MICRO FOCUS | SERENA

Startool® FDM

Installation Guide

Product version: 7.7.1

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Welcome to StarTool FDM

About This Book

This document describes StarTool® FDM (File and Data Manager) Version 7.8. It provides installation instructions for the StarTool FDM base product. Installation procedures are documented separately for licensed product options such as StarBat, the Db2 Option, the IMS Option, and the Extended Compare Option.

StarTool FDM StarTool FDM is a multi-purpose file and data management utility for IBM® mainframe systems. It provides an ISPF-based, menu-driven, integrated interface to a variety of editors and data management tools for PDS, PDSE, VSAM, direct-access, IMS, and Db2 files. A TSO command-line interface is also supported, as well as bulk file processing in batch mode. Customizable option tables and exits make StarTool FDM highly flexible and adaptable to user needs.

Audience This document is intended for use by z/OS mainframe systems engineers and programmers responsible for installing StarTool FDM.

Before You Begin

New Information Change bars in the left margin (shown at left) identify substantive changes to this publication since StarTool FDM Version 7.8.

Corrections and Technical Support The Readme file contains updates and corrections to this manual issued after the publication date. It also provides contact information for Micro Focus Customer Support.

Conventions

Terminology Throughout this document:

- z/OS refers to the IBM® z/OS™ operating system.
- StarTool FDM may also be referenced as FDM.

Typographic Conventions

The following textual conventions are used throughout this document to highlight special information:

Convention	Meaning
Bold	Panel title or field name.
Italics	Introduces new terms, sets off important information, or marks document titles.
UPPERCASE	Indicates keys or key combinations; for example, the ENTER key.
Bright blue	Clickable cross-reference or active hyperlink.
`Monospaced`	JCL, source code, or message text. Also used for member names, file names, and commands if these are not clear from context.
`MONOSPACED UPPERCASE`	Required value or literal in code or JCL parameter.
`monospaced lowercase`	Pattern for a field value or parameter you specify. Number of characters is significant. Upper-case characters are literals. Lower-case characters are placeholders that indicate data type, where: `y` = year `m` = month `d` = day `a` = alphanumeric `n` = numeric `x` = other or mixed `?` = one-character wild card `*` = *n*-character wild card Punctuation other than wild cards must be reproduced in the position shown.

Convention	Meaning
Examples: ■ `yyyy/mm/dd` ■ `C'aa'` ■ `B'nn'` ■ `D'nn'` ■ `X'nn'`	*Examples:* ■ International calendar date with four-character year, two-character month, and two-character day separated by required slashes, such as `2011/01/01`. ■ Alphanumeric character string in user-readable form, two characters long, such as `C'K9'` ■ Binary number, two digits long, where `n = 0` to `1`, such as `B'10'` ■ Decimal number, two digits long, where `n = 0` to `9`, such as `D'10'` ■ Hexadecimal number, two digits long, where `n = 0` to `F`, such as `X'C1'`
monospaced italics	Descriptive placeholder for value or parameter you specify, but not a pattern; for example, *filename*.
Square braces `[ ]`	Optional parameter or choice of values. May be nested.
Vertical bar `|`	Inside braces, a vertical bar separates mutually exclusive parameter choices or values.
Ellipsis `. . .`	Optional repetitions of a pattern in a list.
Greater-than symbol `>`	Separates items in a chain of menu or command selections on a GUI client. For example, **Start > All Programs > Micro Focus > *product_name***.

Documentation

You can download a complete set of electronic product documentation for StarTool FDM from the Micro Focus Customer Support Web site at:

https://www.microfocus.com/support-and-services/documentation/

FDM Documentation Suite

Available StarTool FDM publications include:

Title	Description
StarTool FDM Installation Guide	System requirements, installation instructions, and configuration information for StarTool FDM.
SER10TY User's Guide	Installation information for SER10TY licensing software and instructions on how to apply license key SERtificates.
StarTool FDM Quick Reference	Overview of StarTool FDM commands, with syntax details for frequently used functions. Includes PEDIT and StarBat subcommands.
StarTool FDM User's Guide	StarTool FDM concepts and facilities, with instructions for using the ISPF-based menu-driven interface.
StarTool FDM Command Reference	TSO command-line syntax and parameter reference, organized alphabetically. Interactive subcommands included for major functions.
StarTool FDM System Services	Advanced reference to operating system calls used by StarTool FDM.
StarTool FDM StarBat Option	Batch-mode interface for bulk changes to data sets. StarTool FDM functions invoked by JCL procedures.
StarTool FDM DB2 Option	StarTool FDM data management functions for DB2 relational database tables, columns, and rows, with SQL processing support.
StarTool FDM IMS Option	StarTool FDM data management functions for IMS hierarchical database files and structures.
StarTool FDM Extended Compare Option	Integrated file comparison utility based on Micro Focus Comparex. Data file versus text file comparison logic.
StarTool FDM Messages	Consolidated message reference for base product and all licensed product options, with error recovery recommendations.

Using the PDF Documentation

To view PDF files, use Adobe® Reader®, which is freely available from Adobe on the World Wide Web at:

http://www.adobe.com

Reader Version 9 or higher is recommended.

TIP Be sure to download the *full version* of Adobe Reader. The more basic version does not include the cross-document search feature.

This section highlights some of the main Reader features. For more detailed information, see the Adobe Reader online help system.

The PDF manuals include the following features:

- **Bookmarks.** All of the online manuals contain predefined bookmarks that make it easy for you to quickly jump to a specific topic. By default, the bookmarks appear to the left of each online manual.
- **Links.** Cross-reference links within an online manual enable you to jump to other sections within the manual and to other manuals with a single mouse click. These links appear in blue.
- **Printing.** While viewing a manual, you can print the current page, a range of pages, or the entire manual.
- **Advanced search.** Starting with Version 6, Adobe Reader includes an advanced search feature that enables you to search across multiple PDF files in a specified directory. (This is in addition to using any search index created by Adobe Catalog—see step 3 below.)

To search across multiple PDF documents at once, perform the following steps (requires Adobe Reader Version 6 or higher):

1 In Adobe Reader, select Edit > Search (or press CTRL+F).

2 In the text box, enter the word or phrase for which you want to search.

3 Select the **All PDF Documents in** option, and browse to select the folder in which you want to search. (If you have a document open that has an Adobe Catalog index attached, you can leave the **In the index named...** option selected to search across all the manuals in the index.)

4 Optionally, select one or more of the additional search options, such as **Whole words only** and **Case-Sensitive**.

5 Click the **Search** button.

NOTE Optionally, you can click the **Use Advanced Search Options** link near the lower right corner of the application window to enable additional, more powerful search options. (If this link says **Use Basic Search Options** instead, the advanced options are already enabled.) For details, see Adobe Reader's online help.

Chapter 1

Prerequisites

To assist with installation planning, this chapter discusses the following requirements of StarTool® FDM.

Software Environment

StarTool FDM runs under IBM z/OS. In addition, make the following environments available:

- ISPF and ISPF/PDF (Version 4.1 or above)
- TSO/E
- SER10TY license management software

The Readme file points to the latest information concerning software products and versions required or supported by StarTool FDM.

Storage Requirements

Virtual Storage

Region Size

StarTool FDM executes best in region size of 3072K or larger. However, you can use a region as small as 1100K in many cases.

The following allocation considerations apply:

- ***STARTOOL load module*** — The main StarTool FDM load module, `STARTOOL`, requires a minimum of 900K of virtual memory. At execution time, this module obtains additional region storage of 124K for disk track buffers.
- ***ISPF split screen*** — If you use StarTool FDM on both sides of an ISPF split, the minimum region size for the `STARTOOL` load module increases to 1500K.
- ***Subcommand modules*** — Subcommand and support modules for StarTool FDM require a total of 100K below the 16MB line and 800K above the line when in concurrent use. These allocations are temporary and the actual mix varies with command use.
- ***RETAIN buffers*** — Add 58K for each RETAIN track buffer.
- ***GO sessions*** — Add 124K for each concurrent GO session.

Addressing Mode Considerations

Link Pack Area (LPA)

StarTool FDM is written in reentrant assembler and is link-edited with the RENT attribute. Consequently, you should include it in the Link Pack Area (LPA) so that concurrent users can share the same copy in storage and reduce central storage requirements.

16MB Line

The main STARTOOL load module is assembled with attributes AMODE 24 and RMODE 24 (below the 16MB line), but it switches addressing mode dynamically when it needs to address storage above the line.

Many subcommand modules, including PEDIT (load module PDSPEDIT) and PBROWSE (load module PDSPBROW), are assembled as RMODE ANY and AMODE ANY to reside above the 16MB line.

The PDS#DYNA dynamic security exit must be assembled with AMODE 31 and RMODE 31 attributes, as it must reside above the 16MB line.

Large File Processing Support

IEFUSE Exit

To support large file processing, you should implement the IBM-supplied exit IEFUSI to set a maximum region size above the 16MB line large enough to accommodate interactive editing operations on very large data sets. The actual allocation depends on the maximum file size you plan to edit at your installation.

For example, a data set of 1 million 80-byte fixed-length records would require a 256MB TSO region size to edit and save the last record with PEDIT. The default allocation of 32MB is not sufficient.

Compressed Data Sets

For best performance, IBM recommends tailored compression over generic compression when working with large, sequential datasets. StarBat I/O performance improves with compressed sequential data sets when tailored compression is used.

Large Block Interface (LBI)

The StarTool FDM StarBat Option supports the Large Block Interface (LBI) feature of DFSMSdfp for its primary input and output files. The LBI allows tape block sizes larger than 32K bytes, depending on the tape control unit used. This increases the virtual storage requirements of StarBat jobs. Customers should evaluate their current REGION= parameters to account for the growth in buffer space requirements when using the LBI.

Auxiliary Storage

All of the StarTool FDM software modules, including separately licensed options, require about 55 tracks of 3390 storage if installed using IEBCOPY. For an SMP/E installation, about 110 tracks are required. Allow at least 65% more space for applying maintenance and user modifications.

StarTool FDM has different data set requirements depending on mode of operation:

- When StarTool FDM operates in online mode, provide a TSO HELP member for user reference.
- In its normal execution mode as an ISPF dialog, StarTool FDM requires a panel and a message library.
- When StarTool FDM operates in batch mode, there is no need for special data sets.

StarTool FDM supports high-capacity 3390-type DASD devices or emulated devices of the "3390-27" type (32K cylinders, 27 GB) and the "3390-54" type (64K cylinders, 54 GB).

Third-Party Data Management Utilities

PDSFAST

If you use an old version (4.1 or earlier) of PDSFAST from Software Engineering of America (SEA) as a replacement for IBM's IEBCOPY, customize the `PDS#OPT4` options module after installation so that the default `IKJEFTSR` interface for the COPY and COMPRESS subcommands is not used. Later versions of PDSFAST do not require this customization.

Customization options and procedures are discussed in Chapter 3, "Configuring PDS#OPT4 Options".

Archived Data Sets

StarTool FDM has several internal checks for archived data sets. Archived data sets normally use a volume name of MIGRAT (DFHSM, FDR/ABR and CA-1 or ADAM). If you use ARCIVE (DMS/OS) or any other single volume name to indicate an archived data set, specify parameter #INITARC to inform StarTool FDM. FDR/ABR installations can use MIGRAT or the original volume name for an archived data set. For StarTool FDM, use the MIGRAT option.

If you delete a data set cataloged to MIGRAT with a DEL line command in the LISTC/LISTF function, StarTool FDM processes this data set through the PDSLCD4 panel. If you have FDR/ABR or CA-1 installed, change this panel to invoke DEL instead of HDEL and remove the NOWAIT option.

Authorization Requirements

APF-Authorized Modules

StarTool FDM's main load module, STARTOOL, is linked as a problem program and does not require APF authorization.

However, many StarTool FDM subcommands, optional features, and execution options do require authorization if you expect to use them. Module authorization requirements are listed in the table below.

Module to Authorize	Subcommands/Functions Accessing Module
FDRREORG	COMPRESS
IDCAMS	IDCAMS
IEBCOPY (IBM)	COMPRESS, COPY
PDSEAUTH	FIXPDS, LLA, PDSE#SECI
PDSFAST (SEA)	COMPRESS, COPY
PDSEPRIM	PDSE started task

Security Setup Permissions

You must be authorized to use the TSO PARMLIB command to configure security for StarTool FDM.

License Key SERtificates

SER10TY You must apply license key certificates, called SERtificates, to enable the execution of StarTool FDM and its separately licensed product options. SERtificates are applied using SER10TY, Serena's mainframe software licensing product, after the installation of StarTool FDM is complete.

Refer to the *SER10TY User's Guide* for instructions on applying license key SERtificates.

PROFILE Parameters

For best runtime help and diagnostic support, StarTool FDM should execute in an environment where users have set their PROFILE parameters to enable `MSGID` and `WTPMSG`. To do this, type the following TSO command in READY mode:

```
TSO PROFILE MSGID WTPMSG
```

StarTool FDM honors `PROFILE NOMSGID` by displaying program messages without the message identifiers. However, if StarTool FDM users operate with message identifiers enabled, they can reference messages using their identifiers in the *StarTool FDM Messages* manual and in the MSG section of the HELP member.

When StarTool FDM initializes, it checks for `MSGID` in the profile. If it is set to `NOMSGID`, StarTool FDM issues a `PDS531W` warning message that suggests that you type `TSO PROFILE MSGID`.

Chapter 2

Installing StarTool FDM

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Installation Overview

Installing StarTool FDM is, in general, a five-step process. You will:

1 Set up the host environment, including library naming conventions.

2 Install the software to installation libraries on the host.

3 Configure the installed software to your site requirements.

4 Test the configured software with any user-customized code.

5 Distribute the tested configuration into production.

The details of each step vary with distribution media (CD-ROM versus Web download files versus tape), the installation method (SMP/E versus IEBCOPY/non-SMP/E), and the functional and security requirements of your installation.

Library Naming Conventions

Installation Libraries

The StarTool FDM installation libraries are the end result of unloading the product distribution media and installing the product. These libraries are referenced throughout this manual using their default data set names, which take the following general form:

somnode.PDSE*vrm*.*libtype*

where:

- *somnode* is the high-level qualifier (HLQ) you specify to identify the final StarTool FDM installation libraries.
  - ***For an IEBCOPY (non-SMP/E) install***, the installation libraries are created when you unload the product distribution media. In this case, *somnode* is the **Host HLQ** you provide to the PC installer (if installing from CD-ROM or online media) or the HLQ you supply when customizing PDSELOAD (if installing from tape).
  - ***For an SMP/E install***, the installation libraries are created by SMP/E in a second step after unloading the product distribution media to the host. In this case, the **Host HLQ** you provide to the PC installer (if installing from CD-ROM or online media) or

the HLQ you supply when customizing PDSELOAD (if installing from tape) is a temporary HLQ for SMP/E input files. You will provide a final value for *somnode* using SMP/E.

- *vrm* is the version number, release, and modification level without punctuation. (For example, version 7.7.1 would become 771 in the library name).
- *libtype* is the library type created by the StarTool FDM installer.

Custom Code Libraries

User-customized code for option tables, exits, messages, panels, CLISTs, STEPLIBs, and other StarTool FDM modules should reside in separate libraries. They should not share the StarTool FDM installation libraries. Adopting this convention protects your custom code when upgrading to a new product release or applying patches.

Custom code libraries typically reside with the StarTool FDM production libraries, but that choice is up to you.

Installations with different data set naming conventions will need to customize their production JCL and certain supplied configuration members accordingly.

Customizable Members

The StarTool FDM installation libraries, together with the customizable code members and related macros included in each, are listed in Appendix B, "StarTool FDM Libraries and Members".

Distribution Media Considerations

Distribution on CD-ROM or Online

Most customers download StarTool FDM from the Serena Customer Support Web site via FTP to a PC client. They then unload the media and transfer it to the host by FTP over a secure internal network.

Customers who require product shipment on physical media generally install from CD onto a PC client, then transfer the media to the host. Other than method of product delivery, the installation process is identical for both the downloaded distribution media and CD.

Distribution on Tape

Some government installations and regulated industries require product distribution on tape. Serena Software accommodates these customers on an individual basis.

To begin the installation process, see the following instructions as appropriate for your product distribution media:

Unloading the CD or Online Media

The product distribution files are generally delivered by FTP download from the Serena Customer Support Web site or on CD. These files are shipped in compressed and encrypted form.

Windows PC Installer

A Windows PC client-side installer program decrypts the product files and stores them in a temporary directory on your PC hard disk. It also generates a control file with the commands needed to upload the distribution files to the mainframe host using FTP, and it generates the JCL needed to receive and decompress the uploaded distribution files to the desired mainframe libraries.

Prerequisites

The PC client unload process requires:

- TCP/IP FTP connectivity from your PC to the host computer.
- The host LPAR name or dotted decimal IP address.
- A host user ID and password.
- Security authorization to allocate files on the host.
- Administrator authorization on the Windows PC.

Running the Client-Side Installer

To unload the distribution files from the product distribution media to your host, perform the following steps

Installer Program Names

1. Start the client-side installer from the CD or from the downloaded distribution files on your PC. Installer programs have the following names:

   - `autorun.exe` — Wrapper that chooses your install program (CD only).

Full Install

- `FDM`*`vrm`*`Setup.exe` — For a full product install. The variable *`vrm`* is replaced by the actual version, release, and modification level of the product. This is the only installer provided for feature releases with a modification level of zero (for example, version 7.7.0).

Fix Install

- `FDM`*`vrm`*`FixSetup.exe` — For installing fixes to a previously installed base level of the product. The variable *`vrm`* is replaced by the actual version, release, and modification level of the product. This installer is provided as an option only for maintenance releases with a modification level greater than zero (for example, version 7.8.1).

To start the installer from CD:

- If your client system has the autorun feature enabled, the installer program will start automatically when you insert the distribution media in the CD-ROM drive.
- If the installer does not start automatically, open the root directory on the CD and double-click on the `autorun.exe` program.

To start the installer from downloaded media:

- Open the PC folder where you downloaded the distribution files.
- Double-click on `FDM`*`vrm`*`Setup.exe` for a full install, or on `FDM`*`vrm`*`FixSetup.exe` to install fixes only.

2 The autorun wrapper program (CD only) displays a **Welcome** screen and prompts you to choose an install option.

- **Full Install** — Installs the entire product.
- **Fix Install** — Installs only fixes to a previously installed base version of the product.

NOTE Feature releases with a modification level of zero, such as version 7.7.0, do not offer the option to install fixes only.

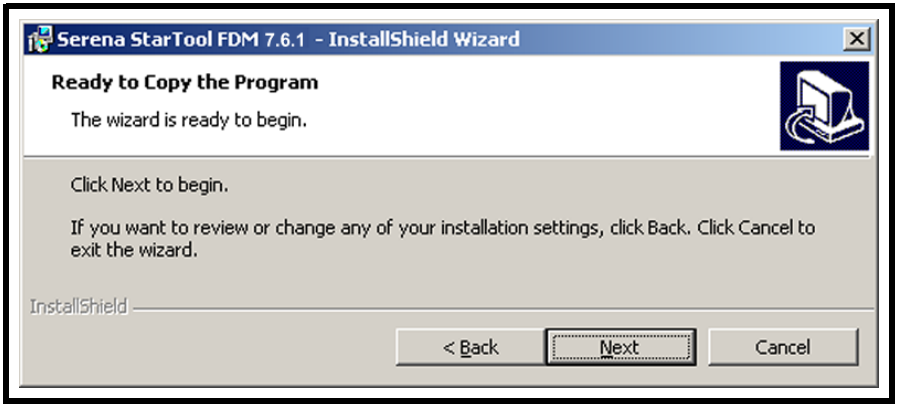
Choose your installation option and click **Next**.

3 The **Location to Save Files** screen displays the default location on your PC to which the installer will copy the distribution files.

Accept the default destination for the copied files, or click **Change** to browse to another location on the PC. When you are satisfied with the copy destination, click **Next**.

==>Start here.

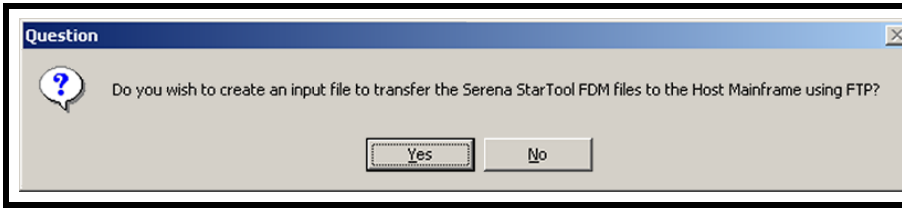
4 The **Ready to Copy the Program** screen displays. This screen gives you a chance to go back and change your previous selections before copying the product files to the PC.



Click **Next** to begin copying. A status screen displays the progress of the copy operation.

FTP Control File

5 After the distribution files are copied to the PC, a dialog box asks whether you want the installer to generate an FTP control file to transfer the distribution files from the PC to the mainframe.

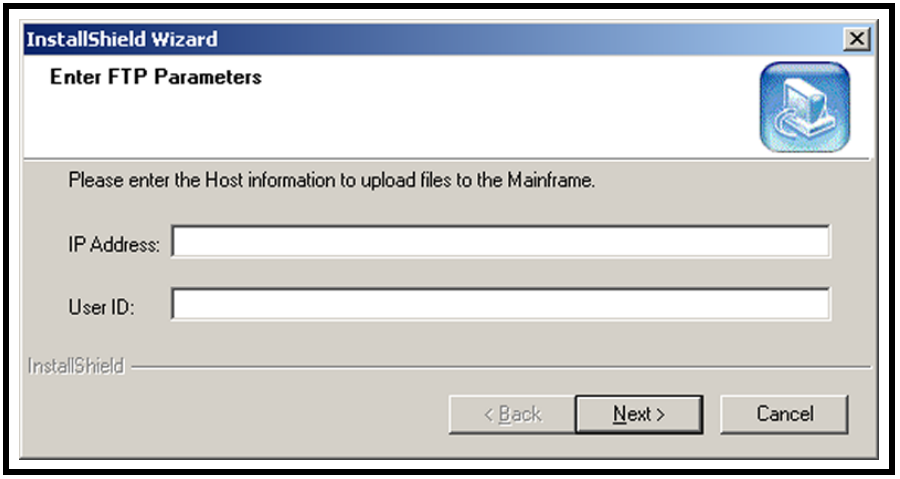


Click **Yes**.

NOTE If you select **No**, the installer still creates an FTP input control file, but it does not prompt you interactively for the values needed to upload the product files to the host. If you want to use this file later, you will have to customize it manually.

See "Editing the FTP Input Control File" for more information.

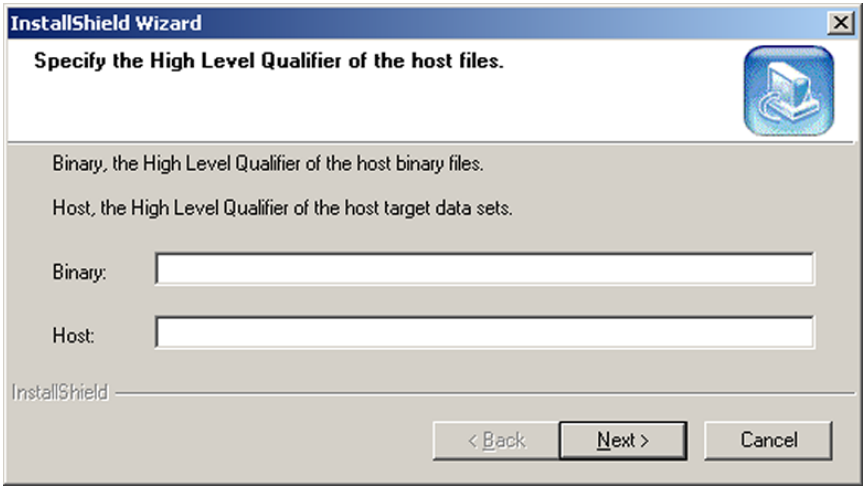
6 If you requested generation of an FTP control file, the **Enter FTP Parameters** screen displays.



Type the mainframe LPAR name or IP address in the **IP Address** field. In the **User ID** field, type the host user ID to be used when transferring the product distribution files to the host. The installer will customize the FTP input control file with this information.

Click **Next**.

7 If you requested generation of an FTP control file, the **Specify High-Level Qualifiers** screen displays.



Type the high-level qualifiers (HLQs) to be used for the temporary XMIT files and for the decompressed product files on the host, as follows:

Temporary XMIT HLQ

- **Binary HLQ** – The installer adds this HLQ to the names of the sequential data sets that are transmitted from the PC to the host. These are temporary datasets for XMIT-format compressed files.

Target Library Host HLQ

- **Host HLQ** – The installer adds this HLQ to the libraries created on the host when the StarTool FDM RECEIVE job expands the compressed XMIT files using IEBCOPY.
  - ***For an IEBCOPY install***, this value should be the HLQ for the final StarTool FDM installation libraries
  - ***For an SMP/E install***, this value should be a temporary HLQ for SMP/E input files. It should *not* be the HLQ you want to use with your final StarTool FDM installation libraries. The final installation libraries will be created by SMP/E in a later step.

The following rules apply to the **Binary** and **Host** HLQs:

- The **Binary HLQ** and **Host HLQ** values must be different.
- Do not choose HLQs that duplicate data set names already on the host. The FTP transmit and host RECEIVE processes overlay existing data sets.

CAUTION! Do not duplicate data set names on the host. The FTP transmit and host RECEIVE processes overlay existing data sets.

- Your host user ID must have authority to allocate files with these data set names.
- Do not add parentheses or quotes (single or double).
- Do not add leading or trailing periods. (However, embedded periods are accepted.)
- Case is not significant; entries will be forced to upper case.
- The maximum length of the HLQ is thirteen characters, including embedded periods.

When ready, click **Next**.

8 The **Readme** screen displays. Review the Readme file for late-breaking information that could not be included in this manual.

Then click **Next**.

9 When the **InstallShield Wizard Completed** screen displays, click **Finished**.

The distribution files on the PC are now ready for transfer to the host. Proceed to "Editing the FTP Input Control File".

Editing the FTP Input Control File

1 Go to **Start > Programs > Serena > StarTool FDM > Edit FTP Input.** This displays the FTP control file `FTP.input`, which is used to transfer StarTool FDM files from the PC to the host.

2 Add the password for your host user ID to the file. This should be entered on the third line of the file, signified by ****.

CAUTION! For security purposes, delete this password from the file on your PC after you finish uploading the files to the host.

3 Save the file under the same name, `FTP.input`.

4 Proceed to "Editing the RECEIVE Job".

Editing the RECEIVE Job

A file called `RECEIVE.TXT` contains the JCL to either:

- ***Complete an IEBCOPY install*** of StarTool FDM.
- ***Create the input files for an SMP/E install*** of StarTool FDM.

The RECEIVE job invokes IEBCOPY on the host to expand the uploaded, compressed distribution files from XMIT format to EBCDIC text or executable binaries, as appropriate for the library type. The expanded files are copied to libraries prefixed with the **Host HLQ** you specified to the PC installer.

Adding the Host Job Card

You must add your host job card to the `RECEIVE.TXT` file in order for the RECEIVE job to run on the host. You can edit the `RECEIVE.TXT` file now, on the PC, or you can edit it later through your TSO session after the product files are uploaded to the host.

To edit the RECEIVE.TXT file now, do the following:

1 Go to **Start > Programs > Serena > StarTool FDM > Edit Receive Text**.

2 Add your job card at the top of the file. All characters must be typed in upper case.

3 Save the file under the same name, RECEIVE.TXT.

4 Proceed to "Transferring Files to the Host"

Transferring Files to the Host

After you add your password to the FTP input control file, you are ready to transfer the product distribution files from the PC to the host. Both machines must be connected to the network using TCP/IP, and both must enable FTP file transfers.

To transfer the product files:

1 Go to **Start > Programs > Serena > StarTool FDM > FTP Files to Host**.

FTP Log

2 After the transfer completes, view the FTP log file on the PC to verify a successful file transfer. Select **Start > Programs > Serena > StarTool FDM > View FTP log**.

FTP Error Messages

If any of the following errors occur, make the appropriate corrections to the FTP.input control file and repeat the transfer request.

Message	Corrective Action
Unknown Host	Check the host name or IP address of your host and edit the FTP input file.
Invalid Command	Verify that the user name and password in the FTP input file are correct.
Not Connected	The FTP connection was lost and the files did not upload. Resubmit the program by choosing **FTP Files to Host**.

Submitting the RECEIVE Job

After you successfully complete the FTP file transfer, issue the RECEIVE command on the host. This command decompresses the XMIT-formatted product files and either:

- ***Completes an IEBCOPY install*** of StarTool FDM to the final installation libraries.
- ***Creates temporary input libraries for an SMP/E install*** of StarTool FDM. SMP/E will later create the final installation libraries.

To run the RECEIVE job:

1. Log on to your TSO session.
2. Locate the `RECEIVE.TXT` file in library *`host_hlq`*`.PDSE`*`vrm`*`.CNTL`, where *`host_hlq`* is the **Host HLQ** you supplied to the PC installer.
3. If you did not edit the `RECEIVE.TXT` file on the PC (see "Editing the RECEIVE Job"), edit the file now on the mainframe to add your job card information.
4. Submit the RECEIVE job for execution.
5. Examine the libraries created with the **Host HLQ** to ensure that they are PDS libraries. They may not have been created successfully, despite a zero return code or a job SYSOUT message that says, "`Restore successful to dataset...`".

Deleting your Password

After unloading the product distribution files to the host, delete your host password from the `FTP.input` file.

1. Go to **Start > Programs > Serena > StarTool FDM > Edit FTP Input.**
2. Delete your password.

3 Save the file under the same name, `FTP.input`.

CAUTION! If your do not delete your TSO user ID and password from the `FTP.input` file, anyone with access to the installation PC could obtain host sign-on privileges.

Completing the Install

- ***If you are performing an IEBCOPY (non-SMP/E) install***, installation is complete. Proceed to Chapter 3, "Configuring PDS#OPT4 Options".
- ***If you are performing an SMP/E install***, the input files are now ready for SMP/E. Proceed to "SMP/E Installation" in this chapter.

Unloading the Tape

The product distribution libraries are provided on tape media with standard labels. IEBCOPY is used to transfer these files to disk.

Write-Protecting the Tape

Do not risk writing over the input volume! Make the tape cartridge read-only and check it into your tape library before you begin the installation process. Note the volume name (`VOL=SER=`) on the external label.

Unloading the PDSE*vrm*.CNTL Library

The `PDSE`*`vrm`*`.CNTL` data set on the tape contains members that unload the full suite of StarTool FDM software from tape to disk. Copy this data set to a disk library whose data set name is prefixed with an appropriate host high-level qualifier (*`host_hlq`*), as follows:

- ***For an IEBCOPY (non-SMP/E) install***, *`host_hlq`* should be the HLQ for the final StarTool FDM installation libraries

- ***For an SMP/E install***, *host_hlq* should be a temporary HLQ for SMP/E input files. It should ***not*** be the HLQ you want to use with your final StarTool FDM installation libraries. The final installation libraries will be created by SMP/E in a later step.

To copy the PDSE*vrm*.CNTL library to disk, perform the following steps:

1 Customize the following JCL job as appropriate for your installation. This job invokes IEBCOPY to copy PDSE*vrm*.CNTL to disk.

```
1  //COPY1  EXEC PGM=IEBCOPY
2  //SYSPRINT DD SYSOUT=*
3  //SYSUT1   DD DSN=PDSEvrm.CNTL,DISP=(OLD,PASS),
4  //            UNIT=3480,VOL=SER=SP????,
5  //            LABEL=(1,SL,EXPDT=98000)
6  //SYSUT2   DD DSN=host_hlq.PDSEvrm.CNTL,UNIT=SYSDA,
7  //            DISP=(,CATLG,DELETE),
8  //            SPACE=(TRK,(15,5,19)),
9  //            DCB=(RECFM=FB,LRECL=80,BLKSIZE=9040)
10 //SYSIN    DD *
11 COPY I=SYSUT1,O=SYSUT2
```

a Replace *vrm* on lines **3** and **6** with the actual StarTool FDM version number, without punctuation. For example, if you are unloading version 7.8, replace *vrm* with 780.

b Correct the tape unit and volume ID as needed on line **4**.

c If your installation cannot process standard-label tapes created outside of your installation, invoke label-bypass processing by replacing 1,SL with 2,BLP on line **5**.

d For the target library name on disk, substitute your actual target HLQ for *host_hlq* and the disk unit name, if required, on line **6**.

e To place the PDSE*vrm*.CNTL data set on a specific disk volume, add ,VOL=SER=*volser* on line **7**, where *volser* is the name of the target disk volume.

f To reblock the PDSE*vrm*.CNTL data set during the unload operation, change the block size in line **9** to a value such as 13680 for 3390-type disk units.

2 Run the modified job stream to load PDSE*vrm*.CNTL.

Unloading the Tape with PDSELOAD

To unload the remaining StarTool FDM members, perform the following steps:

1 Edit JCL member PDSELOAD, which unloads the remaining StarTool FDM data sets from the tape. PDSELOAD resides in the newly created library *host_hlq*.PDSE*vrm*.CNTL.

a Add your standard //*jobname* JOB card at the top of the file.

b Correct the tape volume and tape unit names as required.

c Choose a disk volume name. If you do not want a specific output volume, type DISKVOL=, to nullify this parameter.

d Correct the disk unit name if required.

e Substitute your chosen value of *host_hlq* for *somnode* in the JCL.

f If desired, remove all occurrences of ,EXPDT=98000.

g If your installation cannot process standard-labeled tapes created outside of your installation, invoke bypass-label processing by substituting values from the following table:

Standard Label Processing	Bypass Label Processing
3,SL	8,BLP
4,SL	11,BLP
5,SL	14,BLP
6,SL	17,BLP
7,SL	20,BLP
8,SL	23,BLP
9,SL	26,BLP
10,SL	29,BLP
11,SL	32,BLP
12,SL	35,BLP
13,SL	38,BLP
14,SL	41,BLP

Standard Label Processing	Bypass Label Processing
15,SL	44,BLP
16,SL	47,BLP
17,SL	50,BLP
18,SL	53,BLP

2 Optionally reblock the ASM, CLISTS, CNTL, HELP, MSGS, PANELS, SKELS, and TSRC data sets if:

- You are loading to a 3390 disk volume. As shipped, these libraries are blocked at 9040 bytes for loading to a 3380 disk volume. Use a block size such as 13680 when loading to a 3390 disk volume.
- You will concatenate these data sets to existing data sets at your installation.

To reblock these data sets, insert a JCL statement such as this:

```
//   DCB=(RECFM=FB,LRECL=80,BLKSIZE=13680),
```

3 Optionally reblock the DD statements names OSCERCL, OSERJCL, OSERMSG, OSEROBJ, and OSERPNL.

4 Run the modified job stream to load the StarTool FDM data sets. Check for a zero return code.

5 Examine the libraries created with the *host_hlq* prefix to ensure that they are PDS libraries. They may not have been created successfully, despite a zero return code.

Completing the Install

- ***If you are performing an IEBCOPY (non-SMP/E) install***, installation is complete. Proceed to Chapter 3, "Configuring PDS#OPT4 Options".
- ***If you are performing an SMP/E install***, the input files are now ready for SMP/E. Proceed to "SMP/E Installation" in this chapter.

SMP/E Installation

If you are installing a full copy of StarTool FDM, follow the instructions under "Full Install with SMP/E".

If APPLYing on a base release, add `BYPASS(PRE,ID)` if needed.

CAUTION! StarTool FDM must be installed into a separate CSI zone. APPLYing an SMP/E install in a shared CSI zone will cause unpredictable results.

Full Install with SMP/E

These instructions guide you through a full SMP/E installation.

Copy JCL procedure `SMPPROC` to a library in your site's JES2 concatenation. This procedure is referenced by the SMP/E install members for StarTool FDM. It resides in the newly created SMP/E input library *`host_hlq`*`.PDSE`*`vrm`*`.JCL`. For assistance, refer to your JES2 manuals or consult your JES2 systems programmer.

Alternatively, your site may already have a SMP/E procedure defined. Consult your systems programmer for the name of your site's SMP/E procedure. To use a different procedure name, change the `SMP*` members as appropriate in *`host_hlq`*`.PDSE`*`vrm`*`.JCL`. You also need to change `PDSETGT` to match your target zone name and `PDSEDLB` to match your DLIB zone name.

6 To define a new CSI and new SMP/E data sets for your StarTool FDM installation, modify and submit JCL member `SMPCSI`, which resides in *`host_hlq`*`.PDSE`*`vrm`*`.JCL`. This member defines and initializes the VSAM CSI data set and defines the `SMPLOG`, `SMPMTS`, `SMPPTS`, `SMPSCDS`, and `SMPSTS` data sets. Check for a zero return code.

Modify the member as follows:

- Change the disk unit name (if required).
- Change the disk volume name. If you do not want a specific output volume, type `DISKVOL=`, to nullify this parameter.
- Change the prefix from *`somnode`* to your chosen high-level qualifier (HLQ) for the final StarTool FDM installation libraries created by SMP/E.

7 Modify the "define DDDEF" member SMPDDDEF, which resides in *host_hlq*.PDSE*vrm*.JCL. Define the DDNAME and data set names for SMP/E dynamic allocation.

- Change all occurrences of *somnode* to your chosen HLQ for the final StarTool FDM installation libraries.
- Update the SYSLIB definition to include other DDNAMEs as required. Add the DDDEF of PDSEASM to the SYSLIB concatenation so SMP/E uses the StarTool FDM macros in its assemblies.
- Place PDSEASM last in the concatenation.

8 Submit the modified SMPDDDEF member and check the return code.

- If you previously defined these data sets, you should get a return code of zero.
- If these data sets are being defined for the first time, you should get a return code of 04 since a REP is being performed.

9 If installing from CD-ROM or online media, also edit and run the SMPCDDEF job from the *host_hlq*.PDSE*vrm*.JCL library. Update the JCL as follows:

- The value for CDHOST should be changed to the temporary high-level qualifier *host_hlq*. This should be the same value you specified for **Host HLQ** in the PC installer. (See Step 7 of the section titled "Running the Client-Side Installer".)
- The value for *somnode* should be the desired HLQ for the final StarTool FDM installation libraries created by SMP/E. This should ***not*** be the same value as *host_hlq*.
- Change the JOB statement and all occurrences of *somnode* and CDHOST as appropriate for your installation.

10 Modify and submit member SMPALLOC to allocate SMP/E target and DLIB data sets. SMPALLOC resides in *host_hlq*.PDSE*vrm*.JCL.

- Change the disk unit name (if required).
- Change the disk volume name. If you do not want a specific output volume, type DISKVOL=, to nullify this parameter.
- Change your prefix for *somnode*.

- Reblock the data sets (if required). The source data sets are blocked at 9040 bytes for loading to a 3380 disk volume. Use a blocksize of 13680 when loading to a 3390 disk volume. You may also want to reblock these data sets if they will be concatenated to existing data sets at your installation.

11 Submit the modified SMPALLOC job and check for a zero return code.

12 Modify the SMP/E job member in library *host_hlq*.PDSE*vrm*.JCL. If you are installing from CD-ROM or online media, edit member SMPCDREC. If installing from tape, edit member SMPRECV. For both members:

- Change the Global CSI name.
- Replace the ???? placeholders in the JCL with the correct values for your installation.

13 If installing from CD-ROM or online media, further modify SMPCDREC to change the mid-level qualifier CDNODE to match the host high-level qualifier you entered in the PC installer.

14 Submit the modified SMPCDREC or SMPRECV job — not both! — and check for a zero return code.

15 Modify member SMPAPPLY (the SMP/E APPLY job) in library *host_hlq*.PDSE*vrm*.JCL to ensure that all parameters conform to your installation standards. Instructions are included in this job to perform an APPLY CHECK. (Note that the second step is commented out – this should be changed for any release that has source updates. The Readme file will identify these updates.)

16 Submit the modified SMPAPPLY job and check for a zero return code. Your target libraries should be filled with the proper StarTool FDM software.

17 If you do not want to execute StarTool FDM out of SMP-controlled libraries, create copies of the following libraries: FD77ASM, FD77CLS, FD77CPS, FD77CTC, FD77HPN, FD77JCL, FD77LOD, FD77MPN, FD77MSG, and FD77SKL.

18 After StarTool FDM is configured and working properly, edit member SMPACC (the SMP/E ACCEPT job) in *host_hlq*.PDSE*vrm*.JCL so that all parameters conform to your installation standards. Instructions are included in this job to perform an ACCEPT CHECK.

(Note that the second step is commented out – this should be changed for any release that has source updates. The Readme file will identify these updates.)

19 Submit job SMPACC and check for a zero return code. If successful job completion is verified, installation is now complete.

ACCEPT Processing Requirements

After testing and implementation in production, an SMP/E ACCEPT should be performed at the base level of the product. This ensures that the correct level of each component exists in the DLIB zones.

ACCEPT processing should also be performed after successfully applying and implementing each maintenance release.

CAUTION! SMP/E cannot roll back customizations and maintenance releases properly if ACCEPT processing is not performed.

Customizing an SMP/E Install

USERMODS are provided for the customization of StarTool FDM. After install, these members reside in *somnode*.PDSE*vrm*.JCL. They reference the following routines in *somnode*.PDSE*vrm*.ASSEMBLE:

SMP#DYNA	Links PDS#DYNA with StarTool FDM from SAMPDYN*n* (where *n* is 1, 2 or 3)
SMP#OPTJ	Links PDS#OPT4 as a separate module from SAMPOPT4
SMP#OPT4	Links PDS#OPT4 with StarTool FDM from SAMPOPT4
SMP#SECI	Links PDS#SECI with StarTool FDM from SAMPSECR or SAMPSECC
SMP#SECA	Links PDS#SECI with PDSEAUTH from SAMPSECR

Instructions for customizing these modules appear in Chapter 3, "Configuring PDS#OPT4 Options" and Chapter 4, "Customizing Security Options".

Chapter 3

Configuring PDS#OPT4 Options

StarTool FDM provides assembly language source code modules that let you tailor a variety of base product options after installation. This chapter discusses the following features of one such module, PDS#OPT4.

NOTE In this chapter, *somnode* is the high-level qualifier (HLQ) of your final installation libraries, while *vrm* is the version number, release number, and modification level of the StarTool FDM base product.

Default Option Processing

PDS#OPT4

At initialization, StarTool FDM automatically checks for a customized option control module called PDS#OPT4. If PDS#OPT4 is not found, FDM displays the following message:

```
CSV003I REQUESTED MODULE PDS#OPT4 NOT FOUND
```

Customizing Option Settings with PDS#OPT4

To override the default option settings for file and data management behavior in StarTool FDM, customize PDS#OPT4. Customization requires the following steps:

1 Make an editable copy of sample option configuration member SAMPOPT4 in a separate library where you keep your customized StarTool FDM assembly language source code members.

SAMPOPT4 resides in library *somnode*.PDSE*vrm*.ASSEMBLE.

2 Create load member PDS#OPT4 ***with the shipped default options***, as follows:

a Generate an ***unchanged*** PDS#OPT4 source member from SAMPOPT4 using JCL member PDS#OPTJ (for IEBCOPY installations) or JCL member SMP#OPTJ (for SMP/E installations).

PDS#OPTJ resides in library *somnode*.PDSE*vrm*.CNTL. SMP#OPTJ resides in *somnode*.PDSE*vrm*.JCL. The macros used by SAMPOPT4 reside in library *somnode*.PDSE*vrm*.COPY.

b Place the resulting PDS#OPT4 source member in the separate library where you keep your customized StarTool FDM source code members.

c Assemble and link the generated PDS#OPT4 source member with its macros. Place the resulting PDS#OPT4 load module in the separate library where you keep your customized StarTool FDM load members.

d Add the customized load library where PDS#OPT4 resides to the JOBLIB or STEPLIB concatenation used to run StarTool FDM.

e Verify your assembly and library concatenation steps by starting StarTool FDM. PDS#OPT4 should execute, and message CSV003I should not display.

3 Edit the parameters in the SAMPOPT4 source code as desired, following the instructions in this chapter and in any documentation contained in the SAMPOPT4 member itself.

NOTE If there are conflicts between the customization instructions in this manual and the documentation in the SAMPOPT4 module, the instructions in the module take precedence.

4 Replace the previous PDS#OPT4 members with ***your customized version***, as follows:

a Generate new PDS#OPT4 source code from your ***modified*** copy of SAMPOPT4 using JCL member PDS#OPT4 (for IEBCOPY installations) or JCL member SMP#OPTJ4 (for SMP/E installations).

The PDS#OPT4 JCL member resides in *somnode*.PDSE*vrm*.CNTL. SMP#OPT4 resides in *somnode*.PDSE*vrm*.JCL. The macros used by SAMPOPT4 reside in library *somnode*.PDSE*vrm*.COPY.

b Place the resulting PDS#OPT4 source member in the separate library where you keep your customized StarTool FDM source code members.

c Assemble and link the generated PDS#OPT4 source member with its macros. Place the resulting, customized PDS#OPT4 load module in the separate library where you keep your customized StarTool FDM load members.

5 Validate your tailored installation of StarTool FDM by starting the program and entering the CONTROL DEFAULTS command at the command line. A list of current default settings will print.

Special Considerations

PDSFAST If your installation uses PDSFAST 4.3 or earlier as a replacement for IEBCOPY, you ***must*** customize PDS#OPT4. As shipped, StarTool FDM invokes IEBCOPY with IKJEFTSR, which causes an ENQUEUE lockout for

old levels of PDSFAST if you use DISP=SHR allocation with the COMPRESS or COPY subcommands.

PDS#OPT4 Macro Summary

Macro Descriptions

SAMPOPT4, the assembly language source code member used to generate PDS#OPT4, consists of one or more calls to certain assembly language macros provided by Serena. The parameter values supplied to these macros modify the default behavior of StarTool FDM.

The PDS#OPT4 macros are summarized in the following table.

Macro	Description
#INITIAL	Major installation defaults and environmental variables. Required.
#DYNCMDT	ISPF command table entries to be added dynamically during StarTool FDM initialization. Optional.
#DYNLIBS	Names of cataloged data sets to be referenced dynamically by StarTool FDM. Optional.
#PASSNAM	Function names to be managed by StarTool FDM's pass-through mechanism. Optional.
#VDEFINE	Names and initial values of customizable dialog variables. Optional.
#RESUSE	Names of restricted-use subcommands and operands. Required if $TYPEACF security parameter for #INITIAL macro is not NONE.
#GENER	PDS#OPT4 source code generator. Takes no parameters. Required.

Invocation Sequence

Macros should be invoked by SAMPOPT4 — and hence PDS#OPT4 — in the following sequence:

- **#INITIAL** — A single invocation of #INITIAL is required. It must be the first macro called.
- **Optional macros** — One or more of the following macros may be invoked after #INITIAL as needed: #DYNCMDT, #DYNLIBS, #PASSNAM, and #VDEFINE.

- **#RESUSE** — One or more invocations of #RESUSE may follow the optional macros.

IMPORTANT! At least one instance of #RESUSE is required if the $TYPEACF security parameter for the #INITIAL macro is not NONE.

- **#GENER** — One instance of the code generation macro #GENER must be the last macro invoked by SAMPOPT4. It generates the PDS#OPT4 source code module that you assemble and link into StarTool FDM. This macro takes no parameters.

Setting Initialization Defaults with #INITIAL

The #INITIAL macro specifies major installation defaults and environmental variables for StarTool FDM.

Keyword Prefixes

#INITIAL takes keyword parameters with prefixes that identify functional area, as shown in the following table:

Keyword Prefix	Functional Area
$	Global defaults
#	Subcommand defaults
@	External TSO command defaults
LF	Panel view defaults – LISTC/LISTF
LV	Panel view defaults – LISTV
ML	Panel view defaults – MEMLIST
SL	Select (S) line command defaults
SPF	ISPF function defaults

RDW Default

You can specify a default for the Record Description Word (RDW) by coding the following keyword parameter for #INITIAL:

RDW=0|1|2|3

Global Defaults

The #INITIAL keyword parameters beginning with a dollar sign ($) specify StarTool FDM global defaults.

$TYPEACF Security Parameter

An important parameter in this set is $TYPEACF, which controls how StarTool FDM secures access to its subcommands.

StarTool FDM supports internal or external security environments:

- Internal security ($TYPEACF=CALL) requires that you assemble and link a module (see sample source member SAMPSECC in *somnode*.PDSE*vrm*.ASSEMBLE) that performs checking of tokens based on USERID tables or some other criteria within the module.
- External security ($TYPEACF=LOGNO, RACF, TOP or ACF2) requires that you assemble and link a module that communicates with your security system using the SAF security interface. (See sample source code member SAMPSECR in StarTool FDM source code library *somnode*.PDSE*vrm*.ASSEMBLE.)

For internal or external security, the resultant checking module is named PDS#SECI. You can specify one option, $TYPEACF=LOGNO, to drive PDS#SECI from the authorized PDSEAUTH routine. In this situation, the RACROUTE macro specifies LOG=NO to suppress SMF records for access denials that occur normally in classifying users.

During StarTool FDM initialization, the name (or token) for each restricted subcommand name list is passed to the PDS#SECI module for checking; the exit responds with a yes or no. When StarTool FDM receives the first yes response, it uses the associated restricted subcommand list for internal authorization checks before executing a subcommand. The lowest level restricted subcommand table is assumed valid for all users. Thus, if you have four classes of StarTool FDM users, at most three calls are made to PDS#SECI during StarTool FDM initialization.

$TYPEACF=DYNAMIC supports internal security or external security in security exit PDS#SECI to determine a user's restricted subcommand list as described above. When a user enters one of the restricted subcommands, control is given to an exit called PDS#DYNA that is provided the name of the subcommand (or subcommand restriction name such as FIXDIR) and the current data set name.

StarTool FDM customizes security installation instructions based on the names of restricted user tables and the type of security system at your installation. If you are implementing security for the first time or are changing the name or number of #RESUSE macro calls, select

$TYPEACF=NONE for now, then read Chapter 4, "Customizing Security Options" before implementing StarTool FDM security.

CAUTION! If you specify NONE as the value of the $TYPEACF parameter, no global access restrictions are enabled for StarTool FDM subcommands. In this case, you must define one or more sets of restricted subcommand names using the #RESUSE macro. See Chapter 4, "Customizing Security Options", for details.

Global Default Parameters

The complete list of global default parameters for the #INITIAL macro appear in the table below.

Parameter	Description	Values	Default	Override
$FIXANYD	Allows FIXPDS to update a DSCB for any data set through the PDSEAUTH support routine. This parameter is disabled by default. Enable it after your StarTool FDM security is in place and tested.	YES/NO	NO	No
$FIXDSCB	Allows FIXPDS to update DSCB for the current data set through the PDSEAUTH support routine. This parameter is disabled by default. Enable it after your StarTool FDM security is in place and tested.	YES/NO	NO	No
$FIXNAME	Allows FIXPDS to update DSCB to rename an uncataloged data set through the PDSEAUTH routine. This parameter is disabled by default. Enable it after your StarTool FDM security is in place and tested.	YES/NO	NO	No
$INSTALL	Use this parameter only if your installation has customized code.	As defined	0	No
$ISPF	ISPF availability for StarTool FDM dialogs.	YES/NO	YES	No
$ISPMODE	Initial screen mode when initialized under ISPF. ISPMODE is the normal full screen initialization; XISPMODE requests a line-mode initialization.	ISPMODE/ XISPMODE	ISPMODE	Yes

Parameter	Description	Values	Default	Override
$LOGO	Controls display of StarTool FDM logo screen. This screen displays during ISPMODE initialization as an in-progress panel. NONDISP turns off the screen but panel variables are still processed. SUPPRESS turns off both the screen and processing of panel variables.	NONDISP/ LOGO/ SUPPRESS	SUPPRESS	No
$PDSMANM	Use to specify an alternate name for the StarTool FDM PDS space management member. This member is checked by FIXPDS before adjusting directory blocks.	Member name	$$$SPACE	No
$RETAIN	Number of CONTROL RETAIN buffers to allocate during initialization.	1 to 9	9	Yes
$RMRETRY	Number of times to retry a READ MULTIPLE failure.	1 to 20	1	No
$TYPEACF	Type of subcommand access security. Specify NONE if you want to configure security later.	NONE/ RACF/ TOP/ ACF2/ LOGNO/ DYNAMIC/ CALL	NONE	No!
$UPCASE	Display program output and messages in upper case for Tokyo users.	YES/NO	NO	No

Subcommand Defaults

#INITIAL keyword parameters beginning with the pound sign or hash mark (#) specify StarTool FDM subcommand defaults. These parameters modify StarTool FDM defaults locally, on a function-by-function basis.

#CONADEF DSNAME Parameter

The #CONADEF parameter determines the type of display wanted for the DSNAME subcommand. You can choose a table-message format, a JCL format, or a TSO allocation format.

#CONGLBL CONTROL Parameter

The #CONGLBL parameter turns off optional processing for individual subcommands. Note that this parameter specifies only the startup default. Each parameter can be overridden by the user at runtime with the CONTROL subcommand. The #CONGLBL parameter accepts multiple values separated by plus sign (+) symbols.

Each #CONGLBL parameter value corresponds directly to an operand in the CONTROL subcommand as follows:

#CONGLBL Value	Corresponding CONTROL Operand
ALIASINF	**NOALIASINFO**. Alias information is provided on ATTRIB subcommands only by explicit request. Also, no alias information is provided on MAP subcommands.
LKEDDATE	**NOLKEDDATE**. Linkage edit dates are provided on ATTRIB subcommands by explicit request only.
PROMPT	**NOPROMPT.** At a program decision point (such as when a group of members are to be deleted), do not provide a confirmation prompt.
RECOVER	**NORECOVER**. Do not attempt ESTAE recovery after an ABEND. This default is provided automatically when StarTool FDM executes in the background under the TSO TMP.
TRANSLAT	**NOTRANSLATOR**. Do not provide assembler or compiler TRANSLATOR information in HISTORY subcommands unless explicitly requested. TRANSLATOR should not be the default for PL/I modules since these modules contain numerous translator IDR records.

For example, you can set StarTool FDM's default behavior at startup to be equivalent to the following CONTROL command:

```
CONTROL NORECOVER NOTRANSLATOR
```

To do so, code the following #INITIAL parameter value:

```
#CONGLBL=RECOVER+TRANSLAT
```

Subcommand Default Parameters

The complete list of subcommand default parameters for the #INITIAL macro appears in the following table.

Parameter	Description	Values	Default	Override
#COMPLST	Level of detail for COMPRESS.	SUMMARY/LIST	SUMMARY	Yes
#CONADEF	Default format for DSNAME.	MSG/ TSO/ JCL	MSG	Yes

Parameter	Description	Values	Default	Override
#CONDRNG	Whether or not a range such as pds: actually means pds:pds. (Specify NO unless users are already familiar with this method.)	YES/NO	NO	No
#CONFIRM	ISPF 4.x CONFIRM verification. Type YES if you want ISPF edit confirmation prompting for CANCEL, MOVE or REPLACE.	YES/NO	YES	Yes
#CONGLBL	CONTROL subcommand optional processing to turn off. **Note:** Set this parameter to null to retain all optional processing.	TRANSLAT, ALIASINF, LKEDDATE, PROMPT, RECOVER	(null)	Yes
#COPYLST	Level of detail for COPY.	SUMMARY/ LIST	LIST	Yes
#COPYMOD	IEBCOPY or PDSFAST support load module reblocking. If YES, StarTool FDM converts COPY statements to COPYMOD if the input and output data set blocksizes differ.	YES/NO	YES	No
#COPYSHR	Type of allocation default for COPY. StarTool FDM uses logic similar to logic used by ISPF for protecting data sets that are updated during shared allocation.	SHR/OLD	SHR	Yes
#INITARC	Volume name to check for archived volume in addition to MIGRAT.	volume name	ARCIVE	No
#INITLC	Number of data sets to add to a LISTC/LISTF table between in-progress messages.	number or 999999 to disable	250	Yes
#INITLV	Number of volumes to add to a LISTV table between in-progress messages.	number or 999999 to disable	50	Yes
#INITMAC	Initial edit macro name to use at your installation to provide a standard edit macro.	member name	none	Yes
#INITML	Number of members to add to a MEMLIST table between in-progress messages.	number or 999999 to disable	500	Yes

Parameter	Description	Values	Default	Override
#INITVMAP	Number of data sets to add to a VMAP table between in-progress messages.	number or 999999 to disable	500	Yes
#PROFNAM	Default edit profile name.	member name	none	Yes
#PUNIT	Unit name for permanent data sets (such as IEBCOPY SYSUT2 data sets). Set this parameter to null to use the default unit name from SYS1.UADS.	SYSALLDA/ SYSDA	SYSALLDA	Yes
#TUNIT	Unit name for use by temporary data sets (such as IEBCOPY SYSUT4 data sets). **Note:** This unit name should not map to a VIO device.	SYSDA/ SYSALLDA/ PUBDA	SYSDA	No
#UCBFOUR	UCB names normally contain three or four characters. If this parameter is YES, UCB names are four characters long in the LISTV function.	YES/NO	NO	No

External TSO Command Defaults

The #INITIAL keywords beginning with @ correlate StarTool FDM subcommands and their supporting TSO subcommands. A subcommand is disabled if its parameter is coded as a null string or if it is not coded and its default is **(disabled)**. Disabled subcommands cannot be used by your users. If you enter a command name, be aware that several of these subcommands support an undocumented PGM(name) keyword to control the actual TSO command called.

Three very important parameters for #INITIAL are @COMPR (for COMPRESS), @COPYE (for COPY with program objects), and @COPY (for COPY in other cases) which determine the copy utility to use: IEBCOPY from IBM, PDSFAST from Software Engineering of America (SEA) or FDRREORG from Innovation (for COMPRESS only). IEBCOPY and

FDRREORG must gain control in an authorized state. The IKJEFTSR interface is recommended.

NOTE Do not use the default IKJEFTSR interface if you have PDSFAST (level 4.3 or earlier). Specify IEBCOPY or PDSFAST instead. Current levels of PDSFAST have support for invocation by StarTool FDM using shared allocation. If you use the default IKJEFTSR interface for these subcommands, a shared allocation for the COPY and COMPRESS subcommands cause an ENQUEUE lockout when PDSFAST gets control.

If you specify IEBCOPY or PDSFAST for @COMPR, @COPY or @COPYE, the copy program is assumed to be PDSFAST and it invokes without authorization; otherwise, the IKJEFTSR interface is used.

The IKJEFTSR interface requires TSO/E release 1.2 or later.

Subcommands ABE, DCF, PRINT, REVIEW, SUBMIT, TSOLIST, USER1, USER2, USER3, and VPRINT use an internal service routine that formats the request as a fully qualified data set name and member name in quotes followed by any additional data you specify. Each invokes a CLIST instead of a TSO command. In this case, the CLIST name is limited to seven characters and the first parameter passed is the data set and member name. A CLIST option cannot be used under ISPMODE or MEMLIST.

You can get several of the optional programs invoked by StarTool FDM from the following public domain sources:

- ABE (A Better Editor) is on the NASPA VIP tape.
- BLK3350, BLK3380, BLK3390, BLK9345, COMPARE$, DSAT and DVOL are on the CBT tape, file 296.
- HEL, REVIEW and ZAP are on the CBT tape, file 134 for source, file 135 for load.
- LIST is on the CBT tape, file 300.
- PRINTOFF is on the CBT tape, file 325.
- VTOC is on the CBT tape, file 112.

Most of the public domain programs invoked by StarTool FDM are available on the distribution media. Even though these programs are distributed with StarTool FDM, they are not officially supported (report any errors so they can be fixed).

HELP and load members are available for BLK3350, BLK3380, BLK3390, BLK9345, COMPARE$, DSAT, DVOL, LIST, L, HEL, PRINTOFF, REVIEW, TAPEMAP, VTOC and ZAP. These members were loaded into *somnode*.PDSE*vrm*.TSRC and *somnode*.PDSE*vrm*.TLOD. Several other extra test members are also present in the load data set.

The *somnode*.PDSE*vrm*.TSRC and *somnode*.PDSE*vrm*.TLOD. libraries will be dropped from the StarTool FDM product in a future release. These libraries have not been updated in several years and, if needed, can be located by users. Serena has never officially supported these programs and samples. If you have questions or concerns about library contents, please contact Serena Customer Support.

TSO Command Defaults

The complete list of TSO command default parameters for the `#INITIAL` macro appears in the table below.

Parameter	Description	Values	Default
@ABE	ABE (A Better Editor) available from public domain sources.	ABE/ %clist	(disabled)
@ACFCOMP	ACFCOMP compiles source rules for CA-ACF2.	ACFCOMP/ %clist	(disabled)
@BLK3350	BLK3350 is a blocksize optimization program for 3350 disks. StarTool FDM displays output from this program in the log.	BLK3350/ %clist	(disabled)
@BLK3380	BLK3380 is a blocksize optimization program for 3380 disks. StarTool FDM displays output from this program in the log.	BLK3380/ %clist	(disabled)
@BLK3390	BLK3390 is a blocksize optimization program for 3390 disks. StarTool FDM displays output from this program in the log.	BLK3390/ %clist	(disabled)
@BLK9345	BLK9345 is a blocksize optimization program for 9345 disks. StarTool FDM displays output from this program in the log.	BLK9345/ %clist	(disabled)
@BROWSE	BROWSE for a VSAM data set uses PBROWSE or it invokes the BRIF service.You can invoke other VSAM browse utilities (VSAMMBR is VSAM Utility and REVIEW is a non-ISPF full screen browse program).	PBROWSE/ BRIF/ REVIEW/ %VSAMFBR/ %VSAMMBR	PBROWSE

Parameter	Description	Values	Default
@COMPARE	COMPARE selects the program you wish to use to display data set differences. ■ COMPAREC is a preprocessor for SuperC, which is a part of ISPF/PDF. ■ COMPAREW is a preprocessor for COMPAREX, a Serena product. ■ COMPARE$ is the Yale Compare Program. ■ COMPAREZ enables the StarTool FDM Extended Compare Option. You must be licensed to use this option. StarTool FDM displays output from these programs in the log.	COMPAREC/ COMPAREW/ COMPARE$/ COMPAREZ/ %clist	COMPAREC
@COMPR	COMPRESS removes deleted members from a PDS. ■ IEBCOPY is part of DFP from IBM. ■ PDSFAST is an IEBCOPY replacement from Software Engineering of America. StarTool FDM displays output from these programs in the log.	IKJEFTSR/ IEBCOPY/ PDSFAST	IKJEFTSR -- see preceding caution for PDSFAST installations
@COPY	COPY selectively copies members to another data set. IEBCOPY is part of DFP from IBM. PDSFAST is an IEBCOPY replacement from Software Engineering of America. StarTool FDM displays output from these programs in the log.	IKJEFTSR/ IEBCOPY/ PDSFAST	IKJEFTSR -- see preceding caution for PDSFAST installations
@COPYE	@COPYE is for program object support. If the input or output data set is a program object library, this parameter defines the copy utility instead of @COPY. StarTool FDM displays output from these programs in the log.	IKJEFTSR/ IEBCOPY/ PDSFAST	IKJEFTSR -- see preceding caution for PDSFAST installations
@DCF	DCF scripts data. SCRIPT is an IBM product.	SCRIPT/ %clist	SCRIPT
@DSAT	DSAT is a short form LISTD TSO command. StarTool FDM displays output from this program in the log.	DSAT/%clist	(disabled)

Parameter	Description	Values	Default
@DVOL	DVOL is a short form disk volume summary TSO command. StarTool FDM displays output from this program in the log.	DVOL	(disabled)
@EDIT	EDIT for a VSAM data set uses PEDIT or it invokes the EDIF service which displays the first 255 characters of any record.You can invoke another VSAM editor (VSAMMED is VSAM Utility).	PEDIT/ EDIF/ %VSAMMED	PEDIT
@EXEC or %	EXEC is the system CLIST processor; it is a part of TSO.	EXEC	EXEC
@FSE	FSE+ is a full screen edit program from Palm Beach Associates.	FSE	(disabled)
@HELP	HELP is a user assistance service based on a TSO HELP member (this is in addition to the normal ISPF dialog HELP). HELP is TSO HELP command from IBM. HEL is a full screen help command in seven colors.	HELP/ HEL	HEL
@PBROWSE	PBROWSE module name. Use this parameter to specify an alternate name for the StarTool FDM PBROWSE module.	member name	PDSPBROW
@PEDIT	PEDIT module name. Use this parameter to specify an alternate name for the StarTool FDM PEDIT module.	member name	PDSPEDIT
@PRINT	PRINT produces a hardcopy listing. PRINTOFF originated with the IBM IPO group; PRINTDS is a part of TSO/E. **Note:** PRINTDS does not support uncataloged data sets.	PRINTDS/ PRINTOFF/ %clist	PRINTDS
@REVIEW	REVIEW is a non-ISPF full screen browse program with VSAM support in seven colors.	REVIEW/ %clist	(disabled)
@SEQCOPY	Sequential copy program name. The COPY subcommand uses this name for copying sequential data sets.	member name	IEBGENER
@SUBMIT	SUBMIT sends data to the background for processing; it is a part of the operating system and TSO.	SUBMIT/ %clist	SUBMIT

Parameter	Description	Values	Default
@TSO	TSO simulates the ISPF TSO command. TSOEXEC obtains the equivalent of "TSO TSOEXEC cmnd"; NOAUTH is normal.	NOAUTH/ TSOEXEC	NOAUTH
@TSOEDIT	TSOEDIT is the TSO EDIT command.	EDIT	(disabled)
@TSOLIST	TSOLIST is a LIST command processor.	LIST/ %clist	(disabled)
@USER1	USER1 is for use at your installation.	ANYCMND/ %clist	SAMPCMD
@USER2	USER2 is for use at your installation.	ANYCMND/ %clist	%PCLIST1
@USER3	USER3 is for use at your installation.	ANYCMND/ %clist	(disabled)
@VPRINT	VPRINT (or VTAM print) prints a hardcopy with a VTAM printer. It is available from Levi, Ray and Shoup. DSPRINT is a VTAM print program from IBM.	VPSPRINT/ DSPRINT	VPSPRINT
@VTOC	VTOC is a volume data set search program. StarTool FDM displays output from this program in the log.	VTOC	(disabled)

Panel View Defaults

Panel view defaults for the LISTC, LISTF, and LISTV commands may be customized using `#INITIAL` macro keywords beginning with `LF*` or `LV*`. Keywords beginning with `LF` specify which panels are enabled for the LISTC/LISTF. Keywords beginning with `LV` specify which panels are enabled for the LISTV.

MEMLIST panel view defaults may be customized using `#INITIAL` macro keywords beginning with `ML*`.

LISTC and LISTF Panel View Defaults

The LISTC/LISTF function displays data set information in any of ten different panel formats. Users scroll through these different data views with the RIGHT and LEFT commands.

As shipped, only four of these panel view formats are shown in StarTool FDM: Attributes, Size, Extent and Double Line. You may configure different displays with panel view default parameters for the

#INITIAL macro. At runtime, your users may override these defaults and select the panels they actually want to see with the SETPANEL command.

LISTC/LISTF Panel View Parameters

The complete list of LISTC and LISTF panel view keywords for the #INITIAL macro are shown in the table below. Keywords are listed in the order in which the panels display with the RIGHT command if all panels are turned on.

Sample panels enabled by these keywords are shown following the table.

Parameter	Panel Displayed	ISPF Variable	Values	Default
LFATTRIB	Attributes (DSORG and DCB info)	PDSSWLC0	YES/NO	YES
LFDSNAME	DSNAME (full data set name and DSORG)	PDSSWLC1	YES/NO	NO
LFCUSTOM	Custom (make customizations to panel PDSPN57)	PDSSWLC2	YES/NO	NO
LFSIZE	Size (size of data set and device)	PDSSWLC3	YES/NO	YES
LFEXTENT	Extent (extent information, KEYLEN and RKP)	PDSSWLC4	YES/NO	YES
LFUSER	User (make customizations to panel PDSPN60)	PDSSWLC5	YES/NO	NO
LFDOUBLE	Double line (two line panel with most data set information)	PDSSWLC6	YES/NO	YES
LFCREATE	Created/Referenced (access history information)	PDSSWLC7	YES/NO	NO
LFEXPIRE	Expiration (expiration and PDS info)	PDSSWLC8	YES/NO	NO
LFTOTAL	Total (three line panel with all data set info)	PDSSWLC9	YES/NO	NO

Attributes LISTC/LISTF Panel

```
---------------------- List files TESTXX - (Attributes) ------  ROW 1 TO 3 OF 3
COMMAND ===>                                                    SCROLL ===> CSR
- DSN=USER01.LIB.CNTL,VOL=SER=STR969  MEM=PDSPN49:PDSPN75  -------------------
CMD C V DATA/MSG ---------DATA SET NAME ---------- VOLUME DO RECFM LRECL BLKSI
    Y Y *CHANGE  WSER07.LIB.CLIST_________________ STR911 PO FB       80  9040
    Y Y *REFRESH WSER07.LIB.CLISTV________________ STR92P PO VB      255  9040
    - - *REFRESH WSER07.LIB.CLISTVV_______________ MIGRAT
```

Dsname LISTC/LISTF

```
------------------------ List files TESTXX - (Dsname) -------  ROW 1 TO 3 OF 3
COMMAND ===>                                                    SCROLL ===> CSR
- DSN=USER01.LIB.CNTL,VOL=SER=STR969  MEM=PDSPN49:PDSPN75  -------------------
CMD C V DATA/MSG ---------DATA SET NAME --------------------- VOLUME DO RECFM
    Y Y *CHANGE  WSER07.LIB.CLIST_____________________________ STR911 PO FB
    Y Y *REFRESH WSER07.LIB.CLISTV____________________________ STR92P PO VB
    - - *REFRESH WSER07.LIB.CLISTVV___________________________ MIGRAT
```

Custom LISTC/LISTF Panel

```
---------------------- List files TESTXX - (Custom) ---------  ROW 1 TO 3 OF 3
COMMAND ===>                                                    SCROLL ===> CSR
- DSN=USER01.LIB.CNTL,VOL=SER=STR969  MEM=PDSPN49:PDSPN75  -------------------
CMD C V DATA/MSG ---------DATA SET NAME ---------- VOLUME DO RECFM LRECL BLKSI
    Y Y *CHANGE  WSER07.LIB.CLIST_________________ STR911 PO FB       80  9040
    Y Y *REFRESH WSER07.LIB.CLISTV________________ STR92P PO VB      255  9040
    - - *REFRESH WSER07.LIB.CLISTVV_______________ MIGRAT
```

Size LISTC/LISTF Panel

```
------------------------ List files TESTXX - (Size) --------  ROW 1 TO 3 OF 3
COMMAND ===>                                                  SCROLL ===> CSR
- DSN=USER01.LIB.CNTL,VOL=SER=STR969  MEM=PDSPN49:PDSPN75  -------------------
CMD C V DATA/MSG ---------DATA SET NAME ----------    SIZE    FREE USED DEVICE
    Y Y *CHANGE  WSER07.LIB.CLIST_____________________    100T      4T  96% 3380K
    Y Y *REFRESH WSER07.LIB.CLISTV____________________      2T      0T 100% 3390M3
    - - *REFRESH WSER07.LIB.CLISTVV___________________
```

Extent LISTC/LISTF Panel

```
----------------------- List files TESTXX - (Extent) --------  ROW 1 TO 3 OF 3
COMMAND ===>                                                  SCROLL ===> CSR
- DSN=USER01.LIB.CNTL,VOL=SER=STR969  MEM=PDSPN49:PDSPN75  -------------------
CMD C V DATA/MSG ---------DATA SET NAME ---------- EXT   SEC ALLOC RND KEY RKP
    Y Y *CHANGE  WSER07.LIB.CLIST_____________________   3    33 TRK   NO    0   0
    Y Y *REFRESH WSER07.LIB.CLISTV____________________   1    10 TRK   NO    0   0
    - - *REFRESH WSER07.LIB.CLISTVV___________________
```

User LISTC/LISTF Panel

This panel is user-customizable.

```
---------------------- List files TESTXX - (User) -----------  ROW 1 TO 3 OF 3
COMMAND ===>                                                  SCROLL ===> CSR
- DSN=USER01.LIB.CNTL,VOL=SER=STR969  MEM=PDSPN49:PDSPN75  -------------------
CMD C V DATA/MSG ---------DATA SET NAME ---------- VOLUME DO RECFM LRECL BLKSI
    Y Y *CHANGE  WSER07.LIB.CLIST_____________________ STR911 PO FB       80  9040
    Y Y *REFRESH WSER07.LIB.CLISTV____________________ STR92P PO VB      255  9040
    - - *REFRESH WSER07.LIB.CLISTVV___________________ MIGRAT
```

Double Line LISTC/LISTF Panel

```
---------------------- List files TESTXX - (Double line) ----  ROW 1 TO 3 OF 3
COMMAND ===>                                                   SCROLL ===> CSR
- DSN=USER01.LIB.CNTL,VOL=SER=STR972  MEM=PDSPN49:PDSPN75  --------------------
CMD C V DATA/MSG ---------DATA SET NAME --------------------- VOLUME DEVICE DO
       RECFM LRECL BLKSI    SIZE    FREE USED CREATED    EXPIRATION REFERENCED
    Y Y *CHANGE* WSER07.LIB.CLIST_________________________ STR911 3380K  PO
       FB       80  9040    100T      4T  96% 1989/10/04 ** NONE ** 1995/06/28
    Y Y *REFRESH WSER07.LIB.CLISTV________________________ STR92P 3390M3 PO
       VB      255  9040      2T      0T 100% 1995/03/16 1995/12/31 1995/06/20
    - - *REFRESH WSER07.LIB.CLISTVV_______________________ MIGRAT
```

Created/ Referenced LISTC/LISTF Panel

```
----------------------- List files TESTXX - (Created) -------  ROW 1 TO 3 OF 3
COMMAND ===>                                                    SCROLL ===> CSR
- DSN=USER01.LIB.CNTL,VOL=SER=STR969  MEM=PDSPN49:PDSPN75  --------------------
CMD C V DATA/MSG ---------DATA SET NAME ---------- CREATED    REFERENCED UPD
    Y Y *CHANGE  WSER07.LIB.CLIST_________________ 1989/10/04 1995/06/28 U
    Y Y *REFRESH WSER07.LIB.CLISTV________________ 1994/03/16 1995/06/20
    - - *REFRESH WSER07.LIB.CLISTVV_______________
```

Expiration LISTC/LISTF Panel

```
---------------------- List files TESTXX - (Expiration) -----  ROW 1 TO 3 OF 3
COMMAND ===>                                                   SCROLL ===> CSR
- DSN=USER01.LIB.CNTL,VOL=SER=STR972  MEM=PDSPN49:PDSPN75  --------------------
CMD C V DATA/MSG ---------DATA SET NAME ---------- EXPIRATION   DIR  USED RACF
    Y Y *CHANGE* WSER07.LIB.CLIST_________________ ** NONE **    73    64
    Y Y *REFRESH WSER07.LIB.CLISTV________________ 1995/12/31
    - - *REFRESH WSER07.LIB.CLISTVV_______________
```

Total LISTC/LISTF Panel

```
----------------------- List files TESTXX - (Total) --------  ROW 1 TO 3 OF 3
COMMAND ===>                                                  SCROLL ===> CSR
- DSN=USER01.LIB.CNTL,VOL=SER=STR972  MEM=PDSPN49:PDSPN75  -------------------
CMD C V DATA/MSG ---------DATA SET NAME --------------------- VOLUME DEVICE
            DO    LRECL  KEY  CREATED  EXPIRATION   --SIZE-  -DIR-  ALLOC USED
             RECFM BLKSI  RKP  REFERENCED UPD EXT    --FREE-  -USED -SEC-  RND
    Y Y *CHANGE  WSER07.LIB.CLIST_____________________________ STR911 3380K
            PO       80    0  1989/10/04 ** NONE **    100T          TRK   96%
            FB     9040    0  1995/06/28 U     3         4T           33  NO
    Y Y *REFRESH WSER07.LIB.CLISTV____________________________ STR92P 3390M3
            PO      255    0  1994/03/16 1994/12/31      2T          TRK  100%
            FB     9040    0  1995/06/20       1         0T           10  NO
    Y - *REFRESH WSER07.LIB.CLISTVV___________________________ MIGRAT
```

LISTV Panel View Defaults

The LISTV function displays data set information in any of six different formats. Users scroll through different data views with the RIGHT and LEFT commands.

As shipped, StarTool FDM displays only four of these formats: Free, Used, VTOC, and Dual. You can configure different displays with panel view default parameters for the `#INITIAL` macro. At runtime, your users may override these defaults and select the panels they actually want to see with the `SETPANEL` command.

LISTV Panel View Parameters

The complete list of LISTV panel view keywords for the `#INITIAL` macro are shown in the table below. Keywords are listed in the order in which the panels display with the RIGHT command if all panels are turned on.

Sample panels enabled by these keywords are shown following the table.

Parameter	Panel Displayed	ISPF Variable	Values	Defaults
`LVATTR`	Attributes (Device type and mount attributes)	PDSSWLV1	YES/NO	NO
`LVFREE`	Free Space (Device type and free space)	PDSSWLV2	YES/NO	YES
`LVUSED`	Percent Used Space (Percent of space available)	PDSSWLV3	YES/NO	YES

Parameter	Panel Displayed	ISPF Variable	Values	Defaults
LVVTOC	VTOC Size Information (VTOC information)	PDSSWLV4	YES/NO	YES
LVCUST	Custom (customizable)	PDSSWLV5	YES/NO	NO
LVDUAL	Dual Line (access history information)	PDSSWLV6	YES/NO	YES

Attributes LISTV Panel

```
------------------------- List Volumes - (Attributes) -------- Row 1 to 4 of 4
COMMAND ===>                                                    SCROLL ===> CS
- DSN=USER01.LIB.CNTL,VOL=SER=SER001  MEM=MVS*  -------------------------------
--------------------------------------------------------------------------------
CMD VOLUME DATA/MSG DEV  DEV MOUNT USE  ---- TOTAL FREE ----   LARGEST  STATUS
--  NAME  -------- ADDR TYPE ATTR CNT  CYLS TRKS  NUM DSCBS  CYLS TRKS  -INDC-
     OS39H2         124 3380   PR  10    73   13    2   726    73    9 A  CSIM
     OS39R2         A80 3390M3 PR 268   341   12    3  2451   341   10 A   SD
     SCPMV5         122 3380E  ST  71   813  129   33   636   165    0 A PCSI
     SER002         140 3380E  PR   7  1441   17    4  1572  1438    0 A   SI
```

Free Space LISTV Panel

```
------------------------ List Volumes - (Free Space) --------- Row 1 to 4 of 4
COMMAND ===>                                                    SCROLL ===> CS
- DSN=USER01.LIB.CNTL,VOL=SER=SER001  MEM=MVS*  -------------------------------
 --------------------------------------------------------------------------------
CMD VOLUME DATA/MSG DEV     ----- TOTAL FREE -------  ---- LARGEST EXTENT ---
---  NAME  -------- TYPE    CYLS+TRKS=TRACKS->KBYTES  CYLS+TRKS=TRACKS->KBYTES
   OS39H2           3380      73   13   1108   52605    73    9  1104    52415
   OS39R2           3390M3   341   12   5127  290516   341   10  5125   290403
    SCPMV5          3380E    813  129  12324  585118   165    0  2475   117508
    SER002          3380E   1441   17  21632 1027044  1438    0  21570 1024100
```

Percent LISTV Panel

```
--------------------------- List Volumes - (Percent) ----------- Row 1 to 4 of 4
COMMAND ===>                                                     SCROLL ===> CSR
- DSN=USER01.LIB.CNTL,VOL=SER=SER001  MEM=MVS*  -------------------------------
  ------------------------------------------------------------------------------
CMD VOLUME DATA/MSG DEV  DEV MOUNT USE SPACE VTOC FREE FREE    LARGEST  STATUS--
     NAME  -------- ADDR TYPE ATTR CNT  USED USED VIRS DSCBS  CYLS TRKS -INDC-
   OS39H2            124 3380   PR  10   84%   2%   14   726    73    9  A CSIM
   OS39R2            A80 3390M3 PR 268   89%  18%    0  2451   341   10  A SD
   SCPMV5            122 3380E  ST  71   53%  20%  261   636   165    0  APCSI
   SER002            140 3380E  PR   7   18%   1%  265   1572 1438    0  ASI
```

VTOC Size LISTV Panel

```
--------------------------- List Volumes - (VTOC Size) ---------- Row 1 to 4 of 4
COMMAND ===>                                                     SCROLL ===> CSR
- DSN=USER01.LIB.CNTL,VOL=SER=SER001  MEM=MVS*  -------------------------------
  ------------------------------------------------------------------------------
CMD  VOLUME DATA/MSG DEV  DEV  -MOUNT-    STORAGE  USE -----VTOC----  FREE  FREE
----  NAME  -------- ADDR TYPE  ATTR STAT  CLASS  CNT --CCHH--  SIZE  DSCBS VIRS
      OS39H2         124  3380   PR  PRES  DEFAULT 10  0000000114      726    14
      OS39R2         A80  3390M3 PR  SYSR         268  0376000060      2451    0
      SCPMV5         122  338E   ST  PRES          71  022E000015      636   261
      SER002         140  3380E  PR  PRES           7  000A000030      1572  265
```

Custom LISTV Panel

This panel is customizable. See instructions in the panel member.

```
--------------------------- List Volumes - (Custom) ----------- Row 1 to 4 of 4
COMMAND ===>                                                     SCROLL ===> CSR
- DSN=USER01.LIB.CNTL,VOL=SER=SER001  MEM=MVS*  -------------------------------
  ------------------------------------------------------------------------------
CMD  VOLUME DATA/MSG DEV  DEV MOUNT USE  --TOTAL FREE--     LARGEST   STATUS
----  NAME  -------- ADDR TYPE ATTR CNT  CYLS TRKS  NUM    CYLS TRKS  -INDC-
                      STORAGE STATUS SPACE                ------- VTOC -------
                      CLASS     ---- USED   DSCBS VIRS    SIZE USED  --CCHH--
      OS39H2          124 3380   PR    10    73   13    2      73  9   A CSIM
                       DEFAULT   PRES  84%     726   14      14   2%  00000001
      OS39R2          A80 3390M3 PR 268     341   12    3     341 10   A  SD
                                 SYSR  89%    2451    0      60  18%  03760000
      SCPMV5          122 3380E  ST  71     813  129   33     165  0  APCSI
                                 PRES  53%     636  261      15  20%  022E0000
```

Dual Line LISTV Panel

```
--------------------------- List Volumes - (Double) ---------- Row 1 to 4 of 4
COMMAND ===>                                                   SCROLL ===> CSR
- DSN=USER01.LIB.CNTL,VOL=SER=SER001  MEM=MVS*  ------------------------------
  ------------------------------------------------------------------------------
CMD  VOLUME DATA/MSG DEV  DEV MOUNT USE  --TOTAL FREE--     LARGEST   STATUS
----  NAME  -------- ADDR TYPE ATTR CNT  CYLS TRKS  NUM    CYLS TRKS  -INDC-
                      STORAGE STATUS SPACE                ------ VTOC -------
                      CLASS     ---- USED   DSCBS VIRS    SIZE USED  --CCHH--
     OS39H2           124 3380   PR  10    73   13    2     73    9  A CSIM
                       DEFAULT   PRES  84%     726   14      14   2%  00000001
     OS39R2           A80 3390M3 PR 268   341   12    3     341   10  A  SD
                                 SYSR  89%    2451    0      60  18%  03760000
     SCPMV5           122 3380E  ST  71   813  129   33     165    0  APCSI
                                 PRES  53%     636  261      15  20%  022E0000
```

MEMLIST Panel View Defaults

The #INITIAL macro keyword parameters beginning with ML* specify which panels are enabled for the MEMLIST load display function.

The MEMLIST load function displays data set information in any of four different formats. Users scroll through different data views with the RIGHT and LEFT commands.

As shipped, StarTool FDM displays only three of these panel formats: Attributes, Size and Dual Line. You can configure different displays with panel view default parameters for the #INITIAL macro. At runtime, your users may override these defaults and select the panels they actually want to see with the SETPANEL command.

MEMLIST Load Panel View Parameters

All MEMLIST panel view keyword parameters for the #INITIAL macro appear in the following table. Parameters are listed in the order in which their corresponding panels are displayed with the RIGHT command if all panels are turned on.

Examples of the panels follow the table.

Parameter	Panel Displayed	ISPF Variable	Values	Default
MLLATTR	Attributes (load member attributes)	PDSSWML1	YES/NO	YES

Parameter	Panel Displayed	ISPF Variable	Values	Default
MLLSIZE	Member Size (TTR location and module size)	PDSSWML2	YES/NO	YES
MLLDUAL	Dual Line (combined information)	PDSSWML3	YES/NO	YES
MLLCMN	ChangeMan ZMF info (customizable)	PDSSWML4	YES/NO	NO

Attributes MEMLIST Load Panel

```
-------------------- Load MEMLIST (Attributes), Session# 1 ----- Row 1 to 5 of 5
 COMMAND ===>                                                   SCROLL ===> CSR
 - DSN=USER01.LINK.LOAD,VOL=SER=SER001  MEM=CMN/  ------------------------------
CMD  NAME     DATA/MSG ALIASOF  LEN/LKED   --  ATTRIBUTES  -- APF MODE  MAIN
     CMNAPSPL                   1994/06/02 RENT REUS             RANY
     DSAT                       1995/12/19 REFR RENT           AC
     DSATA             DSAT     1995/12/19 REFR RENT           AC      DSAT
     PDSE531                    1997/03/13 REFR RENT
     VTOC                       1995/06/14 REFR RENT
```

Size MEMLIST Load Panel

```
-------------------- Load MEMLIST (TTR/Size), Session# 1 ---- Row 1 to 5 of 5
COMMAND ===>                                                  SCROLL ===> CSR
- DSN=USER01.LINK.LOAD,VOL=SER=SER001  MEM=CMN/  ------------------------------
CMD  NAME     DATA/MSG ALIASOF   TTR     MAIN    MATCH   LENGTH  LEN-KB  ENTRY
    CMNAPSPL                   027F08                   006140     25K  000000
    DSAT                       048005                   002558     10K  000000
    DSATA             DSAT     048005 DSAT     DSAT     002558     10K  000000
    PDSE531                    048C08                   0AE020    697K  0A4198
    VTOC                       034506                   004790     18K  000000
```

Dual Line MEMLIST Load Panel

```
---------------------- Load MEMLIST (Double), Session# 1 ------ Row 1 to 5 of 5
COMMAND ===>                                                    SCROLL ===> CSR
- DSN=USER01.LINK.LOAD,VOL=SER=SER001  MEM=CMN/  ------------------------------
CMD NAME     DATA/MSG ALIASOF  LEN/LKED   --  ATTRIBUTES  -- APF MODE  MAIN
                      MATCH    LENGTH   LEN-KB    TTR       ENTRY     SSI
--- -------- -------- -------- -------- ---- ---- ---- ---- ---- ---- ----------
    CMNAPSPL                   1994/06/02 RENT REUS            RANY
                               006140 25K    027F08   000000   40BE1799
--- -------- -------- -------- -------- ---- ---- ---- ---- ---- ---- ----------
    DSAT                       1995/12/19 REFR RENT        AC
                               002558      10K    048005   000000
--- -------- -------- -------- -------- ---- ---- ---- ---- ---- ---- ---------
    DSATA              DSAT    1995/12/19 REFR RENT        AC      DSAT
                       DSAT    002558      10K    048005   000000
--- -------- -------- -------- -------- ---- ---- ---- ---- ---- ---- ---------
    PDSE531                  1997/03/13 REFR RENT
                               0AE020     697K    048C08   0A4198
--- -------- -------- -------- -------- ---- ---- ---- ---- ---- ---- ---------
    VTOC                     1995/06/14 REFR RENT
                               004790      18K    034506   000000   ABACADAE
```

ChangeMan ZMF MEMLIST Load Panel

```
-------------------- Load MEMLIST (Change Man), Session# 1 --- Row 1 to 5 of 5
COMMAND ===>                                                    SCROLL ===> CSR
- DSN=USER01.LINK.LOAD,VOL=SER=SER001  MEM=CMN/  ------------------------------
CMD NAME     DATA/MSG ALIASOF  LEN/LKED   --  ATTRIBUTES   -  CMN date  time
    CMNAPSPL                   2004/06/02 RENT REUS           2004/06/02 18:08
    DSAT                       2005/12/19 REFR RENT
    DSATA              DSAT    2005/12/19 REFR RENT
    PDSE531                    2007/03/13 REFR RENT
    VTOC                       2005/06/14 REFR RENT
```

SELECT Line Command Defaults

The `#INITIAL` keyword parameters beginning with `SL*` specify the default function to invoke for all lines selected with the `S` line command in certain StarTool FDM tables. Different default functions may be specified independently for tables displayed by the following commands:

- CAX

- CMDTBL
- CSECTS
- LISTA
- LISTC/LISTF
- LISTV
- MEMLIST (load and source members)
- WORKPAD

The parameter value is set to the name of the default function to be invoked on SELECT. Users can override the default at runtime using the `SETSEL` command.

The SELECT line command parameters for the `#INITIAL` macro appear in the following table.

Parameter	Table Where Select (S) Command Issued	Overriding ISPF Variable for SETSEL	Values	Defaults
SLASEL	LISTA	PDSLASEL	CHANGE/ DSAT/ USAGE	CHANGE
SLCSEL	LISTC/LISTF	PDSLCSEL	CHANGE/ INFO/ USAGE	CHANGE
SLDSEL	MEMLIST load members	PDSLDSEL	VIEW/ BROWSE/ ATTRIB	BROWSE
SLISEL	CMDTBL	PDSCTSEL	TEST	TEST
SLOSEL	MEMLIST source members	PDSSCSEL	VIEW/ EDIT/ BROWSE	EDIT
SLSSEL	CSECTS	PDSCSSEL	LIST/ HISTORY	LIST
SLTSEL	WORKPAD	PDSTTSEL	E	E
SLVSEL	LISTV	PDSLVSEL	SP/ DVOL	SP
SLXSEL	CAX	PDSCXSEL	UT/LISTC	UT

ISPF Defaults

StarTool FDM's interactive interface is built on ISPF. The #INITIAL macro lets you modify certain ISPF defaults. These settings apply globally to StarTool FDM, but not generally to ISPF in environments external to StarTool FDM. ISPF keyword parameters for #INITIAL begin with SPF*.

ISPF default parameters for the #INITIAL macro appear in the table below. Users can override the default settings at runtime using the SET command and ISPF variable shown in the table.

Parameter	Description	SET Command ISPF Variable	Values	Default
SPFCBYOP	VTOC support for optical media (3395 M151 volumes).	PDSCBYOP (SETLF)	YES/NO	YES
SPFCKPT	ISPMODE checkpoint size. Specifies number of lines to be produced by a subcommand before FDM prompts user to terminate.	PDSCCKPT (SETLOG)	100 - 999999	5000
SPFCONVE	Automatic invocation of PEDIT for ISPF EDIT with data sets that are not supported by ISPF EDIT.	PDSCONVE (SETX)	YES/NO	YES
SPFEDUPD	Automatic rescan of directory after ISPF EDIT. The rescan adds to the member list any members that were updated by EDIT REPLACE or added by CREATE since invoking the ISPF EDIT command.	PDSEDUP (SETX)	YES/NO	NO
SPFLFDEL	Automatically drop deleted data sets from LISTFILE displays. The default value makes FDM behave like ISPF.	PDSLFDEL (SETLF)	YES/NO	YES
SPFLFOLD	Automatic drop of original data set name for renamed data sets in LISTFILE displays. The default value makes FDM behave like ISPF.	PDSLFOLD (SETLF)	YES/NO	YES
SPFLKED	MEMLIST provides linkage edit dates. If YES, IDR data from the load module must be read to determine this date.	PDSLKDT (SETML)	YES/NO	YES

Parameter	Description	SET Command ISPF Variable	Values	Default
SPFMAX	Maximum number of lines to retain after execution of a single subcommand. Use this parameter to keep any one subcommand from flooding the ISPMODE table. After the subcommand is complete, the log table is trimmed to SPFSIZE.	PDSCMAX (SETLOG)	100 - 999999	20000
SPFPERMT	Permanent table library DDNAME. Tables saved by WORKPAD and LISTC/LISTF are directed to this DDNAME.	PDSTLIB (SETX)	Any DDNAME	ISPPROF
SPFPRIM	ISPF primary panel name. This parameter is used by the ISPF subcommand and on recursive entry to StarTool FDM as a dialog.	PDSPRIM (SETX)	Member name	ISR@PRIM
SPFSIZE	Maximum ISPMODE log table size. This quantity is given in lines. After the limit is reached, lines drop off the log table on a FIFO basis.	PDSCSIZE (SETLOG)	100 - 999999	10000
SPFTDEL	Automatically drop deleted members from MEMLIST displays. The default value makes FDM behave like ISPF.	PDSTDEL (SETML)	YES/NO	YES
SPFTOLD	Automatic drop of original data set name for renamed data sets in MEMLIST displays. The default value makes FDM behave like ISPF.	PDSTOLD (SETML)	YES/NO	YES
SPFTRAP	Automatic trapping of output from TSO commands for inclusion in the ISPMODE log. If YES, FDM captures output from TSO commands that generate PUTLINE output.	PDSTPSET (SETTRAP)	YES/NO	YES
SPFTSIZE	Maximum number of trapped lines to retain when SPFTRAP=YES. When this limit is exceeded, additional output lines from TSO commands are discarded.	PDSTLIM (SETTRAP)	100 - 999999	3000

Parameter	Description	SET Command ISPF Variable	Values	Default
SPFVOMSG	Provide individual record counts for each volume during multivolume tape processing in StarBat. Both input and output files are processed if this option is enabled. If this option is disabled, only the total record count for all volumes in the multivolume file is supplied.		Y = Enable N = Disable	N

StarBat Record Descriptor Word

You can set a default value for the Record Descriptor Word (RDW) parameter by adding the RDW value (RDW=0,1,2, or 3) to the list of #INITIAL values that are specified in the PDS#OPT4 member of the somnode.PDSEvrm.COPY distribution library.

The default value that is shipped with StarTool FDM is 0.

You can override the default with a StarBat SYSIN command at execution time.

Command Table Configuration with #DYNCMDT

#DYNCMDT specifies ISPF command table entries that are to be added dynamically at StarTool FDM initialization. They remain in effect as long as ISPF is active, even after StarTool FDM terminates. In this way, StarTool FDM commands can be invoked from ISPF independently of the StarTool FDM server.

Command table entries are added to the ISPF command table only if StarTool FDM entries are not already present.

Macro Call Syntax

Each call to the #DYNCMDT macro defines a single command table entry and takes the following general form:

#DYNCMDT(*cmdname*,*abbrevlength*,*action*,*comment*)

where:

cmdname	=	ISPF command name, one to eight bytes long. First character must be alphabetic or national and other characters must be alphanumeric or national.
abbrevlength	=	Minimum number of characters in command name to accept as abbreviation or alias. Value is one byte long and may be any numeric digit except 1. A value of 0 means no abbreviation is accepted.
action	=	Action ISPF is to take when the command name is entered in StarTool FDM as a primary command. Specified as variable-length character string in single quotes containing an ISPF command with parameters. Alphabetic characters must be upper case.
comment	=	Variable-length character string in single quotes that documents the associated command. Alphabetic characters may be upper or lower case.

The following examples describe a PLIST and a COLOR ISPF command table entry:

```
#DYNCMDT (PLIST,2,'SELECT CMD(STARTOOL FILE(ISPPLIB) ISPXEQSX
    LISTC 20 PROMPT','PLIST Command')
#DYNCMDT (COLOR,0,'SELECT PGM(ISPOPT)
     PARM(ISPOPT10)','InvokX
    e global color change utility')
```

Invocation Sequence

Enter multiple #DYNCMDT entries in the order in which they are to be added to the ISPF command table. These entries are added to the ISPF command table just after the other entries added by StarTool FDM for the RCHANGE, RFIND, LEFT, RIGHT, UP, DOWN, and LIST commands and the entries added by the #PASSNAM macro.

NOTE These added entries can mask command table entries below them in the command table.

Dynamic Library Allocation with #DYNLIBS

To assist managing multiple instances of StarTool FDM with a single PDS#OPT4 configuration member, StarTool FDM supports dynamic library allocation. This option is enabled with the #DYNLIBS macro.

#DYNLIBS specifies names of cataloged data sets that are to be dynamically referenced. Specify CLIB for CLIST libraries, PLIB for panel libraries, SLIB for skeletons and MLIB for message libraries. The CLIB reference is activated by a TSO/E ALTLIB command and the others are activated with ISPF LIBDEF calls.

Use #DYNLIBS even if you invoke StarTool FDM with a CLIST so that StarTool FDM can recover from dynamic allocation errors that can occur during StarTool FDM execution.

Initialization substitutes the SMFID for the letters &SYS if they appear in the PLIB, SLIB, MLIB or CLIB data set names as shown in the example below for MLIB.

StarTool FDM tests for the availability of a release-specific panel to determine if a LIBDEF for ISPPLIB or ISPMLIB is required.

The following example specifies a CLIST library, a panel library, a skeleton library and two message libraries:

```
#DYNLIBS CLIB=SYS2.SERENA.PDSE vrm .CLIST,                X
   PLIB=SYS2.SERENA.PDSE vrm .PANELS,                   X
   SLIB=SYS2.SERENA.PDSE vrm .SKELS,                    X
   MLIB=(''SYS2.SERENA.PDSE vrm .MSGS'',''SYS2.MSGS.&&SYS'')
```

Restrictions and notes:

1 ***All parameters*** - to specify more than one library, use the list form as shown in the example for MLIB above.

2 ***PLIB parameter*** - panel member PDS@PRIM (StarTool FDM primary) must be copied to a generally accessible ISPPLIB data set if you want to invoke StarTool FDM with this panel.

3 ***MLIB parameter*** - message member PDS#10 contains messages required by panel PDS@PRIM and must be copied to a generally accessible ISPMLIB data set if PDS@PRIM is to be used to invoke StarTool FDM.

4 ***PLIB parameter*** - after encountering a panel or message display problem, StarTool FDM tests for the availability of a release specific panel called PDSVR*vrm*, where vrm is the version, release, and modification level without punctuation. (For example, for version 7.7.1, the panel name would be PDSVR771.) If this panel is not available, PLIB and MLIB data sets are reactivated and a recovery message is issued.

5 ***SLIB parameter*** - if PDSVR*vrm* is available, a release specific skeleton called PDS$K*vrm* is checked for availability. If this skeleton is not available, the SLIB data set is reactivated.

6 ***MLIB parameter*** - if PDSVR*vrm* is available, a release specific message called PDS#*vrm*A is checked for availability. If this message is not available, the MLIB data set is reactivated.

7 CLIB parameter - if you use another application from StarTool FDM that also uses an ALTLIB data set, the StarTool FDM ALTLIB is stacked and that CLIST data set is not referenced until the ALTLIB is deactivated. Thus, if you have CLIST members that reference other CLIST members in the StarTool FDM CLIST library (such as member VSAMMBR and VSAMMED), they are not able to find the referenced CLIST (VSAMMINV in this case). To circumvent this problem, copy VSAMMINV into a library in the SYSPROC concatenation.

8 CLIB parameter - several CLISTS are edit macros of general applicability for use when StarTool FDM is not already active in a session. Copy these members and convert (if necessary) to a library in the SYSPROC concatenation. See member PDSECLST in *somnode*.PDSE*vrm*.CNTL for a sample copy JOB that uses the StarTool FDM DUP subcommand to copy these members.

9 CLIB parameter - a FREE ALL command frees the ALTLIB library, which is only open during CLIST read processing.

Function Name Pass-Through with #PASSNAM

The #PASSNAM macro determines which functions are controlled by StarTool FDM's pass-through mechanism. This can be helpful in resolving command name conflicts. For example, if you want the ZAP command to refer to the StarTool FDM version of the ZAP function when StarTool FDM

is active and something else at other times, code ZAP as a #PASSNAM operand.

#PASSNAM parameter values are listed as operand pairs. The first operand in each pair is the name of the function and the second operand is an abbreviation length, where 0 means no abbreviation is allowed. The following example codes ZA, ZAP, LISTA and LISTC as pass-through controlled:

```
#PASSNAM (ZAP,2,LISTA,0,LISTC,0)
```

As another example, the following items are coded at one site with many ISPF command conflicts:

```
#PASSNAM (ALTERNAT,3,       <- TSO/E ALTLIB
   CONTROL,3,               <- RACF CONNECT
   COMPARE,2,               <- RACF CONNECT
   DDNAME,2,                <- DDNAME COMMAND
   DUP,2,                   <- DUP COMMAND
   HMIG,2,                  <- HSM HMIGRATE
   HREC,0,                  <- HSM HRECALL
   LC,0,                    <- TSO LC
   LISTA,0,                 <- TSO/E LISTA
   LISTC,0,                 <- TSO/E LISTCAT
   LISTV,0,                 <- LOCAL LISTVTOC
   LV,0,                    <- LOCAL LISTVTOC
   OUTPUT,3,                <- TSO/E OUTPUT
   PANEL,3,                 <- PANVALET
   PEDIT,2,                 <- RACF PERMIT
   RACF,0,                  <- ISPF RACF PANELS
   REC,2,                   <- TSO/E RECEIVE/REMOVE
   SMPGEN,2,                <- LOCAL SMP CLIST
   SPF,2,                   <- ISPF AND LISTSPACE
   STATUS,2,                <- TSO/E STATUS
   VTOC,2,                  <- LOCAL VTOC CLIST
   WHOHAS,2)                <- LOCAL WHOHAS
```

Setting Dialog Defaults with #VDEFINE

The #VDEFINE macro specifies names and initial values for dialog variables used by StarTool FDM. Dialog variables defined and used by StarTool FDM but not otherwise available for customization with the other

macros are given default values. If a variable already exists, #VDEFINE does not modify it.

The following example changes the default source code view in the editor from COPYBOOK to EXTENDED:

```
#VDEFINE (CSRC,CL8'EXTENDED')
```

The following example changes the default color of input fields from RED to GREEN and adds a variable, PDSADDED, for dialog use:

```
#VDEFINE (PDSCLIN,CL8'GREEN',                              X
   PDSADDED,CL3'NO')
```

PDSZINST Panel Versus #VDEFINE

Alternatively, if you select #INITIAL macro parameter $LOGO=LOGO or $LOGO=NONDISP, you can modify panel **PDSZINST** to provide installation defaults for all dialog variables available in the SET panels. These panel defaults override values coded for the #VDEFINE macro in PDS#OPT4. The panel also provides a means of customizing defaults for variables not modifiable using #VDEFINE.

#VDEFINE Dialog Parameters

If you specify any of the following StarTool FDM variable overrides, be sure to retain the length and data type. Otherwise, dialog errors can result because of variable truncation errors and invalid variables.

Variable Name	SET Command	Default	Description
CSRC	SETALL	CL8'COPYBOOK'	Default view for source members in EDIT. Values: ■ COPYBOOK ■ EXTENDED ■ VERTICAL
PDSALUP	SETALL	CL3'NO'	Automatic alias resynchronization in EDIT. Values: ■ YES ■ NO

Variable Name	SET Command	Default	Description
PDSCAUTO	SETALL	CL3'NO'	Automatic table save in LISTC/LISTF. Values: ■ YES ■ NO
PDSCLAC	SETCOLOR	CL8'YELLOW'	Color of action bar (non-CUA). Values: ■ BLUE • TURQ ■ GREEN • WHITE ■ PINK • YELLOW ■ RED
PDSCLIN	SETCOLOR	CL8'RED'	Color of input fields. Values: ■ BLUE • TURQ ■ GREEN • WHITE ■ PINK • YELLOW ■ RED
PDSCLHI	SETCOLOR	CL8'WHITE'	Color of highlight fields. Values: ■ BLUE • TURQ ■ GREEN • WHITE ■ PINK • YELLOW ■ RED
PDSCLOW	SETCOLOR	CL8'TURQ'	Color of normal text. Values: ■ BLUE • TURQ ■ GREEN • WHITE ■ PINK • YELLOW ■ RED
PDSCLTL	SETCOLOR	CL8'YELLOW'	Color of titles. Values: ■ BLUE • TURQ ■ GREEN • WHITE ■ PINK • YELLOW ■ RED
PDSCLT1	SETCOLOR	CL8'TURQ'	Color of table keys. Values: ■ BLUE • TURQ ■ GREEN • WHITE ■ PINK • YELLOW ■ RED
PDSCLT2	SETCOLOR	CL8'BLUE'	Color of table text. Values: ■ BLUE • TURQ ■ GREEN • WHITE ■ PINK • YELLOW ■ RED

Variable Name	SET Command	Default	Description
PDSCLWN	SETCOLOR	CL8'BLUE'	Color of the window (non-CUA). Values: ■ BLUE ■ GREEN ■ PINK ■ RED • TURQ • WHITE • YELLOW
PDSCUA	SETALL	CL3'YES'	CUA processing desired if ISPF 3.3 or above. Values: ■ YES ■ NO
PDSCVER	SETALL	CL3'YES'	Confirm data set delete in LISTC/LISTF. Values: ■ YES ■ NO
PDSEDLG	SETALL	CL3'YES'	Automatic EDITLOG for line commands. Values: ■ YES ■ NO
PDSENDX	SETALL	CL3'YES'	Prompt at termination of StarTool FDM. Values: ■ YES ■ NO
PDSGBLP	SETALL	CL3'YES'	Prompt before any global command except GLOBAL itself. Values: ■ YES ■ NO
PDSHIAC	SETCOLOR	CL8'REVERSE'	Action bar highlight (non-CUA). Values: ■ REVERSE ■ USCORE
PDSLFREF	SETALL	CL3'NO'	Automatic REFRESH for LISTC (not LISTF). Values: ■ YES ■ NO
PDSJUMP	SETALL	CL3'YES'	Interpret jump commands (=3.4) as StarTool FDM commands. Values: ■ YES ■ NO
PDSMEMP	SETALL	CL3'NO'	Prompt after a MEMLIST subcommand. Values: ■ YES ■ NO

Variable Name	SET Command	Default	Description
PDSMENU	SETALL	CL3'STA'	Default interface. Values: ■ STANDARD ■ ADVANCED ■ POWER
PDSMVER	SETALL	CL3'NO'	Confirm member delete in MEMLIST. Values: ■ YES ■ NO
PDSSEPCH	SETALL	CL1';'	Separator character for commands. One byte.
PDSSPAC	SETALL	CL3'YES'	Read VTOC for volume space in LISTV. Values: ■ YES ■ NO
PDSSPWA	SETALL	CL3'NO'	Wait to read VTOC if reserved in LISTV. Values: ■ YES ■ NO
PDSTAB	SETALL	CL6'OUTPUT'	Tab to SORT header fields.
PDSWAUTO	SETALL	CL3'YES'	Automatic table save in WORKPAD. Values: ■ YES ■ NO
PDSWMODE	SETALL	CL3'NO'	Automatic execute if modified in WORKPAD. Values: ■ YES ■ NO

Restricting Subcommand Use with #RESUSE

The #RESUSE macro creates a table of restricted-use subcommands and associates them with user groups. Multiple tables may be created, each serving a different classification of users. The sequence of #RESUSE macro calls establishes a hierarchy of user access levels, with the least restricted users assigned to the first subcommand table and the most heavily restricted users assigned to the last. The last (and lowest-level)

subcommand table applies to all users who cannot use a higher-level table.

#RESUSE requires you to specify your security environment using the $TYPEACF parameter of the #INITIAL macro. The PDS#SECI exit uses this setting to interface with your system's security package.

On initial installation and setup, Serena recommends that SAMPOPT4 — and hence the PDS#OPT4 options module generated from it — be coded with $TYPEACF=NONE for the #INITIAL macro, and that no customizations be made to the #RESUSE macro calls provided in the sample. Ensure that other customizations are working satisfactorily and that your system security package is managing StarTool FDM access to data and system resources as desired before you venture into customizing subcommand use.

Use of the #RESUSE macro is described with related security considerations in Chapter 4, "Customizing Security Options".

Generating PDS#OPT4 with #GENER

The #GENER macro takes no parameters. It must the last macro called in your source member. During assembly and linking of your customized source, #GENER generates the PDS#OPT4 CSECT that controls StarTool FDM's default behavior.

Chapter 4

Customizing Security Options

This chapter contains the following information:.

Security Features of StarTool FDM

There are several ways to implement security for StarTool FDM.

- Control access to data sets and system resources externally; no StarTool FDM security is necessary.
- Restrict access to certain subcommands for separate groups of users by tailoring `SAMPOPTR`. StarTool FDM is controlled by the `PDS#OPT4` member in the STEPLIB used at initialization.
- Restrict access to groups of subcommands for separate groups of users by tailoring `SAMPOPT4`. StarTool FDM determines the user group by communicating with the security system.

- Restrict access to groups of subcommands dynamically. StarTool FDM determines the user group as above and communicates with the security system with each use of a restricted subcommand.
- Restrict data access to different classes of users through PDS#SECI.

Restricting Subcommand Use by STEPLIB

User access to StarTool FDM functionality is normally all or nothing. Global user access to the product and to the data sets and system resources accessed by the product is managed by your system security package.

PDS#OPT4 PDS#OPT4 can be tailored to restrict user access to certain high-impact functions of StarTool FDM. Restricted subcommands in the shipped sample are:

- FIXNAME
- FIXANYD
- FIXDSCB
- FIXMAX
- REPNOSTA
- REPLCI
- FIXRESET
- COMPRSHR

To restrict high-impact subcommand use during StarTool FDM testing, perform the following steps:

1. Refer to *somnode*.PDSE*vrm*.ASSEMBLE(SAMPOPTR) for information on changes that need to be made to the source for PDS#OPT4.
2. Add the user STEPLIB to the StarTool FDM library concatenation invoked by the restricted user group. Because only one restriction table is used, the PDS#SECI routine is not required. Consequently, you can generate a different PDS#OPT4 for each class of users, each restricting a slightly different set of subcommands, and each invoked

by a different user STEPLIB. This is the easiest way to restrict StarTool FDM subcommand use.

CAUTION! If you customized PDS#OPT4 to tailor your installation defaults, this step reinstates the default options. Do not use restriction by STEPLIB if you plan to configure any other StarTool FDM options.

Restricting Subcommand Use by User Group

The #RESUSE macro in source member SAMPOPT4 — used to generate the PDS#OPT4 options configuration member — creates a table of restricted-use subcommands. This may be used to add a layer of internally managed security within StarTool FDM that restricts user access to certain high-impact functions.

Multiple tables may be created, each serving a different classification of users. This is done by coding multiple calls to #RESUSE in the SAMPOPT4 member. The sequence of #RESUSE macro calls establishes a hierarchy of user access levels, with the least restricted users assigned to the first subcommand table and the most heavily restricted users assigned to the last. The last (and lowest-level) subcommand table applies to all users who cannot use a higher-level table. User group management is enforced by security exit PDS#SECI.

#RESUSE requires you to specify your security environment using the $TYPEACF parameter of the #INITIAL macro. The PDS#SECI exit uses this setting to interface with your system's security package.

CAUTION! If you have more than one #RESUSE security table, and you did not code #INITIAL macro parameter $TYPEACF=NONE in PDS#OPT4, you must enable the PDS#SECI exit. (See "PDS#SECI Security Exit" later in this chapter.)

If only a single instance of the #RESUSE macro is coded, the associated subcommands are restricted for all users who have access to this version of the command. In this case, PDS#SECI is not required and you can have a different PDS#OPT4 module for each class of users. (See "Restricting Subcommand Use by STEPLIB" earlier in this chapter.)

Subcommand Security Processing

During StarTool FDM initialization, the subcommand table name (token) for each restricted subcommand name list is passed in entry order to the PDS#SECI security exit for user access checking. The exit responds with a YES or NO. When the first YES response is received, StarTool FDM uses the associated restricted subcommand list for internal authorization checks before executing a subcommand. The lowest-level restricted subcommand table applies for all unmatched users. Its associated token is not passed to security exit PDS#SECI.

If $TYPEACF=DYNAMIC is coded in the #INITIAL macro parameters, the restrictions on subcommands is not absolute. It may be overridden if permission is granted by an additional security exit, PDS#DYNA. When a user enters one of the restricted subcommands, control is given to PDS#DYNA, which is provided the name of the subcommand (or subcommand restriction name such as FIXDIR) and the current data set name.

Classifying User Levels

You might want to configure StarTool FDM to support four classes of users: experienced systems programmers, novice systems programmers, experienced applications programmers, and everyone else. To do this, assign token names and associated restricted resource names using the #RESUSE macro in SAMPOPT4:

```
SYSTEMSE #RESUSE , -- NO RESTRICTIONS
SYSTEMSN #RESUSE (FIXRESET,COMPRSHR)
APPLEXP  #RESUSE (CONTROLR,FIXNAME,FIXANYD,FIXDSCB,FIXMAX,  X
              REPNOSTA,REPLCI,FIXRESET,COMPRSHR)
OTHERS   #RESUSE (CONTROLR,FIXNAME,FIXANYD,FIXDSCB,FIXMAX,  X
              REPNOSTA,REPLCI,FIXRESET,COMPRSHR,FIXDCB,     X
              FIXALLOC,FIXEXPDT,REPLACEL,ZAP,SAVELOAD,      X
              FINDMOD,ATTRMODL,ALIAS,RESTOREL,REPROL,LLA)   X
```

Interpret this as:

- Experienced systems programmers (SYSTEMSE) have no restrictions.
- Novice systems programmers (SYSTEMSN) cannot use resources called FIXRESET or COMPRSHR.
- Experienced applications programmers (APPLEXP) cannot use nine resources.

- Everyone else (OTHERS) cannot use 22 resources.

Subcommand Impact Ranking

The table below ranks the StarTool FDM subcommands in a suggested order from highest impact to least impact. High-impact subcommands are candidates for the tightest access restrictions. Low-impact subcommands are candidates for minimal or no restrictions. You can modify the subcommand access tables in any desired order to meet the requirements of your own installation.

Parameter	Description
For systems programmers only	
CONTROLR	CONTROL subcommand with RESTRICTED. This displays the user's table of restricted subcommands.
FIXNAME	FIXPDS subcommand with NEWDSNAME. This changes the name of a data set by rewriting the Format 1 DSCB DS1DSNAM field using PDSEAUTH. The data set must be uncataloged, it must reside on a non-indexed volume and ALTER authority for the data set is required.
FIXANYD	FIXPDS subcommand with MODDSNAME. This changes any Format 1 DSCB field except for the DSNAME for any data set using PDSEAUTH. UPDATE authority for the data set is required.
FIXDSCB	FIXPDS subcommand with DSCB. This changes the active data set's Format 1 DSCB using PDSEAUTH. Any Format 1 DSCB field other than DSNAME can be changed. UPDATE authority for the data set is required.
FIXMAX	FIXPDS subcommand with MAXSPACE or LSTAR. This changes the data set end pointer or DS1LSTAR.
REPNOSTA	REPLACE for load modules with NOSTATS. This allows a module change without updating the IDR data.
REPLCI	REPLACE for a VSAM DATA or INDEX component using BLOCK or DATA format. This accesses the component using control intervals instead of records.
FIXRESET	FIXPDS subcommand with RESET or INITDIR. This reinitializes the directory.

Parameter	Description
COMPRSHR	COMPRESS subcommand with SHR. This operand is not documented in the StarTool FDM *Reference Guide*. StarTool FDM uses logic similar to that used by ISPF for protecting data sets that are updated during a shared allocation.
For experienced application programmers	
FIXDCB	FIXPDS subcommand with OPTCD, RECFM, LRECL or BLKSIZE change. This changes the DCB of a data set.
FIXALLOC	FIXPDS subcommand with BLK (with or without ROUND), TRK, CYL or SPACE(size). This changes the data set's secondary allocation type and amounts and involves updating the Format 1 DSCB through PDSEAUTH.
FIXEXPDT	FIXPDS subcommand with EXPDT(yyyyddd). This assigns a new expiration date to the data set and updates the Format 1 DSCB.
REPLACEL	REPLACE subcommand with load modules and WRITE. This updates the contents of load members. REPLACE also updates AMASPZAP IDR records for historical tracking unless NOSTATS is specified. Also, see REPNOSTA above.
MAPMOD	MAP with AMODExx or RMODExx operands to change CSECT linkage modes.
ZAP	The ZAP function updates load modules. ZAP also updates AMASPZAP IDR records for historical tracking.
SAVELOAD	The PEDIT function updates a load module directly. PEDIT also updates AMASPZAP information using the first CSECT in the module.
SVCMAP	The SVCMAP subcommand displays the active system SVCs. The display includes a dump and disassembly of an individual SVC.
FINDMOD	The FINDMOD subcommand locates system modules in the nucleus, LPA, MLPA, TASKLIB, linklist concatenation or LPALIB concatenation.
ATTRMODL	ATTRIB subcommand with a load module attribute change. This updates linkage editor attributes of a module.

Parameter	Description
ALIAS	ALIAS subcommand. This adds an alternate name for a member to the directory.
RESTOREL	RESTORE subcommand with load modules. This resurrects deleted members.
REPROL	REPRO subcommand with load modules. This creates or moves load members.
LLA	LLA subcommand. This selectively refreshes or removes LLA directory entries in LLA-managed libraries with an LLACOPY macro in PDSEAUTH.
For any application programmer	
FIXDIR	FIXPDS subcommand with EXPANDDIR, FREEDIR or ADJUSTFREE. This adjusts the number of directory blocks in the data set.
FIXADD	FIXPDS subcommand with ADDTRK, ADDCYL or ADDFREE. This adds a data set extent.
FIXREL	FIXPDS subcommand with RELEASE, RELEXTENT, RELSAVE or RELFREE. This releases disk space from the data set.
COMPRESS	COMPRESS subcommand. This removes unused space from a PDS.
ATTRMODS	ATTRIB subcommand with a source member attribute change. This updates ISPF statistics or SSI information for a member.
RESTORE	RESTORE subcommand. This resurrects deleted source members.
CMDTBLUP	CMDTBL function with the SAVE command to update the ISPF command table.
OUTCOPY	OUTCOPY subcommand. This outputs utility control statements.
ENCODE	ENCODE subcommand. This outputs encrypted members.
DECODE	DECODE subcommand. This outputs decrypted members.
ABE	ABE subcommand. This edits a source member with ABE.

Parameter	Description
EDIT	EDIT subcommand. This edits a source member with ISPF edit.
FSE	FSE subcommand. This edits a source member with FSE.
TSOEDIT	TSOEDIT subcommand. This edits a source member with TSO edit.
REPLACE	REPLACE subcommand. This updates a source member.
COPY	COPY subcommand. This copies or moves members to another data set.
DUP	DUP subcommand. This copies or moves members to another data set.
REPRO	REPRO subcommand. This creates or moves source members.
RENAME	RENAME subcommand. This changes a member name.
DELETE	DELETE subcommand. This deletes a member.
CMDTBL	CMDTBL function. This views the ISPF command table.

Local Commands

In addition to StarTool FDM subcommand names, several subcommand-specific, local command names can be restricted in situations where an operand or library type changes the potential impact level of a subcommand. These local command names are ATTRMODL, ATTRMODS, CMDTBLUP, COMPRSHR, CONTROLR, FIXALLOC, FIXADD, FIXANYD, FIXDCB, FIXDIR, FIXDSCB, FIXEXPDT, FIXMAX, FIXNAME, FIXREL, FIXRESET, MAPMOD, REPLACEL, REPLCI, REPNOSTA, REPROL and RESTOREL.

TIP The FIXxxx operands are assigned in the order shown in the table above. You can mask the use of one operand by the use of a higher priority operand. For example, if you want to prevent a user from using FIXPDS EXPANDDIR or FREEDIR (this is parameter FIXDIR) and you do not care about FIXPDS RECFM, LRECL or BLKSIZE (parameter FIXDCB), the parameter used for security checking is FIXDCB if you specify both BLKSIZE and EXPANDDIR.

PDS#SECI Security Exit

PDS#SECI supports both internal or external security environments. Internal security ($TYPEACF=CALL) requires you to assemble and link a module (see sample source member SAMPSECC in *somnode*.PDSE*vrm*.ASSEMBLE) that performs checking of tokens based on USERID tables or some other criteria within the module.

External security ($TYPEACF=LOGNO, RACF, TOP or ACF2) requires you to assemble and link a module (see sample source member SAMPSECR in *somnode*.PDSE*vrm*.ASSEMBLE) that communicates with your security system through the SAF security interface. Before assembling the SAMPSECR routine to build the PDS#SECI module, be sure to modify options as required for your installation.

For either internal or external security, the resultant checking module is PDS#SECI.

Security Requirements

PDSEAUTH Module

PDS#SECI invokes security module PDSEAUTH, which must be APF-authorized. Installation of PDSEAUTH is addressed in "PDSEAUTH Security Module" later in this chapter.

Token Names

If you use PDS#SECI to determine restricted subcommands for multiple classes of StarTool FDM users, ensure that the resource (or token) names coded on the #RESUSE macro statements correspond to the names expected in the PDS#SECI exit and by RACF, CA-Top Secret or CA-ACF2.

Customizing PDS#SECI

Use JCL member PDS#SECI (for IEBCOPY installations) or JCL member SMP#SECI (for SMP/E installations) to assemble and link your customized version of SAMPSECR into StarTool FDM without PDSEAUTH. For $TYPEACF=LOGNO, use member JCL member PDS#SECA (for IEBCOPY installations) or SMP#SECA (for SMP/E installations) to assemble and link PDS#SECI into StarTool FDM with PDSEAUTH.

The PDS#SECI and PDS#SECA JCL members are located in StarTool FDM installation library *somnode*.PDSE*vrm*.CNTL. The SMP#SECI and SMP#SECA JCL members are located in *somnode*.PDSE*vrm*.JCL.

Dynamic Security Checking

Normally, StarTool FDM performs security checking only on initialization. This is done by security exit PDS#SECI.

However, if #INITIAL macro parameter $TYPEACF=DYNAMIC is requested in PDS#OPT4, an additional exit named PDS#DYNA is invoked on each use of any restricted subcommand.

PDS#DYNA Security Exit

PDS#DYNA provides dynamic security checking that enables context-sensitive restriction constraints. For example, a subcommand might be restricted for a group only when used with a particular operand or against a certain library type.

For example, if DELETE is in a user's restricted subcommand list, each of the following invocations of DELETE causes control to be passed to PDS#DYNA:

```
DELETE abc:xyz ALIAS
    IF abc:xyz NORENT THEN(DELETE)
    FIND abc:xyz 'string' ELSE(DELETE)
```

Customizing PDS#DYNA

Three sample exits are provided for generating the PDS#DYNA load module. They are:

- SAMPDYN1 — Checks for 'ALTER' authority for the current data set via RACROUTE.
- SAMPDYN2 — Checks for restricted subcommands in class #PDSAUTH via RACROUTE.
- SAMPDYN3 — Checks for restricted subcommands using native CA-ACF2 interfaces.

All reside in source code library *somnode*.PDSE*vrm*.ASSEMBLE.

Of these exits, SAMPDYN1 has the simplest requirements. Your normal data set protection guards system or group data sets from subcommands

considered dangerous and your users are not restricted from using their own data sets.

SAMPDYN2 offers better control over individual users and subcommands by using a restricted subcommand if there is UPDATE authority to the STARTOOL.subcommand in class #PDSAUTH, or if there is READ authority to the same symbol, and there is ALTER authority for the data set. See implementation instructions for each type of security system on the following pages.

SAMPDYN3 is similar to SAMPDYN2 in function but it uses native CA-ACF2 interfaces. While SAMPDYN1 and SAMPDYN2 can be used in any security environment, in a CA-ACF2 environment each attempted use of a restricted subcommand increments a violation count. This causes a user session to be canceled if the maximum violation threshold is exceeded. SAMPDYN3 can be used instead as it does not cause the violation count to be incremented.

A user can use a restricted subcommand if there is UPDATE authority to a CA-ACF2 generalized resource rule of type CMD for STARTOOL.*subcommand*, or if there is READ authority to the same symbol, and there is ALLOCATE authority for the data set.

Generating PDS#DYNA

To assemble and link the PDS#DYNA exit load member into StarTool FDM, use JCL member PDS#DYNA (for IEBCOPY installations) or SMP#DYNA (for SMP/E installations).

The PDS#DYNA JCL member resides in library *somnode*.PDSE*vrm*.CNTL. The SMP#DYNA JCL member resides in *somnode*.PDSE*vrm*.JCL.

IMPORTANT! When customizing this exit, be aware that the PDS#DYNA dynamic security exit uses 31-bit addressing and must be assembled with the AMODE 31 and RMODE 31 attributes, as it must reside above the 16MB line.

Security Exits and RACF

RACF and PDS#SECI

For new installations of StarTool FDM with RACF, use the FACILITY class to install StarTool FDM security. For upgrade installations, use the $PDSE resource class.

Using the FACILITY Resource Class

The FACILITY general resource class is suitable for a wide variety of purposes at an installation.

First, define resources in PDS#OPT4 (assume resources SYSTEMSE, SYSTEMSN, APPLEXP and OTHERS), define profile names associated with the FACILITY class and permit appropriate personnel to the resources.

Detailed installation steps include:

1 Define restricted subcommands and user groups in PDS#OPT4 with the #RESUSE macro.

2 SETROPTS RACLIST processing for the FACILITY general resource class to reduce I/O to the RACF data base:

```
SETROPTS RACLIST(FACILITY)
```

3 Define profile names associated with class FACILITY. Enter RACF commands from TSO similar to the following (SYSTEMSE, SYSTEMSN, APPLEXP and OTHERS are names as assigned with #RESUSE macros in PDS#OPT4):

```
RDEFINE FACILITY (STARTOOL.SYSTEMSE) OWNER(localid)
UACC(NONE) -
   APPL('SYS EXP.')
RDEFINE FACILITY (STARTOOL.SYSTEMSN) OWNER(localid)
    UACC(NONE) -
   APPL('SYS NOV.')
RDEFINE FACILITY (STARTOOL.APPLEXP)  OWNER(localid)
    UACC(NONE) -
   APPL('APPL EXP.')
RDEFINE FACILITY (STARTOOL.OTHERS)   OWNER(localid)
    UACC(NONE)
```

```
APPL('OTHERS')
```

- *localid* is the administrator for the FACILITY class.
- The last RDEFINE command is not necessary; OTHERS is the assumed authority level.

4 Refreshing the RACF SETROPTS option for the FACILITY class:

```
SETROPTS RACLIST(FACILITY) REFRESH
```

5 Permitting appropriate personnel. The following example RACF command permits USR1 to the SYSTEMSE resource:

```
PERMIT STARTOOL.SYSTEMSE CLASS(FACILITY)
ACCESS(READ) ID(USR1)
```

6 Refreshing the RACF SETROPTS option for the FACILITY class again:

```
SETROPTS RACLIST(FACILITY) REFRESH1)
```

Adding a $PDSE Resource Class

For RACF systems, define resources in PDS#OPT4 (assume resources SYSTEMSE, SYSTEMSN, APPLEXP and OTHERS), add a class to the Resource Class Descriptor table (assume class name $PDS), add an entry to the Router table, define profile names associated with class $PDS and permit appropriate personnel to the resources.

Detailed installation steps are:

1 Define restricted subcommands and user groups in PDS#OPT4 with the #RESUSE macro.

2 Before assembling the SAMPSECR routine to build the PDS#SECI module, be sure to follow instructions in the program comments for RACF and set parameter LOG=NO.

3 Add a class to the Resource Class Descriptor table. Add an assembler statement similar to the following to your source code for ICHRRCDE:

```
$PDSCLAS ICHERCDE CLASS=$PDS,                          X
   ID=129,    /* Note: 128 through 255 could be used */ X
   POSIT=25,  /* Note: 19 through 56 could be used   */ X
   MAXLNTH=8,FIRST=ALPHA,OTHER
```

- ID and POSIT must be selected as appropriate for your installation.
- ICHRRCDE must be assembled and linked into SYS1.LINKLIB. Use your installation's procedure for RCD table changes.
- This module is copied to SQA during RACF initialization.

4 Add an entry to the Router table. Add an assembler statement similar to the following to your source code for ICHRFR01:

```
$PDSCLAS ICHRFRTB CLASS=$PDS,ACTION=RACF
```

- ICHRFR01 must also be assembled and linked into SYS1.LINKLIB. Use your installation's procedure for Router table changes.
- This module is copied to SQA during RACF initialization.

5 Define profile names associated with class $PDS. Enter RACF commands from TSO similar to the following (SYSTEMSE, SYSTEMSN, APPLEXP and OTHERS are names as assigned with #RESUSE macros in PDS#OPT4):

```
   RDEFINE $PDS
(SYSTEMSE)OWNER(localid)UACC(NONE)APPL('SYS EXP.')
   RDEFINE   $PDS
     (SYSTEMSN)OWNER(localid)UACC(NONE)APPL('SYS NOV.')
   RDEFINE $PDS (APPLEXP)OWNER(localid)ACC(NONE)APPL('APPL
     EXP.')
   RDEFINE $PDS
     (OTHERS)OWNER(localid)UACC(NONE)APPL('OTHERS')
```

- *localid* is the administrator for the $PDS class.
- The last RDEFINE command is not necessary since OTHERS is the assumed level of authority.

6 Resetting the SETROPTS option for class $PDS. Type the following example RACF command:

```
SETROPTS CLASSACT($PDS)
```

7 Permitting appropriate personnel. The following example RACF command permits USR1 to the SYSTEMSE resource:

```
PERMIT SYSTEMSE CLASS($PDS) ACCESS(READ) ID(USR1)
```

RACF and PDS#DYNA

If you use SAMPDYN1 to install PDS#DYNA, you need not take any further action for RACF systems.

For SAMPDYN2, perform the following steps:

1 Add a class to the Resource Class Descriptor table. Add an assembler statement similar to the following to your source code for ICHRRCDE:

```
PDSAUTH  ICHERCDE CLASS=#PDSAUTH, X
    ID=130,    /* Note: 128 through 255 could be used */
 X
    POSIT=27,  /* Note: 19 through 56 could be used   */
 X
    MAXLNTH=17,FIRST=ALPHA,OTHER=ANY
```

- ID and POSIT must be selected as appropriate for your installation.
- ICHRRCDE must be assembled and linked into 'SYS1.LINKLIB'. Use your installation's procedure for RCD table changes.
- This module is copied to SQA during RACF initialization.

2 Add an entry to the Router table. Add an assembler statement similar to the following to your source code for ICHRFR01:

```
PDSAUTH  ICHRFRTB CLASS=#PDSAUTH,ACTION=RACF
```

- ICHRFR01 must be assembled and linked into 'SYS1.LINKLIB'. Use your installation's procedure for Router table changes.
- This module is copied to SQA during RACF initialization.

3 Define profile names associated with class #PDSAUTH. Enter RACF commands from TSO similar to the following where FIXDIR is the subcommand to be restricted:

```
  RDEFINE #PDSAUTH (STARTOOL.FIXDIR) OWNER(localid)
UACC(NONE)
```

- *localid* above is the administrator for the $PDS class.

4 Permit appropriate personnel. For example, assuming FIXDIR is in the restricted command list for USR1 and USR2, to allow USR1 unrestricted access to FIXDIR and USR2 access to FIXDIR only if USR2 has ALTER authority to a data set:

```
   PERMIT STARTOOL.FIXDIR CLASS(#PDSAUTH)
ACCESS(UPDATE) ID(USR1)
   PERMIT STARTOOL.FIXDIR CLASS(#PDSAUTH) ACCESS(READ)
     ID(USR2)
```

If you implement dynamic security, inform Serena Customer Support of the security environment you are using, the SAMPDYNx member used, and any changes required to the routine or these procedures.

Security Exits and CA-Top Secret

CA-Top Secret and PDS#SECI

For CA-Top Secret systems, define resources in PDS#OPT4 (assume resources SYSTEMSE, SYSTEMSN, APPLEXP and OTHERS), define a new resource class (assume class name APDS), define resources to CA-Top Secret and permit appropriate personnel to the resources.

Detailed installation steps are:

1 Define restricted subcommands and user groups in PDS#OPT4 with the #RESUSE macro.

2 Before assembling the SAMPSECR routine to build the PDS#SECI module, modify the &ACCTYP parameter for CA-Top Secret.

3 Define resource class of APDS. Enter the following CA-Top Secret command:

```
TSS ADD(RDT) RESCLASS(APDS) RESCODE(nn)
```

- The RESCODE *nn* value can range from 01 to 3F. For values that are in use type the command TSS LIST(RDT) DATA(ALL).
- For more information on the RDT, see *"CA-Top Secret IMPLEMENTATION: GENERAL GUIDE."*

4 Define resources to CA-Top Secret. Type the following CA-Top Secret commands (SYSTEMSE, SYSTEMSN, APPLEXP and OTHERS are names assigned with #RESUSE macros in PDS#OPT4 and *resowner* is a local name for the owner of the resource):

```
TSS ADDTO(resowner) APDS(SYSTEMSE)
```

```
TSS ADDTO(resowner) APDS(SYSTEMSN)
TSS ADDTO(resowner) APDS(APPLEXP)
TSS ADDTO(resowner) APDS(OTHERS)
```

The last ADDTO command is not required since OTHERS is the assumed level of authority.

5 Permit appropriate personnel. The following example CA-Top Secret command permits USR1 to the SYSTEMSE resource:

```
TSS PERMIT(USR1) APDS(SYSTEMSE)
```

CA-Top Secret and PDS#DYNA

If you use SAMPDYN1 to install PDS#DYNA, you need not take any further action for CA-Top Secret systems.

For SAMPDYN2, you need to perform the following:

1 Define resource class of #PDSAUTH. Enter the following CA-Top Secret command:

```
TSS ADD(RDT) RESCLASS(#PDSAUTH) RESCODE(nn)
```

The RESCODE *nn* value can range from 01 to 3F. You can see which values are in use with the following command: TSS LIST(RDT) DATA(ALL).

2 Define resources to CA-Top Secret. Enter CA-Top Secret commands similar to the following where FIXDIR is a subcommand to be restricted, and *resowner* is a local name for the owner of the resource:

```
TSS ADDTO(resowner) #PDSAUTH(STARTOOL.FIXDIR)
```

3 Permit appropriate personnel. For example, assuming FIXDIR is in the restricted command list for USR1 and USR2, to allow USR1 unrestricted access to FIXDIR and USR2 access to FIXDIR only if USR2 has ALTER authority to a data set:

```
TSS PERMIT(USR1) #PDSAUTH(STARTOOL.FIXDIR) UPDATE
TSS PERMIT(USR2) #PDSAUTH(STARTOOL.FIXDIR) READ
```

Security Exits and CA-ACF2

If your site has CA-ACF2, your first security step is to add entries for the STARTOOL main load module, the PDSE started task, the alias name PDS, and any alternative entry points to the command limiting list so that ACF2 recognizes these as valid command processor names.

CA-ACF2 and PDS#SECI

For CA-ACF2 systems, define resources in PDS#OPT4 (assume resources SYSTEMSE, SYSTEMSN, APPLEXP and OTHERS), identify to CA-ACF2 what SAF calls to process and how to map SAF resource classes into resource types, update the RESDIR GSO record (if the rules are resident) and create the resource rules.

Following are detailed installation steps.

1 Define restricted subcommands and user groups in PDS#OPT4 with the #RESUSE macro.

2 Before assembling the SAMPSECR routine to build the PDS#SECI module, set LOG=NO and modify the &ACCTYP parameter for CA-ACF2.

3 Identify SAF calls to be processed depending on your level of CA-ACF2.

- For levels of CA-ACF2 before 6.0, identify SAF calls to be processed with SAFPROT and how to map SAF resource classes into resource types with SAFMAPS, review the GSO Records section of the *"ACF2 Systems Administrator Guide"*, then add to the SAFPROT GSO record from ACF2:

```
SET CONTROL(GSO)
INSERT SYSID(sysidx)SAFPROT.PDSE CLASSES(-) CNTLPTS(-)
  SUBSYS(PDS-)
CHANGE SYSID(sysidx) SAFMAPS MAPS(PDS/$PDS)
```

- For levels of CA-ACF2 at 6.0 or above, map SAF resource classes into resource types with CLASMAP. If SAFDEF SAFALL is overridden in your implementation of CA-ACF2, you need to identify SAF calls to be processed with a SAFDEF statement as shown in the following example. Review the GSO Records section of the *"ACF2 Systems Administrator Guide"*, then add to the SAFDEF and CLASMAP GSO records from ACF2:

```
SET CONTROL(GSO)
SET SYSID(sysidx)
INSERT SAFDEF.PDSE MODE(GLOBAL) RACROUTE(SUBSYS=PDS-)
  REP ID(PDSE)
INSERT CLASMAP.PDS RESOURCE($PDS) RSRCTYPE(PDS)
```

4 If resource rules are resident, update the RESDIR GSO record.

5 Create the resource rules. From ACF2, enter commands similar to the following, using the security tokens for user groups created in PDS#OPT4 using the #RESUSE macros. (The following example uses SYSTEMSE from SAMPOPT4):

```
SET RESOURCE(PDS)
COMPILE * STORE
$KEY(SYSTEMSE) TYPE(PDS)
ALLOW UID(SYSADMIN)
END
COMPILE * STORE
     ...
```

6 IPL, REFRESH, or REBUILD to enable the changes.

CA-ACF2 and PDS#DYNA

If you use SAMPDYN1 to install PDS#DYNA, you need not take any further action for CA-ACF2 systems.

For SAMPDYN2, you need to perform the following:

1 Identify SAF calls to be processed depending on your level of CA-ACF2.

- For levels of CA-ACF2 before 6.0, insert a SAFPROT GSO record to activate #PDSAUTH and DATASET classes and add the PDS generalized resource to the SAFMAPS GSO record:

```
SET CONTROL(GSO)
INSERT SAFPROT.PDS#DYNA CLASSES(#PDSAUTH,DATASET)
CNTLPTS(PDSE,PDSTOOLS,STARTOOL) SUBSYS(PDS-)
CHANGE SAFMAPS MAPS(PDS/#PDSAUTH) ADD
```

- For levels of CA-ACF2 at 6.0 or above, map SAF resource classes into resource types with CLASMAP. If SAFDEF SAFALL is overridden in your implementation of CA-ACF2, you need to identify SAF calls to be

processed with SAFDEF statements as shown in the following example; however, in many CA-ACF2 installations, the SAFDEF statements are not required.

2 Review the GSO Records section of the *"ACF2 Systems Administrator Guide"*, then add to the SAFDEF and CLASMAP GSO records from ACF2:

```
SET CONTROL(GSO)
SET SYSID(sysidx)
INSERT SAFDEF.PDSE1 MODE(GLOBAL) RB(PDS-) ID(PDSE1) REP
 -
   RACROUTE(SUBSYS=PDS- CLASS=DATASET)
INSERT SAFDEF.PDSE2 MODE(GLOBAL) RB(PDS-) ID(PDSE2) REP
 -
   RACROUTE(SUBSYS=PDS- CLASS=#PDSAUTH)
INSERT CLASMAP.PDS RESOURCE(#PDSAUTH) RSRCTYPE(PDS)
```

3 Permit appropriate personnel. For example, assuming FIXDIR is in the restricted command list for USR1 and USR2, to allow USR1 unrestricted access to FIXDIR and USR2 access to FIXDIR only if USR2 has ALTER authority to a data set:

```
$KEY(STARTOOL.FIXDIR) TYPE(PDS)
UID(USR1's UID string) SERVICE(UPDATE) ALLOW
UID(USR2's UID string) SERVICE(READ) ALLOW
```

4 Refresh the SAFPROT and SAFMAPS GSO records.

5 For SAMPDYN3, write generalized resource rules of type CMD as needed. For example, assuming FIXDIR is in the restricted command list for USR1 and USR2, to allow USR1 unrestricted access to FIXDIR and USR2 access to FIXDIR only if USR2 has ALLOCate authority to a data set:

```
$KEY(STARTOOL.FIXDIR) TYPE(CMD)
UID(USR1's UID string) SERVICE(UPDATE) ALLOW
UID(USR2's UID string) SERVICE(READ) ALLOW
```

If you implement dynamic security, inform Serena Customer Support of the security environment you are using, the SAMPDYN*n* member used, and any changes required to the routine or these procedures.

PDSEAUTH Security Module

PDSEAUTH and IKJEFTSR

If you customize your security options, the StarTool FDM security module PDSEAUTH is required and must be APF-authorized. StarTool FDM invokes PDSEAUTH from an APF-authorized environment using IKJEFTSR and RACROUTE LOG=NO.

IMPORTANT! The IKJEFTSR interface to PDSEAUTH requires TSO/E Release 1.2 or higher. If you have an earlier release of TSO/E, contact Serena Customer Support for help.

Environments That Require PDSEAUTH

PDSEAUTH is used by security module PDS#SECI. PDS#SECI is required if you code the #INITIAL macro parameter $TYPEACF=LOGNO and you implement more than one #RESUSE macro in the PDS#OPT4 options module. Under these conditions, PDS#SECI must be linked with PDSEAUTH.

PDSEAUTH is also invoked in the following situations:

- ***FIXPDS*** subcommand with operands DSCB, DSORG, NEWDSNAME, MODDSNAME, BLK (with or without ROUND), TRK, CYL or SPACE(*size*). These functions update the Format 1 DSCB (Data Set Control Block) of the active data set under ENQUEUE protection, and are therefore monitored by PDSEAUTH.
- ***FIXPDS*** subcommand with RELEASE for a PDSE data set. This function executes the PARTREL macro, which is monitored by PDSEAUTH.
- ***LLA*** subcommand. It invokes the LLACOPY macro to update directory entries in LLA-managed libraries, and is therefore monitored by PDSEAUTH.

Authorizing PDSEAUTH

To APF-authorize the PDSEAUTH security module, perform the following steps:

1 Move PDSEAUTH to an APF LINKLIST library and add PDSEAUTH to 'SYS1.PARMLIB(IKJTSO00)' in category AUTHTSF. Category AUTHTSF controls which programs are authorized when invoked by IKJEFTSR.

NOTE In principle, PDSEAUTH need not be in an APF LINKLIST to be APF-authorized. However, if it is not, StarTool FDM will be unable locate PDSEAUTH when it is used from ISPF. This problem occurs because ISPF cannot be APF-authorized.

2 After copying PDSEAUTH to the LINKLIST library, delete it from *somnode*.PDSEvrm.LOAD, since it must be loaded from an authorized library.

3 Update the TSO/E PARMLIB with your PDSEAUTH settings. To do so, you can either perform an IPL, or update TSO/E values dynamically from TSO by typing the following command:

```
PARMLIB UPDATE(00)
```

IMPORTANT! You must be authorized to use the TSO PARMLIB command. In addition, there must be an entry for PARMLIB in member IKJTSO00 in category AUTHCMD.

4 If your site has CA-ACF2, add PDSEAUTH to the command limiting list so that ACF2 recognizes PDSEAUTH as a load module (and not a CLIST).

Authorizing IDCAMS

The IDCAMS subcommand module is invoked through IKJEFTSR to start most IDCAMS subcommands. The following IDCAMS functions require authorization:

- DEFINE with RECATALOG
- DELETE with RECOVERY
- EXPORT (for a BCS)
- IMPORT (for a BCS)

- PRINT (of a ICF catalog)
- REPRO (for a BCS copy or merge)
- VERIFY (for a BCS)
- All CACHE manipulation commands

If you use any of these functions in StarTool FDM, you must APF-authorize IDCAMS. To do so, perform the following steps:

1 Move IDCAMS to an APF LINKLIST library and add IDCAMS to 'SYS1.PARMLIB(IKJTSO00)' in category AUTHCMD. Category AUTHCMD controls which programs are authorized when invoked by IKJEFTSR.

NOTE In principle, IDCAMS need not be in an APF LINKLIST to be APF-authorized. However, if it is not, StarTool FDM will be unable locate IDCAMS when it is used from ISPF. This problem occurs because ISPF cannot be APF-authorized.

2 After copying IDCAMS to the LINKLIST library, delete it from *somnode*.PDSEvrm.LOAD, since it must be loaded from an authorized library.

3 Update the TSO/E PARMLIB with your IDCAMS settings. To do so, you can either perform an IPL, or update TSO/E values dynamically from TSO by typing the following command:

```
PARMLIB UPDATE(00)
```

IMPORTANT! You must be authorized to use the TSO PARMLIB command. In addition, there must be an entry for PARMLIB in member IKJTSO00 in category AUTHCMD.

4 If your site has CA-ACF2, add IDCAMS to the command limiting list so that ACF2 recognizes IDCAMS as a load module (and not a CLIST).

Turning on StarTool FDM Security

After you follow the security customization instructions, you or a security system representative need to inform your security system of

StarTool FDM resources, define profile names, and authorize appropriate personnel access to StarTool FDM resources. Then perform the following steps to turn on StarTool FDM's internally managed security.

1 Change #INITIAL macro parameter $TYPEACF in options module PDS#OPT4 from NONE to any other supported value. This enables StarTool FDM security checking.

2 Assemble and link SAMPSECR (or SAMPSECC) and SAMPOPT4 with StarTool FDM rather than as stand-alone modules to simplify module management.

3 Exit StarTool FDM and restart it to obtain current versions of PDS#OPT4 and PDS#SECI.

Verifying Security Settings

After StarTool FDM initializes properly, verify that users are being placed into the correct class. To check this,:

1 Log on as a user in each of the different restriction classes, enter StarTool FDM normally (with WTPMSG and MSGID enabled), and check for any messages.

2 Perform a restricted function to verify that restricted subcommands and resources are properly protected. You should get an error message similar to the following for each attempted use of a protected resource.

```
>------>compress shr
PDS920E Use of COMPRSHR is restricted
```

Such messages appear after the normal CONTROL subcommand informational messages PDS100I, PDS030I, PDS031I, PDS036I and PDS046I.

If #INITIAL macro parameter $TYPEACF=DYNA has been defined, your system security package also reports this as an attempted security violation.

3 Unless the RESTRICT resource itself is restricted, verify the list of restricted resources for an individual user as shown in the following example:

```
>------>control restrict
PDS038I Use of FIXNAME is restricted
```

```
PDS038I Use of FIXANYD is restricted
PDS038I Use of FIXDSCB is restricted
PDS038I Use of REPLCI is restricted
PDS038I Use of COMPRSHR is restricted
```

Troubleshooting Security Issues

The following error conditions are commonly encountered when first setting up customized security for StarTool FDM.

PDSEAUTH or PDS#SECI Modules Not Found

If StarTool FDM issues CSV003I error messages during initialization for PDSEAUTH or PDS#SECI, either PDSEAUTH is not authorized or the module was not linked with PDSEAUTH properly. StarTool FDM assumes access to the subcommand table was denied on each call, but the user eventually is given access using the lowest security table.

Module PDS#DYNA Not Found

If StarTool FDM issues a CSV003I message during initialization for PDS#DYNA, the module was not linked with StarTool FDM properly. Until this situation is corrected, StarTool FDM disables dynamic security and uses the PDS#SECI module alone to restrict user access to subcommands.

Unmatched Security Token Name

If an unexpected resource name is passed to PDS#SECI, one of the following messages is issued and the user is considered not eligible for the group identified by the passed token.

- STARTOOL TOKEN NAME NOT MATCHED — Issued by sample routine SAMPSECC for #INITIAL macro parameter $TYPEACF=CALL.
- STARTOOL TOKEN *token-name* NOT KNOWN — Issued by sample member SAMPSECR for the other values of the #INITIAL macro $TYPEACF parameter (LOGNO, RACF, TOP, ACF2 or DYNA).

If this happens with all token names passed, the user is still allowed access as a member of the lowest-level group defined to PDS#SECI.

If you use PDS#SECI to restrict subcommand access for multiple classes of StarTool FDM users, ensure that the resource (or token) names coded

on the #RESUSE macro statements correspond to the names expected in the PDS#SECI exit and by RACF, CA-Top Secret or CA-ACF2.

Chapter 5

Adding User-Defined Commands and Panels

The panel processing facilities of ISPF provide an interpretive language for selecting and formatting commands that add new functions to StarTool FDM. StarTool FDM incorporates these ISPF functions to let you add user-defined commands to the Utility (UT) command panel. You can also customize other panels in StarTool FDM.

This chapter discusses the following topics:

Displaying User Commands

User panels are displayed by the Option (0) command in StarTool FDM. This provides automatic documentation for user-added functions.

To access the user command panel, type UT as a primary command or line command, as appropriate for the panel. You can also use the **O** option. Select any of the user commands; the panel processing section builds an appropriate request string. The request string is constructed using literals and variables supplied by StarTool FDM, ISPF, and the user.

Dynamic User Command Processing

User-defined commands are added by changing the Utility panel. Changes may be dynamic (single-session use by the current user) or permanent (reusable by multiple users).

Your users add their own dynamic commands to the Utility panel by typing over panel fields. User command processing activates when StarTool FDM determines that a command is not one of its standard commands. The command is passed to the appropriate user panel in the dialog variable ZCMD, a standard dialog variable commonly used within ISPF as the command input variable. The panel is then invoked with the non-display feature, allowing the INIT and PROC sections to process the command. These sections format a request to be processed by StarTool FDM as either a STARTOOL command or as an external process using the ISPF SELECT service. The request is returned to StarTool FDM by placing the request string in the standard dialog variable PDSSEL.

Permanent Panel Customization

Sample command-action pairs are imbedded in the TRANS parameter list of the supplied Utility (UT) user command panel and other panels. Add your own pairs to the panel using EDIT. Experienced ISPF panel programmers can take advantage of several processing statements for more complex request formatting.

The following examples are from the TRANS section of different panels.

```
ACTIVE,'MEMLIST: LAST(8) ID(&Zuserid)'
```

ACTIVE is a primary command to request a MEMLIST of source members that were updated recently by the user. This example is used in panel PDSOPUX to create a new command entered on the command line. Use &Z*userid* in the ID filter option to request members created or updated by the current user.

```
NONE,'ATTRIBUTE &PDSMEM NOREF NORENT NOREUS'
```

NONE is a line command for a LOADLIB member list. This example is used in panel PDSLLUX to create a new line command to remove attributes from a load module. Variable &PDSMEM indicates the current member.

```
ASM,'CMD(%ASMCL &PDSMEM &PDSDSN)'
```

ASM is a line command for a source member list. This example is used in panel PDSLOUX to create a new line command to assemble the member for a user CLIST. The member and fully qualified data set name without quotes are passed to the CLIST as separate parameters to simplify CLIST processing. The ISPF SELECT service is requested by providing the format 'CMD(...)'.

```
SUM,'PGM(LOADSUM) PARM(&PDSDSN) NEWAPPL(ANY) PASSLIB'
```

SUM is a primary command for a load library. This example is used in panel PDSOUUX to create a new command to call a user program to summarize attributes of the library. The fully qualified data set name without quotes is passed to the program as a parm.

```
ALC,'PANEL(PDSALCMN)'
```

ALC is a line command for either source or load members that can be added to panels PDSLOUX and PDSLLUX to create a line command for allocating the library and member to a given DDNAME. Panel PDSALCMN has entry lines for DDNAME and disposition type (SHR/OLD). The processing section looks like the following:

```
VER(&DDNAME,NB,NAME)
       VER(&STAT,LIST,OLD,SHR)
       IF (&PDSVOL EQ &Z) &CVOL=&Z
       IF (&PDSVOL NE &Z) &CVOL=' VOL(&PDSVOL)
    UNIT(SYSALLDA)'
       &AL='ALLOCATE'
       &PDSSEL='CMD(&AL DD(&DDNAME)
    DA(''&PDSDSN(&PDSMEM)'') &CVOL &STAT)'
```

Formatting a TSO command requires additional input from the user to include TSO command operands. Do this by adding a user command that displays a new panel. After the data are supplied and the user presses the ENTER key, the processing section of the panel then formats the request. The panel to be displayed can be a standard StarTool FDM entry panel to which the user wants a direct path.

```
PT,'PANEL(PDSLOPR)'
```

PT is a line command for a source member list. This example is used in panel PDSLOUX to create a new line command to go directly to the PRINT option entry panel.

```
MONTH,'MEMLIST : MONTH &OPERAND'
```

User commands can optionally use operands. `MONTH` is a line command for a source member list in panel PDSLOUX. If you type `MONTH`, a MEMLIST is built for all members updated in the last 30 days. If you type `MONTH ID(XYZ)`, a MEMLIST is built for all members updated in the last 30 days by user `XYZ*`.

Panel Names and Dialog Variables

Some panels process commands entered on the command line. Others process commands entered in the option field for line commands. Both panels types provide source code that can be copied into user-defined commands.

Primary Option Panels

The following are the panel names for primary option panels. To access the source code for these panels, type **UT** as a primary command:

- PDSCXUX for CAX
- PDSAAUX for LISTA/DDNAME
- PDSLFUX for LISTC/LISTF
- PDSVVUX for LISTV
- PDSOPUX for Log and MEMLIST for source libraries
- PDSOSUX for Log for sequential or VSAM data sets
- PDSOUUX for Log, MEMLIST and CSECTS for load libraries
- PDSWOUX for WORKPAD

Panels for Processing Line Commands

The following are panel names for processing line commands. To access the source code for these panels, type **UT** as a line command:

- PDSLXUX for CAX function

- PDSLSUX for CSECTS function
- PDSLAUX for LISTA/DDNAME function
- PDSLCUX for LISTC/LISTF function
- PDSLVUX for LISTV function
- PDSLOUX for source member lists
- PDSLLUX for load member lists
- PDSWOUX for WORKPAD

Standard Dialog Variables

In nearly all dialogs, including primary option panels, StarTool FDM uses the following standard variables:

Name	Description	Values
ZCMD	Panel command line	
PDSSEL	Request to be returned to FDM	
PDSTNAME	Name of current active table	
PDSDSN	Name of the current data set	
PDSVOL	Volume name if VOLUME key was used in allocation; blank otherwise	
PDSVOLAL	Volume name of allocated dataset	
PDSVOLK	Volume keyword, or blank if PDSVOL is blank	General form: VOL(&PDSVOL)
PDSUNIT	Unit keyword, or blank if PDSVOL is blank	General form: UNIT(SYSALLDA)
PDSDSORG	Data set organization	Values: ■ PO (partitioned) ■ PS (sequential)
PDSTYPE	Library type	Values: ■ U (load/binary) ■ blank (other)

Name	Description	Values
OPERAND	Operand entered in user command	

SET Dialog Variables

If you select #INITIAL macro parameter $LOGO=LOGO or $LOGO=NONDISP, you can modify panel **PDSZINST** to provide installation defaults for all dialog variables available in the SET panels. These panel defaults override values coded for the #VDEFINE macro in PDS#OPT4. The panel also provides a means of customizing defaults for variables not modifiable using #VDEFINE.

Line Command Variables

Panels that process line commands have panel-specific variables associated with their use.

CAX Line Command Variables (Panel PDSLXUX)

PDSXDSN - Dataset name of catalog line entry
PDSXVOL - Volume name of catalog
PDSXTYPE - Catalog type (ICF, VSAM, RECV, MSTR)
PDSXSTAT - Catalog status
PDSXADDR - Hexadecimal address
PDSXNUM - Sequential number

CSECTS Line Command Variables (Panel PDSLSUX)

PDSSTYPE - SECTION type (CSECT, ENTRY, COMMON, ...)
PDSSCSEC - CSECT name
PDSSENTR - ENTRY name
PDSSHADR - Hexadecimal address
PDSSHLEN - Hexadecimal length
PDSSSEG - RMODE/AMODE
PDSSIN - Segment

LISTA Line Command Variables (Panel PDSLAUX)

PDSADDN - DDNAME on LISTA line
PDSADSN - Data set name on LISTA line

PDSAALLC - Allocation type (OLD, SHR, NEW, MOD)
PDSADISP - Disposition (PASS, KEEP, DLET, CTLG, UNCT)
PDSACDSP - Conditional disposition (KEEP, DLET, CTLG, UNCT)
PDSAOCNT - Count of opens for the data set; 0-9, or * if more

LISTC Line Command Variables (Panel PDSLCUX)

PDSCCAT - Cataloged indicator (-/Y/N)
PDSCVTOC - VTOC indicator (-/M/Y/N)
PDSCDSOR - Data set organization
PDSCRF - Record format
PDSCVOL - Volume ID
PDSCDSN - Data set name
PDSCLREC - Logical record length
PDSKEYL - Key length
PDSCCDAT - Date created
PDSCEDAT - Expiration date
PDSCTOT - Total tracks
PDSCDIR - Total directory blocks
PDSCATYP - Allocation type
PDSCBLKS - Block size
PDSCRKP - Relative key position
PDSCRDAT - Date referenced
PDSCUPD - Updated flag
PDSCEXT - Extents
PDSCFREE - Free tracks
PDSCDIRU - Directory blocks used
PDSCSEC - Secondary units

LISTV Line Command Variables (Panel PDSLVUX)

PDSVVOL - Volume name on LISTV line
PDSVADDR - Unit address
PDSVTYPE - Unit type (3380, 3390, etc.)
PDSVATTR - Mount attributes
PDSVCNT - Use count
PDSVTCYL - Total free cylinders
PDSVTTRK - Total free tracks
PDSVXNUM - Total free space
PDSVDSCB - Total free data set control blocks (DSCBs)
PDSVLCYL - Largest free cylinder
PDSVLTRK - Largest free track
PDSVINDC - Status indicator
PDSVSTAT - Mount status

PDSVVTOC - VTOC address (cchh) in displayable hexadecimal
PDSVVSIZ - VTOC size in tracks
PDSVVIRS - Total free VIRs

MEMLIST Line Command Variables for Load Members (Panel PDSLLUX)

PDSMEM - Member name of current entry
PDSDATA - Any date entered in data field on MEMLIST line
MEMLTTR - TTR in displayable hex
MEMLLENG - Length in displayable hex
MEMLLKB - Length in K (1024 byte) units
MEMLENTY - Entry point in displayable hex
MEMLMNAM - Main name
MEMLMTTR - Match name
MEMLATT1 - Module attribute
MEMLATT2 - Module attribute
MEMLDC - Module attribute (DC or blank)
MEMLTEST - Module attribute (TEST or blank)
MEMLAPF - Module attribute (AC=1, NOVS, or blank)
MEMLMODE - Module attribute (A31, RANY, or blank)

MEMLSSI - SSI data in displayable hex or blank
MEMLALIS - Alias-of member name
MEMLLDAT - LEN/LKED field

MEMLIST Line Command Variables for Source Members (Panel PDSLOUX)

PDSMEM - Member name of current entry
PDSDATA - Any date entered in data field on MEMLIST line
MEMLVMOD - Version and modification level (or ALIAS)
MEMLCDAT - Creation date
MEMLMDAT - Last modification date
MEMLMTIM - Last modification time
MEMLMID - Last user ID to modify the member
MEMLISIZ - Initial size
MEMLCSIZ - Current size
MEMLTTR - TTR in displayable hex
MEMLALIS - Alias-of member name

WORKPAD Line Command Variables for Source Members (Panel PDSLTUX)

```
PDSTTYPE   - Command type (-, blank, P, D or T)
PDSTCMDD   - Command data
PDSTMEMB   - Member group
PDSTVOL    - Volume serial
```

Vendor Panel Integration with StarTool FDM

You can connect StarTool FDM to and from other vendor products by customizing the following VENDOR panel. Attach it to your ISR@PRIM panel in StarTool FDM through option **V** in the VENDOR panel translate section:

```
V,'PANEL(VENDOR)'
```

Users type **V** on the ISR@PRIM main menu to go to the **VENDOR** panel, which is already set to return to StarTool FDM. You can expand the **VENDOR** panel to include other software in the future.

```
)BODY EXPAND(!!)
%!-!  Vendor Supplied Software  !-!
%Option ===>_ZCMD ! !+
%
%   1 +StarTool   - Invoke StarTool as a command
%   2 +StarTool   - Invoke StarTool with a panel
%   3 +Other      - Invoke other vendor software (not supplied)
%   X +Exit       - Return to primary option menu
+
+Press%ENTER+to continue; Enter%END Command+to exit.
)PROC
  &ZSEL = TRANS( TRUNC (&ZCMD,'.')
                 1,'CMD(STARTOOL *) NEWAPPL(ISR)'
                 2,'PANEL(PDS@PRIM) NEWAPPL(ISR)'
                ' ',' '
                 X,'EXIT'
                 *,'?' )
  &ZTRAIL = .TRAIL
)END
```

Alternatively, you can modify one of your existing selection menus to invoke StarTool FDM by including one of the following commands in the translate section of the panel, where *s* is the StarTool FDM option.

- `s,'PANEL(PDS@PRIM)'` — Invokes StarTool FDM and displays the `PDS@PRIM` testing panel, which may be customized for production use if desired.
- `'s,CMD(STARTOOL)'` — Invokes StarTool FDM in the default mode recommended for production use.

Chapter 6

Production Environment Setup

Executing StarTool FDM from the Installation Libraries

Test your StarTool FDM installation using CLIST members `LIBDEF`, `LIBDEF2` or `LIBDEF3`. All three members execute StarTool FDM from the installation libraries. All reside in library *somnode*`.PDSE`*vrm*`.CLIST`.

Copy the desired `LIBDEF` CLIST to a common CLIST library and rename it to `STARTOOL`, `PDSTOOLS`, or `PDSE`. Change data set names as required.

Each CLIST behaves slightly differently.

- `LIBDEF` invokes StarTool FDM using the last data set referenced as the active data set. Invoke this CLIST as follows:

  ```
  TSO %STARTOOL
  ```

- `LIBDEF2` invokes StarTool FDM through the `PDS@PRIM` panel. This makes it easy to execute a test version of StarTool FDM by specifying an alternate name for the `STARTOOL` load module. Invoke this CLIST as follows:

  ```
  TSO %LIBDEF2
  ```

CAUTION! Do not use the LIBDEF2 CLIST in production.

- LIBDEF3 prompts for a data set name if necessary and then invokes StarTool FDM with that dataset. Invoke this CLIST as follows:

  TSO %STARTOOL [*your.data.set.name*]

Invoking StarTool FDM With Alternate Entry Names

StarTool FDM recognizes short and long entry names.

- ***Short entry names*** perform the indicated service and terminate. The names supported are CAX, DDN, LA, LC, LF, LV and WO. StarTool FDM terminates when all pending commands have been processed and StarTool FDM normally goes to the log display.
- ***Long entry names*** also perform the indicated service but StarTool FDM continues processing until termination is requested. The names supported are CAXWA, DDNAME, LISTALL, LISTCA, LISTF, LISTV and WORKPAD.

For either type of entry name, your ISPF profile data set is used as the current data set. If the indicated service supports operands, they can also be entered.

As an example of invoking a short alias name of StarTool FDM under ISPF, type:

```
TSO LV IMS
```

To invoke the same service as a long entry name from ISPF, type:

```
TSO LISTV IMS
```

Decide which StarTool FDM aliases to install and document at your installation.

There are two installation methods: using the linkage editor or using StarTool FDM itself. For example, to assign the alias names LC and LISTF to StarTool FDM, perform one of the following:

1 Relink StarTool FDM using JCL and controls based on the linkage edit step for member PDS#OPT4. Insert the following control statement just before the NAME statement:

```
ALIAS LC,LISTF
```

2 From StarTool FDM in the *somnode*.PSDE*vrm*.LOAD installation load library, type the following subcommands:

```
ALIAS STARTOOL LC
```

```
ALIAS STARTOOL LISTF
```

ISPF Application ID

When you invoke StarTool FDM in an ISPF environment, StarTool FDM forces an ISPF application ID (APPLID) of ISR. Because StarTool FDM is a shared server for its ISPF-supported subcommands, this APPLID is in effect for subcommands such as EDIT, EDREC, ISPF and BROWSE as well as STARTOOL.

Serena highly recommends that you retain the ISR APPLID. Changing the APPLID causes the following issues:

- ***Edit Recovery*** — Edits that fail while EDIT is invoked under StarTool FDM cannot be recovered by ISPF EDIT. Conversely, edits that fail under ISPF EDIT cannot be recovered by EDIT processing under StarTool FDM.
- ***PF Keys*** — Any PF key defined under the APPLID used by StarTool FDM retains that APPLID for the EDIT, ISPF and BROWSE subcommands.

To inspect or manipulate dialog variables in the ISR application from StarTool FDM using ISPF Dialog Test option 3, do the following:

1 In TSO READY mode, invoke the VARIABLE CLIST by typing the following command:

```
TSO% VARIABLE
```

2 Invoke StarTool FDM.

3 From the StarTool FDM **Primary Option Menu,** select option **7** to bring up the **ISPF Dialog Test** panel.

4 From the **ISPF Dialog Test** panel, select option **3**.

Installing StarTool FDM into Production

Use the StarTool FDM `COPY` subcommand to copy members from the product installation libraries to your production libraries. StarTool FDM automatically requests a `COPYMOD` operation if needed.

A list of installation libraries and their customizable members appears in Appendix B, "StarTool FDM Libraries and Members".

LOAD Members

Copy *somnode*`.PDSE`*vrm*`.LOAD` into a system LINKLIST library, into a STEPLIB, or copy its reentrant members into `SYS1.LPALIB` to avoid conflicts with the ISPF `ISPLLIB`.

LINKLIST Considerations

If you place StarTool FDM members into a LINKLIST library, be careful that you do not cause a new library extent to be taken. If modules are placed into a new extent in a LINKLIST library, they cannot be used until you perform an IPL.

An LLA refresh is not sufficient to access modules that reside in a new extent, since LINKLIST data sets are opened during the IPL process. The LINKLIST DEB (Data Extent Block) cannot be extended through conventional methods.

CAUTION! `S106-0E` ABENDs occur if you attempt to use a StarTool FDM module from a new LINKLIST extent.

LPALIB Considerations

If you move the main STARTOOL load module and its aliases into the LPALIB, you should also move modules PDS#OPT4, PDSEAUTH, PDSPBROW, PDSPEDIT and PDSRX with them.

You also need to create ISPTCM entries for these members in ISPF, as follows:

```
ISPTCM ENTRY,ENTNAME=STARTOOL,FLAG=42
```

If any of the alternate entry point names are assigned to the STARTOOL load module, a similar ISPTCM entry is needed for each name.

See the *IBM ISPF Installation and Customization* manual for more information.

Panels and Messages

StarTool FDM panels and message members may be made available to your production environment in several ways. The option you choose should take into consideration any plans to customize production panels or messages.

Split Standard and Tutorial Panels

It may be the practice at your installation to split ISPF panels into a tutorial set and a set of more active panels. To do this, use the StarTool FDM COPY subcommand to copy panels PDS@:PDSZ from the installation library *somnode*.PDSE*vrm*.PANELS into your standard ISPF panel library. Copy panels PDS0:PDS9 into your tutorial library.

Copying StarTool FDM Panels and Messages into ISPF

StarTool FDM panels and message members may be copied into your system ISPF libraries. Alternatively, you can reallocate your ISPF libraries

to include the StarTool FDM panels and messages with a CLIST similar to the following:

```
PROC 0
/**********  Always concatenate the higher block size first!  ******/
FREE FI(ISPPLIB,ISPMLIB)
ALLOC FI(ISPPLIB) DA('somnode.PDSEvrm.PANELS'     +
      'SYS2.ISPF.PLIB') SHR REUSE   /* MODIFY TO ADD ALL LIBRARIES */
ALLOC FI(ISPMLIB) DA('somnode.PDSEvrm.MSGS',      +
      'SYS2.ISPF.MLIB') SHR REUSE   /* MODIFY TO ADD ALL LIBRARIES */
 PROFILE MSGID                 /* SO StarTool WILL DISPLAY MSGID'S */
```

To do this:

1. Use ISPF to create the CLIST above, customized appropriately for your installation.
2. Exit from ISPF into native TSO (`READY` mode) and execute the CLIST.
3. Reenter ISPF with the ISPF TSO command.
4. Invoke StarTool FDM from ISPF with ISPF Option 6 or as a line command from ISPF Option 3.4.

Compiling ISPF Panels

ISPF panels are normally interpreted at runtime. However, ISPF applications perform better with compiled panels because compiled panels do not need to be reinterpreted each time they display.

If you already use compiled ISPF panels from other vendors and are comfortable with their use, perform the following steps for StarTool FDM:

1. Allocate a panel library with DCB (Data Control Block) attributes similar to the compiled panel libraries of other vendors. Ensure this library has at least 500 directory blocks, since ISPF statistics are added to each member.
2. Go into ISPF Option 7.1 (dialog function test) and enter `ISP@PRIM` as the StarTool FDM panel to test. Enter 2 as the menu option and press ENTER.
3. Panel `ISPPREPA` displays and requests that you:

   `SPECIFY "FROM" AND "TO" DATA SET NAMES BELOW:`

Specify ***** under the **FROM** data set name as the member name specification. Enter the desired **TO** information and press ENTER.

4 ISPF compiles most StarTool FDM panels successfully.

At least fifty panels will not compile because they use extendible areas or specify a panel width as a dialog variable. These must be copied to your production libraries in interpretable form. To do this:

5 Use the StarTool FDM `COPY` subcommand to copy the uncompiled panels from the installation library *somnode*.PDSE*vrm*.PANELS to the desired production library. Use the following command syntax:

```
COPY PDS@:PDS target.data.set NOEXIST
```

Referencing Installation Library Panels and Members

The ISPF `LIBDEF` service can reference StarTool FDM panel members (with `ISPPLIB`) and message members (with `ISPMLIB`). To reference these members in the StarTool FDM installation libraries, use a CLIST such as `LIBDEF` or `LIBDEF3`, which are supplied in the installation library *somnode*.PDSE*vrm*.CLIST.

Alternatively, you can reference panel and message members dynamically using the `PLIB` and `MLIB` operands of the `#DYNLIBS` macro in `PDS#OPT4`.

Change your LOGON procedure allocation for `ISPPLIB` and `ISPMLIB` through a CLIST or by LOGON procedure changes.

Do not use installation library panels or messages if you plan to customize these members. Copy them to a production library first.

HELP Members

Copy the HELP members from *somnode*.PDSE*vrm*.HELP into your SYSHELP concatenation or change your SYSHELP concatenation to include this library.

HELP members are available for your use of `ENCODE` and `DECODE` independently of StarTool FDM. If you plan to do this, you must also make the `ENCODE` and `DECODE` aliases of `PDSDECRY` available for use from TSO.

CLIST Members

Access the CLIST library dynamically through the #DYNLIBS macro CLIB parameter in PDS#OPT4, or copy the CLISTs provided into a general CLIST library. If you use VB CLIST libraries, copy them with ISPF Option 3.3 directly, or convert them with the DUP subcommand of StarTool FDM.

If you are using dynamic CLIST activation for StarTool FDM, copy (and convert) both EDIT macros and general-purpose CLISTs into a general CLIST library.

See member PDSECLST in *somnode*.PDSE*vrm*.CNTL for a sample JOB that copies these members using the DUP subcommand of StarTool FDM.

Skeleton Members

For the following skeleton members, update the STEPLIBs for SYS1.STARTOOL.LOAD to point to your StarTool FDM production load library.

- PDS$CBAT
- PDS$DYNO
- PDS$DYON
- PDS$ID2P
- PDS$NDNO
- PDS$NDON
- PDS$STBJ
- PDS$WBAT

Comparex Integration with StarTool FDM

If Serena® Comparex® is installed at your site and you want to invoke it from StarTool FDM, use a CLIST provided in the StarTool FDM CLIST installation library.

Two Comparex CLIST members are provided in the CLIST installation library *somnode*.PDSE*vrm*.CLIST.

- ***STRCPXIF*** — Use member STRCPXIF if your production Comparex dialog data sets reside in your ISPF library concatenations.
- ***STRCPXI2*** — Modify and rename member STRCPXI2 to STRCPXIF if your production Comparex dialog data sets reside elsewhere. STRCPXI2 contains the necessary LIBDEF statements.

Installation Verification

To verify the production installation of StarTool FDM, perform the following steps:

1 Ensure that you have message prefixes enabled and that you are receiving proper diagnostic information by typing the following command:

```
TSO PROFILE MSGID WTPMSG
```

2 Refresh LINKLIST entries selectively with the LLA subcommand. Type the following:

```
STARTOOL 'linklist.library.with.startool'
LLA (STARTOOL,PDS#OPT4,PDSEAUTH,PDSPBROW,PDSPEDIT)
```

3 Invoke StarTool FDM ***without*** a STEPLIB or ISPLLIB allocation. Type the following command from TSO READY mode:

```
STARTOOL [any.data.set.name]
```

4 If you receive any of the following messages, StarTool FDM is not installed properly:

```
CSV003I REQUESTED MODULE PDS#OPT4 NOT FOUND
CSV003I REQUESTED MODULE PDS#SECI NOT FOUND
CSV003I REQUESTED MODULE PDS#DYNA NOT FOUND
```

5 Verify that you are using the correct version of StarTool FDM and PDS#OPT4. Examine the version number from the PDS100I message and note the identification data in the PDS037I message from a CONTROL DEFAULTS output:

```
PDS030I Global operands: NOPROMPT,NOTRANSLATOR,ALIASINFO,LKEDDATE,RECOVER
PDS030I Global operands: NODSNAME, NOSYSOUT, NOFORM, NODEST
PDS031I Input buffering: RETAIN(9)
PDS036I Largest free storage area is 3164K
PDS046I Largest area above the line is 1950M
PDS037I Installation defaults from PDS#OPT4 2008/04/01 09.31:
Access control method             RACF
Security tables                   SYSTEMSE SYSTEMSN APPLEXP OTHERS
DSN default format                MSG
    . . .
```

The assembly time and date should match the assembly of SAMPOPT4 for the installation of StarTool FDM.

6 If assembly dates and times do not match, type the following subcommand to find the first occurrence of PDS#OPT4:

```
FINDMOD PDS#OPT4 NOSEARCH
```

7 Verify the origin of STARTOOL, PDS#SECI (if linked independently) and PDS#DYNA (if linked independently) in a similar fashion.

To find all occurrences of these modules in LINKLIST or LPA libraries, use the StarTool FDM FINDMOD subcommand without the NOSEARCH keyword.

Appendix A

Installing the PDSE Started Task

The PDSE started task is an optional feature of StarTool FDM. If you plan to use it, install the started task after all other features of StarTool FDM are working satisfactorily. This chapter addresses the following topics:

PDSE Started Task Functions

The PDSE started task provides access to system resources when many system facilities are not available. This can facilitate disaster recovery or other high-impact interventions as needed.

The PDSE started task accesses and alters data sets and members without VTAM, TSO or JES. Using the subsystem interface, PDSE communicates through the system console to perform line mode commands. During its operation, TSO TMP activates dynamically to provide TSO line mode command execution at the console. Operating in line mode, StarTool FDM commands alter data sets and their members like FIXPDS, RESTORE, FIND, REPLACE and ATTRIB.

The PDSE started task communicates with an established subsystem using a special command character identified when the started task is initiated.

Using the PDSE started task, you can avoid full disk volume stand-alone restores or the need to perform several IPLs to return to the normal working production environment.

CAUTION! The PDSE started task needs high-level access to enable it to fix different system problems. Protect your system so that the PDSE started task cannot be misused.

For example, use the **Logon to Console** facility to protect your system consoles. Alternatively, use the PDSE started task only in emergencies and ensure that it is stopped after each use.

Installing the PDSE Started Task

Install the name in SYS1.PARMLIB(IEFSSN00). Add PDSE as a name in this member. (You can use a different name for this started task; however, you must select a name with no more than four characters because of subsystem name length restrictions.) IPL to refresh this table.

Install the JCL procedure in SYS1.PROCLIB(PDSE). Member PDSEPDSE of *somnode*.PDSE*vrm*.CNTL is the base for this. Edit the member to add in the appropriate APF-authorized STEPLIB.

NOTE This member must be present in SYS1.PROCLIB and not some other JES2 procedure library.

Authorizing the PDSE Started Task

Module PDSEPRIM must be placed in an APF-authorized library and must itself be APF-authorized. Other required members may come out of the same library.

Place the modules in SYS1.LINKLIB so the availability of the IEAAPF*nn* list is not a requirement for the activation of PDSE from the console. If SYS1.LINKLIB or a concatenated APF authorized library is to be used, remove the STEPLIB DD statement from the PDSE JCL and copy in subsystem modules PDSEPRIM, PDSEWTO and PDSESSSM. For access to StarTool FDM, copy the STARTOOL load module and its alias, PDSE, as well as options module PDS#OPT4, security module PDSEAUTH, and PDSRX.

For systems with RACF, add the name of your started task in the ICHRIN03 table of authorized started tasks. Give PDSE high authority to update SYS1 or system data sets.

As an example entry for PDSE in the ICHRIN03 table, code:

```
DC        CL8'PDSE'              STARTED TASK NAME
DC        CL8'SYSPDSE'           RACF IDENTIFIER
DC        CL8'SYS1'              RACF GROUP
DC        XL8'8000000000000000'  OPTIONAL, PRIVILEGED USER
```

NOTE Define SYSPDSE to RACF and SYS1.UADS as a TSO user. This suppresses error messages and assigns a default userid (SYSPDSE in this case). If you make PDSE a privileged user as shown above, RACF permits it to access any data set.

Starting the PDSE Started Task

Before starting PDSE, determine which special character to designate as a command character for line mode execution. The default command character is the ampersand (&).

If the ampersand is not a good choice for a command character at your site, change it by calling the PDSE start procedure with the CC keyword parameter. Parameter values include the following:

Parameter Value	Command Character
CC=HY	Hyphen (-)
CC=AT	At symbol (@)
CC=PO	Pound or hash symbol (#)
CC=PE	Period or full stop (.)
CC=SL	Forward slash (/)

Additional choices are documented in the start procedure.

Start PDSE. If you want to use @ for the command character, issue a command like:

```
S PDSE,CC=AT
```

Otherwise, your start command is:

```
S PDSE
```

A CONNECTED message displays from the PDSE started task, prefaced by the command character you specified at startup. For example:

```
s pdse
& CONNECTED
```

Entering PDSE Commands

Enter commands in single subcommand mode. For example:

```
&startool 'sys1.proclib attrib pdse
& OK
IKJ56644I NO VALID TSO USERID, DEFAULT USER ATTRIBUTES USED
PDS230I MEMBER   VER.MOD CREATED  LAST MODIFIED SIZE  INIT  MOD
PDS230I  PDSE     01.11 2001/06/18 2001/06/28  8:38 88  6    88
READY
END
```

The data set name is followed by one subcommand that executes immediately.

TSO commands that use PUTLINE and PUTGET (such as LISTD, DELETE, and RENAME) work using the PDSE started task interface. For example, enter the following command:

```
&listd 'sys1.proclib'
```

Full-screen applications like ISPF do not work with this interface. The TSO EDIT program does not work directly because it requires terminal interactions; however, you can use EDIT if multiple subcommands are made available. No ISPMODE commands can be used.

Several TSO commands are available when entering multiple subcommands. Use these to stack subcommands for StarTool FDM:

TSO Command	Description
EF	Stacks an EDIT command for the data set allocated to FILE(EDITFILE) and stacks EDIT subcommands.
STACK	Executes a command that takes subcommands (like EDIT or STARTOOL).
STACKL	Alias of STACK that also lists each subcommand as it executes.

For example, the following STACKL command invokes the STARTOOL load module, then issues StarTool FDM FIND subcommand.

```
&stackl startool 'sys1.proclib'; find pd* / any /
& OK
IKJ56644I NO VALID TSO USERID, DEFAULT USER ATTRIBUTE USED

STARTOOL 'sys1.proclib'
PDS100I STARTOOL Version v.r.m  20xx
PDS200I DISP UNIT RECFM LRECL BLKSIZE ALLOCTRK FREETRK SECONDARY F
PDS200I SHR  3390    FB    80   23440    1X      30

PDS200I DISP UNIT RECFM LRECL BLKSIZE ALLOCTRK FREETRK SECONDARY F
PDS200I SHR  3390    FB    80   23440    1X      30       22     1  CYL

PDS298I There are 2 users allocated to this data set

FIND PD* / ANY /

** FIND     PDSE
004100 //* A CPU LOOP IN ANY OF THE COMMANDS ISSUED BY THE PDSE

PDS142I 88 lines in this member
PDS146I 1 strings found
PDS300A ENTER OPTION -- DSN=SYS1.PROCLIB, VOL=SER=SCPMV5  MEM=PDSE*
END
```

Following is an example command stream using these commands:

```
&ALLOC file(editfile) da(userid.mid.clist(mytask))
&EF verify; bottom; insert lastline; save
&FREE file(editfile)
```

```
&STACK pdse userid.ispf.text; find pdse* 'any data'
    then(sublist); attrib *
&STACKL edit 'sys1.data(anymember)'cntl;verify;find /abc/
    ;find /xyz/; down 1
```

An END subcommand is not required because it is automatically added as the last subcommand.

To use a different delimiter than a semicolon for EF, STACK or STACKL, type a special character (not alphanumeric, national or %) before any other data. It is used as the delimiter.

For example, type the following for STACK:

```
STACK -pdse userid.ispf.text-find pdse* 'any;data'
then(sublist)- attrib *
```

To avoid swamping a terminal with replies, only the first 30 messages are returned to a terminal. The other messages are available. To see them, issue the L (list) command with a plus sign to tell it where to start. For example, to display (or redisplay) lines 51 through 80 from the last subcommand, type `&L+50`. Then, to display the next 30 lines, type `&L+80`. Next, type `&L+110`.

Terminating the PDSE Started Task

To terminate PDSE, type `&logoff`.

The `& DISCONNECTED` message displays from the PDSE started task as shown in the example below. You can also cancel PDSE. It cleans up and terminates without problems.

```
&logoff
& OK
& DISCONNECTED
```

Appendix B

StarTool FDM Libraries and Members

This section contains the following information:

Distribution and Installation Libraries

StarTool FDM is distributed online, on CD-ROM, or on a 3480 distribution tape with standard labels. After unloading the product files from the distribution media, the following installation libraries are created on the host:

Data Set	Description
PDSE*vrm*.ASSEMBLE	StarTool FDM assembly language source DCB=(RECFM=FB,LRECL=80,BLKSIZE=9040)
PDSE*vrm*.CLIST	StarTool FDM CLISTs DCB=(RECFM=FB,LRECL=80,BLKSIZE=9040)
PDSE*vrm*.CNTL	StarTool FDM general JCL members DCB=(RECFM=FB,LRECL=80,BLKSIZE=6000)
PDSE*vrm*.COPY	StarTool FDM copybooks and macros DCB=(RECFM=FB,LRECL=80,BLKSIZE=9040)
PDSE*vrm*.HELP	StarTool FDM TSO HELP members DCB=(RECFM=FB,LRECL=80,BLKSIZE=9040)
PDSE*vrm*.JCL	StarTool FDM SMP/E JCL members DCB=(RECFM=FB,LRECL=80,BLKSIZE=9040)
PDSE*vrm*.LOAD	StarTool FDM LOAD modules DCB=(RECFM=U,BLKSIZE=18432)

Data Set	Description
PDSE*vrm*.MCS	SMP/E MCS function (full installs) DCB=(RECFM=FB,LRECL=80,BLKSIZE=9040)
PDSE*vrm*.MSGS	StarTool FDM ISPF messages DCB=(RECFM=FB,LRECL=80,BLKSIZE=9040)
PDSE*vrm*.PANELS	StarTool FDM ISPF panels DCB=(RECFM=FB,LRECL=80,BLKSIZE=9040)
PDSE*vrm*.SKELS	StarTool FDM ISPF skeletons DCB=(RECFM=FB,LRECL=80,BLKSIZE=9040)
PDSE*vrm*.TSRC	Public domain test library source code DCB=(RECFM=FB,LRECL=80,BLKSIZE=9040)
PDSE*vrm*.TLOD	Public domain test library load modules DCB=(RECFM=U,BLKSIZE=18432)
SERCOMC.*vrm2*.CNTL	SER10TY licensing JCL DCB=(RECFM=FB,LRECL=80,BLKSIZE=23440)
SERCOMC.*vrm2*.LOAD	SER10TY licensing load modules DCB=(RECFN=U,BLKSIZE=6000)
SERCOMC.*vrm2*.XML	SER10TY licensing XML members

The foregoing library names are prefixed by the high-level qualifier (HLQ) *somnode*, which you provide during the installation process. The StarTool FDM product installation libraries are then copied to host library names of the form:

somnode.PDSE*vrm*.*libtype*

The Serena product licensing libraries are copied to host library names of the form:

somnode.SERCOMC.*vrm2*.*libtype*

User-Customizable Library Members

Many StarTool FDM library members are user-customizable source code modules, CLISTs, or panels; sample source code members; or macros or JCL required for the assembly of user-customizable modules or for the installation and configuration of the product. These user-customizable

members and their related modules are listed in this section alphabetically by library for your reference.

The lists shown here are by no means a complete list of all modules shipped with the product. Non-customizable members are omitted.

Each library also includes a documentation member with a name of the form `$$PDS*` or `$$DOC*`, which itemizes the actual contents of the library, documents its purpose, and described the intended usage of user-customizable members.

IMPORTANT! The `$$DOC*` or `$$PDS*` members shipped with the actual libraries contain the latest available information about library content and user-customizable members. They supersede the content of the *StarTool FDM Installation Guide*.

PDSE*vrm*.ASSEMBLE Members

Member	Description
`$$$PDSE`	Documentation of data set purpose & member usage.
`COMPARE$`	Panels used with COMPARE and the Yale compare.
`COMPAREC`	Panels used with COMPARE and SuperC.
`COMPAREW`	Panels used with COMPARE and COMPAREX.
`COMPAREZ`	Panels used with the Extended Compare Option.
`PDS#EXT*`	Documentation and sample members for StarWarp date exits.
`PDS#HOL*`	Documentation and sample members for StarWarp holiday tables.
`PRINTD`	Panels used with the PRINT subcommand using `PRINTDS`.
`PRINTO`	Panels used with the PRINT subcommand using `PRINTOFF`.
`SAMPDYN1`	Sample dynamic security exit which checks for RACROUTE `'ALTER'` authority.
`SAMPDYN2`	Sample dynamic security exit which checks for RACROUTE authority for class `#PDSAUTH`.

Member	Description
SAMPDYN3	Sample dynamic security exit that uses native CA-ACF2 calls to check subcommand restrictions.
SAMPIMSE	Sample installation exit to allocate the IMS system libraries.
SAMPOPTR	Sample options member used to build PDS#OPT4, the configuration member for testing with restricted user access to high-impact subcommands.
SAMPOPT4	Sample options member used to build PDS#OPT4, the full-function configuration member for StarTool FDM.
SAMPPGMX	Sample user exit for PGMDOC. You can override or add entries to the PGMDOC table with this exit routine.
SAMPSECC	Sample exit for a CALL internal security check interface, used in building PDS#SECI.
SAMPSECR	Sample exit for a SAF security check interface, used in building PDS#SECI.
SAMPTSOE	Sample source code and JCL to invoke StarTool FDM in a non-TSO environment.
SZFRCTAB	StarBat return code table.

PDSE*vrm*.CLIST Members

Member	Description
$$$DOCC	Documentation of data set purpose & member usage.
$PDSLDML	MEMLIST LOADMEML command to add to an active MEMLIST.
$PDSUXMT	XMIT command to transmit a data set or individual MEMLIST members.
$PDSWJCL	WORKPAD or LISTC PASTEJCL command to load from a CUTJCL table.
CMNLOAD*	REXX routines to support ChangeMan ZMF member preload routines.
DSNXREF*	CLISTS to support data set member cross reference checking.

Member	Description
IMPACT*	CLISTS to reconcile load CSECT names and source members.
IMSALLOC	CLIST to acquire IMS data sets.
IMSLOGAL	CLIST to allocate an IMS log.
LCTCLEAN	CLIST to clean up linkage edit control statements in the StarTool FDM log.
PDSDPAN	CLIST to support the DPAN line command in MEMLIST-LIBDEF panel display.
PDSTRAP	OUTTRAP REXX to capture output from TSO commands.
PDSTRAPC	SYSOUTTRAP CLIST to capture output from TSO commands.
STRCPXIF	CLIST to invoke Comparex from FDM; assumes dialogs reside in ISPF library concatenation.
STRCPXI2	CLIST to invoke Comparex from FDM; assumes dialogs reside outside ISPF library concatenation.
Note: The following members are general CLISTs which may be copied into a general system CLIST data set. See CNTL member PDSECLST.	
CDPU	CLIST support for the CDPU line command (this is a GDDM application).
COPYPREP	REXX exec to prepare an output data set for a copy operation and prevent failures.
DECODER	A CLIST with instructions to support ENCODE and DECODE subcommands.
DISPCMDS	CLIST to display active command tables.
LIBDEF	CLIST with LIBDEFs for testing StarTool FDM.
LIBDEF2	Alternate version of LIBDEF which invokes StarTool FDM with PDS@PRIM.
PDSENDC	Detects the end of CLIST mode under ISPMODE.
REEQUAL	CLIST to reset the EQUAL macro.
SAMPPREP	Sample "PREP" CLIST.

PDSE*vrm*.CNTL Members

Member	Description
$$$DOCN	Documentation of data set purpose & member usage.
BINDJCL	Sample JCL for the DB2 bind.
COMPBAT	Sample JCL and controls to execute COMPCHK and CSECTCHK in batch mode.
LCTJCL	Sample JCL to separate MAP JCL or LCT output into PDS members.
PDS#DYNA	Links PDS#DYNA with StarTool FDM.
PDS#OPTJ	Links PDS#OPT4 into PDSE*vrm*.LOAD.
PDS#OPT4	Links PDS#OPT4 with StarTool FDM permanently.
PDS#SECA	Links PDS#SECI with PDSEAUTH for LOG=NO processing.
PDS#SECI	Links PDS#SECI with StarTool FDM.
PDSBATCH	Sample JCL to execute StarTool FDM under IKJEFT01 (the TSO TMP).
PDSCOBOL	Sample JCL to execute StarTool FDM in the background for COBOL members.
PDSDYNAM	Sample JCL to execute StarTool FDM using the TSO/E Environment Service.
PDSECLST	Copy edit macros and general CLISTs using the DUP subcommand.
PDSEPDSE	PDSE started task JCL procedure. Place in library SYS1.PROCLIB(PDSE) after editing.
PDSIEDIT	Sample JCL to execute StarTool FDM and update members with an edit macro.
PDSISPF	Sample JCL to execute StarTool FDM in batch with ISPMODE services.
PDSSQL	Input for the sample DB2 BINDJCL.
REASMLNK	Sample JCL procedure for use with DISASM REASM option.
SZFRCTAB	Links SFZRCTAB return code table into StarBat.

PDSE*vrm*.COPY Members

Member	Description
$$$DOC	Documentation of data set purpose & member usage.
#MACROS	Macros for use in assembling tailoring module PDS#OPT4.
PDS#OPT4	StarTool FDM options tailoring source code member.
SZFRCTG	Macro used with StarBat return code table SZFRCTAB.
SZFTRNSL	StarTool FDM translator ID table.
SZFTRNSM	Macro used with translator ID table SZFTRNSL.

PDSE*vrm*.HELP Members

Member	Description
$$$DOCH	Documentation of data set purpose & member usage.
$PDS	HELP member for StarTool FDM messages.
$PDSINIT	StarTool FDM tutorial member. This is for the PRIMER command with no CUA.
PDS	HELP member (alias of STARTOOL)
PDSE	HELP member (alias of STARTOOL).
PDSTOOLS	HELP member (alias of STARTOOL).
STARTOOL	StarTool FDM HELP member.
STARWARP	HELP member (alias of STARTOOL)

PDSE*vrm*.JCL Members

Member	Description
$$$DOCJ	Documentation of data set purpose & member usage.
PDS	JCL to invoke STARTOOL load module (alias of STARTOOL).

Member	Description
SMP#DYNA	SMP/E USERMOD to link PDS#DYNA with StarTool FDM.
SMP#OPTJ	SMP/E USERMOD to link PDS#OPT4 into PDSE*vrm*.LOAD.
SMP#OPT4	SMP/E USERMOD to link PDS#OPT4 with StarTool FDM.
SMP#SECA	SMP/E USERMOD to link PDS#SECI with PDSEAUTH.
SMP#SECI	SMP/E USERMOD to link PDS#SECI with StarTool FDM.
SMPACC	SMP/E ACCEPT of StarTool FDM.
SMPALLOC	IEFBR14 allocation of StarTool FDM target and DLIB data sets.
SMPAPPLY	SMP/E APPLY for StarTool FDM.
SMPAPPUS	SMP/E APPLY USERMODS (StarTool FDM maintenance).
SMPCDDEF	Supplemental data definitions to execute after SMPDDDEF for a CD-ROM or online media install.
SMPCDREC	SMP/E RECEIVE for StarTool FDM and load of optional data sets, for CD-ROM or online media install.
SMPCSI	SMP/E allocate and initialize a new CSI and other SMP/E data sets for StarTool FDM.
SMPDDDEF	SMP/E UCLIN for DDDEF's and zone definitions.
SMPPROC	Sample SMP/E procedure for StarTool FDM.
SMPPTF*	SMP/E PTF modules.
SMPRECUS	SMP/E RECEIVE USERMODS (StarTool FDM maintenance).
SMPRECV	SMP/E RECEIVE for StarTool FDM and load of optional data sets, for tape install.
STARTOOL	JCL to invoke STARTOOL load module.
SZFTRNSL	JCL for translator ID table.

PDSE*vrm*.LOAD Members

Member	Description
COMPAREC	SuperC interface for StarTool FDM.
COMPAREW	COMPAREX interface for StarTool FDM.
COMPAREZ	Extended Compare Option for StarTool FDM.
DECODE	Alias of PDSDECRY for use of DECODE independent of StarTool FDM.
ENCODE	Alias of PDSDECRY for use of ENCODE independent of StarTool FDM.
PDS#OPT4	StarTool FDM default options tailoring member.
PDSDECRY	StarTool FDM decryption module.
PDSEAUTH	StarTool FDM authorized functions.
PDSENCRY	StarTool FDM encryption module (alias of PDSDECRY).
PDSESSSM	PDSE subsystem interface module.

PDSE*vrm*.MESSAGES Members

Member	Description
$$$DOCM	Brief documentation of data set purpose and member usage.
PDS#10	StarTool FDM main message member.
PDS#20	StarTool FDM translate message member; this supports the TRANS command.
PDS#30	StarTool FDM messages for PEDIT and PBROWSE.
PDS#40	StarTool FDM messages for PEDIT Selective Edit.
PDS#45: PDS#77	Miscellaneous message members.

PDSE*vrm*.PANELS Members

Member	Description
PDS@PRIM	StarTool FDM primary panel; used to enter StarTool FDM with data set prompting.
PDSDB*	StarTool FDM DB2 panels.
PDSIMS: PDS*IM	StarTool FDM IMS panels.
PDSMENU	StarTool FDM primary panel; you can toggle to this with MENU STARTOOL.
PDSMENUW	StarWarp primary panel; you can toggle to this with MENU STARWARP.
PDS0:PDS9	StarTool FDM tutorial panels.
PDSMENUS	StarTool FDM option menus.
PDSMENUX	User and utility command menu.
PDSPN*	StarTool FDM table panels.
PDS*UX	StarTool FDM user and utility command panels; these panels also support dynamic commands.
PDSZINST	StarTool FDM installation SET defaults panel.
SZFIDY*H	IMS Option data entry panels.

Appendix C

Customizing StarTool FDM

This appendix discusses how to customize some StarTool FDM facilities and gives some customization examples.

Tailoring SAMPOPT4

The following code sample shows a SAMPOPT4 options tailoring member for assembly and linking as PDS#OPT4.

CAUTION! Do not use this sample as is for generating modules. It is generic, and does not include the latest changes to the PDS#OPT4 copy code that is distributed with each StarTool FDM release.

```
PDS#OPT4 TITLE 'StarTool INITIALIZATION DEFAULTS CSECT'
PDS#OPT4 CSECT ,
START    DC    CL8'PDS#OPT4'
         DC    CL16' &SYSDATE &SYSTIME '
*NOTE: THE FIRST MACRO INVOKED IS #INITIAL; IT SPECIFIES THE "CALL"
*      SECURITY INTERFACE AND TWO #CONGLBL PARAMETERS.  NOTE THE
*      CONTINUATION MARK IN COLUMN 72 AND CONTINUATIONS IN COLUMN 16.
*---+----1----+----2----+----3----+----4----+----5----+----6----+----7-
         #INITIAL $TYPEACF=CALL,                                      X
               #CONGLBL=TRANSLAT+ALIASINF,                            X
               @DSAT=DSAT,                                            X
               @DVOL=DVOL,                                            X
               @HELP=HEL,                                             X
               @EDIT=%VSAMFED,                                        X
               SLCSEL=EDIT
*
         #DYNCMDT (PLIST,2,'SELECT CMD(STARTOOL FILE(ISPPLIB) ISPXEQS LX
               ISTC 20 PROMPT','PLIST Command')
         #DYNLIBS PLIB=SYS2.SERENA.PDSEvrm.PANELS,                    X
               MLIB=SYS2.SERENA.PDSEvrm.MSGS,                         X
               CLIB=(''SYS2.SERENA.PDSEvrm.CLIST'',''SYS2.CLISTS'')
*
*NOTE: THE #VDEFINE MACRO SETS GLOBAL "SETALL" AND "SETCOLOR" DEFAULTS.
*      NOTE THE CONTINUATION MARK IN COLUMN 72 AND CONTINUATIONS
*      IN COLUMN 16.
*---+----1----+----2----+----3----+----4----+----5----+----6----+----7-
         #VDEFINE (PDSCLIN,CL8'GREEN',                                X
               PDSADDED,CL3'NO')
*
* #VDEFINE VARIABLES ARE DESCRIBED WITH THEIR DEFAULTS AS SHIPPED WITH
* THE PRODUCT IN THE TABLE BELOW.
*
* VARIABLE | SET OPTN | DEFAULT     | DESCRIPTION
*----------+----------+-------------+--------------------------------+
* CSRC     | SETALL   |CL8'COPYBOOK'| SOURCE VIEW IN EDITOR          |
* PDSALUP  | SETALL   | CL3'NO'     | AUTOMATIC EDIT ALIAS RESYNCH   |
* PDSCAUTO | SETALL   | CL3'NO'     | AUTOMATIC LISTC TABLE SAVE     |
* PDSCUA   | SETALL   | CL3'YES'    | CUA PROCESSING TO BE PERFORMED |
* PDSCVER  | SETALL   | CL3'YES'    | CONFIRM DATA SET DELETE IN LISTF|
```

```
* PDSENDX  | SETALL   | CL3'YES'    | TERMINATION PROMPT              |
* PDSGBLP  | SETALL   | CL3'YES'    | PROMPT BEFORE ANY GLOBAL COMMAND|
* PDSMEMP  | SETALL   | CL3'NO'     | PROMPT AFTER MEMLIST SUBCOMMAND |
* PDSMVER  | SETALL   | CL3'NO'     | CONFIRM MEMBER DELETE IN MEMLIST|
* PDSSEPCH | SETALL   | CL1';'      | COMMAND SEPARATOR CHARACTER     |
* PDSSPAC  | SETALL   | CL3'YES'    | READ VTOC FOR VOLUME SPACE      |
* PDSSPWA  | SETALL   | CL3'NO'     | WAIT TO READ VTOC IF RESERVED   |
* PDSWAUTO | SETALL   | CL3'YES'    | AUTOMATIC SAVE OF WORKPAD       |
* PDSWMODE | SETALL   | CL3'NO'     | AUTOMATIC EXECUTE MODE          |
* PDSCLIN  | SETCOLOR | CL8'RED'    | COLOR OF INPUT FIELD            |
* PDSCLTL  | SETCOLOR | CL8'YELLOW' | COLOR OF THE TITLE              |
* PDSCLHI  | SETCOLOR | CL8'WHITE'  | COLOR OF HILITE TEXT            |
* PDSCLOW  | SETCOLOR | CL8'TURQ'   | COLOR OF NORMAL TEXT            |
* PDSCLAC  | SETCOLOR | CL8'YELLOW' | COLOR OF ACTION BAR             |
* PDSCLWN  | SETCOLOR | CL8'BLUE'   | COLOR OF THE WINDOW             |
* PDSCLT1  | SETCOLOR | CL8'TURQ'   | COLOR OF TABLE KEY              |
* PDSCLT2  | SETCOLOR | CL8'BLUE'   | COLOR OF TABLE TEXT             |
* PDSHIAC  | SETCOLOR | CL8'REVERSE'| ACT BAR HILITE (REVERSE/USCORE) |
*----------+----------+-------------+---------------------------------+
*
         #PASSNAM (ZAP,2,LISTA,0,LISTC,0)
*
*NOTE: SYSTEMSE IS THE FIRST TOKEN NAME; IT HAS NO RESTRICTIONS
SYSTEMSE #RESUSE ,
*
*NOTE: SYSTEMSN MAY NOT USE FIXRESET OR COMPRSHR
SYSTEMSN #RESUSE (FIXRESET,COMPRSHR)
*
*NOTE: APPLEXP RESTRICTIONS:
APPLEXP  #RESUSE (CONTROLR,FIXNAME,FIXANYD,FIXDSCB,FIXMAX,             X
               REPNOSTA,REPLCI,FIXRESET,COMPRSHR)
*
*NOTE: RESTRICTIONS FOR EVERYONE ELSE:
OTHERS   #RESUSE (CONTROLR,FIXNAME,FIXANYD,FIXDSCB,FIXMAX,             X
               REPNOSTA,REPLCI,FIXRESET,COMPRSHR,FIXDCB,FIXALLOC,      X
               FIXEXPDT,REPLACEL,MAPMOD,ZAP,SAVELOAD,SVCMAP,FINDMOD, X
               ATTRMODL,ALIAS,RESTOREL,REPROL,LLA)
*NOTE: #GENER IS SPECIFIED LAST TO GENERATE THE PDS#OPT4 CSECT
         #GENER  ,
         END
```

Tailoring SAMPSECR

The following code sample shows a SAMPSECR security tailoring member for assembly and linking as PDS#SECI.

CAUTION! Do not use this sample as is for generating modules. It is generic, and does not include the latest changes to the PDS#SECI copy code that is distributed with each StarTool FDM release.

```
SAMPSECR TITLE 'StarTool SECURITY INTERFACE -- SAMPLE SAF EXIT'
***
*** NOTE: PLEASE CHANGE THE VALUES OF THE FOLLOWING VARIABLES ACCORDING
*** TO THE INSTRUCTIONS BELOW TO MATCH YOUR OPERATING ENVIRONMENT.
*** &ACCTYP  - CORRESPONDS TO YOUR SECURITY SYSTEM TYPE AND LEVEL
*** PDS#NAME - CONTAINS YOUR #RESUSE RESOURCE CLASS NAMES
*** &CLS     - INDICATES YOUR RESOURCE CLASS DESCRIPTOR NAME
*** &OWNER   - A SECURITY SYSTEM DEPENDENT NAME FOR CUSTOMIZATION
*** &USER1   - A SAMPLE USERID FOR YOUR INSTALLATION
*** &USER2   - A SAMPLE USERID FOR YOUR INSTALLATION
*** &LOGOPT  - INDICATES YOUR CHOICE ON COMMAND LOGGING
***
         GBLA  &ACFNCNT,&CTR
         GBLC  &ACCTYP,&LOGOPT,&CLS,&ACFNELE,&ACFNAME(10)
         GBLC  &OWNER,&USER1,&USER2
***
*** NOTE:  THIS EXIT IS SET UP FOR USE IN A RACF 1.8 (OR LATER) SYSTEM.
*** IF YOUR INSTALLATION HAS A DIFFERENT SECURITY SYSTEM, COMMENT THE
*** &ACCTYP STATEMENT FOR RACF18 AND UNCOMMENT THE &ACCTYP STATEMENT
*** WHICH CORRESPONDS TO YOUR SYSTEM.
*ACCTYP  SETC  'RACF'       ***  FOR RACF BEFORE RELEASE 1.8
*ACCTYP  SETC  'RACF 1.8'   ***  FOR RACF RELEASE 1.8 OR LATER
*ACCTYP  SETC  'RACF FACIL' ***  FOR RACF WITH THE FACILITY CLASS
&ACCTYP  SETC  'TOP SECRET' ***  FOR CA-TOP SECRET
*ACCTYP  SETC  'ACF2'       ***  FOR CA-ACF2
*ACCTYP  SETC  'ACF2 6.0'   ***  FOR CA-ACF2 6.0 OR LATER
***
*** NOTE:  CHANGE THE RESOURCE NAMES BELOW TO THE NAMES USED FOR THE
*** #RESUSE MACROS IN YOUR SAMPOPT4 SOURCE MEMBER FOR NAME VALIDATION.
*** THESE NAMES MUST BE IN THE SAME ORDER AS IN SAMPOPT4:
         PDS#NAME (SYSTEMSE,SYSTEMSN,APPLEXP,OTHERS)
***
*** NOTE:  SET THE CLASS NAME FOR THE RACROUTE MACRO.  NORMALLY, A
*** CA-TOP SECRET SHOP SHOULD USE 'APDS'; OTHERS SHOULD USE '$PDS'.
&CLS     SETC  '$PDS'       ***  CLASS NAME FOR RACF OR CA-ACF2
*CLS     SETC  'APDS'       ***  CLASS NAME FOR CA-TOP SECRET
***
*** NOTE:  SET AN OWNER NAME FOR MESSAGE CUSTOMIZATION
&OWNER   SETC  'LOCALID'    ***  FOR RACF, USED FOR RDEFINE OWNER()
```

```
*OWNER   SETC  'RESOWNER'    ***  FOR TOP SECRET, USED FOR TSS ADDTO()
*OWNER   SETC  'SYSIDX'      ***  FOR ACF2, FOR INSERT/CHANGE SYSID()
***
*** NOTE:  SET THE NAME OF TYPICAL USERID'S AT YOUR INSTALLATION
&USER1   SETC  'USER1'       ***  CHANGE TO A TYPICAL USERID
&USER2   SETC  'USER2'       ***  CHANGE TO A TYPICAL USERID
***
```

Customizing StarBat Return Code Processing

You can modify return code processing in StarBat by customizing the StarBat return code table SZFRCTAB. Return code customization for StarBat is independent of any customizations performed for the base StarTool FDM product in PDS#OPT4.

Refer to the *StarTool FDM StarBat Option* manual for detailed modification information.

Customizing the StarTool FDM Compiler Translator Table

The compiler translator table (SZFTRNSL) used by StarTool FDM in for example, the HISTORY command, can now be modified to add new compiler translator information. (For example, the translator information identifiers that IBM assigns it its Assembler H (ASMH) compilers are Translators 566896201 and 5734AS1).

The FDM compiler translator table is coded in assembly language member SZFTRNSL. The SZFTRNSL source code member is located in library *somnode*.PDSE*vrm*.ASSEMBLE. SZFTRNSL calls the assembly language macro SZFTRNSM. The source member for this macro is located in library *somnode*.PDSE*vrm*.COPY. The macro is needed for assembly of SZFTRNSL if you customize the values in the translator table.

To customize the Startool FDM compiler translator table, perform the following steps:

1. Make an editable copy of SZFTRNSL by copying the source from *somnode*.PDSE*vrm*.COPY into *somnode*.PDSE*vrm*.ASSEMBLE(SZFTRNSL) in the location instructed in this member.

2. Edit the parameter values in the table as desired, following the instructions contained in the member.

3. Assemble and link the modified SZFTRNSL member with macro SZFTRNSM and place the resulting load module in the separate library where you keep your customized StarTool FDM load members. You can find the JCL to assemble and link the module in *somnode*.PDSE*vrm*.CNTL(SZFTRNST).

4. Add your custom load library to the JOBLIB or STEPLIB concatenation used to run StarTool FDM. At runtime, if FDM finds an SZFTRNSL load module in the run-time load library concatenation, it uses it. If not, FDM uses the translator table with default values that was pre-linked at the factory into the STARTOOL load module.

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