the prompter name in the Library Functions screen. First, select the Library Functions option from the Prompter Design Facility menu (shown at the beginning of this section), and then select the FETCH option.

You can move among the facilities listed on this screen without losing the prompter currently in your work area. Remember to save your prompter design or any updates via the Library Functions option before exiting from this facility to the MANTIS Facility Selection Menu (see "Facility selection menu" on page 23). If you try to exit from the Prompter Design facility without saving current changes, MANTIS prompts you to confirm your exit.

The remainder of this chapter discusses the prompter facilities. If you are creating a new prompter, proceed through this chapter. If you are updating a prompter, refer to the section(s) you need.

The following table provides an overview of the options available in prompter design.

When you select this option	Details on how you can	Appear in
Create or Update a Prompter	Design a new prompter or alter an existing one.	"Create or update a prompter" on page 212
Set Tabs	Alter tab character and/or tab location for this prompter design.	"Set tabs" on page 216
Library Functions	Save or import a new prompter design, or replace, fetch, delete, export, or import existing prompter designs.	"Library functions" on page 218
Directory of Prompters	View an alphabetic list of prompter designs in your library.	"Directory of prompters" on page 224
Display Completed Design	View the prompter design currently in your work area.	"Display completed design" on page 226
Print Completed Design	Print a copy of your current prompter design.	"Print completed design" on page 226

Create or update a prompter

The Create or Update a Prompter function enables you to create a new prompter design or update a prompter design, and to invoke an external editor.

If you are creating a new prompter, select the Create or Update a Prompter option from the Prompter Design Facility Menu (see "Accessing the prompter design facility" on page 208). The following screen appears. The scale line across the top of the screen is provided to aid you in character positioning.

```
 Page No : 1                Create Or Update A Prompter             Lines :  0
....!.@..1....!.@..2....!.@..3....!.@..4....!.@..5....!.@..6....!.@..7....!..
```

If you are updating a prompter, or returning to this function after performing other functions, the prompter in your current work area will be displayed above (after you fetch it).

MANTIS maintains the following entries:

Page No : *n*

Description This is the page of the prompter currently being displayed.

Consideration To page through the prompter, press the corresponding PF key or enter the desired page number and press RETURN.

Lines : *n*

Description This is the total number of lines currently in your prompter.

To invoke an external editor, press EDIT (GOLD/E). You may now use all the facilities of your default external editor to modify your prompter. When you return from the editor, MANTIS will issue a warning if your design exceeds 80 lines or if any line is longer than 77 characters. Any excess data will be truncated.

EDIT (GOLD/E) invokes the external editor specified by the EDITOR MANTIS Option. If tab characters are used in the external editor, MANTIS converts them to spaces when reading the prompter design from the editor interface. The default tab increment of eight is assumed, so unpredictable results may occur if the tab increment is not set to eight in your external editor.

NOTE

OpenVMS EDIT (GOLD/E) invokes either the EDT, TPU, or LSE callable editor interfaces. If you are using the TPU editor interface, you can select the TPU editor of your choice by ensuring that the logical name TPU$SECTION (or TPUSECINI) identifies your TPU section file. Similarly, for the LSE editor interface, the logical name LSE$SECTION identifies your LSE section file.

You can also use the MANTIS prompter editing functions by entering your prompter data as described below:

First Tab Position

You can manipulate lines on the screen by entering action indicators ‘A’, ‘I’, or ‘D’ in the first tab position associated with each detail line to be changed. These action indicators have the following meanings:

A	Alter this line by keying new information over the existing fields. MANTIS will not change any of the fields until you enter ‘A’.
I	Insert this line.
D	Delete this line.

Second Tab Position

Begin entering text here. The tab character and tab locations are indicated on the scale line at the top of the screen for your convenience. The at sign characters (@) in the scale line represent the default tabbing character and the default tab columns. This mode of tabbing is for compatibility with MANTIS for the IBM mainframe, and is covered in “Set tabs” on page 216.

MANTIS handles column-based tabbing using fixed tabbing increments via the batch MANTIS commands {TABCOL} and {TABINC = *n*}. You can define a column tabbing key with the {KEY ... = “{TABCOL}”} Batch MANTIS command. For further information on these batch MANTIS commands, Refer to *AD/Advantage MANTIS Administration OpenVMS/UNIX*, P39-1320.

When you enter your data, press RETURN. If you press CANCEL, you will lose all unsaved additions and updates. After you press RETURN, press CANCEL to return to the Prompter Design Facility Menu (see “Accessing the prompter design facility” on page 208).

You can insert a new line between two existing lines by placing an ‘I’ in the first tab position, next to the line you want the inserted line to follow. Type the new line over the existing line, beginning at the second tab position. If the entire line is not modified, the remaining part of the original line must be cleared (DELEOF = GOLD/PF4), or it will be included as part of the new line. Press RETURN. To insert before the first existing line, place an ‘I’ in the first tab position, press RETURN, and type the new first line on top of the old first line; then, the new first line must be altered.

When you recall this prompter through the Display a Prompter Facility on the MANTIS Facility Selection Menu, the prompter text appears along with a centered heading. This heading is obtained from the description you provide when you save the prompter (see “Library functions” on page 218). The scale line and line numbers are not displayed when you use this facility.

Set tabs

The Set Tabs option enables you to specify tab settings in a manner compatible with MANTIS for the IBM mainframe. The tab character and tab positions are displayed on the screen. You can change both the character indicating the tab settings and the actual columns in which tabs are set.

When you select the Set Tabbing Characteristics option from the Prompter Design Facility Menu (see “Accessing the prompter design facility” on page 208), the following screen appears.

```
                M  A  N  T  I  S

            PROMPTER DESIGN FACILITY



 Tab Character  ........................ @

 Tab Positions  ........................ 7
                                         17
                                         27
                                         37
                                         47
                                         57
                                         67
```

Enter data as described below:

Tab Character

Description *Optional*. Indicates which character you want to represent a tab location. You can choose any character in the MANTIS character set to represent a tab.

Default @ At sign

Consideration You need to change the tab character if you want to use the at-sign as part of the prompter text. Choose any character that is not part of the text of your prompter.

Tab Positions

Description Indicates in which columns you want a tab set. A tabbing example is provided below.

Default Location settings are 7, 17, 27, 37, 47, 57, 67

Consideration You may designate up to seven tab settings.

After you indicate the tab character and the locations in which it should appear, press RETURN. MANTIS accepts your selections and returns the Prompter Design Facility Menu (see "Accessing the prompter design facility" on page 208).

Example If you set the asterisk (*) as the tab character, specified tabs in positions 8 and 27, keyed in the following text lines, and pressed RETURN:

```
    ....!..*.1....!....2....!.*..3....!....4..
  I THIS IS AN*EXAMPLE
  I *TO
  I **EXPLAIN THE TABBING
  I FUNCTION
 MANTIS reorganizes the text as shown below:
  ....!..*.1....!....2....!.*..3....!....4..
  THIS IS AN                EXAMPLE
         TO
                            EXPLAIN THE TABBING
  FUNCTION
```

Library functions

The Library Functions option enables you to save or import new prompters and retrieve, replace, delete, import, and export existing prompter designs. When you complete the specified option, MANTIS returns to the Prompter Design Facility Menu, and displays a confirmation message in the lower, left corner of the screen.

When you select the Library Functions option from the Prompter Design Facility Menu (see “Accessing the prompter design facility” on page 208), the following screen appears.

```
                              M  A  N  T  I  S


                      PROMPTER DESIGN LIBRARY FACILITY

  Name  ............... :                                                  :
  Description  ........ :                                                 :
  Password  ........... :                  :
  Next Prompter  ...... :                  :
  Language  ........... :                  :
  Export File Name .... :                                     :

                     Save  ...................  1
                     Replace  ................  2
                     Fetch  ..................  3
                     Delete  .................  4
                     Export  .................  5
                     Import  .................  6
                     Exit  ...............  CANCEL

                                :    :
```

Under some circumstances, choosing one of the options on the Prompter Design Library Facility Menu will generate a message requesting confirmation. To confirm your action, the same key sequence must be reentered. This key sequence is always a PF key or ENTER, depending on how the Library Function option was entered. FETCH requires confirmation if modifications to the current working design will be lost. REPLACE requires confirmation if you attempt to replace a different prompter in your library. DELETE always requires a confirmation. IMPORT requires confirmation if unsaved modifications to the current working design exist because the PROMPTER will be imported into the work area. EXPORT requires no confirmation since the work area is not affected.

Enter data as described below:

Name

Description *Required* for SAVE, REPLACE, FETCH, and DELETE. Specifies the name of the prompter.

Format 1–16 character alphanumeric name, optionally prefixed by a user library specification

Considerations

- You can load any unprivileged user's prompter provided that one of the following conditions is met:
  - The specified prompter's password is NULL.
  - The password of the currently loaded prompter matches the specified prompter's password.
- You cannot modify another user's library.
- This field initially displays the fully qualified name of the current working prompter design.

Description

Description *Required*. Supplies a description of the prompter that will be displayed as the screen heading when the prompter is executed by the PROMPT statement.

Format 1–48 character string

Password

Description *Required*. This is used in IBM compatibility mode.

Format 1–16 alphanumeric characters

Consideration MANTIS uses the Password only for library functions, not the PROMPT statement.

Next Prompter

Description *Optional*. Specifies if another prompter is to be automatically displayed once you have terminated the display of the current prompter.

Format Valid prompter name specified as [*user-name*:] *prompter-name*

Considerations

- The specified prompter name need not exist when you are designing your current prompter.
- If you do not want to chain to another prompter, do not enter NONE or blanks, or MANTIS will search for a prompter with that name (“NONE” or “”). If this prompter does not exist, a program fault for the MANTIS PROMPT statement will occur.
- The prompter to which this prompter will be chained may be in another MANTIS user’s library.

Language

Description *Required*. Specifies a language attribute for the prompter.

Default Your current language as specified by your Master User

Considerations

- The language attribute saved with the prompter is used by the PROMPT statement to locate the correct prompter. MANTIS first attempts to locate the prompter with the user's default language attribute (stored in the user profile or changed by the LANGUAGE statement). Failing that, MANTIS attempts to locate the same prompter with the ENGLISH language attribute.
- If you specify another language, it remains in effect until you change it or exit from the Prompter Design Facility.
- You must specify a known language; otherwise, MANTIS will display an error message, and will not execute the selected function.

Export File Name

Description *Optional*. Indicates the name of the file which is to be used for Importing/Exporting entities.

Default *prompter_name*.mpt

Format A valid file specification

Save (Option 1)

Description *Optional*. Saves a new prompter design from your current work area into your library.

Consideration Use this option only when the prompter design does not exist in your library.

Replace (Option2)

Description *Optional*. Replaces a prompter in your library with the updated version currently in your work area.

Fetch (Option 3)

Description *Optional*. Retrieves a prompter from your library and places it in your work area.

Delete (Option 4)

Description *Optional*. Deletes a prompter design from your library.

Consideration When you select this option, you will be prompted to confirm your deletion. To delete the Prompter, press RETURN (if you entered a 4 in the action field) or press PF4 again. To cancel the deletion, press CANCEL. To rename the Prompter, select the SAVE option and provide a new name, then Delete the old name.

Export (Option 5)

Description *Optional*. Exports a prompter design from your work area.

Considerations

- You can specify only a single design to be exported. This option will export the entity which is currently in the work area.
- If the work area does not contain anything, you can export a Prompter provided that it exists and you have access to it.
- The default output file is of the form *prompter_name*.mpt.

Import (Option 6)

Description *Optional*. Imports a prompter design into your work area.

Considerations

- You can specify only a single design to be imported. This entity will be imported into the work area only.
- If unsaved changes exist, you will be prompted to confirm the import since the changes will not be saved.
- The default input file is of the form *prompter_name*.mpt.

The current prompter design will remain in your current work area until another prompter design is fetched or until you exit from the Prompter Design Facility.

After you have saved, replaced, fetched, or deleted a prompter design, you will return to the Prompter Design Facility Menu (see "Accessing the prompter design facility" on page 208).

Exit (Cancel)

Description Select this option to exit or cancel the Prompter Design Library Facility.

NOTE

Before exiting or canceling any function, it is good practice to save and or replace your work.

Directory of prompters

The Directory of Prompters option enables you to view an alphabetic listing of all prompters. When you select the Directory of Prompters option from the Prompter Design Facility Menu (see “Accessing the prompter design facility” on page 208), the following screen appears.

```
   USERID                        Directory Of Prompters                YYYY/MM/DD
   REPOINT                                                             HH:MM:SS
SEL-------------NAME------------- -----------------DESCRIPTION-----------------_
```

The directory list provides the name, description and modification date/time of your prompters. Notice that passwords are not displayed on the directory listing. Use the WINRIGHT terminal function (KP6) to view the prompter modification date/times. You can also select one prompter to load into the work area by entering an S next to the prompter name and pressing RETURN. Press RETURN to page through the directory listing. Press CANCEL to return to the Prompter Design Facility Menu (see “Accessing the prompter design facility” on page 208).

MANTIS maintains the following entries:

USERID

Description MANTIS displays the user's sign-on name; that is, the owner of the directory.

REPOINT

Description *Optional*. Specifies a directory reposition command. The directory is repositioned at or after the specified position.

Consideration Enter a space to reposition at the start of the directory.

SEL

Description *Optional*. Enter S next to the prompter name with which you want to work. You will return to the Prompter Design Facility Menu with the selected design preloaded.

Considerations

- The directory does not support multiple entity selection. Entering a second 'S' will override the previous selection.
- When you exit the Prompter Design Facility, you will not return to the Prompter Directory. The directory select function does not recursively call the Prompter Design Facility, but returns control to it, optionally with a selected design name to load.

Display completed design

The Display Completed Design option enables you to view the prompter currently in the workspace. You can return to the Prompter Design Facility Menu at any time during the prompter design phase and select this option. The current prompter design appears on your terminal. Press CANCEL to terminate the prompter display and return to the Prompter Design Facility Menu. For additional information, refer to the PROMPT statement in *AD/Advantage MANTIS Language OpenVMS/UNIX*, P39-1310.

Print completed design

The Print Completed Design option enables you to obtain a hard copy of your current prompter design. You may return to the Prompter Design Facility Menu at any time during the prompter design phase and select this option. MANTIS routes the current prompter design to your designated printer.

Exit prompter design

Pressing “Cancel” allows you to exit the Prompter Design Facility. You can exit the Prompter Design Facility at any time by pressing the cancel key and return to the MANTIS Facility Selection Menu.

NOTE

Before exiting or canceling any function, it is good practice to save and or replace your work.

7

Interface design

The Design an Interface Facility enables you to design and save new interface profiles, and update and maintain existing interface profiles.

The interface profile is specified by the INTERFACE statement in the MANTIS program. The interface profiles you create using this facility may be accessed by user-written non-MANTIS interface programs via the MANTIS CALL statement.

The Interface Design Facility allows automatic data conversion on the CALL statement. You indicate the format (packed, zoned, binary, float, decimal, or text) in which data is passed between MANTIS and the interface program, and the corresponding internal data type (INTEGER, SMALL, BIG, DECIMAL, or TEXT).

Accessing the interface design facility

When you select the Design an Interface option from the MANTIS Facility Selection Menu (see “Facility selection menu” on page 23), the following menu appears.

```
                              M  A  N  T  I  S


                          INTERFACE DESIGN FACILITY



                Create Or Update Interface Profile  ...  1
                Update Area Layout  ...................  2
                Library Functions  ....................  3
                Directory Of Interfaces  ..............  4
                Print Completed Design  ...............  5
                Exit Interface Design  ...........  CANCEL


 Load Interface .. :                                                  :
 Current Interface :                                                  :

                                  :    :
```

To create a new interface design, follow the sequence on the Interface Design Facility Menu (that is, first create the profile, then update area layouts, and so on). To update an interface design, first select Library Functions to fetch the interface from your library into your work area. You can load an existing interface design in one of three ways:

- Enter the interface name in the Load Interface field of the Interface Design Facility menu (see the preceding screen illustration) and then select the action you want to perform.
- Select from the directory selection screen. First, select the Directory Of Interfaces option from the Interface Design Facility menu (see the preceding screen illustration).
- Enter the interface name in the Library Functions screen. First, select the Library Functions option from the Interface Design Facility menu (see the preceding screen illustration), and then select the FETCH option.

The Load Interface and Current Interface fields on the Interface Design Facility menu are described on the following pages.

Load Interface

Description *Optional*. Specifies the name of an interface design to load into the work area before executing the selected option; otherwise, all options apply to the current working interface design.

Format 1–16 character alphanumeric name, optionally prefixed by a user library specification

Considerations

- You can load any unprivileged user's interface design provided that one of the following conditions is met:
  - The specified interface design's password is NULL.
  - The password of the currently loaded interface design matches the specified interface design's password.
- If ENTER is pressed without specifying a menu option, the specified interface design will be loaded.
- This field does not cause an interface design screen load when the Directory option is selected, but is interpreted as a directory repoint command.

Current Interface

Description MANTIS displays the fully qualified name of the interface design currently in the work area.

You can move among the options listed on this screen without losing the interface design currently in your work area. Remember to save your interface design or any updates via the Library Functions before exiting from the Interface Design Facility to the MANTIS Facility Selection Menu (see "Facility selection menu" on page 23). If you try to exit from the Interface Design Facility without saving current changes, MANTIS prompts you to confirm your exit.

This chapter discusses the Interface Design options. If you are creating a new interface, proceed through the chapter. If you are updating an interface design, see the section(s) you need.

The following table provides an overview of the options available in Interface Design and where the option is discussed.

When you select this option	Details on how you can	Appear in
Create or Update Interface Profile	Create a new interface profile and update existing ones.	"Create or update interface profile" on page 232
Update Area Layout	Create or update an area layout for an interface.	"Update area layout" on page 238
Library Functions	Save, replace, fetch, delete, export, and import an interface design.	"Library functions" on page 246
Directory of Interfaces	View a listing of interface designs in your library.	"Directory of interfaces" on page 250
Print Completed Design	Print an interface design.	"Print completed design" on page 252

General considerations

- Two protocols for parameter transfer are available to your interface programs (see "Storage area definition and access" on page 255 for a discussion on Storage Area Definition and Access).
- **OpenVMS** MANTIS will invoke your interface program as either a OpenVMS subprocess or a dynamically activated shareable image. MANTIS can transfer data to or from programs written in any language (for example, COBOL, FORTRAN, or MACRO-32) following the call by reference or named program section conventions.
- **UNIX** MANTIS will invoke your interface program either in a new shell or, in the case of internal interface designs, by dynamically loading the external code into the current process if the host platform supports this capability. MANTIS can transfer data to or from programs written in any language (for example, COBOL, FORTRAN, PASCAL, C).

Create or update interface profile

The Create or Update Interface Profile option enables you to create a new interface profile and update existing ones. If you are creating a new interface profile, select this option from the Interface Design Facility Menu (see “Accessing the interface design facility” on page 228). The following screen appears:

```
                              M  A  N  T  I  S


                          INTERFACE DESIGN FACILITY


     Interface Name :

     Associated Area Layout  ... :                  :
     Status  ................... :                  :

     Internal Interface  ....... : N :
     Internal Buffer  .......... : N :
     Internal Routine Name  .... :                                  :
     Internal Routine Cobol .... : Y :
     Internal Routine Resident . : Y :


-----------------------Name Of Program To Be Called-------------------------
```

If you are updating an interface profile, or returning to this option after performing some other function, the interface description currently in your work area will be displayed above (after you fetch it).

To create a new interface profile, enter the following information:

Interface Name

Description MANTIS displays the fully qualified name of the current working interface design. Use Library Functions to supply a new design name and description.

Associated Area Layout

Description *Optional*. Supplies the name of an existing interface only if your interface will use an area layout identical to that of an existing interface.

Format 1–16 character alphanumeric name

Considerations

- Do not delete the associated interface while the current interface remains ACTIVE.
- Do not change the associated area layout while it is being used by this interface design.
- If there is no associated area layout, leave this field blank—if you enter NONE, MANTIS will search for an interface named NONE.

Status

Description *Required*. Enter ACTIVE to allow access to this interface from a program.

Consideration Anything other than ACTIVE (for example ACTIVE*b*) prohibits access to this interface from a program.

Internal Interface

UNIX Internal interfaces are not supported on all UNIX platforms. If your UNIX system does not support internal interfaces, you will receive the following error message on the CALL statement:

530 This function is not available

Description *Optional*. Specifies whether you want MANTIS to invoke your interface program using dynamic image activation.

Default	N	no
Options	Y	for yes, MANTIS should invoke your interface program using dynamic image activation
	N	for no, your program is an executable image and is run in a subprocess

Considerations

- **OpenVMS** If you select YES, your program must be linked as an OpenVMS shareable image. It is activated on the first CALL and remains part of the MANTIS process until MANTIS terminates.
- **UNIX** If you select Yes, and your Interface Program is written in COBOL, you must be running with the same version of COBOL that MANTIS was linked and built with, to run as an Internal Interface.

Internal Buffer

Description *Optional*. Specifies the type of common storage area to use for the interface parameters. MANTIS CALL statement parameters and/or the contents of the interface design variables are placed in this storage area during CALL statement processing.

Default N no

Options

Y	for yes, your program is an internal interface program and you want your interface area to be passed in an internal buffer within MANTIS
N	for no, the interface area is passed to your program in a shared memory section and your program must call a MANTIS-supplied routine to map onto it.

Consideration You cannot use an internal interface buffer with an external interface program.

Internal Routine Name

Description *Optional*. Specifies the routine name to be called after your external program code has been dynamically loaded.

Format **OpenVMS** VMS universal symbol

UNIX The name of a subroutine or function that is globally accessible in the external program code

Consideration You must enter a routine name if you selected YES for the INTERNAL INTERFACE option.

Internal Routine COBOL

Description *Optional*. Specifies if the internal interface routine is written in COBOL.

Default Y Yes

Options

Y	Yes, your program is an internal interface routine written in COBOL.
N	No, your program is an internal interface routine not written in COBOL.

Consideration

- This profile field is only checked for HP/UX UNIX platforms. If set to Y and Internal Routine Resident is marked as N, the COBCANCEL function will be called before the routine is dynamically unloaded by MANTIS.

Internal Routine Resident

Description *Optional*. Specifies if the internal interface routine is to be dynamically unloaded at the end of the process or remain resident.

Default Y Yes

Options

Y	Yes, your internal interface routine should remain resident within the operating system at the end of the process.
N	No, your internal interface routine should be dynamically unloaded at the end of the process.

Consideration

- This option is only in effect for HP/UX UNIX. This field will be ignored for all other UNIX platforms.
- For performance reasons, internal interface routines marked to remain resident (Y) will perform faster, since the routines need only be dynamically loaded the first time. Routines that are only used a few times in a processing day are good candidates for the N option (dynamically unload at end of process). This will release memory back to the operating system.

Name Of Program To Be Called

Description Supplies the name of the program MANTIS calls when this interface is used.

Format External file specification

Considerations

- **OpenVMS** For internal interfaces, you must specify a logical name for the shareable image; otherwise, a logical name or file specification may be entered.
- **OpenVMS** For external interfaces, you may append DCL RUN command qualifiers to the image name. MANTIS prefixes 'RUN ' to whatever you enter into this field before executing the whole command in a subprocess.
- **UNIX** MANTIS uses the environment variable MANTIS_SHRLIB as a path to locate all shared library files. You must set this environment variable so that MANTIS can locate shared libraries that are not in your current directory, or the full path is not given in the Name of Program to be Called screen field. Also, you may set your own environment variable as the Name of Program to be Called, if the variable contains the full path.

Enter the appropriate data for your interface design and press RETURN. MANTIS accepts your interface design and returns the Interface Design Facility Menu (see "Accessing the interface design facility" on page 228).

Before you can save this interface profile via Library Functions, you must create an area layout (see "Update area layout" on page 238) unless you specified an associated area layout.

Update area layout

The Update Area Layout option enables you to create or update an area layout for an interface. Your area layout can contain up to 254 fields. Each page displays 16 fields.

When you select the Update Area Layout option from the Interface Design Facility Menu (see “Accessing the interface design facility” on page 228), the following screen appears. Each underline (_) represents a built-in tab for this function.

```
Page No : 1  :              Interface Area Layout              YYYY/MM/DD
Userid:Name                                                    HH:MM:SS
Element Count :                                  Element Size :
ELEM  -------------NAME------------- TYPE  FORMAT LEN SIGN  DEC DIM -ATTRIBUTE--

_ _  _                               _     _     _   _     _  _   _



                         PF1-PF16 Page; CANCEL Exit
```

If you are updating an interface profile or returning to this option after performing some other functions, your current area layout appears.

MANTIS maintains the following entries:

Userid:Name

Description *Display*. MANTIS displays the fully qualified name of the current working interface design.

Page No : *n*

Description *Display*. Displays the page number of the current area layout.

Consideration You can use the relevant PF keys (1–16) to page through your area layout or overtype the page number with the desired page number and press RETURN.

Element Count : *n*

Description *Display*. Specifies the total number of elements currently in your area layout.

Element Size : *m*

Description *Display*. Supplies the total size of elements currently in your area layout.

Enter the area layout as described below:

Elem

First Tab Position

Description Required. Specifies whether you want to alter, insert, or delete the line.

Options

A	Alter this line with the new information keyed over the existing fields. Type the new information over the existing fields. You must enter ‘A’ in order for MANTIS to change the fields.
I	Insert this line. Type the new information over the existing fields. You must enter ‘I’ to insert the line.
D	Delete this line.

Second Tab Position

Description *Required*. Specifies which line you want to alter, insert, or delete.

Format Arithmetic value in the range 1–254

Consideration You can insert one or more elements between two existing elements (for example, between elements 4 and 5, by inserting (typing I for insert) the new element as line 4 and pressing ENTER. MANTIS renumbers the new element as line 5, the original line 5 as line 6, 6 as 7, and so on). You can insert a line before element 1 by inserting element 0.

NAME

Description *Required*. Supplies a standard variable name.

Format 1–30 character symbolic name

TYPE

Description *Optional*. Indicates the data type of the MANTIS variable created for the field.

Options The first character of one of the following:

INTEGER	signed 4-byte integer (for whole numbers)
SMALL	4-byte binary floating point
BIG	8-byte binary floating point
DECIMAL	DECIMAL floating point of specified precision
TEXT	variable length character string up to specified maximum length

Consideration If you do not specify a type, MANTIS supplies a type that is compatible with the external FORMAT specified.

FORMAT

Description *Optional*. Indicates the format in which the data is stored on the external file. Only the first character is required.

Options The first character of one of the following:

PACKED	for packed decimal (fixed point)
ZONED	for unpacked (zoned) decimal (fixed point)
BINARY	for 1, 2, 4, or 8 byte binary (fixed point)
FLOAT	for 4 or 8 byte binary floating point
DECIMAL	for DECIMAL floating point
TEXT	for text character-string format

Consideration If you do not specify a format, MANTIS supplies a format that is compatible with the internal TYPE specified.

LEN

Description *Required*. The length, in bytes, of the field on the external file.

Format 1–3 numeric characters (field length in bytes)

Considerations

- Specifies the number of bytes in the field to be in the range 1–254.
- May be greater than the number of digits stored for numeric fields but must be at least 2 bytes greater than the precision (DEC) specified for a DECIMAL field.
- Text fields are blank-padded on output by MANTIS and trailing blanks are removed on input by MANTIS.

SIGN

Description *Optional*. Specifies whether the field is signed.

Default NO (unsigned)

Options For binary fields, enter YES to indicate the field is signed. For zoned fields, use the following values to indicate which sign format the numeric decimal field is in:

YES	Trailing overpunch
NO	Unsigned numeric (default)
T/S	Trailing separate
L/O	Leading overpunch
L/S	Leading separate
T/Z	Trailing zoned

Considerations

- Float, decimal, and packed fields are always considered signed.
- For TEXT fields, the value of sign is ignored.
- If the value of sign for binary and zoned is N (for no), it is not displayed on this layout definition.

DEC

Description *Optional*. Specifies the number of decimal places for PACKED, ZONED, and BINARY fields, or the precision of a DECIMAL field.

Default 0

Considerations

- The number of decimal places cannot exceed the number of digits for PACKED, ZONED, and BINARY fields. BINARY fields of 1, 2, 4 and 8 bytes in length are considered to have 2, 4, 9, and 18 digits respectively.
- The precision of a DECIMAL field must be between 1 and 31.
- For DECIMAL fields, the length (LEN) must be at least 2 bytes more than the precision (DEC). You may specify a value for either LEN or DEC and MANTIS will calculate the other value if omitted.

DIM

Description *Optional*. Specifies the dimension of a field (the number of times it occurs). During execution of the INTERFACE statement, MANTIS allocates the variables specified in this Interface Area Definition as single occurrence fields if the DIM value is less than 2, or as an array if the DIM value is 2 or greater. The dimension of the allocated array is equal to the value supplied here.

Format Arithmetic value in the range 0–255

Default 0

Options For *TEXT* fields:

First Tab Position	Specify the length of this field if a scalar (non-array), or the number of occurrences of this field in an array.
Second Tab Position	Specify the length of each occurrence of this field in an array.

For INTEGER, SMALL, and BIG Fields:

First Tab Position	Specify the number of occurrences in a one-dimensional array, or the number of rows in a two-dimensional array.
Second Tab Position	Specify the number of columns in a two-dimensional array.

For DECIMAL Fields:

First Tab Position	For a scalar number specify the precision of the DECIMAL number, which is the maximum number of significant digits that can be stored (at one byte per digit). For a DECIMAL array, specify the number of array elements in this position and use the second tab position to specify the DECIMAL precision.
Second Tab Position	Specify the precision of the DECIMAL number or the precision of each number in the array indicated by the first tab position.

Consideration If the INTERFACE statement indicates multiple buffering, an additional level of dimension is generated at that time, unless the field has a SINGLE_LEVEL attribute.

ATTRIBUTE

Description *Optional*. You can assign SINGLE_LEVEL on any element. This holds the information in the interface area only once, regardless of the LEVEL specification in the INTERFACE statement.

Consideration In Interface Design, S stands for SINGLE LEVEL, not SCRAMBLE as in File Design.

When entering all the data, press RETURN to store the area layout definition. If you press CANCEL or any action key other than RETURN, you will lose your unsaved additions and updates. After you press RETURN, press CANCEL to return to the Interface Design Facility Menu (see “Accessing the interface design facility” on page 228).

Library functions

The Library Functions option enables you to save or import new interface designs and to retrieve, replace, delete, import, and export existing interfaces. When you select the Library Functions option from the Interface Design Facility Menu (see “Accessing the interface design facility” on page 228), the following screen appears.

```
                          M  A  N  T  I  S


                    INTERFACE DESIGN LIBRARY FACILITY


    Interface Name . :                                                  :
    Description .... :                                                  :
    Password ....... : USER            :
    Export File Name :                                       :

                     Save  ...................  1
                     Replace  ................  2
                     Fetch  ..................  3
                     Delete  .................  4
                     Export  .................  5
                     Import  .................  6
                     Exit  ..............  CANCEL

                                 :    :
```

Under some circumstances, choosing one of the options on the Interface Design Library Facility Menu will generate a message requesting confirmation. To confirm the action you have chosen, the same key sequence must be reentered. This key sequence is always a PF key or ENTER, depending on how the Library Function option was entered. FETCH requires confirmation if modifications to the current working design will be lost. REPLACE requires confirmation if you attempt to replace a different interface in your library. DELETE always requires a confirmation. IMPORT requires confirmation if unsaved modifications to the current working design exist because the interface will be imported into the work area. EXPORT requires no confirmation since the work area is not affected.

Enter data as described below:

Interface Name

Description *Required* for SAVE, REPLACE, FETCH, and DELETE. Specifies the name of the interface design.

Format 1–16 character alphanumeric name, optionally prefixed by a user library specification

Considerations

- You can load any unprivileged user's prompter provided that one of the following conditions is met:
  - The specified interface design's password is NULL.
  - The password of the currently loaded interface design matches the specified interface design's password.
- You cannot modify another user's library.
- This field initially displays the fully qualified name of the current working file view.

Description

Description *Optional*. Supply a description of the interface design.

Format 1–48 character string

Password

Description Specifies the password for the interface design.

Export File Name

Description *Optional*. Indicates the name of the file which is to be used for Importing/Exporting entities.

Default *interface_name*.mid

Format A valid file specification

Save (Option 1)

Description *Optional*. Saves the interface design and area layout in your current work area into your library.

Replace (Option 2)

Description *Optional*. Replaces the interface design in your library with the updated version currently in your work area.

Fetch (Option 3)

Description *Optional*. Retrieves an interface design from a library and places it in your work area.

Delete (Option 4)

Description *Optional*. Deletes an interface design from your library. When you select this option, you will be prompted to confirm your deletion. If you want to delete the interface design, press RETURN (if you entered a 4 in the action field) or press PF4 again. To cancel the deletion, press CANCEL. To rename the Interface Design, select the SAVE option and provide a new name, then Delete the old name

Export (Option 5)

Description *Optional*. Exports an interface design from your work area.

Considerations

- You can specify only a single design to be exported. This option will export the entity which is currently in the work area.
- If the work area does not contain anything, you can export an interface design provided that it exists and you have access to it.
- The default output file is of the form *interface_name*.mid.

Import (Option 6)

Description *Optional*. Imports an interface design to your work area.

Considerations

- You can specify only a single design to be imported. This entity will be imported into the work area only.
- If unsaved changes exist, you will be prompted to confirm the import since the changes will not be saved.
- The default input file is of the form *interface_name*.mid.

When the specified option from Library Functions is completed, MANTIS exits to the Interface Design Facility menu (see "Accessing the interface design facility" on page 228) and displays a library confirmation message in the lower left-hand portion of the screen.

Exit (Cancel)

Description Select this option to exit or cancel the Library Functions.

NOTE

Before exiting or canceling any function, it is good practice to save and or replace your work.

Directory of interfaces

The Directory of Interfaces displays an alphabetic listing of all interface designs. When you select the Directory of Interfaces option from the Interface Design Facility Menu, the following screen appears.

```
   USERID                      Directory Of Interfaces                YYYY/MM/DD
   REPOINT                                                            HH:MM:SS
SEL-------------NAME------------- -----------------DESCRIPTION----------------_
```

You are supplied with the name, description, and modification date/time of your interface designs Notice that passwords are not displayed on the directory listing. Use the WINRIGHT terminal function (KP6) to view the profile modification date/times. You can also select one design to load into the work area by entering an S next to the design name and pressing RETURN. Press RETURN to page through the directory listing. Press CANCEL to return to the Interface Design Facility Menu (see “Accessing the interface design facility” on page 228).

MANTIS maintains the following entries:

USERID

Description MANTIS displays the user's sign-on name; that is, the owner of the directory.

REPOINT

Description *Optional*. Specifies a directory reposition command. The directory is repositioned at or after the specified position.

Consideration Enter a space to reposition at the start of the directory.

SEL

Description *Optional*. Enter S next to the interface name with which you want to work. You will return to the Interface Design Facility Menu with the selected design preloaded.

Considerations

- The directory does not support multiple entity selection. Entering a second S will override the previous selection.
- When you exit the Interface Design Facility, you will not return to the Interface Directory. The directory select function does not recursively call the Interface Design Facility, but returns control to it, optionally with a selected design name to load.

Print completed design

Use the Print Completed Design option to obtain a hard copy of your current interface design and area layout. At any time during the interface design phase you can return to the Interface Design Facility Menu (see "Accessing the interface design facility" on page 228) and select this option. MANTIS routes the current interface design and area layout to your designated printer.

Exit interface design

Pressing "Cancel" allows you to exit the Interface Design Facility. You can exit the Interface Design Facility at any time by pressing the cancel key and return to the MANTIS Facility Selection Menu.

NOTE

Before exiting or canceling any function, it is good practice to save and or replace your work.

Interface program description

When you issue a CALL statement from a MANTIS program, your interface program is invoked in one of the following ways depending on the options selected in the Create or Update Interface Profile function and on the capability of your host operating system to perform dynamic loading of program code.

- If the INTERNAL INTERFACE PROGRAM option is set to NO, MANTIS runs the program specified as the NAME OF PROGRAM TO BE CALLED in a subprocess and passes it a storage area in a shared memory section. Your program must call a MANTIS-supplied routine to map onto the shared memory section.

- If the INTERNAL INTERFACE PROGRAM option is set to YES, MANTIS dynamically loads the external program code specified as the NAME OF PROGRAM TO BE CALLED and calls the entry point specified as the INTERNAL ROUTINE TO BE CALLED. If the USE INTERNAL INTERFACE BUFFER option is set to NO, a storage area is passed in shared memory section. Your program must call a MANTIS-supplied routine to map onto the shared memory section. If the USE INTERNAL INTERFACE BUFFER option is set to YES, a storage area is passed in an internal buffer within MANTIS. The start address of this internal buffer is passed as an argument to your program—you do not call any MANTIS-supplied routine to gain access to it.

The storage area passed to your interface program contains any information provided by your MANTIS program which issued the CALL. The contents of the storage area may be modified by the interface program. MANTIS waits for your program to complete or return.

When your program exits, MANTIS continues processing, using the updated contents in the storage area.

Considerations

- **OpenVMS** If the INTERNAL INTERFACE PROGRAM option is set to YES, your interface program must be linked with the /SHAREABLE option and the entry name specified as the INTERNAL ROUTINE TO BE CALLED must be declared as a UNIVERSAL symbol. If MANTIS is installed with privileges, your shareable interface image must also be installed. Also, in this case, the logical name specified as the NAME OF PROGRAM TO BE CALLED must be defined in the system logical name table with the /EXEC attribute. Refer to the descriptions of LIB$FIND_IMAGE_SYMBOL in the *VMS Run Time Library Routines Reference Manual* and the INSTALL utility in the *VMS Utilities Manual* for further details. Your system administrator can tell you if you are running a system wide or a group wide MANTIS.

- **OpenVMS** Do not use the SYS$COMMAND device.

- **UNIX** Two access methods are provided so that you may choose the one most suitable to the programming language of your interface program. See "Storage area definition and access" on page 255 for more information.

Storage area definition and access

The storage area that MANTIS passes to your interface program is defined as described below. MANTIS uses the first eight bytes of the storage area as a text variable associated with your interface name. The MANTIS program issuing the CALL can test the interface symbolic name for a value returned by the interface program. If, for example, your MANTIS program contains the following statements:

```
120 ..CALL TESTPGM("GET","1234")
130 ..IF TESTPGM="NOTFOUND"
140 ...MESSAGE="ERROR,EMPLOYEE DOES NOT EXIST"
150 ..END
```

The interface program may have returned NOTFOUND in the first eight bytes of the storage area. The first eight bytes will always contain blanks upon entry to your interface program. The MANTIS program cannot change the value of the interface symbolic variable.

The remainder of the storage area is defined according to the interface area layout definition (see “Update area layout” on page 238). Numeric and text fields are stored in the order that they appear in the interface area layout. For each text and numeric field, specify the same size as during the interface area layout definition.

The storage area contains packed data only, which is a consideration for machines with data alignment restrictions or if you want your MANTIS applications to be portable to other hardware platforms generally. See “UNIX interface program examples” on page 265 for examples of packed data handling.

The maximum size of the interface storage area is 65535 bytes. You must declare this storage area layout in your interface program.

Considerations

- **OpenVMS** Your program accesses this storage area in one of the following ways, depending on how the storage area is passed to your program:

  - If it is passed in a VMS global section, you call one of two MANTIS-supplied routines—one maps the global section and passes its start address as the only argument to your program (that is, call-by-reference); the other maps the global section onto a named program section, MANTIS_COMMON. To use the call-by-reference method, you must declare your main procedure to accept one input argument, the start address of the storage area.

  - If the storage area is passed in an internal buffer within MANTIS, the address of the start of this area is always passed as the only argument to the procedure specified as the INTERNAL ROUTINE TO BE CALLED. You may not use the common block approach. You must declare your procedure so as to accept one input argument, the start address of the storage area. You do not call any MANTIS-supplied routine.

- **OpenVMS** COBOL/VAX uses the pass-by-reference method so you can define the storage area layout in the linkage section and specify it with the USING clause when you declare the main procedure. In COBOL/ALPHA, it is not possible to use the pass-by-reference method because the COBOL compiler does not use the static register as a storage pointer. However, you can use the named program section method as in FORTRAN to access the storage area. See the example in “OpenVMS interface program examples” on page 259.

- **OpenVMS** In FORTRAN you may use the named program section method by defining the storage area in a COMMON block named MANTIS_COMMON. The internal buffer approach may alternatively be employed (internal interfaces only) by using the ‘FUNCTION’ statement as the entry point instead of the ‘PROGRAM’ statement.

- **OpenVMS** In MACRO-32, you may use either method—define the offsets of the fields relative to the start of the storage area and MANTIS will pass the address of the start of the storage area to you, or declare the storage area in a program section named MANTIS_COMMON. You must align the program section on a 512-byte page boundary.

- **OpenVMS** For other languages, use whichever method is supported by that language.

- **OpenVMS** If the storage area is being passed in a VMS global section (that is, the USE INTERNAL INTERFACE BUFFER option is set to NO), you must link a MANTIS-supplied object module with your interface program.

NOTE

If you use the pass-by-reference method (COBOL uses this method), you must link in MANTIS_LIBRARY: MANTISCAL.OBJ. If you use the named program section method, you must link in MANTIS_LIBRARY: MANTISCOM.OBJ. When your program executes, it must immediately call the routine MANTIS_INTERFACE, without any parameters, before you can access the storage area.

- **OpenVMS** The MANTIS INTERFACE routine (whether it is in MANTISCAL.OBJ or MANTISCOM.OBJ) returns a status that your interface program should check immediately. Any return value other than one (1) is an error, meaning that the global section was not mapped correctly. The interface program should return immediately in this case. Do not attempt to set the interface status parameter, as this could result in an ACCESS VIOLATION.

- **UNIX** If the storage area is passed in an internal buffer within MANTIS, the address of the start of this area is always passed as the only argument to the procedure specified as the INTERNAL ROUTINE TO BE CALLED. You must declare your procedure so as to accept one input argument, the start address of the storage area. You do not call any MANTIS-supplied routine.

- **UNIX** The MANTIS-supplied routine which provides access to the interface storage area is mantis_interface. It may be called in two different ways depending on whether your interface program language supports pointer data types.

  - Programming languages which support pointer data types, such as C, PASCAL and assembler, can access the storage area directly by obtaining a pointer to it. The object library mcom_ptr.a defines a C routine, mantis_interface, for this purpose as follows:

    ```
    int mantis_interface(unsigned char **p_p_retaddr)
    ```

  - Programming languages which do not support pointer data types, such as COBOL and FORTRAN, can perform read/write operations on the storage area. The object library mcom_cpy.a defines a C routine, mantis_interface, for this purpose as follows:

    ```
    int mantis_interface(
        unsigned char *p_function,
        unsigned char *p_area,
        unsigned short *p_size
     )
    ```

    p_function points to a character specifying R to read the storage area, or W to write it back to MANTIS.

    p_area points to memory in your program address space for the copy of the interface storage area.

    p_size points to the size of the storage area in your program address space.

NOTE

Your interface program should call mantis_interface initially to read a copy of the interface storage area, process it, and call mantis_interface again prior to exiting to write the storage area back to the shared memory used by MANTIS.

- **UNIX** The return value of mantis_interface is nonzero for success, zero for failure.

OpenVMS interface program examples

Assume that you have created an interface profile as follows:

```
Page No : 1  :              Interface Area Layout               YYYY/MM/DD
Userid:Name                                                     HH:MM:SS
Element Count : 6                              Element Size : 46
ELEM  -------------NAME------------- TYPE  FORMAT LEN SIGN  DEC DIM -ATTRIBUTE-
  1   FUNCTION                       TEXT  TEXT    8
  2   NID                            SMALL PACKED  3  YES
  3   BRUT                           SMALL ZONED   5  YES
  4   NOM                            TEXT  TEXT    20
  5   AMOUNT                         BIG   PACKED  4  YES
  6   BALANCE                        BIG   BINARY  4  YES    2

                         PF1-PF16 Page; CANCEL Exit
```

In your MANTIS interface program, code the following:

```
10 INTERFACE TESTPGM("TESTFACE","ALIBABA")
20 .
30 .
   .
90 CALL TESTPGM
```

If you allow the INTERNAL INTERFACE PROGRAM option to default to NO, code the COBOL source program on a file TESTCOB.COB as follows:

COBOL/VAX external interface example

```
IDENTIFICATION DIVISION.
     PROGRAM-ID.  COBINTER.
ENVIRONMENT DIVISION.
DATA DIVISION.
WORKING-STORAGE SECTION.
01  STAT PIC 9 COMP.
01  RECORD-AREA.
      02  REC-NID                 PIC S9(5)    COMP-3.
      02  REC-AMT                 PIC S9(7)    COMP-3.
      02  REC-SEQ                 PIC S9(3)    COMP-3.
      02  REC-BRUT                PIC S9(5).
      02  REC-SUPLL               PIC S9(5)    COMP-3.
      02  REC-BAL                 PIC S9(5)V99 COMP.
      02  REC-NOM                 PIC X(20).
LINKAGE SECTION.
01  DATA-AREA.
      05  MANTIS-HEADER.
          07  STATUS-RETURNED      PIC X(8).
      05  MANTIS-DATA.
          07  FUNCTION-REQ         PIC X(8).
          07  MAN-NID              PIC S9(5)    COMP-3.
          07  MAN-BRUT             PIC S9(5).
          07  MAN-NOM              PIC X(20).
          07  MAN-AMT              PIC S9(7)    COMP-3.
          07  MAN-BAL              PIC S9(5)V99 COMP.
PROCEDURE DIVISION USING DATA-AREA.
    CALL 'MANTIS_INTERFACE'  GIVING STAT.
    IF STAT NOT EQUAL 1
       STOP RUN.
    MOVE MAN-NID TO REC-NID.
             :
            etc.
    MOVE 'OK' TO STATUS-RETURNED.
    EXIT PROGRAM.
```

The corresponding LINK command will be:

```
LINK TESTCOB,MANTIS_LIBRARY:MANTISCAL
```

COBOL/ALPHA external interface example

```
IDENTIFICATION DIVISION.
     PROGRAM-ID.  COBINTER.
ENVIRONMENT DIVISION.
DATA DIVISION.
WORKING-STORAGE SECTION.
01  STAT PIC 9 COMP.
01  RECORD-AREA.
      02  REC-NID                  PIC S9(5)    COMP-3.
      02  REC-AMT                  PIC S9(7)    COMP-3.
      02  REC-SEQ                  PIC S9(3)    COMP-3.
      02  REC-BRUT                 PIC S9(5).
      02  REC-SUPLL                PIC S9(5)    COMP-3.
      02  REC-BAL                  PIC S9(5)V99 COMP.
      02  REC-NOM                  PIC X(20).
01  MANTIS COMMON EXTERNAL
      05  MANTIS-HEADER.
          07  STATUS-RETURNED      PIC X(8).
      05  MANTIS-DATA.
          07  FUNCTION-REQ         PIC X(8).
          07  MAN-NID              PIC S9(5)    COMP-3.
          07  MAN-BRUT             PIC S9(5).
          07  MAN-NOM              PIC X(20).
          07  MAN-AMT              PIC S9(7)    COMP-3.
          07  MAN-BAL              PIC S9(5)V99 COMP.
PROCEDURE DIVISION
    CALL 'MANTIS_INTERFACE'  GIVING STAT.
    IF STAT NOT EQUAL 1
       STOP RUN.
    MOVE MAN-NID TO REC-NID.
             :
            etc.
    MOVE 'OK' TO STATUS-RETURNED.
    EXIT PROGRAM.
```

The corresponding LINK command will be:

```
LINK TESTCOB,MANTIS_LIBRARY:MANTISCOM
```

To use the internal interface feature with the preceding example, select the following options in the Create or Update Interface Profile function (see “Create or update interface profile” on page 232).

```
                              M  A  N  T  I  S                    YYYY/MM/DD
                                                                  HH:MM:SS

                          INTERFACE DESIGN FACILITY


     Interface Name :

     Associated Area Layout  ... : TEST             :
     Status  ................... : ACTIVE           :

     Internal Interface  ....... : Y :
     Internal Buffer  .......... : N :
     Internal Routine Name  .... : COBINER                         :


-----------------------Name Of Program To Be Called--------------------------
TESTCOB
```

If the Internal Buffer option is set to NO, the MANTIS and COBOL programs remain the same. The following LINK commands must be used to create your program as a shareable image.

```
LINK/SHAREABLE TESTCOB,MANTIS_LIBRARY:MANTISCAL,SYS$INPUT:/OPT
UNIVERSAL=COBINTER
```

NOTE

In the UNIVERSAL directive above, COBINTER is the COBOL PROGRAM-ID

If the USE INTERNAL INTERFACE BUFFER option is set to YES, the MANTIS program remains the same but the COBOL program must have the following statements removed:

```
CALL 'MANTIS INTERFACE' GIVING STAT.
IF STAT NOT EQUAL 1
   STOP RUN.
```

The following LINK commands must be used:

```
LINK/SHAREABLE TESTCOB,SYS$INPUT:/OPT
UNIVERSAL=COBINTERF
```

In both cases, before running MANTIS you must define the logical name specified as the Name Of The Program To Be Called as follows:

```
DEFINE TESTCOB TESTCOB.EXE
```

An example of an interface program written in MACRO-32 using an EXTERNAL INTERFACE is shown as follows:

```
;       example INTERFACE MACRO-32 program
;
;       input:
;               interface storage area in MANTIS_COMMON program section
;       output:
;               return status text in interface storage area
;       .PSECT MANTIS_COMMON,GBL,OVR,WRT,SHR,NOEXE,PAGE
;
;       interface common area definition
;
STATUS_RETURNED:       .BLKB    8
FUNCTION_REQ:          .BLKB    8
MAN_NIB:               .BLKB    3
MAN_BRUT:              .BLKB    5
MAN_NOM:               .BLKB    20
MAN_AMT:               .BLKB    4
MAN_BAL:               .BLKB    4
        .PSECT  DATA,LCL,CON,WRT,NOEXE
;       local work storage
;
STATUS_OK:              .ASCII  'OK       '
        .PSECT
;
;       start of program code
;
;       .ENTRY  TESTMAC, M  R2,R3,R4      ; Macro test program
        CALLS   #0,MANTIS_INTERFACE       ; address interface area
        BLBC    R0,EXIT                   ; failed to map global
  section
        CVTPL   #7,MAN_AMT,R4             ; get amount
        MULL2   #100,R4                   ; in cents
        SUBL2   R4,MAN_BAL                ; subtract from balance
        ; ...  more codes ...
        MOVQ    STATUS_OK,STATUS_RETURNED ; set return status
        MOVL    #1,R0
EXIT:
        RET                               ; return to MANTIS
        .END    TESTMAC
```

The corresponding LINK command will be:

```
LINK TESTMAC,MANTIS_LIBRARY:MANTISCOM
```

Debugging considerations

If an interface fails to perform properly, check the following:

- The name of the interface specified in the CALL statement must match the name given in the INTERFACE statement.
- The name of the interface profile specified in the INTERFACE statement must match the name assigned during interface design.
- The fields defined in the INTERFACE profile must all have corresponding fields of the correct length and type in the linkage section or program section of the INTERFACE program.

UNIX interface program examples

This section includes example programs in COBOL and C. Since many UNIX systems run on hardware with data alignment restrictions, these examples illustrate how the packed interface storage area should be handled for aligned machines generally.

The following examples refer to the interface layout shown in “OpenVMS interface program examples” on page 259:

COBOL example

```
IDENTIFICATION DIVISION.
PROGRAM-ID.  FACU-IF.
ENVIRONMENT DIVISION.
DATA DIVISION.
WORKING-STORAGE SECTION.
01 RSTAT PIC 9 COMP.
01 DSIZE PIC 9999 COMP.
01 FREAD PIC X VALUE IS "R".
01 FWRITE PIC X VALUE IS "W".
01 MANTIS-DATA  PIC X(52).
01 XFUNCTION PIC X(8).
01 XNID PIC X(3).
01 REDEFINES XNID.
   03 NID PIC S9(5) USAGE IS COMP-3.
01 YNID PIC S9(5) SIGN IS LEADING SEPARATE.
01 XBRUT PIC X(5).
01 REDEFINES XBRUT.
   03 BRUT PIC S9(5) SIGN IS TRAILING SEPARATE CHARACTER.
01 XNOM PIC X(20).
01 XAMOUNT PIC X(4).
01 REDEFINES XAMOUNT.
   03 AMOUNT PIC S9(7) USAGE IS COMP-3.
01 YAMOUNT PIC S9(7) SIGN IS LEADING SEPARATE.
01 XBALANCE PIC X(4).
01 REDEFINES XBALANCE.
   03 BALANCE PIC S9(5)V99 USAGE IS COMP.
01 YBALANCE PIC S9(5)V99 SIGN IS LEADING SEPARATE.
```

```
PROCEDURE DIVISION.
BODY.
    MOVE 52 TO DSIZE.
    CALL "MANTIS_INTERFACE" USING FREAD MANTIS-DATA DSIZE
         GIVING RSTAT.
    IF RSTAT NOT EQUAL 1 THEN
          STOP RUN.    MOVE MANTIS-DATA(9:8) TO XFUNCTION.
    MOVE MANTIS-DATA(17:3) TO XNID.
    MOVE MANTIS-DATA(20:5) TO XBRUT.
    MOVE MANTIS-DATA(25:20) TO XNOM.
    MOVE MANTIS-DATA(45:4) TO XAMOUNT.
    MOVE MANTIS-DATA(49:4) TO XBALANCE.
    COMPUTE BALANCE = BALANCE + 0.01.
    MOVE BALANCE TO YBALANCE.
    MOVE XBALANCE TO MANTIS-DATA(49:4).
    MOVE AMOUNT TO YAMOUNT.
    MOVE NID TO YNID.
    DISPLAY "FUNCTION=" XFUNCTION.
    DISPLAY "NID=" YNID.
    DISPLAY "BRUT=" BRUT.
    DISPLAY "NOM=" XNOM.
    DISPLAY "AMOUNT=" YAMOUNT.
    DISPLAY "BALANCE=" YBALANCE.
    MOVE "SUCCESS" TO MANTIS-DATA(1:7).
    CALL "MANTIS_INTERFACE" USING FWRITE MANTIS-DATA DSIZE
         GIVING RSTAT.
    IF RSTAT NOT EQUAL 1 THEN
          STOP RUN.
   END PROGRAM FACU-IF.
```

COBOL linkage

The program executable can be linked by a command such as:

```
$cobol -o facu_if facu_if.cob $MANTIS_ROOT/lib/mcom_cpy.a
```

The Name Of Program To Be Called is facu_if, which must be entered in the interface design.

UNIX COBOL example consideration

The “DSIZE PIC 999 COMP.” setting must contain the number of bytes that points to the size of the storage area in your program address space. The maximum size is 65535 bytes. This setting is used by the mantis_interface (“mcom_cpy.a”) to either Read From or Write To the MANTIS shared memory, depending on the parameter given in the “CALL” statement when calling the “MANTIS _INTERFACE”. If the size of storage to be written or read is going to be greater than 9999 bytes, then your COBOL program must be compiled using the “NOTRUNC” option.

C example

```
  /* Define parameter area layout as storage area offsets */
#define P_STATUS        0
#define P_FUNCTION      8
#define P_NID           16
#define P_BRUT          19
#define P_NOM           24
#define P_AMOUNT        44
#define P_BALANCE       48
main()
{
    long        balance;
    char        *p_parm;
    if (!mantis_interface(&p_parm))
    {
        printf("/nError in mantis_interface/n");
        exit (1);
    }
        /* NB:  Packed fields not handled in this example */
    memcpy(&balance, &p_parm[P_BALANCE], 4);
    printf("\nFUNCTION = %.8s", &p_parm[P_FUNCTION]);
    printf("\nBRUT = %.5s", &p_parm[P_BRUT]);
    printf("\nNOM = %.20s", &p_parm[P_NOM]);
    printf("\nBALANCE = %ld", balance);
    balance += 1; /* Add 1 cent and update balance field */
    memcpy(&p_parm[P_BALANCE], &balance, 4);
    memcpy(&p_parm[P_STATUS], "SUCCESS", 7);
    exit(0);
}
```

C linkage

The program executable can be linked by a command such as:

```
$cc -o facu_if facu_if.c $MANTIS_ROOT/lib/mcom_ptr.a
```

The Name Of Program To Be Called is facu_if, which must be entered in the interface design.

8

Prototyping

This chapter provides an overview of the concept of prototyping and describes two MANTIS facilities you can use to prototype your applications. Sources quoted in footnotes throughout this chapter are compiled in the Notes section at the end of the chapter with complete bibliographic information for all sources.

Introduction to prototyping

Prototyping defines requirements that analyze user needs, and refines them by building a working model of the ultimate system. This working model provides a basis of communication between the user and the developer, and is “iteratively refined as their understanding of the system grows.”[1]

In general, prototyping can be used alone or with traditional life-cycle design methods to minimize life-cycle costs, project risks, and application backlogs. For the prototype to be economically feasible, it must be developed rapidly, and be flexible to allow rapid change during the development cycle.

Prototyping provides the user with an animated, concrete model to work with and evaluate. Definition of the system occurs through gradual, evolutionary discovery of the user’s needs. Prototyping eliminates misapplication of a user’s needs by providing an active and dynamic model to anchor discussions and enable unambiguous communication.

User participation in the design and implementation of the system inspires confidence and minimizes “user rejection, last minute rework, and project cancellation.”[2] Early exposure to the product gives the user “a feel for the system and encourages his full participation.”[3] Since the user works as a member of the design team, the user-developer adversarial relationship is less likely to occur.

To identify the essential features of a system, the prototype must simulate the system in a simplified manner. The initial prototype model “sacrifices accuracy in some areas for a quick check of the system’s function”[4] and interaction with its intended environment. As the user’s requirements become more apparent, the prototype is modified, expanded, and refined.

To allow for valid evaluation, the prototype should demonstrate all the primary functions of the ultimate system. It should provide error detection and correction procedures and demonstrate inter-screen flow and the intended human/machine interaction. The user can then see a concrete model of the system, compare it with his needs, and communicate ideas to the developer.

Developers can also use prototyping as an evaluation tool. A conceptual model can be used to show design alternatives or the potential value and use of an end product. Used as a validation vehicle, a prototype can be operationally tested before making an expensive commitment of development resources.

Other advantages of the prototyping design process include:

- Opportunity to assess the impact of the system on the workplace
- Better project management because of iterative development and better communication among team members
- Training vehicles for users
- Libraries of models to use at the beginning of the development cycle to stimulate ideas
- Development documentation
- Minimal waste of time, money, and resources (if a system is built incorrectly, it is often too expensive to change)

Prototyping uses a working model as the foundation for evaluating and/or refining the subject system. The iterative design continues until developers and users agree on a solution. The assumption is that "extensive iteration is necessary, inevitable, desirable, and to be encouraged."[5]

Prototype designs

There are two types of prototype designs:

- Disposable prototypes—Demonstrate "a selected set of quality factors."[6] They are typically developed quickly, and must be easy to test and communicate.
- Cyclic prototypes—Use successive refinements to create a system. The basic strategy of this design process is to capture a set of needs and quickly implement them, with the "intent of expanding and refining them as mutual user/developer understanding of the system grows."[7]

The prototyping life cycle

The prototyping life cycle makes use of traditional functional specification techniques to gain an initial understanding of the problem. When the basic requirements for the system are identified, a model system is implemented. This system provides a basis for discussion. The system is modified as the users/developers continue to define problems and provide solutions.

There are four basic stages in the prototyping life cycle:

- Identify Needs[8]—Define the problems and the functions and data needed to solve them.
- Develop a Working Model[9]—Create a preliminary model that incorporates the key items identified in the previous step. Rapid development of a working model maintains interest in the project and inspires user confidence.
- Implement the Model—Demonstrate the model, in context, to everyone interested. Encourage brainstorming and additions to the system.
- Revise and Evaluate—Evaluate the system in the end user's environment.

The prototype is alternately revised and implemented until the system is acceptable to both developers and users. This design process produces a definite solution to the initial problem that has a low probability of change and a high probability of user acceptance.

MANTIS prototyping tools

MANTIS combines the features of an application development tool, the Run System Facility, and the AD/Advantage Facility to achieve powerful prototyping capabilities. The ease of using MANTIS minimizes the time and cost of designing and implementing systems—making prototyping a viable alternative to traditional systems design methods. Both facilities are options which may be available to you from your MANTIS Facility Selection Menu (see “Facility selection menu” on page 23).

The MANTIS Run System Facility enables you to execute data entry, browsing, and inquiry applications without writing specific application programs. You can use it to test screen and file designs and to quickly demonstrate basic system functions.

These highly diverse facilities enable you to concurrently develop multiple prototypes, each dealing with a separate system concern. You can use the MANTIS Run System along with MANTIS programs to prototype functional system requirements. Using MANTIS prototyping capabilities to their fullest by implementing multiple, concurrent prototypes saves development time and breaks the development task into discrete, simple units thereby facilitating project management.

MANTIS run system facility

The MANTIS Run System Facility enables you to execute data entry, browse, and inquiry applications without writing specific application programs. MANTIS provides a set of generalized programs for inquiry and maintenance functions to MANTIS files, ULTRA file views, RDM user views, and external files. You can access these programs via the Run System Facility or use programming mode to customize the applications.

OpenVMS RDM views are a feature of MANTIS for OpenVMS only. ULTRA file views are not supported on all UNIX platforms. Check the RDM and PDM MANTIS Options respectively.

Accessing the MANTIS run system facility

To use the MANTIS Run System, first create your screen and file. (See "Screen design" on page 25 and "MANTIS file design" on page 117 for details on how.) When you select the MANTIS Run System Facility option from the MANTIS Facility Selection Menu, the following screen will appear.

```
                              M  A  N  T  I  S

                             RUN SYSTEM FACILITY

Screen Name ................... :                                    :
Number Of Records On Screen ... :    :

File Or View Name ............. :                                    :
File Or View Password ......... :                  :

Type (MANTIS,ULTRA,EXT,RDM) ... :        :
Key Type (NUMERIC,TEXT) ....... :         :

                              Select System To Run

                            Data Entry  ......... 1
                            Browse  ............ 2
                            Inquiry  ........... 3
                            Instructions  ....... 4
                            Exit  .......... CANCEL
                                     :   :
```

To access a Run System program, enter the data described below:

Screen Name

Description *Required*. Supplies the name of the MANTIS screen that is used to enter or browse the data.

Format 1–28 character screen library name

Consideration If the screen does not reside in your library, you can access it by specifying the name of the user in whose library it does reside, followed by a colon and the screen name:

`[user-name:]screen-name.`

Number Of Records On Screen

Description *Required*. Specifies the total number of records that can be entered or displayed on the screen named in SCREEN NAME (the total number is the original line plus the total number of vertical repeat occurrences).

Default 1

Format 1–2 digit number

File Or View Name

Description *Required*. Provides the name of the MANTIS file, ULTRA file view, RDM view, or external file view you wish to access.

Format 1–16 character library name

Consideration If the file does not reside in your library, you can access it by specifying the name of the user in whose library it does reside followed by a colon and the file name:

`[user-name:]file-name.`

File Or View Password

Description *Required*. Provides the password for this file. If you want to use the DATA ENTRY option on the Run System Facility Menu, you must enter the file password for deleting/inserting; otherwise, supply the password for viewing.

Format 1–16 characters

Type (MANTIS, ULTRA, EXT, RDM)

Description *Required*. Indicates the type of file used. The minimum abbreviations allowed are shown by underlining.

Options

MANTIS	for MANTIS file
ULTRA	for ULTRA file view
EXT	for external file
RDM	for RDM user view

Key Type (NUMERIC, TEXT)

Description *Required*. Supplies the primary key of the file.

Options

N	for numeric (INTEGER, SMALL, BIG, or DECIMAL)
T	for TEXT

Consideration The Run System enables you to perform data-entry functions only on single-keyed files. You can perform browse and inquiry functions for multikeyed files by specifying the key type of the first key field.

Select system to run

Data Entry

Description *Optional*. Enters data into the file.

Browse

Description *Optional*. Browses the data in the file.

Inquiry

Description *Optional*. Queries a specific record on the file. MANTIS will display the following message in the lower left corner of the screen:

```
PLEASE ENTER KEY DATA FOR INQUIRY
```

Enter the first key for the record you want to see and press ENTER. MANTIS will display the record in the first record-entry line on the screen.

Instructions

Description *Optional*. Select this option for an overview of the Run System and instructions for customizing applications.

Exit (Cancel)

Description Select this option to exit or cancel the Run System Facility.

NOTE

Before exiting or canceling any function, it is good practice to save and or replace your work.

Customizing applications

If you want to customize applications, you may either use applications from the Master User library or fetch similar skeleton modules from the EXAMPLES library.

Program	Description
SKELETON_ENTRY	data-entry program
SKELETON_BROWSE	browsing program
SKELETON_INQUIRY	inquiry program
SKELETON_MAINT	inquiry/maintenance program
SKELETON_MENU1	menu program using your screen
SKELETON_MENU2	generic menu program without a screen

To use these programs, you must be in programming mode for your assigned user. Load the desired program from the EXAMPLES library using this format:

```
LOAD EXAMPLES:SKELETON_ENTRY,CASINO
```

When the program is loaded in your work area, you can begin modifications.

SKELETON_ENTRY program

The following skeleton data-entry program is available in the EXAMPLES library.

```
 10 ENTRY SKELETON_ENTRY
 20 .TEXT CHAIN_NAME(33)
 30 .|*********************************************************
 40 .|*                                                       *
 50 .|* TO USE THIS AS A SKELETON TO CREATE DATA ENTRY PROGRAMS,*
 60 .|* THE FOLLOWING MUST BE CHANGED:                        *
 70 .|* 1.  INSERT THE PROPER SCREEN AND FILE INFORMATION.     *
 80 .|* 2.  DELETE THE FILE/DBMS/ACCESS/VIEW STATEMENTS NOT USED*
 90 .|* 3.  IF THIS PROGRAM IS TO CHAIN TO ANOTHER PROGRAM,    *
100 .|*     FILL IN CHAIN_NAME, ELSE LEAVE IT BLANK.           *
110 .|*                                                       *
120 .|*********************************************************
130 .|
140 .SCREEN MAP("????????????????")
150 .FILE RECORD("????????????????","????????????????")
160 .ULTRA RECORD("????????????????","????????????????")
170 .ACCESS RECORD("????????????????","????????????????")
180 .VIEW RECORD("????????????????")
190 .CHAIN_NAME=""
200 .|
210 .|
220 .CONVERSE MAP
230 .WHILE MAP<>"CANCEL"
240 ..INSERT RECORD
250 ..CLEAR MAP
260 ..CONVERSE MAP
270 .END
280 .IF SIZE(CHAIN_NAME)>ZERO
290 ..CHAIN CHAIN_NAME
300 .END
310 EXIT
```

SKELETON_BROWSE program

The following skeleton browse program is available on the EXAMPLES library.

```
 10 ENTRY SKELETON_BROWSE
 20 .TEXT CHAIN_NAME(33)
 30 .|*********************************************************
 40 .|*                                                       *
 50 .|* TO USE THIS AS A SKELETON TO CREATE BROWSING PROGRAMS,  *
 60 .|* THE FOLLOWING MUST BE CHANGED:                        *
 70 .|* 1.  SET THE NUMBER_RECORDS FIELD TO THE NUMBER         *
 80 .|*     OF RECORDS ON THE SCREEN TO BE USED.               *
 90 .|* 2.  INSERT THE PROPER SCREEN AND FILE INFORMATION.      *
100 .|* 3.  DELETE THE FILE/DBMS/ACCESS/VIEW STATEMENTS NOT USED*
110 .|* 4.  IF THIS PROGRAM IS TO CHAIN TO ANOTHER PROGRAM,     *
120 .|*     FILL IN CHAIN_NAME, ELSE LEAVE IT BLANK.            *
130 .|*                                                       *
140 .|*********************************************************
150 .|
160 .NUMBER_RECORDS=1
170 .SCREEN MAP("????????????????")
180 .FILE
  RECORD("????????????????","????????????????",NUMBER_RECORDS)
190 .ULTRA RECORD("????????????????","????????????????")
200 .ACCESS
  RECORD("????????????????","????????????????",NUMBER_RECORDS)
210 .VIEW RECORD("????????????????")
220 .CHAIN_NAME=""
230 .|
240 .|
250 .WHILE MAP<>"CANCEL" AND RECORD<>"END"
260 ..CLEAR MAP
270 ..GET RECORD LEVEL=1
280 ..BUFFER=1
290 ..WHILE RECORD<>"END" AND BUFFER<NUMBER_RECORDS
300 ...BUFFER=BUFFER+1
310 ...GET RECORD LEVEL=BUFFER
320 ..CONVERSE MAP
330 .END
340 .IF SIZE(CHAIN_NAME)>ZERO
350 ..CHAIN CHAIN_NAME
360 .END
370 EXIT
```

SKELETON_INQUIRY program

The following skeleton inquiry program is available on the EXAMPLES library.

```
 10 ENTRY SKELETON_INQUIRY
 20 .TEXT CHAIN_NAME(33)
 30 .|*********************************************************
 40 .|*                                                       *
 50 .|* TO USE THIS AS A SKELETON TO CREATE INQUIRY PROGRAMS,   *
 60 .|* THE FOLLOWING MUST BE CHANGED:                          *
 70 .|* 1.  IF THE KEY IS NUMERIC DELETE THE TEXT               *
 80 .|*     STATEMENT FOR INQUIRY_KEY                           *
 90 .|* 2.  SET THE NUMBER_RECORDS FIELD TO THE NUMBER          *
100 .|*     OF RECORDS ON THE SCREEN TO BE USED.                *
110 .|* 3.  INSERT THE PROPER SCREEN AND FILE INFORMATION.      *
120 .|* 4.  DELETE THE FILE/DBMS/ACCESS/VIEW STATEMENTS NOT USED*
130 .|* 5.  IF THIS PROGRAM IS TO CHAIN TO ANOTHER PROGRAM,     *
140 .|*     FILL IN CHAIN_NAME, ELSE LEAVE IT BLANK.            *
150 .|*                                                       *
160 .|*********************************************************
170 .|
180 .TEXT INQUIRY_KEY(100)
190 .NUMBER_RECORDS=1
200 .SCREEN MAP("????????????????")
210 .FILE
  RECORD("????????????????","????????????????",NUMBER_RECORDS)
220 .ULTRA RECORD("????????????????","????????????????")
230 .ACCESS
  RECORD("????????????????","????????????????",NUMBER_RECORDS)
240 .VIEW RECORD("????????????????")
250 .CHAIN_NAME=""
260 .|
270 .|
280 .ATTRIBUTE(MAP)="PROTECT"
290 .CLEAR
300 .SHOW "PLEASE ENTER KEY DATA FOR INQUIRY"
310 .OBTAIN INQUIRY_KEY
320 .WHILE MAP<>"CANCEL" AND RECORD<>"END"
330 ..CLEAR MAP
340 ..GET RECORD(INQUIRY_KEY)LEVEL=1
350 ..BUFFER=1
360 ..WHILE RECORD<>"END" AND BUFFER<NUMBER_RECORDS
```

```
370 ...BUFFER=BUFFER+1
380 ...GET RECORD LEVEL=BUFFER
390 ..END
400 ..CONVERSE MAP
410 ..OBTAIN INQUIRY_KEY
420 .END
430 .IF SIZE(CHAIN_NAME)>ZERO
440 ..CHAIN CHAIN_NAME
450 .END
460 EXIT
```

SKELETON_MAINT program

This skeleton inquiry/maintenance program is on the EXAMPLES library.

```
 10 ENTRY SKELETON_MAINT
 20 .TEXT CHAIN_NAME(33)
 30 .|*********************************************************
 40 .|*                                                       *
 50 .|* TO USE THIS AS A SKELETON TO CREATE MAINTENANCE PROGRAMS*
 60 .|* THE FOLLOWING MUST BE CHANGED:                        *
 70 .|* 1.  IF THE KEY IS NUMERIC DELETE THE TEXT              *
 80 .|*     STATEMENT FOR INQUIRY_KEY                          *
 90 .|* 2.  SET THE NUMBER_RECORDS FIELD TO THE NUMBER         *
100 .|*     OF RECORDS ON THE SCREEN TO BE USED.               *
110 .|* 3.  INSERT THE PROPER SCREEN AND FILE INFORMATION.     *
120 .|* 4.  DELETE THE FILE/DBMS/ACCESS/VIEW STATEMENTS NOT USED*
130 .|* 5.  IF THIS PROGRAM IS TO CHAIN TO ANOTHER PROGRAM,    *
140 .|*     FILL IN CHAIN_NAME, ELSE LEAVE IT BLANK.           *
150 .|*                                                       *
160 .|*********************************************************
170 .|
180 .TEXT INQUIRY_KEY(100)
190 .NUMBER_RECORDS=1
200 .SCREEN MAP("????????????????")
210 .FILE
  RECORD("????????????????","????????????????",NUMBER_RECORDS)
220 .ULTRA RECORD("????????????????","????????????????")
230 .ACCESS
  RECORD("????????????????","????????????????",NUMBER_RECORDS)
240 .VIEW RECORD("????????????????")
250 .CHAIN_NAME=""
260 .|
270 .|
280 .UNTIL MAP="CANCEL" OR RECORD="END"
290 ..CLEAR MAP
300 ..GET RECORD(INQUIRY_KEY)LEVEL=1
310 ..COUNT=1
320 ..WHILE COUNT<NUMBER_RECORDS AND RECORD<>"END"
330 ...COUNT=COUNT+1
340 ...GET RECORD LEVEL=COUNT
350 ..END
```

```
360 ..CONVERSE MAP:OBTAIN INQUIRY_KEY
370 ..IF MAP="ALTER" OR MAP="PF1"
380 ...COUNT=1
390 ...WHILE COUNT<=NUMBER_RECORDS
400 ....WHEN AID(COUNT)="A"
410 .....UPDATE RECORD LEVEL=COUNT
420 ....WHEN AID(COUNT)="I"
430 .....INSERT RECORD LEVEL=COUNT
440 ....WHEN AID(COUNT)="D"
450 .....DELETE RECORD LEVEL=COUNT
460 ....END
470 ....COUNT=COUNT+1
480 ...END
490 ..END
500 .END
510 .IF SIZE(CHAIN_NAME)>ZERO
520 ..CHAIN CHAIN_NAME
530 .END
540 EXIT
```

SKELETON_MENU1 program

The following skeleton menu program uses your screen design. It is available on the EXAMPLES library.

```
 10 ENTRY SKELETON_MENU1
 20 .|*********************************************************
 30 .|*                                                       *
 40 .|* TO USE THIS AS A SKELETON TO CREATE MENU PROGRAMS,     *
 50 .|* THE FOLLOWING MUST BE CHANGED:                         *
 60 .|* 1.  CREATE YOUR MENU SCREEN WITH ONE NUMERIC FIELD     *
 70 .|*     CALLED OPTION.                                    *
 80 .|* 2.  INSERT THE PROPER SCREEN INFORMATION.              *
 90 .|* 3.  REMOVE THE REMARKS SYMBOL FROM THE BEGINNING       *
100 .|*     OF EACH SELECTION CRITERIA TO BE ACTIVATED.        *
110 .|* 4.  FILL IN THE CHAIN NAME OF EACH ACTIVE OPTION.      *
120 .|*                                                       *
130 .|*********************************************************
140 .|
150 .SCREEN MAP("????????????????")
160 .|
170 .|
180 .CONVERSE MAP
190 .WHILE MAP<>"CANCEL"
200 ..WHEN MAP="PF1" OR OPTION=1
210 ...|CHAIN"?????????????"
220 ...|WHEN MAP="PF2" OR OPTION=2
230 ...|CHAIN"?????????????"
240 ...|WHEN MAP="PF3" OR OPTION=3
250 ...|CHAIN"?????????????"
260 ...|WHEN MAP="PF4" OR OPTION=4
270 ...|CHAIN"?????????????"
280 ...|WHEN MAP="PF5" OR OPTION=5
290 ...|CHAIN"?????????????"
300 ...|WHEN MAP="PF6" OR OPTION=6
310 ...|CHAIN"?????????????"
320 ...|WHEN MAP="PF7" OR OPTION=7
330 ...|CHAIN"?????????????"
```

```
340 ...|WHEN MAP="PF8" OR OPTION=8
350 ...|CHAIN"????????????"
360 ...|WHEN MAP="PF9" OR OPTION=9
370 ...|CHAIN"????????????"
380 ...|WHEN MAP="PF10" OR OPTION=10
390 ...|CHAIN"????????????"
400 ...|WHEN MAP="PF11" OR OPTION=11
410 ...|CHAIN"??????????? ???"
420 ...|WHEN MAP="PF12" OR OPTION=12
430 ...|CHAIN"????????????"
440 ..END
450 ..CONVERSE MAP
460 .END
470 .STOP
480 EXIT
```

SKELETON_MENU2 program

The following is a generic menu program (without a screen design) that is available on the EXAMPLES library.

```
 10 ENTRY SKELETON_MENU2
 20 .SCREEN MAP("EXAMPLES:SKELETON_MENU2")
 30 .TEXT CHAIN_NAME(12,33)
 40 .|*********************************************************
 50 .|*                                                       *
 60 .|* TO USE THIS AS A SKELETON TO CREATE MENU PROGRAMS,      *
 70 .|* THE FOLLOWING MUST BE CHANGED:                          *
 80 .|* 1.  FILL IN THE APPROPRIATE HEADING TO BE DISPLAYED     *
 90 .|*     ON THE SCREEN.  (MAXIMUM=60 CHARACTERS)             *
100 .|* 2.  FILL IN THE APPROPRIATE MESSAGE TO BE DISPLAYED     *
110 .|*     FOR EACH ACTIVE OPTION.  (MAXIMUM=12)               *
120 .|* 3.  FILL IN THE CHAIN NAME OF EACH ACTIVE OPTION.       *
130 .|*                                                       *
140 .|*********************************************************
150 .|
160 .|
170 .HEADING=""
180 .|
190 .OPTION_MESSAGE(1)=".....................................1"
200 .CHAIN_NAME(1)="????????????"
210 .OPTION_MESSAGE(2)=".....................................2"
220 .CHAIN_NAME(2)="????????????"
230 .OPTION_MESSAGE(3)=".....................................3"
240 .CHAIN_NAME(3)="????????????"
250 .OPTION_MESSAGE(4)=".....................................4"
260 .CHAIN_NAME(4)="????????????"
270 .OPTION_MESSAGE(5)=".....................................5"
280 .CHAIN_NAME(5)="????????????"
290 .OPTION_MESSAGE(6)=".....................................6"
300 .CHAIN_NAME(6)="????????????"
310 .OPTION_MESSAGE(7)=".....................................7"
320 .CHAIN_NAME(7)="????????????"
330 .OPTION_MESSAGE(8)=".....................................8"
340 .CHAIN_NAME(8)="????????????"
```

```
350 .OPTION_MESSAGE(9)=".....................................9"
360 .CHAIN_NAME(9)="?????????????"
370 .OPTION_MESSAGE(10)=".....................................10"
380 .CHAIN_NAME(10)="?????????????"
390 .OPTION_MESSAGE(11)=".....................................11"
400 .CHAIN_NAME(11)="?????????????"
410 .OPTION_MESSAGE(12)=".....................................12"
420 .CHAIN_NAME(12)="?????????????"
430 .|
440 .|
450 .|
460 .TEXT BLANKS(60)
470 .BLANKS="
480 .HEADING=BLANKS(1,((60-SIZE(HEADING))/2))+HEADING
490 .CONVERSE MAP
500 .WHILE MAP<>"CANCEL"
510 ..WHEN OPTION=1 OR MAP="PF1"
520 ...CHAIN CHAIN_NAME(1)
530 ..WHEN OPTION=2 OR MAP="PF2"
540 ...CHAIN CHAIN_NAME(2)
550 ..WHEN OPTION=3 OR MAP="PF3"
560 ...CHAIN CHAIN_NAME(3)
570 ..WHEN OPTION=4 OR MAP="PF4"
580 ...CHAIN CHAIN_NAME(4)
590 ..WHEN OPTION=5 OR MAP="PF5"
600 ...CHAIN CHAIN_NAME(5)
610 ..WHEN OPTION=6 OR MAP="PF6"
620 ...CHAIN CHAIN_NAME(6)
630 ..WHEN OPTION=7 OR MAP="PF7"
640 ...CHAIN CHAIN_NAME(7)
650 ..WHEN OPTION=8 OR MAP="PF8"
660 ...CHAIN CHAIN_NAME(8)
670 ..WHEN OPTION=9 OR MAP="PF9"
680 ...CHAIN CHAIN_NAME(9)
690 ..WHEN OPTION=10 OR MAP="PF10"
700 ...CHAIN CHAIN_NAME(10)
```

```
710 ..WHEN OPTION=11 OR MAP="PF11"
720 ...CHAIN CHAIN_NAME(11)
730 ..WHEN OPTION=12 OR MAP="PF12"
740 ...CHAIN CHAIN_NAME(12)
750 ..END
760 ..CONVERSE MAP
770 .END
780 EXIT
```

Portability considerations

Run System facilities on MANTIS for the IBM mainframe are not exactly the same as those available on MANTIS, mainly because of the file support available.

Notes

1. Bernard H. Boar, *Application Prototyping, A Requirements Definition Strategy for the 80s* (New York: John Wiley & Sons, Inc., 1984), pp. 5 and 7.

2. Boar, *Application Prototyping*, pg. 19.

3. A. Carpenter, “Designing and Developing Adaptive Information Systems,” *Computer Technology Review*, Spring-Summer 1982, pp. 19–29.

4. Weiser, “Scale Models and Rapid Prototyping,” *ACM Sigsoft Software Engineering Notes*, Vol. 7, No. 5, December 1982, pp. 181–185.

6. Boar, *Application Prototyping*, pg. 28.

7. E. Keus, “Prototyping: A More Reasonable Approach to System Development,” *ACM Sigsoft Software Engineering Notes*, Vol. 7 No. 5, December 1982, pp. 94–95.

8. Boar, *Application Prototyping*, pg. 5.

9. Boar, *Application Prototyping*, pg. 8.

10. Boar, *Application Prototyping*, pg. 8.

9

Program design

The Program Design Facility provides a menu of options to create, maintain, view, print, bind, unbind, and edit MANTIS programs.

Program design facility menu

When you select the Design a Program option from the MANTIS Facility Selection Menu (see “Facility selection menu” on page 23), the following menu appears.

```
                              M  A  N  T  I  S

                          PROGRAM DESIGN FACILITY

                   Update Program  .............(S).......  1
                   Directory Of Programs  ................  2
                   Library Functions  ....................  3
                   Print Program  ..............(L).......  4
                   Bind Program  ...............(B).......  5
                   Unbind Program  .............(U).......  6
                   Purge Program  ..............(P).......  7
                   Purge Program Source  .......(N).......  8
                   Edit Program  ...............(E).......  9
                   Exit Program Design  .............  CANCEL

 Load Program .. :                                                  :
 Current Program :

                                       :    :
```

The Load Program and Current Program fields on the Program Design Facility menu are described below:

Load program

Description *Optional*. Specifies the name of a program to load into the work area before executing the selected option; otherwise, all options apply to the current working program.

Format 1–30 character alphanumeric name, optionally prefixed by a user library specification. Wildcard selections can be made but are confined to the current user's program library. The following wildcard characters are supported:

***** Represents an indefinite number of generic characters. For example, *A* selects all programs whose name contains an A.

? Represents a single generic character. Prog??? designates a program (or programs) whose name begins with PROG and ends with any three characters.

Considerations

- You can load any unprivileged user's program provided that one of the following conditions is met:
  - The specified program's password is NULL.
  - The password of the currently loaded program matches the specified program's password.
- If ENTER is pressed without specifying a menu option, the specified program will be loaded.
- Wildcard characters are ignored if another user's library specification is given.
- Wildcard selections cause the Program Directory Selection screen to be displayed, positioned at the start of the range of selected programs. For specific actions, (for example, BIND) the SEL field of the program Directory Selection screen is initialized to reflect the selected option (for example, B for BIND).
- This field does not cause a program load when the Directory option is selected, but is interpreted as a directory repoint command.

Current program

Description MANTIS displays the fully qualified name of the program currently in the work area.

Consideration Initially, and then after any NEW command is executed, the program name defaults to your user name. Thus, the fully qualified default program name appears as USERNAME:USERNAME.

Program design options

To create and modify your program, you can use the Program Design Mode, automatically initiated in the Update Program option, or an external editor, initiated through the EDIT option or the EDIT command (see "MANTIS program design commands" on page 301). The facilities listed on this menu are described in this chapter. The following table provides an overview of the options that are available from the Program Design Menu.

When you select this option	Details on how you can	Appear in
Update Program	Initiate MANTIS programming mode, allowing you to create, edit, and run a MANTIS program.	"Update program" on page 295
Directory of Programs	View an alphabetic listing of all programs in your library, and select programs for update, purging (deletion), binding, unbinding, deletion of program source, printing, or editing.	"Directory of programs" on page 349
Library Functions	Save or input a new program, and replace, fetch, delete, export, or import existing programs.	"Library functions" on page 353
Print Program	Print a copy of the program in your work area.	"Print program" on page 359
Bind Program	Create a more efficient version of your MANTIS program that is stored with your program code.	"Bind program" on page 360
Unbind Program	Delete the bound version of your program.	"Unbind program" on page 361
Purge Program	Purge a program (and bound version, if it exists) from your library.	"Purge program" on page 362
Purge Program Source	Delete unbound version of a bound program from your library.	"Purge program source" on page 362
Edit Program	Invoke an external editor.	"Edit program" on page 363

Update program

The Update Program option initiates MANTIS programming mode (the Line Editor), in which you can create, edit, and run a MANTIS program. To enter MANTIS programming mode, select the Update Program option from the Program Design Facility Menu (see “Program design facility menu” on page 291). The following screen will appear.

```
PROGRAM user-name:user-name
```

The programming mode screen heading displays the name of the program in the work area as follows:

PROGRAM ==> *user-name:program-name*

Until a program is loaded, and after a NEW command, the working program name defaults to your user sign-on name.

When you execute a program with the RUN command, the programming mode screen heading is cleared to indicate that the program is now in control of the screen display.

Programming fundamentals

There are two basic elements of MANTIS programming mode:

- Statements are part of a program and require a run-mode action (such as FILE and SCREEN). MANTIS statements require a line number. Refer to *AD/Advantage MANTIS Language OpenVMS/UNIX*, P39-1310 for a description of those statements.

- Commands are not part of a program, but designate an immediate-mode action for MANTIS (such as LIST and RUN). MANTIS commands do not have a line number. Program design commands are described in this chapter; other MANTIS statements that may be used as commands appear in *AD/Advantage MANTIS Language OpenVMS/UNIX*, P39-1310.

MANTIS statements can be executed as commands except for CHAIN and logic verbs requiring END. The following example illustrates how SHOW can be used as part of a program and for immediate execution as a command.

```
10 ENTRY COMPOUND
20 .SHOW "WHAT IS THE CAPITAL AMOUNT?"  <---- statement
30 .OBTAIN INVESTMENT
40 EXIT
RUN
WHAT IS THE CAPITAL AMOUNT?
1400
SHOW INVESTMENT+650                     <---- command
2050
```

You can also direct MANTIS to obtain statements and commands from an external file by entering an at sign (@) followed by the external file specification. The at sign (@) is really a batch MANTIS function (refer to *AD/Advantage MANTIS Administration OpenVMS/UNIX*, P39-1320). It causes a temporary change of input stream (from MANTIS_INPUT) to the file you specify.

Creating a program

To build a MANTIS program, type a line number and statement at the bottom of the screen. When you press RETURN, MANTIS scrolls up previously entered lines and repositions the cursor on the bottom line.

```
10 ENTRY COMPOUND
_
```

You can add MANTIS statements to those statements you have already entered by specifying a line number between the lines where you want the new statement to appear.

```
10 ENTRY COMPOUND
20 SHOW "WHAT IS THE CAPITAL AMOUNT?"
11 |THIS IS AN EXAMPLE
_
```

You may execute a partial or complete program at any time by entering the RUN command. MANTIS executes your program from the first coded statement. If MANTIS encounters an error, it returns a message and the line number where the error was found.

To display an ordered listing of your program statements, enter the LIST command. MANTIS automatically indents by placing periods in all statements to indicate their relative position in the program's nesting hierarchy.

```
10 ENTRY COMPOUND
20 SHOW "WHAT IS THE CAPITAL AMOUNT?"
11 |THIS IS AN EXAMPLE
LIST
10 ENTRY COMPOUND
11 .|THIS IS AN EXAMPLE
20 .SHOW "WHAT IS THE CAPITAL AMOUNT?"
```

To renumber your statements and leave room for future insertions, use the SEQUENCE command. The following example shows how SEQUENCE renumbers a program. (The default increment value is 10.)

```
10 ENTRY COMPOUND
11 .|THIS IS AN EXAMPLE
21 .SHOW "WHAT IS THE CAPITAL AMOUNT?"
22 .OBTAIN SAVINGS
25 .STOP
30 EXIT
SEQUENCE
LIST
10 ENTRY COMPOUND
20 .|THIS IS AN EXAMPLE
30 .SHOW "WHAT IS THE CAPITAL AMOUNT?"
40 .OBTAIN SAVINGS
50 .STOP
60 EXIT
```

To store a program in your MANTIS library, use the SAVE command or the SAVE option in Library Functions (“Library functions” on page 353). Retrieve a program from the library by using the LOAD command or by using the FETCH option in Library Functions or by selecting it from the Program Directory screen. When MANTIS retrieves the program, it displays the new program name at the top of the Program Update screen (see “Update program” on page 295). This heading disappears when you execute (RUN) a program and reappears when the program terminates.

Modifying a program

The MANTIS commands that can modify your program are described in "MANTIS program design commands" on page 301. You can use the following methods to alter a MANTIS program statement:

- Enter the statement number with the new statement at the bottom of the screen and press RETURN.
- Use the ALTER command with a specific line number. MANTIS displays the statement you specify at the bottom of the screen. You can move the cursor and change any portion of your statement without reentering the entire line.
- If the program line you want to modify is visible on the screen (as a result of a LIST, for example), move the cursor to the line and press KP0 (0 on the numeric keypad). This is the same as using the ALTER command with a specific line number.
- Use the EDIT command (or GOLD/E) to invoke an external editor to edit your program.

To delete a line (or lines) from your program, use one of the following methods:

- Enter only the line number at the bottom of the screen and press RETURN.
- Use the ERASE command with specific line numbers to delete a block of statements.

Exiting from programming mode

You must save or replace your program before you exit from Program Design or the changes to your program will be lost. If you exit from programming mode using the QUIT command, you return to the Program Design Facility Menu (see "Program design facility menu" on page 291) and your program remains in the work area.

MANTIS terminates running a program when:

- It executes a STOP statement.
- It encounters no more statements (it has executed the last statement and is ready to execute the next sequential statement).
- It encounters an error.
- You enter KILL in the Reply Field (or press the KILL key—GOLD/K) in response to program input. Be careful when using the KILL command in programming mode. If a program is running (heading line not displayed), KILL terminates the program. If no program is running, however, (heading line displayed) KILL terminates Program Design and your program is lost from the work area.

Refer to *AD/Advantage MANTIS Messages and Codes OpenVMS/UNIX*, P39-1330, for lists of all the warnings and error messages you may receive while you are in programming mode. The rest of this section discusses the MANTIS program design commands.

MANTIS program design commands

When you enter MANTIS commands at the bottom of the screen without a line number, MANTIS will execute them immediately. This section describes the program design commands and provides the following information for each parameter of the commands:

Description	Description of the parameter
Default	default value, if any, of the parameter
Format	required format of the parameter
Considerations	any special limitations, considerations, and guidelines for the parameter
Example	example of the command

The following table lists the MANTIS program design commands described on the following pages.

Command	Enables you to
ALTER	Present specified program line(s) for modification.
BIND*	Bind or unbind a MANTIS program.
CHANGE	Replace occurrences of a string of characters in a range of program lines.
CLEAR BREAK	Clear program breakpoints.
COPY	Copy portions of a MANTIS program into the current program work area.
DOWN	Move down to a lower-level routine.
EDIT*	Invoke an external text editor.
EDITRCV	Invoke an external text editor.
ERASE	Delete one or more program lines.
GO	Resume execution from a program breakpoint.
HELP	Display explanatory information for an error message, command name, or reserved word.

Command	Enables you to
KILL***	Terminate a program listing, a paused program, or a program in a loop.
LIST	List all or part of the program in the work area.
LOAD* **	Retrieve a program from a library or file into the work area.
NEW	Clear the work area.
PURGE* **	Purge a program from a library, but not from the work area.
QUIT	Terminate programming mode and return to the Program Design Facility Menu. Your program and any changes you made remain in the work area. You can go into other options of Program Design and return to the Update Program option to save/replace your program.
REPLACE**	Replace a program in the library with the program currently in the work area.
RUN	Execute any MANTIS program or the program currently in the work area.
SAVE**	Copy the program currently in the work area into a library or file.
SEQUENCE	Renumber the lines of the program in the work area.
SET BREAK	Set breakpoints in the current program.
SHOW	Display current program breakpoints or the next program line to be executed.
UP	Move up to a higher-level routine.
USAGE	Show where a MANTIS keyword, symbolic name, or string is used in your program.

* You can also perform this function through the Program Directory Selection. See "Directory of programs" on page 349.

** You can also perform this function through Library Functions. See "Library functions" on page 353.

*** KILL is not a command.

ALTER

Use the ALTER command to alter one or more lines of a MANTIS program without retyping the line(s). When you use the ALTER command, MANTIS displays the specified lines one at a time on the bottom line of the screen for you to alter.

ALTER *begin*[,*end*]

begin

Description *Required*. Specifies the number of the first line you want to alter.

Format Arithmetic expression that evaluates to a line number in your program

Considerations

- The line number you specify must be a valid line number in your program.
- MANTIS applies only the integer portion of *begin*.

end

Description *Optional*. Specifies the number of the last line you want to alter.

Default Value of begin parameter

Format Arithmetic expression that evaluates to a line number in your program

Considerations

- The line number you specify does not have to be a line number in the program. For example, you can enter ‘ALTER 10,99999’ to alter all program lines.
- MANTIS applies only the integer portion of *end*.

General considerations

- MANTIS displays all lines with line numbers greater than or equal to begin and less than or equal to end.
- If you supply only begin, the same value is assumed for end. So, to alter one line, you need to specify that line number only once.
- You can escape from ALTER mode without altering any more lines by entering a command (which has no line number) in place of the next line displayed by ALTER.
- You can copy a line by using the ALTER command to display the line at the bottom of the screen and then changing the line number.
- You can also alter a line without using the ALTER command by reentering it entirely, including the line number. To delete a line without using the ALTER command, simply enter the line number and press RETURN. Do not delete the line number, as this cancels the ALTER command.
- MANTIS automatically removes breakpoints from altered program lines.
- Program lines longer than the width of the scroll output map are truncated before being displayed for editing. You can avoid truncation by editing these lines externally using the EDIT command (how the lines came to be entered originally). The scroll output map width can be altered by setting the SCRLCOLS MANTIS Options at MANTIS startup.

Example

```
LIST
  10  ENTRY INDEX
  20  .FILE RECORD("INDEX","SERENDIPITY")
  30  .SCREEN MAP("INDEX")
  40  .WHILE RECORD<>"END"
  50  ..CONVERSE MAP
  60  .END
ALTER 40
  40 WHILE RECORD<>"END"
```

BIND

Use the BIND command to convert a program from unbound to bound or bound to unbound format. When you bind a program, MANTIS parses the program and creates a more efficient version of your program and stores it with your program code.

BIND [ON | OFF]

ON

Description *Optional*. MANTIS performs the binding process for that program. This is the default value.

Consideration MANTIS always executes the bound version of your program, if it exists.

OFF

Description *Optional*. Indicates that you want MANTIS to delete the bound version of your program, leaving the unbound program code.

General considerations

- When you run your bound program, MANTIS executes the bound version. When you load the program into your work area to make modifications, MANTIS loads whatever is stored in the MANTIS file (bound or unbound). If you modify the program work area in any way, the program is automatically unbound by MANTIS. You must issue the BIND and REPLACE commands after you modify the program if you want to save the changes. Any MANTIS command or statement that alters the current program work area effectively deletes the bound program.
- MANTIS maintains a statement counter in conjunction with the SLICE and SLOT statements, but the counter is not incremented during execution of the bound version.
- A bound program can DO or CHAIN to an unbound program and *vice versa*. MANTIS simply executes the bound version, where found.
- Program breakpoints that are set in the unbound version of the program cannot be executed when the bound version is running.

- You can use the GO command to resume execution of a bound program provided that the condition which stopped the program has been corrected without destroying the bound version (for example, after CTRL-C).

- You may also bind your program with the Bind Program option on the Program Design Facility Menu or by entering B in the SEL field on the Program Directory Selection screen (see “Directory of programs” on page 349).

Example

```
10 FILE EMPLOYEE("PERSONNEL:EMPLOYEES","PERSONNEL")
20 FILE DEPT("PERSONNEL:DEPARTMENTS","PERSONNEL",PREFIX)
30 FILE SKILLS("PERSONNEL:SKILLS","PERSONNEL",PREFIX)
40 TEXT COMMAND(4,5)
50 COMMAND(1)="PRINT","NEXT","PREV","QUIT"
60 IF USER="PERSONNEL"
70 .SCREEN EMPL("PERSONNEL:EMPLOYEES")
80 ELSE
90 .SCREEN EMPL("PERSONNEL:EMPLOYEES_VIEW")
100 END
BIND
```

CHANGE

Use the CHANGE command to replace occurrences of a specified string by a new string over a range of lines.

$$\textbf{CHANGE}\left[\textbf{ALL}\right]\left\{\begin{matrix}\textbf{'}\\ \textbf{,}\\ \textbf{;}\end{matrix}\right\}old-string\left\{\begin{matrix}\textbf{'}\\ \textbf{,}\\ \textbf{;}\end{matrix}\right\}new-string\left\{\begin{matrix}\textbf{'}\\ \textbf{,}\\ \textbf{;}\end{matrix}\right\}\left[begin\left[,lines\right]\right]$$

ALL

Description *Optional*. Specifies that all occurrences of old-string on each line are to be replaced.

Consideration If you do not specify ALL, MANTIS replaces only the first occurrence on each line.

‘ , ;

Description *Required*. Specifies the delimiter to separate the old and new strings.

old-string

Description *Required*. Specifies the string of characters you want to change.

Format Any string of characters

new-string

Description *Required*. Specifies the string of characters that you want to replace old-string.

Format Any string of characters

Consideration Use the same delimiter as you used for *old-string*.

begin

Description *Optional*. Specifies the first line of the program for MANTIS to start the search-and-replace operation.

Format Arithmetic expression that evaluates to a number between 1 and 64000

Considerations

- If you do not specify begin, MANTIS starts searching at the first line of your program.
- The line number you specify must be a valid line number in your program.

lines

Description *Optional*. Specifies the number of program lines in which to search for *old-string*.

Format Arithmetic expression that evaluates to a number between 1 and 64000

Consideration If you do not specify *lines*, MANTIS searches to the last line in your program.

General considerations

- All changed program lines are listed below the CHANGE command.
- The *old-string* is compared with the text of the program as it would be listed by the LIST command. The *old-string* is not replaced unless there is an exact match in the program line. Spacing and case must match.
- Any breakpoint is removed from a line when it is modified by a CHANGE command.
- The largest program line number allowed in a MANTIS program is defined by the MAXPROGLINES MANTIS Option (64000 by default).

Example

```
10 ENTRY SAMPLE
20 .SMALL J
30 .WHILE J<10
40 ..SHOW J:J=J+1
50 .END
60 EXIT
CHANGE 'J'K'20,3
20 SMALL K
30 WHILE K<10
40 SHOW K:J=J+1
CHANGE ALL 'J'K'40
40 SHOW K:K=K+1
```

CLEAR BREAK

Use the CLEAR command to clear program breakpoints.

CLEAR BREAK [*line-number*]

BREAK

Description *Required*. Clears program breakpoints set by SET BREAK.

line-number

Description *Optional*. Specifies the line number where a program breakpoint is to be cleared.

Format Arithmetic expression that evaluates to a line number in your program

Consideration The line number must be a valid line number in your program.

General considerations

- MANTIS removes the program breakpoint at the specified line number or removes all program breakpoints if no line number is specified.
- CLEAR can also be used as a statement, as documented in *AD/Advantage MANTIS Language OpenVMS/UNIX*, P39-1310.

Example

```
CLEAR BREAK 60
```

COPY

Use the COPY command to copy portions of a program into the work area. The program from which you copy the program lines can be in a library or can be the program currently in the work area.

$$\textbf{COPY}\ \left[\textit{libname},\right]\left\{\begin{array}{l}\textbf{FIRST}\\ \textit{begin}\\ \textbf{LAST}\end{array}\right\}\ \left[\begin{array}{l}\textbf{,}\textit{end}\\ \textbf{,LAST}\end{array}\right]\ \left\{\begin{array}{l}\textbf{FIRST}\\ \textbf{AFTER}\ \textit{position}\\ \textbf{LAST}\end{array}\right\}$$

libname

Description *Optional*. Specifies the library name of the program from which you are copying.

Default Your current program

Format [*user-name*:]*program-name*

Consideration If the program is in your library, you only need to specify the *program-name*.

FIRST, *begin*, LAST

Description *Required*. Specifies the line in the program where MANTIS should begin copying. FIRST specifies the first line in the program from which you are copying. LAST specifies the last line in the program. If you select the begin parameter, specify an existing line number in the program you are copying.

Consideration If you specify LAST, MANTIS copies only the last line in the program.

end, LAST

Description *Optional*. Specifies the line in the program where MANTIS should stop copying. If you select the *end* parameter, specify the line in the program where MANTIS should stop copying. LAST specifies the last line of the program you are copying.

Consideration If you do not specify *end* or LAST, MANTIS copies only the line specified by the preceding parameter.

FIRST, AFTER *position*, LAST

Description *Required*. FIRST tells MANTIS to insert the copied lines before the first line of the program currently in the work area. AFTER position specifies the line after which MANTIS should insert the copied lines. LAST tells MANTIS to insert the copied lines after the last line of the program.

Consideration When you specify AFTER *position*, you need not specify an existing line in the program.

General considerations

- MANTIS assigns a line number to the first line copied according to FIRST, AFTER *position*, or LAST. The line number increments by one for each subsequent line copied.
- If the assigned line numbers overlap into existing program lines, MANTIS internally issues a SEQUENCE command to renumber as many lines as necessary to restore an ascending sequence. If you relied on the original line numbers, you may lose your place in the current program. To reorient yourself, issue the LIST command and scan to the line you need.
- To acquire and modify a subroutine from another library, use COPY followed by an ALTER with range.
- If the program you are copying is in another user's library and its password does not match your current program password, you will be refused access to the program and the copy attempt will terminate.
- MANTIS removes all breakpoints from the program when it executes the COPY command.

Example

```
LIST
10 ENTRY COMPOUND_INTEREST
20 .SHOW "WHAT IS THE CAPITAL AMOUNT?"
30 .OBTAIN SAVINGS
40 EXIT
COPY SIMPLE_INTEREST,70,80 AFTER 34
LIST
10 ENTRY COMPOUND_INTEREST
20 .SHOW "WHAT IS THE CAPITAL AMOUNT?"
30 .OBTAIN SAVINGS
35 .SHOW "WHAT IS THE INTEREST?"
36 .OBTAIN INTEREST
40 EXIT
```

DOWN

Use the DOWN command to select an external subroutine at a lower level than the current program. You can then list and edit it in the work area.

DOWN [*levels*]

levels

Description *Optional*. Specifies the number of levels down from the current program to the external subroutine.

Default One level

Format Numeric expression that evaluates to a positive number

General considerations

- Use this command after MANTIS has stopped while executing an external subroutine and you have used the UP command to select a higher-level routine or the calling program as the current program in the work area. DOWN then allows you to return to a lower level.
- The name of the program that contains the external subroutine at the specified level will appear at the top of the screen.
- If the levels parameter is greater than the number of levels down to the lowest level, MANTIS selects the external subroutine at the lowest level.

Example

```
DOWN 2
```

EDIT

Use the EDIT command to invoke an external editor to edit a MANTIS program. The editor you select is specified by the EDITOR MANTIS Option.

EDIT [*libname* [, *password*] | FILE *file* - *spec*]

libname

Description *Optional*. Specifies the name of the program you want to edit if it is in a MANTIS library.

Format [*user-name*:] *program-name*

Consideration If the program is in your library, you only need to specify the *program-name*.

password

Description *Optional*. Specifies the password used to save the program in the MANTIS library.

Default Password of the program currently in the work area

Format 1–16 character text value

Considerations

- The password should be the password that was specified when the program was last saved.
- If the program is in your library, you do not need to specify password.
- If the password specified here does not match the password specified when the program was saved, MANTIS displays an error message instead of loading the program (unless the program is in your own library).

FILE *file-spec*

Description *Optional*. Specify the name of an external text file that contains your program.

Format A valid file specification

Consideration If the external file contains lines that cannot be encoded into a MANTIS program, they will be converted into comment lines.

General considerations

- If you use EDIT with no parameters, the current program in the work area is made available to the Full-Screen Editor. The EDIT program function (GOLD/E) is the same as EDIT with no parameters, and you cannot use GOLD/E to perform an edit with a recovery.

- When you exit from the Full-Screen Editor, MANTIS copies the edited program back into the work area. While in the external editor, MANTIS line numbers may be deleted and/or new lines may be entered without line numbers; or line numbers may be entered or altered out of sequence. MANTIS will automatically sequence the program when you EXIT from the editor. The automatic sequencing line increment value is one.

- The EDIT *libname* and EDIT FILE *file-spec* commands cause MANTIS to load the specified program or external file before calling the editor.

- The maximum line length depends on your default editor.

- You can also edit your program with the Edit option on the Program Design Facility Menu, or by entering E in the SEL field on the Program Directory Selection Screen.

- **OpenVMS** If a TPU editor is selected, the logical name TPU$SECTION is used to identify the TPU section file. If TPU$SECTION is not a defined logical name, the logical name TPUSECINI is used instead. If an LSE editor is selected, the logical name LSE$SECTION is used to identify the LSE section file.

- **OpenVMS** The editor interface permits you to include other MANTIS programs into a buffer. The OpenVMS editor commands you will use differ depending on the type of editor interface used (EDT, TPU, or LSE as specified by the EDITOR MANTIS Option), and (if TPU or LSE is used) on the particular TPU/LSE section file used. MANTIS performs the inclusion after intercepting either the EDT INCLUDE command or the TPU READ_FILE command.

- **OpenVMS** If you EXIT from the editor, all breakpoints in the program work area are cleared.

- **OpenVMS** Upon EXIT from the editor, only the program work area is updated, not the version of the program in your MANTIS library.

- **OpenVMS** You can exit from the Full-Screen Editor with the QUIT command if you want to undo your editing.
- **UNIX** MANTIS initiates a child process to perform the edit using a temporary file.
- **UNIX** If the “%d” format specifier is present in your external editor command, as specified by the EDITOR MANTIS Option, MANTIS substitutes the current program line number as if the program was sequenced (1,1). The external editor can thus be made to place the cursor over the current MANTIS program line. Use the ALTER, LIST, or SET BREAK/GO commands to alter the current program line.
- **UNIX** After EDIT, all program breakpoints are cleared, regardless of how you exited the external editor.

Examples

```
EDIT EXAMPLE_PROGRAM
EDIT FILE DUAO:[MANTIS.COMMON.SOURCE]RTN123.MAN
```

EDITRCV

Use the EDITRCV command to recover the previously aborted EDIT statement or command.

OpenVMS EDIT recovery is a feature only applicable to the OpenVMS Environment.

EDITRCV [*libname* [, *password*] | FILE *file - spec*]

libname

Description *Optional*. Specifies the name of the program you want to edit if it is in a MANTIS library.

Format [*user-name*:] *program-name*

Consideration If the program is in your library, you only need to specify the *program-name*.

password

Description *Optional*. Specifies the password used to save the program in the MANTIS library.

Default Password of the program currently in the work area

Format 1–16 character text value

Considerations

- The password should be the password that was specified when the program was last saved.
- If the program is in your library you do not need to specify password.
- If the password specified here does not match the password specified when the program was saved, MANTIS displays an error message instead of loading the program (unless the program is in your own library).

FILE *file-spec*

Description *Optional*. Specifies the name of an external file that contains your program.

Format A valid file specification

Consideration If the external file contains lines that cannot be encoded into a MANTIS program, they will be converted into comment lines.

General considerations

- If you use EDITRCV without any parameters, the current program in the work area is made available to the Full-Screen Editor.
- When you exit from the Full-Screen Editor, MANTIS copies the edited program back into the work area. While in the external editor, MANTIS line numbers can be deleted and/or new lines may be entered without line numbers; or line numbers may be entered or altered out of sequence. MANTIS will automatically sequence the program when you EXIT from the editor. The automatic sequencing line increment value is one.
- The maximum line length depends on your default editor.
- The parameters used with EDITRCV should match those used on the EDIT statement or command which failed.
- EDITRCV is currently only available for program design. Other MANTIS design facilities which allow full-screen editing cannot yet use this feature.
- You can also edit your program with the Edit option on the Program Design Facility Menu, or by entering E in the SEL field on the Program Directory Selection Screen.
- **OpenVMS** If a TPU editor is selected, the logical name TPU$SECTION is used to identify the TPU section file. If TPU$SECTION is not a defined logical name, the logical name TPUSECINI is used instead. If an LSE editor is selected, the logical name LSE$SECTION is used to identify the LSE section file.

- **OpenVMS** The editor interface permits you to include other MANTIS programs into a buffer. The OpenVMS editor commands you will use differ depending on the type of editor interface used (EDT, TPU, or LSE as specified by the EDITOR MANTIS Option), and (if TPU or LSE is used) on the particular TPU/LSE section file used. MANTIS performs the inclusion after intercepting either the EDT INCLUDE command or the TPU READ_FILE command.

- **OpenVMS** If you EXIT from the editor, all breakpoints in the program work area are cleared.

- **OpenVMS** Upon EXIT from the editor, only the program work area is updated, not the version of the program in your MANTIS library.

- **OpenVMS** You can exit from the Full-Screen Editor with the QUIT command if you want to undo your editing.

- **UNIX** MANTIS initiates a child process to perform the edit using a temporary file.

- **UNIX** If the “%d” format specifier is present in your external editor command, as specified by the EDITOR MANTIS Option, MANTIS substitutes the current program line number as if the program was sequenced (1,1). The external editor can thus be made to place the cursor over the current MANTIS program line. Use the ALTER, LIST, or SET BREAK/GO commands to alter the current program line.

- **UNIX** After EDIT, all program breakpoints are cleared, regardless of how you exited the external editor.

Example

```
EDITRCV EXAMPLE_PROGRAM
```

ERASE

Use the ERASE command to delete one or more lines of a MANTIS program.

ERASE *begin*[,*end*]

begin

Description *Required*. Specifies the first line you want to delete.

Format Arithmetic expression that evaluates to a line number in your program

Consideration The line number must be a valid line number in your program.

end

Description *Optional*. Specifies the last line you want to delete.

Format Arithmetic expression that evaluates to a line number in your program

Considerations

- If you do not specify *end*, MANTIS deletes only the line specified by *begin*.
- The line number must be a valid line number in your program.

General considerations

- Another way to erase a single line is to enter the line number at the bottom of your screen and press RETURN.
- MANTIS does not resequence line numbers automatically. You can resequence by using the SEQUENCE command.

Example

```
LIST
  10 ENTRY MAINTENANCE
  20 .ACCESS RECORD("INDEX","SERENDIPITY",16)
  30 .SCREEN MAP("INDEX")
  40 .CONVERSE MAP
  50 .COUNTER=1
  60 .WHILE MAP<>"CANCEL" AND COUNTER<17
  70 ..WHEN INDICATOR(COUNTER)="G"
  80 ...GET RECORD LEVEL=COUNTER
  90 ..WHEN INDICATOR(COUNTER)="D"
 100 ...DELETE RECORD LEVEL=COUNTER
ERASE 70,80
LIST
  10 ENTRY MAINTENANCE
  20 .ACCESS RECORD("INDEX","SERENDIPITY",16)
  30 .SCREEN MAP("INDEX")
  40 .CONVERSE MAP
  50 .COUNTER=1
  60 .WHILE MAP<>"CANCEL" AND COUNTER<17
  90 ..WHEN INDICATOR(COUNTER)="D"
 100 ...DELETE RECORD LEVEL=COUNTER
```

GO

Use the GO command to resume execution of a program after it has stopped at a breakpoint. You can specify how many lines of the program you want MANTIS to execute.

GO [*lines*]

lines

Description *Optional*. Specifies the number of program lines you want MANTIS to execute before stopping again.

Format Arithmetic expression

Consideration If you do not specify *lines*, MANTIS continues executing your program until it reaches another breakpoint or terminates.

General considerations

- A program breakpoint is affected before any statements on the given program line are executed. The GO command resumes execution starting with the breakpoint program line. You can use the SHOW NEXT command to check which program line is to be executed next, before issuing the GO command.
- Specifying the number of lines to execute is useful during program testing when you want to step through your program a few lines at a time.
- Execution does not stop at a breakpoint when a bound program is running.

Example

```
SET BREAK 70,"SHOW I"
RUN
487 The program has stopped at a breakpoint.
70 I=I+1
--> SHOW I
16
GO 1
608 The specified number of program lines has been executed.
80 GET DETAIL LEVEL=I
GO
```

HELP

Use the HELP command to display information about MANTIS errors, statements, commands, functions, and other miscellaneous topics. MANTIS stores its help text in external help libraries. You can request help on any topic in the MANTIS help library.

HELP [*helpkey*]...

helpkey

Description *Optional*. Specifies a key path in the MANTIS help library.

Format A string of 1–30 characters. The following helpkeys have a special interpretation:

A number (*nnn*) indicates a MANTIS fault code and requests help for 'FAULTS *nnn'*.

OpenVMS 'LAST' is a request to display the last OpenVMS RMS error message encountered by MANTIS. HELP LAST is only applicable in the OpenVMS environment.

Default If a MANTIS fault condition has just occurred, the default will display help for that fault code. Otherwise, the default will display help on the last helpkey specified. If this is the very first HELP command entered, the default is 'HELP HELP'.

Considerations

- **OpenVMS** A 'key path' accesses the hierarchic structure of an OpenVMS HELP library. Each space-separated word requests help at another level which would otherwise be prompted for by the OpenVMS HELP facility.
- **UNIX** Refer to *AD/Advantage MANTIS Administration OpenVMS/UNIX*, P39-1320, for the details of external help library format and maintenance.

Examples

```
HELP 100 ...........help on MANTIS FAULT_100
HELP ATTR ..........help on the ATTRIBUTE statement and function,
      and screen field attributes
HELP ATTRIBUTE() ...help on the ATTRIBUTE function only
HELP SQL ...........help on MANTIS SQL Support
HELP SQL DECLARE ...help on SQL DECLARE (SUPRA DRDM)
HELP RDB ...........help on SQL Support for RDB
HELP RDB WHENEVER ..help on SQL WHENEVER (RDB Support)
HELP ACCESS NEW ....help on the NEW parameter of the ACCESS
  statement
HELP ACCESS * ......help on all ACCESS statement parameters
```

KILL

Use KILL to terminate a program listing, a program currently paused (waiting for user input) or a program in a loop.

KILL

General considerations

- KILL is not a command but a special value that can be entered in the Reply Field of a formatted or unformatted screen. Use the tab key to place the cursor in the bottom right field of the screen.
- Whenever a program executes a WAIT, OBTAIN, or CONVERSE statement or has just issued the message “Potential program loop encountered,” you can stop program execution by entering KILL.
- When listing a program using the LIST command, MORE will be displayed in the Reply Field if there are more program lines to be listed. You can overtype MORE with KILL if you do not want to list any more lines.
- To terminate a multipage scroll-mode output display, enter KILL in the Reply Field. KILL terminates the executing program.
- You can re-execute your program by issuing the RUN statement if you are in programming mode.
- The program function key sequence GOLD/K has the same effect as entering KILL.

Example

```
RUN
303 Potential program loop encountered.  Enter 'KILL' to
  terminate.
```

```
                                                    KILL
```

LIST

Use the LIST command to list all or part of the program currently in the work area. MANTIS removes superfluous blanks and indents statements according to their nesting level in ENTRY-EXIT, FOR-END, IF-ELSE-END, UNTIL-END, WHEN-END, and WHILE-END statements.

LIST[*begin*[,*lines*]]

begin

Description *Optional*. Specifies the number of the first line you want to list.

Format Arithmetic expression that evaluates to a line number in your program

Considerations

- If you do not specify begin, MANTIS begins with the first line in the program in your work area.
- The line number does not have to be exact. MANTIS starts listing the program at the first line greater than or equal to the specified line number. MANTIS displays an error message only if the specified line number is negative, or greater than the highest line number in the program.

lines

Description *Optional*. Specifies the number of lines you want to list.

Format Arithmetic expression

Considerations

- If you do not specify *lines*, MANTIS lists all lines from the starting line specified by begin to the end of the program.
- If you specify more lines than the program contains, the entire program will be listed.

General considerations

- LIST with no parameters lists the entire program. When the program contains more lines than will fit on the screen, press RETURN to continue the display until the end of the program is reached.
- MORE is displayed in the Reply Field if there are more program lines to be listed. You can use either the KILL or CANCEL program functions to terminate the multipage listing. You can do this by:
  - Pressing GOLD/K or CANCEL
  - Entering KILL or CANCEL in the Reply Field (over the MORE prompt), and pressing RETURN
- If a line exceeds the width of the scroll output map, the displayed text will be clipped at the right edge of the scroll output logical display.
- You can print a program while in programming mode by entering:

  ```
  OUTPUT PRINTER
  LIST
  ```

  or by using the Print Program option from the Program Design Facility Menu.

Example

```
LIST
10 SMALL Y(16)
20 LET X=Y+1
```

LOAD

Use the LOAD command to retrieve a program from a MANTIS library or an external file into your work area.

$$\textbf{LOAD}\left\{\begin{array}{l} \textit{libname}\left[,\ \textit{password}\right] \\ \textbf{FILE}\ \ \textit{file - spec} \end{array}\right\}$$

libname

Description *Required*. Specifies the name of the program you want to load if it is in a MANTIS library.

Format [*user-name*:]*program-name*

Consideration If the program is in your library, you only need to specify the *program-name*.

password

Description *Optional*. Specifies the password used when the program was most recently saved.

Default Password of the program currently in the work area

Format 1–16 character text value

Considerations

- If the program is in your library, you do not need to specify *password*.
- If the password does not match the password specified when the program was saved, MANTIS displays an error message instead of loading the program (unless the program is in your own library).

FILE *file-spec*

Description *Optional*. Specifies that you want to load a program from an external file.

Default The last *file-spec* used with a LOAD FILE or SAVE FILE command upon the current program in the work area

Format A valid file specification

Consideration If the external file contains lines that cannot be encoded into a MANTIS program, they will be converted into comment lines.

General considerations

- LOAD automatically clears the work area after loading the specified program. Therefore, if you load a second program before saving or replacing the first program, any changes you made after the most recent SAVE/REPLACE will be lost.
- LOAD FILE renumbers any program lines whose line numbers are missing or are out of sequence and resets the program name to the user name.
- You can also load a program into your work area by using the Fetch option in Library Functions in the Program Design Facility, or by entering S in the SEL field on the Program Directory Selection Screen.

Examples

```
LOAD EXAMPLE_PROGRAM
LOAD MASTER:EDIT_RTN,VICTORIA
LOAD FILE RTN123.MAN
```

NEW

Use the NEW command to clear the work area.

NEW

General considerations

- Issuing the NEW command clears the work area, but does not clear the screen.
- Issuing the NEW command without first saving or replacing the program causes any updates to the program to be lost.
- The NEW command sets the current password to the sign-on password and the current program description to a null text value. It also resets the program name to the user name.
- The LOAD, ‘EDIT libname’, ‘EDIT FILE file-spec’ and ‘RUN libname’ commands also clear the work area.

Example

```
LIST
10 SMALL Y
20 LET X=Y+1
NEW
LIST
```

PURGE

Use the PURGE command to delete a program from your library (but not from the work area).

PURGE *libname*[,*password*]

libname

Description *Required*. Specifies the library name of the program you want to delete.

Format [*user-name*:] *program-name*

Consideration You do not have to specify a *user-name* because you can only purge programs in your own MANTIS library.

password

Description *Optional*. Specifies the password used when the program was most recently saved.

Default Password of the program currently in the work area

Format 1–16 character text value

Consideration The password is not checked because you can only purge programs in your own MANTIS library. There is no need to specify this parameter. This parameter is only provided for compatibility with MANTIS for the IBM mainframe.

General considerations

- You can delete programs only in your own MANTIS library.
- You can delete a program from your own MANTIS program library by using the Delete option in Library Functions in the Program Design Facility, or by entering P in the SEL field on the Program Directory Selection screen.
- You can rename a program by doing a SAVE for a new name, then PURGE the old name.

Example

```
PURGE EXAMPLE_PROGRAM
```

QUIT

Use the QUIT command to terminate programming mode and return to the Program Design Facility Menu.

QUIT

General considerations

- If you issue a QUIT command, MANTIS returns you to the Program Design Facility Menu. Your program and any changes you made remain in the work area. You can go into other options of Program Design and return to the Update Program option to save/replace your program. You can also save/replace your program from the Library Functions Menu.
- The program function key sequence GOLD/Q has the same effect as the QUIT command.
- Using QUIT or GOLD/Q is the only way to exit from programming mode (other than by CTRL-C or KILL, but these can terminate the Program Design Facility altogether, resulting in possible loss of all unsaved changes).

Example

```
QUIT
```

REPLACE

Use the REPLACE command to replace a program in your library with the program currently in your work area.

$$\textbf{REPLACE}\left[\left[\textit{libname}\right]\left[\begin{array}{l}\textit{,password}\left[\textit{description}\right]\\ \textit{,,description}\end{array}\right]\right]$$

libname

Description *Optional*. Specifies the library name of the program you want replaced.

Default The name of the current program in your work area

Format *program-name*

password

Description *Optional*. Specifies the new password for the program you want to be replaced.

Default Password of the current program in the work area

Format 1–16 character text value

description

Description *Optional*. Specifies or changes the description of a program as it appears in the Directory of Programs.

Default Description of the current program in the work area

Format 1–48 character text value

Consideration Specifies a description only if you want to change it or add it to the program.

General considerations

- You can replace a program only in your own library.
- You can SAVE a program only once; thereafter, you must REPLACE it.
- If the program you are replacing is the program now in your work area, you need not specify libname, password, or description.
- If you issue a RUN statement for a program containing a CHAIN statement, be sure that the proper program is in the work area before you REPLACE it. If a program containing a CHAIN statement is run before any modifications have been SAVEd or REPLACEd, these changes will be lost.
- You can also replace a program in your work area by using the Replace option in Library Functions in the Program Design Facility.

Examples

```
REPLACE DATAENTRY
REPLACE PROGRAMA,,TEST PROGRAM
```

RUN

Use the RUN command to execute the program in the work area, optionally loading it into the work area from a specified library. The programming mode heading (PROGRAM ==>*user-name*:*program-name*) disappears from the screen while the program is running and reappears when the program stops executing. A program will run until it encounters an invalid statement, a STOP statement, a KILL command, a breakpoint, or runs out of program statements.

RUN **[*libname*] [*begin*]**

libname

Description *Optional*. Specifies the library name of the program you want to load and run.

Default The current program in the work area

Format [*user-name*:]*program-name*

Consideration If the program is in your library, you only need to specify the *program-name*.

begin

Description *Optional*. Specifies the number of the line where you want the program to begin running.

Default The first line in your program

Format Arithmetic expression that evaluates to a line number in your program

General considerations

- If you specify RUN with no parameter, MANTIS erases all variables and arrays belonging to the program in the work area and executes the program from the beginning. If the program in the work area is an external subroutine (which has stopped before reaching EXIT—for example, due to a fault or program breakpoint), any arguments passed to it on the DO statement are not erased. They retain their values from the time when execution stopped.

- If you specify RUN with a *begin* parameter, MANTIS retains all variables and arrays from prior RUN executions and executes the current program from the specified line number. Use this form of the RUN command to continue a program after it stops because of an error condition or a STOP statement. You will find this useful for interactive testing and debugging.

- You can RUN any program in any user's library. When the program stops, however, you will not be allowed to LIST or modify it unless its password is the same as the password of the program it replaced in the work area.

Example

```
10 SHOW "WHAT IS THE CAPITAL AMOUNT?"
RUN
WHAT IS THE CAPITAL AMOUNT?
```

SAVE

Use the SAVE command to copy the program in the work area into a MANTIS library or an external file.

$$\textbf{SAVE}\left\{\begin{array}{l}\left[\textit{libname}\right]\left[\begin{array}{l}\textit{,password}\left[\textit{,description}\right]\\ \textit{,,description}\end{array}\right]\\ \textbf{FILE}\ \textit{file - spec}\end{array}\right\}$$

libname

Description *Optional*. Specifies the name you want to use when saving the program in your MANTIS library.

Default Name of the program currently in the work area

Format 1–30 alphanumeric characters

password

Description *Optional*. Specifies the password you want to use when saving the program.

Default Password of the program currently in the work area

Format 1–16 character text value

Consideration Specify only to change or to supply a password that is different from your default password.

description

Description *Optional*. Specifies a description of the program as you want it to appear in the directory listings.

Format 1–48 alphanumeric characters

FILE *file-spec*

Description *Optional*. Specifies that you want to save a program in an external file.

Default The last *file-spec* used with a LOAD FILE or SAVE FILE command upon the current program in the work area

Format External file specification

General considerations

- Blanks are important in both program names and passwords because MANTIS interprets them as part of the name or password. Use exactly the same number of blanks consistently. For example, ACME␣PAYROLL is different from ACME␣␣PAYROLL.
- You can save a program only in your own library, not any other library.
- You can SAVE a program only once. After that, you must REPLACE it.
- You can also save a program in your work area by using the Save option in Library Functions in the Program Design Facility.

Examples

```
SAVE DATAENTRY
SAVE PROGRAMA,,TEST PROGRAM
SAVE FILE RTN123.MAN
```

SEQUENCE

Use the SEQUENCE command to renumber the lines of the program in the work area.

SEQUENCE [*first*[,*increment*]] [*entry-name*]

first

Description *Optional*. Specifies the number you want the first statement to have.

Default 10

Format Arithmetic expression that evaluates to a number between 1 and 64000

Considerations

- MANTIS applies only the integer portion of first.
- The largest program line number allowed in a MANTIS program is defined by the MAXPROGLINES MANTIS Option (64000 by default).

increment

Description *Optional*. Specifies the increment by which you want successive line numbers to increase.

Default 10

Format Arithmetic expression

Consideration MANTIS applies only the integer portion of increment.

entry-name

Description *Optional*. Specifies that the renumbering is to be confined to a subroutine or to the main program.

Format Entry name of a subroutine or the main program as defined on an ENTRY statement

General considerations

- If you specify *entry-name*, renumbering begins with the ENTRY *entry-name* statement and ends with the next EXIT statement. Renumbering stops if another ENTRY statement is encountered before the EXIT statement. When renumbering the specified routine, if the last line of the renumbered routine has a higher line number than the program line following, a warning message is displayed and lines are renumbered until no overlap occurs.

- Breakpoints are automatically removed from the program when the SEQUENCE command is executed.

Examples

```
  10 ENTRY COMPOUND
  11 .| THIS IS AN EXAMPLE
  20 .SHOW "WHAT IS THE CAPITAL AMOUNT?"
  30 .OBTAIN INVESTMENT
  40 EXIT
SEQUENCE
LIST
  10 ENTRY COMPOUND
  20 .| THIS IS AN EXAMPLE
  30 .SHOW "WHAT IS THE CAPITAL AMOUNT?"
  40 .OBTAIN INVESTMENT
  50 EXIT
SEQUENCE 100
SEQUENCE 100,5
SEQUENCE 1,1
SEQUENCE 1000 COMPOUND
```

SET BREAK

Use the SET BREAK command to set breakpoints in the current program. Setting a breakpoint at a program line number causes execution of the program to stop when the first statement on that line is about to be executed.

SET BREAK *line-number*[,*command*]

line-number

Description *Required*. Specifies the line number where a breakpoint is to be set.

Format Arithmetic expression that evaluates to a line number in your program

command

Description *Optional*. Specifies a MANTIS command that will be executed when the program reaches the breakpoint.

Format Text expression that evaluates to a MANTIS command

Consideration The command can be any MANTIS command (or statement). MANTIS interprets it as though you entered it after the program stopped at the breakpoint.

General considerations

- Breakpoints are useful during program testing when placed at strategic locations in the program. You can use the RUN command to execute the program until it reaches a breakpoint and then use the SHOW or DISPLAY command to check the values of variables. Use the GO command to resume execution of your program after it has stopped at a breakpoint.
- Programs can be saved or replaced in your program library with breakpoints set. Breakpoints remain in effect when such a program is next loaded during Program Design. You can use this feature to set breakpoints in a subroutine invoked by an external DO statement. External subroutines are not loaded until the DO statement is executed.
- Use the CLEAR command to clear program breakpoints.

- Any breakpoint is removed from a line when it is modified by a CHANGE or ALTER command. All breakpoints are removed from the current program when the program is modified by a SEQUENCE, COPY, or EDIT command.
- SET can also be used as a statement, as documented in *AD/Advantage MANTIS Language OpenVMS/UNIX*, P39-1310.
- Execution does not stop at a breakpoint in a bound program.

Example

```
SET BREAK 70,"SHOW I"
RUN
487 The program has stopped at a breakpoint.
70 I=I+1
-> SHOW I
16
```

SHOW

Use the SHOW command to display the current program breakpoints or the next program line to be executed.

SHOW { **BREAK** | **NEXT** }

BREAK

Description *Optional*. Displays all breakpoints in the current program or external subroutine.

NEXT

Description *Optional*. Displays the program line which will be executed next.

General consideration

- SHOW can also be used with different options in a program statement. Refer to *AD/Advantage MANTIS Language OpenVMS/UNIX*, P39-1310.

Example

```
SET BREAK 70
RUN
487 The program has stopped at a breakpoint
70 I=I+1
SHOW NEXT
70 I=I+1
```

UP

Use the UP command to select as the current program a program or an external subroutine at a higher level. You can then list and edit it in the work area.

UP [*levels*]

levels

Description *Optional*. Specifies the number of levels up from the current program to the desired program or external subroutine.

Format Numeric expression which evaluates to a positive number

Consideration If you do not specify *levels*, MANTIS goes up one level.

General considerations

- Use this command when MANTIS stops executing an external subroutine (for example, due to a fault or program breakpoint). Use the UP command to select a higher-level routine or the calling program as the current program in the work area.
- The name of the main program or the program that contains the external subroutine at the specified level will appear at the top of the screen.
- If levels is greater than the number of levels up to the highest level, MANTIS selects the main program (which is at the highest level).
- Use the DOWN command to return to the current or an intermediate level.

Example

```
UP 2
```

USAGE

Use the USAGE command to show where a MANTIS keyword, symbolic name, or string is used in your program. MANTIS displays each line within a specified range which contains the item you specify.

$$\textbf{USAGE}\left\{\begin{matrix} keyword \\ symbolic\text{ - }name \\ '\ string' \end{matrix}\right\}\left[, begin\left[, lines\right]\right]$$

keyword, *symbolic-name*, *string*

Description *Required*. Specifies the item for which you want to display the usage.

Options

keyword a MANTIS keyword.

symbolic-name the symbolic name of a variable or array or a symbolic name defined in a SCREEN, PROGRAM, INTERFACE, FILE, ACCESS, ULTRA, or VIEW statement.

string an arbitrary string of characters. The string is delimited by a single quotation mark (‘), comma (,), or semicolon (;).

begin

Description *Optional*. Specifies the number of the first line for which you want to display usage of the specified item.

Format Arithmetic expression which evaluates to a line number in your program

Default The first line in your program

Consideration The line number does not need to be exact. MANTIS starts searching the program at the first line greater than or equal to the specified line number.

lines

Description *Optional*. Specifies the number of lines for which you want to display usage of the specified item.

Format Arithmetic expression

Default If you do not specify *lines*, MANTIS displays all lines which contain the specified item. MANTIS waits for you to press RETURN each time it fills the screen.

General considerations

- If you specify *keyword* or *symbolic name*, MANTIS displays only program lines which contain that keyword or symbolic name.
- If you specify *string*, MANTIS displays program lines which contain an exact match for the string in any position. The string is compared with the text of the program as it would be listed by the LIST command. Spacing and case (uppercase or lowercase) must match.
- Include the delimiters if you specify *string*; otherwise, MANTIS may define an unintended symbolic name.
- If multiple pages of displayed usage lines occur, use either the KILL or CANCEL program functions to terminate the command. Do this by:
  - Pressing GOLD/K or CANCEL
  - Entering KILL or CANCEL in the Reply Field (over the MORE prompt), and pressing RETURN

Examples

```
USAGE REC1
10 FILE REC1("INDEX","FORGET_ME_NOT")
30 GET REC1
40 WHILE REC1<>"END"
50 .GET REC1
80 .GET REC1(INDEX1)EQUAL
USAGE 'REC1("INDEX"'
10 FILE REC1("INDEX","FORGET_ME_NOT")
USAGE GET
30 GET REC1
50 .GET REC1
80 .GET REC1(INDEX1)EQUAL
USAGE 'GET'
10 FILE REC1("INDEX","FORGET_ME_NOT")
30 GET REC1
50 .GET REC1
80 .GET REC1(INDEX1)EQUAL
USAGE ,REC1(,,50
80 .GET REC1(INDEX1)EQUAL
```

Directory of programs

The Directory of Programs option enables you to view an alphabetic listing of all programs in your library. When you select this option from the Program Design Facility Menu, a screen similar to the following appears. If you specified a name in the Load Program Name field of the Program Design Facility Menu, it is interpreted as a directory repoint command, and the directory list is positioned accordingly.

```
USERID                    Program Directory Selection              YYYY/MM/DD
REPOINT                                                            HH:MM:SS
SEL------------NAME------------- -----STATUS----- --------DESCRIPTION-------->>



REPOINT
```

The PASSWORD, DATE, and TIME fields appear to the right of the DESCRIPTION field—off the screen on a standard terminal. Window to the right to view these fields.

MANTIS maintains the following fields on this screen:

USERID

Description MANTIS displays the user's sign-on name; that is, the owner of the directory.

NAME

Description Provides the name of the program.

STATUS

Description Indicates whether the program is bound, and whether it is bound with or without source.

DESCRIPTION

Description Supplies the description you provided for the program. If you left the Description field blank, there will not be any description of your program.

PASSWORD

Description Provides the password for the program.

DATE

Description Provides the date when the program was last replaced.

TIME

Description Provides the time when the program was last replaced.

You can provide information for the following fields:

REPOINT

Description *Optional*. Specifies a directory reposition command as either:

- An alphanumeric string to be the new starting position in the display; enter a blank to start from the beginning.
- A wildcard specification

SEL

Description *Optional*. Specifies the action you want to perform on the program. The Program Design Menu screen shows these abbreviations in parentheses.

Options

S	Select the program for update.
P	Delete (Purge) the program code and the bound version, if present.
B	Bind the program.
U	Remove bound version of the program (Unbind).
N	Delete the program source, leaving the bound version, if any (NoSource).
L	Print (List) the program.
E	Edit the program.

Considerations

- You can specify operations for more than one program. The operations you specify are performed in turn, starting with the program at the top of your screen, with the exception of P and N (both delete operations). MANTIS executes delete operations last and prompts you for confirmation of the delete.
- MANTIS displays the Program Directory Selection screen when you select the Directory of Programs option from the Program Design Facility Menu. This is not the same directory screen you receive when you select the Directory of Programs option from the Directory Facility. The Directory Of Programs screen in the Directory Facility only allows you to select a program for update from the directory list.

Press RETURN to continue scrolling through the directory list or to return to the Program Design Facility Menu after viewing your list of programs. To exit at any point before the end of this display, press CANCEL.

Library functions

The Library Functions option enables you to save or import new MANTIS programs and to retrieve, replace, delete, import, and export existing programs. When you select this option from the Program Design Facility Menu, the following screen appears.

```
                              M  A  N  T  I  S

                       PROGRAM DESIGN LIBRARY FACILITY

    Name of Program ....: USER:USER                                        :
    Description ........:                                                 :
    Password ...........:                  :
    Export File Name ...:                                      :

    SAVE  ...................  1          Program Logic Resolved ...: NO  :
    REPLACE  ................  2          Source Code Present ......: NO  :
    FETCH  ..................  3          Program is Bound .........: NO  :
    DELETE  .................  4
    EXPORT  .................  5
    IMPORT ..................  6          String Comparison ..: LENGTH       :
                                          String Delimiter ...: " :
    TERMINATE  ..........  CANCEL         Mask Character .....: # :
                                          Comment Character ..: | :

                                  :    :
```

Under some circumstances, choosing one of the options on the Program Design Library Facility Menu will generate a message requesting confirmation. To confirm the action you have chosen, the same key sequence must be reentered. This key sequence is always a PF key or ENTER, depending on how the Library Function option was entered. FETCH requires confirmation if modifications to the current working design will be lost. REPLACE requires confirmation if you attempt to replace a different program in your library. DELETE always requires a confirmation. EXPORT does not require confirmation since the work area will not be affected. IMPORT, however, requires confirmation if there are unsaved changes to a design in the work area.

Name of Program

Description *Required*. Specifies the name of the program.

Format 1–30 character alphanumeric name, optionally prefixed by a user library specification

Considerations

- You can load any unprivileged user's program provided that one of the following conditions is met:
  - The specified program's password is NULL.
  - The password of the currently loaded program matches the specified program's password.
- You cannot modify another user's library.
- This field initially displays the fully qualified name of the current program in the work area.

Description

Description *Optional*. Provides a description for your program. This description is stored with the program when you save or replace it, and appears on the directory list.

Format 1–48 alphanumeric characters

Password

Description *Optional*. Supplies a password to save a new program or if you want to fetch a program from another user's library.

Default Null string

Format Any string of characters

Export File Name

Description *Optional*. Specifies the name of the file which is to be used for Importing/Exporting entities.

Default *program_name*.mpr

Format A valid file specification

SAVE (Option 1)

Description *Optional*. Saves the program in your current work area in your library.

Considerations

- Use this option only when the program does not already exist in your library.
- You can also save a program by using the SAVE command in programming mode.

REPLACE (Option 2)

Description *Optional*. Replaces the specified program in your library with the updated version currently in your work area.

Consideration You can also replace a program by using the REPLACE command in programming mode.

FETCH (Option 3)

Description *Optional*. Retrieves a program from the specified library and places it in your work area.

Consideration You can also retrieve a program by using the LOAD and EDIT libname commands in programming mode or by specifying a program name on the Program Design Facility Menu and selecting the Update Program or Edit Program options, or by selecting the S option in the Program Directory Selection screen.

DELETE (Option 4)

Description *Optional*. Deletes a program from your library.

Considerations

- The deleted program will remain in your work area until another program is fetched or until you exit from the Program Design Facility.
- You can also delete a program by using the PURGE command in programming mode, by selecting the Purge Program option from the Program Design Menu or by selecting the P option in the Program Directory Selection screen.
- You can resave a program (from the work area) you just deleted by providing a name and selecting the SAVE option.
- You can rename a program by saving under a new name, then deleting under the old name.

EXPORT (Option 5)

Description *Optional*. Exports a Program Design from your work area.

Considerations

- You can specify only a single design to be exported. This option will export the entity which is currently in the work area.
- If the work area does not contain anything, you can export a Program design provided that it exists and you have access to it.
- The default output file is of the form *program_name*.mpr.

IMPORT (Option 6)

Description *Optional*. Imports a Program Design to your work area.

Considerations

- You can specify only a single design to be imported. This entity will be imported into the work area only.
- If unsaved changes exist, you will be prompted to confirm the import since the changes will not be saved.
- The default input file is of the form *program_name*.mpr.

Terminate (Cancel)

Description Select this option to terminate or cancel the Program Design Library Facility.

> **NOTE**
> Before exiting or canceling any function, it is good practice to save and or replace your work.

Program Logic Resolved

Description This protected field specifies whether the program logic (that is, nesting structure) has been resolved correctly or not.

Source Code Present

Description This protected field specifies whether the program contains any source code; that is, whether the source code of a bound program has been deleted.

Program Is Bound

Description This protected field indicates whether the program is bound or not.

String Comparison

Description *Required*. Specifies the MANTIS string comparison mode to be used by the relational operators in this program.

Format Either LENGTH or ALPHANUMERIC. You only need to enter the first character correctly.

Considerations

- If LENGTH is specified, a string will be considered greater than another if its length is greater.
- If ALPHANUMERIC is specified, strings will always be compared up to the shorter length, and if equal, the longer string is considered to be greater.
- When a new program is created, it inherits the string comparison mode from the STRCOMPARE MANTIS Option.

String Delimiter

Description *Required*. Specifies the string delimiter to be used in this program.

Format A single character specifying the string delimiter

Considerations

- The string delimiter is not allowed to be part of the MANTIS character set (except for “). Specifically, it cannot be an alphanumeric character, or any of the characters in the string “ $.+-=(),<>|/!*:;&’_”.
- The string delimiter must be distinct from the program’s comment character.
- When entering a program in Program Design, the double-quote (“) character may also be used as a string delimiter.
- When a new MANTIS program is created, it inherits the string delimiter from the QUOTE MANTIS Option.

Mask Character

Description *Required*. Specifies the FORMAT function default mask character to be used by this program.

Format A single character specifying the mask character

Considerations

- The mask character is not allowed to be a special numeric mask character. Specifically, it cannot be any of the characters in the string “ 0+-,.|z”.
- When interpreting the mask parameter to the FORMAT function, the program FORMAT function mask character will be used by default if the third FORMAT parameter (mask character) has not been specified, or is the NULL string..
- When a new MANTIS program is created, it inherits the mask character from the FMTMASK MANTIS Option.

Comment Character

Description *Required*. Specifies the program comment character to be used in this program.

Format A single character specifying the comment character

Considerations

- The comment character cannot be part of the MANTIS character set (except for | and !). Specifically, it cannot be an alphanumeric character, or any of the characters in the string " $.+-="(),<>/*:;&'_".
- The comment character must be distinct from the program's string delimiter.
- When entering a program in Program Design, the characters | and ! may also be used as comment characters.
- When a new MANTIS program is created, it inherits the comment character from the COMMENT MANTIS Option.

Print program

The Print Program option sends a listing of the program currently in the work area to your printer. When you select this option and a program name has been specified in the Load Program field, the specified program is fetched into the work area and is then printed. If the specified program does not exist, MANTIS displays an error message. If the Load Program field is blank, then the program shown in the Current Program field is printed. If you specify more than one program (using a wildcard specification), MANTIS displays the Program Directory Selection screen with an L in the SEL field. Erase the L to avoid printing a particular program. When you press RETURN, MANTIS prints the programs you have specified.

You can also print a program in programming mode using the OUTPUT PRINTER and LIST commands (see the example in the General considerations for the LIST command, "MANTIS program design commands" on page 301).

You can return to the Program Design Facility Menu at any time during Program Design and select the Print Program option.

Bind program

The Bind Program option invokes the binding process. During the binding process, MANTIS creates a more efficient version of your program and stores it with your program code. MANTIS always executes the bound version of your program if it exists. When you select the Bind Program option, the program you have specified in the Load Program field is loaded, bound, and replaced. If the Load Program field is blank, the program shown in the Current Program field is selected (see "Program design facility menu" on page 291). If you have specified a program that does not exist, MANTIS displays an error message.

If you have selected multiple programs, the specified programs are displayed on the Program Directory Selection screen, with a B in the SEL field. Erase the B to avoid binding a particular program. When you press RETURN, MANTIS starts binding the specified programs.

If any errors are encountered during the BIND operation, the program is not bound. Correct the errors according to the error messages displayed by the BIND function, and repeat the BIND until all errors are eliminated. Program errors uncovered by the Bind function cause messages to be displayed in scroll mode. If the MORE prompt is displayed, you can terminate the current program bind function by pressing KILL or CANCEL. When error messages are displayed for a program, MANTIS finishes the bind function for that program by displaying the "Press RETURN to Continue" message in scroll mode. At this point, you can continue to Bind the remaining program selection (if any) by pressing RETURN, or you can cancel the binding of the remaining program selection by pressing KILL or CANCEL.

When MANTIS finishes the binding process, it displays a status of BOUND or NOT BOUND. Press ENTER to continue.

Remember that MANTIS always executes the bound version of the program if it exists. The bound version of a program is able to DO or CHAIN to an unbound program; and likewise, an unbound program to a bound program.

You can also bind a program in programming mode using the BIND ON command. See "MANTIS program design commands" on page 301 for more details.

Refer to *AD/Advantage MANTIS Language OpenVMS/UNIX*, P39-1310, for information on compatibility with MANTIS for the IBM mainframe.

Unbind program

The Unbind Program option instructs MANTIS to delete the bound version of the program, leaving the unbound program code. When you select the Unbind Program option, the program you have specified in the Load Program field is loaded, unbound, and replaced. If the Load Program field is blank, then the program shown in the Current Program field is selected (see “Program design facility menu” on page 291). If you have specified a program that does not exist, MANTIS displays an error message.

If you have selected multiple programs, the specified programs are displayed on the Program Directory Selection screen, with a U in the SEL field. Erase the U to avoid unbinding a particular program. When you press RETURN, MANTIS deletes the specified bound versions. MANTIS displays a confirmation message when the unbind process is complete. Press ENTER to continue.

You can also delete the bound version of a program in programming mode using the BIND OFF command. See “MANTIS program design commands” on page 301 for more details.

Purge program

The Purge Program option instructs MANTIS to delete both the program code and the bound version of the program from the MANTIS File. When you select the Purge Program option, the program you have specified in the Load Program field is first loaded into the work area, then deleted from the MANTIS File. If the Load Program field is blank, the program shown in the Current Program field is selected (See "Program design facility menu" on page 291). If you specify a program that does not exist, MANTIS displays an error message. You can also delete a program in programming mode using the PURGE command (See "MANTIS program design commands" on page 301).

If you specify multiple programs, MANTIS displays the programs on the Program Directory Selection screen with a P in the SEL field. Erase the P if you do want to avoid purging a particular program. When you press RETURN, MANTIS deletes the programs, one at a time, prompting you to confirm the deletion for each specified program. MANTIS displays a message when the deletion process is complete. Press ENTER to continue.

Purge program source

The Purge Program Source option instructs MANTIS to delete the program source code, leaving only the bound version of the program. You cannot recover the program source code after you execute this option. When you select the Purge Program Source option, the program you have specified in the Load Program field is loaded, stripped of source code, and replaced. If the Program Name field is blank, the program shown in the Current Program field is selected (see "Program design facility menu" on page 291). If you specify a program that does not exist, MANTIS displays an error message.

If you specify multiple programs, MANTIS displays the programs on the Program Directory Selection screen with an N in the SEL field. Erase the N if you want to avoid deleting the program code for a particular program. When you press RETURN, MANTIS deletes the program code, one program at a time. MANTIS prompts you to confirm each deletion. MANTIS displays a message when the deletion process is complete. Press ENTER to continue.

Edit program

The Edit Program option invokes an external editor from the Program Design Facility Menu. If you have specified a program in the Load Program field, MANTIS loads that program before it invokes the editor. If the Load Program field is blank, the program shown in the Current Program field is selected (see "Program design facility menu" on page 291). If the specified program does not exist, MANTIS displays an error message.

You may also select this option by pressing GOLD/E. If the specified program does not exist, MANTIS displays an error message.

NOTE

You can also invoke an external editor from programming mode using the EDIT command. See "MANTIS program design commands" on page 301 for details.

If you specify multiple programs, MANTIS displays the programs on the Program Directory Selection screen with an E in the SEL field. Erase the E if you want to avoid editing a particular program. When you press RETURN, MANTIS passes each selected program to the external editor, one at a time.

When you exit from an external editor, MANTIS copies the edited program back into the work area and renumbers any program lines whose line numbers are missing or are out of sequence. MANTIS enters programming mode to give you the opportunity to RUN, SAVE, or REPLACE the modified program. When you QUIT from programming mode, you will be returned to the screen from where the EDIT was invoked (the Program Design Facility screen, or the Program Directory Selection screen).

NOTE

OpenVMS If you QUIT from the editor, MANTIS will not enter Program Update mode, returning instead to the screen where the editor was invoked.

Exit program design

Pressing "Cancel" allows you to exit the Program Design Facility. You can exit the Program Design Facility at any time by pressing the cancel key and return to the MANTIS Facility Selection Menu.

10

Entity transfer

The Transfer Facility allows MANTIS users, whether using the same or different MANTIS user classes, to share MANTIS entities (for example, screens, files, programs, views, etc.).

For users of the same system, sharing is a simple, two-step process in which one user copies the entity (or entities) into a bin (independent segment) of the Transfer File. The other user(s) can then copy the entity (or entities) from bin to library. Users of different systems must move the Transfer File to the target system from the source system. The other user(s) can then copy the material into their library(s). In addition to copying, you can also delete and list entities that are in the bins.

Accessing the transfer facility

When you select the Transfer Facility option from the MANTIS Facility Selection Menu (see “Facility selection menu” on page 23), the following screen appears.

```
                    TRANSFER FACILITY                        YYYY/MM/DD
                                                             HH:MM:SS

              Bin :                  :
         Password :                  :

Create A New Bin  ..........................  1
Copy From Library To Bin  ...................  2
Copy From Bin To Library  ...................  3
Delete From Bin  ............................  4
List Contents Of Bin  .......................  5
Change Password For Bin  ....................  6
Directory Of Bins  ..........................  7
Turn Print On/Off  ..........................  8
Help  .......................................  9

Delete Entire Bin  ..........................  12

Exit  ...................................  CANCEL

                      :    :
```

To begin a Transfer function, enter the following information in the indicated spaces at the top of the Transfer Facility Menu.

Bin

Description *Required*. Specifies a name for the transfer bin.

Format 1–16 alphanumeric characters

Consideration The bin name you enter here appears in the bin field (upper left corner) of all subsequent screens in the transfer facility.

Password

Description *Optional*. Specifies a password for the transfer bin.

Format 1–16 alphanumeric characters

You may switch a printing trail on or off from any screen in the Transfer Facility (see “Turn print ON/OFF” on page 397 for details).

The remainder of this chapter discusses each of the Transfer Facility options. See the section(s) you need. The following table provides an overview of the options available in the Transfer Facility and where each option is discussed.

When you select this option	Details on how you can	Appear in
Create a New Bin	Create a new bin in the Transfer File.	"Create a new bin" on page 368
Copy from Library to Bin	Copy entities from your library into the current bin.	"Copy from library to bin" on page 368
Copy from Bin to Library	Copy entities from the specified bin into your library.	"Copy from bin to library" on page 377
Delete from Bin	Delete entities from the specified bin.	"Delete from bin" on page 387
List Contents of Bin	List the bin contents for a particular entity type.	"List contents of bin" on page 393
Change Password for Bin	Supply a new password for the specified bin.	"Change password for bin" on page 395
Directory of Bins	List all bins in the transfer file.	"Directory of bins" on page 396
Turn Print ON/OFF	Activate a printing trail showing the results of updates while printing is active.	"Turn print ON/OFF" on page 397
Help	Display help information.	"Help" on page 397
Delete Entire Bin	Delete a designated bin and its contents.	"Delete entire bin" on page 397

Create a new bin

This option enables you to create a new area with its own name and password in the Transfer File. There can only be 360 bins in the same Transfer File.

You begin the Create a New Bin option on the Transfer Facility Menu by entering a bin name and password. MANTIS returns a confirmation message in the lower left portion of the screen after it creates the new bin. (The Transfer Facility Menu remains on the screen.) You can select any option on the menu or press CANCEL to return to the MANTIS Facility Selection Menu (see “Facility selection menu” on page 23).

Copy from library to bin

This option enables you to copy entities from your library to the current bin. To indicate the bin you want to use, enter the 1–16 character alphanumeric bin name and password on the Transfer Facility Menu and select the Copy from Library to Bin option. The following screen appears.

```
                          COPY FROM LIBRARY TO BIN                    YYYY/MM/DD
BIN: CURRENT_BIN                                                      HH:MM:SS

PROGRAMS  ...............  1
SCREENS  ................  2
FILE PROFILES  ..........  3
PROMPTERS  ..............  4              TURN PRINT ON/OFF  ........  12
INTERFACES  .............  5              HELP  ....................  13
SCENARIOS  ..............  6              USER FILE DATA  ..........  14
ULTRA FILE VIEWS  ........  7              ALL USER ENTITIES  ........  24
EXTERNAL FILE VIEWS  .....  8              EXIT  ................  CANCEL


        STARTING NAME :                                  :
          ENDING NAME :                                  :
      (A)DD/(R)EPLACE : A :                WITH DATA : N :
                                             BINDING :   :
             NEW NAME :                                  :
      LANGUAGE:DEVICE : ENGLISH          : 24X80   :

                                  :    :
```

Your current bin name (which you provided on the Transfer Facility Menu) appears in the upper left corner of this screen. Instructions for copying each of the entity types listed on this menu appear in the following sections. A Directory Listing aids you in selecting multiple entities.

General considerations

- Users can copy entities from their library into any user's bin, except a bin owned by the Master User.
- The Master User can copy entities from any user's library into any user's bin.

NOTE

If a bin has a password, it must be supplied to access the bin.

Copy selected entities

To copy the items listed as options 1 through 8 on the Copy from Library to Bin Menu (see "Copy from library to bin" on page 368), complete the relevant entries as indicated below. Select the entity type you want to copy (such as programs), and either press the corresponding PF key or supply the appropriate number in the action field. Press RETURN. MANTIS copies the entity to the bin, and displays a confirmation message in the lower left corner of the screen.

You can continue to use the Copy from Library to Bin Menu, or press CANCEL to return to the Transfer Facility Menu (see "Accessing the transfer facility" on page 366).

To copy multiple entities, you need to specify a range of names, a generic pattern, or a full Directory Listing. Use the STARTING NAME and ENDING NAME fields to specify the multiple entities you want copied.

Starting Name

Description *Required*. Indicates the name of the entity you want to copy to the bin.

Format 1–30 character alphanumeric name

Considerations

- The number of valid characters in the name depends on the entity type (for example, 28 characters for screens, 29 characters for prompters).
- Single entity—Supply the 1–30 character alphanumeric name of the entity.
- Range—Supply the 1–30 character alphanumeric name of the entity where you want to begin copying.
- Generic Pattern—Supply a generic pattern using one of two generic characters for Transfer:

  * Represents an indefinite number of generic characters. For example, *2* yields a directory listing of all entities whose names contain a 2.

  ? Represents a single generic character. PROG???? yields a directory listing of all entities whose names begin with PROG and end with any four characters.
- Full Directory Listing—Supply the generic character * for a full directory listing from which you intend to copy most of the entities. In this case, MANTIS automatically supplies an A or an R (whichever you specify in the (A)dd/(R)eplace field) before every entity in the list. You may erase the A or the R when it appears before an entity that you do not wish to copy.
- If you want a full Directory Listing but intend to copy only a few of the listed entities, leave the Starting Name field blank. When you receive the list, the A/R column is blank. Place an A or an R before each entity to copy.

Ending Name

Description *Optional.*. Indicates the name of the last entity you want to copy to the bin.

Format 1–30 character alphanumeric name

Consideration Supply a name only when using the Range option. Supply the 1–30 character alphanumeric name of the entity where you want to end copying.

(A)dd/(R)eplace

Description Identifies whether you want to add or replace entities.

Default A add

Options

A	Add the entities to the bin. The selected entities cannot already exist in the bin, or you will get an error message.
R	Replace the entities in the bin. The selected entities are added to the bin, regardless of whether it already exists in the bin.

Consideration The symbol you specify appears on the Directory Listing in the A/R field next to each entity, unless you leave the Starting Name field blank for a blank A/R column.

With Data

Description *Optional*. Specifies whether you want to transfer the contents as well as the definitions of internal files to the Transfer File in a single operation.

Default N no

Options

Y	For yes, transfer contents and definitions of internal files to the Transfer File in a single operation.
N	For no, do not transfer contents and definitions of internal files to the Transfer File in a single operation.

Consideration This field is only applicable to the transfer of file profiles (option 3)

Binding

Description *Optional*. Specifies a binding option to apply to programs as they are copied. Options are available to bind or unbind, or to delete the source code of bound programs.

Default Blank no program binding action is performed.

Format One of the following codes:

B	to BIND programs
U	to UNBIND programs
N	to delete the source code of bound programs (NOSOURCE)

Considerations

- The BIND option will be carried out whether or not the program is already bound.
- Unbound programs are not affected by the UNBIND and NOSOURCE options.

New Name

Description *Required*. Specifies the name you want to give to the entity in the bin.

Format 1–30 character alphanumeric name

Consideration Supply a name only if you want to give the entity a new name. The number of valid characters in the name depends on the entity type. Use this for the single entity transfer only, not range or generic.

Language:Device

Description *Optional*. Specifies the language and device type that is associated with the entity.

Default Your default language code and device type

Consideration The language specified here only applies to the transfer of screens and prompters. The device code only applies to the transfer of screens. You are not allowed to store multiple versions of an entity (for example, entities with the same name, but different language/device codes) in the same bin.

Copy screen to bin

If you have selected the screen Copy to BIN, the following screen will display.

```
                        COPY TO BIN: screens                        YYYY/MM/DD
Bin: current_bin                                                    HH:MM:SS

A/R -------NAME IN LIBRARY--------  ----------NAME IN BIN---------  --STATUS--
```

Enter the following data:

A/R

Description *Optional*. If you selected an A (for add) or an R (for replace) on the Copy from Library to Bin Menu, that symbol appears before each listed entity. Do not change the selection if you want the entity copied or replaced. If you do not want an entity copied, overtype the A or the R from the relevant line.

If you specified a Full Directory Listing without A and R indicators (by leaving the Starting Name field blank on the Copy from Library to Bin Menu), enter an A (for add) next to each entity to copy only if it is not already in the bin. Enter an R (for replace) next to each entity to copy even if it is already in the bin. Overtype the A/R selection next to any entities you do not wish to copy.

Name In Bin

Description *Optional*. Specifies a new name in the Name in Bin field for any entity names you want to change in the bin.

Default The NAME IN LIBRARY

Format 1–30 alphanumeric characters

Consideration The number of valid characters in the name depends on the entity type.

Press RETURN. Individual confirmation messages appear in the Status field upon completion of the copy process.

To page through the directory, press RETURN or use the repoint option by entering 1–30 alphanumeric characters in the unsolicited input field at the bottom of the screen. This repoint value represents the new starting position of the directory, but is still within the original selection criteria (do not use wildcards in the repoint value).

Press CANCEL to return to the Copy from Library to Bin Menu (see "Copy from library to bin" on page 368). Press CANCEL again to return to the Transfer Facility Menu (see "Accessing the transfer facility" on page 366).

Copy user file data

The Copy User File Data option enables you to copy data records from a user file in your library to a previously copied user file profile in the current bin. When you select the Copy User File Data option from the Copy from Library to Bin Menu (see “Copy from library to bin” on page 368), the following screen appears:

```
                            COPY USER DATA TO BIN                      YYYY/MM/DD
BIN: current-bin                                                       HH:MM:SS


                 USER : current_user                   :
            FILE NAME :                                :
         STARTING KEY :                                  :
           ENDING KEY :                                  :

     FILE NAME IN BIN :                                 :
        NEW KEY VALUE :                                   :

      (A)DD/(R)EPLACE : A :









                    ENTER COPY; PF12 TOGGLE PRINT; CANCEL EXIT
```

The current bin name is displayed at the top of the screen; the current user appears in the User field. Enter data as follows:

File Name

Description *Required*. Identifies the file from which you are copying.

Format 1–16 character alphanumeric name

Starting Key

Ending Key

Description Starting Key is *Required*; Ending Key is *Optional*. To specify single or multiple records, enter a single key value, a range of key values, or a generic key pattern of 1–32 characters. If the file has a compound key (made up of several fields), the Starting Key field contains the value of the first key field only. All records with the specified value in their first key field are copied.

File Name In Bin

Description *Required*. Identifies the file in the bin.

Format 1–16 character alphanumeric name

New Key Value

Description *Optional*. Provides a new key value only if you want a new key value in the bin.

Format 1–32 character alphanumeric name

(A)dd/(R)eplace

Description *Optional*. Specifies whether you want to add or replace entities.

Default	A	add
Options	A	Add the entities to the bin. The selected entities cannot already exist in the bin, or you will get an error message.
	R	Replace the entities in the bin. The selected entities are added to the bin, regardless of whether they already exist in the bin.

After you supply the relevant data, press RETURN. A confirmation message appears in the lower left portion of the screen when the copy process is complete.

Copy all user entities

The Copy All User Entities option enables you to copy all entities in your library into the current bin. The User Profile is not copied. (User Profiles can only be copied by the Master User.)

Leave the STARTING NAME, ENDING NAME, and NEW NAME fields blank, and supply values for the remaining fields as if you were transferring a multiple entity selection (see “Copy selected entities” on page 369). Next, select the ALL USER ENTITIES option. On completion, a confirmation message indicating the total number of entities copied will be displayed in the lower left corner of the screen.

Copy from bin to library

The Copy from Bin to Library option enables you to copy entities from the current bin to your library. To indicate the bin you want to use, enter the 1–16 character alphanumeric bin name and password on the Transfer Facility Menu and select the Copy from Bin to Library option. The following screen appears.

```
                          COPY FROM BIN TO LIBRARY                    YYYY/MM/DD
Bin: current_bin                                                      HH:MM:SS

Programs  ...............  1
Screens  ................  2
File Profiles  ..........  3
Prompters  ..............  4              Turn Print On/Off  ........  12
Interfaces  .............  5              Help  ....................  13
Scenarios  ..............  6              User File Data  ..........  14
Ultra File Views  ........  7              All User Entities  ........  24
External File Views  .....  8              Exit  ................  CANCEL

        Starting Name :                                  :
          Ending Name :                                  :
      (A)dd/(R)eplace : A :               With Data : N :
                                            Binding :   :
                 USER : MASTER                           :
             New Name :                                  :
      Language:Device : ENGLISH          : 24X80   :

                                   :    :
```

Your current bin name (which you provided on the Transfer Facility Menu) appears in the upper left corner of the screen. Instructions for copying each of the entity types on this menu are in the following sections. A Directory Listing aids you in selecting multiple entities.

General considerations

- Users can copy entities from any user's bin (except a bin owned by the Master User) into their library.
- The Master user can copy entities from any user's bin into any user's library.

NOTE

If a bin has a password, it must be supplied to access the bin.

Copy selected entities

To copy the items listed as options 1 through 8 on the Copy from Bin to Library Menu (see "Copy from bin to library" on page 377), complete the relevant entries as indicated below.

To copy a single entity, specify:

Starting Name

Description *Required*. Indicates the name of the entity you want to copy to the library.

Format 1–30 character alphanumeric name

Considerations

- The number of valid characters in the name depends on the entity type (for example, 28 characters for screens, 29 characters for prompters).
- Single entity—Supply the 1–30 character alphanumeric name of the entity.
- Range—Supply the 1–30 character alphanumeric name of the entity where you want to begin copying.

- Generic Pattern—Supply a generic pattern using one of two generic characters for Transfer:

  * Represents an indefinite number of generic characters. For example, *2* yields a directory listing of all entities whose names contain a 2.

  ? Represents a single generic character. PROG???? yields a directory listing of all entities whose names begin with PROG and end with any four characters.

- Full Directory Listing—Supply the generic character * for a full directory listing from which you intend to copy most of the entities. In this case, MANTIS automatically supplies an A or an R (whichever you specify in the (A)dd/(R)eplace field) before every entity in the list. You may erase the A or the R when it appears before an entity that you do not wish to copy.

- If you want a full Directory Listing but intend to copy only a few of the listed entities, leave the Starting Name field blank. When you receive the list, the A/R column is blank. Place an A or an R before each entity to copy.

Ending Name

Description *Optional.*. Indicates the name of the last entity you want to copy to the library.

Format 1–30 character alphanumeric name

Consideration Supply a name only when using the Range option. Supply the 1–30 character alphanumeric name of the entity where you want to end copying.

(A)dd/(R)eplace

Description Identifies whether you want to add or replace entities.

Default A add

Options

A	Add the entities to the library. The selected entities cannot already exist in the library, or you will get an error message.
R	Replace the entities in the library. The selected entities are added to the library, regardless of whether it already exists in the library.

Consideration The symbol you specify appears on the Directory Listing in the A/R field next to each entity, unless you leave the Starting Name field blank for a blank A/R column.

With Data

Description *Optional*. Specifies whether you want to transfer the contents as well as the definitions of internal files from the Transfer File in a single operation.

Default N no

Options

Y	For yes, transfer contents and definitions of internal files from the Transfer File in a single operation.
N	For no, do not transfer contents and definitions of internal files from the Transfer File in a single operation.

Consideration This field is only applicable to the transfer of file profiles (option 3)

Binding

Description *Optional*. Specifies a binding option to apply to programs as they are copied. Options are available to bind or unbind, or to delete the source code of bound programs.

Default Blank — no program binding action is performed.

Format One of the following codes:

B	to BIND programs
U	to UNBIND programs
N	to delete the source code of bound programs (NOSOURCE)

Considerations

- The BIND option will be carried out whether or not the program is already bound.
- Unbound programs are not affected by the UNBIND and NOSOURCE options.

New Name

Description *Required*. Specifies the name you want to give to the entity in the library.

Format 1–30 character alphanumeric name

Consideration Supply a name only if you want to give the entity a new name. The number of valid characters in the name depends on the entity type. Use this for the single entity transfer only, not range or generic.

Language:Device

Description *Optional*. Specifies the language and device type that is associated with the entity.

Default Your default language code and device type

Consideration The language specified here only applies to the transfer of screens and prompters. The device code only applies to the transfer of screens. You are not allowed to store multiple versions of an entity (for example, entities with the same name, but different language/device codes) in the same bin.

Select the entity type you want to copy (such as programs), and either press the corresponding PF Key, or supply the appropriate number in the action field. Press RETURN and MANTIS copies the entity to your library. A confirmation message appears in the lower left corner of the screen upon completion.

You can continue to use the Copy from Bin to Library Menu, or press CANCEL to return to the Transfer Facility Menu (see "Accessing the transfer facility" on page 366).

To copy multiple entities, specify a range of names, a generic pattern, or a full Directory Listing as follows:

A Directory Listing appears as shown below, listing the names of the entities you indicated on the Copy from Bin to Library Menu (see "Copy from bin to library" on page 377). MANTIS displays the current bin name and the type of entity in the Bin and Copy to Bin fields at the top of the screen. This directory appears only when you are copying more than one entity.

```
                        COPY FROM BIN: PROGRAMS                          YYYY/MM/DD
Bin: current_bin                                                         HH:MM:SS

A/R ---------NAME IN BIN----------  --------NAME IN LIBRARY-------  --STATUS--
```

Enter the following data:

A/R

Description *Optional*. If you selected an A or an R on the Copy from Bin to Library Menu, that symbol appears next to each listed entity. Leave the symbol if you want the entity copied. If you do not want an entity copied, erase the A or the R from the relevant line.

If you specified a full Directory Listing without A or R indicators (by leaving the Starting Name field blank on the Copy from Bin to Library Menu), enter an A next to each entity to copy only if it is not already in your library. Enter an R next to each entity you want to copy even if it is already in your library. Leave the A/R field blank next to any entities you do not wish to copy.

Name In Library

Description *Optional*. Specifies a new name in the labeled field for any entity names you want to change in your library.

Default The NAME IN BIN

Format 1–30 alphanumeric characters

Press RETURN. Individual confirmation messages appear in the Status field upon completion of the copy process.

To page through the directory, press RETURN or use the repoint option by entering 1–30 alphanumeric characters in the unsolicited input field at the bottom of the screen. This repoint value represents the new starting position of the directory, but is still within the original selection criteria (do not use wildcards in the repoint value).

Press CANCEL to return to the Copy from Bin to Library Menu (see "Copy from bin to library" on page 377), and CANCEL again to return to the Transfer Facility Menu (see "Accessing the transfer facility" on page 366).

Copy user file data

The Copy User File Data function allows you to copy data records from a MANTIS file in the current bin to a user file profile in your library. When you select the User File Data option from the Copy from Bin to Library menu (see "Copy from bin to library" on page 377), the following screen appears:

```
                          COPY USER DATA TO LIBRARY                    YYYY/MM/DD
Bin: current_bin                                                       HH:MM:SS


     File Name In Bin :                                 :
         Starting Key :                                   :
           Ending Key :                                   :

                 USER : MASTER                          :
 File Name In Library :                                 :
        New Key Value :                                   :

      (A)dd/(R)eplace : A :









                  ENTER Copy; PF12 Toggle Print; CANCEL Exit
```

The current bin name appears at the top left corner of the screen. Enter data as shown below:

File Name In Bin

Description *Required*. Specifies a name for the MANTIS file from which you are copying.

Format 1–16 character alphanumeric name

Starting Key

Ending Key

Description Starting Key is *Required*; Ending Key is *Optional*. To specify single or multiple records, enter a single key value, a range of key values, or a generic key pattern of 1–32 characters. If the file has a compound key (made up of several fields), the Starting Key field contains the value of the first key field only. All records with the specified value in their first key field are copied.

File Name In Library

Description *Required*. Specifies the name of the MANTIS file profile in your library.

Format 1–16 character alphanumeric name

New Key Value

Description *Optional*. Specifies a new key value only if you want a new key value in your library.

Format 1–32 character alphanumeric name

(A)dd/(R)eplace

Description *Optional*. Specifies whether you want to add or replace entities. Accept the default value (A) to copy only those entities not already in your library. Type an R (over the A) to copy all entities, including those already in your library.

Default A add

Options

A	Add the entities to the bin. The selected entities cannot already exist in the bin, or you will get an error message.
R	Replace the entities in the bin. The selected entities are added to the bin, regardless of whether they already exist in the bin.

After you have supplied the relevant data, press RETURN. A confirmation message appears in the lower left portion of the screen when the copy process is complete.

Copy all user entities

The All User Entities option allows you to copy all entities in the current bin into your library.

Leave the STARTING NAME, ENDING NAME, and NEW NAME fields blank, and supply values for the remaining fields as if you were transferring a multiple entity selection (see “Copy selected entities” on page 378). Then select the ALL USER ENTITIES option. On completion, a status message indicating the total number of entities copied will be displayed in the lower left corner of the screen.

Delete from bin

The Delete from Bin function enables you to delete entities from the current bin. First, to indicate the bin you want to use, enter the 1–16 character alphanumeric bin name and password on the Transfer Facility Menu. This becomes your current bin. Next, select the Delete from Bin option. The following menu appears.

```
                                DELETE FROM BIN                          YYYY/MM/DD
BIN: current_bin                                                         HH:MM:SS


PROGRAMS  ................  1              EXTERNAL FILE VIEWS  ......  8
SCREENS  .................  2
FILE PROFILES  ...........  3
PROMPTERS  ...............  4
INTERFACES  ..............  5              TURN PRINT ON/OFF  ........  12
SCENARIOS  ...............  6              HELP  .....................  13
ULTRA FILE VIEWS  ........  7              USER FILE DATA  ...........  14

                   EXIT  ...................  CANCEL


        STARTING NAME :                                  :
          ENDING NAME :                                  :

                                    :    :
```

Your current bin name (which you provided on the Transfer Facility Menu) appears in the upper left portion of this screen. Instructions for deleting each of the entity types listed on this menu are in the following sections.

General considerations

- Users can delete entities from any user's bin, except a bin owned by the Master User.
- The Master User can copy entities from any user's bin.

NOTE

Note that if a bin has a password, it must be supplied to access the bin.

Delete selected entities

To delete the items listed as options 1 through 7 on the Delete from Bin Menu (see "Delete from bin" on page 387), complete the relevant entries as indicated below.

To delete a single entity, specify:

Starting Name

Description Specifies the name of the entity to delete from the bin.

Format 1–30 character alphanumeric name

Consideration The number of valid characters in the name depends on the entity type.

Ending Name

Description Leave blank.

Select the entity to delete (for example, programs), and either press the corresponding PF key or supply the appropriate number in the action field; then press RETURN. MANTIS deletes the entity from the bin and displays a confirmation message in the lower left portion of the screen upon completion. You may continue to use the Delete from Bin Menu, or use CANCEL to return to the Transfer Facility Menu (see "Accessing the transfer facility" on page 366).

To delete multiple entities, specify a range of names, a generic pattern, or a full Directory Listing as follows:

Starting Name

Description *Optional*. Specifies a starting name by:

- **Range**—Supply the 1–30 character alphanumeric name of the entity where you want to begin deleting.
- **Generic Pattern**—Supply a generic pattern using one of two generic characters for Transfer:

  ***** Represents an indefinite number of generic characters. For example, *2* yields a directory listing of all entities whose names contain a 2.

  ? Represents a single generic character. PROG???? yields a directory listing of all entities whose names begin with PROG and end with any four characters.
- **Full Directory Listing**—Supply the generic character * for a full directory listing from which you intend to delete most of the entities. In this case, MANTIS automatically supplies a D before every entity in the list. You may erase the D when it appears before an entity you do not wish to delete.

> **NOTE**
> If you want a full directory listing but intend to delete only a few of the listed entities, leave the Starting Name field blank. When you receive the list, the DEL column is blank. Place a D before each entity to delete.

Consideration The number of valid characters in the name depends on the entity type.

Ending Name

Description *Required* for a range copy; otherwise, it must be left blank. Specifies the last entity in the range to be copied.

Format 1–30 character alphanumeric name

Consideration The number of valid characters in the name depends on the entity type (for example, 28 characters for screens, 29 characters for prompters).

Select the entity you want to delete (for example, programs), and either press the corresponding PF key or enter the appropriate number in the action field and press RETURN. MANTIS displays a directory screen as shown below, listing the names of the entities you indicated on the Delete from Bin Menu (see “Delete from bin” on page 387). MANTIS displays the current bin name and the type of entity in the Bin and Delete from Bin fields at the top of the screen.

```
                    DELETE FROM BIN: SCREENS                        YYYY/MM/DD
BIN: current_bin                                                    HH:MM:SS

DEL  ------------NAME------------   ----LANGUAGE----   -DEVICE-   --STATUS--
```

If you want to delete screens, the directory list displays the language (LANGUAGE) and device type (DEVICE) after the Name field. For prompters, the directory list displays the language (LANGUAGE) after the Name field. The list shown above is used for all other entity types.

Enter the following data:

Del

Description *Optional*. MANTIS supplies a default value D to every listed entity unless you left the Starting Name field blank on the Delete from Bin Menu. Be sure a D appears in the DEL field next to each entity to be deleted. Erase the D next to each entity you do not wish to delete.

Default The NAME IN LIBRARY

Format 1 alphanumeric character

Considerations

- The number of valid characters in the name depends on the entity type.
- Only blank or “D” are valid.

To page through the directory, press RETURN or use the repoint option by entering 1–30 alphanumeric characters in the unsolicited input field at the bottom of the screen. This repoint value represents the new starting position of the directory, but is still within the original selection criteria (do not use wildcards in the repoint value).

Press CANCEL to return to the Delete from Bin Menu (see “Delete from bin” on page 387), and press CANCEL again to return to the Transfer Facility Menu (see “Accessing the transfer facility” on page 366).

Delete user file data

The User File Data function lets you delete data records from a user file previously copied to the current bin. When you select the User File Data option from the Delete from Bin Menu (see "Delete from bin" on page 387), the following screen appears.

```
                          DELETE USER DATA IN BIN                    YYYY/MM/DD
BIN: current_bin                                                     HH:MM:SS


     FILE NAME IN BIN :                                :

         STARTING KEY :                                  :
           ENDING KEY :                                  :









                 ENTER DELETE; PF12 TOGGLE PRINT; CANCEL EXIT
```

The current bin name is at the top of the screen. Enter data as follows:

File Name In Bin

Description *Required*. Specifies a name for the MANTIS file from which you are deleting.

Format 1–16 character alphanumeric name

Starting Key

Ending Key

Description Starting Key is *Required*; Ending Key is *Optional*. To specify single or multiple records, enter a single key value, a range of key values, or a generic key pattern of 1–32 characters. If the file has a compound key (made up of several fields), the Starting Key field contains the value of the first key field only. All records with the specified value in their first key field are deleted.

After you supply the relevant data, press RETURN. A confirmation message appears in the lower left portion of the screen when the deletion process is complete.

List contents of bin

The List Contents of Bin function allows you to list the current bin contents for any entity type (for example, programs, screens, views, etc.). First, to indicate the bin you want to use, enter the 1–16 character alphanumeric bin name and password on the Transfer Facility Menu. This becomes your current bin. Next, select the List Contents of Bin option. The following menu appears.

```
                          LIST CONTENTS OF BIN                      YYYY/MM/DD
Bin: current_bin                                                    HH:MM:SS


Programs  .............  1              Ultra File Views  .........  7
Screens  ..............  2              External File Views  ......  8
File Profiles  .........  3
Prompters  .............  4
Interfaces  ............  5
Scenarios  ............  6              Turn Print On/Off  ........  12

                  Exit  ......................  CANCEL


                                 :    :
```

Your current bin name appears in the upper left corner of this screen. To select the entity type for which you want a listing, enter the corresponding menu number in the option field or press the corresponding PF key sequence.

All entities of that type (for example, list of programs) in the current bin appear on a directory list. A sample is shown below. If you select the Screens option, MANTIS adds two fields: LANGUAGE and DEVICE (for language and device type) after the Name field. If you select the Prompters option, MANTIS adds a LANGUAGE field for language after the Name field. If you select the File Profiles option, an additional column appears on the screen, giving the number of records in each listed file.

```
                    BIN CONTENTS: FILE PROFILES                      YYYY/MM/DD
Bin: current_bin                                                     HH:MM:SS

-------------NAME-------------   -----LAST UPDATED BY------   --DATE-- -COUNT-



                ENTER Page; PF1 Next Entity Type; CANCEL Exit
```

To page through the directory, press RETURN or use the repoint option by entering 1–30 alphanumeric characters in the unsolicited input field at the bottom of the screen. This repoint value represents the new starting position of the directory, but is still within the original selection criteria (do not use wildcards in the repoint value).

To skip to the next entity type, press PF1 (for example, if the screen currently lists prompters, you can skip to a listing of interfaces by pressing PF1). This has the same effect as your returning to the List Contents of Bin Menu and selecting the next option.

Press CANCEL to return to the List Contents of Bin Menu (shown at the beginning of this section), and press CANCEL again to return to the Transfer Facility Menu (see "Accessing the transfer facility" on page 366).

Change password for bin

The Change Password for Bin function allows you to give a new password to the current bin.

After you call up the Transfer Facility Menu (see "Accessing the transfer facility" on page 366), enter a 1–16 character alphanumeric bin name and its password in the indicated spaces at the top center of your screen.

Select the Change Password for Bin option, and you are prompted for a new password (the Transfer Facility Menu remains on your screen). Type the new password over the old one in the Password field and press RETURN.

MANTIS returns a confirmation message in the lower left portion of the screen upon completion of the change. You may go on to any function on the menu, or use CANCEL to return to the MANTIS Facility Selection Menu (see "Facility selection menu" on page 23).

Directory of bins

The Directory of Bins function supplies a listing of all bins in the transfer area. After you call up the Transfer Facility Menu (see “Accessing the transfer facility” on page 366), select the Directory of Bins option. The following screen appears.

```
                              DIRECTORY OF BINS                        YYYY/MM/DD
                                                                       HH:MM:SS

---------BIN--------   -----CREATED BY-----   --DATE--   ------PASSWORD------
```

Bin names are listed as well as the name of the creator and the date of creation. Passwords also appear if you are the creator of the bin or the Master User.

To page through the directory, press RETURN or use the repoint option by entering 1–30 alphanumeric characters in the unsolicited input field at the bottom of the screen. This repoint value represents the new starting position of the directory, but is still within the original selection criteria (do not use wildcards in the repoint value).

Press CANCEL to return to the Transfer Facility Menu (see “Accessing the transfer facility” on page 366).

Turn print ON/OFF

The Turn Print ON/OFF function allows you to switch on or off a printing trail showing the results of all updates made while the feature is active. The printed copies are routed to your designated printer.

You can switch the printing trail on or off from any screen in the Transfer Facility. When the feature is active, the word PRINT appears in the upper left corner of the screen.

Help

The HELP function allows you to display a prompter. Press RETURN to page through the prompter for relevant information.

Delete entire bin

The Delete Entire Bin function allows you to delete a designated bin and its contents.

After you call up the Transfer Facility Menu (see "Accessing the transfer facility" on page 366), enter in the indicated spaces at the top center of your screen the 1–16 character bin name and password of the bin you want to delete.

Select the Delete Entire Bin option, and MANTIS returns a message asking you to confirm the deletion. MANTIS returns another message when the deletion completes.

You may now proceed to any function on the menu (you are still on the Transfer Facility Menu, see "Accessing the transfer facility" on page 366), or use CANCEL to return to the MANTIS Facility Selection Menu (see "Facility selection menu" on page 23).

General considerations

- Users can delete any bin, except a bin owned by the Master User.
- The Master User can delete any user's bin.
- If a bin has a password, it must be supplied to access the bin.

11

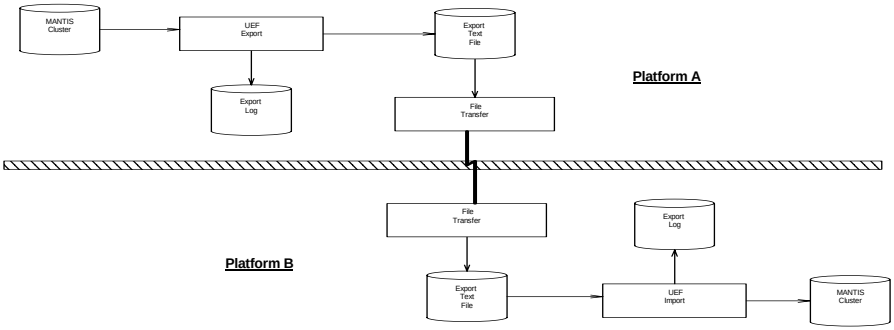
Universal export facility

The Universal Export Facility allows users to migrate one or more entities (for example, screens, files, programs, views etc.) from one MANTIS file to another. The MANTIS clusters can be on the same or different platforms.

IMPORT and EXPORT are accomplished by the transformation of entities between the MANTIS File and an external text file. EXPORT transfers the entities from the MANTIS file to the external file, while IMPORT transfers the entities from the external file to the MANTIS file. The content of the Export file is plain text.

The following figure shows:

- The user on platform A exports entities to the empty export text file.
- Transfer of the export text file from platform A to platform B using your installation's preferred method.
- The user on platform B imports the export text file into the MANTIS cluster.



You import and export entities from the Universal Export Facility Menu. Some menu items are specific to IMPORT or EXPORT.

You may also import or export specific entities from the Library Facility within the entity design facilities (for example, screens, programs, files).

Universal export facility menu

When you select the Universal Export Facility option from the MANTIS Facility Selection Menu (See “Facility selection menu” on page 23), the following screen appears.

```
                              M  A  N  T  I  S

                         UNIVERSAL EXPORT FACILITY

ENTITY NAME ........  :  *                              :
EXPORT FILE NAME ...  :                                       :
DIRECTION (I/E) ....  :   :

: S :  SCREEN ...............  1      SELECT ALL ENTITY TYPES ....  10
:   :  PROCESS ..............  2      CLEAR ALL ENTITY TYPES .....  11
:   :  INTERNAL FILE ........  3      CHANGE OPTIONS .............  12
:   :  PROMPTER .............  4
:   :  EXTERNAL FILE ........  5
:   :  INTERFACE ............  6
:   :  SCENARIO .............  7
:   :  ULTRA VIEW ...........  8
:   :  SEARCH SAVE FILE......  9

                              :    :


                   ENTER Proceed; CANCEL Exit; GOLD/H Help
```

To begin transferring entities, enter the following data:

ENTITY NAME

Description *Optional*. Specifies the design(s) you want to IMPORT/EXPORT, for the entity types you select.

Format A design name or a wild card expression

Considerations

- All designs of the selected entity(ies) will be exported if nothing is entered into this field.
- For EXPORT, when the directory is turned off, all the designs specified here will be EXPORTED. When the directory is turned on, you can select from the displayed portion of the directory which designs to EXPORT.

- Wildcard characters are asterisk (*) and question mark (?). The asterisk matches 0 or more characters. The question mark matches exactly one character. For example P*R will match PR, POR, and POWER. P?R will match POR, but not PR nor POWER.

- See "Export using Directory Selection **"** on page 480 option if you want to use the specification here as a starting or filter for a directory of entities from which to select names.

EXPORT FILE NAME

Description *Required*. Specifies the external text file from which (IMPORT) or to which (EXPORT) you want the entity designs transferred.

Format A valid file specification or logical name

DIRECTION (I/E)

Description *Required*. Specifies the direction of transfer.

Options

I	IMPORT entities into the MANTIS file from an external file.
E	EXPORT entities from the MANTIS file to an external file.

SEL

Description Selects the type or types of entity to be IMPORTED/EXPORTED. See "UEF file selection" on page 405.

Format S

Considerations

- At least one of the entities must be selected, or the 'SELECT ALL ENTITY TYPES' option must be selected.
- You may select an entity type by:
  - Entering S into one or more of the fields next to the entity type name
  - Entering the number (1-9) in the options field, or 10 to select all types
  - Pressing the corresponding Pfkey (F1 is equivalent to entering option 1, SCREEN)
  - Pressing F10 to select all types

SELECT ALL ENTITY TYPES

Description Select this option if you want to IMPORT/EXPORT ALL entity types.

CLEAR ALL ENTITY TYPES

Description Select this option if you want to clear ALL selections of types of entity previously made.

CHANGE OPTIONS

Description Select this option if you want to alter any or all of the Universal Export Facility options, as described in "Universal export facility options" on page 479.

Consideration To make changes to options take effect, you must press ENTER to return from the options panel to the Universal Export Facility Menu (shown at the beginning of this section). If you press CANCEL at the options screen, your changes will not be reflected.

PROCEED

Description You must press ENTER to commence the IMPORT/EXPORT.

HELP

Description Press GOLD/H to obtain help on the Universal Export Facility Menu.

TERMINATE

Description Press CANCEL to exit from this facility and to return to the MANTIS main menu.

UEF file selection

The Universal Export Facility lets you create or modify the export text file, which contains the following components:

- "SCREEN" on page 406
- "PROCESS" on page 431
- "INTERNAL FILE" on page 435
- "PROMPTER" on page 442
- "EXTERNAL FILE" on page 445
- "INTERFACE" on page 460
- "ULTRA VIEW" on page 470

See each component description for an explanation of its syntax.

SCREEN

SCREEN description

The following descriptions define the syntax on the UEF file for the selection of **SCREEN**:

```
SCREEN “screen_name”(
USER_CODE=user_code
NUM_FIELDS=number_of_fields
[LANGUAGE=“language”]
[DEVICE(dev_row,dev_col)]
[DESCRIPTION=“description”]
[PASSWORD=“password”]
[DOMAIN(dom_row,dom_col)]
[ATTRIBUTES(map_attr[,map_attr ...])]
[MASK_CHAR=“mask_char”]
[FILL_CHAR=“fill_char”]
[FIELD “field_name”((row,col),size[,field_attr[,field_attr...])]
[VERTICAL(v_repeats,v_displacement)]
[HORIZONTAL(h_repeats,h_displacement)]
[COLOR=color]
[MASK=“mask”]
[VALIDATION(
[DEFAULT=“default_value”]
[LOW_RANGE=“low_range”]
[HIGH_RANGE=”high_range”]
[VARIABLE=”dynamic_valid_variable_name”]
[LIST_ITEMS(“item”[,”item”...])]
[ROUTINE=“routine_name”]
)]
)]...
)
```

SCREEN “screen_name”

Description Specifies the name of the screen.

Format 1–30 character MANTIS screen name

USER_CODE=user_code

Description The originating or target User’s library code

Format Integer

Default none

Considerations

- See “Ignore USER Descriptor on Import ” on page 482 and “Include USER Descriptor on Export” on page 482 of the Universal Export Facility Options.
- This parameter controls from which user library the entity came or will be imported.

NUM_FIELDS=number_of_fields

Description The number of FIELD descriptions that follow.

Format Integer

Default none

[LANGUAGE=“language”] (OpenVMS, UNIX and PC only)

Description Specifies the language of the screen.

Format 1–15 character language for a given MANTIS system

[DEVICE(dev_row,dev_col)] (Open/VMS, UNIX only)

Description Specifies the number of rows/columns of the output device that displays the screen.

Default (24, 80)

Options (43, 80) (32, 80) (27, 132) (24, 132) (24, 80)

DESCRIPTION=“description”

Description Specifies the description of the screen.

Format 0–48 character MANTIS screen description

[PASSWORD=“password”] (IBM only)

Description Specifies the screen password.

Format 1–16 character MANTIS screen password

[DOMAIN(dom_row,dom_col)]

Description Specifies the domain (size) of the screen in terms of rows and columns.

Options (1–255, 2–255)

[ATTRIBUTES(map_attr [,map_attr ...])]

Description Specifies the attribute(s) of the screen.

Default See defaults in table below.

Options For paired attributes in the following table, if both are in the list of attributes specified in the EXPORT file, the last one takes effect. For example, if PBO displays after BOT in the list EXPORT file, then PBO takes effect.

On	Off	Default	Open/VMS	UNIX	PC	SNI	IBM 5.4	IBM 4.25
ALA	NOA	NOA	✓	✓	✓	✓	✓	✓
ALK			✓	✓	✓			
AUW		AUW	✓	✓	✓			
FUL	NOF	NOF	✓	✓	✓	✓	✓	✓
	NFS		✓	✓	✓			
WIN	NHW/NVW	WIN	✓	✓	✓			
OPA			✓	✓	✓	✓	✓	
PBO	BOT	BOT	✓	✓	✓	✓	✓	✓

ALA-NOA

Description Alarm—controls the sounding of the terminal alarm (bell) whenever the MANTIS CONVERSE statement displays a screen.

Options

ALA — Sounds the terminal alarm (bell) whenever the MANTIS CONVERSE statement displays a screen.

NOA — Displays the screen without sounding the terminal alarm (bell).

ALK

Description Align DBCS—aligns all Double Byte Character Set fields on the screen.

AUW

Description Automatic Window—indicates that the viewing window will move when you tab to a field outside the current view (OpenVMS, UNIX and PC only).

FUL-NOF

Description

Full Display—controls the use of the input screen during a CONVERSE statement. The input screen consists of two lines that normally display over the last two lines of the physical display. The default screen domain size in Screen Design is 22 rows in length; the input screen displays without overlaying the screen design.

MANTIS uses the first line of the input screen to display field validation error messages and to display the cursor or window coordinates on the far right of the line (also called the window map). The second line of the input screen consists of the unsolicited input field and the reply field on the far right of the line.

Options

FUL — Inhibits display of the input screen on a CONVERSE statement and frees the bottom two lines of the physical display for use by Screen Design. To use any of the input screen fields, use the INPUTMAP terminal function during a CONVERSE to toggle the display of the input screen over the bottom two lines of the physical display.

> **NOTE**
> The IBM environment does not have an INPUTMAP terminal function.

NOF — Displays the input screen on a CONVERSE statement. The input screen overlays your screen design if it extends into the last two lines of the physical display.

NFS

Description

No field separators—do not precede each field by a field separator (OpenVMS, UNIX and PC only).

WIN–NHW/NVW

Description Windowing—permits vertical and horizontal windowing. (OpenVMS, UNIX and PC only)

Options

WIN	Permits both horizontal and vertical windowing.
NHW	(No Horizontal Windowing) disables horizontal windowing for the screen. When the windowing terminal functions, WINLEFT and WINRIGHT, are executed during a CONVERSE statement, the screen maintains its position in the physical display.

Consideration

- The map floats horizontally in the logical display so that its position in the physical display does not change by the horizontal terminal windowing functions. A map with this attribute is a floating map. NVW (No Vertical Windowing) disables vertical windowing for the screen. When the windowing terminal functions, WINUP and WINDOWN, are executed on a CONVERSE statement, the map maintains its position in the physical display. The map floats vertically in the logical display so that its position in the physical display does not change by the vertical terminal windowing functions.

NOTE

The IBM environment does not have WINUP and WINDOWN terminal functions.

OPA

Description Opaque—The map occludes other maps in the mapset that it overlays. All displayable data and spaces in the entire domain of the map overlay all data conceptually beneath this map in the mapset. Maps overlay each other in the mapset according to the order in which they are displayed onto the mapset. If a map is not opaque, all spaces within its domain can have data from underlying maps showing through when you display the mapset.

PBO–BOT

Description Protect—controls the use of the input screen during a CONVERSE statement.

Options

PBO	Protects the bottom line of the input screen (the bottom line of the physical display) against data entry. The terminal alarm (bell) sounds if you try to enter data into either the unsolicited input field or the reply field. You cannot tab to either of these fields.
BOT	Allows data entry into the bottom line of the input screen. The unsolicited input and reply fields of the input screen allow data input, provided that you display the input screen (see FUL–NOF for more information).

[MASK_CHAR=“mask_char”]

Description Specifies the mask character used on the screen.

Default IBM, SNI—The character specified in the Customization Macro or the character specified in Screen Design when the screen was saved.

VAX/VMS, UNIX, PC—The mask character as specified for the user.

Normally this will be the hash character (#).

[FILL_CHAR=“fill_char”]

Description Specifies the fill character used on the screen.

Default IBM, SNI—The character specified in the Customization Macro or the character specified in Screen Design when the screen was saved.

OpenVMS, UNIX, PC—The fill character as specified for the USER.

Normally this will be the vertical bar character (|).

[FIELD “field_name”

Description Specifies name of the field.

Format 1–30 character MANTIS symbolic name

Considerations

- Field descriptors MUST appear in row column order.
- A zero-length field name can be used only for heading (title) fields, for example, those fields with an attribute of HED.

(row,col)

Description Specifies the position of the field on the screen in terms of rows and columns.

Format (1–255, 2–255) for all operating environments or (1–255, 1–255) on PC, OpenVMS and UNIX with the map_attr NFS specified (see map_attr above).

size

Description Specifies the length of the field in characters.

Format Integer greater than or equal to 1 and less than or equal to the number of columns in the domain (see dom_col above).

field_attr

Description Specifies attributes of the field.

Default See table below.

Options In the following list of options, if an attribute is one of a pair and both appear in the list of field attributes supplied in the EXPORT file, then the one appearing last takes effect. For example, if AUT displays after NAU in the list, AUT takes effect. This rule also applies to groups of attributes such as the colors.

On	Off	Default	OpenVMS	UNIX	PC	SNI	IBM 5.4	IBM 4.25
AUT	NAU	AUT	✓	✓	✓	✓	✓	✓
B01			✓	✓				
B02			✓	✓				
B03			✓	✓				
B04			✓	✓				
B05			✓	✓				
B06			✓	✓				
B07			✓	✓				
B08			✓	✓				
B09			✓	✓				
B10			✓	✓				
B11			✓	✓				
B12			✓	✓				
B13			✓	✓				
B14			✓	✓				
B15			✓	✓				
BBL			✓	✓				
BBR			✓	✓				
BBT			✓	✓				
BLI	NOB	NOB	✓	✓	✓	✓	✓	✓
BLT			✓	✓				

On	Off	Default	OpenVMS	UNIX	PC	SNI	IBM 5.4	IBM 4.25
BMH			✓	✓				
BMI			✓	✓				
BMV			✓	✓				
BRI	NOR	NOR	✓	✓	✓		✓	✓
BRT			✓	✓				
BTL			✓	✓				
BTR			✓	✓				
BTT			✓	✓				
CUR			✓	✓	✓		✓	✓
DEF			✓	✓	✓		✓	✓
DET	NOD	NOD	✓	✓	✓		✓	✓
DHE	SHE	SHE	✓	✓	✓			
DWI	SWI	SWI	✓	✓	✓			
FIL			✓	✓	✓		✓	✓
FSV			✓	✓				
HED			✓	✓	✓		✓	✓
HID	NOR	NOR	✓	✓	✓		✓	✓
HIG	NOH	NOH	✓	✓	✓		✓	✓
KAN			✓	✓	✓		✓	✓
LBA	NOL	NOL	✓	✓	✓		✓	✓
LIS			✓	✓	✓			
MAS			✓	✓	TXT		✓	
MIX			✓	✓				
MOD	UNM	UNM	✓	✓	✓		✓	✓
MSG	NMS	NMS	✓	✓				
NUM			✓	✓	✓		✓	✓
OVE	NOO	NOO	✓	✓	✓		✓	✓
PIO	UNP	UNP	✓	✓	PRO		PRO	PRO
PRO	UNP	UNP	✓	✓	✓		✓	✓

On	Off	Default	OpenVMS	UNIX	PC	SNI	IBM 5.4	IBM 4.25
RAN			✓	✓	✓		✓	✓
RBA	NRB	NRB	✓	✓	✓		✓	✓
REQ			✓	✓	✓		✓	✓
REV	VID	VID	✓	✓	✓			
RFF	VID/REV	VID	✓	✓	REV			
RTN			✓	✓				
SDE			✓	✓	✓		✓	✓
TXT		TXT			✓		✓	✓
UFF	NOU/UND	NOU	✓	✓	UND			
UND	NOU	NOU	✓	✓	✓		✓	✓
UPP	LOW	LOW	✓	✓	✓		✓	✓
VAR			✓	✓	✓			
VNA			✓	✓	✓			
BLU, GRE, NEU, PIN, RED, TUR, YEL	NOC	NOC	✓	✓	✓	✓	✓	✓
C00, C01, C02, C03, C04, C05, C06, C07, C08, C09, C10, C11, C12, C13, C14, C15	NOC	NOC	✓	✓				

AUT-NAU

Description Autoskip—controls the cursor when you enter data in the rightmost position of a field.

Options

AUT	Causes automatic tabbing to the next input data field.
NAU	Leaves the cursor one column beyond the right of the field.

NOTE

Any attempt to enter data at this position usually is an error and a terminal alarm (bell) flags it.

B01—B15

Description Box characters with a plus (+) sign base. The following list describes each character in terms of the plus sign:

1	Left end of horizontal line
2	Bottom end of vertical line
3	Left corner
4	Right end of horizontal line
5	Horizontal bar
6	Bottom right corner
7	Bottom T-char
8	Top end of vertical line
9	Top left corner
10	Vertical bar
11	Left T-char
12	Top right corner
13	Top T-char
14	Right T-char
15	Cross

BBL

Description Box Bottom Left—bottom left hand corner of a box

BBR

Description Box Bottom Right—bottom right hand corner of a box

BBT

Description Box Bottom T—vertical T

BLI-NOB

Description Blinking—controls the blinking (flashing) display attribute of a field

Options

BLI	Displays the field blinking
NOB	Displays the field not blinking

BLT

Description Box Left T-char—T character on its side with the top on the left (|-)

BMH

Description Box Middle Horizontal— horizontal bar (_)

BMI

Description Box Middle Intersection—intersection character (+)

BMV

Description Box Middle Vertical—vertical bar (|)

BRI-NOR

Description Bright—controls the intensity of the display

Options

BRI	Displays the field in bright (bold) intensity
NOR	Displays the field in normal intensity

BRT

Description Box Right T-char—T character on its side with the top on the right (-|)

BTL

Description Box Top Left— top left-hand corner of a box

BTR

Description Box Top Right—top right-hand corner of a box

BTT

Description Box Top T-char—T character correct side up (T)

CUR

Description Cursor—controls the initial placement of the cursor when the MANTIS CONVERSE statement displays a screen.

NOTE

Specify CUR to display the cursor in the specified field on the screen.

DEF

Description Default—indicates a specified default value

DET–NOD

Description Detectable—indicates the field is detectable by light pen

Options

DET	Makes the field detectable by light pen
NOD	Makes the field undetectable by light pen

DHE–SHE

Description Double Height—specifies whether the field displays in double-height mode

Options

DHE	Displays the field in double-height mode
SHE	Displays the field in single-height mode

DWI–SW

Description Double Width—specifies whether the field displays in double-width mode

Options

DHE	Displays the field in double-width mode
SHE	Displays the field in single-width mode

FIL

Description Fill—fills the entire field on data entry during a CONVERSE statement. Unless you fill the field's display area entirely with data characters, using blank padding if necessary, the field is invalid, an error message displays, and you must correct it.

FSV

Description Field Sensitive Validation—validates dynamically when modified (by data-entry) and the cursor moves out by a tabbing or cursor movement function, or you perform a process function key operation (except for CANCEL). Validation occurs if the field has some extended edit validation attributes or is a numeric field (alphabetic characters are invalid). The CONVERSE statement termination validates a field with validation attributes. (Unless it has the FSV attribute and is already validated dynamically since last modified during the CONVERSE.)

HED

Description Heading—indicates the field is a heading.

HID–NOR

Description Hidden—controls the visibility of a field.

Options

HID	Displays blanks instead of field data.
NOR	Displays field data in normal intensity. You can also use BRI to turn off the HID attribute.

HIG–NOH

Description Highlight—specifies field highlighting.

Options

HIG	Highlights the field using bold or underline, whichever highlighting method is best and supported by the terminal in use.
NOH	Turns off the HIG attribute.

DBC

Description DBCS—indicates that the data type of the field is double-byte character set.

LBA–NOL

Description Left Bar—displays a vertical bar on the left edge of the field.

Options

LBA	Displays a vertical bar on the left edge of the field.
NOL	Displays no vertical bar on the left edge of the field.

LIS

Description Valid List—indicates the field has a fixed validation list specified during screen design. A fixed validation list displays values, one of which must equal the value of the field before the CONVERSE statement accepts it. Unless the field's value equals one of the fixed list values, CONVERSE finds the field invalid, reports an error message, and requires you to correct it.

MAS

Description Masked—indicates the field has a numeric edit mask (specified during screen design). The numeric edit mask specifies the number's display format as well as the rules for number specification during data entry.

MIX

Description Mixed–CCB, PC—indicates that the data type of the field is mixed (e.g., the field can contain both DBCS and text characters). IBM—indicates that the field has double byte character support.

MOD–UNM

Description Modified—indicates that the field is modified.

Options

MOD	Marks the field as modified
UNM	Does not mark the field (initially) as modified.

MSG–NMS

Description Message—specifies which field displays MANTIS system messages such as Field Validation error messages.

Options

MSG	Nominates that field to display MANTIS messages during a CONVERSE statement. When a field has the MSG attribute, the MSG attribute resets on all other fields on the screen. MSG also sets PRO, which protects the field from user input. A TEXT data field (TEXT or MIXED data field for DBCS MANTIS) sets the MSG attribute.
NMS	Resets the MSG and PRO attributes (note that NMS is effective only on fields that have the MSG attribute).

NOTE

During a CONVERSE operation, the following steps determine the message field:

1. The mapset searches for a field with the MSG attribute that is visible to the terminal display, for example, screen, but not fully overlaid by another field. The active map (the map most recently added to the map set) is searched, then the map below it, and so on until the mapset finds a visible message field.
2. If no visible MSG field exists, then it uses the message field of the CONVERSE input map.
3. If the input map is not visible (e.g., because the active map has the FULL DISPLAY attribute), the message does not display.

NUM

Description Numeric—indicates that the data type of the field is numeric.

OVE–NOO

Description Overline—indicates overline displays on the top edge of the field.

Options

OVE	Displays overline on the top edge of the field.
NOO	Displays no overline on the top edge of the field.

PIO–UNP

Description Protected Input Only—controls the ability to enter data in a screen field.

Options

PIO	Protects the field from any data entry. You tab into a protected field from input only, but you do not enter data into the field. MANTIS sounds the terminal alarm (bell) if you try to enter data into a field protected from input only.
UNP	allows tabbing and data entry into the field.

PRO–UNP

Description Protected—controls access to a screen field.

Options

PRO	Protects the field from being tabbed into and from any data entry. You can use the terminal cursor functions to place the cursor in a protected field, but you cannot enter data into the field. MANTIS sounds the terminal alarm (bell) if you try to enter data into a protected field.
UNP	Allows tabbing and data entry into the field.

RAN

Description Range—indicates the field has low-high range checking. Screen design specifies the low and high values. If a value outside the specified range displays in the field, CONVERSE finds the field invalid, reports an error message, and requires you to correct it.

RBA–NRB

Description Right Bar—displays a vertical bar on the right edge of the field.

Options

RBA	Displays a vertical bar on the right edge of the field.
NRB	Does not display a vertical bar on the right edge of the field.

REQ

Description Required—requires the field to have a nonzero (numeric) or non-null (text) value. Otherwise, MANTIS finds the field invalid, reports an error message, and requires you to correct it.

REV–VID

Description Reverse—controls the reverse video display attribute of a field. The attribute is effective only over the current data length of the field, not the field's maximum displayable length.

Options

REV	Displays the field's data in reverse video (e.g., the reversed background and character colors). On a black and white terminal with a black background, the field displays as black letters on a white background.
VID	Displays the field's data in normal video, using the default background color.

RFF–VID

Description Reverse Full Field—controls the reverse video display attribute over the entire screen field length. The REV attribute affects data displayed in the field.

Options

RFF	Displays the entire screen field in reverse video, regardless of the contents of the field.
VID	Displays the field in normal video mode. REV changes from full field reverse to normal (data only) reverse video display.

RTN

Description Validation Routine—indicates the field has a descriptor ROUTINE specified validation routine.

SDE

Description Show Default—displays the field's default value if the field has a value of zero (numeric) or the null string (text). If not specified, the rules of the DEF attribute still apply, but you do not see the default value display during the initial CONVERSE of the map.

SOI

Description SO/SI—indicates that the DBCS (Double Byte Character Set) and EBCDIC characters reside concurrently in a text variable (mixed-data type support).

TXT

Description Text—indicates that the data type of the field is text.

UFF–NOU

Description Underline Full Field—controls field underlining over the entire screen field length. The UND attribute affects only the data displayed in the field.

Options

UFF	Displays the entire screen field with underlining, regardless of the contents of the field.
NOU	Displays the field without any underlining. UND changes from full field underlining to normal (data only) underlining.

UND–NOU

Description Underline—controls the underlining display attribute of a field. The attribute is effective only over the current data length of the field, not the field's maximum displayable length.

Options

UND	Displays the field's data with underlining.
NOU	Displays the field without any underlining.

UPP–LOW

Description Uppercase—controls uppercase conversion during data entry into a screen field.

Options

UPP	Converts lowercase to uppercase during data entry. Lowercase characters display if assigned to the field by the MANTIS program. This attribute only affects data entry during a CONVERSE.
LOW	Enters lowercase characters into the field during a MANTIS CONVERSE. This attribute does not convert any characters from uppercase to lowercase.

VAR

Description Valid Variable—indicates the field has a validation variable specified. The validation variable name is a scalar or array variable containing one or more values for the field. If the field's value does not equal one of the options specified by the variable (nor in a fixed validation list, if specified), MANTIS finds the field invalid, reports an error message, and requires you to correct it.

VNA

Description Valid Name—indicates a valid MANTIS symbolic name is required for the field. This attribute is only effective for text fields. If the field's value does not obey the rules for a valid MANTIS symbolic name, MANTIS finds the field invalid, reports an error message, and requires you to correct it.

NOC, BLU, GRE, NEU, PIN, RED, TUR, YEL, C00, C01, C02, C03, C04, C05, C06, C07, C08, C09, C10, C11, C12, C13, C14, C15

Description Colors – indicates color in which MANTIS will display the field. COLOR= specification, if used, overrides attribute specified here.

Consideration When the IBM attributes LBA, RBA, and OVE combine with UND, the result is a BOXED field in MANTIS for IBM. Boxing in MANTIS for the PC, VAX, UNIX is completely different and is not compatible with MANTIS for IBM mainframe.

[VERTICAL(v_repeats .

Description Specifies the number of additional vertical repeats of the field (not the total number of occurrences).

Format Any integer that does not result in field overlap

Default 0

v_displacement)]

Description Specifies the spacing between vertical repeats of the field.

Format Any integer that does not result in field overlap

Default 0

[HORIZONTAL(h_repeats.

Description Specifies the number of additional horizontal repeats of the field (not the total number of occurrences).

Format Any integer that does not result in field overlap

Default 0

h_displacement)]

Description Specifies the spacing between horizontal repeats of the field. For example, to repeat a 3-character field with two characters between fields, you specify a displacement of 5.

Format Any integer that does not result in field overlap

Default 0

[COLOR=color]

Description Specifies the color used to display the field.

Format Full keyword or its 3-character equivalent

Default NEU

Options

BLU	Blue
RED	Red
PIN	Pink
GRE	Green
TUR	Turquoise
YEL	Yellow
NEU	Neutral
C00–C15	

Considerations

- Color specified here overrides any color specified in the field attribute list.
- Options C00–C14 are not valid in the IBM environment.

[MASK="mask"]

Description Specifies the edit mask for the field or a heading literal.

Format A quoted valid edit mask or heading literal no longer than the size of the field

Considerations

- If you supply an edit mask, you must set the field attribute MAS.
- If you supply a heading literal you must set the field attribute HED.

[DEFAULT=“default_value”]

Description Specifies the value in the field when the screen displays.

Format String no greater in length than the length of the field

Considerations

- To display the default value of the field, set field_attr to SDE.
- If you supply a default value, you set the field attribute DEF.

[LOW_RANGE=“low_range”]

Description Specifies the value used as a low range check for validity. That is, any data you enter in the field that falls below this value is invalid.

Format Any value that matches the edit mask for the field

Consideration If you specify low_range and/or high_range, you must set the field attribute RAN.

[HIGH_RANGE=“high_range”]

Description Specifies the value used as a high range check for validity. Any data you enter in the field that is above this value is invalid.

Format Any value that matches the edit mask for the field

Consideration If you specify low_range and/or high_range, you must set the field attribute RAN.

[VARIABLE=“dynamic_valid_variable_name”] (OpenVMS, UNIX and PC only)

Description Specifies the MANTIS variable to verify the contents of the field.

Format MANTIS symbolic name

Consideration If you specify a dynamic_valid_variable_name, you must specify the field attribute VAR.

[LIST_ITEMS(“item” [“item”…] (OpenVMS, UNIX and PC only)

Description Specifies the list of values against which you check the data entered into the field.

Format A value that matches the type and length of the field

Consideration If you specify the number_of_list_items, you must set the field attribute LIS.

[ROUTINE=“routine”] (OpenVMS and UNIX only)

Description Specifies the MANTIS routine used to check the validity of data in the field.

Format 1–30 character MANTIS symbolic name

Consideration If you specify routine, you must set the field attribute RTN.

General consideration Field descriptors must be in row, column order for UEF Screen Description.

PROCESS

PROCESS DESCRIPTION

The following descriptions define the syntax on the UEF file for the selection of **PROCESS**:

```
PROCESS “program_name”(
    [USER_CODE=user_code]
    [PASSWORD=“password”]
   [DESCRIPTION=“description”]
     FORMAT_CHAR=“format_character”
     QUOTE_CHAR=“quote_character”
     COMMENT_CHAR=“comment_character”
     LINES(
    line1
    line2
  )
 );
```

PROCESS “program_name”

Description Specifies the name of the program.

Format 1–30 character MANTIS program name

[USER_CODE=user_code]

Description The originating or target User’s library code

Format Integer

Default none

Considerations

- See “Ignore USER Descriptor on Import ” on page 482 and “Include USER Descriptor on Export” on page 482 of the Universal Export Facility Options.
- This parameter controls from which user library the entity came or will be imported.

[PASSWORD=“password”]

Description Specifies the program’s password

Format 1-16 character string

Consideration Not exported if you set **Export Passwords** option to **N**

[DESCRIPTION=“description”]

Description *Optional* Specifies the program’s description

Format 0-48 character string

FORMAT_CHAR=“format_character”

Description *Required* Specifies the program’s FORMAT function detault mask character.

Format one character string

Considerations

- The mask character is not allowed to be a special numeric mask character. Specifically, it cannot be any of the following characters: zero (0), plus (+) minus (-) comma (,) period (.) vertical bar (|) z character (z)
- The FORMAT function will use this character as a mask character when the third operand of the FORMAT function is missing or null.

QUOTE_CHAR="quote_character"

Description *Required* Specifies the program's string delimiter character (quote).

Format one character string

Considerations

- If you specify a double quote character, it must be repeated inside the quoted string, that is, QUOTE_CHAR="""""
- The quote character is not allowed to be any character in the MANTIS character set, except double quote ("). Specifically, it cannot be any alphanumeric or any of the following characters:
  dollar sign ($) plus (.+) minus (-) equals (=) left or right parentheses (()), less than or greater than (<>) vertical bar (|) slash (/) exclamation point (!) asterisk (*) comma (;) period (.) ampersand (&) single quote (') underscore (_)
- The string delimiter must be distinct from the program's COMMENT_CHAR

COMMENT_CHAR="comment_character"

Description *Required* Specifies the program's comment identifier character.

Format one character string

Considerations

- The comment identifier character is not allowed to be any character in the MANTIS character set, except vertical bar (|) and exclamation point (!). Specifically, it cannot be any alphanumeric or any of the following characters, dollar sign ($) plus (.+) minus (-) equals (=) left or right parentheses (()), less than or greater than (<>) vertical bar (|) slash (/) exclamation point (!) asterisk (*) comma (;) period (.) colon (:) semi-colon (;) ampersand (&) single quote (') underscore (_)
- The comment identifier must be distinct from the program's QUOTE_CHAR

LINES(
line1
line2
)

Description *Required* Specifies the program's source lines.

Format Character strings

Considerations

- For Import the lines must be either
  - In sequence and with an asterisk (*) as line numbers.
  - With line numbers
- For Export, line numbers appear if you have selected Y as **Include Process Line Numbers** option. Asterisks (*) appear if you have selected N.
- Programs will be resequenced after Import if Y is selected for **Resequence Line Numbers on Import** or if the line numbers have asterisks
- The lines may appear with or without MANTIS' nesting indentation periods (.)

INTERNAL FILE

INTERNAL FILE description

The following descriptions define the syntax on the UEF file for the selection of **INTERNAL FILE**:

```
FILE “file_name”(
  [DESCRIPTION=“description”]
  [VIEW_PASSWORD=“view_password”]
  [ALTER_PASSWORD=“alter_password”]
  [INSERT_PASSWORD=“insert_password”]
  [STATUS=“status”]
  [RECORD_LAYOUT=“layout_name”]
  [FIELD “field_name”(
            TYPE=field_type
            [ATTRIBUTES(field_attr)]
            [DIMENSIONS(dim_left,dim_right)]
    )]...
)
```

FILE “file_name”(

Description Specifies the name of the internal file.

Format 1–16 character internal file name

[DESCRIPTION=“description”]

Description *Optional* Specifies the description of the internal file.

Format 0–58 characters

[VIEW_PASSWORD=“view_password”]

Description *Optional* Specifies the password that enables viewing of records in the file.

Format 0–16 characters

Consideration Not exported if you set **Export Passwords** option to **N**

[ALTER_PASSWORD=“alter_password”]

Description *Optional* Specifies the password that enables updating of records in the file.

Format 0–16 characters

Consideration Not exported if you set **Export Passwords** option to **N**

[INSERT_PASSWORD=“insert_password”]

Description *Optional* Specifies the password that enables inserting and deleting of records in the file.

Format 0–16 characters

Consideration Not exported if you set **Export Passwords** option to **N**

[STATUS=“status”]

Description Specifies the status of the file.

Format 1–8 characters

Options ACTIVE status required to be ACTIVE if the internal file is to access from a MANTIS program. Anything other than ACTIVE prevents access to the internal file from a MANTIS program.

[RECORD_LAYOUT=“layout_name”]

Description Specifies the name of an existing internal file.

Format 1–16 character internal file name

Considerations

- Fields specified must exactly match the fields of the lowest associated record layout. For example, if you specify A in the export file, and A has an associated record layout of B, and B in turn has an associated record layout of C, then the fields specified for A are the fields of C.
- On IMPORT, if any associated record layout in the associated record chain does not exist, then the internal file does not import. Using the example in consideration 1 above, B and C must exist and B must have an associated record layout of C before A is imported.
- On IMPORT, if the associated record layout specified does exit, then the fields specified must match exactly those of the lowest associated record layout. If the fields do not match, then the internal file will not import.

[FIELD “field_name”(

Description Specifies the name of a field of the internal file.

Format 1–16 character MANTIS symbolic name

TYPE=field_type

Description Specifies the data type of the field.

Options

Attribute	OpenVMS	UNIX	PC	SNI	IBM 5.4	IBM 4.25
TEXT	✓	✓	✓	✓	✓	✓
BIG	✓	✓	✓	✓	✓	✓
SMALL	✓	✓	✓	✓	✓	✓
MIXED	✓	✓	TEXT	TEXT	TEXT	TEXT
DBCS	✓	✓	✓	✓	✓	✓

TEXT Alphanumeric field

BIG Numeric field for large numbers (recommended when using decimals)

SMALL Numeric field for small numbers (recommended when using integers)

MIXED Field of mixed DBCS and TEXT data

DBCS Double byte character set field

[ATTRIBUTES(field_attr)]

Description Specifies the attributes of the field.

Options

KEY	Indicates that the field is the key of the record
SCRAMBLED	Indicates that the data for the field is to be scrambled when stored, and unscrambled when used by a program

Considerations

- You must specify the KEY attribute for the first field of the record layout. The key length cannot exceed 32 characters. You can specify KEY on any contiguous fields to follow, as long as the total length does not exceed 32 characters.
- You can only specify SCRAMBLE as an attribute on any non-KEY field.
- You can assign only one attribute to any one field.

[DIMENSIONS(dim_left,dim_right)

Description For field types of BIG and SMALL, dim_left indicates the number of rows in a 2-dimensional array or 0 in a 1-dimensional array. Dim_right indicates the number of columns in a 2-dimensional array or the number of occurrences in a 1-dimensional array. For field types of TEXT, MIXED and DBCS, dim_left is the number of occurrences of this field in a list or 0 if the field is not in a list. Dim_right indicates the length of each occurrence in a list or the length of the field if the field is not in a list.

Format Integer,Integer

Options

TEXT	fields 0–255, 1–255
NUMERIC	fields 0–255, 0–255

Considerations

- You must specify this descriptor for field types TEXT, DBCS and MIXED.
- Fields with an ATTRIBUTE of KEY cannot be arrays.

General consideration

Field descriptors must appear in order (field_1 followed by field_2, and so on) for the UEF Internal File Description.

INTERNAL FILE WITH DATA

DATA FILE description

The following descriptions define the content on the UEF file for the selection of INTERNAL FILE **WITH DATA**.

The layout of the DATA for internal files is:

DATA “file_name”(

record1_field1,record1_field2, record1_field3, ...

record2_field1,record2_field2, record2_figld3, ...

);

DATA “file_name”(…

Description Specifies the name of the file that is the source or target of the data.

Format 1–16 character MANTIS file name

record*n*-field*n*

Description Specifies the data values of the fields for the file

Format comma-delimited list of quoted character strings or numbers

Consideration Fields must match in order and data type to file definition.

PROMPTER

PROMPTER description

The following descriptions define the syntax in the UEF file for the selection of **PROMPTER**:

```
PROMPTER “prompter_name”(
USER_CODE=user_code
NUM_LINES=number_of_lines
  [LANGUAGE=“language”]
  [PASSWORD=“password”]
  [DESCRIPTION=“description”]
  [NEXT_PROMPTER=“next_prompter_name”]
  LINES(
[line]…)
)
)
```

PROMPTER “prompter_name”

Description Specifies the name of the prompter.

Format 1–16 character MANTIS prompter name

USER_CODE=user_code

Description The originating or target User's library code

Format Integer

Default none

Considerations

- See "Ignore USER Descriptor on Import " on page 482 and "Include USER Descriptor on Export" on page 482 of the Universal Export Facility Options.
- This parameter controls from which user library the entity came or will be imported. USER_CODE=user_code

NUM_LINES=number_of_lines

Description The number of LINES that follow.

Format Integer

Default none

[LANGUAGE="language"]

Description Specifies the language of the screen.

Format 1–30 character valid language for a given MANTIS system

Default English

[PASSWORD="password"]

Description Specifies the prompter password.

Format 1–16 character MANTIS prompter password

Default IBM—user name

Consideration Not exported if you set **Export Passwords** option to **N**

[DESCRIPTION=“description”]

Description Specifies the description of the prompter.

Format 0–48 character MANTIS prompter description

[NEXT_PROMPTER=“next_prompter_name”]

Description *Optional*. Specifies the library name of the prompter that will display automatically when the current prompter is finished..

Format MANTIS prompter name

LINES([line]…)

Description Specifies a prompter line.

Format Character string

Considerations

- The closing parenthesis for the LINES descriptor must be on a separate line.
- Each prompter line must be on a separate line.
- For Export, line numbers appear if you have selected Y as **Include Prompter Line Numbers** option. Asterisks (*) appear if you have selected N.

EXTERNAL FILE

EXTERNAL FILE description

The following descriptions define the syntax for the selection of **EXTERNAL FILE**:

```
ACCESS “name”(
    USER_CODE=user_code
    NUM_FIELDS=number_of_fields
    [DESCRIPTION=“description”]
    [VIEW_PASSWORD=“view_password”]
    [ALTER_PASSWORD=“alter_password”]
    [INSERT_PASSWORD=“insert_password”]
    [SHARE_PASSWORD=“share_password”]
    [STATUS=“status”]
    [KEY_LENGTH=key_length]
    [FDL_NAME=“fdl_name”]
    [FILE_NAME=“file_name”]
    [FILE_TYPE=“file_type”]
    [RECORD_TYPE=“record_type”]
    [MAX_RECORD_LENGTH=maximum_record_length
    [REFERENCE_VARIABLE=“reference”]
    [NUM_REPEATS=“ruler”]
    [FIRST_REPEATING_ELEMENT=“dependent”]
    [READ_TIMEOUT=“timeout”]
    [KEY_OF_REFERENCE=key_number]
    [ACCESS_METHOD=“file_access_meth”]
    FIELD “field_name”(
        TYPE={SMALL, BIG, TEXT, KANJI, MIXED}
        FORMAT={PACKED, ZONED, BINARY, FLOAT, TEXT, KANJI, MIXED}
        [ATTRIBUTES( {KEY, SCRAMBLE} )]
        [SIGN={“YES”, “NO”, “L/S”, “T/S”, “L/O”, “BLANK”, “CODE”, “T/Z”}]
        [DIMENSIONS(n,m)]
        [DECIMAL_PLACES=decimal_places]
        [POSITION=position]
        [OFFSET=offset]
……) …
 );
```

ACCESS “name”(

Description Specifies the library name of the access description..

Format 1–16 character MANTIS access profile name

USER_CODE=user_code

Description The originating or target User’s library code

Format number

Default none

Considerations

- See “Ignore USER Descriptor on Import ” on page 482 and “Include USER Descriptor on Export” on page 482 of the Universal Export Facility Options.
- This parameter controls from which user library the entity came or will be imported.

NUM_FIELDS=number_of_fields

Description The number of fields in this External File View (Element Count)

Format Integer, 0—254

[DESCRIPTION=“description”]

Description Optional. Supplies a description of the file view.

Format 1–64 character string

Default Null

Consideration A Description is required to import into Mantis for Mainframe**.**

[VIEW_PASSWORD="view_password"]

Description Specifies the password that enables viewing of records in the file.

Format 1–16 alphanumeric characters

Default null

Considerations

- If not supplied, programs must use the ALTER or DELETE/INSERT passwords to access the file.
- Not exported if you set **Export Passwords** option to **N**

[ALTER_PASSWORD="alter_password"]

Description Specifies the password that enables updating of records in the file.

Format 1–16 alphanumeric characters

Default null

Considerations

- If not supplied, programs must use the VIEW or DELETE/INSERT passwords to access the file.
- Not exported if you set **Export Passwords** option to **N**

[INSERT_PASSWORD=“insert_password”]

Description Specifies the password that enables inserting and deleting of records in the file.

Format 1–16 alphanumeric characters

Default null

Considerations

- If not supplied, programs must use the VIEW or ALTER passwords to access the file.
- Not exported if you set **Export Passwords** option to **N**

[SHARE_PASSWORD=“share_password”]

Description Specifies the password that enables shared update of records in the file.

Format 1–16 alphanumeric characters

Default null

Considerations

- Programs using this password may view, update, delete, and insert records at the same time as other processes.
- Not exported if you set **Export Passwords** option to **N**

[STATUS="status"]

Description Specifies the status of the external file view.

Format 1-16 characters

Default null

Considerations:

- Specify ACTIVE if you want to use the file view.
- If you specify any other status (for example, ARCHIVE), MANTIS programs will not be able to use the file.
- Trailing blanks are significant. ("ACTIVE" is not the same as "ACTIVEb ")

[KEY_LENGTH=key_length]

Description Specifies the key length for the file

Format Integer 0-*n* (n is environment dependent)

Default 0

Considerations

- Specify the sum of the lengths of fields that have the KEY Attribute
- Specify a non-zero value for INDEXED files only, not for SEQUENTIAL nor RELATIVE.

[FDL_NAME=“fdl_name”] (OpenVMS and UNIX only)

Description Provides the name of the FDL file that will be used in the external file creation.

Format File specification of a logical name

Default The logical name MANTIS_CREATE

Considerations

- MANTIS will create a file if the NEW keyword is specified on the ACCESS statement.
- The FDL default specification is MANTIS_CREATE. This default identifies an FDL file for creating SEQUENTIAL files with variable length records.
- **OpenVMS** The logical name MANTIS_CREATE identifies an FDL to create CARRIAGE RETURN carriage control. In addition MANTIS offers two other logical names: MANTIS_CREFTN and MANTIS_CRENON. These names identify FDL files that describe sequential files that have carriage controls of FORTRAN and NONE. When you create any other type of file, you must supply the FDL file specification in this field.
- **UNIX** “FDL for UNIX” on page 617 specifies the FDL (File Definition Language) syntax. The access method and record attributes are specified by statements you supply in this file.
- **UNIX** MANTIS_CREATE is an environment variable defined to identify an FDL file for the creation of SEQUENTIAL and RELATIVE files. To create an INDEXED file, you must supply your own FDL file.

[FILE_NAME=”file_name”]

Description Provides the name of external file view is (or will be) known externally.

Format File specification or a logical name

Consideration If you want MANTIS to create the external file, you can specify the FDL file for doing so (above).

[FILE_TYPE=“file_type”]

Description Indicates the type of file used

Options

INDEXED	for indexed files
SEQUENTIAL	for sequential files
RELATIVE	for files accessed by RRN (Relative Record Number)
OpenVMS MAILBOX	for OpenVMS MAILBOX files

[RECORD_TYPE=“record_type”]

Description **Specifies the types of records in the file**

OPTIONS

FIXED	for fixed-length records
VARIABLE	for variable-length records

MAX_RECORD_LENGTH=maximum_record_length

Description Specifies the maximum record length of physical records in the file.

Format Integer between 1 and 32767

Considerations

- In IBM compatibility mode, the maximum record size is restricted to 18000 bytes.
- For fixed-length records, you should enter the actual record length defined for the file.
- For variable-length records, you should enter the maximum record length to be stored in this file.
- CISAM maximum and minimum record lengths are restricted by the CISAM package.

[REFERENCE_VARIABLE="reference"]

Description Specifies a record identification variable ("reference")for RELATIVE files, or for SEQUENTIAL files that may be updated or randomly accessed.

Format A valid MANTIS symbolic name.

Consideration MANTIS allocates reference variable (with all the other variables defined in the FIELD name) during the processing of the ACCESS statement (described in *AD/Advantage MANTIS Language OpenVMS/UNIX*, P39-1310). This variable has the same multiple buffer allocation and prefixing requirements as all other variables defined in this file view.

[NUM_REPEATS="ruler"]

Description Specifies the field acting as the Occurrence Controlling Element (ruler).

Format Mantis symbolic name

Consideration Specify only for variable-length records. Indicate the name of an array-controlling element defined in the file view layout . MANTIS calculates the variable record length based on the current number of repeats for each record.

[FIRST_REPEATING_ELEMENT=“dependent”]

Description Indicates the first (or only) element that is part of a repeating data structure.

Format Mantis symbolic name

Consideration This field used in conjunction with the Occurrence Controlling Element.

[READ_TIMEOUT=“timeout”] (OpenVMS only)

Description Specifies whether you want your mailbox requests to be asynchronous.

Options

YES	Your mailbox requests should be asynchronous
NO	Your mailbox requests are not asynchronous. If you issue a GET, MANTIS will wait until a record is available and if you issue an INSERT, MANTIS will wait until another process reads the record.

Default NO

Considerations

- Mailbox timeout is applicable only to the OpenVMS environment.
- Mailbox timeout is not supported for RMS operations over DECnet. If timeout is required, it can be implemented through an external program using asynchronous system services.

[KEY_OF_REFERENCE=key_number]

Description Specifies the key of reference for this file view if the external file type is INDEXED and if the file has alternate keys defined.

Format Integer 0-n

Default 0

Consideration The primary key is 0, the first alternate key is 1, and so on. You may only use the primary key or one of the alternate keys with each file view. If you wish to access a file from more than one key, you must define a separate view for each key of reference.

[ACCESS_METHOD="file_access_meth"]

Description Specifies which access method (software) is used to access the external file.

Options

OpenVMS You must specify RMS.

UNIX Specify one of the following:

BINARY	access method required for any files containing nonprintable characters (especially '/0' and '/n'). These files do not have standard carriage control and are unsuitable for editing.
TEXT	access method required for normal text files; for example, files you want to edit, or pipe through a filter. Note that you must specify VARIABLE length records to obtain normal carriage
MISAM	MANTIS's proprietary Indexed Sequential Access Method type of INDEXED file.
CISAM or CIS_TM	for CISAM or CISAM transaction monitor, respectively proprietary CISAM type of INDEXED file control ('/n').

IBM Mainframe Specify one of the following:

VSAM	for Virtual Storage Access Method (VSAM).
PC	for a PC Contact file.

FIELD “field_name”(

Description Specify the MANTIS element name for the field within the external file.

Format MANTIS symbolic name, 1-30 characters in length

TYPE={SMALL, BIG, TEXT, KANJI, MIXED}

Description Specifies the MANTIS data type of the variable created for the field.

Options

INTEGER	signed 4-byte integer (for whole numbers)
SMALL	4-byte binary floating point
BIG	8-byte binary floating point
DECIMAL	DECIMAL floating point of specified precision
TEXT	variable length character string up to specified maximum length

FORMAT={PACKED, ZONED, BINARY, FLOAT, TEXT, KANJI, MIXED}

Description Specifies the format in which the data is stored on the external file.

Options

PACKED	for packed decimal (fixed point)
ZONED	for unpacked (zoned) decimal (fixed point)
BINARY	for 1, 2, 4, or 8 byte binary (fixed point)
FLOAT	for 4 or 8 byte binary floating point
DECIMAL	for DECIMAL floating point
TEXT	for text character string format

[ATTRIBUTES({KEY, SCRAMBLE})]

Description Specifies the KEY and SCRAMBLE attributes of the field

Options

KEY	this field is a key or partial key of an INDEXED file type
SCRAMBLE	MANTIS stores this field in an encoded format on the external file.

Considerations

- For indexed files only, nominate the key(s) in the record by entering KEY in this field.
- KEY should not be entered for sequential and relative files.
- MANTIS only provides support for either the primary key or one of the alternate keys in each view of an indexed file. If you define more than one field with the KEY attribute, these are treated as segments of the key of reference specified in the Create or Update File Views option. If you wish to access an indexed file with more than one key of reference, you must define a separate view for each key.
- Non-MANTIS programs will not be able to make sense of SCRAMBLED data.
- Key fields cannot be scrambled.
- Use SCRAMBLE only on new elements.

[SIGN={“YES”, “NO”, “L/S”, “T/S”, “L/O”, “BLANK”, “CODE”, “T/Z”}]

Description Indicates if the numeric data is signed.

Options

Binary fields enter YES to indicate that the field is signed, otherwise, enter NO.

Zoned fields use one of the following values to indicate the sign format of the numeric decimal field:

YES	Trailing overpunch
NO	Unsigned numeric (default)
T/S	Trailing separate
L/O	Leading overpunch
L/S	Leading separate
T/Z	Trailing zoned

Default NO

Considerations

- Packed, float, and decimal fields are always considered signed.
- For text fields, the value of SIGN is ignored.

[DIMENSIONS(n,m)]

Description Specifies the dimensions of the field (the number of times it occurs)

Format Integer between 1 and 255.

Considerations

- MANTIS allocates the variables specified in this file view as single-occurrence fields if the DIM value is less than 2, or as an array if the DIM value is 2 or greater. The dimension of the allocated array is equal to the value supplied here.
- If the ACCESS statement stipulates multiple levels, an additional level of dimension is generated.

[DECIMAL_PLACES=decimal_places]

Description Optional. Specifies the number of decimal places for PACKED, ZONED, and, BINARY numeric fields, or the precision of a DECIMAL field.

Format Integer between 0 and 31.

Default 0

Considerations

- The number of decimal places cannot exceed the number of digits for PACKED, ZONED, and BINARY fields. BINARY fields of 1, 2, 4, and 8 bytes in length are considered to have 2, 4, 9, and 18 digits respectively.
- The number of decimal places of a DECIMAL field must be between 0 and 31.
- For DECIMAL fields, the length must be at least 2 bytes more than the decimal places.

[POSITION=position]

Description Specifies the position of this field within the record

Format Integer, 1 to maximum record length.

Considerations

- The position starts relative to 1. **OpenVMS** For RMS-indexed files, the position of a key field is specified relative to 0 in the CREATE FDL, but must be relative to 1 here.
- For repeating fields, specify the position of the first occurrence

[OFFSET=offset]

Description Specify the offset between successive occurrences of this field within a repeating group. For a field within a structure, this is the length of the structure.

Format Integer

Default Length (second operand of DIMENSIONS) of the field, that is, not part of a repeating structure.

Consideration

- This should be specified only for fields with first DIMENSIONS operand greater than 1.
- Value should be at least as large as the LENGTH

INTERFACE

INTERFACE description

The following descriptions define the syntax for the selection of **INTERFACE**:

```
INTERFACE “name”(
   [USER_CODE=user_code]
   [NUM_FIELDS=number_of_fields]
   [DESCRIPTION=“description”]
   [STATUS=“status”]
   [PASSWORD=“password”]
   [ATTRIBUTES(attrl,attr2)]
   [ROUTINE=“routine_name”]
   [IMAGE=“image_name”]
   [PROGRAM=“prog_name”]
   [RECORD_LAYOUT=“layout”]
FIELD “field_name”(
      TYPE={SMALL, BIG, TEXT, KANJI, MIXED}
      FORMAT={PACKED, ZONED, BINARY, FLOAT, TEXT, KANJI, MIXED}
[ATTRIBUTES({SINGLE  LEVEL})]
[SIGN={“YES”, ”NO”, “L/S”, “T/S”, “L/O”, “BLANK”,  “CODE”, “T/Z”}]
[DIMENSIONS(r,c)]
[DECIMAL_PLACES=decimal_places]
]POSITION=position]
[OFFSET=offset]
) ...
 );
```

INTERFACE “name”(

Description Specifies the name of the interface design

Format 1-16 character string

[USER_CODE=user_code]

Description The originating or target User's library code

Format Integer

Default none

Considerations

- See "Ignore USER Descriptor on Import " on page 482 and "Include USER Descriptor on Export" on page 482 of the Universal Export Facility Options.
- This parameter controls from which user library the entity came or will be imported.

[NUM_FIELDS=number_of_fields]

Description Specifies the number of fields in the interface design.

Format Integer

[DESCRIPTION="description"]

Description *Optional* Specifies the text description of the interface.

Format 0-48 character string

[STATUS="status"]

Description Specifies the status of the interface design

Format Character string

Considerations

- Enter "ACTIVE" to allow programs to use the interface. Any other value prohibits use in a running program.
- Trailing blanks are significant, "ACTIVE" is not the same as "ACTIVE␣"

[PASSWORD="password"]

Description Specifies the password for the interface design.

Format 1-16 character string

Considerations

- A program must specify this value to allow access to the INTERFACE.
- Not exported if you set **Export Passwords** option to **N**

[ATTRIBUTES(attrl,attr2)]

Description Specifies the attribute(s) of the interface.

Options

Attribute	OpenVMS	UNIX	PC	SNI	IBM 5.4	IBM 4.25
<EXTERN>			PROGRAM			
INTERNAL	✓	✓	DLL			
LOCAL_BUF	✓	✓				
PROGRAM	<EXTERN>		✓			
DLL	INTERNAL	INTERNAL	✓			
REMOTE			✓			
MAINFRAME			✓			
INPUT			✓			
OUTPUT			✓			
FULL			✓			
CREATE_PIPE			✓			

<EXTERN> Indicates that the given interface is external. The string <EXTERN> does not appear in the export format; it is a default. Thus if you do not specify any of the other attributes, EXTERN is the attribute used.

INTERNAL Indicates the INTERNAL INTERFACE attribute of the interface profile. You must include this line for an internal interface, and omit it for all other interfaces. Including this attribute indicates that you want MANTIS to invoke your interface program using VMS dynamic image activation.

LOCAL_BUF	Indicates the INTERNAL INTERFACE BUFFER attribute of the interface profile. You must include this line for an internal interface, and omit it for all other interfaces. This specifies the type of common storage area to use for the interface parameters.
PROGRAM	Indicates which type of interface to use. Starts an external program. DLL - Indicates which type of interface to use. Accesses a routine in a dynamic link library.
REMOTE	Indicates which type of interface to use. Accesses a server program or another MANTIS session via a specified named pipe, possibly on a network.
MAINFRAME	Indicates which type of interface to use. Provides for design only, to be migrated to a mainframe.
INPUT	Specifies data flow. Data passes from the interface program to MANTIS.
OUTPUT	Specifies data flow. Data passes from MANTIS to the interface program.
FULL	Specifies data flow. Data passes in both directions.
CREATE_PIPE	Indicates whether MANTIS must create a pipe or use the one created by the server program or by another MANTIS session.

Considerations

- When moving interface designs between VAX/UNIX and PC, the data flow attribute of FULL is used as a default.
- You must specify LOCAL_BUF if you specify the INTERNAL INTERFACE attribute.
- CREATE_PIPE is REQUIRED for REMOTE interfaces when you specify data_flow as either INPUT or OUTPUT. You must omit it in all other cases.

[ROUTINE=“routine_name” (OpenVMS, UNIX, PC only)

Description:

- OpenVMS The routine name to be called when you invoke your shareable image.
- PC Specifies the name of the dynamic link library routine you want to call at the CALL statement.

Format

- PC 1–16 character MANTIS program name
- OpenVMS 1–31 character MANTIS program name

Considerations

- OpenVMS You must specify a routine name if the interface is internal.
- PC The routine name is REQUIRED for DLL interfaces.
- PC You must omit the routine name for all interface types except DLL.
- PC The routine name must match the name declared in the module definition (.DEF) file for the DLL.
- PC If an interface description originated on VAX/VMS, the routine name may truncate.

[IMAGE=“image_name”](OpenVMS, UNIX, PC only)

Description Specifies the name of the executable file included in the program name.

Format 1–31 character executable for the given operating environment

Consideration Derive the image name from the program name specified by “prog_name”.

[PROGRAM=“prog_name”]

Description Specifies the name of the program MANTIS calls when you use this interface, or you load the dynamic link library for PC environment, at the CALL statement.

Format External file specification

IBM	1–8 character program name
SNI	1–8 character program name
PC	1–64 character program name
OpenVMS	1–252 character program name
UNIX	1–252 character program name

Considerations

- **OpenVMS** For internal interfaces, you must specify a logical name for the shareable image; otherwise, a logical name or file specification can be entered.
- **OpenVMS** For external interfaces, you can append DCL RUN command qualifiers to the image name. MANTIS adds the prefix “RUN” to whatever you specify here before executing the whole command in a sub program.
- **UNIX** You can enter the file specification of an executable file (program or shell script) or the name of an environment variable.
- **PC** Progname is REQUIRED for PROGRAM, DLL and MAINFRAME interfaces.
- **PC** You must omit progname for REMOTE interfaces.

[RECORD_LAYOUT="layout"]

Description Specifies the INTERFACE name of an associated area layout.

Format INTERFACE name

Considerations

- Fields specified must exactly match the fields of the lowest associated record layout. For example, if you specify A in the export file, and A has an associated record layout of B, and B in turn has an associated record layout of C, then the fields specified for A are the fields of C.
- On IMPORT, if any associated record layout in the associated record chain does not exist, then the interface does not import. Using the example in consideration 1 above, B and C must exist and B must have an associated record layout of C before A is imported.
- On IMPORT, if the associated record layout specified does exit, then the fields specified must match exactly those of the lowest associated record layout. If the fields do not match, then the interface will not import.

FIELD "field_name"(

Description Specify the MANTIS element name for the field within the external file.

Format MANTIS symbolic name, 1-30 characters in length

TYPE={SMALL, BIG, TEXT, KANJI, MIXED}

Description Specifies the MANTIS data type of the variable created for the field.

Options

INTEGER	signed 4-byte integer (for whole numbers)
SMALL	4-byte binary floating point
BIG	8-byte binary floating point
DECIMAL	DECIMAL floating point of specified precision
TEXT	variable length character string up to specified maximum length

FORMAT={PACKED, ZONED, BINARY, FLOAT, TEXT, KANJI, MIXED}

Description Specifies the format in which the data is stored on the external file.

Options

PACKED	for packed decimal (fixed point)
ZONED	for unpacked (zoned) decimal (fixed point)
BINARY	for 1, 2, 4, or 8 byte binary (fixed point)
FLOAT	for 4 or 8 byte binary floating point
DECIMAL	for DECIMAL floating point
TEXT	for text character string format

[ATTRIBUTES({SINGLE LEVEL})]

Description Specifies that the field is to have a single occurrence, even if the INTERFACE contains multiple LEVELs.

[SIGN={“YES”, “NO”, “L/S”, “T/S”, “L/O”, “BLANK”, “CODE”, “T/Z”}]

Description Indicates if the numeric data is signed.

Options

Binary fields enter YES to indicate that the field is signed, otherwise, enter NO.

Zoned fields use one of the following values to indicate the sign format of the numeric decimal field:

YES	Trailing overpunch
NO	Unsigned numeric (default)
T/S	Trailing separate
L/O	Leading overpunch
L/S	Leading separate
T/Z	Trailing zoned

Default NO

Considerations

- Packed, float, and decimal fields are always considered signed.
- For text fields, the value of SIGN is ignored.

[DIMENSIONS(n,m)]

Description Specifies the dimensions of the field (the number of times it occurs)

Format Integers between 1 and 255.

Considerations

- MANTIS allocates the variables specified in this interface view as single-occurrence fields if the DIM value is less than 2, or as an array if the DIM value is 2 or greater. The dimension of the allocated array is equal to the value supplied here.
- If the ACCESS statement stipulates multiple levels, an additional level of dimension is generated.

[DECIMAL_PLACES=decimal_places]

Description Optional. Specifies the number of decimal places for PACKED, ZONED, and, BINARY numeric fields, or the precision of a DECIMAL field.

Format Integer between 0 and 31.

Default 0

Considerations

- The number of decimal places cannot exceed the number of digits for PACKED, ZONED, and BINARY fields. BINARY fields of 1, 2, 4, and 8 bytes in length are considered to have 2, 4, 9, and 18 digits respectively.
- The precision of a DECIMAL field must be between 0 and 31.
- For DECIMAL fields, the length must be at least 2 bytes more than the number of decimal places.

[POSITION=position]

Description Specifies the position of this field within the interface.

Format Integer, 1 to maximum interface length.

Considerations

- The position starts relative to 1.
- For repeating fields, specify the position of the first occurrence

[OFFSET=offset]

Description Specify the offset between successive occurrences of this field within a repeating group. For a field within a structure, this is the length of the structure.

Format Integer

Default Length (second operand of DIMENSIONS) of the field, that is, not part of a repeating structure.

Consideration This should be specified only for fields with first DIMENSIONS operand greater than 1.

ULTRA VIEW

ULTRA VIEW description

The following descriptions define the syntax for the selection of **ULTRA VIEW**:

```
ULTRA “name”(
USER_CODE=user_code
NUM_FIELDS=number_of_fields
[DESCRIPTION=“description”]
[VIEW_PASSWORD=“view_password”]
[ALTER_PASSWORD=“alter_password”]
[INSERT_PASSWORD=“insert_password”]
[STATUS=“status”]
[KEY LENGTH=key_length]
[FILE_NAME=“pdm_data_set”]
[FILE_TYPE=(PRIMARY,RELATED)]
[LINK_PATH=“linkpath”]
[RECORD_CODE=”cc”]
[REFERENCE_VARIABLE=“symbolic_name”]
[DBMOD=“dbmod_name”]
[CODE_ELEMENT=“code_element”]
FIELD “name”(
ELEMENT=“pdm_element_name”
TYPE={SMALL, BIG, TEXT, KANJI, MIXED}
FORMAT={PACKED, ZONED, BINARY, FLOAT, TEXT, KANJI, MIXED}
[ATTRIBUTES({KEY, SCRAMBLE})]
[SIGN={"YES", "NO”, "L/S”, "T/S”, "L/O”, “BLANK”, “CODE”, “T/Z”}]
[DIMENSIONS(n,m)]
[DECIMAL_PLACES=decimal_places]
) …
);
```

ULTRA “name”(

Description Specifies the library name of the ULTRA description**.**

Format 1–16 character MANTIS ULTRA profile name

USER_CODE=user_code

Description The originating or target User's library code

Format **Integer**

Default none

Considerations

- See "Ignore USER Descriptor on Import " on page 482 and "Include USER Descriptor on Export" on page 482 of the Universal Export Facility Options.
- This parameter controls from which user library the entity came or will be imported.

NUM_FIELDS= number_of_fields

Description The number of fields in this ULTRA File View (Element Count)

Format Integer, 0—254

[DESCRIPTION="description"]

Description Optional. Supplies a description of the ULTRA file view.

Format 0–64 characters **Default** Null

[VIEW_PASSWORD="view_password"]

Description Specifies the password that enables viewing of records in the file.

Format 0–16 characters

Default null

Considerations

- If not supplied, programs must use the ALTER or DELETE/INSERT passwords to access the file.
- Not exported if you set **Export Passwords** option to **N**

[ALTER_PASSWORD=“alter_password”]

Description Specifies the password that enables updating of records in the file.

Format 0–16 characters

Default null

Considerations

- If not supplied, programs must use the VIEW or DELETE/INSERT passwords to access the file.
- Not exported if you set **Export Passwords** option to **N**

[INSERT_PASSWORD=“insert_password”]

Description Specifies the password that enables inserting and deleting of records in the file.

Format 0–16 characters

Default null

Considerations

- If not supplied, programs must use the VIEW or ALTER passwords to access the file.
- Not exported if you set **Export Passwords** option to **N**

[STATUS=“status”]

Description Specifies the status of the file view.

Format 0-16 characters

Default null

Considerations

- Specify ACTIVE if you want to use the file view.
- If you specify any other status (for example, ARCHIVE), MANTIS programs will not be able to use the file.
- Trailing blanks are significant. (“ACTIVE” is not the same as “ACTIVEb “)

[KEY_LENGTH=key_length]

Description Specifies the key length for the file

Format Integer

[FILE_NAME="pdm_data_set"]

Description Specifies the Supra PDM database name of the file.

Format 4 alphanumeric characters, valid PDM file name

[FILE_TYPE=(PRIMARY,RELATED)]

Description Specifies the type of PDM file.

Options

PRIMARY	the file is a Supra PDM primary file
RELATED	the file is a Supra PDM related file

Consideration Must match the file type specified in the Supra PDM database description

[LINK_PATH="linkpath"]

Description Specifies which linkage path MANTIS will use to retrieve, update, delete, and insert records into your related file.

Format A valid linkage path name, 8-character alphanumeric

Considerations

- For RELATED files only
- You are limited to one linkage path name per ULTRA view. You must define additional ULTRA views if you wish to use others.

[RECORD_CODE=”cc”]

Description Specifies the Supra PDM Record Code to associate with this view.

Format 2-character alphanumeric valid Record Code

Considerations

- For RELATED files with coded records only
- If you do not specify any record code, all RELATED records are accessed, regardless of record code.
- During retrieval, MANTIS selects PDM file records that match the specified record code and disregards all others. During update or insertion, MANTIS enforces the specified record code.
- You are limited to one specified record code per ULTRA view. You must either omit the record code specification or define additional ULTRA views if you wish to use others.

[REFERENCE_VARIABLE=“symbolic_name”]

Description Specifies the reference variable (position) in the PDM file.

Format MANTIS symbolic name

Considerations

- For RELATED files only
- MANTIS sets the reference variable during GET and INSERT statements and uses this variable to mark the position within a SET of related records.
- You can use the reference variable in subsequent GET and INSERT statements as a positional qualified. (GET … AFTER refer)
- MANTIS will allocate a TEXT(4) variable in the program, as an array when the ULTRA statement is LEVELed. You can save the returned value in another TEXT variable for subsequent use.

[DBMOD=“dbmod_name”]

Description Specifies the database descriptor module name.

Format 6-character alphanumeric

Considerations

- The compiled database description must exist as XXXXXX.MOD, where XXXXXX is the 6-character database description name. If XXXXXX.MOD does not exist in the default directory, XXXXXX must be a logical name that identifies a database description module.
- Refer to the ULTRA statement in *AD/Advantage MANTIS Language OpenVMS/UNIX*, P39-1310, for the interpretation of the database description name with respect to the logical name MANTIS_DBMOD_XXXXXX.

[CODE_ELEMENT=“code_element"]

Description Specifies the name of the ULTRA/TOTAL element that contains the record code (derived from dbmod_name).

Format Valid PDM element name

Considerations For coded files only.

FIELD “name”(

Description Specify the MANTIS element name for the field within the ULTRA file.

Format MANTIS symbolic name, 1-30 characters in length

ELEMENT=“pdm_element_name”

Description Specify the MANTIS element name for the field within the ULTRA file.

Format Valid PDM element name 8 characters in length

TYPE={SMALL, BIG, TEXT, KANJI, MIXED}

Description Specifies the MANTIS data type of the variable created for the field.

Options

INTEGER	signed 4-byte integer (for whole numbers)
SMALL	4-byte binary floating point
BIG	8-byte binary floating point
DECIMAL	DECIMAL floating point of specified precision
TEXT	variable length character string up to specified maximum length

FORMAT={PACKED, ZONED, BINARY, FLOAT, TEXT, KANJI, MIXED}

Description Specifies the format in which the data is stored on the external file.

Options

PACKED	for packed decimal (fixed point)
ZONED	for unpacked (zoned) decimal (fixed point)
BINARY	for 1, 2, 4, or 8 byte binary (fixed point)
FLOAT	for 4 or 8 byte binary floating point
DECIMAL	for DECIMAL floating point
TEXT	for text character string format

[ATTRIBUTES({KEY, SCRAMBLE})]

Description Specifies the KEY and SCRAMBLE attributes of the field

Options

KEY	this field is a key or partial key of an file
SCRAMBLE	MANTIS stores this field in an encoded format on the external file.

Considerations

- Non-MANTIS programs will not be able to make sense of SCRAMBLED data.
- Key fields cannot be scrambled.
- Use SCRAMBLE only on new elements.

[SIGN={“YES”, “NO”, “L/S”, “T/S”, “L/O”, “BLANK”, “CODE”, “T/Z”}]

Description Indicates if the numeric data is signed.

Options

Binary fields enter YES to indicate that the field is signed, otherwise, enter NO.

Zoned fields use one of the following values to indicate the sign format of the numeric decimal field:

YES	Trailing overpunch
NO	Unsigned numeric (default)
T/S	Trailing separate
L/O	Leading overpunch
L/S	Leading separate
T/Z	Trailing zoned

Default NO

Considerations

- Packed, float, and decimal fields are always considered signed.
- For text fields, the value of SIGN is ignored.

[DIMENSIONS(n,m)]

Description Specifies the dimensions of the field (the number of times it occurs)

Format Integer between 1 and 255

Considerations

- MANTIS allocates the variables specified in this file view as single-occurrence fields if the DIM value is less than 2, or as an array if the DIM value is 2 or greater. The dimension of the allocated array is equal to the value supplied here.
- If the ULTRA statement stipulates multiple levels, an additional level of dimension is generated.

[DECIMAL_PLACES=decimal_places]

Description Optional. Specifies the number of decimal places for PACKED, ZONED, and BINARY numeric fields, or the precision of a DECIMAL field.

Format Integer between 0 and 31.

Default 0

Considerations

- The number of decimal places cannot exceed the number of digits for PACKED, ZONED, and BINARY fields. BINARY fields of 1, 2, 4, and 8 bytes in length are considered to have 2, 4, 9, and 18 digits respectively.
- The decimal places of a DECIMAL field must be between 0 and 31.
- For DECIMAL fields, the length must be at least 2 bytes more than the precision.

Universal export facility options

When you select CHANGE OPTIONS on the Universal Export Facility Menu (see “Universal export facility menu” on page 401), the following screen appears.

```
                    M A N T I S

              UNIVERSAL EXPORT FACILITY
                       OPTIONS

     Add or Replace the Entity on Import ...  (A/R) :  A :
     Export using Directory Selection ......  (Y/N) :  N :
     Language ....................................  :  ENGLISH          :
     Screen Device ...............................  :  24 x 80  :
     Create new or Append to Export File ...  (C/A) :  A :
     Ignore USER Descriptor on Import ......  (Y/N) :  Y :
     Include USER Descriptor on Export .....  (Y/N) :  N :
     Import/Export DATE and TIME ...........  (Y/N) :  N :
     Include Process Line Numbers ..........  (Y/N) :  N :
     Resequence Line Numbers on Import......  (Y/N) :  N :
     Include Prompter Line Numbers .........  (Y/N) :  N :
     Export File Line Width .............  (80-254) :  80  :
     Export File Indentation ............  (1-30) :  4  :
     Import/Export internal files with data   (Y/N) :  N :
     Use UEF 1.1 Language Format ...........  (Y/N) :  N :
     Export Passwords ......................  (Y/N) :  Y :

              ENTER Update; CANCEL Exit; GOLD/H Help
```

Enter the following data:

Add or Replace the Entity on Import . . . (A/R)

Description Specifies whether you want to replace or add the designs in the MANTIS file.

Default A

Options

A	Add the designs to the MANTIS file if they do not already exist. If they do exist in the MANTIS file, an error will be displayed.
R	Replace the designs in the MANTIS file if they already exist. Add the designs to the MANTIS file if they do not exist.

Considerations

- This field is used only for Import.
- When replacing a file, the data for the file being replaced will be overwritten.

Export using Directory Selection . . . . . (Y/N)

Description Specifies whether you want the selected entities' directories to be displayed. You can select the designs to be EXPORTED from these directories.

Default N

Options

N	Do not display Directory.
Y	Display Directory.

Considerations

- This field is used only for EXPORT.
- If you enter Y and if you entered a design name into the SELECTION field, the part of the directory beginning with the design name will be displayed. However, if you entered a wildcard expression into the SELECTION field, only the relevant designs will be displayed in the directory.

Language

Description Specifies the language of the screens or prompters you want IMPORTED/EXPORTED.

Default Your default language

Format A valid language name. The valid languages are stored in the Language file controlled by the Master User.

Considerations

- This field is used only for screens and prompters. It is ignored for all other entities.
- An empty field indicates all languages.

Screen Device

Description Specifies the size of the device used to create the screens that are to be IMPORTED/EXPORTED. Specify 00 x 00 if all screens regardless of device are to be processed.

Default 24 x 80

Options 43 x 80, 32 x 80, 27 x 132, 24 x 132, 24 x 80, 00 x 00

Consideration This field is used only for screens. It is ignored for all other entities.

Create new or Append to Export File . . . (C/A)

Description Specifies whether you want to create a new EXPORT file or append to an existing EXPORT file.

Default A

Options

C	Create a new EXPORT file.
A	Append to an existing EXPORT file.

Consideration If Append is selected and the EXPORT file specified does not exist, it will be created.

Ignore USER Descriptor on Import . . . . . (Y/N)

Description During IMPORT, ignore the USER_CODE= descriptor found in the EXPORT file.

Default Y

Options

N	Do NOT ignore the USER_CODE descriptor.
Y	Ignore the USER_CODE descriptor.

Considerations

- This field is used only for IMPORT.
- If the user descriptor is ignored, all entities in the Export File that match the selection criteria will be imported into the current user.
- If the option to ignore the USER_CODE descriptor is NOT selected, one of the following actions is performed:
  - Master User has the ability to select the user to IMPORT. The entities matching the selection criteria will be IMPORTED into the library of the selected user.
  - Any user other than Master can only import its own entities.

Include USER Descriptor on Export . . . . . (Y/N)

Description *Optional*. Specifies whether the USER_CODE descriptor is to output to the export file.

Default N

Options

N	Do not output the USER_CODE descriptor to the EXPORT file.
Y	Output the USER_CODE descriptor to the EXPORT file.

Consideration This field is used only for EXPORT.

Import/Export Date/Time . . . . . (Y/N)

Description *Optional*. On EXPORT, this option specifies whether these descriptors are to be output to the export file. On Import, this option specifies whether the DATE and TIME descriptors are to be used when storing the entity description.

Default N

Options (EXPORT)

N	Do not output the DATE and TIME descriptors to the EXPORT file.
Y	Output the DATE and TIME descriptors to the EXPORT file.

Options (IMPORT)

N	Do not use the DATE and TIME descriptors.
Y	IMPORT—Use the DATE and TIME descriptors when storing the entity description.

Consideration Importing, using the DATE and TIME descriptors, is currently unavailable for Process descriptors. Therefore, the current date and time will always be used when storing Process descriptions.

Include Process Line Numbers . . . . . (Y/N)

Description Specify whether you want process (program) line numbers to be output to the EXPORT file on EXPORT file.

Default N

Options

N	Do not include process line numbers in the EXPORT file.
Y	Include process line numbers in the EXPORT file.

Considerations

- This field is ignored for all entities except processes.
- This field is used only for EXPORT.

Resequence Line Numbers on Import . . . . . (Y/N)

Description Specifies whether the process (program) lines are to be resequenced on Import. Resequencing indicates that once a process has been imported, process lines will start at one and increment by one, regardless of any line numbers found in the EXPORT file.

Default N

Options

N	Do not resequence line numbers.
Y	Resequence line numbers.

Considerations

- This field is ignored for all entities except processes (programs).
- This field is used only for IMPORT.
- If a process description contains no process line numbers in the EXPORT file, import line numbers will start at one and increment by one.

Include Prompter Line Numbers . . . . . (Y/N)

Description Specifies whether you want Prompter line numbers to be output to the export file on EXPORT file.

Default N

Options

N	Do not include Prompter line numbers in the EXPORT file.
Y	Include Prompter line numbers in the EXPORT file.

Considerations

- This field is ignored for all entities except Prompters.
- This field is used only for EXPORT.

Export File Line Width . . . . . (80–254)

Description Specifies the width of the line output to the EXPORT file.

Default 80

Options 80–254

Consideration This field is used only for EXPORT.

Export File Indentation . . . . . (1–30)

Description Specifies the indentation of indented lines output to the EXPORT file.

Default 4

Options 1–30

Consideration This field is used only for EXPORT.

Import/Export internal files with data (Y/N)

Description Specifies whether you want the data of the internal file designs IMPORTED/EXPORTED.

Default N

Options

N	IMPORT/EXPORT file without data.
Y	IMPORT/EXPORT file with data.

Consideration This field is ignored for all entities except MANTIS files.

Use UEF 1.1 Language Format . . . . . (Y/N)

Description Specifies if you want the export file to be produced in the format of the previous version of UEF, to allow the entities in the export file to be imported using the previous version of UEF.

Default N

Options

N	Export file will be in UEF 1.2 format
Y	Export file will be in UEF 1.1 format

Consideration If Y is specified for this option, the export file IS also valid for importing using UEF 1.2. The UEF formats are upwardly compatible.

Export Passwords . . . . . (Y/N)

Description Specify if you want the export file to reveal passwords included in various entities. For example, an external file view design may specify up to four access passwords. For security reasons, you may not want these passwords to appear in the export file.

Default Y

Options

N	Do not export any passwords in any entities
Y	Export all entity passwords

Consideration Failure to include passwords in an export file may render an application invalid if it is exported and then imported elsewhere, because the programs that use the entities in question will specify certain passwords that no longer exist in the entities unless you manually restore passwords after import.

HELP

Description Press the PF1 and H keys in sequence to obtain help on the Universal Export Facility Menu (see “Universal export facility menu” on page 401).

Export directory

When the DIRECTORY Option is turned on, in the Universal Export Facility Menu (see “Universal export facility menu” on page 401), the following screen appears.

```
USER:                  DIRECTORY OF entity-type                    YYYY/MM/DD
user_name                                                          HH:MM:SS

  NAME OF DESIGN ===>

SEL--------NAME----------  --- STATUS ---   ---------DESCRIPTION--------->>
```

Enter the following data:

NAME OF DESIGN

Description *Optional*. Specifies the new starting position of the directory.

Format A design name or wildcard expression

Consideration Wildcard characters are asterisk (*) and question mark (?). The asterisk matches 0 or more characters. The question mark matches exactly one character. For example P*R will match PR, POR, and POWER. P?R will match POR, but not PR nor POWER.

SEL

Description *Optional*. Select the designs you wish to EXPORT.

Format S

Consideration When the directory is for a wildcard expression, the default action is to select (S) all entities displayed in the directory. You can omit an entity by erasing the S next to its name.

MANTIS supplies the following fields:

NAME

Description This is the name of the design.

STATUS

Description This is the status message given on completion of the EXPORT process.

Possible values

- ERROR An error occurred while exporting the design.
- EXPORTED EXPORTED Successfully.

Consideration When designs are selected, press RETURN, for EXPORT to begin. To page through the directory, press RETURN or use the repoint option by entering a design name or wildcard expression in the NAME OF DESIGN Field. This repoint value represents the new starting position of the directory.

Press CANCEL to return to the Universal Export Facility Menu (see "Universal export facility menu" on page 401).

DESCRIPTION

Description This is the description of the design specified in NAME.

Consideration Press the window right key to see the full description.

12

MANTIS search facility

The MANTIS Search Facility (MSF) is a programmer's tool to search through the text of MANTIS entities and find matches for supplied criteria.

MSF searches program lines for supplied criteria, including optionally searching comments within a program. Other options include case sensitivity on the searching of the supplied criteria. .It searches for matching field names in other entities, including Screens, Internal Files, External File Views, Prompters, Interfaces and Ultra/PDM File Views. Additionally, the entity description field can be searched. The results of the MSF search can be directed to either the user terminal and/or printer, at a report level or page level.

Accessing the MANTIS search facility

The MANTIS Search Facility is executed using online MANTIS. Sign on to the appropriate user and choose option 20 SEARCH_FACILITY on either the MASTER or Start_Facility menu.

When you select the SEARCH_FACILITY option, the screen is displayed as shown in the following screen illustration:

```
MSFFACILITY01              MANTIS Search Facility         1999/03/30  14:58:49

===➔

Search Criteria:
  Username           MASTER                                (* =All Users)
  Password
  Entity Name        *                                     (* = All Names/Wildcard)
  Entity Type        Programs
  Search Comments?   N     Search Descriptions?  N         Case Sensitive?       N
  Saved Search       ____________________________          Print Results?   Y/N  N
Search String(s):
=>
=>
=>
=>
+>
=>
=>

  1=Help     3=EXIT     5=RESET     6=ENTITY LIST     7=SAVE SEARCH    8=LOAD SEARCH
  9=DELETESEARCH       12=CANCEL   15=MENU           24=LOGOFF
```

Field descriptions for this screen are as follows:

Username

Description The user name defaults to whatever user is signed on. You may change the user name to any other valid MANTIS user.

Considerations Exceptions include:

- Control users (users with user codes less than 32)
- The MASTER user can only be accessed by Master.
- The MASTER user can enter a wildcard (*) to search across all users

Password

Description The Master user may enter any user name without being required to enter a password. All other users must enter a password.

Entity Name

Description The entity name is the name of the entity you want to search

Options A complete valid entity name—search only that entity.

Considerations

- A partial name with an asterisk (*) as a wildcard searches all entities beginning with the partial name. (e.g., CUST* searches all entities beginning with 'CUST')
- An Asterisk (*)—searches all entity names.

Entity Type

Description The entity type can be one or more different types of entity to be searched. The default entity type is Programs on the MSF panel.

Options To change or to select different entity types, enter "6" at the command line or press "PF6" to display an entity type selection screen shown in the following screen illustration:

```
MSFFACILITY01                    MANTIS Search Facility         1999/03/30  14:58:49

===➔ 6
Search Criteria:                                +-------------------------------------------+
  Username            MASTER                    | MSFSEL01       MANTIS Search Facility     |
  Password                                      |                                           |
  Entity Name         *                         | "S"elect Type and Press 'ENTER'           |
  Entity Type         Programs                  |                                           |
  Search Comments?    N      Search Desc        |    P = Programs                           |
  Saved Search                                  |    S = Screens                            |
Search String(s):                               |    E = External Files                     |
=>                                              |    F = Internal Files                     |
=>                                              |    I = Interfaces                         |
=>                                              |    O = Prompters                          |
=>                                              |    U = ULTRA/PDM Views                    |
+>                                              |    * = All Entity Types                   |
=>                                              |                                           |
=>                                              |  F1=HELP  F3=EXIT  F12=CANCEL             |
=>                                              +-------------------------------------------+

  1=Help     3=EXIT     5=RESET     6=ENTITY LIST     7=SAVE SEARCH    8=LOAD SEARCH
  9=DELETESEARCH       12=CANCEL   15=MENU           24=LOGOFF
```

Place an "S" next to the type(s) of searches you want and press Enter to fill the Entity Type field on the MSF panel.

Search Comments

- Entering "Y" indicates that while searching programs, comments are to be included in the search.
- Entering "N" (default) excludes comments from the search.

Search Description

- Entering "Y" indicates that entity descriptions are to be included in the search
- Entering "N" (default) excludes entity descriptions from the search

Case Sensitive

- Entering "Y" indicates that while searching, that case sensitive values will be used in the supplied search criteria.
- Entering "N" (default) excludes case sensitivity from the supplied search criteria.

Saved Search

- You have the ability to save and recall search criteria. This is discussed in "Saving and recalling searches" on page 493.

Print Results

- Entering "Y" indicates results of the search be routed to your designated printer.
- Entering "N" (default) indicates that the results of the search will display upon your terminal.

Search String(s)

- You may enter up to nine separate search criteria. Each search criterion is examined and compared separately as the search is conducted. If a string within an entity matches one or more of the search strings, it is included in the results display.

Saving and recalling searches

You may save search criteria and in subsequent sessions recall the criteria so you do no have to reenter them each time you need them. All Search String information is saved, along with User Name, Entity Name and Entity Type. The following option settings are saved: Search Comments, Search Description and Case Sensitive. The Password field is not saved, nor is the Print Results Option.

Saving searches

To save a search, enter the search information (in the search strings) and then enter a save-name (spaces are allowed) in the Save Search field and press PF7. Your search criteria are saved, and a confirmation message is presented on the MSF panel. If search criteria by that name already exist, they are updated with the new search criteria and a confirmation message is presented on the MSF panel.

Recalling searches

To recall a search, press PF8. You are presented with a selection list shown in the following screen illustration.

```
MSFFACILITY01                    MANTIS Search Facility         1999/03/30  14:58:49

===➔ 8
Search Criteria:     +————————————————————————————————————————+
  Username           | MSFREC01       MANTIS Search Facility   |  11 Users)
  Password           |                                         |
  Entity Name        | “S”elect Type and Press ‘ENTER’         |  11 Names/Wildcard)
  Entity Type        |                                         |
  Search Comments?   |  S MY_SEARCH_DATA                       |  e Sensitive? . . N
  Saved Search       |    MY_SEARCH_STUFF                      |  nt Results? Y/N  N
Search String(s):    |                                         |
=>                   |                                         |
=>                   |                                         |
=>                   |                                         |
=>                   |                                         |
+>                   |                                         |
=>                   |                                         |
=>                   |  F3=EXIT  F8=FORWARD  F12=CANCEL        |
=>                   +————————————————————————————————————————+

  1=Help     3=EXIT     5=RESET     6=ENTITY LIST     7=SAVE SEARCH    8=LOAD SEARCH
  9=DELETESEARCH       12=CANCEL   15=MENU           24=LOGOFF
```

Place an “S” next to the save-search name and press Enter. If the list is longer than what is presented on this pop-up window, press PF8 to scroll forward.

Once a saved search is selected, the MSF panel is filled in with the saved search information, except for the Password field and Print Results option.

Deleting searches

To delete a saved search, press PF9. You are presented with a selection list shown in the following screen illustration:

```
MSFFACILITY01                    MANTIS Search Facility         1999/03/30  14:58:49

===➔ 9
Search Criteria:     +-----------------------------------------+
  Username           | MSFDEL01       MANTIS Search Facility   |
  Password           |                                         |
  Entity Name        | "D"elete Search and Press 'ENTER'       |
  Entity Type        |                                         |
  Search Comments?   |  D MY_SEARCH_DATA                       |
  Saved Search       |    MY_SEARCH_STUFF                      |
Search String(s):    |                                         |
=>                   |                                         |
=>                   |                                         |
=>                   |                                         |
=>                   |                                         |
+>                   |                                         |
=>                   |                                         |
=>                   |  ENTER=FORWARD   F3=EXIT  F12=CANCEL    |
=>                   +-----------------------------------------+

  1=Help     3=EXIT     5=RESET     6=ENTITY LIST     7=SAVE SEARCH    8=LOAD SEARCH
  9=DELETESEARCH       12=CANCEL   15=MENU           24=LOGOFF
```

Place a "D" next to the saved-search name(s) and press Enter to delete the saved-search name(s) selected. A delete confirmation message is presented to the left of each saved-search name selected.

If the list is longer than what is presented in this pop-up window, press Enter to scroll forward.

The following table lists the COMMANDS you can enter on the MSF's command Line:

Command	Description
PROGRAM filename	Loads the "filename" program into the Program Design Facility. Can be abbreviated as PROG filename.
SCREEN filename	Loads the "filename" screen into the Screen Design Facility. Can be abbreviated as SCRN filename.
ACCESS filename	Loads the "filename" external file into the External File Design Facility.
INTERFACE filename	Loads the "filename" interface into the Interface Design Facility. Can be abbreviated as INT filename.
PROMPTER filename	Loads the "filename" prompter into the Prompter Design Facility. Can be abbreviated as PROM filename.
FILE filename	Loads the "filename" internal MANTIS file into the MANTIS File Design Facility.
ULTRA filename	Loads the "filename" ULTRA file view into the ULTRA File View Design Facility.
DIRECTORY	Runs the MANTIS Directory Facility for entity reference. Can be abbreviated as DIR.
EXIT	Leaves the MANTIS Search Facility.
CANCEL	Leaves the MANTIS Search Facility
MENU	Returns to the MANTIS Main Menu.
LOGOFF	Logs off MANTIS.
HELP	Presents a series of help prompters.
PF KEY9s)	Any PF key numbers can be entered on the Command Line. (e.g. PF6 would be entered as "6").

Sample search

The EXAMPLE user is selected, “*” for entity names (Programs, Screens, External Fields, Internal Files, Interfaces, and Prompters) as the entity types, Y(es) search comments and descriptions, and we want to look for either “GAMES” and/or “TEST” as the search criteria, without case sensitivity.

```
MSFFACILITY01           MANTIS Search Facility             999/03/30  14:58:49

===➔

Search Criteria:
   Username     EXAMPLES                                   (* =All Users)
   Password
   Entity Name                                             (* = All Names/Wildcard)
   Entity Type  Programs,Screens,Ext-Files,Int-Files,Interfaces,Prompters
   Search Comments?  Y   Search Descriptions?   Y           Case Sensitive?      N
   Saved Search   ______________________________           Print Results?  Y/N  N
Search String(s):
=> GAMES
=> TEST
=>
=>
+>
=>
=>

   1=Help   3=EXIT   5=RESET   6=ENTITY LIST   7=SAVE SEARCH   8=LOAD SEARCH
   9=DELETE SEARCH  12=CANCEL 15=MENU         24=LOGOFF
```

After pressing Enter, the following screen illustrations are displayed.

> **NOTE**
> You also have the option of printing the results in this screen to be routed to your designated printer, by entering “Y” in the Print Screen field.

```
MSFDISPLAY01MANTIS             Search Facility             1999/03/30  14:58:49

Page 1                                                      Print Screen Y/N? N

W21-INF:Program ‘EXAMPLES:APPLICATIONS’ Item(s) found
   30  .PROGRAM GAMES (“EXAMPLES:GAMES”, PASSWORD).
   170   ..DO GAMES
W31-INF:Search found       2 match(es) in ‘EXAMPLES:COMMON DIVISOR’.

W21-INF:Program ‘EXAMPLES:COMMON_DIVISOR’ Item(s) found
   20  .TEXT ANSWER (3) :HEAD “GREATEST COMMON DIVISOR” : CLEAR
   190 ..SHOW “THE GREATEST COMMON DIVISOR IS”; ONE
W31-INF:Search Found     2 match(es) in ‘EXAMPLES:COMMON DIVISOR’.

W21-INF:Program ‘EXAMPLES:GAMES’ Item(s) found
W20-INF:SELECT A Test Game
   10 . ENTRY GAMES
   20    .SCREEN MAP(“EXAMPLES:GAMES”)
W-31-INF:Search found    3 match(es) in ‘EXAMPLES:GAMES’.

W21-INF:Program ‘EXAMPLES:PERCEPTION’ Item(s) found
W20-INF:TEST EXTRASENSORY PERCEPTION
   10  .HEAD  “TEST YOUR EXTRA-SENSORY PERCEPTIVE ABIITY”
W31-INF:Search found     2 match(es) in ‘EXAMPLES:PERCEPTION’.
```

```
MSFDISPLAY01            MANTIS Search Facility            1999/03/30  14:58:49

Page 2                                                     Print Screen Y/N? N

W21-INF:Program ‘EXAMPLES:APPLICATIONS’ Item(s) found
     30  .PROGRAM GAMES (“EXAMPLES:GAMES”, PASSWORD).
     170  . . . DO GAMES
W31-INF:Search found      2 match(es) in ‘EXAMPLES:APPLICATIONS’.

W21-INF:Program ‘EXAMPLES:COMMON_DIVISOR’ Item(s) found
     20   . TEXT ANSWER (3) :HEAD “GREATEST COMMON DIVISOR” : CLEAR
    190. . .  SHOW “THE GREATEST COMMON DIVISOR IS”; ONE
W31-INF:Search Found      2 match(es) in ‘EXAMPLES:COMMON DIVISOR’.

W21-INF:Program ‘EXAMPLES:GAMES’ Item(s) found
W20-INF:SELECT A Test Game
    10  . ENTRY GAMES
    20. . . SCREEN MAP(“EXAMPLES:GAMES”)
W-31-INF:Search found     3 match(es) in ‘EXAMPLES:GAMES’.

W21-INF:Program ‘EXAMPLES:PERCEPTION’ Item(s) found
W20-INF:TEST EXTRASENSORY PERCEPTION
    10   .HEAD  “TEST YOUR EXTRA-SENSORY PERCEPTIVE ABIITY”
W31-INF:Search found      2 match(es) in ‘EXAMPLES:PERCEPTION’.
```

```
MSFDISPLAY01            MANTIS Search Facility            1999/03/30  14:58:49

Page 3                                                        Print Screen Y/N? N

W21-INF:Program ‘EXAMPLES:APPLICATIONS’ Item(s) found
    30  .PROGRAM GAMES (“EXAMPLES:GAMES”, PASSWORD).
    170  . . . DO GAMES
W31-INF:Search found     2 match(es) in ‘EXAMPLES:APPLICATIONS’.

W21-INF:Program ‘EXAMPLES:COMMON_DIVISOR’ Item(s) found
    20  . TEXT ANSWER (3) :HEAD “GREATEST COMMON DIVISOR” : CLEAR
    190. . .  SHOW “THE GREATEST COMMON DIVISOR IS”; ONE
W31-INF:Search Found     2 match(es) in ‘EXAMPLES:COMMON DIVISOR’.

W21-INF:Program ‘EXAMPLES:GAMES’ Item(s) found
W20-INF:SELECT A Test Game
    10  . ENTRY GAMES
    20 . . . SCREEN MAP(“EXAMPLES:GAMES”)
W-31-INF:Search found    3 match(es) in ‘EXAMPLES:GAMES’.

W21-INF:Program ‘EXAMPLES:PERCEPTION’ Item(s) found
W20-INF:TEST EXTRASENSORY PERCEPTION
    10 .HEAD  “TEST YOUR EXTRA-SENSORY PERCEPTIVE ABIITY”
W31-INF:Search found     2 match(es) in ‘EXAMPLES:PERCEPTION’.
```

```
MSFDISPLAY01            MANTIS Search Facility            1999/03/30  14:58:49

Page 4                                                      Print Screen Y/N? N

W21-INF:Program 'EXAMPLES:PRIME_NUMBERS' Item(s) found
    50  . SHOW "Please enter the MAXIMUM Prime Number to be tested";
    430. . SHOW "Please enter the MAXIMUM Prime Number to be tested";
W31-INF:Search found      2 match(es) in 'EXAMPLES:PRIME NUMBERS'.

W21-INF:Program 'EXAMPLES:REGRESSOPM' Item(s) found
    2070          . . . . SEARCH FOR GREATEST ELEMENT . . . .
    2450               . . . TEST FOR EMPTY MATRIX . . .
W31-INF:Search Found      2 match(es) in 'EXAMPLES:REGRESSION'.

W21-INF:Program 'EXAMPLES:STATISTICS' Item(s) found
     90  .DO TEST ("INTEGER", II,IJ)
    100  .DO TEST ("BIG", BI, BJ)
    110  .DO TEST ("DECIMAL(30)", DI30, DJ30)
    120  .DO TEST ("DECIMAL(5)", DI5, DJ5)
    130  .SHOW "Test comopleted.  Perss ENTER to continue"; :WAIT
    150  ENTRY TEST (TYPE, XI, XJ)
    170  .SHOW "Start "+TYPE+ Test:";AT(30)TIME

W-31-INF:Search found     7 match(es) in 'EXAMPLES:STATISTICS'.
```

```
MSFDISPLAY01            MANTIS Search Facility            1999/03/30  14:58:49

Page 4                                                      Print Screen Y/N? N

W22-INF:Screen 'EXAMPLES:APPLICATIONS' Item(s) found
    "SOME GAMES TO PLAY . . . . . . . (7,25), 33, NUM

W31-INF:Search found     1 match(es) in 'EXAMPLES:APPLICATIONS'.

W28-INF:Prompter 'EXAMPLES:MANTIS_3.7' Item(s) found
    LATEST RELEASE LEVEL OF THE APPROPRIATE MANUALS.

W31-INF:Search Found     2 match(es) in 'EXAMPLES:MANTIS 3.7'.

W28-INF:Prompter 'EXAMPLES:MANTIS 4.0' Item(s) found
    LARGE VOLUME APPLICATIONS, UNATTENDED OPERATIONS, TESTING
W-31-INF:Search found    3 match(es) in 'EXAMPLES:MANTIS 4.0'.

W21-INF:Prompter 'EXAMPLES:VALUE_ADDED' Item(s) found
1    NEW CODING/TESTING   14     1.4
W31-INF:Search found     1 match(es) in 'EXAMPLES:VALUE ADDED'.

W04-INF:Search completed:  150 Entity(s) processed -   25 Line(s) found
```

13

MANTIS print utility

The MANTIS Print Utility (MPR) lets you view MANTIS file entities without signing on to MANTIS. The output from MPR is designed for printing on a hard-copy printer, and it contains page headings, and so on. The types of entities processed by MPR include file profiles, programs, screens, prompters, users, interfaces, ULTRA, access, and scenarios. MPR can perform three different functions: PRINT (print completed design), DIRECTORY, and SEARCH. These functions are described in detail in the following sections.

MPR input and output

The input to MPR consists of the MANTIS file and a set of commands to process it. The MANTIS file, identified by the logical name MANTIS_FILE, contains all MANTIS entity profiles (completed designs). The commands that direct MPR processing are read first from the command line, and then from standard input, until the GO command is encountered.

MPR output goes to standard output by default, but can be directed to a file by the OUTPUT command. Output is organized into pages with page headers suitable for printing on a line printer. You can control the output page width and length by using the ATTRIBUTE command to set the printer class.

Operation

Commands are processed until the GO command is encountered. If GO is not present in the command line, the prompt MPR> is displayed until the GO command is entered or EOF on standard input.

The UNIX command format can only be used on the UNIX command line. The common format can be used in all environments.

MPR commands create a hierarchy of selection levels:

1. Whole command stream
2. User selection
3. Type selection
4. Select selection

MPR commands specify the action to perform on a selection:

- Directory of selected designs
- Print selected completed designs
- Search selected designs for a string

Action commands can be specified at any selection level and become the default action for all lower levels. Action commands specified prior to the first user selection command become the default actions for the whole command stream.

$ MPR [*commands*]

MPR commands vary in scope, depending on where they are placed in the command stream. Each command is described in "MPR commands" on page 505, along with its syntax, parameters, scope, and effect. The following sections provide an overview of the command stream, its general structure, the MPR command types, and instructions on how to formulate an MPR request.

MPR processes a command stream in a single run. A command stream can be described as a stream of commands that requests many units of work for many users' libraries. Technically, a command stream includes all command input to MPR, terminated by the GO command.

A command stream can contain more than one command set. Each command set is confined to a set of libraries, and contains all units of work for those libraries. A command set begins with a library definition command (USER=) and ends with the next USER= command (or GO).

Each 'unit of work' contains optional entity selection and optional function commands. Only one function is performed on some entity selection within a unit of work. Because defaults and higher level definitions may apply, you need not explicitly define the unit of work.

The five types of MPR commands are:

- **Library definition command.** (USER=) Defines the user library (or libraries) where the data is to be processed. A library definition is required.

- **Entity selection commands.** (TYPE= and SELECT=, for example) Further qualify the data within the library, by defining which entities and which entity names (key values) are to be processed. These commands are optional. The entity selection qualifying command MATCH= belongs to this category. In general, USER=, TYPE=, and SELECT= define the three levels of the entity selection hierarchy.

- **Function commands.** (DIRECTORY, PRINT, and SEARCH=, for example) Define the kind of reporting to be performed. These commands are optional. The default function command is PRINT. Function commands apply to the entity selection last specified.

NOTE

Optionally, you can place function commands as qualifiers to the command stream, library definitions, or entity selections, in which case they apply to all processing at that level, and serve as default function commands for lower levels. The function qualifying command XREF= belongs to this category and has the same scope limitations.

- **Output definition commands.** (ATTRIBUTES= and OUTPUT=) Define output parameters. These commands are optional, and they apply to the whole MPR run.

- **The GO command.** Is required and terminates the command stream.

MPR commands

Here is a summary of the commands accepted by MPR. The underlining in each command represents the characters required to identify the command; however, any additional characters entered must match exactly. Lowercase is converted to uppercase on input. The following table shows the format and description of MPR commands.

General consideration

- In most circumstances, the case of the command stream is not important, but it is necessary to specify passwords and search strings in the exact case. You can quote the entire command line command stream if you wish, or just selected parts of it.

NOTE

UNIX Some command line characters are interpreted by the UNIX shell. You can avoid problems by enclosing all or part of the command stream within quotes (‘), or by escaping specific characters; for example, -U \(username, password\). Commands that are embedded within a quoted part of the command line must be in Common command format.

NOTE

OpenVMS On the command line, uppercase is converted to lowercase except where the command stream is enclosed by double quotes (“).

Common format	UNIX command format	Description
ATTRIBUTES=	-A	Defines output file attributes using the notation of the ATTRIBUTE(PRINTER) MANTIS statement.
BRIEF	-B	Specifies brief screen design printouts. Omit the screen field attributes listing.
DIRECTORY	-D	Prints a list of selected entities.
GO	-G	Ends command input; start processing.
HELP	-H	Displays a help file.
MATCH=	-M	Specifies key matching criterion to be applied with the keys selected.
OUTPUT=	-O	Specifies file for MPR output.
PRINT	-P	Prints completed design of selected entities.
SEARCH=	-F	Searches selected entities for a string “...”.
SELECT=	-S	Selects MANTIS keys to be processed.
TYPE=	-T	Selects type category of MANTIS entities to be processed, for example, SCREEN.
USER=	-U	Selects user library containing selected entities. This is the only required command.
XREF=	-X	Specifies cross-reference options for program listings.
!		Comments go from exclamation to end of line.

These commands are described on the following pages.

ATTRIBUTES

Description *Optional*. Specifies the output file attributes using the same method as the ATTRIBUTE statement. The attributes list is a comma-separated list of attributes applicable to the print file. Refer to the ATTRIBUTE statement in *AD/Advantage MANTIS Language OpenVMS/UNIX*, P39-1310 for more information about printer attributes.

Default "(66,132),BRI,UND,NOS"

Format /ATTRIBUTE=attributes-list

UNIX -A attributes-list

Considerations

- Default setting produces 60 lines per page with bright and underline attributes simulated by overprint records. The output file is not automatically spooled.
- In screen design printouts, MPR simulates bright and underline fields unless the ATTRIBUTE command is used to specify a device class that defines bright and underline control sequences.
  - Bright is simulated by overprinting bright fields.
  - Underline is simulated by overprinting a line of underscores (_).
- UNIX The ATTRIBUTES command can only be used to set the output page size. For example, to display output on the screen truncated to 80 columns you could use "-A (24,80)."

BRIEF

Description *Optional*. Produces brief completed screen designs. The full screen design printout consists of the screen design followed by field attribute information for every heading and data field in the design. Use the BRIEF command to omit all the field attribute information.

Default Full completed designs including field attribute information

Format /BRIEF

UNIX -B

DIRECTORY

Description *Optional*. Produces a directory listing of the selected entities.

Default Inherited from previous selection level. The default action for the whole command stream is print.

Format /DIRECTORY

UNIX -D

GO

Description *Required*. Terminates command processing and initiates selection processing.

Format /GO

UNIX -G

Consideration Command processing is terminated whether or not any more commands are present in the command stream.

HELP

Description *Optional*. Displays MPR online help on standard output.

Default NO HELP

Format /HELP

UNIX -H

MATCH

Description *Optional*. Specifies the matching criterion when a list of generic names is specified in a single SELECT command.

Format /MATCH=match-id

UNIX -M match-id

Default OR

Options

OR	Select if entity matches any generic name.
AND	Select if entity matches all generic names.
NOR	Select if entity does not match any of the generic names.
NAND	Select if entity does not match all of the generic names.

OUTPUT

Description *Optional*. Directs the output produced by MPR to a specified file.

Default Standard output

Format /OUTPUT=filespec

UNIX -O filespec

Considerations

- Only the last output command in the command stream is effective. You cannot create multiple output files in a single MPR command stream.
- Program listings can be controlled by the following special MANTIS program comments:

  ```
  | SKIP N
  | EJECT
  ```

  These commands are interpreted by MANTIS print. EJECT causes a new page of output. SKIP can be used to output a number of blank lines on the current output page.

  UNIX The default page size is 60 rows by 132 columns.

  UNIX The default page width is 132 columns. The default lines per page is determined by the OpenVMS run time library routine LIB$LP_LINES.

  UNIX FORTRAN carriage control (MANTIS_CREFTN) is the default for FILES-11 output. If you specify a class attribute in the ATTRIBUTES command, you will get no carriage control (MANTIS_CRENON).

PRINT

Description *Optional*. Prints completed designs of the selected entities. The output is similar in format and content to that produced by the Print Completed Design option of the various MANTIS facilities.

Default Inherited from the previous selection level. The default for the whole command stream is print.

Format /PRINT

UNIX -P

Considerations

- Header and detail sections are output for each entity. The header section contains information about the design in general. The detail section contains the field layout specifications for the design, or the source lines for programs and prompters.
- The header section is redisplayed on each output page.
- Screen designs include a display of the completed map with the header section. Maps larger than the output page size are output piecemeal on multiple pages.

SEARCH

Description *Optional*. Searches selected entities for a match on the specified string. For programs, each program line is searched; for prompters, each prompter line is searched; for all other entity types, the field names defined in the entity design are searched to see if any contain the string.

Default Inherited from the previous selection level. The default action for the whole command stream is print.

Format /SEARCH=[“]string[“]

UNIX -F [“]string[“]

Consideration MPR is case-sensitive to search strings. Search strings entered on the command line are converted to lowercase unless they are specified within a quoted string.

SELECT

Description *Optional*. Specifies MANTIS entities within the current user and type selection. Entity-name is a generic name in which the following wildcard characters are recognized as pattern matching commands:

*****	zero or more intervening characters
?	one intervening character
^	negate the following pattern
>	greater than the following characters
<	less than the following characters

Default * (all entities of the selected type)

Format /SELECT=entity-name,...

UNIX -S entity-name,...

Considerations

- When a generic key is specified with the SELECT command, all MANTIS entity names (for the given user/type) that match the supplied key(s) are selected for processing.
- When a list of entity names is specified, all are selected by default. You can use the MATCH command to apply other selection criteria to the list.
- Scenario entity names consist of two parts: the scenario name, and the associated screen name. Each field is 16 characters in length. To select a scenario, enter the scenario name followed by an asterisk, so that all the subcomponents of the scenario are printed.

Examples

Entry	Selects
*	all entities
A*	all entities starting with A
A	all entities containing A
A*B	all entities starting with A and ending with B
A??	all 3-character entities starting with A
^A*	all entities not starting with A
*^B	all entities not ending with B
A^MID*B	all entities starting with A, ending with B and not containing MID in between
>A*	all entities starting with a letter greater than A
^<B*	same as >A*
A>F	same as AF?* combined with A>F*

TYPE

Description *Optional*. Specifies a list of MANTIS entity types to which the SELECT command applies. Entity types supported are FILES, ACCESS, ULTRA, PROGRAMS, SCREENS, PROMPTERS, INTERFACES, USERS, SCENARIOS.

Default FILES, PROGRAMS, SCREENS, PROMPTERS, INTERFACES, ULTRA, ACCESS

Format /TYPE=entity-type,...

UNIX -T entity-type,...

USER

Description *Required*. Specifies the user library or libraries to search for all subsequent selection commands up to the next user command.

Format /USER=(user-name,password),...

UNIX -U '(user-name,password),... '

XREF

Description Specifies cross-reference criteria when listing a program.

Default All cross references if XREF is specified; no cross references if XREF is omitted.

Format /XREF [=xref,...]

UNIX -X [xref,...]

Options

VERBS	All verbs used in the program including entry/exit verbs.
VARIABLES	All program variables whether declared or not including subprogram names. An asterisk (*) follows a cross-reference line number if the variable is declared in that line.
LITERALS	All quoted text literals used in the program.
SUBPROGRAMS	All entry names and program names referenced in the program. An asterisk (*) follows a cross-reference line number if the subprogram is declared (via entry or program) in that line.

OpenVMS examples

This example displays all completed designs of the EXAMPLES user on standard output.

```
$MPR
MPR>USER=(EXAMPLES,CASINO) /GO
```

This example displays all completed screen designs of the EXAMPLES user on standard output. The BRIEF command causes the field specifications to be omitted.

```
$ MPR /USER=("EXAMPLES,CASINO")/TYPE=SCREEN/BRIEF/GO
```

This example prints all completed designs of the EXAMPLES user in file MPR.LIS. The printer class specified must be a termtable entry name either in the system termtable or in the one identified by TERM$TABLOC. The output file will be suitable for printing on an LN03 class device.

```
$ MPR /USER=("EXAMPLES,CASINO")/OUT=MPR.LIS/ATTR=CLA(LN03)/GO
```

This example displays all completed designs of the EXAMPLES user on standard output. The printer attributes specify a page size of 24 rows and 80 columns, which is better suited to a video display.

```
$ MPR /USER=("EXAMPLES,CASINO")/ATTR=(24,80)/GO
```

This example displays a directory of all EXAMPLES programs starting with “ACC” on standard output.

```
$ MPR /USER=("EXAMPLES,CASINO")/TYPE=PROG/DIR/SEL=ACC*/GO
```

This example displays a directory of all EXAMPLES programs that contain either A or B but not both.

```
$ MPR /USER=("EXAMPLES,CASINO")/DIR/TYPE=PROG
 MPR>SEL=*A*,*B*/MATCH=NOR/GO
```

This example displays the names of all EXAMPLES programs and prompters containing the string “FRED” and all screen, file, access, interface, and ULTRA designs containing a field name including the string “FRED”.

```
$ MPR /USER=("EXAMPLES,CASINO")/SEAR="FRED"/GO
```

This example produces a listing in MPR.LIS of all EXAMPLES designs. The program listings will include cross references of MANTIS statement verbs.

```
$ MPR /USER=("EXAMPLES,CASINO")/XREF=VERBS/OUT=MPR.LIS/G
```

UNIX examples

This example displays all completed designs of the EXAMPLES user on standard output.

```
$MPR
MPR>USER=(EXAMPLES,CASINO) /GO
```

This example displays all completed screen designs of the EXAMPLES user on standard output. The BRIEF command causes the field specifications to be omitted.

```
$ MPR -U "(EXAMPLES,CASINO)" -T SCREEN -B -G
```

This example displays all completed designs of the EXAMPLES user on standard output. The printer attributes specify a page size of 24 rows and 80 columns, which is better suited to a video display.

```
$ MPR -U "(EXAMPLES,CASINO)" -A (24,80) -G
```

This example displays a directory of all EXAMPLES programs starting with “A” on standard output.

```
$ MPR -U "(EXAMPLES,CASINO)" -T PROG -D -S A* -G
```

This example displays a directory of all EXAMPLES programs that contain either an A or a B, but not both.

```
$ MPR -U "(EXAMPLES,CASINO)" -D -T PROG
MPR>SEL=*A*,*B*
MPR>MATCH=NOR
MPR>GO
```

This example displays the names of all EXAMPLES programs and prompters containing the string “FRED” and all screen, file, access, interface, and ULTRA designs containing a field name including the string “FRED”.

```
$ MPR -U "(EXAMPLES,CASINO)" -F "FRED" -G
```

This example produces a listing in MPR.LIS of all EXAMPLES designs. The program listings will include cross references of MANTIS statement verbs.

```
$ MPR -U "(EXAMPLES,CASINO)" -X VERBS -O MPR.LIS –G
```

Error handling

Any errors encountered during command processing will result in a message describing the error and a request to enter the command line again from the point at which the erroneous command was detected.

For example:

```
$MPR
MPR> USER=(EXAMPLES,CASINO)/TOPE=PROG/GO
Invalid type specification
TOPE=PROG/GO<---Enter again from here
```

After the GO command is received, MPR will not normally produce any errors. If errors do occur, they will be either MANTIS FATAL errors or MANTIS Fault messages. Refer to *AD/Advantage MANTIS Messages and Codes OpenVMS/UNIX*, P39-1330, for user-correctable fatal errors and MANTIS faults. If the information in this manual does not solve your errors or faults, please contact your Cincom support center.

Special considerations

The following sections provide some considerations for scenarios and screen designs.

Screen designs

MPR simulates BRIGHT and UNDERLINE fields in the following way if you have not specified the CLASS attribute with the ATTRIBUTES command:

- BRIGHT fields are output twice with no vertical carriage control, so that they will be overprinted.
- UNDERLINE fields (a separate line) are output containing underscore characters with no vertical carriage control.

NOTE

Some attributes can cause some fields to run into the last printable character position in a line. For example, a bright field can be printed on two consecutive lines instead of being overprinted on one line, or you can observe wrap-around on the output where it was not expected.

14

Options compiler

MANTIS options compiler

MANTIS options describe the operating environment and constraints under which MANTIS runs. Default options are built into the MANTIS executable file. Default options can be changed by any of the following methods:

- Using the SET $OPTION statement in a MANTIS program or command
- Specifying options on the MANTIS command line
- Executing a MANTIS options file by:
  - Executing the special OPTIONS option
  - Defining the logical name MANTIS_OPTIONS to identify an options file that will be executed during MANTIS initialization

The MANTIS Options Compiler (MOP) can be used to:

- Compile a source options file into a binary options file for faster execution.
- List the contents of a binary options file, producing an equivalent source file.
- **OpenVMS** In MANTIS for OpenVMS, you can produce an options patch for the MANTIS executable image. The patch allows you to change the defaults built into the image.

MOP input and output

The MANTIS Options Compiler reads an options file as input. A source options file can be compiled into a binary output options file. Alternatively, an input binary options file can be listed into an output source options file.

For statement format and description for every MANTIS option, see "MANTIS options" on page 528. The following general syntax rules apply to all options SOURCE statements:

- The slash (/) separates OPTIONS statements on the same line.
- The percent sign (%) is the string escape character. Its meaning is determined by what immediately follows:
  - A decimal digit—A decimal number follows, giving the ASCII value of the character you want.
  - A radix operator specifies that the following number be interpreted according to the radix, giving the ASCII value of the character you want. The radix operator can be uppercase or lowercase.

    D—decimal radix

    O—octal radix

    X—hexadecimal radix
  - All other characters mean "use this character" (%% is required to include a percent sign into a string). See "Examples" on page 522.
- String valued options can be specified with or without enclosing quotes. White space or a slash terminates an unquoted string. Embedded quotes in a quoted string can be specified by double quoting (""), or by using the string escape character (%).
- An OPTIONS statement cannot be continued over multiple lines in a source options file.

The MANTIS Options compiler output depends on the command options selected:

- BINARY (default) produces a binary output file that is a compiled version of the input options file. Binary options files can be executed much more efficiently than source options files.
- LIST produces a source output file that is a decompiled version of the input options file.
- **OpenVMS** PATCH is applicable only to MANTIS for OpenVMS and produces an OpenVMS patch file that can be applied to the MANTIS executable image to change the default MANTIS options.

Examples

```
  ! THIS IS A COMMENT.  IT EXTENDS TO THE END OF THE LINE.
CTRLC                          ! A BOOLEAN OPTION
MAXNODIMS=5                    ! A NUMERIC OPTION
STRCOMPARE=ALPHANUMERIC        ! A FIXED-LIST OPTION
USERTEXT1=XYZ                  ! AN UNQUOTED STRING
USERTEXT1="ABCDEFG"            ! A QUOTED STRING
! DIFFERENT WAYS OF EXPRESSING THE STRING 'A B C'
USERTEXT1=A B C                ! UNQUOTED
USERTEXT1="A B C"              ! QUOTED
USERTEXT1=%A B C               ! %{ch} IS THE SAME AS {ch}
USERTEXT1=%d65 B C             ! %d MEANS ASCII(DECIMAL NUMBER)
USERTEXT1=A %D66 C             ! %D IS SAME AS %d
USERTEXT1=A B %67              ! THERE IS NO RADIX BUT THE FIRST
                               ! CHARACTER AFTER THE ESCAPE IS
                               ! A DIGIT, SO DECIMAL IS ASSUMED
USERTEXT1=%o101 B C            ! %o MEANS ASCII(OCTAL NUMBER)
USERTEXT1=%O101 B C            ! %0 IS THE SANE AS %o
USERTEXT1=A %X42 C             ! %X  IS THE SAME AS %x
USERTEXT1=%A% %B% %C           ! BLANKS ARE ALWAYS PADDED OFF
                               ! EACH END OF AN UNQUOTED STRING
! BLANK LINES ARE ALLOWED
MAXUSERS               =    2000     ! WHITE SPACE GETS SKIPPED
                                     ! WHERE IT HAS NO MEANING
! THERE CAN BE MULTIPLE OPTIONS PER LINE
CTRLY /NOIBM /MAXNODIMS = 5/NOCTRLC
/ / / / / / /                        ! THIS DOESN'T HAVE ANY
                                     ! EFFECT
//// USERB001 / NOUSERB002           ! ALL THIS IS VALID
! MOST OPTIONS CAN BE ABBREVIATED E.G.
STRCOMPARE=ALPHANUMERIC
STR=A                        ! THIS IS ALL THAT IS NEEDED
!IBM INCONSISTENCIES CAUSE WARNINGS
NOIBM
MAXNODIMS=3 ! OK
IBM
MAXNODIMS=3 !*****WARNING - NOT ALLOWED IN IBM MODE******
```

Operation

You invoke the compiler by using the MOP command with the optional parameters as follows:

$ MOP [*input-file*] [*options*]

All of the parameters are optional and can be specified in any order. Subsequent options supersede the previous ones.

input-file

Description *Required*. The input file can be either a binary file or a source file. The MANTIS Options Compiler can tell if the input file is a binary options file or a source options file. All compiler options can accept either kind of file.

Default If the input file is not specified, the compiler will prompt for it. If omitted, the filetype suffix, .opt, will be appended to the file name.

options

Description *Optional*. Specifies the actions to be performed by the MANTIS Options Compiler. The UNIX Command Format can only be used on the UNIX command line. The common format can be used in all environments.

Default BINARY, **OpenVMS** NOPATCH, **OpenVMS** NOLIST

The following is a summary of options accepted by the MANTIS Options Compiler. The underlined letters in each option represent abbreviations acceptable to identify the command; however, any additional characters entered must match exactly. Lowercase letters are converted to uppercase on input

Common format	UNIX command format	Description
/BINARY	-B	Produce an options binary-file.
/HELP	-H	Provide help for MANTIS Options.
/LIST	-L	List the contents of an options binary-file.
/PATCH	(not applicable)	Generate an Options Patch that can be applied.
/NOBINARY	-N	Suppress production of an Options binary-file.
/NOLIST	(not applicable)	Suppress production of an Options List-file.
/NOPATCH	(not applicable)	Suppress production of an Options Patch-file.

These options are discussed in more detail below and on the following pages.

BINARY

Description Generates a binary options file from the *input-file*. The default binary file name is *input-file*.bin. BINARY is the default command option.

Format /BINARY [=binary-file]

UNIX -b [binary-file]

HELP

Description Displays online help on standard output for the MANTIS Options Compiler.

Format /HELP

UNIX -h

LIST

Description Generates a listing of the options in the input-file. If no list-file is provided, the listing goes to standard output; otherwise, the default list-file name is *input-file*.lis. The list-file has the options unabbreviated and one per line. No comments are retained.

Format /LIST [=list-file]

UNIX -l [list-file]

PATCH

Description Generates an Options Patch-file from the input-file provided. This option is exclusive to MANTIS for OpenVMS. The default patch-file name is *input-file*.com. The patch generated can then be applied to the MANTIS image. The input options file does not have to specify all possible options. The patch is derived from the existing defaults (in the image) plus any options specified in the source options file.

Format OpenVMS /PATCH [=patch-file]

UNIX not applicable

Consideration UNIX The PATCH option is not supported in MANTIS for UNIX.

NOBINARY

Description Suppresses generation of binary options file.

Format /NOBINARY

UNIX -n

NOLIST

Description Suppresses generation of an options list-file. NOLIST is the default.

Format /NOLIST

UNIX not applicable

Consideration UNIX The NOLIST option is not supported in MANTIS for UNIX.

NOPATCH

Description Suppresses generation of an options patch-file. NOPATCH is the default.

Format /NOPATCH

UNIX not applicable

Consideration UNIX The NOPATCH option is not supported in MANTIS for UNIX.

OpenVMS and UNIX examples

OpenVMS examples

```
$MOP EXAMPLE
    EXAMPLE.OPT -----> EXAMPLE.BIN
$MOP EXAMPLE/BINARY=OPTIONS
    EXAMPLE.OPT ----->OPTIONS.BIN
$MOP EXAMPLE/BIN=.TMP
    EXAMPLE.OPT -----> EXAMPLE.TMP
$MOP EXAMPLE.BIN/LIST=TMP
    EXAMPLE.BIN -----> TMP.LIS
$MOP EXAMPLE.BIN/LIST
    EXAMPLE.BIN -----> sys$output
$MOP EXAMPLE.BIN/PATCH=PATCH
    EXAMPLE.BIN -----> PATCH.COM
$MOP EXAMPLE/PATCH
    EXAMPLE.OPT -----> EXAMPLE.COM
$MOP EXAMPLE/NOBIN
    EXAMPLE.OPT is compiled and verified but no output is
 produced.
```

UNIX examples

```
$mop example
    example.opt -----> example.bin
$mop example -b options
    example.opt -----> options.bin
$mop example -b .tmp
    example.opt -----> example.tmp
$mop example.bin -l tmp
    example.bin -----> tmp.lis
$mop example.bin -l
    example.bin -----> standard output
```

MANTIS options

The MANTIS Options allow you to specify how MANTIS will operate in your environment. They allow you to specify the size of work areas, programs, and output maps. They also allow you to designate the maximum number of parameters in a CHAIN statement, nested external subroutines, users in a file, and so on. Some of the options are display-only and provide quick access to program status.

This section lists the options in alphabetical order. It describes each option, the default, if one exists, and the special considerations of each option. The considerations include the usage rules of each option.

MANTIS options table

The following table lists the options ,for the MANTIS compiler, in alphabetical order. Each option is hyperlinked to the description of that option in this section. Within the description of each option, the abbreviations acceptable to identify the option are shown. However, any additional characters entered must match exactly. Lowercase letters are converted to uppercase on input.

ACCESS DEFAULT	IBMCHECKS	NODELFACILITY	PRINTCMD
ACCESS NEW	IBMPCIFAULT	NODELIMMEDIATE	PRODOPTn
ACCESS REPLACE	IGNORETRLBLKS	NODFWRITE	PWASIZE
AUTOFORMFEED	INDEXSIZE	NOENUM	QUOTE
AUTOREFRESH	INFORMIXSQL	NOEXBOUND	RDBSQL
BATAUTOSKIP	KANJI	NOEXONLY	RDM
BATCH	KHASH	NOEXTCURSORON	READONLY
BIND	KPROMPT	NOHELDFAULT	REALM
BLANKFILL	KSPACE	NOIBM	REGISMACROS
BOXCHARS	LANGUAGE	NOIGNORETRLBLKS	RELCHAIN
BOXGRAPHICS	LEADFORMFEED	NOKANJI	RMSJ
COMCHAIN	MAXBINDERRS	NOLEADFORMFEED	SCREENTAG
COMMENT	MAXCHARGS	NOMBXWAITFULL	SCRLCOLS
CR	MAXDIMSIZE	NOMORE	SCRLROWS
CRPOSITIVE	MAXDOLEVELS	NOPDM	SHARE
CTRLC	MAXENVBUF	NOPRODOPTn	SIGDIGITS
CTRLY	MAXMEMLISTS	NORDBSQL	SIGNOFFCHAIN
DATEMASK	MAXNODIMS	NORDM	SLOT
DB	MAXPCAPOOL	NOREADONLY	SQLDB
DECIMAL	MAXPROGLINE	NOREALM	SQLMIXSEP
DECUSELEN	MAXPROGSIZE	NOREGISMACROS	SQLSSNINC
DELCHAIN	MAXSTRLEN	NORELCHAIN	SQLVARINC
DELFACILITY	MAXUSERS	NORMSJ	STACKLEN
DELIMMEDIATE	MAXVARS	NOSIGNOFFCHAIN	STRCOMPARE
DFWRITE	MBXWAITFULL	NOSLOT	SUPRASQL
DR	MORE	NOSUPRASQL	SYMBOLSIZE
DWASIZE	NOAUTOFORMFEED	NOULTRAGS	SYSTEM
EDITOR	NOAUTOREFRESH	NOUSERBOOn	THOUSANDS
ENUM	NOBATAUTOSKIP	NULLPOSITION	TIMEMASK
EXBOUND	NOBATCH	OPTIONS	TXT0

EXONLY	NOBIND	ORASQL	ULTRAGS
EXTCURSORON	NOBOXGRAPHICS	ORAUNPAD	USERBOOn
EZONE	NOCOMCHAIN	PATH	USERKANJI*n*
FLDMASK	NOCRPOSITIVE	PCIHEAPSIZE	USERNUM*n*
FMTMASK	NOCTRLC	PCISTACKSIZE	
HELDFAULT	NOCTRLY	PDM	
IBM	NODELCHAIN	PID	

ACCESS_DEFAULT

Description Specifies the value of the 'DEFAULT' ACCESS Option to be given to newly created External File View designs. That Option indicates for an ACCESS statement, without the NEW or REPLACE parameter, whether or not MANTIS should create the external file if it does not already exist.

Abbreviation ACCESS_D

Default FAULT

Format ACCESS_DEFAULT = *option*, where *option* is either CREATE or FAULT

Considerations

- FAULT specifies that all newly created External File Views should have the ACCESS option 'DEFAULT' set to FAULT. This means that for a corresponding ACCESS statement, without the NEW or REPLACE parameter, MANTIS will fault if the external file does not exist.
- CREATE specifies that all newly created External File Views should have the ACCESS option 'DEFAULT' set to CREATE. This means that for a corresponding ACCESS statement, without the NEW or REPLACE parameter, MANTIS will create the external file if it does not exist.
- The 'DEFAULT' ACCESS option can be changed in the External File View Design Facility, Library Functions.
- It must be set to FAULT for compatibility with MANTIS for the IBM mainframe.
- You can compile this option by using the MANTIS Options Compiler; that is, you can specify it in an options source file.
- You can set the option using the MANTIS SET $OPTION statement; for example, SET $OPTION "ACCESS_DEFAULT=CREATE".
- You can display this option by using the MANTIS DISPLAY command, and obtain the text data type by using the $OPTION built-in function. A TEXT string will be returned.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

ACCESS_NEW

Description Specifies the value of the 'NEW' ACCESS Option to be given to newly created External File View designs. That Option indicates for an ACCESS statement, using the NEW parameter, whether or not MANTIS should fault if the external file already exists.

Abbreviation ACCESS_N

Default CREATE

Format ACCESS_NEW = *option*, where *option* is either CREATE or FAULT

Considerations

- CREATE specifies that all newly created External File Views should have the ACCESS Option 'NEW' set to CREATE. This means that for a corresponding ACCESS statement, using the NEW parameter, MANTIS will create a new version of the external file, even if the external file already exists.
- FAULT specifies that all newly created External File Views should have the ACCESS Option 'NEW' set to FAULT. This means that for a corresponding ACCESS statement, using the NEW parameter, MANTIS will fault if the external file already exists.
- The 'NEW' ACCESS Option can be changed in the External File View Design Facility, Library Functions.
- You can compile this option by using the MANTIS Options Compiler; that is, you can specify it in an options source file.
- You can set the option using the MANTIS SET $OPTION statement; for example, SET $OPTION "ACCESS_NEW=FAULT".
- You can display this option by using the MANTIS DISPLAY command, and obtain the text data type by using the $OPTION built-in function. A TEXT string will be returned.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

ACCESS_REPLACE

Description Specifies the value of the 'REPLACE' ACCESS Option, to be given to newly created External File View designs. That Option indicates for an ACCESS statement, using the REPLACE parameter, whether or not MANTIS should create the external file if it does not already exist.

Abbreviation ACCESS_R

Default FAULT

Format ACCESS REPLACE = *option*, where *option* is either CREATE or FAULT

Considerations

- FAULT specifies that all newly created External File Views should have the ACCESS Option 'REPLACE' set to FAULT. This means that for a corresponding ACCESS statement, using the REPLACE parameter, MANTIS will fault if the external file does not exist.
- CREATE specifies that all newly created External File Views should have the ACCESS Option 'REPLACE' set to CREATE. This means that for a corresponding ACCESS statement, using the REPLACE parameter, MANTIS will create the external file if it does not exist.
- The 'REPLACE' ACCESS Option can be changed in the External File View Design Facility, Library Functions.
- You can compile this option by using the MANTIS Options Compiler; that is, you can specify it in an options source file.
- You can set the option using the MANTIS SET $OPTION statement; for example, SET $OPTION "ACCESS_REPLACE=CREATE".
- You can display this option by using the MANTIS DISPLAY command, and obtain the text data type by using the $OPTION built-in function. A TEXT string will be returned.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

AUTOFORMFEED

NOAUTOFORMFEED

Description Specifies Automatic Form Feed. When SHOW statements cause output to go to a file, such as with OUTPUT PRINTER, this option controls whether each logical page of output is separated by a form-feed character or not.

Abbreviation AUTOF or NOAUTOF

Default AUTOFORMFEED

Format AUTOFORMFEED or NOAUTOFORMFEED

Considerations

- When AUTOFORMFEED is enabled and output is directed to a file in scroll mode, a form-feed character will precede every N'th line of output, where N is the number of rows per page defined for the device (60 by default).
- This option has no effect on output sent via the CONVERSE statement. When screen designs are printed they are always separated from previous output by a form-feed character.
- You can compile this option by using the MANTIS Options Compiler; that is, you can specify it in an options source file.
- You can set this option by using the MANTIS SET $OPTION statement, for example, SET $OPTION "NOAUTOFORMFEED".
- You can display this option by using the MANTIS DISPLAY command, and obtain the Boolean data type by using the $OPTION built-in function. Boolean displays TRUE or FALSE. For a given Boolean option, for example, AUTOFORMFEED, the relation ($OPTION ("AUTOFORMFEED")= NOT($OPTION("NOAUTOFORMFEED"))) is always true.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

AUTOREFRESH
NOAUTOREFRESH

Description Specifies Automatic Screen Refresh. This option controls whether MANTIS refreshes the screen upon return from an external program or procedure invoked by either CALL or PERFORM.

Abbreviation AUTOR or NOAUTOR

Default NOAUTOREFRESH

Format AUTOREFRESH or NOAUTOREFRESH

Considerations

- The default is not to refresh the screen automatically. In this mode you have control over screen refreshing by virtue of the CLEAR statement, which if executed upon return from CALL or PERFORM would have the same effect as if AUTOREFRESH was enabled.
- Specify AUTOREFRESH is you want MANTIS to automatically clear and refresh the screen after executing CALL and PERFORM statements. In this mode the screen is physically erased and redrawn unconditionally, and may produce undesirable effects in some applications..
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set this option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “NOAUTOREFRESH”.
- You can display this option by using the MANTIS DISPLAY command, and obtain the Boolean data type by using the $OPTION built-in function. Boolean displays TRUE or FALSE. For a given Boolean option, for example, AUTOREFRESH, the relation ($OPTION (“AUTOREFRESH”)= NOT($OPTION(“NOAUTOREFRESH”))) is always true.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

BATAUTOSKIP
NOBATAUTOSKIP

Description Indicates whether auto skip is operative in Batch MANTIS. Auto skip is the automatic placement of the cursor in the next unprotected input field when the current input field is filled.

Abbreviation BATA or NOBATA

Default NOBATAUTOSKIP

Format BATAUTOSKIP or NOBATAUTOSKIP

Considerations

- BATAUTOSKIP indicates that autoskip is operative in Batch MANTIS. When you set this option, be sure to carefully code your batch input streams to avoid field overflow.
- NOBATAUTOSKIP indicates that autoskip is not operative in Batch MANTIS. This functionality is the default because it is easier to code batch input streams. If you accidentally overflow an input field, the excess data is ignored, and the results are unpredictable.
- Set this option to NOBATAUTOSKIP for compatibility with MANTIS for the IBM mainframe.
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set this option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “BATAUTOSKIP”.
- You can display this option by using the MANTIS DISPLAY command, and obtain the Boolean data type by using the $OPTION built-in function. Boolean displays TRUE or FALSE. For a given Boolean option, for example, BATAUTOSKIP, the relation ($OPTION (“BATAUTOSKIP”)= NOT($OPTION(“NOBATAUTOSKIP”))) is always true.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

BATCH
NOBATCH

Description A display-only option indicating the current input mode of MANTIS—either batch or interactive.

Abbreviation BATC or NOBATC

Default Undefined

Format BATCH or NOBATCH

Considerations

- BATCH indicates input is currently from an external file. Batch MANTIS command processing is therefore enabled.
- NOBATCH indicates that MANTIS input is interactive. Batch MANTIS command processing is therefore disabled.
- BATCH is TRUE when MANTIS_INPUT is not standard input, including the case where input is temporarily switched to an external file via the use of '@filespec' in Programming mode.
- You can display this option by using the MANTIS DISPLAY command, and obtain the Boolean data type by using the $OPTION built-in function. Boolean displays TRUE or FALSE. For a given Boolean option, for example, BATCH, the relation ($OPTION("BATCH")=NOT($OPTION("NOBATCH"))) is always true.

BIND

NOBIND

Description A display-only option indicating whether the MANTIS image is authorized to bind programs. This option can only be enabled by the MANTIS security patch.

Abbreviation BI or NOBI

Default Undefined

Format BIND or NOBIND

Considerations

- BIND indicates authorization to bind programs. You will be able to execute the BIND command and select the BIND options in the Program Design and Transfer Facilities.
- NOBIND indicates no authorization to bind programs. You will not be allowed to execute the BIND command or the BIND options in any MANTIS Facility.
- You can display this option by using the MANTIS DISPLAY command, and obtain the Boolean data type by using the $OPTION built-in function. Boolean displays TRUE or FALSE. For a given Boolean option, for example, BIND, the relation ($OPTION (“BIND”)=NOT ($OPTION (“NOBIND”))) is always true.

BLANKFILL

Description Screen Design Blank-fill Character Option. Specifies the blank-fill character (to concatenate heading fields) you wish to use in newly created MANTIS screen designs.

Abbreviation BL

Default |

Format BLANKFILL = *text*, where *text* is a 1-character string specifying the blank-fill character.

Considerations

- The blank-fill character must be distinct from the FLDMASK Option character.
- The blank-fill character is not allowed to be a special numeric mask character. Specifically, it cannot be any of the characters in the string “ 0+-,.Z”.
- A screen’s blank-fill character may be changed via the help screen that is displayed when GOLD/H is invoked in the Screen Design Facility, Create or Update a Screen option.

BOXCHARS

Description Simulated box characters. This text option allows you to define simulated box characters used by MANTIS in Screen Design.

Abbreviation BO

Default “-!+--++!+!+++++” (non-IBM), “_!!_ _!!!_!!_ _!!” (IBM)

Format BOXCHARS=*text*, where *text* is a length 15 TEXT string, each character representing a different line drawing character.

Index	Connectivity	Description
1	right	left end of horizontal line
2	up	bottom end of vertical line
3	right,up	bottom left corner
4	left	right end of horizontal line
5	left,right	horizontal bar
6	left,up	bottom right corner
7	left,up,right	bottom T-char
8	down	top end of vertical line
9	down,right	top left corner
10	down,up	vertical bar
11	down,up,right	left T-char
12	down,left	top right corner
13	down,left,right	top T-char
14	down,left,up	right T-char
15	down,left,up,right	cross

Considerations

- While designing screens in the Screen Design Facility, you can view the current simulated box characters along with the true box character equivalents by pressing GOLD/H for HELP.
- The BOXCHARS option is specifically for use with the Screen Design PF keys PF13, PF14, and EDIT.
- For more information, see “Screen design“ on page 25.
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can display this option by using the MANTIS DISPLAY command, and obtain the text data type by using the $OPTION built-in function. A TEXT string will be returned.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

BOXGRAPHICS

NOBOXGRAPHICS

Description Specifies whether box graphics characters contained within MANTIS Screens should be displayed or converted to simulated box characters contained within the BOXCHAR option during a MANTIS CONVERSE Statement.

Abbreviation BOXG or NOBOXG

Default BOXGRAPHICS

Format BOXGRAPHICS or NOBOXGRAPHICS

Considerations

- This option BOXGRAPHICS/NOBOXGRAPHICS is only in effect for UNIX MANTIS .
- The option NOBOXGRAPHICS will replace MANTIS Screens Box Graphics Line Characters with the corresponding simulated box character contained with the MANTIS BOXCHAR option character set, at display time using a MANTIS CONVERSE Statement.
- If option NOBOXGRAPHICS is turned on during MANTIS Screen Facility, MANTIS screens cannot be built or updated to Box Graphics Characters. Any screens containing Box Graphics Line Characters will be displayed using the MANTIS BOXCHAR option character set.
- You can specify the NOBOXGRAPHICS option on the command line when invoking MANTIS.
- You can compile this option by using the MANTIS Options Compiler, that is, you specify it in an options source file.
- You can display this option by using the MANTIS DISPLAY command, and obtain the Boolean data type by using the $OPTION built-in function. Boolean display TRUE or FALSE for a given Boolean option, for example BOXGRAPHICS the relation: ($OPTION (“BOXGRAPHICS”) = NOT ($OPTION (“NOBOXGRAPHICS”))) is always true.

COMCHAIN
NOCOMCHAIN

Description Specifies whether you want MANTIS to commit all updates to external database systems whenever a CHAIN statement is executed.

Abbreviation COMC or NOCO

Default COMCHAIN

Format COMCHAIN or NOCOMCHAIN

Considerations

- COMCHAIN causes MANTIS to perform a COMMIT whenever a CHAIN statement is executed.
- NOCOMCHAIN prevents a COMMIT by MANTIS during CHAIN statement execution.
- Set this option to COMCHAIN for compatibility with MANTIS for the IBM mainframe.
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set this option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “COMCHAIN”.
- You can display this option by using the MANTIS DISPLAY command, and obtain the Boolean data type by using the $OPTION built-in function. Boolean displays TRUE or FALSE. For a given Boolean option, for example, COMCHAIN, the relation ($OPTION (“COMCHAIN”)=NOT($OPTION(“NOCOMCHAIN”))) is always true.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

COMMENT

Description Program Comment Character Option. Specifies the program comment character you wish to use in newly created MANTIS programs.

Abbreviation COMM

Default |

Format COMMENT = *text*, where *text* is a 1-character string specifying the comment character

Considerations

- The comment character is not allowed to be part of the MANTIS character set (except for | and !). Specifically, it cannot be an alphanumeric character, or any of the characters in the string “ $.+-=“(),<>/*:;&’_”.
- The comment character must be distinct from the QUOTE Option character.
- When entering a program in Program Design, the characters | and ! may also be used as comment characters.
- The comment character associated with a program will always be used by that program, regardless of the current value of the COMMENT Option.
- The program comment character can be changed in the Program Design Library Facility.

CR

Description Credit Indicator Option. Specifies the string you wish to use as the Credit Indicator CR.

Abbreviation N/A

Default CR

Format CR = *text*, where *text* is a 0–32 alphanumeric character string, optionally enclosed within double quotes (“”).

Considerations

- You can compile this option by using the MANTIS Options Compiler; that is, you can specify it in an options source file.
- You can set the option by using the MANTIS SET $OPTION statement; for example, SET $OPTION (“CR=Credit”).
- You can display this option by using the MANTIS DISPLAY command, and obtain the text data type by using the $OPTION built-in function. A TEXT string will be returned.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

CRPOSITIVE

NOCRPOSITIVE

Description Specifies whether you want MANTIS to display the current setting of the CR option when the screen field is positive, or when it is negative. This option is only relevant to numeric edit masks which specify CR or DR in the sign position of the edit mask.

Abbreviation CRP or NOCRP

Default CRPOSITIVE

Format CRPOSITIVE or NOCRPOSITIVE

Considerations

- The following table illustrates the effects of CRPOSITIVE and NOCRPOSITIVE when Options CR, DB, and DR take on their default values of “CR”, “DB”, and “DR” respectively.

Sign	Results for CRPOS		Results for NOCRPOS	
character	+ number	- number	+ number	- number
+	123.34+	123.34-	(same)	
-	123.34	123.34-	(same)	
CR	123.34CR	123.34DR	123.34	123.34CR
DR	123.34	123.34DR	123.34DR	123.34
DB	123.34	123.34DB	(same)	

- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set the option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “CRPOSITIVE”.
- You can display this option by using the MANTIS DISPLAY command, and obtain the Boolean data type by using the $OPTION built-in function. Boolean displays TRUE or FALSE. For a given Boolean option, for example, CRPOSITIVE, the relation ($OPTION (“CRPOSITIVE”) = NOT ($OPTION (“NOCRPOSITIVE”))) is always true.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

CTRLC
NOCTRLC

Description Specifies whether you want the CONTROL-C terminal key sequence to terminate the currently executing MANTIS program, or whether CONTROL-C should be ignored by MANTIS.

Abbreviation N/A

Default CTRLC

Format CTRLC or NOCTRLC

Considerations

- CONTROL-C program termination causes MANTIS FAULT 320 to be displayed in the scroll output map. Program termination does not occur until the currently executing program line is completed.
- In program design mode, you can continue program execution with the GO command. Execution resumes at the next program line.
- During OBTAIN, WAIT, and CONVERSE statement execution, CONTROL-C will terminate the statement and the program line on which it occurs. A subsequent GO command in Program Design will resume program execution at the line containing the OBTAIN, WAIT, or CONVERSE.
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set the option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “CTRLC”.
- You can display this option by using the MANTIS DISPLAY command, and obtain the Boolean data type by using the $OPTION built-in function. Boolean displays TRUE or FALSE. For a given Boolean option, for example, CTRLC, the relation (OPTION (“CTRLC”) = NOT ($OPTION (“NOCTRLC”))) is always true.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

CTRLY

NOCTRLY

Description Specifies whether you want the CONTROL-Y terminal key sequence to terminate the MANTIS process, or whether CONTROL-Y should be ignored by MANTIS.

Abbreviation N/A

Default CTRLY

Format CTRLY or NOCTRLY

Considerations

- If CTRLY is specified, it still takes two consecutive CONTROL-Y characters to terminate the MANTIS process. The second CONTROL-Y must be entered within a short time after the first one, or the first one is ignored. This prevents accidental termination of the MANTIS process.
- CONTROL-Y process termination invokes the MANTIS exit handler, making it impossible to restart the process. Exit handling causes the screen to be cleared, closes all open files and signs off all connected databases.
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set the option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “CTRLY”.
- You can display this option by using the MANTIS DISPLAY command, and obtain the Boolean data type by using the $OPTION built-in function. Boolean displays TRUE or FALSE. For a given Boolean option, for example, CTRLY, the relation ($OPTION (“CTRLY”) = NOT ($OPTION (“NOCTRLY”))) is always true.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

DATEMASK

Description This the default date mask for nonprivileged users' programs.

Abbreviation N/A

Default YY/MM/DD

Format Datemask = *text* The *text* is a 0–32 character string.

Considerations

- You must use the percent sign (%) escape character before any slash (/) character in the DATEMASK option. For example:

  ```
  SET $OPTION("DATEMASK=YYYY%/MM%/DD")
  ```

  Refer to "MOP input and output" on page 520 for more information.

- Refer to the considerations for the DATE statement and function.

DB

Description Debit Indicator Option. Specifies the string you wish to use as the Debit Indicator DB.

Abbreviation N/A

Default DB

Format DB = *text*, where *text* is a 0–32 alphanumeric character string, optionally enclosed within double quotes (“”).

Considerations

- You can compile this option by using the MANTIS Options Compiler; that is, you can specify it in an options source file.
- You can set the option by using the MANTIS SET $OPTION statement; for example, SET $OPTION (“DB=Debit”).
- You can display this option by using the MANTIS DISPLAY command, and obtain the text data type by using the $OPTION built-in function. A TEXT string will be returned.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

DECIMAL

Description Specifies the character you want to use as your decimal point.

Abbreviation DEC

Default . period

Format DECIMAL = *text*, where *text* is a 1-character string specifying the decimal point character

Considerations

- The decimal point character must be distinct from the THOUSANDS option character.
- The decimal point character cannot be a special numeric mask character. Specifically, it cannot be any of the characters in the string “+-EZ”.
- The following table illustrates the effects of the option DECIMAL. It assumes that the statement SET $OPTION(“DEC=:”) has been executed.

Edit mask	Data entered (SCREEN)	Data entered (FORMAT)	Display
####.##	1234:56	1234:56	1234:56
#.###	1:234	1.234	1:234

DECUSELEN

Description Specifies the number of significant digits within a constant that a BIG data type will encode as a DECIMAL constant.

Abbreviation DECU

Default 14

Format DECUSELEN=*n*, where *n* is a number in the range 12–18.

Considerations

- BIG data type numbers are unreliable after about 14 significant digits. Any constant that exceeds the DECUSELEN value will be forced by MANTIS to be encoded as a DECIMAL constant.
- You can compile this option by using the MANTIS Options Compiler; that is, you can specify it in an options source file.
- You can display this option by using the MANTIS DISPLAY command and obtain the numeric data by using the $OPTION built-in function. A BIG number will be returned.

DELCHAIN
NODELCHAIN

Description Specifies whether you want MANTIS to delete all of its active subprocesses upon executing a CHAIN statement.

Abbreviation DEL or NODELC

Default DELCHAIN

Format DELCHAIN or NODELCHAIN

Considerations

- Refer to the considerations for the [NO]DELFACILITY option.
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set the option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “DELCHAIN”.
- You can display this option by using the MANTIS DISPLAY command, and obtain the Boolean data type by using the $OPTION built-in function. Boolean displays TRUE or FALSE. For a given Boolean option, for example, DELCHAIN, the relation ($OPTION (“DELCHAIN”) = NOT ($OPTION (“NODELCHAIN”))) is always true.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

DELFACILITY
NODELFACILITY

Description Specifies whether you want MANTIS to delete all of its active subprocesses upon return to the user's initial facility menu.

Abbreviation DELF or NODELF

Default DELFACILITY

Format DELFACILITY or NODELFACILITY

Considerations

- MANTIS creates a subprocess for the purpose of executing any of the following:
  - CALL statement
  - PERFORM statement
  - Executing the '$command' in Program Design—a shorthand form of the PERFORM command
  - Selecting the SPECTRA option from the initial facility menu—also a shorthand form of the 'PERFORM"SPECTRA"' statement or command
  - Spooling the PRINTER file
- **UNIX** MANTIS for UNIX only supports one active subprocess (shell) at any time. MANTIS waits for subprocess completion before continuing. The subprocess terminates itself upon completion. DELFACILITY, DELCHAIN, and DELIMMEDIATE have no effect in MANTIS for UNIX.
- **OpenVMS** MANTIS SPAWNS a command procedure to control the subprocess. The command procedure is identified by the logical name MANTIS_SPAWN.
- **OpenVMS** Normally only one subprocess is required for all of the above functions. However, if the DCL command directly or indirectly causes an ATTACH back to MANTIS, the subprocess is frozen until it regains control (via ATTACH) and returns normally to MANTIS. While frozen, the subprocess is not available for reuse, so MANTIS would SPAWN another one if required.

- **OpenVMS** You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.

- **OpenVMS** You can set the option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “DELFACILITY”.

- **OpenVMS** You can display this option by using the MANTIS DISPLAY command, and obtain the Boolean data type by using the $OPTION built-in function. Boolean displays TRUE or FALSE. For a given Boolean option, for example, DELFACILITY, the relation ($OPTION (“DELFACILITY”) = NOT ($OPTION (“NODELFACILITY”))) is always true.

- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

DELIMMEDIATE
NODELIMMEDIATE

Description Specifies whether you want MANTIS to delete all of its active subprocesses immediately upon normal return from the MANTIS_SPAWN command procedure.

Abbreviation DELI or NODELI

Default NODELIMMEDIATE

Format DELIMMEDIATE or NODELIMMEDIATE

Considerations

- Refer to the considerations for the [NO]DELFACILITY option.
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set the option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “DELIMMEDIATE”.
- You can display this option by using the MANTIS DISPLAY command, and obtain the Boolean data type by using the $OPTION built-in function. Boolean displays TRUE or FALSE. For a given Boolean option, for example, DELIMMEDIATE, the relation ($OPTION (“DELIMMEDIATE”) = NOT ($OPTION (“NODELIMMEDIATE”))) is always true.
- **OpenVMS** You can output this option to a patch file by using the PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

OpenVMS DFWRITE

OpenVMS NODFWRITE

Description Specifies whether you want MANTIS to use the RMS deferred write option on the MANTIS file and any external RMS files opened via ACCESS statements.

Abbreviation DF or NODF

Default DFWRITE

Format DFWRITE or NODFWRITE

Considerations

- This option is only applicable to the OpenVMS environment.
- Refer to the OpenVMS RMS Reference Manual for more information on the deferred write option.
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set the option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “DFWRITE”.
- You can display this option by using the MANTIS DISPLAY command, and obtain the Boolean data type by using the $OPTION built-in function. Boolean displays TRUE or FALSE. For a given Boolean option, for example, DFWRITE, the relation ($OPTION (“DFWRITE”) = NOT ($OPTION (“NODFWRITE”))) is always true.
- OpenVMS You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

DR

Description Debit Indicator Option. Specifies the string you wish to use as the Debit Indicator DR.

Abbreviation N/A

Default DR

Format DR = *text*, where *text* is a 0–32 alphanumeric character string, optionally enclosed within double quotes (“”).

Considerations

- You can compile this option by using the MANTIS Options Compiler; that is, you can specify it in an options source file.
- You can set the option by using the MANTIS SET $OPTION statement; for example, SET $OPTION (“DR=Debit”).
- You can display this option by using the MANTIS DISPLAY command, and obtain the text data type by using the $OPTION built-in function. A TEXT string will be returned.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

DWASIZE

Description Specifies the initial and expansion increment size of the MANTIS program data work area.

Abbreviation DW

Default 4096

Format DWASIZE = *n*, where *n* is a number in the range 1024–99999

Considerations

- The initial data work area size is the lowest multiple of this option large enough to store the first program variable created during program execution.
- When the data work area has to be expanded to accommodate a new variable of small size, this option ensures that a sufficient expansion takes place to accommodate a reasonable number of new variables before another expansion is required.
- This maximum does not limit the size of a single MANTIS variable. A large enough data work area will always be allocated.
- Setting this maximum too high will minimize the number of internal calls to allocate memory at the expense of large amounts of unused memory. The minimum value of 1024 should not normally cause performance problems.
- The optimum value of this option depends on the average data work area size for the most frequently executed MANTIS programs. The default value of 4096 is optimal for the MANTIS facility programs.
- MANTIS can retain data work areas beyond the life of the MANTIS programs which allocate them. This option affects the total amount of memory in use in conjunction with the MAXPCAPOOL (Number of Entries in the Subprogram Pool) and MAXMEMLIST (Number of Free-Memory Lists) options.
- The data work area is separate for each MANTIS program and external subroutine and stores all program variables. It is expanded when required to accommodate newly created variables.

- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set the option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “DW=8192”.
- You can display this option by using the MANTIS DISPLAY command, and obtain the Boolean data type by using the $OPTION built-in function. Boolean displays TRUE or FALSE. For a given Boolean option, for example, DWASIZE, the relation ($OPTION (“DWASIZE”) = NOT ($OPTION (“NODWASIZE”))) is always true.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

EDITOR

Description Invokes the external system editor you specify to be used by MANTIS.

Abbreviation ED

Default System dependent

Format EDITOR=*text*, where *text* is a 1–32 alphanumeric character string, optionally enclosed within double quotes (“)

Considerations

- MANTIS is released with this option set to the appropriate value for your system.
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set this option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “ED=TPU”.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.
- You can display this option by using the MANTIS DISPLAY command, and obtain the text data type by using the $OPTION built-in function. A TEXT string will be returned.
- **UNIX** Specify the external editor command you would enter prior to the filename. MANTIS saves the entity you are editing in a temporary file and appends the filename to the external editor command string entered here.
- **UNIX** If your external editor supports line number specification, you can include “%d” in this field and MANTIS will substitute the current line number before editing MANTIS programs. For example, “vi -c %d”.
- **OpenVMS** EDITOR must be a 3-character string for one of the following OpenVMS callable editor interfaces: EDT, LSE, TPU.

ENUM
NOENUM

Description Specifies whether you want to be able to enter numbers in scientific (E and/or decimal point) notation during a CONVERSE.

Abbreviation EN or NOEN

Default ENUM

Format ENUM or NOENUM

Considerations

- ENUM allows the entry of numbers, into any screen field, using exponent (E) notation and/or the decimal point character.
- NOENUM disallows exponent (E) notation in all screen fields and disallows the decimal point character in all screen fields except as permitted by an edit mask (for example ###,###.##).
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set the option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “ENUM”.
- You can display this option by using the MANTIS DISPLAY command, and obtain the Boolean data type by using the $OPTION built-in function. Boolean displays TRUE or FALSE. For a given Boolean option, for example, ENUM, the relation ($OPTION (“ENUM”) = NOT ($OPTION (“NOENUM”))) is always true.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

EXBOUND
NOEXBOUND

Description A display-only option indicating whether the MANTIS image is authorized to execute bound program code. This option can only be enabled by the MANTIS security patch.

Abbreviation EXB or NOEXB

Default Undefined

Format EXBOUND or NOEXBOUND

Considerations

- EXBOUND indicates authorization to execute bound program code. If a program is bound, MANTIS will automatically select the bound code for execution.
- NOEXBOUND indicates no authorization to execute bound program code. Even if programs are bound, MANTIS will select the unbound code for execution.
- You can display this option by using the MANTIS DISPLAY command, and obtain the Boolean data type by using the $OPTION built-in function. Boolean displays TRUE or FALSE. For a given Boolean option, for example, EXBOUND, the relation ($OPTION (“EXBOUND”) = NOT ($OPTION (“NOEXBOUND”))) is always true.

EXONLY

NOEXONLY

Description A display-only option indicating whether the MANTIS image is authorized for program development. This option can only be enabled by the MANTIS security patch.

Abbreviation EXO or NOEXO

Default Undefined

Format EXONLY or NOEXONLY

Considerations

- EXONLY indicates Execute-Only authorization. The program development option is disabled. You cannot use any of the MANTIS Facilities to create or modify MANTIS entities.
- NOEXONLY indicates Program Development authorization. You have unrestricted usage of all MANTIS facilities.
- You can display this option by using the MANTIS DISPLAY command, and obtain the Boolean data type by using the $OPTION built-in function. Boolean displays TRUE or FALSE. For a given Boolean option, for example, EXONLY, the relation ($OPTION (“EXONLY”) = NOT ($OPTION (“NOEXONLY”))) is always true.

EXTCURSORON
NOEXTCURSORON

Description External cursor on or off. Indicates whether the cursor should be visible or invisible during the execution of a PERFORM or CALL statement.

Abbreviation EXT or NOEXT

Default EXTCURSORON

Format EXTCURSORON or NOEXTCURSORON

Considerations

- Use NOEXTCURSORON to avoid cursor flash on execution of a PERFORM or CALL statement.
- Use EXTCURSORON if the external program/command you are invoking requires user input.
- You can compile this option by using the MANTIS Options Compiler; that is, you can specify it in an options source file.
- You can set this option by using the MANTIS SET $OPTION statement; for example, SET $OPTION “NOEXTCURSORON”.
- You can display this option by using the MANTIS DISPLAY command, and obtain the Boolean data type by using the $OPTION built-in function. Boolean displays TRUE or FALSE. For a given Boolean option, for example, EXTCURSORON, the relation ($OPTION (“EXTCURSORON”)= NOT($OPTION(“NOEXTCURSORON”))) is always true.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.
- **UNIX** For UNIX, this option is restricted for terminal types (VT100, VT200, etc.) where the invisible cursor option is supported. Also, if the UNIX platform you are using does not support the CURS_SET( ) function in Curses, the System Terminal File or MANTIS Terminfo File (depending on which one MANTIS is set to reference) must contain the proper escape sequence for the invisible cursor option.

EZONE

Description Scientific Notation Zone. Specifies the display width of a numeric result required to force display of scientific notation (E-notation or D-notation) if fixed point decimal format cannot represent the magnitude of the number in the specified Zone. This option affects how numeric data is displayed by the CONVERSE statement when no numeric edit mask is specified.

Abbreviation EZ

Default 0 disabled

Format EZONE_= *width*, where *width* is a number in the range 0–255

Considerations

- The default value of zero disables the option, in which case MANTIS attempts to display fixed point decimal notation using the entire field width on screen, using rounding of decimal places if necessary. Only when the magnitude of the number cannot be accurately represented in fixed point format will MANTIS attempt to display E-notation instead. If neither format will fit in the display field, MANTIS fills the field with asterisks (*) to indicate numeric overflow.

- A nonzero value of EZONE makes display of E-notation more likely because the width specified is the cut-off point for fixed point notation. If the magnitude of the number cannot be displayed in fixed point notation in the specified width, MANTIS will attempt to display it in E-notation.

- If the specified width is shorter than the width of a particular numeric field, you are more likely to see E-notation displayed in the field. For example, if EZONE=5 and you want to display 1234567 in a 13-character numeric screen field, MANTIS will display 1.234567E6 because the magnitude of the number cannot fit into a 5-character zone in fixed point format, so MANTIS displays the number in E-notation using the full field width to display as much precision as possible.

- The specified width can be longer than an actual field width. For example, if EZONE=13 and the field width is 5, and the number to display is 100000, MANTIS will display asterisks (overflow) because 100000 can be represented in fixed point format in a zone of 13, so MANTIS chooses fixed point format and consequently overflows the 5-character display field. This is in spite of the fact that “1E5” could easily fit in the display field.

- Specify EZONE=13 for compatibility with MANTIS 2.3 and earlier versions of MANTIS.
- You can compile this option by using the MANTIS Options Compiler; that is, you can specify it in an options source file.
- You can set the option by using the MANTIS SET $OPTION statement; for example, SET $OPTION “EZ=13”.
- You can display this option by using the MANTIS DISPLAY command, and obtain the numeric data type by using the $OPTION built-in function. A BIG number is returned.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.
- The EZONE option should be set at MANTIS initialization or at the start of a MANTIS program. Setting this option at other times can produce unexpected results in the formatting of output fields.

FLDMASK

Description Screen Design Mask Character Option. Specifies the mask character you wish to use to identify data fields in newly created MANTIS screen designs.

Abbreviation FL

Default #

Format FLDMASK = *text*, where *text* is a 1-character string specifying the field mask character

Considerations

- The field mask character must be distinct from the BLANKFILL Option character.
- The field mask character is not allowed to be a special numeric mask character. Specifically, it cannot be any of the characters in the string “ 0+-,.|Z”.
- A screen’s mask character may be changed via the help screen that is displayed when GOLD/H is invoked in the Screen Design Facility, Create or Update a Screen option.

FMTMASK

Description Program FORMAT Function Mask Character Option. Specifies the default mask character you wish to use for the FORMAT function in newly created MANTIS programs.

Abbreviation FM

Default #

Format FMTMASK = *text*, where *text* is a 1-character string specifying the FORMAT function default mask character.

Considerations

- The FORMAT function mask character cannot be a special numeric mask character. Specifically, it cannot be any of the characters in the string “ 0+-,.|Z”.
- The FORMAT function mask character associated with a program will always be used by that program, regardless of the current value of the FMTMASK Option.
- When interpreting the mask parameter to the FORMAT function, the program FORMAT function mask character will be used by default if the third FORMAT parameter (mask character) has not been specified, or is the NULL string.
- The program FORMAT function mask character can be changed in the Program Design Library Facility.

HELDFAULT
NOHELDFAULT

Description Indicates whether a “HELD” status from I/O operations on PDM and RDM user views will result in a MANTIS fault or not. When set, TRAP must be on to catch the fault.

Abbreviation H or NOH

Default HELDFAULT

Format HELDFAULT or NOHELDFAULT

Considerations

- This option applies only to I/O operations on streams identified by ULTRA and VIEW statements. In particular, it has no effect on the behavior of FILE or ACCESS I/O statements.
- You can set the option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “HELDFAULT”
- You can display this option by using the MANTIS DISPLAY command, and obtain the Boolean data type by using the $OPTION built-in function. Boolean displays TRUE or FALSE. For a given Boolean option, for example, HELDFAULT, the relation ($OPTION (“HELDFAULT”) = NOT ($OPTION (“NOHELDFAULT”))) is always true.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

IBM

NOIBM

Description Specifies whether MANTIS executes in IBM compatibility mode.

Abbreviation N/A

Default NOIBM

Format IBM or NOIBM

Considerations

- IBM sets IBM compatibility mode. Any MANTIS program that attempts to use any of the MANTIS language extensions or exceeds any of the MANTIS for the IBM mainframe size limitations will fault. Refer also to the IBMCHECKS and IBMPCIFAULT options.
- When the IBM option is executed, it automatically sets the following options:
  - BOXCHARS="_!!_ _!!!_!!_ _!!"
  - MAXCHARGS = 40
  - CRPOSITIVE
  - MAXDIMSIZE = 255
  - MAXDOLEVELS = 5
  - MAXNODIMS = 2
  - MAXPROGLINE = 30000
  - MAXPROGSIZE = 65535
  - MAXSTRLEN = 255
  - MAXUSERS = 255
  - MAXVARS = 2047
  - NOBATAUTOSKIP
  - NOIGNORETRLBLKS
  - NULLPOSITION=0
  - RELCHAIN
  - SIGDIGITS=14
  - STRCOMPARE = LENGTH
  - TXT0=""

- NOIBM disables IBM compatibility mode. Any program written for MANTIS for the IBM mainframe will run unmodified on MANTIS. However, programs written for MANTIS will fault when migrated to MANTIS for the IBM mainframe if they use any of the language extensions or exceed any of the limits of MANTIS for the IBM mainframe.

- When the NOIBM option is executed, the above related options are not automatically reset. If you want to dynamically change from IBM mode to NOIBM mode, the recommended approach is to use an options file which specifies NOIBM in conjunction with the preferred values of these related options.

- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.

- You can set the option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “IBM”.

- You can display this option by using the MANTIS DISPLAY command, and obtain the Boolean data type by using the $OPTION built-in function. Boolean displays TRUE or FALSE. For a given Boolean option, for example, IBM, the relation ($OPTION (“IBM”) = NOT ($OPTION (“NOIBM”))) is always true.

- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

IBMCHECKS

Description IBM compatibility Checks Option. IBMCHECKS determines the behavior of a MANTIS program if an attempt is made to execute a MANTIS language extension or exceed IBM size limitations while in IBM compatibility mode.

Abbreviation IBMC

Default FAULT

Format IBMCHECKS = *option*

Options

Fault	On encountering any IBM problems, the MANTIS program will fault.
Ignore	The MANTIS program will ignore any IBM compatibility problems.
Warnings	On encountering any IBM problems, the MANTIS program will issue a warning message and continue.

Considerations

- The IBMCHECKS option is only relevant when a program is executed in IBM compatibility mode.
- You can compile this option by using the MANTIS Options Compiler; that is, you can specify it in an options source file.
- You can set the option by using the MANTIS SET $OPTION statement; for example, SET $OPTION “IBMC=WARN”.
- You can display this option by using the MANTIS DISPLAY command, and obtain the data text type by using the $OPTION built-in function. A TEXT string will be returned.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

IBMPCIFAULT

Description This option determines what happens when an attempt is made to run a program that is BOUND(W) while in IBM compatibility mode. A BOUND(W) program is a program that is BOUND with IBM incompatibility warnings.

Abbreviation IBMP or NOIBMP

Default IBMPCIFAULT

Format IBMPCIFAULT or NOIBMPCIFAULT

Considerations

- The IBMPCIFAULT option is only relevant when a BOUND(W) program is executed in IBM compatibility mode.
- If IBMPCIFAULT is TRUE, then on attempting to execute such a program, MANTIS will fault with the error message

  ```
  687 The bound program is not IBM compatible.
  ```

- If IBMPCIFAULT is FALSE, then on executing such a program, MANTIS will fault with IBM compatibility-related error messages only when an incompatible statement is reached.
- See also the “IBMCHECKS” on page 573 options as a means of overriding IBM-incompatibility errors.
- You can compile this option by using the MANTIS Options Compiler; that is, you can specify it in an options source file.
- You can set the option by using the MANTIS SET $OPTION statement; for example, SET $OPTION “IBMPCIFAULT”.
- You can display this option by using the MANTIS DISPLAY command, and obtain the Boolean data type by using the $OPTION built-in function. Boolean displays TRUE or FALSE. For a given Boolean option, for example, for IBMPCIFAULT, the relation ($OPTION(“IBMPCIFAULT”) - NOT($OPTION(“NOPCIFAULT)) is always true.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

IGNORETRLBLKS
NOIGNORETRLBLKS

Description Specified to ignore trailing blanks when the STRCOMPARE option is also set to ALPHANUMERIC for a given program.

Abbreviation NOIGN

Default NOIGNORETRLBLKS

Format IGNORETRLBLKS or NOIGNORTRLBLKS

Considerations

- This option is only enabled when the NOIBM option is set, along with the STRCOMPARE option set as ALPHANUMERIC for a given program.
- IGNORETRLBLKS string comparison first compares the string operands up to the shorter string length, and the longer string length is compared for trailing blanks only if they are equal up to the shorter length. If the longer string contains all blanks after the shorter string length, the fields are considered equal.
- NOIGNORETRLBLKS string comparison first compares the string operands up to the shorter string length, and their lengths are compared only if they are equal up to the shorter length.
- This option must be set to NOIGNORETRLBLKS for compatibility with MANTIS for IBM mainframe.
- You can compile this option by using the MANTIS options compiler, that is, you specify it in an options source file.
- You can display this option by using the MANTIS DISPLAY command, and obtain the Boolean data type by using the $OPTION built-in function. Boolean displays TRUE or FALSE. For a given Boolean option, for example, the IGNORETRLBLKS relation

  ```
  $OPTION(“IGNORETRLBLKS”)=NOT($OPTION(“NOIGNORETRLBLKS”)))
  ```

  is always true.

INDEXSIZE

Description Specifies the initial, and expansion increment size of the MANTIS program index area. The index area is a table linking symbol table names to variables in the data work area. There is one index entry per symbol table entry.

Abbreviation IN

Default 1024

Format INDEXSIZE = *n*, where *n* is a number in the range 1024–99999

Considerations

- The initial index area size is the lowest multiple of this option large enough for all the variables referenced in the program code. Each index entry is a 32-bit address into the data work area. It is expanded when complex MANTIS statements such as SCREEN, INTERFACE, and VIEW are executed, and cause the number of program variables to exceed the capacity of the index area.
- Refer to the DWASIZE (Data Work Area Increment Size) option considerations for the impact of this option on MANTIS performance.
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set the option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “IN=1050”.
- You can display this option by using the MANTIS DISPLAY command, and obtain the numeric data type by using the $OPTION built-in function. A BIG number is returned.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

INFORMIXSQL
NOINFORMIXSQL

Description A display-only option indicating whether the MANTIS image is authorized for embedded SQL support for INFORMIX. This option can only be enabled by the MANTIS security patch.

Abbreviation INF or NOINF

Default Undefined

Format INFORMIXSQL or NOINFORMIXSQL

Considerations

- INFORMIXSQL indicates authorization to execute embedded SQL statements in MANTIS programs when the DBTYPE is set to INF; that is, against an INFORMIX DRDM database. You will be allowed to execute EXEC_SQL, SQLDA and SQLCA statements and functions.
- NOINFORMIXSQL indicates no authorization to execute embedded SQL statements in MANTIS programs when the DBTYPE is set to INF. You will not be allowed to execute EXEC_SQL, SQLDA and SQLCA statements and functions when the DBTYPE is set to INF.
- You can display this option by using the MANTIS DISPLAY command, and obtain the Boolean data type by using the $OPTION built-in function. Boolean displays TRUE or FALSE. For a given Boolean option, for example, INFORMIXSQL, the relation ($OPTION (“INFORMIXSQL”) = NOT ($OPTION (“NOINFORMIXSQL”))) is always true.

KANJI

NOKANJI

Description A display-only option indicating whether the MANTIS image is authorized to support the DBCS character set. This option can only be enabled by the MANTIS security patch.

Abbreviation KA or NOK

Default Undefined

Format KANJI or NOKANJI

Considerations

- DBCS support provides the following features:
  - DBCS data entry during CONVERSE and OBTAIN statement execution.
  - Use of MIXED and DBCS data types for program variables.
  - Correct conversion of mixed data strings between external and internal formats. See also, “SQLMIXSEP” on page 629 option.
- You can display this option by using the MANTIS DISPLAY command, and obtain the Boolean data type by using the $OPTION built-in function. Boolean displays TRUE or FALSE. For a given Boolean option, for example, KANJI, the relation ($OPTION (“KANJI”) = NOT ($OPTION (“NOKANJI”))) is always true.

KHASH

Description Specifies the DBCS field hash character used in the Screen Design Facility. See "Display completed design" on page 98 for more information.

Abbreviation KH

Default OpenVMS %xA1%xF4

Format KHASH=*character*, where *character* is a single (2-byte) DBCS character.

Considerations

- This option is only applicable in the DBCS version of MANTIS.
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set the option by using the MANTIS SET $OPTION statement, for example, SET $OPTION "KH=DBCS character"
- You can display this option by using the MANTIS DISPLAY command, and obtain the DBCS data type by using the $OPTION built-in function. A DBCS string will be returned.
- OpenVMS You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

KPROMPT

Description Specifies the DBCS prompt string to be used when MANTIS prompts for DBCS input (in response to the SELKANJI terminal function).

Abbreviation KR

Default >> (in DBCS)

Format KPROMPT = *DBCS-string*, where *DBCS-string* is a DBCS character string of 1–16 bytes, optionally enclosed within text double quotes (“).

Considerations

- This option is only applicable in the DBCS version of MANTIS.
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set the option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “KP=DBCS-string”.
- You can display this option by using the MANTIS DISPLAY command, and obtain the DBCS data type by using the $OPTION built-in function. A DBCS string will be returned.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

KSPACE

Description Specifies the DBCS space character to be used by MANTIS.

Abbreviation KS

Default OpenVMS %xA1%xA1

Format KSPACE=character, where character is a DBCS character.

Considerations

- This option is only applicable in the DBCS version of MANTIS.
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set the option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “KS=DBCS character”.
- You can display this option by using the MANTIS DISPLAY command, and obtain the DBCS data type by using the $OPTION built-in function. A DBCS string will be returned.
- OpenVMS You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

LANGUAGE

Description Specifies the language for the initial display of the MANTIS sign-on screen.

Abbreviation LA

Default ENGLISH

Format LANGUAGE = *language*, where *language* is a 1–16 alphanumeric character string, optionally enclosed within double-quotes (“)

Considerations

- You must specify a valid MANTIS language as defined in the MANTIS Languages File (Refer to *AD/Advantage MANTIS Administration OpenVMS/UNIX*, P39-1320, for more information). If the specified language is not valid, ENGLISH is used.
- Each MANTIS user profile specifies the default language for all SCREEN and PROMPTER statements, but the user’s default language cannot take effect until MANTIS sign-on is complete. This option is required to ensure that the desired language is used for the initial sign-on screen.
- This option is only applicable in the DBCS version of MANTIS.
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set the option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “LA=GERMAN”.
- You can display this option by using the MANTIS DISPLAY command, and obtain the text data type by using the $OPTION built-in function. A TEXT string will be returned.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

LEADFORMFEED

NOLEADFORMFEED

Description Output Leading Form Feed. Specify whether MANTIS output files contain a leading form-feed character. In this context, MANTIS output refers to all data output by CONVERSE, SHOW, DISPLAY or LIST, as well as listing files created by any MANTIS Facility or Utility.

Abbreviation LE or NOLE

Default LEADFORMFEED

Format LEADFORMFEED or NOLEADFORMFEED

Considerations

- When LEADFORMFEED is enabled and MANTIS output is directed to a file, the first character to control vertical carriage control will be a form-feed character.
- Specify NOLEADFORMFEED to prevent MANTIS from sending a leading form-feed character to the output file.
- You can compile this option by using the MANTIS Options Compiler; that is, you can specify it in an options source file.
- You can set this option by using the MANTIS SET $OPTION statement; for example, SET $OPTION “NOLEADFORMFEED”.
- You can display this option by using the MANTIS DISPLAY command, and obtain the Boolean data type by using the $OPTION built-in function. Boolean displays TRUE or FALSE. For a given Boolean option, for example, LEADFORMFEED, the relation ($OPTION (“LEADFORMFEED”)= NOT($OPTION(“NOLEADFORMFEED”))) is always true.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

MAXBINDERRS

Description Specifies the maximum number of errors allowed when you bind a single program.

Abbreviation MAXB

Default 100

Format MAXBINDERRS = *n*., where *n* is a number in the range 1–99999

Considerations

- If you select several programs for binding via the Program Design Directory Selection Menu, the maximum program binding error count applies to each program being bound, and termination of the binding of one program does not affect the binding of the remaining selection.
- When this number of errors is reached, the bind operation is terminated with a message indicating that maximum number of allowed error messages has been reached.
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set the option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “MAXB=500”.
- You can display this option by using the MANTIS DISPLAY command, and obtain the numeric data type by using the $OPTION built-in function. A BIG number will be returned.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

MAXCHARGS

Description Specifies the maximum number of parameters allowed in a CHAIN statement.

Abbreviation MAXC

Default 65535

Format MAXCHARGS = *n*, where *n* is a number in the range 40–255

Considerations

- Must be set to 40 for compatibility with MANTIS for the IBM mainframe.
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set the option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “MAXC=700”.
- You can display this option by using the MANTIS DISPLAY command, and obtain the numeric data type by using the $OPTION built-in function. A BIG number will be returned.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

MAXDIMSIZE

Description Specifies the maximum dimension size of any single dimension of an array variable—BIG, SMALL, TEXT, KANJI or MIXED. The dimension size is the number of occurrences of the variable within a given dimension.

Abbreviation MAXDI

Default 65535

Format MAXDIMSIZE = *n*, where *n* is a number in the range 255–65535

Considerations

- Must be set to 255 for compatibility with MANTIS for the IBM mainframe.
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set the option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “MAXDI=500”.
- You can display this option by using the MANTIS DISPLAY command, and obtain the numeric data type by using the $OPTION built-in function. A BIG number will be returned.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

MAXDOLEVELS

Description Specifies the maximum number of nested external subroutine calls in MANTIS.

Abbreviation MAXDO

Default 255

Format MAXDOLEVELS = *n*, where *n* is a number in the range 5–255

Considerations

- External subroutine calls are performed by MANTIS external DO. The DOLEVEL built-in variable returns the current external subroutine nesting level. DOLEVEL equals zero for the main program and is incremented by one for each external subroutine level.
- MAXDOLEVELS ensures that external subroutines do not recurse indefinitely. The limit of 255 levels is sufficient because external subroutine calls are costly in terms of performance and memory requirements.
- Must be set to 5 for compatibility with MANTIS for the IBM mainframe.
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set the option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “MAXDO=200”.
- You can display this option by using the MANTIS DISPLAY command, and obtain the numeric data type by using the $OPTION built-in function. A BIG number will be returned.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

MAXENVBUF

Description Maximum environment buffer size. This option only applies to MANTIS for UNIX. The SET $SYMBOL and SET $LOGICAL statements alter the UNIX environment. MANTIS stores the variables in its own environment buffer and performs crude space management on the buffer.

Abbreviation MAXE

Default 1024

Format MAXENVBUF= *n*, where *n* is a number in the range 1024–99999

Considerations

- Repeatedly setting an environment variable will rapidly use up buffer space if the value being set continually increases in length.
- When the environment buffer is full and space cannot be found to store another variable, MANTIS allocates another buffer. Space management is only performed in the current buffer. Old buffers remain dormant and are never deleted, but can still store current environment variable values.
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set this option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “MAXE”=1024.
- **OpenVMS** You can output this option to a patch file by using the PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.
- You can display this option by using the MANTIS DISPLAY command, and obtain the numeric data type by using the $OPTION built-in function. A BIG number will be returned.

MAXMEMLISTS

Description Specifies the number of free-memory lists maintained internally by MANTIS. Each free list is a linked list of memory allocations of the same size. The free lists are searched first to resolve any internal memory allocation request. A 'hit' in the free list can mean considerable savings in CPU utilization. If the requested memory is not found in a free list, MANTIS makes a system call to obtain the memory.

Abbreviation MAXM

Default 4

Format MAXMEMLISTS = *n*, where *n* is a number in the range 0–10

Considerations

- Only the segments of program context areas are candidates for inclusion in memory free lists. The exact sizes of the memory segments saved depends on the order of events in which memory segments are released during MANTIS initialization. The size also varies due to the MANTIS programs executed and the values of the MANTIS options DWASIZE, PWASIZE, SYMBOLSIZE, INDEXSIZE, and MAXPCAPOOL.
- The only way to find the optimal value for this option is by experimentation. The key performance indicators are CPU utilization and page faults, which can be monitored using the MANTIS STATS statement.
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set the option by using the MANTIS SET $OPTION statement, for example, SET $OPTION "MAXM=5".
- You can display this option by using the MANTIS DISPLAY command, and obtain the numeric data type by using the $OPTION built-in function. A BIG number will be returned.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

MAXNODIMS

Description Specifies the maximum number of dimensions allowed in a MANTIS array variable.

Abbreviation MAXN

Default 255

Format MAXNODIMS = *n*, where *n* is a number in the range 2–255

Considerations

- Must be set to 2 for compatibility with MANTIS for the IBM mainframe.
- When MANTIS has the IBM option enabled, the number of dimensions allowed on a text variable is MAXNODIMS - 1, that is, only one dimension is allowed for text variables.
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set the option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “MAXN=200”.
- You can display this option by using the MANTIS DISPLAY command, and obtain the numeric data type by using the $OPTION built-in function. A BIG number will be returned.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

MAXPCAPOOL

Description Specifies the maximum number of entries in the subprogram pool. Each entry is a saved MANTIS external subroutine context, including program work area, symbol table and index area. The data work area is released.

Abbreviation MAXPC

Default 3

Format MAXPCAPOOL = *n*, where *n* is a number in the range 0–255

Considerations

- When a MANTIS external subroutine returns normally via EXIT or RETURN, or is terminated by an error condition, its context in memory is saved in the external subprogram pool unless this option is set to zero.
- When the pool is full, the oldest entry is removed to make room for the incoming subprogram context.
- The subprogram pool is the first place searched when executing any program load request resulting from a MANTIS command or statement.
- Refer to *AD/Advantage MANTIS Language OpenVMS/UNIX*, P39-1310, for more performance tuning considerations for MANTIS external subroutines.
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set the option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “MAXPC=5”.
- You can display this option by using the MANTIS DISPLAY command, and obtain the numeric data type by using the $OPTION built-in function. A BIG number will be returned.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

MAXPROGLINE

Description Specifies the maximum line number (not number of lines) allowed in a MANTIS program. In the Program Design Facility, you will not be permitted to create program line numbers greater than this maximum.

Abbreviation MAXPROGL

Default 64000

Format MAXPROGLINE = *n*, where *n* is a number in the range 9999–64000

Considerations

- Must be set to 30000 for compatibility with MANTIS for the IBM mainframe.
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set the option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “MAXPROGL=2000”.
- You can display this option by using the MANTIS DISPLAY command, and obtain the numeric data type by using the $OPTION built-in function. A BIG number will be returned.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

MAXPROGSIZE

Description Specifies the maximum program size in bytes. This is the size of the program code segment only, and does not include the size of the program data or symbol table segments.

Abbreviation MAXPROGS

Default 999999

Format MAXPROGSIZE = *n*, where *n* is a number in the range 32768–999999

Considerations

- Must be set to 65535 for compatibility with MANTIS for the IBM mainframe.
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set the option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “MAXPROGS=40000”.
- You can display this option by using the MANTIS DISPLAY command, and obtain the numeric data type by using the $OPTION built-in function. A BIG number will be returned.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

MAXSTRLEN

Description Specifies the maximum length of a string variable in a MANTIS program. When a string variable is created in a MANTIS program, its length cannot exceed this value.

Abbreviation MAXS

Default 65535

Format MAXSTRLEN = *n*, where *n* is a number in the range 255–65535

Considerations

- Must be set to 255 for compatibility with MANTIS for the IBM mainframe.
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set the option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “MAXS=500”.
- You can display this option by using the MANTIS DISPLAY command, and obtain the numeric data type by using the $OPTION built-in function. A BIG number will be returned.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

MAXUSERS

Description Specifies the maximum number of users which can be defined in the MANTIS file.

Abbreviation MAXU

Default 65535

Format MAXUSERS = *n*, where *n* is a number in the range 255–65535

Considerations

- MANTIS reserves 31 privileged users for internal use, for example, facility programs. The number of users you can define in the MANTIS file is equal to this maximum minus 31.
- Must be set to 255 for compatibility with MANTIS for the IBM mainframe.
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set the option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “MAXU=500”.
- You can display this option by using the MANTIS DISPLAY command, and obtain the numeric data type by using the $OPTION built-in function. A BIG number will be returned.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

MAXVARS

Description Specifies the maximum number of variables allowed in a MANTIS program. This is equal to the sum of the number of symbolic names coded in the program and the number of variables created by complex statements such as SCREEN, INTERFACE, and VIEW.

Abbreviation MAXV

Default 65535

Format MAXVARS = *n*, where *n* is a number in the range 2047–65535

Considerations

- Must be set to 2047 for compatibility with MANTIS for the IBM mainframe.
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set the option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “MAXV=3000”.
- You can display this option by using the MANTIS DISPLAY command, and obtain the numeric data type by using the $OPTION built-in function. A BIG number will be returned.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

MBXWAITFULL
NOMBXWAITFULL

Description Specifies whether you want MANTIS to wait before attempting an INSERT into a full mailbox or to display a FAULT 217.

Abbreviation MB or NOMB

Default MBXWAITFULL

Format MBXWAITFULL or NOMBXWAITFULL

Considerations

- If the mailbox fills up while MBXWAITFULL is true, then MANTIS will hang unless there is another process reading from the mailbox.
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set this option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “MBXWAITFULL”.
- You can display this option by using the MANTIS DISPLAY command, and obtain the Boolean data type by using the $OPTION built-in function. Boolean displays TRUE or FALSE. For a given Boolean option, for example, MBXWAITFULL, the relation ($OPTION(“MBXWAITFULL”)=NOT($OPTION(“NOMBXWAITFULL”)) is always true.
- You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

MORE
NOMORE

Description Specifies whether you want MANTIS to pause and display the “MORE” prompt after each screen of scroll-mode output.

Abbreviation MO or NOMO

Default MORE

Format MORE or NOMORE

Considerations

- The MORE option has no effect while BATCH is TRUE. During MANTIS batch input processing, the MORE prompt is never displayed. In addition, no WAIT is ever performed during scroll-mode output.
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set this option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “MORE”.
- You can display this option by using the MANTIS DISPLAY command, and obtain the Boolean data type by using the $OPTION built-in function. Boolean displays TRUE or FALSE. For a given Boolean option, for example, MORE, the relation ($OPTION (“MORE”)=NOT($OPTION(“NOMORE”))) is always true.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

NULLPOSITION

Description Defines whether the statement POINT (“string”-NULL) should give the result 0, 1, or 2

Abbreviation NU

Default 1

Format NULLPOSITION= *option*, where *option* is either 0, 1, or 2

Considerations

- This option must be set to 0 for compatibility with MANTIS for the IBM mainframe.
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set this option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “NULLPOSITION=1”.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.
- You can display this option by using the MANTIS DISPLAY command, and obtain the numeric data type by using the $OPTION built-in function. A BIG number will be returned.
- In the MANTIS/VAX 1.0 release, POINT(string-NULL) returns 1. Other releases of MANTIS return 0. When NULLPOSITION is set to 2, MANTIS will return 1 to the POINT function, like MANTIS/VAX 1.0.

OPTIONS

Description Specifies the name of an options file which will be executed immediately. All the options specified in the file will be set.

Abbreviation O

Default The logical name MANTIS_OPTIONS can be defined to specify an options file to execute during MANTIS initialization.

Format OPTIONS = *filespec*, where *filespec* is an external file specification identifying an options source or binary file. If the file name does not have a file type suffix, .BIN is used by default.

Considerations

- References to options files from within other options files is permitted to a maximum nesting level of 100.
- The file specified by OPTIONS or the logical name MANTIS_OPTIONS can be an options source or a compiled options file, however, the compiled file will execute far more efficiently.
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set the option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “OPTIONS=*optfile*.opt”.

ORASQL
NOORASQL

Description A display-only option indicating whether the MANTIS image is authorized for embedded SQL support for ORACLE. This option can only be enabled by the MANTIS security patch.

Abbreviation OR or NOOR

Default Undefined

Format ORASQL or NOORASQL

Considerations

- ORASQL indicates authorization to execute embedded SQL statements in MANTIS programs when the DBTYPE is set to ORACLE; that is, against an ORACLE DRDM database. You will be allowed to execute EXEC_SQL, SQLDA and SQLCA statements and functions.
- NOORASQL indicates no authorization to execute embedded SQL statements in MANTIS programs when the DBTYPE is set to ORACLE. You will not be allowed to execute EXEC_SQL, SQLDA and SQLCA statements and functions when the DBTYPE is set to ORACLE
- You can display this option by using the MANTIS DISPLAY command, and obtain the Boolean data type by using the $OPTION built-in function. Boolean displays TRUE or FALSE. For a given Boolean option, for example, ORASQL, the relation ($OPTION (“ORASQL”) = NOT ($OPTION (“NOORASQL”))) is always true.

ORAUNPAD

Description Specified if MANTIS text variables used as Oracle input host variables will have trailing blanks removed, for example, VARCHAR, VARCHAR2 Oracle data types used in Oracle SQL commands like INSERT.

Abbreviation N/A

Default NOORAUNPAD

Format ORAUNPAD or NOORAUNPAD

Considerations

- You can set this option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “ORAUNPAD”.
- You can compile this option by using the MANTIS options compiler; that is, you specify it in an options source file.
- You can display this option by using the MANTIS DISPLAY command, and obtain the Boolean data type by using the $OPTION built-in function. Boolean displays TRUE or FALSE. For a given Boolean option, for example, ORAUNPAD, the relation:

  ```
  ($OPTION ("ORAUNPAD") = NOT ($OPTION ("NOORAUNPAD")))
  ```

  is always true.

PATH

Description The MANTIS entity search path is defined as a list of MANTIS user libraries, giving the order in which those libraries are searched for design entities when programs are run in application development mode (that is, from Program Design). The PATH option has no effect when programs are run outside the control of Program Design.

PATH functions independently of the Shared Entity Pool—as each library in the PATH is processed, the Active Shared Pool is searched first and then the MANTIS file.

Abbreviation PA

Default NULL; that is, no PATH.

Format PATH = *text*

The *text* is a string of libnames separated by colons (:) and with the following special libname identifiers:

.	Refers to the signed-on user's own library.
-	Refers to the library of the owner of the current program context.
#	Refers to the library specified in the MANTIS statement declaring the entity. When the username is omitted from the libname, '#' is effectively the same as '.'.

Considerations

- When PATH is NULL, MANTIS only searches the library specified in the MANTIS statement declaring the entity. Then only when the libname is omitted, is the user's own library searched by default.

- SET $OPTION "PATH=#" achieves nothing apart from degrading MANTIS performance. Use SET $OPTION "PATH=" to disable PATH processing.

- To test out another user's program in which the libnames do not define the user (that is, you are normally expected to sign on to that user to run the application), set PATH as follows:

  ```
  SET $OPTION "PATH=#:-"
  ```

  Then you should be able to run the application from the Program Design Facility in your own user library.

- Do not set PATH in an application program—unpredictable results may occur.

- A typical example of the use of PATH is shown below.

  ```
  SET $OPTION "PATH=".:DEVEL:#"
  SCREEN MAP("RUNTIME:MAIN_MENU")
  ```

  The search path for screen MAIN_MENU is:

  A. The signed on user's own library (.)

  B. The DEVEL library

  C. The RUNTIME library (#)

PCIHEAPSIZE

Description Specifies the size in bytes of the heap storage used by the MANTIS bound program (pcode) interpreter. The PCI heap is used to store intermediate string expression results during expression evaluation.

Abbreviation PCIH

Default 2048

Format PCIHEAPSIZE = *n*, where *n* is a number in the range 256–65535

Considerations

- You only need to increase this value if you encounter MANTIS FAULT 706.
- If MANTIS FAULT 706 occurs, you may want to consider reducing the MAXSTRLEN option (Maximum String Length).
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set the option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “PCIH=5000”.
- You can display this option by using the MANTIS DISPLAY command, and obtain the numeric data type by using the $OPTION built-in function. A BIG number will be returned.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

PCISTACKSIZE

Description Specifies the size in bytes of the stack storage used by the MANTIS bound program (pcode) interpreter. The PCI stack is used to store intermediate steps during expression evaluation.

Abbreviation PCIS

Default 15000

Format PCISTACKSIZE= *n*, where *n* is a number in the range 256–65535

Considerations

- You only need to increase this value if you encounter MANTIS fault 705.
- This option is only used by MANTIS for UNIX.
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set this option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “PCISTACKSIZE=256”.
- You can display this option by using the MANTIS DISPLAY command, and obtain the numeric data type by using the $OPTION built-in function. A BIG number will be returned.

PDM

NOPDM

Description *Display* (Boolean). Specifies whether SUPRA 1.3 PDM is available.

Abbreviation PD or NOPD

Default Depends on the current platform

Format PDM or NOPDM

Considerations

- Unless the PDM option is TRUE, you cannot use the ULTRA statement, list ULTRAs via the Directory Facility, or use the ULTRA Design Facility.
- You can display this option by using the MANTIS DISPLAY command, and obtain the Boolean data type by using the $OPTION built-in function. Boolean displays TRUE or FALSE. For a given Boolean option, for example, PDM, the relation ($OPTION(“PDM”)=NOT($OPTION(“NOPDM”))) is always true.

PID

Description The Process Identification number. A display-only option returning an 8-alphanumeric character string identifying the process.

Abbreviation PI

Default Undefined

Format PID

Consideration You can display this option by using the MANTIS DISPLAY command, and obtain the text data type by using the $OPTION built-in function. A TEXT string will be returned.

PRINTCMD

Description System print command. Specifies the system command used by MANTIS to print files opened by the OUTPUT PRINTER statement.

Abbreviation PRI

Default System-dependent

Format PRINTCMD= text, where text is a 1–32 alphanumeric character string, optionally enclosed within double quotes (“)

Considerations

- MANTIS is released with this option set to the appropriate command for your system.
- Your MANTIS user profile specifies the PRINTER-ID in terms of an external filename optionally followed by print command options. The PRINTER-ID is the default value given to PRINTER when you sign on to MANTIS.
- When MANTIS spawns a subprocess to perform a print command, any print command options specified by PRINTER are included in the print command issued to the system.
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set this option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “PRI=PRINT”.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.
- You can display this option by using the MANTIS DISPLAY command, and obtain the text data type by using the $OPTION built-in function. A TEXT string will be returned.

PRODOPT*n*

NOPRODOPT*n*

Description There are 31 display-only options indicating the setting of the corresponding bits in the MANTIS security longword. These bits represent what functionality is authorized to the user.

Abbreviation N/A

Format PRODOPT*n* or NOPRODOPT*n*, where *n* is a number within the range of 1–31

Consideration You can display this option by using the MANTIS DISPLAY command, and obtain the Boolean data type by using the $OPTION built-in function. Boolean displays TRUE or FALSE. For a given Boolean option, for example, PRODOPTn, the relation ($OPTION (“PRODOPT*n*”)=NOT($OPTION(“NOPRODOPT*n*”))) is always true.

PWASIZE

Description Specifies the initial, and expansion increment size of the MANTIS program work area. The program work area is where the MANTIS program code is stored after a program is loaded into memory.

Abbreviation PW

Default 1024

Format PWASIZE = *n*, where *n* is a number in the range 1024–99999

Considerations

- The initial program work area size is the lowest multiple of this option large enough to store the loaded program and can only be expanded during Program Design.
- Refer to the DWASIZE (Data Work Area Increment Size) option considerations for the impact of this option on MANTIS performance.
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set the option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “PW=5000”.
- You can display this option by using the MANTIS DISPLAY command, and obtain the numeric data type by using the $OPTION built-in function. A BIG number will be returned.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

QUOTE

Description Program Quote Character Option. Specifies the program string quote character (that is, the string delimiter) you wish to use in newly created MANTIS programs.

Abbreviation Q

Default "

Format QUOTE = *text*, where *text* is a 1-character string specifying the quote character.

Considerations

- The quote character is not allowed to be part of the MANTIS character set (except for “). Specifically, it cannot be an alphanumeric character, or any of the characters in the string “ $.+-=(),<>|/!*:;&’_”.
- The quote character must be distinct from the COMMENT Option character.
- When entering a program in Program Design, the double quote (“) character may also be used as a string delimiter.
- The quote character associated with a program will always be used by that program, regardless of the current value of the QUOTE Option.
- The program quote character can be changed in the Program Design Library Facility.

RDBSQL
NORDBSQL

Description A display-only option indicating whether the MANTIS image is authorized for embedded SQL support for RDB. This option can only be enabled by the MANTIS security patch.

Abbreviation RDB or NORDB

Default Undefined

Format RDBSQL or NORDBSQL

Considerations

- **OpenVMS** RDB support is only available in MANTIS for OpenVMS.
- RDBSQL indicates authorization to execute embedded SQL statements in MANTIS programs when the DBTYPE is set to RDB, that is, against an RDB database. You will be allowed to execute EXEC_SQL, SQLDA and SQLCA statements and functions.
- NORDBSQL indicates no authorization to execute embedded SQL statements in MANTIS programs when the DBTYPE is set to RDB. You will not be allowed to execute EXEC_SQL, SQLDA and SQLCA statements and functions when the DBTYPE is set to RDB.
- You can display this option by using the MANTIS DISPLAY command, and obtain the Boolean data type by using the $OPTION built-in function. Boolean displays TRUE or FALSE. For a given Boolean option, for example, RDBSQL, the relation ($OPTION (“RDBSQL”) = NOT ($OPTION (“NORDBSQL”))) is always true.

RDM

NORDM

Description *Display* (Boolean). Specifies whether SUPRA 1.1 RDM is available.

Abbreviation N/A

Default Depends on the current platform

Format RDM or NORDM

Considerations

- Unless the RDM option is TRUE, you cannot use the VIEW statement or list VIEWs via the Directory Facility.
- You can display this option by using the MANTIS DISPLAY command, and obtain the Boolean data type by using the $OPTION built-in function. Boolean displays TRUE or FALSE. For a given Boolean option, for example, RDM, the relation ($OPTION(“RDM”)=NOT($OPTION(“NORDM”))) is always true.

READONLY
NOREADONLY

Description Specifies read-only MANTIS file access. Use this option to make sure you do not update the MANTIS file.

Abbreviation READ or NOREAD

Default NOREADONLY

Format READONLY or NOREADONLY

Considerations

- You can specify the READONLY option on the command line when invoking MANTIS.
- You can compile this option by using the MANTIS Options Compiler; that is, you specify it in an options source file.
- You can display this option by using the MANTIS DISPLAY command, and obtain the Boolean data type by using the $OPTION built-in function. Boolean displays TRUE or FALSE. For a given Boolean option, for example, READONLY, the relation ($OPTION(“READONLY”)=NOT($OPTION(“NOREADONLY”))) is always true.

REALM

NOREALM

Description Specifies read-only access to ULTRA data sets when the ULTRA statements specify a read-only password. Use the NOREALM option to force MANTIS to open PDM files for read/write access regardless of the passwords specified in the ULTRA statements.

Abbreviation REAL or NOREAL

Default REALM

Format REALM or NOREALM

Considerations

- You can set this option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “NOREALM”.
- You can compile this option by using the MANTIS Options Compiler; that is, you specify it in an options source file.
- You can display this option by using the MANTIS DISPLAY command, and obtain the Boolean data type by using the $OPTION built-in function. Boolean displays TRUE or FALSE. For a given Boolean option, for example, REALM, the relation ($OPTION(“REALM”)=NOT($OPTION(“NOREALM”))) is always true.

REGISMACROS
NOREGISMACROS

Description Specifies whether REGIS MACROS are used by MANTIS when maps with color are displayed on a terminal with REGIS support.

Abbreviation REG or NOREG

Default REGISMACROS

Format REGISMACROS or NOREGISMACROS

Considerations

- REGIS MACROS are ASCII shorthands for longer REGIS command sequences. They significantly reduce the time taken to refresh a color display.
- If you specify REGISMACROS and MANTIS is run on a terminal with REGIS graphics support, MANTIS will load the MACROS into the terminal during initialization.
- You may want to use NOREGISMACROS to avoid conflicts with external programs that are run on the terminal while MANTIS is active.
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set the option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “REGISMACROS”.
- You can display this option by using the MANTIS DISPLAY command, and obtain the Boolean data type by using the $OPTION built-in function. Boolean displays TRUE or FALSE. For a given Boolean option, for example, REGISMACROS, the relation ($OPTION (“REGISMACROS”) = NOT ($OPTION (“NOREGISMACROS”))) is always true.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

RELCHAIN
NORELCHAIN

Description Specifies whether you want MANTIS to release all internal storage used by RDM user views whenever a CHAIN is executed.

Abbreviation REL or NOREL

Default RELCHAIN

Format RELCHAIN or NORELCHAIN

Considerations

- RELCHAIN causes MANTIS to perform an RDM RELEASE on all open RDM views whenever a CHAIN statement is executed.
- NORELCHAIN prevents an RDM RELEASE on open RDM views during CHAIN statement execution.
- Set this option to RELCHAIN for compatibility with MANTIS for the IBM mainframe.
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set this option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “RELCHAIN”.
- You can display this option by using the MANTIS DISPLAY command, and obtain the Boolean data type by using the $OPTION built-in function. Boolean displays TRUE or FALSE. For a given Boolean option, for example, RELCHAIN, the relation ($OPTION (“RELCHAIN”)=NOT($OPTION(“NORELCHAIN”))) is always true.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

OpenVMS RMSJ

OpenVMS NORMSJ

Description A display-only option indicating whether the MANTIS image is authorized to support RMS recovery-unit (RU) journaling. This option can only be enabled by the MANTIS security patch.

Abbreviation RM or NORM

Default Undefined

Format RMSJ or NORMSJ

Considerations

- This option is only applicable to the OpenVMS environment.
- RMSJ indicates authorization to use RMS RU-journaling support. If an RMS file (including the MANTIS file) is SET for journaling, MANTIS will RU-journal the file. MANTIS COMMIT and RESET (explicit and implicit) will end and abort all active recovery units.
- NORMSJ indicates no authorization for RMS RU-journaling support. MANTIS will never start a recovery unit for any external RMS files. MANTIS COMMIT and RESET (explicit and implicit) will not affect external RMS files (including the MANTIS file).
- You can display this option by using the MANTIS DISPLAY command, and obtain the Boolean data type by using the $OPTION built-in function. Boolean displays TRUE or FALSE. For a given Boolean option, for example, RMSJ, the relation ($OPTION (“RMSJ”) = NOT ($OPTION (“NORMSJ”))) is always true.

SCREENTAG

Description Screen Tag Option. Specify a character string, including optional screen coordinates, to be displayed on every full screen refresh.

Abbreviation SCRE

Default “” (disabled) If a string is specified and the leading screen coordinates are omitted, the default screen position is selected so that the text is displayed right-justified on the last line of the screen.

Format SCREENTAG= *text*, where *text* is a 1–32 alphanumeric character string, optionally prefixed by a physical screen coordinate specified as “(row,col)”.

Considerations

- MANTIS ensures that the SCREENTAG string is resent to the physical device on every full screen refresh..
- If the first character of the string to be displayed is a ‘0’ or a ‘1’, MANTIS toggles this character between ‘0’ and ‘1’ on every screen refresh.
- You can compile this option by using the MANTIS Options Compiler; that is, you can specify it in an options source file.
- You can set this option by using the MANTIS SET $OPTION statement; for example, SET $OPTION “SCREENTAG=(24,70)0END”.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.
- You can display this option by using the MANTIS DISPLAY command, and obtain the text data type by using the $OPTION built-in function. A TEXT string will be returned.
- Setting the SCREENTAG option twice in the same MANTIS program when the text data is smaller the second time produces unexpected results when displaying the tag field on the same screen without displaying another MANTIS screen. Also, if the first character is not 0 or 1, the option becomes useless, since MANTIS toggles this character between 0 and 1 on every screen refresh.

SCRLCOLS

Description Specifies the number of columns in the scroll output map. The scroll output map contains the history of the last 'n' lines displayed by SHOW, PROMPT, DISPLAY, or HELP statements or commands.

Abbreviation SCRLC

Default 132

Format SCRLCOLS = *n*, where *n* is a number in the range 1–255

Considerations

- You may want to increase this value to reduce wrapping of long lines that are displayed by the SHOW and DISPLAY statement or command. While increasing this value increases the amount of displayed information available in a given number of lines, it also increases the proportion of the information that is out of view and can only be seen by using the WINRIGHT (KP6) terminal function.
- You may want to decrease this value to reduce memory usage. For example, a reduction from 255 to 80 could save as much as 44625 bytes ((255–80) * 255).
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can display this option by using the MANTIS DISPLAY command, and obtain the numeric data type by using the $OPTION built-in function. A BIG number will be returned.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

SCRLROWS

Description Specifies the number of rows in the scroll output map. The scroll output map contains the history of the last 'n' lines displayed by SHOW, PROMPT, DISPLAY, or HELP statements or commands.

Abbreviation SCRLR

Default 88

Format SCRLROWS = *n*, where *n* is a number in the range 1–255

Considerations

- To provide more lines of history, which may be recalled by the SELUP (MINUS) and SELDOWN (COMMA) terminal functions, you can increase this value.
- You can decrease this value to reduce memory usage. For example, a reduction by 40 could save as much as 10200 bytes (40 * 255).
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can display this option by using the MANTIS DISPLAY command, and obtain the numeric data type by using the $OPTION built-in function. A BIG number will be returned.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

SHARE

Description Set the Shared Memory Segment attributes. With this option you can prevent a MANTIS process from creating or mapping to a Shared Entity Pool in a shared memory segment or determine the permanency of a shared memory segment created by a MANTIS process.

Abbreviation SH

Default TEMPORARY

Format SHare = *option*

Where *option* is one of the following strings:

None	Do not create or map to a Shared Entity Pool
Temporary	Create a temporary shared memory segment
Permanent	Create a permanent shared memory segment

Considerations

- Each MANTIS class uses a unique shared memory segment. The first MANTIS process to start up in a given MANTIS class will create a shared Entity Pool provided that:
- The SHARE option is not set to NONE
- The logical MANTIS_SHARE identifies either an external Shared Entity Pool File, or specifies the name of a Shared Entity List in the MANTIS File. The value of MANTIS_SHARE is used to try to load an external Shared Pool File first. Only if no such file exists will an attempt be made to build a Shared Entity Pool from a list of entity names. Refer to the Shared Entity Facility for more information.
- Permanent shared memory segments stay in the system until explicitly deleted or until the system is re-booted. The disadvantage of a permanent shared memory segment is that there is one less shared memory segment available in the system, even when MANTIS is not in use. The advantage is that MANTIS initialization time is reduced while the shared memory segment is present.

- A temporary shared memory segment is deleted as soon as the last MANTIS process mapped to it is terminated. A temporary shared memory segment may be advantageous if there are long periods when at least one MANTIS process is active for a given MANTIS class, but there are also long periods when no MANTIS processes are active.

SIGDIGITS

Description Specifies the number of significant digits that MANTIS (1) considers when comparing two BIG values, or (2) uses when converting a BIG value to a string (for display).

Abbreviation SIGD

Default *n*=14

Format SIGDIGITS= *n*, where *n*= 14 or 16

Considerations

- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set this option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “SIGDIGITS=16”.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.
- You can display this option by using the MANTIS DISPLAY command, and obtain the fixed list data type by using the $OPTION built-in function. A fixed list string will be returned.

SIGNOFFCHAIN
NOSIGNOFFCHAIN

Description Specifies whether you want MANTIS to sign off from all external database systems (SUPRA and/or RDB) whenever a CHAIN statement is executed.

Abbreviation SIGN or NOSI

Default NOSIGNOFFCHAIN

Format SIGNOFFCHAIN or NOSIGNOFFCHAIN

Considerations

- When SIGNOFFCHAIN is specified, MANTIS treats the occurrence of a CHAIN statement like that of a main program termination, which is normally the time that a general sign-off is performed.
- When CHAIN statements are common and connection to the same database is required across CHAINED programs, specify NOSIGNOFFCHAIN to save the high cost of database reconnection.
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set the option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “SIGNOFFCHAIN”.
- You can display this option by using the MANTIS DISPLAY command, and obtain the Boolean data type by using the $OPTION built-in function. Boolean displays TRUE or FALSE. For a given Boolean option, for example, SIGNOFFCHAIN, the relation ($OPTION (“SIGNOFFCHAIN”) = NOT ($OPTION (“NOSIGNOFFCHAIN”))) is always true.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

SLOT
NOSLOT

Description Specifies whether MANTIS should be checking the number of program slices an application program can execute before being interrupted by MANTIS**.**

Abbreviation SL or NOSL

Default NOSLOT

Format SLOT or NOSLOT

Considerations

- The SLICE/SLOT statements are only in effect if the SLT option is turned on.
- The SLICE/SLOT statements and the SLOT option is not in effect if running a BOUND version of the program. MANTIS maintains a statement counter in conjunction with the SLICE and SLOT statements, but the counter is not incremented during execution of the bound version.
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an option source file.
- You can set the option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “SLOT”.
- You can display this option by using the MANTIS DISPLAY command, and obtain the Boolean data type by using the $OPTION built-in function. Boolean display TRUE or FALSE. For a given Boolean option, for example SLOT the relation: ($OPTION) “SLOT”) = NOT ($OPTION (“NOSLOT”))) is always true.

SQLDB

Description SQL database name. Specifies the name of the default SQL database name (DBNAME) for your system. It is used to supply the default value of DBNAME when a MANTIS user profile is created.

Abbreviation SQLD

Default System-dependent

Format SQLDB= *text*, where *text* is a 1–32 alphanumeric character string, optionally enclosed within double quotes (“).

Considerations

- MANTIS is released with this option set to the appropriate DBNAME for your system. MANTIS can have embedded SQL support for several SQL databases, including the following: SUPRA, RDB, ALLBASE.
- Not all databases are supported on all platforms.
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set this option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “SQLD=SUPRA”.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.
- You can display this option by using the MANTIS DISPLAY command, and obtain the text data type by using the $OPTION built-in function. A TEXT string will be returned.

SQLMIXSEP

Description Specifies how DBCS and nonDBCS characters are to be separated in string data stored in external databases accessed by embedded SQL.

Abbreviation SQLM

Default BLANK

Format SQLMIXSEP = *option*, where *option* is one of BLANK, CODE, or NONE

Considerations

- MANTIS uses CODE separators internally to separate DBCS characters from both text and Kana characters. Unless you specify CODE separators, you cannot successfully mix Kana and DBCS characters externally because both are recognized by the setting of the most significant bit.
- Specify BLANK if you want one ASCII blank character output to separate DBCS from nonDBCS characters.
- Specify NONE if you want no characters separating DBCS from nonDBCS characters externally.
- If you specify either BLANK or NONE, MANTIS uses the same algorithm when converting external mixed data to internal (CODE) format, so your external data can utilize both formats.
- MANTIS always displays mixed data with an ASCII space separating DBCS from nonDBCS characters. So to preserve the visual presentation of your data between MANTIS and non-MANTIS applications, BLANK separators are recommended.
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set the option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “SQLM=CODE”.
- You can display this option by using the MANTIS DISPLAY command, and obtain the text data type by using the $OPTION built-in function. A TEXT string will be returned.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS and only applicable to the DBCS version of MANTIS.

SQLSSNINC

Description Specifies the initial, and expansion increment size of the MANTIS program SQL work area. The SQL work area is where MANTIS stores context information about each embedded SQL statement in the program. They are identified internally by their Statement Sequence Number (SSN).

Abbreviation SQLS

Default 50

Format SQLSSNINC = *n*, where *n* is a number in the range 1–65535

Considerations

- The initial SQL work area size is based on the lowest multiple of this option greater than or equal to the number of EXEC_SQL statements in the program and can only be expanded during Program Design.
- This option does not affect the run-time performance of MANTIS programs unless it is set too high. A very high value results in a lot of unused entries in the SQL work area, since memory allocation is based on the number of entries being a whole multiple of this option.
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set the option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “SQLS=200”.
- You can display this option by using the MANTIS DISPLAY command, and obtain the numeric data type by using the $OPTION built-in function. A BIG number will be returned.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

SQLVARINC

Description Specifies the initial, and expansion increment size of an SQLDA area. The SQLDA contains a fixed number of header elements followed by a varying number of SQLVAR elements. When an SQLDA is allocated, this option specifies the number of SQLVAR entries that are initially allocated, as well as the number by which it is expanded whenever required.

Abbreviation SQLV

Default 10

Format SQLVARINC = *n*, where *n* is a number in the range 1–300

Considerations

- The SQL database informs MANTIS when the number of SQLVAR entries is too small and MANTIS automatically expands SQLDA areas for you.
- An SQLDA can also be expanded by the SQLDA statement.
- The optimal value of this option depends on the average number of host variable parameters in your EXEC_SQL statements. Specify a value which is a little greater than most EXEC_SQL statements require.
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set the option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “SQLV=200”.
- You can display this option by using the MANTIS DISPLAY command, and obtain the numeric data type by using the $OPTION built-in function. A BIG number will be returned.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

STACKLEN

Description Specifies the size of the string expression evaluation stack in bytes. The string expression stack is used to store intermediate string expression results during expression evaluation.

Abbreviation STA

Default 2048

Format STACKLEN = *n*, where *n* is a number in the range 1024–99999

Considerations

- You only need to increase this value if you encounter MANTIS FAULT 103.
- If MANTIS FAULT 103 occurs, you may want to consider reducing the MAXSTRLEN option (Maximum String Length).
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set the option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “STA=5000”.
- You can display this option by using the MANTIS DISPLAY command, and obtain the numeric data type by using the $OPTION built-in function. A BIG number will be returned.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

STRCOMPARE

Description Specifies the string comparison mode (ALPHANUMERIC or LENGTH based) to be given to newly created MANTIS programs.

Abbreviation STR

Default LENGTH

Format STRCOMPARE = option, where option is ALPHANUMERIC or LENGTH

Considerations

- ALPHANUMERIC string comparison first compares the string operands up to the shorter string length, and their lengths are compared only if they are equal up to the shorter length.
- LENGTH string comparison first compares the string operand lengths to determine which string is greater, and an alphanumeric comparison is only performed if the operands are of the same length.
- Specify LENGTH if you want this mode of string comparison to be given to all newly created programs
- Specify ALPHANUMERIC if you want this mode of string comparison to be given to all newly created programs.
- .The comparison mode associated with a program will always be used by that program, regardless of the current value of the STRCOMPARE option.
- The string comparison mode of a program can be changed in the Program Design Library Facility.
- It must be set to LENGTH for compatibility with MANTIS for the IBM mainframe.
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set the option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “STR= ALPHANUMERIC”.

- You can display this option by using the MANTIS DISPLAY command, and obtain the text data type by using the $OPTION built-in function. A TEXT string will be returned.

- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

SUPRASQL
NOSUPRASQL

Description A display-only option indicating whether the MANTIS image is authorized for embedded SQL support for SUPRA. This option can only be enabled by the MANTIS security patch.

Abbreviation SU or NOSU

Default Undefined

Format SUPRASQL or NOSUPRASQL

Considerations

- SUPRASQL indicates authorization to execute embedded SQL statements in MANTIS programs when the DBTYPE is set to SUPRA, that is, against a SUPRA DRDM database. You will be allowed to execute EXEC_SQL, SQLDA and SQLCA statements and functions.
- NOSUPRASQL indicates no authorization to execute embedded SQL statements in MANTIS programs when the DBTYPE is set to SUPRA. You will not be allowed to execute EXEC_SQL, SQLDA and SQLCA statements and functions when the DBTYPE is set to SUPRA.
- You can display this option by using the MANTIS DISPLAY command, and obtain the Boolean data type by using the $OPTION built-in function. Boolean displays TRUE or FALSE. For a given Boolean option, for example, SUPRASQL, the relation ($OPTION (“SUPRASQL”) = NOT ($OPTION (“NOSUPRASQL”))) is always true.

SYMBOLSIZE

Description Specifies the initial, and expansion increment size of the MANTIS program symbol table. The symbol table is where the MANTIS program variable names are stored.

Abbreviation SYM

Default 2048

Format SYMBOLSIZE = *n*, where *n* is a number in the range 1024–99999

Considerations

- The initial symbol table size is the lowest multiple of this option large enough to store the symbol names referenced in the program code. It is expanded when complex MANTIS statements such as SCREEN, INTERFACE, and VIEW are executed, and cause new symbolic names to be created.
- Refer to the DWASIZE (Data Work Area Increment Size) option considerations for the impact of this option on MANTIS performance.
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set the option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “SYM=2000”.
- You can display this option by using the MANTIS DISPLAY command, and obtain the numeric data type by using the $OPTION built-in function. A BIG number will be returned.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

SYSTEM

Description Machine and operating system identification. A display-only option returning a string identifying the machine and operating system to uniquely identify it among the supported MANTIS platforms.

Abbreviation SYS

Default System identification

Format SYSTEM

Considerations

- You can display this option by using the MANTIS DISPLAY command, and obtain the text data type by using the $OPTION built-in function. A TEXT string will be returned.
- **OpenVMS** All OpenVMS platforms include the text “VMS” in their identification. All UNIX platforms include the text “UNIX” in their identification. MANTIS platform system identifiers include:
  - VAX/VMS, ALPHA/VMS
  - DEC ALPHA/OSF1 UNIX, DEC RISC/ULTRIX(UNIX)
  - HP9000/HPUX(UNIX), IBM RS6000/AIX(UNIX) PC-386/SCO(UNIX)
  - UNISYS/6000(UNIX), SEQUENT DYNIX/ptx(UNIX), SUN/SunOS(UNIX)
  - NCR/3000(UNIX), ICL DRS/NX 6000(UNIX), BULL/DPX-2(UNIX),
  - PYRAMID/OSX(UNIX), Targon/TOS(UNIX), DGUX/5.4.2 UNIX

THOUSANDS

Description Specifies the character you want to use as your thousands separator.

Abbreviation TH

Default , comma

Format THOUSANDS = *text*, where *text* is a 1-character string specifying the thousands separator character

Considerations

- The thousands separator character must be distinct from the DECIMAL option character.
- The thousands separator character cannot be a special numeric mask character. Specifically, it cannot be any of the characters in the string “+-EZ”.
- The following table illustrates the effects of the option THOUSANDS. It assumes that the statement SET $OPTION(“THO = |”) has been executed

Edit mask	Data entered (SCREEN)	Data entered (FORMAT)	Display
#,###.###	1234567	1234567	1|234|567
#,###	1|234	1234	1|234

TIMEMASK

Description Default time mask for nonprivileged users' programs.

Abbreviation TI

Default "HH:MM:SS"

Format TIMEMASK = text, where text is a 0–32 character string

Consideration Refer to *AD/Advantage MANTIS Language OpenVMS/UNIX*, P39-1310, for the considerations of the TIME statement and function.

TXT0

Description Specifies the text value to be returned by TXT(0).

Abbreviation TX

Default " " space

Format TXT0= *text*, where *text* is a 0–32 alphanumeric character string, optionally enclosed within double quotes ("")

Considerations

- The primary purpose of this option is to have the choice of a space or "0" for the result of TXT(0). Since this option is dynamically set, there may be times when it is useful to set TXT0 to some other string, for example, "ZERO."
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set this option by using the MANTIS SET $OPTION statement, for example, SET $OPTION "TXT0=0".
- You can display this option by using the MANTIS DISPLAY command, and obtain the text data type by using the $OPTION built-in function. A TEXT string is returned.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.
- Set this option to "" (space) for compatibility with MANTIS for the IBM mainframe.

ULTRAGS
NOULTRAGS

Description This option only applies to ULTRA Version 1.5. Specify whether you want MANTIS to perform ULTRA statement optimization by saving the names of previously validated MANTIS ULTRA file views in a global section.

Abbreviation UL or NOUL

Default NOULTRAGS

Format ULTRAGS or NOULTRAGS

Considerations

- The MANTIS ULTRA statement can make many calls to ULTRADBMS to validate that the ULTRA file view is correct. This validation is also performed during ULTRA File Design but must be done again in case the ULTRA database (DBMOD) has been modified since. Specify ULTRAGS if you have applications which execute ULTRA statements for the same ULTRA file views many times.
- If you specify ULTRAGS, MANTIS creates a temporary global section when the first ULTRA statement is executed for an ULTRA file view.
- If you are running systemwide MANTIS, the global section will also be systemwide, and the savings even greater if you specify ULTRAGS.
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set the option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “ULTRAGS”.
- You can display this option by using the MANTIS DISPLAY command, and obtain the Boolean data type by using the $OPTION built-in function. Boolean displays TRUE or FALSE. For a given Boolean option, for example, CTRLC, the relation ($OPTION (“ULTRAGS”) = NOT ($OPTION (“NOULTRAGS”))) is always true.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

USERBOO*n*

NOUSERBOO*n*

Description There are 5 Boolean options available for MANTIS user programs, USERBOO1 to USERBOO5.

Abbreviation N/A

Default NOUSERBOO*n*

Format USERBOO*n* or NOUSERBOO*n*, where *n* = 1 through 5.

Considerations

- If you are running MANTIS software supplied by third-party vendors, you should check with the vendor (or Cincom) for any USER options used by the third-party software.
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set the option by using the MANTIS SET $OPTION statement; for example, SET $OPTION “USERBOO1” or SET $OPTION (“USERBOO1”).
- You can display this option by using the MANTIS DISPLAY command, and obtain the Boolean data type by using the $OPTION built-in function. Boolean displays TRUE or FALSE. For a given Boolean option, for example, USERBOOn, the relation ($OPTION (“USERBOO*n*”) = NOT ($OPTION (“NOUSERBOO*n*”))) is always true.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

USERKANJI*n*

Description There are 5 KANJI string options available for MANTIS user programs, USERKANJI1 to USERKANJI5.

Abbreviation N/A

Default USERKANJI*n*=“”

Format USERKANJI*n*= DBCS-string, where *n* = 1 through 5, and where DBCS-string is a 1–32 character string. It must contain only DBCS characters and can optionally be enclosed within text double quotes (“).

Considerations

- If you are running MANTIS software supplied by third-party vendors, you should check with the vendor (or Cincom) for any USER options used by the third-party software.
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set the option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “USERKANJI1=DBCS string” or SET $OPTION (“USERKANJI1=DBCS string”).
- You can display this option by using the MANTIS DISPLAY command, and obtain the DBCS data type by using the $OPTION built-in function. A KANJI string is returned.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.
- This option is only applicable to the DBCS version of MANTIS.

USERNUM*n*

Description There are 5 Numeric options available for MANTIS user programs, USERNUM1 to USERNUM5.

Abbreviation N/A

Default USERNUM*n*=0

Format USERNUM*n*= *n*, where *n* is 1 through 5, and where *n* is an integer in the range -65536 to +65535

Considerations

- If you are running MANTIS software supplied by third-party vendors, you should check with the vendor (or Cincom) for any USER options used by the third-party software.
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set the option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “USERNUM1=5000” or SET $OPTION (“USERNUM1=5000”).
- You can display this option by using the MANTIS DISPLAY command, and obtain the numeric data type by using the $OPTION built-in function. A BIG number is returned.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

USERTEXT*n*

Description There are 5 TEXT string options available for MANTIS user programs, USERTEXT1 to USERTEXT5.

Abbreviation N/A

Default USERTEXT*n*=“”

Format USERTEXT*n*= where *n* is 1 through 5, and text-string, where text-string is a 1–32 character string, optionally enclosed within double quotes (“).

Considerations

- If you are running MANTIS software supplied by third-party vendors, you should check with the vendor (or Cincom) for any USER options used by the third-party software.
- You can compile this option by using the MANTIS Options Compiler, that is, you can specify it in an options source file.
- You can set the option by using the MANTIS SET $OPTION statement, for example, SET $OPTION “USERTEXT1=TESTING” or SET $OPTION (“USERTEXT1=TESTING”).
- You can display this option by using the MANTIS DISPLAY command, and obtain the text data type by using the $OPTION built-in function. A TEXT string is returned.
- **OpenVMS** You can output this option to a patch file by using the /PATCH command qualifier of the MANTIS Options Compiler. This usage is available only for MANTIS for OpenVMS.

15

Additional facilities

Accessing other MANTIS facilities

So far we have discussed the major MANTIS facilities. Other facilities available on the MANTIS Facility Selection Menu are highlighted in the following screen illustration (the standard MANTIS Facility Selection Menu).

```
                              M  A  N  T  I  S


                             FACILITY  SELECTION



Run A Program  .............  1        Sign On As Another User  ....  11
Display A Prompter  ........  2        MANTIS Run System  ..........  12
Design A Program  ..........  3        Run A Scenario  .............  13
Design A Screen  ...........  4        Directory Facility  .........  14
Design A File Profile  ......  5        Transfer Facility  ..........  15
Design A Prompter  .........  6        Universal Export Facility  ..  16
Design An Interface  .......  7
Design An Ultra File View  ..  8
Design An External File View   9        Spectra  ....................  19
Design A Scenario  .........  10       Search Facility..............  20
                                       Exit MANTIS  ............  CANCEL
                                  :    :
```

The following table lists the facilities discussed in this chapter.

When you select this option	Details on how you can	Appear in
Run A Program	Run a program without entering programming mode.	“Run a program” on page 647
Display A Prompter	Display a particular prompter by name.	“Display a prompter” on page 649
Sign On As Another User	Log on to MANTIS as another user.	“Sign on as another user” on page 652
Directory Facility	List and print programs, screens, files, prompters, ULTRA and external file views, logical views, and interfaces.	“Directory facility” on page 653
SPECTRA	Sign on to SPECTRA.	“SPECTRA” on page 654

Run a program

The Run a Program facility allows you to run a program from your own or another user's library without going into programming mode. When you select the Run a Program option from the MANTIS Facility Selection Menu (see "Accessing other MANTIS facilities" on page 645), the following screen appears.

```
                    M  A  N  T  I  S

                    PROGRAM SELECTION



        Specify the name of the required program :


    :                                                  :





                      CANCEL Exit
```

Enter the program name. A password is not required since you may only execute the program—you cannot list, inspect, or modify it in any way.

To run a program, enter the data as described below:

Specify the name of the required program

Description *Required*. Specifies the program name. A password is not required because you can only execute the program; you cannot list, inspect, or modify it.

Format [*user-name*:]*program-name*

user-name

Description *Optional*. Enter the user name only if the program to be loaded is from a library other than the one you signed on to. If omitted, your sign-on name is assumed.

Consideration The user name and program name must be separated by a colon.

program-name

Description *Required*. Provide the name of a valid program.

Consideration If the program is from another user's library, prefix it with the appropriate user name as described above.

When you press RETURN, the program begins execution. If the program name is not found, you may enter another name. Upon completion, you will return to the MANTIS Facility Selection Menu (See "Accessing other MANTIS facilities" on page 645).

Display a prompter

The Display a Prompter facility enables you to view prompters; you cannot alter the contents of a prompter when you use this facility. Changes to the prompter must be made through the Prompter Design Facility (see “Prompter design” on page 207).

Select the Display a Prompter option from the MANTIS Facility Selection Menu (see “Accessing other MANTIS facilities” on page 645), and the Prompter Selection screen (shown below) appears. Enter the name of the prompter you want to display and press the RETURN key. The default language (in this case, ENGLISH) is automatically displayed on the screen.

```
                    M  A  N  T  I  S

                DISPLAY A PROMPTER FACILITY




Prompter Name :                                                    :
Language  ...  :  ENGLISH          :




                 ENTER Display; CANCEL Exit
```

To display a prompter, enter data as described below:

PROMPTER NAME

Description *Required*. Specifies the name of a prompter.

Format [*user-name*:]*prompter-name*

user-name

Description *Optional*. Enter the user name only if the prompter resides in another user's library. If omitted, your sign-on name is assumed.

Consideration The user name and prompter name must be separated by a colon.

prompter-name

Description *Required*. Provide the name of the prompter you want to view.

Consideration If the prompter is in another user's library, you must prefix the prompter name with the user name as indicated above.

Language

Description This is the default language of the prompter.

When you press RETURN, the prompter you indicated appears (refer to the general considerations for PROMPT, in *AD/Advantage MANTIS Language OpenVMS/UNIX*, P39-1310). A sample prompter is shown in the following screen illustration. The heading (from the description you provided when you saved the prompter) is centered at the top of the screen in bright intensity. To page through a prompter, press RETURN. When all prompter information has been displayed (including any prompters which may be chained to this one), you will return to the Display a Prompter Facility screen. Press CANCEL to return to your Facility Selection Menu.

```
                        STATE CODE PROMPTER FOR BURRYS

AL - ALABAMA                 KY - KENTUCKY           ND - NORTH DAKOTA
AK - ALASKA                  LA - LOUISIANA          OH - OHIO
AZ - ARIZONA                 ME - MAINE              OK - OKLAHOMA
AR - ARKANSAS                MD - MARYLAND           OR - OREGON
CA - CALIFORNIA              MA - MASSACHUSETTS      PA - PENNSYLVANIA
CO - COLORADO                MI - MICHIGAN           RI - RHODE ISLAND
CT - CONNECTICUT             MN - MINNESOTA          SC - SOUTH CAROLINA
DE - DELAWARE                MS - MISSISSIPPI        SD - SOUTH DAKOTA
DC - DISTRICT OF COLUMBIA    MO - MISSOURI           TN - TENNESSEE
FL - FLORIDA                 MT - MONTANA            TX - TEXAS
GA - GEORGIA                 NE - NEBRASKA           UT - UTAH
HI - HAWAII                  NV - NEVADA             VT - VERMONT
ID - IDAHO                   NH - NEW HAMPSHIRE      VA - VIRGINIA
IL - ILLINOIS                NJ - NEW JERSEY         WA - WASHINGTON
IN - INDIANA                 NM - NEW MEXICO         WV - WEST VIRGINIA
IA - IOWA                    NY - NEW YORK           WI - WISCONSIN
KS - KANSAS                  NC - NORTH CAROLINA     WY - WYOMING
```

Sign on as another user

The Sign On As Another User Facility allows you to sign on to another User ID from the MANTIS Facility Selection Menu. When you select the Sign On As Another User option from the MANTIS Facility Selection Menu (see “Accessing other MANTIS facilities” on page 645), a sign-on screen appears that is similar to the one shown below. In this example, the Cincom logo appears as the sign-on screen.

```
                              M  A  N  T  I  S


          *****         *****        (C) Cincom Systems, Inc.  2001
       ********      ********        All Rights Reserved
     **********    **********
    ***********   ***********        Use of this software is governed
   ************  ************        by a license agreement.  This software
  ************* *************        contains confidential and proprietary
  ************* *************        information of Cincom Systems, Inc.
      V2801.nnn.nnn.nnn              which is protected by copyright,
  ************* *************        trade secret, and trademark law.
  ************* *************
   ************ ************
    ***********  ***********         Username :                  :
     **********  **********          Password :                  :
        ******** ********
           ***** *****
```

Supply the name and password of the user whose libraries you are able to access. When you press RETURN, that user’s Facility Selection Menu appears.

Directory facility

The Directory Facility allows you to view or print an alphabetic listing of all current programs, screens, files, prompters, interfaces, and/or views in your library. When you select the Directory Facility option from the MANTIS Facility Selection Menu (see “Accessing other MANTIS facilities” on page 645), the following screen appears.

```
                              M  A  N  T  I  S


                            DIRECTORY FACILITY


List Programs  .............  1        Print Programs  ............  11
List Screens  ..............  2        Print Screens  .............  12
List Files  ................  3        Print Files  ...............  13
List Prompters  ............  4        Print Prompters  ...........  14
List Interfaces  ...........  5        Print Interfaces  ..........  15
List Ultra File Views  ......  6        Print Ultra File Views  .....  16
List External File Views  ...  7        Print External File Views  ..  17
List RDM Views  ............  8        Print RDM Views  ...........  18
List Scenarios  ............  9        Print Scenarios  ...........  19


                                 :    :
```

Select the option corresponding to the directory you want to view or print. You may enter a repoint value on the Directory Facility screen to position the display at a specific point. To use the repoint option, enter 1–30 alphanumeric characters (no wildcards) in the unsolicited input field at the bottom of the screen and press RETURN. The directory will be displayed alphabetically, beginning with the entry corresponding to, or the first entry following, your repoint value.

Directory LIST options invoke the directory functions of the MANTIS Facilities, where you can select a design to work with if you wish. If an entity is selected, the appropriate design facility will be called with the entity preloaded. When you exit the design facility, the directory screen will be redisplayed starting with the last selected entity. For more information about each directory screen, refer to the appropriate MANTIS Facility.

Directory PRINT options send the directory listings to your designated printer without any interaction.

SPECTRA

SPECTRA is a feature of MANTIS for OpenVMS only.

The SPECTRA option allows you to sign on to SPECTRA, a query and report writing facility. When you select this option from the MANTIS Facility Selection Menu (see “Accessing other MANTIS facilities” on page 645), MANTIS prompts you to enter a database name; however this prompt depends on how SPECTRA is configured. You may be able to go straight to the SPECTRA screen since MANTIS executes a PERFORM “SPECTRA” statement.

```
S P E C T R A  for  V A X  V2.1
S P E C T R A  for  V A X  V2.1

            ***             ***      (C) Cincom Systems, Inc. 1990
        *******         *******      All Rights Reserved
     **********      **********
   ************    ************      Use of this software is governed
  *************   *************      by a license agreement. This software
 **************  **************      contains confidential and proprietary
 **************  **************      information of Cincom Systems, Inc.
                                     which is protected by copyright,
 **************  **************      trade secret, and trade mark law.
 **************  **************
  *************  *************
   ************  ************     Username:
    **********   **********       Password:
        *******  *******
            ***  ***
```

When you enter the database name and press RETURN, MANTIS displays the SPECTRA Menu. From here you may sign on to the system or use the CANCEL key to return to the MANTIS Facility Selection Menu.

A

SUPRA relational data manager

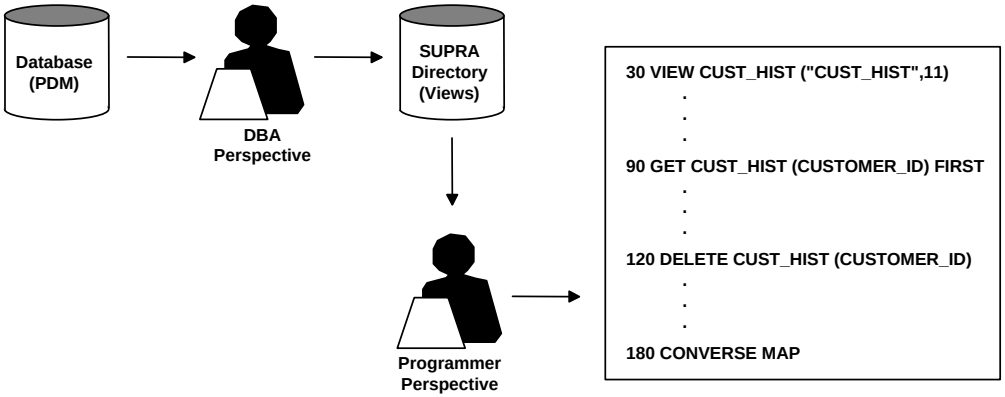
This section provides information on accessing RDM logical views through your MANTIS program. Details on the syntax and use of the MANTIS statements described in this section appear in *AD/Advantage MANTIS Language OpenVMS/UNIX*, P39-1310.

OpenVMS SUPRA RDM support is only applicable to the OpenVMS environment.

Overview of SUPRA relational data manager

The Relational Data Manager (RDM) is a record-by-record relational database. A logical view is a set of one or more logical records defined by the DBA. Fields are mapped between the externally constructed logical record and the Physical Data Manager (PDM).

The Relational Data Manager is the component that allows programs (written in any supported language or in MANTIS) to access data from the files. The following figure illustrates this process.



The DBA defines logical views in the database directory by describing the fields needed and by providing access to the files containing these fields. Once your DBA has defined the fields to be included in a logical view, you may use all or part of the logical view.

NOTE

Logical views are designed only in the database directory. There is no MANTIS Logical View Design Facility.

Using MANTIS to access the RDM

To access RDM, your MANTIS user name must be defined in the database directory with the same password as your MANTIS password. This is done by means of the DBA User Maintenance function, entering hyphens in place of any underscore characters in the MANTIS user name, and entering only the first eight characters of the MANTIS password. (Only the first eight characters of the MANTIS password, forced to uppercase, are used to access the Directory.)

You must specify the name of the database description referred to by the logical views you want to use. Assign the 6-character name of the database description to the logical name CSI_SCHEMA. If the compiled database description does not reside in your default directory, you must assign its file specification to *XXXXXX*.MOD (where *XXXXXX* is the database description name). If the directory database description (SUPRA.MOD) and data sets (UDD1.CSI, etc.) do not reside in your default directory, you will need to assign file specifications for them—consult your Database Administrator.

The VIEW statement in your MANTIS application program specifies the logical view you want to use. The specified view will then be retrieved from the SUPRA Directory. MANTIS variables will appear as they are defined in the directory with two exceptions:

- MANTIS converts all hyphens in logical view field names to underscores in MANTIS variable names and vice versa.
- MANTIS only checks for hyphens; any other invalid characters will be included in the MANTIS variables, and may not be referenced in a MANTIS program.

The SELECT clause in the VIEW statement allows you to indicate that only a subset of fields is to be processed for the logical view. The GET, UPDATE, INSERT, and DELETE statements allow you to manipulate records on an occurrence-by-occurrence basis. The MARK statement obtains the current position of the logical view established by the last GET, UPDATE or INSERT statements. You must open the view by processing the associated VIEW statement before a field can be marked. Use the RELEASE statement to free PDM's internal storage for a specified open view or for all open views.

Missing fields

In the process of building a logical record, if RDM is unable to acquire data from a packed or zoned field, it will mark the field as missing or null. It will mark the field as blank if it is a TEXT field. If an UPDATE is issued and the field is no longer null, RDM will automatically insert the physical record containing the field. MANTIS will keep track of these fields to ensure that RDM knows that a field is missing when an update is attempted.

Directory of logical views

The Directory of SUPRA Logical Views allows you to view an alphabetic listing of the logical views that you can use.

To access this Directory, select the Directory Facility option from the MANTIS Facility Selection Menu shown in see “Facility selection menu” on page 23. The Directory Facility Menu screen (shown below) will appear.

```
                              M  A  N  T  I  S


                            DIRECTORY FACILITY


   List Programs  ..............  1        Print Programs  .............  11
   List Screens  ...............  2        Print Screens  ..............  12
   List Files  .................  3        Print Files  ................  13
   List Prompters  .............  4        Print Prompters  ............  14
   List Interfaces  ............  5        Print Interfaces  ...........  15
   List Ultra File Views  ......  6        Print Ultra File Views  .....  16
   List External File Views  ...  7        Print External File Views  ..  17
   List RDM Views  .............  8        Print RDM Views  ............  18
   List Scenarios  .............  9        Print Scenarios  ............  19


                                  :    :
```

When you select the List Logical Views option from the Directory Facility Menu, the following screen will appear.

```
                          Directory Of RDM Views                YYYY/MM/DD
                                                                HH:MM:SS
SEL  -------------NAME------------- --DATE-- --TIME--
```

MANTIS provides an alphabetical listing of the RDM Views you are authorized to access along with the date and time of the most recent update to the view. At any time during the directory listing, you can press CANCEL to return to the MANTIS Facility Selection Menu.

Enter an S in the SEL field that corresponds to the view you want to examine. When you enter S and press RETURN, the following screen appears. Think of this as a read-only version of the design facilities for other entity types. Remember, all of this information is defined by your DBA in the RDM directory.

```
                              RDM Logical View                      YYYY/MM/DD
Name: VS-NO                            Size: 48                     HH:MM:SS
Counts: Fields 4       Keys 2       No Uniques         Insertable 4
        Levels 1       Reqs 2        Deletable 4      Replaceable 4
-ATTR-  -------------NAME------------- TYPE  LEN LEVEL DEC FORMAT ---ALLOW----
KEY     VS-NO-SUPPLIER                 TEXT  6             CHAR   DEL,INS
KEY     VS-NO-PRODUCT                  TEXT  9             CHAR   DEL,INS
        VS-NO-PART-NO                  TEXT  20            CHAR   ALL
        VS-NO-PART-COST                BIG   9         2   NUMRIC ALL









             RETURN = Next Page;  PF1 = Next View;  CANCEL = Exit
```

MANTIS maintains the following fields:

NAME

Description Provides the name of the logical view.

SIZE

Description Supplies the logical record length.

COUNTS

Description MANTIS provides the following statistics for the view:

FIELDS	Number of fields in the view
LEVELS	Number of levels in the view
KEYS	Number of keys
REQS	Number of required fields
NONUNIQUES	Number of non-unique fields
DELETABLE	Number of deleteable fields
INSERTABLE	Number of insertable fields
REPLACEABLE	Number of replaceable fields

NAME

Description Supplies the field name in the view.

TYPE

Description Provides the MANTIS internal data type: TEXT, BIG, or SMALL.

LENGTH

Description Supplies the length of the field in bytes.

LEVEL

Description Provides the level of the field in the view hierarchy. Fields from the first physical record accessed in the view have LEVEL 0. Fields from the physical record(s) accessed directly from the first level are LEVEL 1, and so on.

DEC

Description Specifies the number of decimal places in the field.

FORMAT

Description Supplies the format in which the data is stored on the view. Values include:

CHARACTER	for a character string
BINARY	for fullword binary
PACKED	for decimal packed
HALFWORD	for halfword binary
ZONED	for unpacked (zoned) decimal
FLOAT	for binary floating point

ALLOW

Description Provides the allowed function(s) for the view. The values are DELETE, INSERT, REPLACE, and ALL. Allowable abbreviations are indicated by underlines.

Press RETURN to move to the next page of the view definition. Press PF1 to move to field definitions for the next selected view, or press CANCEL to return to the MANTIS Facility Selection Menu.

B

Recovery and data integrity considerations

MANTIS provides you with a powerful set of tools to access and update data stored in external RMS files, PDM files, RDM views, DRDM tables, RDB/OpenVMS tables, or MANTIS files. MANTIS ensures that such updates are properly maintained. This guarantees data integrity and removes a considerable amount of concern from application programming for the quality of data stored. Generally, most of the data integrity concerns can be left to MANTIS. However, certain applications demand specialized knowledge of the data handled by MANTIS to effect proper data recovery and integrity. In such cases, you direct MANTIS to provide special recovery points.

NOTE

OpenVMS MANTIS also provides an RMS Journaling option for external RMS files and the MANTIS file. You may turn journaling on or off for specific files. Details of how RMS Journaling works is provided in your OpenVMS documentation. You should also consult your documentation to determine which files are best suited for RMS Journaling. This appendix describes the MANTIS Logical Unit of Work only.

The concept of logical unit of work

MANTIS groups update accesses to user data into units of work called Logical Units of Work (LUW). The following figure illustrates update accesses on a time scale.

Time	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	...
...	ru	ri	ru	tw	cm	tr	ru	ru	ru	rd	ri	ri	ru	tw	cm	tr	ru	...

where:

ru - represents record update operation

ri - represents record insertion

rd - represents record deletion

tw - represents terminal-write operation

tr - represents terminal-read operation

cm - represents COMMIT point `

The end limits of the Logical Unit of Work are the COMMIT points (sometimes called synchronization points). If, at terminal-read time, there are uncommitted updates, MANTIS generates a COMMIT. (MANTIS statements that cause the generation of a COMMIT are COMMIT, CONVERSE, OBTAIN, SHOW, and WAIT.) For this reason, the COMMIT points normally coincide with terminal reads, and the maximum span of a Logical Unit of Work is from one terminal read to the next terminal read. If the application design requires a Logical Unit of Work to span terminal reads (for example, if it has multiscreen transactions), the generation of a COMMIT on each terminal read can be disabled using a COMMIT statement with an OFF parameter. After COMMIT OFF, user-specified synchronization points must be defined using the COMMIT statement.

The LUW concept covers all databases accessed through MANTIS GET, UPDATE, INSERT and DELETE statements, as well as those accessible through MANTIS embedded SQL support. Be aware that a MANTIS COMMIT will end the LUW by issuing commit requests to all the database systems to which MANTIS is currently connected to.

Once the updates are committed, they can never be backed out. If the updates are uncommitted (due to system or application failure), MANTIS will cause the updates to be backed out to the last COMMIT point. Such update backout is called transaction recovery.

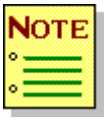
The following figure illustrates an incomplete LUW and the next figure, subsequent transaction recovery.

Time	1	2	3	4	5	6	7	8	9	10	11	
...	ru	ri	ru	tw	cm	tr	ru	ru	ru	rd	ri	*

where:

* - represents system failure

MANTIS, due to the underlying database recovery , backs out events 11, 10, 9, 8, and 7.



The backing out happens in the reverse order. Event 3 (record update) is not backed out since it is committed by the COMMIT point (event 5).

Time	1	2	3	4	5	6
...	ru	ri	ru	tw	cm	tr

At the end of transaction recovery, the database files are restored to their positions at the COMMIT point. You can therefore be sure that an incomplete LUW is always backed out and data integrity is intact.

User-specified synchronization points

In addition to MANTIS-generated COMMIT points, you can use the COMMIT statement to add COMMIT points to suit the demands of the application. If you have used a COMMIT OFF statement to disable MANTIS-generated COMMIT points, you must use COMMIT statements to define the Logical Unit of Work in the application.

An explicit COMMIT should be issued by a MANTIS program after calling an interface program which does database updates, deletes, or inserts. MANTIS only implicitly commits resources that have been updated by a MANTIS program. It does not know whether an interface program has done modifications that require committing. (For details on the COMMIT statement, refer to *AD/Advantage MANTIS Language OpenVMS/UNIX*, P39-1310.)

If we take the example from the previous section and add a user-generated COMMIT point after event 9, we have the following sequence of events:

Time	1	2	3	4	5	6	7	8	9	10	11	12	
...	ru	ri	ru	tw	cm	tr	ru	ru	ru	cm	rd	ri	*

Transaction recovery will back out events 12 and 11 but will not back out 9, 8, and 7 due to the user-generated COMMIT point at event 10.

Such subdivisions of LUWs may be necessary for certain applications, but you should carefully consider the additional COMMIT points that you want to place in the application. Apart from the fact that such COMMIT points may adversely impact the original aim of the application, they also consume a considerable amount of machine resources.

Enqueuing on resources

Two concurrently running application programs may try to update the same record. For example, Program A reads a record, and then does other processing. Meanwhile, Program B reads and updates the same record. Now, Program A wants to update the record without first rereading it. If allowed, Program A would update the record without any regard to those changes Program B might have made to the record.

To prevent such situations, MANTIS provides a facility for application programs to enqueue on resources. There are two ways to enqueue on resources.

The first method involves issuing a GET statement with the ENQUEUE parameter. This reserves the record for UPDATE access with the current application program, and prevents any other application programs from updating the record at the same time. When the application program updates the record and reaches the end of the LUW, the record becomes available for any other application program that wishes to perform an UPDATE. Regardless of the record update, the scope of the ENQUEUE ends when a COMMIT statement or MANTIS-generated COMMIT terminates the LUW.

The second method involves the ENQUEUE statement and an arbitrarily named resource. The resource name is a text expression that you assign as an agreed representation for all programs competing for the actual resource. For example, if the following MANTIS statement were inserted in all application programs having an UPDATE capability for the invoices file, it would ensure that the application program has exclusive control of “INVOICE.*xxxxxx*” before changing any data affecting that particular invoice.

```
ENQUEUE "INVOICE."+TXT(INVOICE_NUMBER)
```

The exclusive control of the named resource is released when the application program issues the DEQUEUE statement for the same resource name or when the end of the LUW is reached.

When more than one resource needs to be reserved, the application program must ensure that the sequence in which the resources are reserved is always the same and is also identical to the sequence used by other programs reserving these resources. If this rule is not observed, resource deadlock may occur due to two or more programs trying to obtain exclusive control of resources already controlled by these programs.

Concurrent updating of database files

The two methods of record holding given in the previous section have different programming requirements. The MANTIS ENQUEUE statement causes the MANTIS program to enter a resource wait state until the named resource becomes available. This requires careful programming to ensure that no MANTIS program can possibly hold the resource for an unacceptable duration.

The ENQUEUE parameter on the MANTIS GET statement causes a return status of HELD if the record is already locked. You may want to attempt a certain number of retries of the GET before giving up and reporting the HELD status. Always check return statuses, and never program infinite retry loops in case of fatal embrace situations.

Concurrent updating of external files must be enabled by specifying the SHARED UPDATE level password on the MANTIS ACCESS statement. Once enabled, the normal ENQUEUE and COMMIT considerations will apply.

Concurrent updating of resources accessible through the interface

Your interface program can access data in any database file. You must carefully review the implications of concurrent updates before writing the interface program. In general, if resource enqueuing needs to be done, the interface program should do it.

Transaction recovery after system failure

LUW provides a convenient yardstick for assessing the point to which a transaction is backed out after a system failure.

Updates associated with a completed LUW are left intact. Updates associated with an incomplete LUW are backed out after system restart. The backing out occurs for all application programs that at the time of failure were in the middle of an incomplete LUW. All application programs are signed off after the restart and are not allowed to continue.

Transaction recovery after application failure

If the application program fails, MANTIS displays a fault message and issues a RESET to back out any database updates done during the scope of the incomplete LUW. MANTIS then terminates the application program.

If the application program detects a logical failure, it can back out the incomplete LUW by executing a RESET statement. In this case, the program can decide whether to display a message and whether to terminate or continue.

If you use the MANTIS SET TRAP statement in your application program, be aware that the implicit RESET is not executed by MANTIS if there is a MANTIS trap handler subroutine available when a program fault occurs. If the trap handler subroutine cannot adequately recover from the condition, restart the application from a known point. The trap handler subroutine should execute a RESET statement to make sure that there are no outstanding and incomplete LUWs (to ensure database integrity).

C

Color support extensions

OpenVMS The VTxxx terminal information in this appendix is only applicable to the OpenVMS environment. In the UNIX environment color terminal support availability is platform dependent.

MANTIS color terminal support allows you to address your terminal's color capabilities. The active palette for the VT340 series terminals will display 16 different colors at the same time (do not confuse this with the total number of different colors that can be displayed on the terminal). The VT241 terminals only support an active palette of four colors. The terminal can either operate in normal (monochrome) mode or color (ReGIS functions) mode. Even with color terminals, the screen design session is performed in normal mode unless you select the Display Completed Design option and have color attributes set for your screen design. When you display your screen using the CONVERSE statement, MANTIS operates in normal mode unless it finds a color field in the logical display. This appendix describes methods for specifying field and screen color as well as the way MANTIS displays screens which use color.

In color mode, your terminal supports all field characteristics except blinking. Field intensity varies only by changing the color of the field.

Getting colors in your screen design

You can specify a color for a field in your screen in one of three ways:

- Complete the COLOR option on the field attribute prompt you receive in the Update Field Specifications option (“Field attributes” on page 56) of screen design using the color attributes listed there. These colors are equivalent to IBM color values. For display, a color is mapped to a predefined color position in the palette. See the table at the end of this section for the default mapping, based on the default color palettes for the VT340 and VT241 terminals.

- Complete the COLOR option on the field attribute prompt you receive in the Update Field Specifications option of screen design using the position of the color in your palette. Position is specified as C*nn*, where *nn* is a color position in the palette (for example, background color = 00). Values for the VT340 range from 00 through 15. If the requested position is not available (as would be the case for the VT241 terminals where only four colors, instead of sixteen, are supported), the field assumes the highest available color position. The table at the end of this section provides a mapping of color values to default color positions.

- Use the ATTRIBUTE statement to dynamically alter the color of a field. The ATTRIBUTE statement accepts color values (BLUE, GREEN, NEUTRAL, PINK, RED, TURQUOISE, YELLOW, NO COLOR) or color position (C*nn*—see the table at the end of this section for default values). The ATTRIBUTE statement is documented in *AD/Advantage MANTIS Language OpenVMS/UNIX*, P39-1310. If you specify a color using the ATTRIBUTE statement and your terminal does not support color display, MANTIS will change the field attribute, but the display is not affected.

It is also possible to set the color of all headings, boxed fields, and data fields through the Set Common Attributes... options from the Inspect or Alter Field Attributes Menu. When you select one of these options, you are prompted to complete those attributes you wish to make universal. Color may be specified using color values (BLUE, GREEN, NEUTRAL, PINK, RED, TURQUOISE, YELLOW, NO COLOR) or using color position specification (C*nn*). Color attributes for an entire screen can also be dynamically supplied using the ATTRIBUTE statement. Refer to *AD/Advantage MANTIS Language OpenVMS/UNIX*, P39-1310.

NOTE

When you are operating in IBM compatibility mode, you must specify IBM-compatible field attributes or you will receive an IBM compatibility mode exception.

The table that follows provides a list of mappings for IBM color values and palettes for VT340 series and VT241 terminals. These mappings are designed to produce the closest approximation to the specified color value if the terminal is set up with its default palette.

Since the active palette for the VT241 terminals is only four colors, you are required to set these colors to suitable values before using color values in MANTIS. If your MANTIS application uses more than four IBM color values, some of those colors will map to the same position in the color palette (as shown in the following table).

Also, on a VT241 terminal, GREEN and YELLOW fields will never be seen as distinct colors in the same display, unless you use one of them as the background color (C00). This is a restriction of using IBM color values only. You can always see any four colors you want by using the C*nn* specification.

	Position in palette	
IBM color value	**VT340**	**VT241**
NO COLOR	07	03
BLUE	01	01
GREEN	03	03
NEUTRAL	07	03
PINK	04	02
RED	02	02
TURQUOISE	05	01
YELLOW	06	03

How MANTIS displays your color screens

In formatted-screen mode, MANTIS displays your “conversed” screen in normal mode unless there are color fields in the logical display (whether visible or not). When you converse a screen with color fields, the terminal remains in color mode until the logical display contains no color fields. Scroll-mode displays are always in normal mode.

D

FDL for UNIX

MANTIS External File Definition Language (FDL) for UNIX consists of a few statements to define the access method and record structure of an external file.

An FDL file specification may be entered in the ACCESS profile design and is required by the ACCESS statement when the NEW parameter is used to specify file creation.

FDL statements

The following table lists the FDL statements described in the following pages.

Statement	Enables you to
ACCESS	Specify the ACCESS METHOD
KEYS	Define the key structure
MAXRECL	Specify the maximum record length
MINRECL	Specify the minimum record length
RECFM	Specify the FIXED/VARIABLE record format

ACCESS

Use the ACCESS statement to define the access method (software) to be used to interface between MANTIS and the external data.

$$\underline{\mathbf{A}}\mathbf{CCESS} = \left\{ \begin{array}{l} \mathbf{MISAM} \\ \mathbf{TEXT} \\ \mathbf{BINARY} \\ \mathbf{CISAM} \end{array} \right\}$$

MISAM

Description MANTIS proprietary Indexed Sequential Access Method (MISAM) is an indexed sequential file management system supporting variable-length records, multiple segmented keys, and record locking.

TEXT

Description Specifies TEXT to create an ordinary text file with '\n' record separators.

BINARY

Description Specifies BINARY to create an ordinary file which includes binary (nontext) data in the record layout.

Considerations

- Refer to the UNIX considerations under Access Method in "Create or update file views" on page 172.
- The MANTIS file is implemented by the MISAM access method.
- There is no distinction between TEXT and BINARY with respect to file creation; that is, the same type of external file is created. The distinction is made in the syntax for clarity and consistency with ACCESS profile design.
- When ACCESS is TEXT or BINARY, no other FDL statements are necessary to create the external file.

CISAM

Description CISAM is a proprietary indexed sequential file management system, supporting variable-length records, multiple segmented keys, and record-locking.

KEYS

Use the KEYS statement to define the key structure for MISAM and CISAM files. You can define one or more possibly segmented keys for a MISAM/CISAM file. The different keys are called alternate keys. Each key can be defined in terms of noncontiguous segments specified by position and size within the record.

You must specify all the keys that will ever be required to access the file by coding one or more KEYS statements in the FDL file.

KEYS (keyno, segment) = position, length, type [, DUPLICATES]

keyno

Description *Required*. Specifies the alternate key number.

Format A number in the range 1–256

Consideration *keyno* must start at 1 and increment by zero or one in subsequent KEY statements.

segment

Description *Required*. Specifies the key segment number within a given *keyno*.

Format A number in the range 1–256

Considerations

- *segment* must start at 1 and increment by one in subsequent KEY statements for a given value of keyno.
- All key segments for a given *keyno* must be contiguous within the record.

position

Description *Required*. Specifies the starting byte position of the specified key segment within a record.

Format A number in the range 1–32767

Consideration In a segmented key definition, the positions should be specified in increasing order.

length

Description *Required*. Specifies the length of a key segment.

Format A number in the range 1–32767

type

Description *Required*. Specifies the key segment data type. Specifying the key data type correctly allows MISAM to perform key comparisons correctly and thus produce the correct collating sequence in any file.

Options

BINARY	binary data string of arbitrary length (not an integer)
DOUBLE	double precision (8 byte) floating point
FLOAT	single precision (4 byte) floating point
SHORT	2-byte integer
LONG	4-byte integer
TEXT	text data string of arbitrary length containing only printable characters

DUPLICATES

Description *Optional*. Allows records with duplicate keys in the file. If you omit DUPLICATES, MANTIS will return an error status if you attempt to insert a record with a duplicate key.

MAXRECLEN

Use the MAXRECLEN statement to define the maximum record length of a MISAM/CISAM file.

MAXRECLEN=*length*

length

Description *Required*. Specifies the maximum record length.

Format A number in the range 1–32767

MINRECLEN

Use the MINRECLEN statement to define the minimum record length of a MISAM/CISAM file.

MINRECLEN=*length*

length

Description *Required*. Specifies the minimum record length.

Format A number in the range 1–32767

Consideration If this statement is omitted, the minimum record length is determined by the highest character position of any key segment in the file.

RECFM

Use the RECFM statement to define FIXED or VARIABLE length record format for a file.

RECFM = { **FIXED** | **VARIABLE** }

FIXED

Description Specifies fixed-length records.

VARIABLE

Description Specifies variable-length records.

Consideration If this statement is omitted, the default is VARIABLE.

Examples

The following FDL is used to define the MANTIS file:

```
access     =  cisam
keys (1,1) =  1,2,s
keys (1,2) =  3,2,s
keys (1,3) =  5,30,t
keys (1,4) =  35,4,b
maxreclen  =  4096
```

The following example defines a CISAM file with two nonsegmented keys (alternate keys) starting at byte positions 1 and 16, and allowing duplicate keys:

```
access     =  CISAM
keys (1,1) =  1,4,BINARY,DUPLICATE
keys (2,1) =  16,10,TEXT,DUPLICATE
recfm      =  VARIABLE
minreclen  =  26
maxreclen  =  132
```

The following example defines a sequential TEXT file but could equally be used to create a sequential BINARY file:

```
access   =   TEXT
```

Index

A

access methods in external file views 176
access names in external file views 173
ACCESS_DEFAULT MANTIS options compiler command 531
ACCESS_NEW MANTIS options compiler command 532
ACCESS_REPLACE MANTIS options compiler command 533
accessing MANTIS 22, 652
action commands 502
alignment
  in external files 195
  numeric fields in screens 37
ALTER program design command 303
altering
  lines
    file designs 127
    interface designs 240
    prompters 214
    ULTRA file views 154
  program designs 299
arrays
  controlling elements in external file views 179
  dimensions in ULTRA file views 158
assigning attributes in interface designs 245
associated area layout for interface designs 233
ATTRIBUTES MANTIS print utility command 507
AUTOFORMFEED MANTIS options compiler command 534
automatic skipping 35. *See also* autoskip
automatic windowing attribute in screen design 107
AUTOREFRESH MANTIS options compiler command 535
autoskip
  Batch MANTIS 536
  screen attribute 60

B

BATAUTOSKIP MANTIS options compiler command 536
BATCH MANTIS options compiler command 537
BINARY MANTIS options compiler command format 524
BIND MANTIS options compiler command 538
BIND program design command 305
binding program designs 357, 360
bins
  copying from library 368
    all user entities 377
    selected entities 369
    user file data 375
  copying to library 377
    all user entities 387
    selected entities 378
    user file data 385
  creating 368
  deleting entire bin 397
  deleting entities 387
    selected entities 388

user file data 392
description 365
listing contents 393
passwords 395
viewing 396
blank-fill characters 34, 109
BLANKFILL MANTIS options compiler command 539
blinking screen attribute 61
BOUND(W) programs 574
BOXCHARS MANTIS options compiler command 540
BOXGRAPHICS, MANTIS options compiler command 542
BRIEF MANTIS print utility command 507
browsing data
run system facility 277

C

calling programs in interface designs 237
change options in universal export 479
CHANGE program design command 307
changing program designs 299
CLEAR BREAK program design command 310
clearing work areas, screen designs 111
color screen attribute 73
COMCHAIN MANTIS options compiler command 542, 543
command format for MANTIS options compiler 524
command sets 503
command streams 503
comment character specified in program designs 359
COMMENT MANTIS options compiler command 544
COPY program design command 311
copying
bin to library 377
all user entities 387
selected entities 378
user file data 385
library to bin 368
all user entities 377
selected entities 369
user file data 375
CR MANTIS options compiler command 545
creating
bins 368
external file views 172
interface designs 232
program designs 297
prompters 212
ULTRA file views 147
CRPOSITIVE MANTIS options compiler command 546
CTRLC MANTIS options compiler command 547
CTRLY MANTIS options compiler command 548
cursor screen attribute 72
customization instructions in run system facility 278
customizing applications
SKELETON_BROWSE program 280
SKELETON_ENTRY program 279
SKELETON_INQUIRY program 281
SKELETON_MAINT program 283
SKELETON_MENU1 program 285
SKELETON_MENU2 program 287
cyclic prototypes 273

D

data entry
in run system facility 277
data fields 35
data format types 128
data position character 34, 43
data transfer format

interface designs 241
data type screen attribute 59
DATEMASK MANTIS options compiler command 549
DB MANTIS options compiler command 550
debugging
OpenVMS interface designs 265
DECIMAL MANTIS options compiler command 551
decimal placement in interface designs 244
decimal places in ULTRA file views 157
defaulting non-existent file in external file views 202
DELCHAIN MANTIS options compiler command 553
deleting
bins 397
entities from bins 387
selected entities 388
user file data 392
external file views 199
file designs 135
interface designs 248
lines
file designs 127
interface designs 240
prompters 214
ULTRA file views 154
program designs 299, 356, 362
program lines 321
program source code 362
prompters 222
screen designs 111
ULTRA file views 162
DELFACILITY MANTIS options compiler command 554
DELIMMEDIATE MANTIS options compiler command 556
detectable screen attribute 74
DFWRITE MANTIS options compiler command 557
dimensions for fields in interface designs 244
directories, viewing 653
DIRECTORY MANTIS print utility command 508
display default extended edit screen attribute 64
displaying
programs 344
prompters 226, 649
screen designs 98
disposable prototypes 273
double height screen attribute 77
double width screen attribute 78
DOWN program design command 314
DR MANTIS options compiler command 558
drawing boxes in screens 49, 50
DWASIZE MANTIS options compiler command 559
dynamic unloading of interface routines in interface designs 236

E

edit characters for screens 39
edit keys for screens 46
edit masks 35
EDIT program design command 315
editing program designs 363
EDITOR MANTIS options compiler command 561
element attributes in ULTRA file views 159
entering data
in run system facility 277
entities
change options 479
migrating 401
viewing 487
entity selection command 503

entity transfer *See also* copying. *See also* library. *See also* bins
  help 397
  overview 365
  print ON/OFF function 397
ENUM MANTIS options compiler command 562
ERASE program design command 321
erasing program designs 299
error handling in MANTIS print utility 517
EXAMPLES MANTIS print utility command 515, 516
EXBOUND MANTIS options compiler command 563
executing programs 297
exiting
  programming mode 300
EXONLY MANTIS options compiler command 564
export file names
  external file views 198
  file designs 134
  interface designs 247
  program designs 354
  prompters 221
  screen designs 104
  ULTRA file views 161
exporting
  external file views 199
  file designs 135
  interface designs 248
  program designs 356
  prompters 222
  screen designs 111
  ULTRA file views 162
EXTCURSORON MANTIS options compiler command 565
extended edit data, extended edit screen attribute 70
extended edit screen attributes *See also* validation list
  displaying default field values 64
  filling the entire data field 64
  required data entry 64
  specifying default values 70
  specifying low/high values 70
  specifying validation routine 68, 83
  specifying validation variable 68
  symbolic name validation 65
  validating field values 65
extended screen attribute 63
external file views
  alignment considerations 195
  creating/updating 172
  defaulting non-existing files 202
  deleting 199
  export file names 198
  exporting 199
  fetching 199
  file creation delayed 201
  file open delayed 201
  importing 199
  library options 197
  overview 167
  printing 205
  reducing space 193
  replacing 199
  replacing non-existing files 201
  saving 198
  specifying
    access methods 176
    access names 173
    actions for new files 203
    array-controlling elements 179
    external names 173
    FDL file names 173
    field status 175
    file types 175
    first occurring elements 179
    last profile updates 180
    mailbox timeouts 180
    occurrence-controlling elements 179

passwords for altering 174
passwords for deleting/inserting 174
passwords for shared update 174
record length 178
record size 177
reference variable names 179
refernce keys 180
specifying passwords for viewing 174
viewing 181, 204
external names in external file views 173
EZONE MANTIS options compiler command 566

F

FDL file names in external file views 173
fetching
external file views 199
file designs 135
interface designs 248
program designs 355
prompters 222
screen designs 110
ULTRA file views 162
field definitions
interface designs 243
ULTRA file views 156
field dimensions in interface designs 244
field length specified in interface designs 242
field mapping, description 141
field matching in screens 44
field movement 35
field name screen attribute 58
field sensitive validation screen attribute 85
field separators
attribute in screen design 106
field specifications in screen designs 52. *See also* extended edit screen attributes
altering fields 55
assigning field attributes 53
assigning field attributes for all data fields 55
assigning field attributes for all headings 55
assigning field attributes for box fields 55
assigning field attributes to a range of fields 54
assigning symbolic names 58
identifying row/column coordinates 59
inserting fields 55
listing attributes 56
nominating fields 53
screen and field attributes 87, 88
specifying
cursor placement in field 72
cursor skipping 60
display of system messages 82
extended editing 63
field blinking 61
field brightness 59
field color 73
field data types 59
field detection 74
field display in uppercase 62
field highlighting 79
field horizontal size 78
field length 71
field modification marking 75
field protection 61
field protection against input 62
field underlining 61
field vertical size 77
fields in reverse video 60
field-sensitive validation 85
horizontal repeats and displacement in fields 81

left bars in fields 76
over bars in fields 76
right bars in fields 76
vertical repeats and displacement in fields 80
file creation delayed
external file views 201
file designs
altering lines 127
creating/updating 122
data format types 128
deleting 135
deleting lines 127
export file names 134
exporting 135
fetching 135
field occurrences 129
first tab position 127
importing 136, 163, 200, 223, 249, 278, 357
inserting lines 127
library options 132
overview 117
password for altering 123
password for deleting/inserting 123
password for viewing 122
printing 139
record size 126
replacing 134
saving 134
second tab position 127
specifying file status 123
text length 129
viewing 125, 137
file name specified in run system facility 276
file open delayed
external file views 201
file password specified in run system facility 276
file type
specified in external file views 175
specified in run system facility 277
file view, description 141
fill characters 41
fill extended edit screen attribute 64
first occurring elements in external file views 179
first tab position
file designs 127
interface designs 240
prompters 214
fixed-position characters 42
FLDMASK MANTIS options compiler command 568
float characters 40
FMTMASK MANTIS options compiler command 569
formatting numeric data 36
full display attribute in screen design 105
function command 504

G

generic prototype programs 275
GO MANTIS print utility command 508
GO program design command 323

H

heading
fields 34
HELDFAULT MANTIS options compiler command 570
help
displaying online help 508
entity transfer 397
HELP
MANTIS options compiler command format 524
program design command 324
HELP MANTIS print utility command 508
highlight screen attribute 79
horizontal repeats/disp screen attribute 81
horizontal windowing attribute in screen design 108

I

IBM MANTIS options
compiler command 571
IBMCHECKS MANTIS
options compiler
command 573
IBMPCIFAULT MANTIS
options compiler
command 574
IGNORETRLBLKS MANTIS
options compiler
command 575
importing
external file views 199
file designs 136, 163, 200,
223, 249, 278, 357
interface designs 249
program designs 356
prompters 223
screen designs 112
ULTRA file views 163
INDEXSIZE MANTIS options
compiler command 576
INFORMIXSQL MANTIS
options compiler
command 577
inserting
lines
file designs 127
interface designs 240
prompters 214
ULTRA file views 154
intensity screen attribute 59
interface designs
altering lines 240
area layout association 233
assigning attributes 245
calling programs 237
creating/updating 232
data transfer format 241
decimal placement in fields
244
deleting 248
deleting lines 240
dynamic unloading of
internal interface
routines 236
export file names 247
exporting 248
fetching 248
field definitions 243
first tab position 240
importing 249
inserting lines 240
invoking OpenVMS
programs 253, 254
invoking shareable images
235, 253
invoking UNIX programs
254
invoking VMS dynamic
image activation 234
layout update 238
library options 246
OpenVMX debugging 265
OpenVMX sample 259
overview 227
passwords 247
printing 252
replacing 248
saving 248
second tab position 240
specifying
COBOL routine 236
specifying common storage
areas 235
specifying field dimensions
244
specifying field length 242
specifying interface status
233
specifying internal buffers
235
specifying internal routines
235
storage considerations 255
UNIX sample 265
variable names 240
viewing 250
internal buffers in interface
designs 235
internal file description in
UEF 435
internal routines in interface
designs 235, 236
invoking
shareable images in
interface designs 235,
253
VMS dynamic image
activation in interface
designs 234

K

KANJI MANTIS options
compiler command 578
key type
specified in run system
facility 277
KHASH MANTIS options
compiler command 579
KILL program design
command 326
KPROMPT MANTIS options
compiler command 580
KSPACE MANTIS options
compiler command 581

L

language attribute
prompters 221
screen design 103
LANGUAGE MANTIS
options compiler
command 582
last alteration
dates specified in ULTRA
file views 151
times specified in ULTRA
file views 151
last profile ipdates in external
file views 180
LEADFORMFEED MANTIS
options compiler
command 583
left bar screen attribute 76
length screen attribute 71
library
copying from bins 377
all user entities 387
selected entities 378
user file data 385
copying from library to bin
368
all user entities 377
selected entities 369
user file data 375
definition command 503
options
external file views 197
file designs 132
interface designs 246
program designs 353
prompters 218
screen design 100
ULTRA file views 160
linkage paths specified in
ULTRA file views 149
LIST MANTIS options
compiler command
format 525
LIST program design
command 327
listing
bin contents 393
listing program statements
297
LOAD program design
command 329
logical view, description 141

M

mailbox timeouts in external
file views 180
MANTIS Options Compiler
access option value 531,
532, 533
array variable dimension
size 586
automatic form feed 534
autoskip operation 536
bind authorization 538
blank-fill characters 539
boolean options 641
bound code authorization
563
BOUND(W) program
operation 574
box characters 540
changing defaults 519
commitment of all updates
542, 543
CR option setting 546
credit indicator string 545
current input mode 537
cursor visibility 565
data field mask character
568
DB strings 550
DBCS authorization 578
DBCS character separation
in string data 629

DBCS hash character 579
DBCS prompt strings 580
DBCS space character 581
decimal point character 551
default date masks 549
default SQL database name 628
default time masks 639
deletion of all active subprocesses via CHAIN 553
deletion of all active subprocesses via initial menu 554
deletion of all active subprocesses via MANTIS_SPAWN 556
description 519
DR strings 558
evaluation stack size 632
examples 522
executable options files 600
FORMAT mask characters 569
heap storage size 605
I/O operations status 570
IBM check option 573
IBM compatibility mode execution 571
index area size 576
INFORMIX SQL support authorization 577
inputs 520
invoking 523
invoking external system editor 561
KANJI string options 642
language 582
leading form-feed character 583
machine and operating system identification 637
MANTIS entity search path 603
MANTIS pauses 598
MANTIS program symbol table size 636
MANTIS waits 597
maximum environment buffer size 588
maximum number of bind errors 584
maximum number of CHAIN parameters 585
maximum number of dimensions 590
maximum number of nested external subroutines 587
maximum number of subprogram pool entries 591
maximum number of users 595
maximum number of variables 596
maximum program line number 592
maximum program size 593
maximum string variable length 594
null string resulsts 599
number of free-memory lists 589
numeric options 643
OpenVMS/UNIX examples 527
ORASQL support authorization 601
output commands 521
overview 519
print system command 609
process identification numbers 608
program comment characters 544
program data work area size 559
program development authorization 564
program string delimiter 612
program work area size 611
RDB SQL support 613
read-only access 615
read-only ULTRA data sets 616

REGIS MACROS usage 617
releasing internal storage 618
RMS deferred write option 557
RMS journalling authorization 619
scientific notation entry 562
scientific notation zone 566
screen coordinates 620
screen refresh 535
scroll output map columns 621
scroll output map rows 622
significant digits 625
sign-off from database systems 626, 627
SQL work area size 630
SQLDA area size 631
stack storage size 606
string comparison mode 633
SUPRA PMD availability 607
SUPRA RDM availability 614
SUPRA SQL support authorization 635
syntax rules 520
termination key sequence 547, 548
TEXT string options 644
thousands separator character 638
trailing blanks 575
trailing blanks in Oracle support 602
TXT(0) text values 639
ULTRA statement optimization 640
user functionality authorization 610
MANTIS Print Utility
action commands 502
changing page dimensions 501
commands 502
command processing 508
cross references 514
defining entities to be processed 503
defining output parameters 504
defining reporting 504
defining the user library 503
directing output to a file 510
displaying online help 508
entity selection 512
entity types 513
list of commands 505
listing entities 508
matching criterion for entities 509
OpenVMS examples 515
output file attributes 507
printing entities 511
printing partial completed screens 507
searching for entity matches 511
terminating the command stream 504
types 503
user libraries 513
controlling page width 501
description 501
handling errors 517
overview 501
UNIX examples 516
MANTIS Run System Facility *See* Run System Facility
mask characters
in program designs 358
specifying 109
MATCH MANTIS print utility command 509
MAXBINERRS MANTIS options compiler command 584
MAXCHARGS MANTIS options compiler command 585
MAXDIMSIZE MANTIS options compiler command 586

MAXDOLEVELS MANTIS options compiler command 587
MAXENVBUF MANTIS options compiler command 588
MAXMEMLISTS MANTIS options compiler command 589
MAXNODIMS MANTIS options compiler command 590
MAXPCAPOOL MANTIS options compiler command 591
MAXPROGLINE MANTIS options compiler command 592
MAXPROGSIZE MANTIS options compiler command 593
MAXSTRLEN MANTIS options compiler command 594
MAXUSERS MANTIS options compiler command 595
MAXVARS MANTIS options compiler command 596
MBXWAITFULL MANTIS options compiler command 597
message screen attribute 82
migrating entities 401
modified screen attribute 75
modifying program designs 299
MOP *See* MANTIS Options Compiler
MORE MANTIS options compiler command 598
MPR *See* MANTIS Print Utility

N

nesting structure in program designs 357
NEW program design command 331
next prompters 220
NOAUTOFORMFEED MANTIS options compiler command 534
NOAUTOREFRESH MANTIS options compiler command 535
NOBATAUTOSKIP MANTIS options compiler command 536
NOBATCH MANTIS options compiler command 537
NOBINARY MANTIS options compiler command format 525
NOBIND MANTIS options compiler command 538
NOBOXGRAPHICS, MANTIS options compiler command 542
NOCOMCHAIN MANTIS options compiler command 542, 543
NOCRPOSITIVE MANTIS options compiler command 546
NOCTRLC MANTIS options compiler command 547
NOCTRLY MANTIS options compiler command 548
NODELCHAIN MANTIS options compiler command 553
NODELFACILITY MANTIS options compiler command 554
NODELIMMEDIATE MANTIS options compiler command 556
NODFWRITE MANTIS options compiler command 557
NOENUM MANTIS options compiler command 562
NOEXBOUND MANTIS options compiler command 563
NOEXONLY MANTIS options compiler command 564

NOEXTCURSORON MANTIS options compiler command 565
NOHELDFAULT MANTIS options compiler command 570
NOIBM MANTIS options compiler command 571
NOINFORMIX MANTIS options compiler command 577
NOKANJI MANTIS options compiler command 578
NOLEADFORMFEED MANTIS options compiler command 583
NOLIST MANTIS options compiler command format 525
NOMBXWAITFULL MANTIS options compiler command 597
NOMORE MANTIS options compiler command 598
NOORASQL MANTIS options compiler command 601
NOPATCH MANTIS options compiler command format 526
NOPDM MANTIS options compiler command 607
NOPRODOPTn MANTIS options compiler command 610
NORDBSQL MANTIS options compiler command 613
NORDM MANTIS options compiler command 614
NOREADONLY MANTIS options compiler command 615
NOREALM MANTIS options compiler command 616
NOREGISMACROS MANTIS options compiler command 617
NORELCHAIN MANTIS options compiler command 618
NORMSJ MANTIS options compiler command 619
NOSIGNOFFCHAIN MANTIS options compiler command 626, 627
NOSQLMIXSEP MANTIS options compiler command 629
NOSUPRASQL MANTIS options compiler command 635
NOULTRAGS MANTIS options compiler command 640
NOUSERBOOn MANTIS options compiler command 641
NULLPOSITION MANTIS options compiler command 599
number of records specified in run system facility 276
numeric data format 36

O

occurrence-controlling elements in external file views 179
opaque map attribute in screen design 107
OPTIONS MANTIS options compiler command 600
ORASQL MANTIS options compiler command 601
ORAUNPAD MANTIS options compiler command 602
output commands for MANTIS OPTIONS Compiler 521
output definition command 504
OUTPUT MANTIS print utility command 510
over bar screen attribute 76

P

page width in MANTIS Print Utility 501
passwords
  altering
    file designs 123
    specified in external file views 174
    specified in ULTRA file views 149
  bins 395
  deleting/inserting
    file designs 123
    specified in external file views 174
    specified in ULTRA file views 149
  interface designs 247
  program designs 354
  prompters 220
  run system facility 276
  shared update
    specified in external file views 174
  viewing
    file designs 122
    specified in external file views 174
    specified in ULTRA file Views 148
PATCH MANTIS options compiler command format 525
PATH MANTIS options compiler command 603
PCIHEAPSIZE MANTIS options compiler command 605
PCISTACKSIZE MANTIS options compiler command 606
PDM element database names in ULTRA file views 154
PDM element program names in ULTRA file views 154
PDM Files identified in ULTRA file names 148
PDM MANTIS options compiler command 607
PID MANTIS options compiler command 608
porting
  prototypes 289
PRINT MANTIS print utility command 511
print ON/OFF function in entity transfer 397
PRINTCMD MANTIS options compiler command 609
printing *See also* MANTIS Print Utility
  external file views 205
  file designs 139
  interface designs 252
  ON/OFF function in entity transfer 397
  partially completed screens 507
  program designs 359
  prompters 226
  screen designs 115
  selected entities 511
  ULTRA file views 166
PRODOPTn MANTIS options compiler command 610
program commands 296
program designs
  binding 357, 360
  commands
    altering program designs 303
    binding program formats 305
    changing strings in program designs 307
    clearing program breakpoints 310
    clearing program design work areas 331
    copying program lines 311
    deleting program designs 332
    deleting program lines 321
    displaying current program breakpoints 344

editing program external subroutines 314
executing program designs 336
help for programs 324
higher level program selection 345
invoking the external editor in program designs 315
killing program designs 326
list of all commands 301
listing program designs 327
loading program designs 329
program usage 346
purging program designs 332
quitting programming mode 333
renumbering program designs 340
replacing program designs 334
resuming program execution 323
running program designs 336
saving program designs 338
sequencing program designs 340
setting program breakpoints 342
terminating program designs 326
terminating programming mode 333
creating 297
deleting 299, 356, 362
deleting program source code 362
editing 363
executing programs 297
exiting 300
export file name 354
exporting 356
fetching 355
importing 356
library options 353
listing statements 297
modifying 299
nesting structure 357
overview 291
passwords 354
printing 359
program logic resolution 357
purging 362
renumbering program statements 298
replacing 355
running 647
saving 298, 355
source code detection 357
specifying comment character 359
specifying mask characters 358
specifying string delimiters 358
string comparison mode 357
unbinding 361
updating 295
viewing 349
program logic resolution in program designs 357
program statements 296
prompter description in UEF 442
prompters
altering lines 214
creating/updating 212
deleting 222
deleting lines 214
design overview 207
displaying 226, 649
export file names 221
exporting 222
fetching 222
first tab position 214
importing 223
inserting lines 214
library options 218
password 220
peplacing 221
printing 226
saving 221
second tab position 214

setting tabs 216
specifying language attributes 221
specifying next prompter 220
specifying tab characters 217
specifying tab positions 217
viewing 224
protect bottom line attribute in screen design 106
protected input only screen attribute 62
protected screen attribute 61
prototypes *See also* Run System Facility
cyclic types 273
disposable types 273
generic programs 275
lifecycles 273
porting 289
tools 274
prototyping
description 271
overview 271
PURGE program design command 332
purging program designs 362
PWASIZE MANTIS options compiler command 611

Q

queries 654
querying data in run system facility 277
QUIT program design command 333
QUOTE MANTIS options compiler command 612

R

RDBSQL MANTIS options compiler command 613
RDM MANTIS options compiler command 614
READONLY MANTIS options compiler command 615
REALM MANTIS options compiler command 616
record
codes specified in ULTRA file views 150
lengths in external file views 178
sizes in external file views 177
reference
keys in external file views 180
variables
names in external file views 179
specified in ULTRA file views 150
REGISMACROS MANTIS options compiler command 617
RELCHAIN MANTIS options compiler command 618
renumbering
program designs 340
program statements 298
repeat specifications in screen designs 92
displacing columns 96
displacing lines 95
nominating fields 93
updating additional horizontal repeats 95
updating additional vertical repeats 95
viewing 97
REPLACE program design command 334
replacing
external file views 199
file designs 134
interface designs 248
non-existent files in external file views 201
program designs 334, 355
prompters 221
screen designs 110
ULTRA file views 162
reports 654

required extended edit screen attribute 64
reverse/FF screen attribute 60
right bar screen attribute 76
RMSJ MANTIS options compiler command 619
row/column screen attribute 59
RUN program design command 336
Run System Facility 275
  accessing programs 275
  browsing data 277
  customization instructions 278
  entering data 277
  file or view name specification 276
  file or view password specification 276
  file type specification 277
  key type specification 277
  querying data 277
  record number 276
  screen name specification 276
running
  program designs 336
  programs 297, 647

S

samples
  C code for invoice records 196
  MANTIS options compiler 522
  OpenVMS interface designs 259
  OpenVMS/UNIX MANTIS options compiler 527
  screen designs 51
  SKELETON_BROWSE program 280
  SKELETON_ENTRY program 279
  SKELETON_INQUIRY program 281
  SKELETON_MAINT program 283
  SKELETON_MENU1 program 285
  SKELETON_MENU2 program 287
  UNIX interface designs 265
  variable length record definitions 194
SAVE program design command 338
saving
  external file views 198
  file designs 134
  interface designs 248
  program designs 298, 355
  programs 338
  prompters 221
  screen designs 110
  ULTRA file views 161
scrambling data 131
screen description in UEF 406
screen designs
  adding row scale lines 47
  aligning numeric fields 37
  clearing work area 111
  converting box characters to graphics 48
  converting box graphics to characters 48
  copying fields 46
  copying ranges of lines 48
  creating 31
  data fields 35
  data-position characters 43
  deleting
    fields 47
    lines 46
    screen design 111
  displaying 98
    column scale lines 46
    help screen 49
    screen domain 48
  drawing boxes 49, 50
  edit characters 39
  edit keys 46
  editing via external editor 49
  erasing boxes 49
  expanding screen size 105
  export file names 104
  exporting 111

fetching 110
fill characters 41
fixed-position characters 42
float characters 40
formatting numeric data 36
general rules 32
heading fields 34
importing 112
inserting
  lines 46
invoking the external editor 49
library options 100
matching fields 44
moving
  column scale lines 46
  fields 46
overview 25
printing 115
removing
  column scale lines 46
  row scale lines 47
repeating fields on the screen 92
  displacing columns 96
  displacing lines 95
  nominating fields 93
  updating additional horizontal repeats 95
  updating additional vertical repeats 95
  viewing 97
replacing 110
sample 51
saving 110
sign characters 41
specifying
  automatic windowing protection 107
  blank-fill characters 109
  bottom line protection 106
  field separators 106
  horizontal windowing ability 108
  language attributes 103
  mask characters 109
  opaque mapping 107
  sceen size 104
  vertical windowing ability 108
  tab increments 32
  terminal beeping 105
  testing numeric data format 38
  updating field specifications 52
    altering fields 55
    assigning field attributes 53
    assigning field attributes for all data fields 55
    assigning field attributes for all headings 55
    assigning field attributes for box fields 55
    assigning field attributes to a range of fields 54
    inserting fields 55
    listing attributes 56
    nominating fields 53
    screen and field attributes 87, 88
  validating fields 44
  verifying field specifications 89
  viewing 113
screen name
  specified in run system facility 276
screen size
  attribute in screen design 104
  default values 31
SCREENTAG MANTIS options compiler command 620
SCRLCOLS MANTIS options compiler command 621
SCRLROWS MANTIS options compiler command 622
SEARCH MANTIS print utility command 511
searching
  data in run system facility 277
  entity matches 511
second tab position
  file designs 127

interface designs 240
prompters 214
SELECT MANTIS print utility command 512
SEQUENCE program design command 340
sequencing
program designs 340
program statements 298
SET BREAK program design command 342
SHARE MANTIS options compiler command 623
SHOW program design command 344
SIGDIGITS MANTIS options compiler command 625
sign characters 41
signing on
as another user 652
master user role 22
SIGNOFFCHAIN MANTIS options compiler command 626, 627
SKELETON_BROWSE Program 280
SKELETON_ENTRY Program 279
SKELETON_INQUIRY Program 281
SKELETON_MAINT Program 283
SKELETON_MENU1 Program 285
SKELETON_MENU2 Program 287
sound alarm attribute in screen design 105
source code detection in program designs 357
space reduction in external files 193
specifying actions for new external file views 203
specifying COBOL routines in interface designs 236
SPECTRA Facility 654
SQLDB MANTIS options compiler command 628
SQLMIXSEP MANTIS options compiler command 629
SQLSSNINC MANTIS options compiler command 630
SQLVARINC MANTIS options compiler command 631
STACKLEN MANTIS options compiler command 632
status
external file views 175
file designs 123
interface designs 233
ULTRA file views 149
storage
programs 298
scrambling data 131
storage considerations
interface designs 255
storage Format in ULTRA file views 155
STRCOMPARE MANTIS options compiler command 633
string comparison mode in program designs 357
string delimiters in program designs 358
SUPRASQL MANTIS options compiler command 635
SYMBOLSIZE MANTIS options compiler command 636
syntax rules for MANTIS options compiler 520
SYSTEM MANTIS options compiler command 637

T

tab
character specification in prompters 217
increments in screen design 32
positions
file designs 127
prompters 214

positions in prompters 217
terminating programming mode 300
Testing Numeric Data Format in Screens 38
THOUSANDS MANTIS options compiler command 638
TIMEMASK MANTIS options compiler command 639
transferring entities *See* entity transfer
TXT0 MANTIS options compiler command 639
TYPE MANTIS print utility command 513

U

UEF *See* Universal Export Facility. *See* Universal Export Facility
ULTRA file views
  altering lines 154
  creating/updating 147
  deleting 162
  deleting lines 154
  description 141
  export file names 161
  exporting 162
  fetching 162
  field definitions 156
  identifying PDM files 148
  importing 163
  inserting lines 154
  layout update 152
  library options 160
  overview 141
  PDM element database names 154
  PDM element program names 154
  printing 166
  replacing 162
  saving 161
  specifying
    array dimensions 158
    decimal places 157
    element attributes 159
    file view status 149
    last alteration dates 151
    last alteration times 151
    linkage paths 149
    passwords for altering 149
    passwords for deleting/inserting 149
    passwords for viewing 148
    record codes 150
    reference variables 150
    storage formats 155
  viewing 164
ULTRAGS MANTIS options compiler command 640
unbinding
  program designs 361
underline/FF screen attribute 61
universal export *See also* migrating entities. *See also* migrating entities
  change options 479
  overview 399, 489
Universal Export Facility syntax 405
  internal file description 435
  prompter description 442
  screen description 406
UP program design command 345
updating
  external file views 172
  interface designs 232
  prompters 212
  ULTRA file views 147
uppercase screen attribute 62
USAGE program design command 346
USER MANTIS print utility command 513
USERBOOn MANTIS options compiler command 641
USERKANJIn MANTIS options compiler command 642
USERNUMn MANTIS options compiler command 643

USERTEXTn MANTIS
options compiler
command 644
using programs 346

V

valid name extended edit
screen attribute 65
validation list
altering entries 66
deleting entries 66
extended edit screen
attribute 65
inserting entries 66
providing a field value 67
providing the entry list
order 66
validation routine extended
edit screen attribute 68, 83
variable extended edit
screen attribute 68
variable names
interface designs 240
verifying field specifications
for screen designs 89
vertical repeats/disp screen
attribute 80
vertical windowing attribute
in screen design 108
view name specified in run
system facility 276
view password specified in
run system facility 276
viewing
bins 396
directories 653
entities 487
external file views 204
external files 181
file designs 125, 137
interface designs 250
program designs 349
prompters 224, 649
screen design repeat
specifications 97
screen designs 113
ULTRA file views 164

X

XREF MANTIS print utility
command 514

Z

zero-fill character 43