



EMC[®] Mainframe Enablers

Version 8.1

Installation and Customization Guide

REV 02

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For the most up-to-date regulatory document for your product line, go to the technical documentation and advisories section on the EMC online support website.

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PREFACE

As part of an effort to improve its product lines, EMC periodically releases revisions of its software and hardware. Therefore, some functions described in this document might not be supported by all versions of the software or hardware currently in use. The product release notes provide the most up-to-date information on product features.

Contact your EMC representative if a product does not function properly or does not function as described in this document.

Note: This document was accurate at publication time. New versions of this document might be released in EMC Online Support. Check EMC Online Support to ensure that you are using the latest version of this document.

Audience

This document is intended for use by systems programmers who are responsible for installing and configuring the Mainframe Enablers software.

Coverage

This documents describes Mainframe Enablers when used in the following VMAX operating environments supported by Mainframe Enablers 8.1:

- ◆ HYPERMAX OS 5977
- ◆ Engenuity 5876
- ◆ Engenuity 5773¹

Note: Refer to prior versions of the *Mainframe Enablers Installation and Customization Guide* for information pertaining to other Engenuity levels.

Related documentation

[Table 1 on page 16](#) provides a list of the related documentation.

The following documents provide additional information:

- ◆ *EMC VMAX All Flash Product Guide* — Documents the features and functions of the VMAX All Flash arrays.
- ◆ *HYPERMAX OS for EMC VMAX All Flash and EMC VMAX3 Family Release Notes* — Describe new features and any known limitations.
- ◆ *EMC VMAX3 Family with HYPERMAX OS Product Guide*— Documents the features and functions of the VMAX3 100K, 200K, and 400K arrays.
- ◆ *EMC VMAX Family with Engenuity Product Guide* — Documents the features and functions of the VMAX 10K, 20K, and 40K arrays.

1. Engenuity 5773 is not supported in SRDF configurations that include a VMAX system running HYPERMAX OS 5977.

- ◆ *EMC VMAX Family Viewer for Desktop and iPad*[®] — Illustrates system hardware, incrementally scalable system configurations, and available host connectivity offered for VMAX arrays.
- ◆ E-Lab[™] Interoperability Navigator (ELN) — Provides a web-based interoperability and solution search portal. You can find the ELN at <https://elabnavigator.EMC.com>.
- ◆ SolVe Desktop — Provides links to documentation, procedures for common tasks, and connectivity information for 2-site and 3-site SRDF configurations. To download the SolVe Desktop tool, go to EMC Online Support at <https://support.EMC.com> and search for SolVe Desktop. Download the SolVe Desktop and load the VMAX Family and DMX procedure generator.

You need to authenticate (authorize) your SolVe Desktop. Once it is installed, please familiarize yourself with the information under Help tab.

Conventions used in this document

EMC uses the following conventions for special notices:

Note: A note presents information that is important, but not hazard-related.

IMPORTANT

An important notice contains information essential to software or hardware operation.

Typographical conventions

EMC uses the following type style conventions in this document:

Normal	Used in running (nonprocedural) text for: <ul style="list-style-type: none"> • Names of interface elements, such as names of windows, dialog boxes, buttons, fields, and menus • Names of resources, attributes, pools, Boolean expressions, buttons, DQL statements, keywords, clauses, environment variables, functions, and utilities • URLs, pathnames, filenames, directory names, computer names, links, groups, service keys, file systems, and notifications
Bold	Used in running (nonprocedural) text for names of commands, daemons, options, programs, processes, services, applications, utilities, kernels, notifications, system calls, and man pages Used in procedures for: <ul style="list-style-type: none"> • Names of interface elements, such as names of windows, dialog boxes, buttons, fields, and menus • What the user specifically selects, clicks, presses, or types
<i>Italic</i>	Used in all text (including procedures) for: <ul style="list-style-type: none"> • Full titles of publications referenced in text • Emphasis, for example, a new term • Variables
<code>Courier</code>	Used for: <ul style="list-style-type: none"> • System output, such as an error message or script • URLs, complete paths, filenames, prompts, and syntax when shown outside of running text
<code>Courier bold</code>	Used for specific user input, such as commands

<i>Courier italic</i>	Used in procedures for: <ul style="list-style-type: none"> • Variables on the command line • User input variables
< >	Angle brackets enclose parameter or variable values supplied by the user
[]	Square brackets enclose optional values
	Vertical bar indicates alternate selections — the bar means “or”
{ }	Braces enclose content that the user must specify, such as x or y or z
...	Ellipses indicate nonessential information omitted from the example

Where to get help

EMC support, product, and licensing information can be obtained on EMC Online Support, as described next.

Note: To open a service request through EMC Online Support, you must have a valid support agreement. Contact your EMC sales representative for details about obtaining a valid support agreement or to answer any questions about your account.

Product information

For documentation, release notes, software updates, or for information about EMC products, licensing, and service, go to EMC Online Support (registration required) at:

<https://support.EMC.com>

Technical support

EMC offers a variety of support options.

Support by Product — EMC offers consolidated, product-specific information on the Web at:

<https://support.EMC.com/products>

The Support by Product web pages offer quick links to Documentation, White Papers, Advisories (such as frequently used Knowledgebase articles), and Downloads, as well as more dynamic content, such as presentations, discussion, relevant Customer Support Forum entries, and a link to EMC Live Chat.

EMC Live Chat — Open a Chat or instant message session with an EMC Support Engineer.

eLicensing support

To activate your entitlements and obtain your VMAX license files, visit the Service Center on <https://support.EMC.com>, as directed on your License Authorization Code (LAC) letter emailed to you.

For help with missing or incorrect entitlements after activation (that is, expected functionality remains unavailable because it is not licensed), contact your EMC Account Representative or Authorized Reseller.

For help with any errors applying license files through Solutions Enabler, contact the EMC Customer Support Center.

If you are missing a LAC letter, or require further instructions on activating your licenses through the Online Support site, contact EMC's worldwide Licensing team at licensing@emc.com or call:

- ◆ North America, Latin America, APJK, Australia, New Zealand: SVC4EMC (800-782-4362) and follow the voice prompts.
- ◆ EMEA: +353 (0) 21 4879862 and follow the voice prompts.

Your comments

Your suggestions will help us continue to improve the accuracy, organization, and overall quality of the user publications. Send your opinions of this document to:

VMAXContentFeedback@emc.com

CHAPTER 1

Introduction

This chapter covers the following topics:

- ◆ [Mainframe Enablers software](#)..... 14
- ◆ [Mainframe Enablers documentation](#)..... 16

Mainframe Enablers software

The EMC® Mainframe Enablers are a suite of components that monitor and manage your EMC storage system. The components listed below are distributed and installed as a single package. This combined packaging simplifies installation and maintenance, and provides assurance of component compatibility.

Mainframe Enablers components

The Mainframe Enablers include the following software components:

ResourcePak® Base for z/OS

ResourcePak Base makes communication between mainframe-based applications (provided by EMC or independent software vendors) and an EMC storage system more efficient.

SRDF® Host Component for z/OS

SRDF Host Component monitors SRDF (Symmetrix Remote Data Facility) status and controls SRDF processes through the use of commands executed from a host. SRDF Host Component maintains a real time copy of data at the logical volume level in multiple storage systems located in physically separate sites.

Consistency Groups for z/OS

Consistency Groups (ConGroup) is designed to ensure the consistency of data remotely copied by the SRDF feature in the event of a rolling disaster.

AutoSwap for z/OS

AutoSwap handles automatic workload swaps between systems when the AutoSwap software detects an unplanned outage or problem. Although included with ResourcePak Base, AutoSwap is primarily used with Consistency Groups for z/OS.

TimeFinder®/Clone Mainframe Snap Facility

TimeFinder/Clone Mainframe Snap Facility is the software foundation for the following functional local replication products:

- ◆ TimeFinder SnapVX provides a space-efficient method for making volume level snapshots of thin devices and consumes additional storage capacity only when updates are made to the source volume.
- ◆ Data Protector for z Systems (zDPTM) is employed with SnapVX and provides application recovery from unintended changes to data.
- ◆ TimeFinder/Clone allows creating point-in-time copies of full volumes or individual datasets.
- ◆ TimeFinder/Snap allows creating pointer-based copies where only the pre-images of changed data are written to the save area.
- ◆ TimeFinder/Consistency Group allows you to perform snap and clone operations on volumes so that the target is dependent write consistent.

TimeFinder/Mirror for z/OS

TimeFinder/Mirror allows you to create Business Continuance Volumes (BCVs) and gives you the ability to ESTABLISH, SPLIT, RE-ESTABLISH and RESTORE from the source logical volumes.

TimeFinder Utility for z/OS

TimeFinder Utility is used in conditioning SPLIT BCVs by relabeling the volume and (optionally) renaming and re-cataloging datasets. This allows the BCV to be mounted and used.

Additional features

Mainframe Enablers also include additional features that can be enabled by the major components:

Multi-Session Consistency (MSC)

Multi-Session Consistency (MSC) provides consistency across multiple VMAX systems for SRDF/A groups.

SRDF/AR

SRDF/AR (Auto Recovery) automates data copying across SRDF links to provide a restartable image of the data at a remote site in the event of a disaster at the production site.

Mainframe Enablers documentation

This *Mainframe Enablers Installation and Customization Guide* and the other manuals for Mainframe Enablers are available on the EMC Online Support website.

Note: As information is added, new versions of these documents may be released to EMC Online Support at <https://support.EMC.com>. Check the website to ensure that you are using the latest versions of these documents.

Table 1 lists the documentation for Mainframe Enablers.

Table 1 Mainframe Enablers documentation

Component	Document
Mainframe Enablers	<i>Mainframe Enablers Installation and Customization Guide</i>
	<i>Mainframe Enablers Message Guide</i>
	<i>Mainframe Enablers Release Notes</i>
ResourcePak Base for z/OS	<i>ResourcePak Base for z/OS Product Guide</i>
SRDF Host Component for z/OS, including the REXX interface	<i>SRDF Host Component for z/OS Product Guide</i>
Consistency Groups for z/OS and AutoSwap for z/OS	<i>Consistency Groups for z/OS Product Guide</i>
	<i>AutoSwap for z/OS Product Guide</i>
TimeFinder SnapVX	<i>TimeFinder SnapVX and zDP Product Guide</i>
TimeFinder/Clone Mainframe Snap Facility	<i>TimeFinder/Clone Mainframe Snap Facility Product Guide</i>
TimeFinder/Mirror for z/OS	<i>TimeFinder/Mirror for z/OS Product Guide</i>
TimeFinder Utility	<i>TimeFinder Utility Product Guide</i>

CHAPTER 2

Installation

This chapter covers the following topics:

- ◆ Pre-installation 18
- ◆ Installation 21
- ◆ Post-installation 31

Pre-installation

Before you begin installing Mainframe Enablers, complete the following steps:

1. Review the Mainframe Enablers Release Notes.
2. Review the interoperability information in the E-Lab™ Interoperability Navigator which can be reached at <http://elabnavigator.EMC.com>.
3. Ensure that your system meets the hardware and software requirements listed in “Hardware and software requirements” on page 18.
4. Gather installation information as described in “Installation information” on page 20.

Hardware and software requirements

This section covers both VMAX/DMX system and IBM mainframe requirements.

Table 2 lists the VMAX/DMX hardware and software requirements.

Table 2 VMAX/DMX system requirements (page 1 of 2)

Item	Requirements
Hardware	All currently supported VMAX/DMX systems.
Operating environment	<p>HYPERMAX OS 5977, Enginuity 5876, Enginuity 5773</p> <p>The following are the minimum levels required for the features:</p> <ul style="list-style-type: none"> • Enginuity 5773 for the following: <ul style="list-style-type: none"> R21 support • Enginuity 5876 for the following: <ul style="list-style-type: none"> Virtual Snap improvements Multi-device capabilities Thin device support Cascaded clone support Extended address volume support • HYPERMAX OS 5977 for the following: <ul style="list-style-type: none"> Support of 4-byte VMAX/DMX device numbers^a Enhanced asynchronous attention 128KB FBA track size SRDF/A Multi-Cycle Mode Support of targetless infrastructure Adaptive copy: conversion of ADC-WP to ADC-DISK Transition to a single pool type Support of multiple user exits Multi-port group support GNS scalability

Table 2 VMAX/DMX system requirements (page 2 of 2)

Item	Requirements
VMAX/DMX devices	TimeFinder/Clone Mainframe Snap Facility: If you are going to use your system for Virtual Snapshot, your system must be configured with Virtual and Snap Pool devices.
	TimeFinder/Mirror: Your system must be configured with BCV volumes.
VMAX/DMX configuration parameters	Consistency Groups: <ul style="list-style-type: none"> Prevent auto links recovery after all links failure?: YES Force RAs Links off-line after power-up?: YES Enable page dataset Mode?: YES
	TimeFinder/Mirror (required for SRDF/AR only): <ul style="list-style-type: none"> Prevent auto links recovery after all links failure?: YES Force RAs Links off-line after power-up?: YES Enable Links Domino: NO

a. Although Mainframe Enablers 8.1 accepts up to “FFFFFF” device numbers, HYPERMAX OS 5977 can handle only FFFFF devices.

Table 3 lists the mainframe hardware and software requirements.

Table 3 Mainframe hardware and software requirements

Item	Requirements
Hardware	<ul style="list-style-type: none"> Any system that supports versions of the z/OS operating system currently supported by IBM. FTP or TSO connection to an Open Systems host.
Software	<ul style="list-style-type: none"> Any version of the z/OS operating system currently supported by IBM. <p>For ResourcePak Base: The z/OS level on your system must be 1.9 or higher and running on a z/990 or higher. DIAG must include REUSASID(YES) (use D DIAG to check, and then use SET DIAG=xx where the diag member DIAG.xx contains REUSASID(YES)). Contact your Systems Programmer to discuss whether this is available for use.</p> <ul style="list-style-type: none"> JES2 or JES3 environments. RACF 1.9 or higher, or an equivalent SAF compliant security product, must be installed and activated. <p>Note: Mainframe Enablers are not supported in native VM. However, Mainframe Enablers can run on a z/OS guest under VM. VM does not allow volumes defined as unsupported to be attached to SYSTEM, or used to perform IPL on a virtual machine. When running on a guest under VM, Mainframe Enablers require special consideration. You must define volumes to VM (SET RDEV) as TY[pe] UNSUP[orted] DEVC[lass] DASD DPS Y[es] RESERVE_REL[ease] Y[es]. You must attach volumes to the guest.</p>

Installation information

Prior to installing Mainframe Enablers, identify or decide upon the following items:

CLIST library and edit macro — Determine a name for the edit macro created by the installation dialog and a name for the CLIST library used to store the edit macro.

Product dataset name prefix — Choose a dataset name prefix for installing Mainframe Enablers.

Names for the product datasets consist of a final qualifier, such as LINKLIB, and a dataset name prefix. EMC recommends that you use “EMC.SMFE vrm ¹” as the dataset name prefix if it agrees with your site standards. In this case, for example, the LINKLIB dataset is named “EMC.SMFE vrm .LINKLIB.”

Note: Hereafter, datasets created using this product dataset name prefix are referred to as if they had been created with the suggested prefix “EMC.SMFE vrm .” The actual prefix for your installation may be different.

Ensure that you have RACF ALTER authority (or the equivalent from another security manager) for the datasets created with this prefix.

SMP/E dataset name prefix — Determine a dataset name prefix for the SMP/E datasets into which you install Mainframe Enablers. All components must be installed into the same CSI.

If you have installed another EMC product using SMP/E, you must install Mainframe Enablers into the same CSI. For example, if you already have SMP/E-maintained EMC products and the SMPLOG dataset is called “EMC.SMPE.SMPLOG,” the SMP/E dataset name prefix must be “EMC.SMPE.”

If you are installing Mainframe Enablers for the first time, EMC suggests using “EMC.SMPE.”

SMP/E dataset volser — Choose a disk volume to install the distribution libraries (required by SMP/E).

This may be the same volume as you use for the product libraries. However, many customer sites prefer to keep SMP/E-related datasets on separate volumes from product libraries. An amount of space similar to that needed for the product libraries is required.

Install-to disk volser — Choose a disk volume to install the product (runtime) libraries.

Disk unit name — Decide upon a disk unit name for the above volumes. Use the name required by your site standards. The default value is “SYSDA.”

1. vrm stands for version, release, and modification level of the software.

Installation

Mainframe Enablers use a standard SMP/E installation process with assisted post-installation customization.

To install Mainframe Enablers, complete the following steps:

- ◆ [Step 1: Obtain Mainframe Enablers installation kit](#)
- ◆ [Step 2: Load XMITFILE to mainframe](#)
- ◆ [Step 3: Customize XMITLIB\(#EXTRACT\)](#)
- ◆ [Step 4: Run XMITLIB\(#EXTRACT\)](#)
- ◆ [Step 5: Customize RIMLIB installation jobs](#)
- ◆ [Step 6: Run RIMLIB installation jobs](#)
- ◆ [Step 7: Apply maintenance updates](#)
- ◆ [Step 8: Install license](#)

Step 1: Obtain Mainframe Enablers installation kit

1. Take one of the following steps:
 - If you are installing Mainframe Enablers from a CD:
 - a. Mount the CD on an Open Systems host. The host must have FTP installed.
 - b. Select a working directory on the Open Systems host for the installation.
 - c. Copy the contents of the CD to the working directory.
 - If you are installing from an EMC Online Support download:
 - a. Log on to a privileged account on an Open Systems host (root on UNIX or administrator on Windows).
 - b. Select a working directory on the Open Systems host for the installation.
 - c. Log on to <https://support.EMC.com>.
 - d. Click **Downloads**, and type **Mainframe Enablers** in the **Find a Product** field.

Result: A page for Mainframe Enablers is displayed.

Note: If you are not able to access this location, you may not have registered your software or registered it incorrectly. Follow the prompts to register your software, correct your registration, or contact EMC in the event of a problem.

- e. Click the required product version on the left to filter on the version.
- f. Click the ZIP file of the Mainframe Enablers electronic distribution kit and download it into the working directory you selected in step b.

- If your current host is a Windows system, unzip the file into the working directory. If your current host is a UNIX system, unzip and untar the file into the working directory.

Result: The following Mainframe Enablers installation kit files are now available:

MFEvrm.xmitfile — Contains a PDS of TSO TRANSMIT images of files, and the JCL needed to perform an SMP/E indirect-library installation of the product.

ReadMe_MFEvrm.txt — Provides instructions on how to install Mainframe Enablers.

Step 2: Load XMITFILE to mainframe

To load XMITFILE to the mainframe:

- On the target mainframe, allocate a dataset to which you can upload MFEvrm.XMITFILE using FTP. Use the product dataset name prefix you determined in [“Installation information” on page 20](#).

For example, if you want to install the product with the recommended product dataset name prefix of “EMC.SMFEvrm,” name the dataset “EMC.SMFEvrm.XMITFILE.”

Use the following characteristics for the dataset to be allocated:

```
LRECL=80
BLKSIZE=3120
DSORG=PS
SPACE=(CYL,(60,2)) (Assumes a 3390 device.)
```

- Upload MFEvrm.XMITFILE in binary format (as-is without translation or encoding) to the mainframe using FTP. Your FTP session may look as follows:

```
ftp host
(username and password prompts)
cd..
250 "" is working directory name prefix
binary
200 Representation type is image
put MFEvrm.XMITFILE 'EMC.SMFEvrm.XMITFILE'
```

Where:

host is the name or IP address of the LPAR to install Mainframe Enablers.

- Use the TSO RECEIVE command to retrieve EMC.SMFEvrm.XMITFILE and restore the XMITLIB library.

In the `indataset` parameter, specify the dataset allocated in step 1 of this procedure. In the `DA` parameter, when prompted, use “XMITLIB” preceded by the product dataset name prefix you determined in [“Installation information” on page 20](#).

For example:

```
receive indataset('EMC.SMFEvrm.XMITFILE')

INMR901I Data Set EMC.SMFEvrm.XMITLIB from user ID on nodename
INMR906A Enter restore parameters or 'DELETE' or 'END' +

DA('EMC.SMFEvrm.XMITLIB')
```

Result: The XMITLIB library is now available, which contains the #EXTRACT member used to extract other Mainframe Enablers installation files.

Step 3: Customize XMITLIB(#EXTRACT)

The #EXTRACT member of the XMITLIB library extracts the RIMLIB library and SMP/E indirect libraries, creating all the datasets needed for an SMP/E installation.

Customize XMITLIB(#EXTRACT) for your installation either automatically or manually.

To customize XMITLIB(#EXTRACT) automatically:

1. Run the SETUP REXX program in the EMC.SMFEvrn.XMITLIB dataset. The SETUP REXX program prompts you for all of the information needed to customize JCL, as shown in [Figure 1](#).

```

----- EMC JCL Customization Utility -----
| COMMAND ==> _____ |
| Type EXEC on the command line and press ENTER to proceed, or PF3 to exit. |
| CLIST library          ==> 'EMC.SMFEvrn.XMITLIB' |
| Edit macro name       ==> XMIT |
| XMITLIB dsname prefix ==> EMC.SMFEvrn |
|
| Install-to disk volser==> _____ Disk unit name ==> SYSDA |
| Enter your job card below ('%MEMBER%' will be replaced by member name): |
| => //EMCX JOB MSGCLASS=A, CLASS=A, MSGLEVEL=(1,1) |
+-----+

```

Figure 1 EMC JCL Customization Utility panel for XMITLIB(#EXTRACT)

2. In the panel, specify values determined in [“Installation information” on page 20](#):

CLIST library — Accept or change the name of the XMITLIB library to store the edit macro created by this dialog. The default value is suitable for most users and does not need to be changed.

Edit macro name — Accept or change the default name of the edit macro. The edit macro is created in the CLIST or EXEC library from the data entered on this panel. The edit macro is applied to all members of XMITLIB that start with a # character. Normally, you do not need to change the default value.

XMITLIB dsname prefix — Enter the product dataset name prefix you determined in [“Installation information” on page 20](#).

Install-to disk volser — Enter the six-character volser of the disk volume to which you want to install the Mainframe Enablers libraries. Typically, it is the same as the volser on which the XMITLIB library resides.

Disk unit name — Specify a disk unit name that is appropriate to your site. The default value is SYSDA.

Enter your job card below — Enter a job card that is appropriate for your site.

By default, the job card is set to a value which may be suitable for many users. The first seven characters of the job name are your TSO user ID, plus “X.”

You can set the job name to %MEMBER%. This causes the edit macro to set the job name equal to the JCL member name (that is, #EXTRACT).

Do not use any parameter that contains an ampersand (&), such as NOTIFY=&SYSUID. An ampersand in the job card may result in edit macro errors.

An example of the completed panel for user ID “EMC” is shown in [Figure 2](#).

```

----- EMC JCL Customization Utility -----
| COMMAND ==> _____ |
| Type EXEC on the command line and press ENTER to proceed, or PF3 to exit. |
| CLIST library          ==> 'EMC.SMFE810.XMITLIB' |
| Edit macro name       ==> XMIT |
| XMITLIB dsname prefix ==> EMC.SMFE810 |
|
| Install-to disk volser==> #DVT03          Disk unit name ==> 3390 |
|
| Enter your job card below ('%MEMBER%' will be replaced by member name): |
| => //EMCX JOB MSGCLASS=A, CLASS=A, MSGLEVEL=(1,1) |
+-----+

```

Figure 2 EMC JCL Customization Utility panel for XMITLIB(#EXTRACT) — completed

3. When you are satisfied with your entries, type **EXEC** on the command line and press **Enter**. If the dialog completes successfully, the output is similar to the following:

```

BUILDING AN EDIT MACRO (XMIT) IN 'EMC.SMFEvrn.XMITLIB'
PROCESSING MEMBER: #EXTRACT
***

```

To customize XMITLIB(#EXTRACT) manually, edit it by making the following changes:

1. Change the job card to the one that conforms to your site standards.
2. Globally change the dataset prefix to the XMITLIB library prefix, which will be used as the dataset name prefix for the product libraries.
3. Globally change DVOL to the disk volser onto which you want to place the extracted libraries.
4. Globally change DISK-UNIT to a name that is appropriate for your site.

Result: The #EXTRACT job is customized for your installation and ready to run.

Step 4: Run XMITLIB(#EXTRACT)

Submit the #EXTRACT job.

Step completion codes should be zero (0), except for the DELETE step. DELETE has a step completion code of eight (8) unless the job is a rerun.

Result: The EMC.SMFEvrn.RIMLIB library is now available, as well as some other Mainframe Enablers libraries.

Step 5: Customize RIMLIB installation jobs

The RIMLIB library is a PDS containing JCL to install the product. After you extract RIMLIB, it has the contents shown in [Table 4](#).

Table 4 RIMLIB members

Member	Description
#U1ALLOC	Allocates target and distribution libraries (for upgrades only).
#U2DFZON	(Placeholder) Job #02 is not used during an upgrade.
#U3REPRO	(Placeholder) Job #03 is not used during an upgrade.
#U4DDDEF	Adds or replaces product library DDDEFS in the SMP/E CSI (for upgrades only).
#01ALLOC	Allocates target and distribution libraries.
#02DFZON	Defines the SMP/E CSI dataset.
#03REPRO	Repro to load the SMP/E CSI dataset.
#04DDDEF	Adds or replaces product library DDDEFS in the SMP/E CSI.
#05RECEV	Receives Mainframe Enablers functionality into the global zone.
#06APPLY	Applies Mainframe Enablers functionality in the target zone.
#07ACCP	Accepts Mainframe Enablers functionality in the distribution zone.
#08CLEAN	Deletes indirect libraries and DDDEFS used for them.
#90SAFJB	(Optional) JCL to remove EMCSAFI and replace it with EMCSAFD or with your own modified EMCSAFI. (Chapter 5 provides more information.)
#91SNPJB	(Optional) JCL to change the TimeFinder/Clone Mainframe Snap Facility defaults.
#92SAFJB	(Optional) JCL to restore the default EMCSAFI object code (not the SAMPLIB member) to its state when Mainframe Enablers were first installed (including any maintenance updates that were installed at that time).
#93TSDJB	(Optional) JCL to replace the supplied TSDVEXIT with your own modified one.
#94TFMJB	(Optional) JCL to modify the TimeFinder/Mirror default options.
#99MAINT	A sample file for SMP/E RECEIVE and APPLY.
MFEJCL	The REXX program to customize the installation process.
MFEWIN1	Panel used when the SETUP REXX program is run.
SETUP	The REXX program to simplify the customization process.

Customize RIMLIB members for your installation.

Note: EMC strongly recommends that you use the SETUP REXX program contained in the RIMLIB dataset to customize RIMLIB members. However, you may customize it manually if you prefer. `ReadMe_MFEvrm.txt` provides instructions for manual editing.

To customize RIMLIB members:

1. Run the SETUP REXX program in the EMC.SMFEvrm.RIMLIB dataset. The SETUP REXX program calls the EMC JCL Customization Utility to display prompts for all of the information needed to customize JCL, as shown in [Figure 3](#).

```

----- EMC JCL Customization Utility -----
| COMMAND ==> _____ |
| |
| Type EXEC on the command line and press ENTER to proceed, or PF3 to exit. |
| |
| CLIST library          ==> 'EMC.SMFEvrm.RIMLIB' |
| Edit macro name       ==> SMFE |
| Product dsname prefix ==> EMC.SMFEvrm |
| SMP/E dsname prefix   ==> EMC.SMPE |
| SMP/E data sets volser ==> _____ |
| Install-to disk volser==> _____ Disk unit name ==> SYSDA |
| |
| Enter your job card below ('%MEMBER%' will be replaced by member name): |
| => //EMCX JOB MSGCLASS=A,CLASS=A,MSGLEVEL=(1,1) |
+-----+

```

Figure 3 EMC JCL Customization Utility panel for RIMLIB

2. In the panel, specify values determined in [“Installation information”](#) on page 20:

CLIST library — Accept or change the name of the RIMLIB library to store the edit macro created by this dialog. The default value is suitable for most users and does not need to be changed.

Edit macro name — Accept or change the default name of the edit macro. The edit macro is created in the CLIST or EXEC library from the data entered on this panel. The edit macro is applied to all members of RIMLIB that start with a # character. Normally, you do not need to change the default value.

Product dsname prefix — Enter the product dataset name prefix you determined in “Installation information” on page 20.

SMP/E dsname prefix — Enter the SMP/E dataset name prefix you determined in “Installation information” on page 20.

SMP/E data sets volser — Enter the six-character volser of the disk volume on which you want to allocate the SMP/E distribution libraries for Mainframe Enablers. This volser may be the same as the Install-to disk volser, or you may elect to keep these datasets on a separate volume.

Install-to disk volser — Enter the six-character volser of the disk volume to which you want to install the Mainframe Enablers libraries.

Disk unit name — Specify a disk unit name that is appropriate to your site. The default value is SYSDA.

Enter your job card below — Enter a job card that is appropriate for your site.

By default, the job card is set to a value which may be suitable for many users. The first seven characters of the job name are your TSO user ID, plus “X.”

You can set the job name to %MEMBER%. This causes the edit macro to set the job name equal to the JCL member name (that is, #01ALLOC, #02DDDEF, and so forth).

Do not use any parameter that contains an ampersand (&), such as NOTIFY=&SYSUID. An ampersand in the job card may result in edit macro errors.

An example of the completed panel for user ID “EMC” is shown in [Figure 4](#).

```

----- EMC JCL Customization Utility -----
| COMMAND ==> _____ |
| Type EXEC on the command line and press ENTER to proceed, or PF3 to exit. |
| CLIST library          ==> 'EMC.SMFEvrm.RIMLIB' |
| Edit macro name       ==> SMFE |
| Product dsname prefix ==> EMC.SMFEvrm |
| SMP/E dsname prefix  ==> EMC.SMPE |
| SMP/E data sets volser ==> #DVT04 |
| Install-to disk volser==> #DVT04 Disk unit name ==> 3390 |
| Enter your job card below ('%MEMBER%' will be replaced by member name): |
| => //EMCX JOB MSGCLASS=A,CLASS=A,MSGLEVEL=(1,1) |
+-----+

```

Figure 4 EMC JCL Customization Utility panel for RIMLIB — completed

3. When you are satisfied with your entries, type **EXEC** on the command line and press **Enter**. If the dialog completes successfully, the output is similar to the following:

```
BUILDING AN EDIT MACRO (PROD) IN 'EMC.SMFEvrm.RIMLIB'
PROCESSING MEMBER: #U1ALLOC
PROCESSING MEMBER: #U2DFZON
PROCESSING MEMBER: #U3REPRO
PROCESSING MEMBER: #U4DDDEF
PROCESSING MEMBER: #01ALLOC
PROCESSING MEMBER: #02DFZON
PROCESSING MEMBER: #03REPRO
PROCESSING MEMBER: #04DDDEF
PROCESSING MEMBER: #05RECEV
PROCESSING MEMBER: #06APPLY
PROCESSING MEMBER: #07ACCPT
PROCESSING MEMBER: #08CLEAN
PROCESSING MEMBER: #90SAFJB
PROCESSING MEMBER: #91SNPJB
PROCESSING MEMBER: #92SAFJB
PROCESSING MEMBER: #93TSDJB
PROCESSING MEMBER: #94TFMJB
PROCESSING MEMBER: #99MAINT
***
```

Result: The RIMLIB jobs are customized for your installation and ready to run.

Step 6: Run RIMLIB installation jobs

Submit the customized jobs in the following order, ensuring that each job completes successfully before submitting the next one:

- ◆ If you install into a new set of SMP/E libraries:
 1. #01ALLOC
 2. #02DFZON
 3. #03REPRO
 4. #04DDDEF
 5. #05RECEV
 6. #06APPLY
 7. #07ACCPT
- ◆ If you install into an old set of SMP/E libraries:
 1. #U1ALLOC
 2. #U4DDDEF
 3. #05RECEV
 4. #06APPLY
 5. #07ACCPT

Job completion codes should be zeroes (00), except for #U4DDDEF or #04DDDEF and #07ACCPT, where “04” is acceptable.

Result: The Mainframe Enablers functionality is received, applied, and accepted on the target mainframe.

Step 7: Apply maintenance updates

You must install any available maintenance updates for Mainframe Enablers. The latest maintenance updates, as well as current release and service notes, are available on the Downloads page at EMC Online Support.

Note: [Appendix A](#) describes how you can determine the current maintenance level of Mainframe Enablers installed at your site.

To apply maintenance updates, complete the following steps:

1. Log on to a privileged account on an Open Systems host (root on UNIX or administrator on Windows).
2. Select a working directory on the Open Systems host for the maintenance updates.
3. Log on to <https://support.EMC.com>.
4. Click **Downloads**, and type **Mainframe Enablers** in the **Find a Product** field.

Result: A page for the Mainframe Enablers product is displayed.

Note: If you are not able to access this location, you may not have registered your software or registered it incorrectly. Follow the prompts to register your software, correct your registration, or contact EMC in the event of a problem.

5. Click the required product version on the left to filter on the version.
6. Click the ZIP file of the Mainframe Enablers maintenance updates, which has a postfix of "_Fixes", and download it into the working directory you selected in step 2 of this procedure.
7. If your current host is a Windows system, unzip the file into the working directory. If your current host is a UNIX system, unzip and untar the file into the working directory.

The Mainframe Enablers maintenance updates kit contains:

ReadMe_id_Fixes.txt — Lists the fixes included in the release.

Service_Notes_id.txt — Contains the most current information regarding this version of the software.

ME ν mFIX.BIN — The PTF (Program Temporary Fix) used to patch the software.

SMPJOB.TXT — A sample JCL job with instructions on how to customize it for your installation.

8. On the target mainframe, allocate a dataset to which you can upload the ME ν mFIX.BIN file using FTP.

- Upload the MEvr m FIX.BIN file in binary format (as-is without translation or encoding) to the mainframe using FTP. Your FTP session may look as follows:

```
ftp host
(username and password prompts)
cd ..
250 "" is working directory name prefix
binary
200 Representation type is image
put MEvr $m$ FIX.BIN 'DS'
```

Where:

host is the name or IP address of the LPAR where Mainframe Enablers are installed.
DS is the dataset allocated in step 8 of this procedure.

- Use the TSO RECEIVE command to retrieve MEvr m FIX.BIN and restore the SMPPTFIN dataset.

In the `indataset` parameter, specify the dataset allocated in step 9 of this procedure. In the `DA` parameter, when prompted, use “SMPPTFIN” preceded with the product dataset name prefix that was used to install Mainframe Enablers.

For example:

```
receive indataset('DS')

INMR901I Data Set MEvr $m$ FIX from user_ID on nodename
INMR906A Enter restore parameters or 'DELETE' or 'END' +

DA('EMC.SMFEvr $m$ .SMPPTFIN')
```

Where:

DS is the dataset allocated in step 9 of this procedure.

- On the target mainframe, allocate a dataset to which you can upload the SMPJOB.TXT file using FTP.
- Upload the SMPJOB.TXT in text (ascii) format to the mainframe using FTP. Your FTP session may look as follows:

```
ftp host
(username and password prompts)
cd ..
250 "" is working directory name prefix
ascii
200 Representation type is Ascii NonPrint
put SMPJOB.TXT 'DS'
```

Where:

host is the name or IP address of the LPAR where Mainframe Enablers are installed.
DS is the dataset allocated in step 11 of this procedure.

- Customize SMPJOB JCL for your installation. You can find editing instructions in the Smpjob.txt comments.
- Submit the #EXTRACT job to receive and apply the maintenance updates. Step completion codes should be zero (0).

Step 8: Install license

Install your license as described in [“Installing/uninstalling licenses”](#) on page 42.

Post-installation

Installation of EMC Mainframe Enablers is now finished. Before you start using Mainframe Enablers, complete configuration and security activities described in the Product Guide for each Mainframe Enablers component and in [Chapter 5, “Security”](#) of this document.

To use the REXX interface, complete the steps described in [“Customizing the REXX interface” on page 31](#).

After you ensure that Mainframe Enablers are correctly installed and functioning properly, run the RIMLIB(#08CLEAN) job to delete datasets and DDDEFSs used during the installation process that are no longer needed.

Customizing the REXX interface

If the following programs do not reside in an authorized library, complete the steps listed below to set up your REXX interface environment:

- ◆ EMCTF (TimeFinder/Mirror)
 - ◆ EMCTFU (TimeFinder Utility)
 - ◆ EMCSNAP (TimeFinder/Clone Mainframe Snap Facility)
 - ◆ EMCTFA (SRDF/AR)
 - ◆ EMCGROUP (Group Name Services)
 - ◆ EMCQOS (Quality of Service)
 - ◆ SCFRDFME (MSC Star)
 - ◆ EHCMSCME (MSC Star)
 - ◆ EHCGCOPY (MSC Star)
 - ◆ EHCRCVRY (MSC Star)
 - ◆ ECORAFIF (MSC Star)
 - ◆ SCFRDFM6 (MSC Star)
 - ◆ EHCMSM6 (MSC Star)
 - ◆ EIPINIT (zDP)
 - ◆ EIPASAF (zDP)
1. In SYS1.PARMLIB(IKJTSOxx), add the following program names to the AUTHPGM NAMES, AUTHTSF NAMES, and AUTHCMD NAMES statements:
 - EMCTF
 - EMCTFU
 - EMCSNAP
 - EMCTFA
 - EMCGROUP
 - EMCQOS
 - SCFRDFME
 - EHCMSCME
 - EHCGCOPY
 - EHCRCVRY
 - ECORAFIF
 - SCFRDFM6
 - EHCMSM6
 - EIPINIT
 - EIPASAF

2. For these changes to take effect, perform one of the following:

- Use the “PARMLIB” TSO authorize command to dynamically change the IKJTSOxx active member without an IPL.¹
- Perform an IPL of your system.

```

AUTHPGM NAMES( /* AUTHORIZED PROGRAMS */+
EMCTF /* (TimeFinder/Mirror) */ +
EMCTFU /* (TimeFinder/Utility) */ +
EMCSNAP /* (TimeFinder/Clone Mainframe Snap Facility) */ +
EMCTFA /* (SRDF/AR) */ +
EMCGROUP /* (Group Name Services) */ +
EMCQOS /* (Quality of Service) */ +
SCFRDFME /* (MSC Star) */ +
EHCMSME /* (MSC Star) */ +
EHCRCOPY /* (MSC Star) */ +
EHCRCVRY /* (MSC Star) */ +
ECORAFIF /* (MSC Star) */ +
SCFRDFM6 /* (MSC Star) */ +
EHCMSM6 /* (MSC Star) */+
EIPINIT /* (z/DP) */
EIPASAF6 /* (z/DP) */
)
/* */
AUTHTSF NAMES( /* PROGRAMS TO BE AUTHORIZED */+
/* WHEN CALLED THROUGH THE */+
/* TSO SERVICE FACILITY. */+
EMCTF /* (TimeFinder/Mirror) */ +
EMCTFU /* (TimeFinder/Utility) */ +
EMCSNAP /* (TimeFinder/Clone Mainframe Snap Facility) */ +
EMCTFA /* (SRDF/AR) */ +
EMCGROUP /* (Group Name Services) */ +
EMCQOS /* (Quality of Service) */ +
SCFRDFME /* (MSC Star) */ +
EHCMSME /* (MSC Star) */ +
EHCRCOPY /* (MSC Star) */ +
EHCRCVRY /* (MSC Star) */ +
ECORAFIF /* (MSC Star) */ +
SCFRDFM6 /* (MSC Star) */ +
EHCMSM6 /* (MSC Star) */+
EIPINIT /* (z/DP) */
EIPASAF6 /* (z/DP) */
)
/* */
/* */
AUTHCMD NAMES( /* AUTHORIZED PROGRAMS */+
EMCTF /* (TimeFinder/Mirror) */ +
EMCTFU /* (TimeFinder/Utility) */ +
EMCSNAP /* (TimeFinder/Clone Mainframe Snap Facility) */ +
EMCTFA /* (SRDF/AR) */ +
EMCGROUP /* (Group Name Services) */ +
EMCQOS /* (Quality of Service) */ +
SCFRDFME /* (MSC Star) */ +
EHCMSME /* (MSC Star) */ +
EHCRCOPY /* (MSC Star) */ +
EHCRCVRY /* (MSC Star) */ +
ECORAFIF /* (MSC Star) */ +
SCFRDFM6 /* (MSC Star) */ +
EHCMSM6 /* (MSC Star) */+
)

```

Note: The AUTHCMD NAMES entries allow you to execute MSC Auto Recovery procedures.

1. It is recommended that you examine PARMLIB CHECK(xx) (where xx is the member name suffix) to ensure that there are no syntax errors.

CHAPTER 3

Upgrade

This chapter covers the following topics:

- ◆ Pre-upgrade 34
- ◆ Upgrade 34
- ◆ Post-upgrade 35

Pre-upgrade

Before you begin upgrading Mainframe Enablers, complete the following steps:

1. Review the Mainframe Enablers Release Notes.
2. Review the interoperability information in the E-Lab™ Interoperability Navigator which can be reached at <http://elabnavigator.EMC.com>.
3. Ensure that your system meets the hardware and software requirements listed in “Hardware and software requirements” on page 18.
4. Gather installation information as described in “Installation information” on page 20.

Upgrade

To upgrade Mainframe Enablers from version 8.0 to version 8.1, complete the following steps:

- ◆ Step 1: Obtain Mainframe Enablers installation kit
- ◆ Step 2: Load XMITFILE to mainframe
- ◆ Step 3: Customize XMITLIB(#EXTRACT)
- ◆ Step 4: Run XMITLIB(#EXTRACT)
- ◆ Step 5: Customize RIMLIB installation jobs
- ◆ [Step 6: Run RIMLIB installation jobs](#)
- ◆ Step 7: Apply maintenance updates
- ◆ Step 8: Install license
- ◆ [Step 9: Restart ResourcePak Base](#)

Note: For steps 1-5 and 7-8, follow the instructions provided in [Chapter 2, “Installation.”](#)

Step 6: Run RIMLIB installation jobs

Submit the customized jobs in the following order, ensuring that each job completes successfully before submitting the next one:

1. #U1ALLOC
2. #U4DDDEF
3. #05RECEV
4. #06APPLY
5. #07ACCPT

Job completion codes should be zeroes (00), except for #U4DDDEF or #04DDDEF and #07ACCPT, where “04” is acceptable.

Result: The Mainframe Enablers functionality is received, applied, and accepted on the target mainframe.

Step 9: Restart ResourcePak Base

Shut down and restart ResourcePak Base as described in the *ResourcePak Base for z/OS Product Guide*.

Post-upgrade

The upgrade of EMC Mainframe Enablers is now finished. Before you start using Mainframe Enablers, verify configuration and security settings described in the Product Guide for each Mainframe Enablers component and in [Chapter 5, “Security”](#) of this document.

After you ensure that Mainframe Enablers are correctly installed and functioning properly, run the RIMLIB(#08CLEAN) job to delete datasets and DDDEFSs used during the installation process that are no longer needed.

CHAPTER 4

Licensing

This chapter covers the following topics:

- ◆ Overview..... 38
- ◆ Installing/uninstalling licenses 42
- ◆ Viewing licenses 42

Overview

Mainframe Enablers support Electronic Licensing (eLicensing).

Note: For information on eLicensing, refer to EMC Knowledgebase article 13866 on the EMC Online Support website.

With the introduction of eLicensing, VMAX licensing moved from a host-based model to a VMAX-based model, with the majority of licenses now being stored internally on the VMAX system. However, there are still a number of VMAX licenses that remain host-based and use License Feature Codes (LFCs).

To enable any of the Mainframe Enablers' components, except ResourcePak Base (which is a persistent address space running on any z/OS processor on which it is installed), you need one of the following:

- ◆ For Enginuity 5876 and HYPERMAX OS 5977, you need the eLicense for that component.
- ◆ For Enginuity 5773, you need to install the License Feature Code (LFC) for that component into the ResourcePak Base initialization file.

VMAX-based licenses

For information about VMAX-based licenses, refer to one of the following documents:

- ◆ *VMAX All Flash Product Guide*
- ◆ *VMAX3 Family Product Guide*
- ◆ *VMAX Family Product Guide*

Host-based licenses

[Table 5](#) lists the host-based licenses that apply regardless of the Enginuity/HYPERMAX OS level.

Table 5 Host-based licenses regardless of Enginuity/HYPERMAX OS level

License	Commands included
AutoSwap for z/OS	AutoSwap: N/A Consistency Group: CAX configuration parameter
z/OS Migrator	N/A Startup (EXEC PGM=EFMMMAIN)

Table 6 lists the host-based licenses required to perform operations on systems running Engenuity 5773 from a Mainframe Enablers host. It also lists components used to validate the presence of the applicable license.

Table 6 Host-based licenses required for Engenuity 5773

Feature	Model number	Required Mainframe Enablers component	Function/command	Parameter or keyword checked
SRDF/DM ^a	SRDFDM-RN-ZOS	SRDF Host Component	SC VOL command	SYNC
SRDF Host Component and Consistency Group	SRDFS-RN-ZOS	SRDF Host Component	Startup (EXEC PGM=EMCINIT)	N/A
		Consistency Groups	Startup (EXEC PGM=CGRPMAIN)	N/A
SRDF/A MSC	SRDFA-RN-ZOS	SRDF Host Component	Initialization	MSC_INCLUDE_SESSION
SRDF/AR ^b	SRDFAR-RN-ZOS	TimeFinder/Mirror	SRDF/AR ADD SRDF/AR DELETE SRDF/AR MODIFY	N/A
EMC AutoSwap™ for z/OS	AUTOSWAPMSUxx	Consistency Group	CAX configuration parameter	N/A
		AutoSwap	N/A	N/A
SRDF/Star for z/OS	SRDFSTAR-RN-Z	SRDF Host Component	Initialization	MSC_STAR
TimeFinder/Clone for z/OS ^c	TF-C-RN-ZOS	TimeFinder/Clone Mainframe Snap Facility	Startup (EXEC PGM=EMCSNAP) SNAP command	N/A TARGET or TRG
		TimeFinder/Mirror (for clone emulation) ^d	ESTABLISH command GLOBAL command	CLONEemulation CLONEemulation
TimeFinder/Snap for z/OS ^c	TF-S-RN-ZOS	TimeFinder/Clone Mainframe Snap Facility	Startup (EXEC PGM=EMCSNAP)	N/A
			SNAP command	VDEV
Dynamic Cache Partitioning for z/OS	DYNCP-RN-ZOS	ResourcePak Base	SETCACHE command SETCPxxx command	N/A
Symmetrix Priority Control for z/OS	SYMPRCNT-RN-Z	ResourcePak Base	SETSPC command SETDIR command SETDEV command SETDEVP command	N/A N/A N/A N/A

- a. SRDF/DM requires an EMC Customer Support defined configuration setting. It does not require an LFC.
- b. In addition to the SRDF/AR LFC, TimeFinder/Mirror also requires the TimeFinder/Consistency Group LFC (SRDF/AR does a consistent SPLIT) and the TimeFinder/Clone (TARGET) LFC for Clone Emulation.
- c. TimeFinder/Clone and TimeFinder/Snap LFCs are processed at ResourcePak Base (EMCSCF) initialization, and validated at batch EMCSNAP execution.
- d. TimeFinder/Mirror under Engenuity 5874 or higher uses only clone emulation. It also requires use of devices configured with the BCV attribute.

TimeFinder LFCs for Engenuity 5773

To use TimeFinder/Clone and TimeFinder/Snap, you must install the matching Licensed Feature Code (LFC) as listed in [Table 7](#).

Table 7 TimeFinder components and LFCs

To use...	Install...
TimeFinder/Clone and the TARGET parameter	TimeFinder/Clone Licensed Feature Code
TimeFinder/Snap and the VDEVice parameter	TimeFinder/Snap Licensed Feature Code
TimeFinder/Consistency Group does not require a separate license.	

After you enter one of the LFCs, the TF/Clone mainframe Snap Facility common code and the specific code for the functional product are enabled by that Licensed Feature Code.

For example, if you enable the LFC for TimeFinder/Snap, you can use the VDEV parameter in command specifications and perform any task enabled by the common code and by TimeFinder/Snap.

Under LFC management, certain commands have valid parameters that apply to specific functional products. For example, SNAP VOLUME has a TARGET parameter that you can only use if you have installed the TF/Clone licensed feature code and a VDEVice parameter that you can only use if you have installed the TF/Snap LFC.

However, you cannot use the VDEVice parameter with SNAP VOLUME if you have only installed the TF/Clone LFC or use TARGET if you have only installed the TF/Snap LFC.

[Table 8](#) shows the command set in the foundation software and how they are used in the functional products: TF/Clone, TF/Snap, and TF/Consistency Group.

Conventions

- ◆ The word **Available** in a table cell indicates that the functional product uses the command. (The command may be part of the common code or may be specific to the product.) Additional text in a table cell explains the special conditions for using this command with this functional product.
- ◆ Gray shade in a table cell means that the functional product cannot use the command.

Table 8 Functional product commands (page 1 of 2)

Foundation command	TF/Clone LFC	TF/Snap LFC	TF/Consistency Group
ACTIVATE	Available	Available	Available CONSISTENT parameter usable
CLEANUP [EXTENT TRACK ON]	Available	Available	Available
CONFIG	Available	Available	Available
DEFINE GROUP	Available	Available	Available
DEFINE_SOURCE_VOLUME_LIST	Available	Available	Available
DELETE GROUP	Available	Available	Available

Table 8 Functional product commands (page 2 of 2)

Foundation command	TF/Clone LFC	TF/Snap LFC	TF/Consistency Group
END GROUP	Available	Available	Available
GLOBAL	Available	Available	Available CONSISTENT parameter usable
QUERY DATASET	Available		
QUERY GLOBAL	Available	Available	Available
QUERY GROUP	Available	Available	Available
QUERY VDEVICE		Available	
QUERY VOLUME	Available	Available	Available
RESTORE VOLUME		Available	
SNAP DATASET	Available		
SNAP VOLUME	Available TARGET parameter usable	Available VDEV parameter usable	Available, but requires TF/Clone LFC to use the TARGET parameter Requires TF/Snap LFC to use the VDEV parameter
STOP SNAP TO DATASET	Available		
STOP SNAP TO VOLUME	Available	Available	Available

Installing/uninstalling licenses

VMAX-based licenses

Refer to the *Solutions Enabler Installation Guide* and *Unisphere Online Help* for instructions on how to install and uninstall licenses on the VMAX system.

IMPORTANT

If there is no Open Systems host attached to your VMAX system, contact your EMC Service Engineer for installation and activation of your license files.

Host-based licenses

Host-based licenses are installed in the form of License Feature Codes (LFCs). You specify LFCs using the SCF.LFC.LCODES.LIST parameter in the ResourcePak base initialization file.

Note: The *ResourcePak Base for z/OS Product Guide* describes the ResourcePak Base initialization file and the SCF.LFC.LCODES.LIST parameter.

Viewing licenses

You can view license information by using eLicensing management commands of Symmetrix Control Facility (SCF):

- ◆ To view a list of licensed features, use the ELM,LIST command of SCF.
- ◆ To check how the licenses are used, use the ELM,QUERY command of SCF.

Note: The *ResourcePak Base for z/OS Product Guide* describes the eLicensing management commands.

To view LFCs, check the SCF.LFC.LCODES.LIST parameter in the ResourcePak Base initialization file (specified using the SCFINI DD statement of the SCF started task).

Note: The *ResourcePak Base for z/OS Product Guide* describes the ResourcePak Base initialization file and the SCF.LFC.LCODES.LIST parameter.

CHAPTER 5

Security

This chapter covers the following topics:

- ◆ EMCSAFI security interface 44
- ◆ Classes and resources used in EMCSAFI 45
- ◆ Enabling/disabling EMCSAFI 62
- ◆ Customizing EMCSAFI..... 64
- ◆ Restoring EMC-supplied EMCSAFI 71

EMCSAFI security interface

Mainframe Enablers security¹ is implemented through the EMCSAFI security interface.

To use resources, EMCSAFI uses z/OS SAF calls (RACROUTE) to request authorization. The input to this program is the EMCSAFRB request block. EMCSAFRB describes the authorization.

EMCSAFI requires that RACF version 1.9 or higher, or an equivalent SAF-compliant security product is installed and activated.

EMCSAFI is enabled by default. If you do not want to use EMCSAFI, disable it as described in [“Disabling EMCSAFI” on page 62](#).

When EMCSAFI is active, check with your security administrator to ensure that the proper classes are active and the proper resources are defined. The classes and resources used by EMCSAFI are described in [“Classes and resources used in EMCSAFI” on page 45](#).

1. The *VMAX All Flash and VMAX3 Family Security Configuration Guide* provide a general overview of Mainframe Enablers security controls.

Classes and resources used in EMCSAFI

IMPORTANT

EMCSAFI is affected by changes to some of the defaults for a dynamically defined CDT class. This causes resource classes that are dynamically defined to act differently than if they were created with the ICHERCDE macro. Review the resource names regarding the default values for special characters.

ResourcePak Base

XFACILIT

Table 9 lists the resource validation requests for the ResourcePak Base environment commands.

Update authority to these resources is required to issue commands. If the resource profile is not present, all users are allowed to issue the commands.

Table 9 ResourcePak Base resource validation requests with XFACILIT (page 1 of 3)

Command environment	Function	Class	Resource	Attribute
ASY	DISABLE ENABLE REFRESH SSAR		EMC.ADMIN.CMD.ASY	
DSE	DISABLE ENABLE REFRESH	XFACILIT	EMC.ADMIN.CMD.DSE	Update

Table 9 ResourcePak Base resource validation requests with XFACILIT (page 2 of 3)

Command environment	Function	Class	Resource	Attribute
GPM	ADD ALLOCATE BIND CREATE COMPRESS DECOMPRESS DELETE DISABLE DISPLAY DRAIN ENABLE HALTTASK HDRAIN MOVE PERSIST OFF POOLATTR REBALANCE REBIND REMOVE RENAME UNBIND USR_NRDY USR_RDY	XFACILIT	EMC.ADMIN.CMD.GPM	Update
<p>Note: Only the QUERY GPM command is not RACF-protected. The DISPLAY GPM command is RACF-protected.</p>				
INI	RELOAD SHUTDOWN CSTOP	XFACILIT	EMC.ADMIN.CMD.INI	Update
MSC	ADDDEV DEACT DEACTREFRESH DEACTRESTART DEACTRESTARTTOSEC DEACTRESTARTTOZERO DELDEV DISABLE ENABLE PENDDROP RECOVER REFRESH RESTART RESTARTTOSEC RESTARTTOZERO TAKEOVER VERBOSE	XFACILIT	EMC.ADMIN.CMD.MSC	Update
REC	RELDLOCK		EMC.ADMIN.CMD.REC	

Table 9 ResourcePak Base resource validation requests with XFACILIT (page 3 of 3)

Command environment	Function	Class	Resource	Attribute
SAR	MODIFY PAUSE RESTART START STOP	XFACILIT	EMC.ADMIN.CMD.SAR	Update
SDV	DISABLE ENABLE REFRESH	XFACILIT	EMC.ADMIN.CMD.SDV	Update
THN	DISABLE ENABLE REFRESH		EMC.ADMIN.CMD.THN	
TRU	DISABLE ENABLE HOLD RECLAIM REFRESH RELEASE SCAN START STOP	XFACILIT	EMC.ADMIN.CMD.TRU	Update

VMAX system naming feature

ResourcePak Base allows you to assign a name to a VMAX system. SAF security for the VMAX system naming feature uses the XFACILIT general resource class. The resource name is:

```
EMC . ADMIN . SCF . CTRL . nnnnnnnnnnnn
```

Where *nnnnnnnnnnnn* is the 12-character VMAX system serial number.

Update authority to this resource is required to assign a name to a VMAX system. If the profile for the resource is not present, all users are allowed to assign names to VMAX systems.

QOS Utility

With Mainframe Enablers 7.0 and higher, QOS also supports the use of the XFACILIT class. EMC recommends using XFACILIT for new installations. [Table 10](#) summarizes the resource validation requests for QOS Utility features and functions with XFACILIT.

Table 10 EMCQOS resource validation requests with XFACILIT

Function	Class	Resource	Attribute
QOS Symmetrix Priority Control	XFACILIT	EMC.ADMIN.CMD.QOS-SPC	Read
QOS Dynamic Cache Partitioning	XFACILIT	EMC.ADMIN.CMD.QOS-DCP	Read

The QS#BASE class remains available for compatibility reasons.

Table 11 EMCQOS resource validation requests with QS#BASE

Function	Class	Resource	Attribute
QOS Symmetrix Priority Control	QS#BASE	QOS-SPC	Read
QOS Dynamic Cache Partitioning	QS#BASE	QOS-DCP	Read

zBoost PAV Optimizer

Table 12 summarizes the resource validation requests for zBoost PAV Optimizer commands with XFACILIT.

Table 12 zBoost PAV Optimizer resource validation requests with XFACILIT

Command	Class	Resource	Attribute
DISPLAY	XFACILIT	EMC.ADMIN.CMD.DEV.OPTIMIZE	Read
ENABLE DISABLE SUSPEND RESUME RESET	XFACILIT	EMC.ADMIN.CMD.DEV.OPTIMIZE	Update

SRDF Host Component

To set up SRDF Host Component security, use either of the following methods:

- ◆ [XFACILIT](#)

The XFACILIT class resources add the ability to protect specific actions of each SRDF Host Component command individually.

- ◆ [Initialization parameters](#)

This legacy method provides protection at the command level only.

The XFACILIT resources are checked first. If the resource in question is not defined in XFACILIT, then the initialization parameters are checked.

XFACILIT

Query commands

Table 13 summarizes the resource validation requests for SRDF Host Component query commands with XFACILIT.

Table 13 SRDF Hosts component resource validation requests with XFACILIT: query commands

Command	Class	Resource	Attribute
#SQ ADC	XFACILIT	EMC.ADMIN.CMD.SRDF.SQ.ADC	Read
#SQ CNFG	XFACILIT	EMC.ADMIN.CMD.SRDF.SQ.CNFG	Read
#SQ DSTAT	XFACILIT	EMC.ADMIN.CMD.SRDF.SQ.DSTAT	Read
#SQ EPVOL	XFACILIT	EMC.ADMIN.CMD.SRDF.SQ.EPVOL	Read

Table 13 SRDF Hosts component resource validation requests with XFACILIT: query commands

Command	Class	Resource	Attribute
#SQ FAVOL	XFACILIT	EMC.ADMIN.CMD.SRDF.SQ.FAVOL	Read
#SQ GLOBAL	XFACILIT	EMC.ADMIN.CMD.SRDF.SQ.GLOBAL	Read
#SQ LINK	XFACILIT	EMC.ADMIN.CMD.SRDF.SQ.LINK	Read
#SQ MIRROR	XFACILIT	EMC.ADMIN.CMD.SRDF.SQ.MIRROR	Read
#SQ MSG	XFACILIT	EMC.ADMIN.CMD.SRDF.SQ.MSG	Read
#SQ RAID	XFACILIT	EMC.ADMIN.CMD.SRDF.SQ.RAID	Read
#SQ RAID5	XFACILIT	EMC.ADMIN.CMD.SRDF.SQ.RAID5	Read
#SQ RAID6	XFACILIT	EMC.ADMIN.CMD.SRDF.SQ.RAID6	Read
#SQ RAID10	XFACILIT	EMC.ADMIN.CMD.SRDF.SQ.RAID10	Read
#SQ RDFGRP	XFACILIT	EMC.ADMIN.CMD.SRDF.SQ.RDFGRP	Read
#SQ SRDFA	XFACILIT	EMC.ADMIN.CMD.SRDF.SQ.SRDFA	Read
#SQ SRDFA_DSE	XFACILIT	EMC.ADMIN.CMD.SRDF.SQ.SRDFA_DSE	Read
#SQ SRDFA_VOL	XFACILIT	EMC.ADMIN.CMD.SRDF.SQ.SRDFA_VOL	Read
#SQ SRDFA_WP	XFACILIT	EMC.ADMIN.CMD.SRDF.SQ.SRDFA_WP	Read
#SQ SRDFA_WP_VOL	XFACILIT	EMC.ADMIN.CMD.SRDF.SQ.SRDFA_WP_VOL	Read
#SQ SSID	XFACILIT	EMC.ADMIN.CMD.SRDF.SQ.SSID	Read
#SQ STATE	XFACILIT	EMC.ADMIN.CMD.SRDF.SQ.STATE	Read
#SQ VIEWRA	XFACILIT	EMC.ADMIN.CMD.SRDF.SQ.VIEWRA	Read
#SQ VOL	XFACILIT	EMC.ADMIN.CMD.SRDF.SQ.VOL	Read

Configuration commands

Table 14 summarizes the resource validation requests for SRDF Host Component configuration commands with XFACILIT.

Table 14 SRDF Host Component resource validation requests with XFACILIT: configuration commands

Command and action	Class	Resource	Attribute
#SC CNFG SYNCH_DIRECTION	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.CNFG.SYNCH_DIRECTION	Update
#SC FAVOL WriteEnable	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.FAVOL.WRITEENABLE	Update
#SC GLOBAL 4BYTE_ON	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.GLOBAL.4BYTE_ON	Update
#SC GLOBAL 4BYTE_OFF	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.GLOBAL.4BYTE_OFF	Update
#SC GLOBAL FBA_DISABLE	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.GLOBAL.FBA_DISABLE	Update
#SC GLOBAL FBA_ENABLE	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.GLOBAL.FBA_ENABLE	Update
#SC GLOBAL PARM_REFRESH	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.GLOBAL.PARM_REFRESH	Update
#SC GLOBAL SORT_BY_COMMAND	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.GLOBAL.SORT_BY_COMMAND	Update

Table 14 SRDF Host Component resource validation requests with XFACILIT: configuration commands

Command and action	Class	Resource	Attribute
#SC GLOBAL SORT_BY_MVSCUU	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.GLOBAL.SORT_BY_MVSCUU	Update
#SC GLOBAL SORT_BY_SYMDEV	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.GLOBAL.SORT_BY_SYMDEV	Update
#SC GLOBAL SORT_BY_VOLSER	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.GLOBAL.SORT_BY_VOLSER	Update
#SC GLOBAL SSID_REFRESH	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.GLOBAL.SSID_REFRESH	Update
#SC GLOBAL SWAPLOG	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.GLOBAL.SWAPLOG	Update
#SC GLOBAL SYNCH_DIRECTION	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.GLOBAL.SYNCH_DIRECTION	Update
#SC LINK ONLINE	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.LINK.ONLINE	Update
#SC LINK OFFLINE	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.LINK.OFFLINE	Update
#SC MSG RESET	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.MSG.RESET	Update
#SC RDFGRP ADD	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.RDFGRP.ADD	Update
#SC RDFGRP DELETE	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.RDFGRP.DELETE	Update
#SC RDFGRP DELETE(STAR)	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.RDFGRP.DELETE.STAR	Update
#SC RDFGRP DELETE(SQAR)	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.RDFGRP.DELETE.SQAR	Update
#SC RDFGRP MODIfy	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.RDFGRP.MODIFY	Update
#SC RDFGRP MODIfy(STAR)	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.RDFGRP.MODIFY.STAR	Update
#SC RDFGRP MODIfy(SQAR)	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.RDFGRP.MODIFY.SQAR	Update
#SC RDFGRP SYNCH_DIRECTION	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.RDFGRP.SYNCH_DIRECTION	Update
#SC RECOVER MSC	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.RECOVER.MSC	Update
#SC RECOVER SRDFA	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.RECOVER.SRDFA	Update
#SC SRDF_CMPR ACT	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.SRDF_CMPR.ACT	Update
#SC SRDF_CMPR DEACT	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.SRDF_CMPR.DEACT	Update
#SC SRDFA ACT	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.SRDFA.ACT	Update
#SC SRDFA CONS_DEACT	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.SRDFA.CONNS_DEACT	Update
#SC SRDFA DEACT_TO_ADCOPY	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.SRDFA.DEACT_TO_ADCOPY	Update
#SC SRDFA DEACT_TO_ADCOPY_DISK	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.SRDFA.DEACT_TO_ADCOPY_DISK	Update
#SC SRDFA DROP	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.SRDFA.DROP	Update
#SC SRDFA DROP_SIDE	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.SRDFA.DROP_SIDE	Update
#SC SRDFA PEND_DEACT	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.SRDFA.PEND_DEACT	Update
#SC SRDFA PEND_DROP	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.SRDFA.PEND_DROP	Update
#SC SRDFA SET_CACHE_LIMIT	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.SRDFA.SET_CACHE_LIMIT	Update
#SC SRDFA SET_DROP_PRIORITY	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.SRDFA.SET_DROP_PRIORITY	Update
#SC SRDFA SET_HOST_THROTTLE	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.SRDFA.SET_HOST_THROTTLE	Update

Table 14 SRDF Host Component resource validation requests with XFACILIT: configuration commands

Command and action	Class	Resource	Attribute
#SC SRDFA SET_MIN_CYCLE_TIME	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.SRDFA.SET_MIN_CYCLE_TIME	Update
#SC SRDFA TOL_ON	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.SRDFA.TOL_ON	Update
#SC SRDFA TOL_OFF	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.SRDFA.TOL_OFF	Update
#SC SRDFA TRANSMIT_IDLE	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.SRDFA.TRANSMIT_IDLE	Update
#SC SRDFA_DSE ACT	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.SRDFA_DSE.ACT	Update
#SC SRDFA_DSE AUTO_ACT	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.SRDFA_DSE.AUTO_ACT	Update
#SC SRDFA_DSE DEACT	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.SRDFA_DSE.DEACT	Update
#SC SRDFA_DSE THRESHOLD	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.SRDFA_DSE.THRESHOLD	Update
#SC SRDFA_DSE A400_POOL	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.SRDFA_DSE.A400_POOL	Update
#SC SRDFA_DSE 3380_POOL	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.SRDFA_DSE.3380_POOL	Update
#SC SRDFA_DSE 3390_POOL	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.SRDFA_DSE.3390_POOL	Update
#SC SRDFA_DSE FBA_POOL	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.SRDFA_DSE.FBA_POOL	Update
#SC SRDFA_WP AUTO_ACT	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.SRDFA_WP.AUTO_ACT	Update
#SC SRDFA_WP ACT	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.SRDFA_WP.ACT	Update
#SC SRDFA_WP DEACT	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.SRDFA_WP.DEACT	Update
#SC SRDFA_WP DSE_THOLD	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.SRDFA_WP.DSE_THOLD	Update
#SC SRDFA_WP MAXDELAY	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.SRDFA_WP.MAXDELAY	Update
#SC SRDFA_WP PTYPE	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.SRDFA_WP.PTYPE	Update
#SC SRDFA_WP STATS_OFF	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.SRDFA_WP.STATS_OFF	Update
#SC SRDFA_WP STATS_ON	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.SRDFA_WP.STATS_ON	Update
#SC SRDFA_WP STATS_RESET	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.SRDFA_WP.STATS_RESET	Update
#SC SRDFA_WP THRESHOLD	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.SRDFA_WP.THRESHOLD	Update
#SC VOL ADC_MAX	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.VOL.ADC_MAX	Update
#SC VOL ADCOPY_WP	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.VOL.ADCOPY_WP	Update
#SC VOL ADCOPY_DISK	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.VOL.ADCOPY_DISK	Update
#SC VOL CASCRE	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.VOL.CASCRE	Update
#SC VOL CASDEL	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.VOL.CASDEL	Update
#SC VOL CASRSUM	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.VOL.CASRSUM	Update
#SC VOL CASSUSP	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.VOL.CASSUSP	Update
#SC VOL CASSWAP	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.VOL.CASSWAP	Update
#SC VOL CREATEPAIR	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.VOL.CREATEPAIR	Update
#SC VOL DELETEPAIR	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.VOL.DELETEPAIR	Update

Table 14 SRDF Host Component resource validation requests with XFACILIT: configuration commands

Command and action	Class	Resource	Attribute
#SC VOL DOMINO	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.VOL.DOMINO	Update
#SC VOL HDELETEPAIR	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.VOL.HDELETEPAIR	Update
#SC VOL HMOVEPAIR	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.VOL.HMOVEPAIR	Update
#SC VOL HSWAP	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.VOL.HSWAP	Update
#SC VOL INVALIDATE	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.VOL.INVALIDATE	Update
#SC VOL ITA	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.VOL.ITA	Update
#SC VOL MOVEPAIR	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.VOL.MOVEPAIR	Update
#SC VOL NADCOPY	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.VOL.NADCOPY	Update
#SC VOL NDOMINO	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.VOL.NDOMINO	Update
#SC VOL NITA	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.VOL.NITA	Update
#SC VOL NRDY	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.VOL.NRDY	Update
#SC VOL OFFLINE	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.VOL.OFFLINE	Update
#SC VOL ONLINE	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.VOL.ONLINE	Update
#SC VOL PREFRESH	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.VOL.PREFRESH	Update
#SC VOL PRE_RSUM	XFACILIT	MC.ADMIN.CMD.SRDF.SC.VOL.PRE_RSUM	Update
#SC VOL R22SWTCH	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.VOL.R22SWTCH	Update
#SC VOL RDY	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.VOL.RDY	Update
#SC VOL RDF_NRDY	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.VOL.RDF_NRDY	Update
#SC VOL RDF_RSUM	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.VOL.RDF_RSUM	Update
#SC VOL RDF_SUSP	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.VOL.RDF_SUSP	Update
#SC VOL RDF_WR_ENABLE	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.VOL.RDF_WR_ENABLE	Update
#SC VOL REFRESH	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.VOL.REFRESH	Update
#SC VOL RESUMEPAIR	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.VOL.RESUMEPAIR	Update
#SC VOL RFR_RSUM	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.VOL.RFR_RSUM	Update
#SC VOL RNG_PREFRESH	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.VOL.RNG_PREFRESH	Update
#SC VOL RNG_PRE_RSUM	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.VOL.RNG_PRE_RSUM	Update
#SC VOL RNG_REFRESH	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.VOL.RNG_REFRESH	Update
#SC VOL RNG_RSUM	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.VOL.RNG_RSUM	Update
#SC VOL R/O	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.VOL.R/O	Update
#SC VOL R/W	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.VOL.R/W	Update
#SC VOL SEMI-SYNC	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.VOL.SEMI-SYNC	Update
#SC VOL SUSP_CGRP	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.VOL.SUSP_CGRP	Update

Table 14 SRDF Host Component resource validation requests with XFACILIT: configuration commands

Command and action	Class	Resource	Attribute
#SC VOL SWAP	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.VOL.SWAP	Update
#SC VOL SYNC	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.VOL.SYNC	Update
#SC VOL USR_NRDY	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.VOL.USR_NRDY	Update
#SC VOL USR_RDY	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.VOL.USR_RDY	Update
#SC VOL VALIDATE	XFACILIT	EMC.ADMIN.CMD.SRDF.SC.VOL.VALIDATE	Update

Miscellaneous commands

Table 15 summarizes the resource validation requests for miscellaneous SRDF Host Component commands with XFACILIT.

Table 15 SRDF Host Component resource validation requests with XFACILIT: miscellaneous commands

Command and action	Class	Resource	Attribute
#HELP CMDLIST	XFACILIT	EMC.ADMIN.CMD.SRDF.HELP.CMDLIST	Read
#HELP CODES	XFACILIT	EMC.ADMIN.CMD.SRDF.HELP.CODES	Read
#HELP SYNTAX	XFACILIT	EMC.ADMIN.CMD.SRDF.HELP.SYNTAX	Read
#TF	XFACILIT	EMC.ADMIN.CMD.SRDF.TF	Update
#STOP	XFACILIT	EMC.ADMIN.CMD.SRDF.STOP	Update

Initialization parameters

To set SRDF Host Component class and resource names, use the SRDF Host Component initialization parameters:

- ◆ SAF_CLASS
- ◆ SAF_PROFILE

Note: The *SRDF Host Component Product Guide* provides information on these parameters.

SnapVX

Table 16 summarizes the resource validation requests for SnapVX features and functions with XFACILIT.

Table 16 SnapVX resource validation requests with XFACILIT

Function	Class	Resource	Attribute
CREATE SNAPSHOT	XFACILIT	EMC.ADMIN.COMD.EMCSNAP.CREATE	Read
TERMINATE SNAPSHOT	XFACILIT	EMC.ADMIN.COMD.EMCSNAP.TERMINATE	Read
LINK SNAPSHOT	XFACILIT	EMC.ADMIN.COMD.EMCSNAP.LINK	Read
UNLINK SNAPSHOT	XFACILIT	EMC.ADMIN.COMD.EMCSNAP.UNLINK	Read
RENAME SNAPSHOT	XFACILIT	EMC.ADMIN.COMD.EMCSNAP.RENAME	Read

zDP

zDP supports the use of the XFACILIT class. EMC recommends using XFACILIT for new installations. Table 17 summarizes the resource validation requests for zDP features and functions with XFACILIT.

Table 17 zDP resource validation requests with XFACILIT (page 1 of 2)

Function	Class	Resource	Attribute
Start	XFACILIT	EMC.ADMIN.COMD.ZDP.START	Update
Stop	XFACILIT	EMC.ADMIN.COMD.ZDP.STOP	Update
Pause	XFACILIT	EMC.ADMIN.COMD.ZDP.PAUSE	Update
Resume	XFACILIT	EMC.ADMIN.COMD.ZDP.RESUME	Update
Query VDG	XFACILIT	EMC.ADMIN.COMD.ZDP.QUERY.VDG	Read
Query target	XFACILIT	EMC.ADMIN.COMD.ZDP.QUERY.TGT	Read
Query status	XFACILIT	EMC.ADMIN.COMD.ZDP.QUERY.STATUS	Read
Query devices	XFACILIT	EMC.ADMIN.COMD.ZDP.QUERY.DEVICES	Read
Query snapset	XFACILIT	EMC.ADMIN.COMD.ZDP.QUERY.SNAPSET	Read
Define VDG	XFACILIT	EMC.ADMIN.COMD.ZDP.DEFINE	Update
Define target	XFACILIT	EMC.ADMIN.COMD.ZDP.DEFINE	Update
Delete VDG	XFACILIT	EMC.ADMIN.COMD.ZDP.DELETE	Update
Delete target	XFACILIT	EMC.ADMIN.COMD.ZDP.DELETE	Update
Add device	XFACILIT	EMC.DEVC.12digitserialnumber.ssid.dev# ^a	Update
Remove device	XFACILIT	EMC.DEVC.12digitserialnumber.ssid.dev# ^a	Update
Release device lock	XFACILIT	EMC.ADMIN.COMD.ZDP.RELDLOCK	Update
Modify options	XFACILIT	EMC.ADMIN.COMD.ZDP.MODIFY.OPTIONS	Update
Set persistent attribute	XFACILIT	EMC.ADMIN.COMD.ZDP.PERSISTENT	Update

Table 17 zDP resource validation requests with XFACILIT (page 2 of 2)

Function	Class	Resource	Attribute
Terminate snapset	XFACILIT	EMC.ADMIN.CMD.ZDP.TERMINATE	Update
Link snapset	XFACILIT	EMC.ADMIN.CMD.ZDP.LINK	Update
Unlink snapset	XFACILIT	EMC.ADMIN.CMD.ZDP.UNLINK	Update
Debug	XFACILIT	EMC.ADMIN.CMD.ZDP.DEBUG	Update
Link/Restore	XFACILIT	EMC.ADMIN.CMD.ZDP.BYPASS-ONLINE-CHECK	Read

a. Refer to “Enhanced device security” on page 55 for information about this resource.

TimeFinder/Clone Mainframe Snap Facility

Table 18 summarizes the basic resource validation requests for TimeFinder/Clone Mainframe Snap Facility features and functions.

Table 18 TimeFinder/Clone Snap Facility resource validation requests

Function	Class	Resource	Attribute	Dstyp	Volser
Snap volume	DASDVOL	<i>Old-volser</i>	Read		
	DASDVOL	<i>New-volser</i>	Alter		
Snap dataset	DATASET	<i>Old-dsname</i>	Read	N or V	Volser
	Normal z/OS security processing is performed for output dataset.				

Enhanced device security

EMCSAFI supplies additional security checks for environments where multiple groups of users are using different devices on a single VMAX system. These security checks are provided through the SYMDV# parameter. When you use SYMDV#, TimeFinder/Clone Mainframe Snap Facility now checks to ensure that devices are logically only available to an authorized user.

For example, if you specify VDEV(FREE) within TimeFinder/Clone Mainframe Snap Facility, the software checks that a device assigned is logically accessible by a particular user. Or, if a SNAP VOLUME occurs, TimeFinder/Clone Mainframe Snap Facility checks to ensure both the source and target devices are logically accessible only by a particular user.

To implement this check at the VMAX device number level, the SAF check provided by ResourcePak Base supports the XFACILIT resource name.

The requested access authority is READ for source devices and UPDATE for target devices. The format of the SAF request is as follows:

```
EMC.DEVC.12digitserialnumber.ssid.dev#
```

Where:

```
12-digitserialnumber
```

The 12-digit serial number of the VMAX system.

ssid

The subsystem ID.

dev#

The VMAX device number. This must be an 8-digit value.

Example The following example identifies a VMAX system with serial number 00000006185. The SSID is 0C02, and the VMAX device number is 00000230.

```
EMC.DEVC.00000006185.0C02.00000230
```

You can use an asterisk (*) to specify a mask. For example, the following statement protects an entire SSID:

```
EMC.DEVC.00000006185.0C02.*
```

The following statement protects the entire VMAX system:

```
EMC.DEVC.00000006185.*
```

Enhanced group security

You can control who may modify, display, and use groups with the XFACILIT resource class. The requested authority for all commands that reference a group is READ. The requested authority for commands that define or delete groups is UPDATE. The format for the SAF resource name is:

```
EMC.ADMIN.GROUP.EMCSNAP.groupname
```

Where:

groupname

Specifies the group name.

Enhanced pool security

You can control who may modify, display, and use pools through the XFACILIT resource class. The requested authority for all commands that reference a pool is READ. The requested authority for all CONFIGPOOL commands is UPDATE. The format for the SAF resource name is:

```
EMC.ADMIN.POOL.EMCSNAP.poolname
```

Where:

poolname

Specifies the pool name.

Note: The *ResourcePak Base for z/OS Product Guide* provides more information about the CONFIGPOOL commands.

Enhanced command security

You may also control who can issue commands through the XFACILIT resource class. The requested authority for all commands is READ. [Table 19](#) shows the format for the SAF resources.

Table 19 Command resources with XFACILIT

Command	Resource
ACTIVATE	EMC.ADMIN.CMD.EMCSNAP.ACTIVATE
CLEANUP	EMC.ADMIN.CMD.EMCSNAP.CLEANUP
CONFIG	EMC.ADMIN.CMD.EMCSNAP.CONFIG
CONFIGPOOL ADD	EMC.ADMIN.CMD.EMCSNAP.CONFIGPL.ADD
CONFIGPOOL CREATE	EMC.ADMIN.CMD.EMCSNAP.CONFIGPL.CREATE
CONFIGPOOL DELETE	EMC.ADMIN.CMD.EMCSNAP.CONFIGPL.DELETE
CONFIGPOOL DISABLE	EMC.ADMIN.CMD.EMCSNAP.CONFIGPL.DISABLE
CONFIGPOOL DISPLAY	EMC.ADMIN.CMD.EMCSNAP.CONFIGPL.DISPLAY
CONFIGPOOL DRAIN	EMC.ADMIN.CMD.EMCSNAP.CONFIGPL.DRAIN
CONFIGPOOL ENABLE	EMC.ADMIN.CMD.EMCSNAP.CONFIGPL.ENABLE
CONFIGPOOL REMOVE	EMC.ADMIN.CMD.EMCSNAP.CONFIGPL.REMOVE
CONFIGPOOL UNDRAIN	EMC.ADMIN.CMD.EMCSNAP.CONFIGPL.UNDRAIN
DEBUG DATASET	EMC.ADMIN.CMD.EMCSNAP.DEBUG.DATASET
DEFINE GROUP	EMC.ADMIN.CMD.EMCSNAP.GROUP.DEFINE
DEFINE SOURCE_VOLUME_LIST	EMC.ADMIN.CMD.EMCSNAP.DEFINE.SRCLIST
DELETE GROUP	EMC.ADMIN.CMD.EMCSNAP.GROUP.DELETE
END GROUP	EMC.ADMIN.CMD.EMCSNAP.GROUP.END
GLOBAL	EMC.ADMIN.CMD.EMCSNAP.GLOBAL
Perform a group operation	EMC.ADMIN.CMD.EMCSNAP.GROUP
QUERY DATASET	EMC.ADMIN.CMD.EMCSNAP.QUERY.DATASET
QUERY GLOBAL	EMC.ADMIN.CMD.EMCSNAP.QUERY.GLOBAL
QUERY GROUP	EMC.ADMIN.CMD.EMCSNAP.QUERY.GROUP
QUERY SNAPPPOOL	EMC.ADMIN.CMD.EMCSNAP.QUERY.SNAPPPOOL
QUERY VDEV	EMC.ADMIN.CMD.EMCSNAP.QUERY.VDEV
QUERY VOLUME	EMC.ADMIN.CMD.EMCSNAP.QUERY.VOLUME
RESET	EMC.ADMIN.CMD.EMCSNAP.RESET
RESTORE	EMC.ADMIN.CMD.EMCSNAP.RESTORE
SNAP DATASET	EMC.ADMIN.CMD.EMCSNAP.SNAP.DATASET
SNAP VOLUME	EMC.ADMIN.CMD.EMCSNAP.SNAP.VOLUME
STOP SNAP TO DATASET	EMC.ADMIN.CMD.EMCSNAP.STOP.DATASET
STOP SNAP TO VOLUME	EMC.ADMIN.CMD.EMCSNAP.STOP.VOLUME

TimeFinder/Mirror

TimeFinder/Mirror supports the use of the XFACILIT class. EMC recommends using XFACILIT for new installations.

Table 20 summarizes the resource validation requests for TimeFinder/Mirror features and functions with XFACILIT.

Table 20 TimeFinder/Mirror resource validation requests with XFACILIT

Function	Class	Resource	Attribute
Query	XFACILIT	EMC.ADMIN.COMD.TF.QUERY	Read
Establish	XFACILIT	EMC.ADMIN.COMD.TF.ESTABLISH	Update
Re-establish	XFACILIT	EMC.ADMIN.COMD.TF.RE-ESTABLISH	Update
Split	XFACILIT	EMC.ADMIN.COMD.TF.SPLIT	Update
Restore (incremental)	XFACILIT	EMC.ADMIN.COMD.TF.PARTIAL-RESTORE	Update
Restore (incremental)	XFACILIT	EMC.ADMIN.COMD.TF.PARTIAL-RESTORE-BYPASS-WTOR	Update
Restore (full)	XFACILIT	EMC.ADMIN.COMD.TF.FULL-RESTORE	Update
Restore (full)	XFACILIT	EMC.ADMIN.COMD.TF.FULL-RESTORE-NOVERIFY	Update
Restore (full)	XFACILIT	EMC.ADMIN.COMD.TF.FULL-RESTORE-BYPASS-WTOR	Update
Config	XFACILIT	EMC.ADMIN.COMD.TF.CONFIG	Update
SRDF/AR ADD	XFACILIT	EMC.ADMIN.COMD.TF.SAR-ADD	Update
SRDF/AR DELETE	XFACILIT	EMC.ADMIN.COMD.TF.SAR-DELETE	Update
SRDF/AR START	XFACILIT	EMC.ADMIN.COMD.TF.SAR-START	Update
SRDF/AR STOP	XFACILIT	EMC.ADMIN.COMD.TF.SAR-STOP	Update
Site options	XFACILIT	oEMC.ADMIN.COMD.TF.SITE-OPTIONS-OVERRIDE	Update
SRDF/AR MODIFY	XFACILIT	EMC.ADMIN.COMD.TF.SAR-MODIFY	Update
All functions	XFACILIT	EMC.ADMIN.COMD.TF.BYPASS-ONLINE-CHECK	Update

The TF#BASE class remains available for compatibility reasons. Table 21 summarizes the resource validation requests for TimeFinder/Mirror features and functions with TF#BASE.

Table 21 TimeFinder/Mirror resource validation requests with TF#BASE

Function	Class	Resource	Attribute
Query	TF#BASE	QUERY	Read
Establish	TF#BASE	ESTABLISH	Read
Re-establish	TF#BASE	RE-ESTABLISH	Read
Split	TF#BASE	SPLIT	Read
Restore (incremental)	TF#BASE	PARTIAL-RESTORE	Read
Restore (incremental)	TF#BASE	PARTIAL-RESTORE-BYPASS-WTOR	Read
Restore (full)	TF#BASE	FULL-RESTORE	Read

Table 21 TimeFinder/Mirror resource validation requests with TF#BASE

Function	Class	Resource	Attribute
Restore (full)	TF#BASE	FULL-RESTORE-NOVERIFY	Read
Restore (full)	TF#BASE	FULL-RESTORE-BYPASS-WTOR	Read
Config	TF#BASE	CONFIG	Read
SRDF/AR ADD	TF#BASE	SAR-ADD	Read
SRDF/AR DELETE	TF#BASE	SAR-DELETE	Read
SRDF/AR START	TF#BASE	SAR-START	Read
SRDF/AR STOP	TF#BASE	SAR-STOP	Read
SRDF/AR MODIFY	TF#BASE	SAR-MODIFY	Read
Site options	TF#BASE	SITE-OPTIONS-OVERRIDE	Read
All functions	TF#BASE	BYPASS-ONLINE-CHECK	Read

TimeFinder Utility

Table 22 summarizes the resource validation requests for TimeFinder Utility features and functions.

Table 22 TimeFinder Utility resource validation requests

Function	Class	Resource	Attribute	Dstyp	Volser
Relabel Vol	DASDVOL	Old-volser	Alter		
	DASDVOL	New-volser	Alter		
Rename nvsam	DATASET	Old-dsname	Alter	N	<i>Volser</i>
	DATASET	New-dsname	Alter	N	<i>Volser</i>
Rename cluster	DATASET	Old-dsname	Alter	V	<i>Old cat vol</i>
	DATASET	New-dsname	Alter	V	<i>New cat vol</i>
Rename path	DATASET	Old-pathname	Alter	V	<i>Old cat vol</i>
	DATASET	New-pathname	Alter	V	<i>New cat vol</i>

ConGroup

Table 23 summarizes the resource validation requests for ConGroup features and functions.

XFACILIT is the default SAF class. EMC.ADMIN.CMD.CG is the default SAF profile. You can localize both in the ConGroup global initialization parameters.

EMC strongly encourages to use the default Class/Resource names for MFE version 8.1; however, both 8.1 and pre-8.1 names may be used until pre-8.1 names support is withdrawn.

The following does not apply if initialization parameters are used to override the defaults listed in Table 23: if a SAF validation request is made and the corresponding default 8.1 Resource/Class set is NOT DEFINED, ConGroup will attempt to validate using the previous default Resource/Class definitions. See the *Mainframe Enablers Installation and Customization Guide* for the release you are upgrading from for more information.

Table 23 ConGroup resource validation requests (page 1 of 2)

Function	Class	Resource	Attribute
ADD	XFACILIT	EMC.ADMIN.CMD.CG.ADDDEL	Update
#ADD CONTROLLER	XFACILIT	EMC.ADMIN.CMD.CG.ADDDEL	Update
CANCEL	XFACILIT	EMC.ADMIN.CMD.CG.CGMANAGE	Update
DAS ^a	n/a	n/a	n/a
DELETE	XFACILIT	EMC.ADMIN.CMD.CG.ADDDEL	Update
#DELETE CONTROLLER	XFACILIT	EMC.ADMIN.CMD.CG.ADDDEL	Update
DISABLE	XFACILIT	EMC.ADMIN.CMD.CG.CGMANAGE	Update
DISPLAY CONGROUP	XFACILIT	EMC.ADMIN.CMD.CG.CGDISP	Read
DISPLAY ENVIRONMENT	XFACILIT	EMC.ADMIN.CMD.CG.CGDISP	Read
#DISPLAY GATEKEEPER	XFACILIT	EMC.ADMIN.CMD.CG.CGDISP	Read
ENABLE	XFACILIT	EMC.ADMIN.CMD.CG.CGMANAGE	Update
HELP ^b	n/a	n/a	n/a
LA ^b	n/a	n/a	n/a
MOVEOWNER	XFACILIT	EMC.ADMIN.CMD.CG.CGMANAGE	Update
#PIN	XFACILIT	EMC.ADMIN.CMD.CG.CGMANAGE	Update
QUERY CONGROUP	XFACILIT	EMC.ADMIN.CMD.CG.CGDISP	Read
REFRESH	XFACILIT	EMC.ADMIN.CMD.CG.CGREFR	Update
REMSPLIT	XFACILIT	EMC.ADMIN.CMD.CG.CGMANAGE	Update
RESET	XFACILIT	EMC.ADMIN.CMD.CG.CGMANAGE	Update
RESUME	XFACILIT	EMC.ADMIN.CMD.CG.CGMANAGE	Update
SET VERIFY_INTERVAL	XFACILIT	EMC.ADMIN.CMD.CG.CGMANAGE	Update

Table 23 ConGroup resource validation requests (page 2 of 2)

Function	Class	Resource	Attribute
TAKEOVER	XFACILIT	EMC.ADMIN.CMD.CG.CGMANAGE	Update
TRIP	XFACILIT	EMC.ADMIN.CMD.CG.CGTRIP	Update
#UNPIN	XFACILIT	EMC.ADMIN.CMD.CG.CGMANAGE	Update
VERIFY	XFACILIT	EMC.ADMIN.CMD.CG.CGMANAGE	Update
Run Cleanup utility	XFACILIT	EMC.ADMIN.FNC.CG.ECGUTIL	Update
Run TRIP API	XFACILIT	EMC.ADMIN.FNC.CG.TRIP	Update
STOP	XFACILIT	EMC.ADMIN.CMD.CG.CGSTOP	Update

- a. ConGroup does not check SAF but passes the command directly to AutoSwap. See [Table 24](#) for AutoSwap SAF requirements.
- b. No SAF checking is performed.

AutoSwap

[Table 24](#) summarizes the resource validation requests for AutoSwap features and functions.

Table 24 AutoSwap resource validation requests

Function	Class	Resource	Attribute
DEFINE DELETE SET SETSWAP SWAP VALIDATE	XFACILIT	EMC.ADMIN.CMD.AUTOSWAP	Update
DISPLAY	XFACILIT	EMC.ADMIN.CMD.AUTOSWAP	Read

Message ESWP633I indicates the status of resource checking.

Enabling/disabling EMCSAFI

Enabling EMCSAFI

EMCSAFI is enabled by default.

Disabling EMCSAFI

Member EMCSAFD in the Mainframe Enablers SAMPLIB contains assembler source code that you can use to disable EMCSAFI. Use member #90SAFJB in Mainframe Enablers RIMLIB to assemble and link the modules.

This source replaces CSECT EMCSAFI with a routine that returns a return code of zero (0) or four (4), depending on the content in RNAME_TBL. Entries in RNAME_TBL return 4. No attempt to call RACF is made and the following message is placed in ESRBMSG:

```
EMC SAF INTERFACE IS DISABLED
```

Note: The ESRBMSG message field is part of the EMCAFRB structure. Refer to the ESRBMSG area for messages related to the EMCSAFT routine.

#90SAFJB assembles the EMCSAFD exit and links it to all products. If the SAF interface is to be disabled in selected products, the link edit control statements will have to be removed for the products that will still use the SAF security process. (See the instructions included with #90SAFJB in the RIMLIB library).

To disable the EMC SAF interface for any of the Mainframe Enablers:

1. Read the instructions in the #90SAFJB and ensure that the SAF security process will be disabled in the intended products.
2. Change the JCL to conform to your installation standards.
3. Run the job.

This relinks the component program.

The sample EMCSAFD (Figure 5 on page 63) includes MNOTE statements to identify the RNAME_TBL table. After reviewing this code, comment the MNOTE statements.

```

**
* IF THE SUPPLIED RESOURCE NAME MATCHES AN ENTRY IN THE RNAME_TBL,
* RETURN WITH RC 4.
**

MNOTE 12,'*-----*'
MNOTE 12,'* Please review the new functionality added with  *'
MNOTE 12,'* the RNAME_TBL. A rc 4 will be returned for    *'
MNOTE 12,'* each resource name in the table, allowing for  *'
MNOTE 12,'* protection of these functions when a full SAF  *'
MNOTE 12,'* interface is not desired.                      *'
MNOTE 12,'*
MNOTE 12,'* To run without this enhancement, replace the  *'
MNOTE 12,'* first character of the first entry in the table *'
MNOTE 12,'* with a hex FF.                                *'
MNOTE 12,'*
MNOTE 12,'* Before submitting this module for assembly,   *'
MNOTE 12,'* delete or comment these MNOTE statements.     *'
MNOTE 12,'*-----*'
LA      R2,RNAME_TBL                                PRIME POINTER TO RNAME TBL

```

Figure 5 Sample EMCSAFD

Customizing EMCSAFI

Member EMCSAFI in the Mainframe Enablers SAMPLIB contains assembler source code for the security interface. The source code included in the Mainframe Enablers SAMPLIB is the code linked with the other mainframe components. This source is provided to allow you to customize the behavior of the security code to match your installation requirements.

Use member #90SAFJB in the Mainframe Enablers RIMLIB to assemble and link the modules, making sure to change all occurrences of literal *SAFMBR* to EMCSAFI.

IMPORTANT

EMCSAFI is affected by changes to some of the defaults for a dynamically-defined CDT class. This causes resource classes that are dynamically defined to act differently than if they were created with the ICHERCDE macro. Review the resource names regarding the default values for special characters.

To customize the interface:

1. Change the JCL to conform to your installation standards.
2. Change the source for EMCSAFI to suit your needs.
3. Run the job.

This relinks the component.

Note: Customization of the EMCSAFI routine should only be attempted by experienced systems programmers who have extensive knowledge of the assembler language and standard linkage conventions, and who understand the RACF RACROUTE interface. Normal precautions must be taken to test changes in an isolated environment, and to protect the working production code.

On entry to EMCSAFI, R1 points to a full word containing the address of the EMCSAFRB. The information in this request block is used to build a RACROUTE request.

On return, R15 contains one of the following return codes:

- | | |
|----|---|
| 0 | For ESRBATTR = T: Security subsystem is active.
For ESRBATTR ≠ T: Access is allowed. |
| 8 | Access is denied. |
| 12 | EMCSAFRB failed validation. |
| 16 | RACF is not active. |

Note: Take care when customizing EMCSAFI to maintain re-entrancy.

Zero return code

If the return code is zero, then field ESRBMSG contains one of the messages shown in [Table 25](#).

Table 25 EMCSAFI routine: zero return code

Message	Description
ACCESS ALLOWED	Access to the requested resource is allowed.
ACCESS ALLOWED - (WARN MODE)	Access to the requested resource would have been denied; however, warn mode is in effect, so access is allowed.
ACCESS ALLOWED - CLASS NOT ACTIVE	The requested class is not defined, and PROTECT ALL is not in effect.
ACCESS ALLOWED - RESOURCE NOT PROTECTED	The requested resource is not defined, and PROTECT ALL is not in effect.
SECURITY SUBSYSTEM IS ACTIVE	The request was to determine if the security subsystem is active and it is.

Non-zero return code

If the return code is non-zero, then field ESRBMSG contains one of the messages shown in [Table 26](#).

Table 26 EMCSAFI routine: non-zero return code (page 1 of 2)

Message	Description
ACCESS DENIED	The security subsystem has denied access to the resource. Contact your security administrator for proper access.
SECURITY SUBSYSTEM IS NOT ACTIVE	The security subsystem is not running. Start the security subsystem or run job EMCSAFD from the SCF SAMPLIB to disable the security feature.
EMCSAFRB ERROR - CLASS NOT SPECIFIED	The EMCSAFRB control structure passed to the security interface is in error. Field ESRBCLAS is not filled in. If you have customized the SAF interface, review your changes for errors. If you have not customized the SAF interface, contact the EMC Customer Support Center for technical assistance.
EMCSAFRB ERROR - INVALID AUTHORITY LEVEL REQUESTED	The EMCSAFRB control structure passed to the security interface is in error. Field ESRBATTR has an invalid value. If you have customized the SAF interface, review your changes for errors. If you have not customized the SAF interface, contact the EMC Customer Support Center for technical assistance.

Table 26 EMCSAFI routine: non-zero return code (page 2 of 2)

Message	Description
EMCSAFRB ERROR - RESOURCE NAME NOT SPECIFIED	The EMCSAFRB control structure passed to the security interface is in error. Field ESRBRNAM is not filled in. If you have customized the SAF interface, review your changes for errors. If you have not customized the SAF interface, contact the EMC Customer Support Center for technical assistance.
EMCSAFRB ERROR - INVALID DSTYPE VALUE SPECIFIED	The EMCSAFRB control structure passed to the security interface is in error. Field ESRBDSTY has an invalid value. If you have customized the SAF interface, review your changes for errors. If you have not customized the SAF interface, contact the EMC Customer Support Center for technical assistance.
EMCSAFRB ERROR - DSTYPE IS NOT M AND VOLSER NOT SPECIFIED	The EMCSAFRB control structure passed to the security interface is in error. Field ESRBDSTY has an invalid value. The value is not M, and field ESRBVSER is not filled in. If you have customized the SAF interface, review your changes for errors. If you have not customized the SAF interface, contact the EMC Customer Support Center for technical assistance.

Customizing EMCSAFRB

The EMCSAFRB macro describes the resource access request and is built by the caller and passed to the EMCSAFI routine. The macro is included in the Mainframe Enablers SAMPLIB, and is also shown in [Figure 6 on page 68](#).

XFACILIT class

When the class name is XFACILIT, the following statements are true:

- ◆ ESRBP1 contains two halfword values. The first halfword is the SSID of the device. The second halfword is the SYMDV# of the device.
- ◆ There are situations where the first halfword may be zero because internal processing has not yet progressed to the point of determining the SSID.

Depending on the action specified, some fields may not be filled in. These fields can be used to customize the security exit.

QS#BASE class

When the class name is QS#BASE, the following statements are true:

- ◆ ESRBP1 contains the cuur in the first halfword and cuus in the second halfword.
- ◆ ESRBP2 contains the Primary VMAX device number in the first halfword and the Secondary VMAX device number in the second halfword.

Depending on the action specified, some fields may not be filled in. You can use these unused fields to customize the security exit.

DATASET class (ConGroup)

When the class name is DATASET (or the class name specified in the initialization of ConGroup), the following are true:

ESRBCLAS	Set the class name (QNAME).
ESBRNAM	Set to the resource name (RNAME).
ESRBATTR	U (update) or R (read).
ESRBUTOK	Security token supplied in the CIB representing the operator command.
ESRBDSTY	M (model profile).
ESRBUID	Set to spaces.
ESRBGID	Set to spaces.

Depending on the action specified, some fields may not be filled in. You can use these fields to customize the security exit.

DATASET class (SRDF Host Component)

When the class name is DATASET, the following statements are true:

- ◆ ESRBP1 contains the cuup in the first halfword and cuus in the second halfword.
- ◆ ESRBP2 contains the Primary VMAX device number in the first halfword and the Secondary VMAX device number in the second halfword.

Depending on the action specified, some fields may not be filled in. You can use these unused fields to customize the security exit.

TF#BASE class

When the class name is TF#BASE, the following statements are true:

- ◆ ESRBP1 contains the cuur in the first halfword and cuus in the second halfword.
- ◆ ESRBP2 contains the Primary VMAX device number in the first halfword and the Secondary VMAX device number in the second halfword.

Depending on the action specified, some fields may not be filled in. You can use these unused fields to customize the security exit.

Sample EMCSAFRB macro

Figure 6 on the following pages shows a sample EMCSAFRB macro.

```

MACRO
*****
.*
.* EMCSAFRB
.*
.* STRUCTURE PASSED AS INPUT TO THE EMCSAFI SECURITY INTERFACE
.* ROUTINE.
.*
.*-----
.* CHANGE LOG:
.*
.* 02/09/08 BASE
.* 09/28/08 ADD OPTIONAL PARMS
.*
*****
EMCSAFRB
EMCSAFRB DSECT
*
*****
*
* AUTHORITY LEVEL
*
*****
ESRBATTR DS CL1 REQUEST AUTHORITY LEVEL
* T - TEST RACF ACTIVE
* R - READ
* U - UPDATE
* A - ALTER
* C - CONTROL
* DS CL3 .. OPEN ..
*****
*
* REQUESTOR INFORMATION
*
*****
* SET ESRBUID AND ESRBGID TO BLANK UNLESS 3RD PARTY AUTHORIZATION
* CHECKING IS TO BE USED
*
ESRBUID DS CL8 USERID OR BLANK
ESRBGID DS CL8 GROUPID OR BLANK
ESRBACEE DS A | 0 OR ADDR OF ACEE OR 4X'FF'
* | IF ESRBUTOK POINTS TO UTOKEN
*

```

Figure 6 Sample EMCSAFRB macro

```

*****
*                               RESOURCE INFORMATION                               *
*****
ESRBCLAS DS      CL8                RESOURCE CLASS
ESRBRNAM DS      CL44               RESOURCE NAME
ESRBVSER DS      CL6                VOLSER  (IF CLASS=DATASET)
ESRBDSTY DS      CL1                DSTYPE: (IF CLASS=DATASET)
*                               N - NONVSAM
*                               V - VSAM
*                               M - MODEL PROFILE
*                               T - TAPE
                               DS      CL5                | .. OPEN ..
*****
*                               RETURN CODES                                   *
*****
ESRBR15  DS      F                  RETURN CODE FROM RACROUTE
ESRBRRET DS      F                  RACF RETURN CODE
ESRBRREA DS      F                  RACF REASON CODE
ESRBSRET DS      F                  SAF RETURN CODE
ESRBSREA DS      F                  SAF REASON CODE
*****
*                               ERROR MESSAGE                                 *
*****
ESRBMSG  DS      CL100              AREA FOR MESSAGE RETURN
*****
* REUSE ERROR MESSAGE AREA FOR ADDITIONAL PARAMETERS.  NOTE THAT          *
* THESE PARAMETERS WILL BE OVERLAYED ON RETURN FROM EMCSAFI.              *
*****
                               ORG      ESRBMSG
ESRBP1   DS      XL4                | OPTIONAL PARAMTERS PASSED
ESRBP2   DS      XL4                | . BY APPLICATION
ESRBP3   DS      XL4                | . . .
ESRBP4   DS      XL4                | . . .
ESRBUTOK DS      XL4                | A (USER TOKEN)
                               ORG      ESRBMSG+L' ESRBMSG
EMCSAFRL EQU      *-EMCSAFRB        | AREA LENGTH
                               MEND

```

Figure 6 (continued) Sample EMCSAFRB macro

Tables 27 through 30 describe the fields in the EMCSAFRB structure.

Table 27 Authority level

ESRBATTR	1-byte field describing the level of access required. Valid values are: <ul style="list-style-type: none"> • T — Tests whether the security interface is active. A return code of zero indicates that it is active, a non-zero return code indicates that it is not active. • R — Requests READ access to the resource. • U — Requests UPDATE access to the resource. • A — Requests ALTER access to the resource. • C — Requests CONTROL access to the resource.
----------	--

Table 28 Requestor information

ESRBUID	8-byte field containing the user ID of the user requesting access. If ESRBACEE is specified, this field is ignored.
ESRBGID	8-byte field containing the group ID of the user requesting access. If this field is blank and the ESRBUID field is specified, the default group for the user ID is used. If ESRBUID is blank or ignored, this field is ignored.
ESRBACEE	8-byte field containing the address of a valid ACEE for the user requesting access. If this field is zero and ESRBUID is blank, the ACEE associated with the current address space is used.

Table 29 Resource information

ESRBCLAS	8-byte field containing the class name.
ESRBNAM	44-byte field containing the resource name.
ESRBVSR	Volume serial. Used only when ESRBCLAS=DATASET and ESRBDSTY is not equal to "M."
ESRBDSTY	Dataset type when ESRBCLAS=DATASET. Valid values are: <ul style="list-style-type: none"> • N — Non-VSAM • V — VSAM • M — Model profile • T — Tape dataset

Table 30 Return codes

ESRBR15	On return, contains the return code from the RACROUTE macro.
ESRBRRET	On return, contains the RACF return code.
ESRBRREA	On return, contains the RACF reason code.
ESRBSRET	On return, contains the SAF return code.
ESRBSREA	On return, contains the SAF reason code.

Note: The RACROUTE, RACF, and SAF return codes and reason codes are documented in the IBM publication, *External Security Interface (RACROUTE) Macro Reference for MVS and VM*, or, in later releases, *SecureWay Security Server RACROUTE Macro Reference*.

Restoring EMC-supplied EMCSAFI

Use member #92SAFJB in the Mainframe Enablers RIMLIB to restore the EMC-supplied SAF interface.

Take the following steps for all of the Mainframe Enablers components:

1. Read the instructions in #92SAFJB and ensure that the SAF security process will be reenabled in the intended products.
2. Change the JCL to conform to your installation standards.
3. Run the job.
4. Restart all Mainframe Enablers components.

APPENDIX A

Maintenance Levels

This chapter discusses how to determine maintenance levels of Mainframe Enablers components:

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ResourcePak Base

To determine the latest maintenance level that has been applied to ResourcePak Base, look at the header of the initial task startup message:

```
SCF0100I EMC SYMMETRIX CONTROL FACILITY VERSION vrm NOW ACTIVE (nn)
```

This message reports:

- ◆ VERSION *vrm* — ResourcePak Base release information:
 - v* — Version
 - r* — Release
 - m* — Modification level
- ◆ (*nn*) — The last two digits of the latest EMC PTF maintenance update that was applied to ResourcePak Base. If no maintenance updates have been applied, the PTF value is 00.

GNS

To determine the latest maintenance level that has been applied to the GNS module, look at the initial task startup message:

```
SCF0890I SCFGNST - GNS task is now active. SCFGNST-mm/dd/yy-hh.mm-Vvrm-SFvrmnn-SSCF
```

This message reports:

- ◆ ResourcePak Base release information:
 - v* — Version
 - r* — Release
 - m* — Modification level
 - nn* — The latest EMC PTF maintenance update that was applied to ResourcePak Base.
- ◆ The date, hour, and minute the latest module was assembled is also provided.

SDV and DSE Monitors

To determine the latest maintenance level that has been applied to the SDV and DSE Monitors, look at the initial task startup messages:

```
SCF1100I SDV MONITOR SNAPPOL TASK STARTED - SCFMNLOG-mm/dd/yy-hh.mm-Vv.r.m(nnn)
SCF1100I DSE MONITOR DSEPOOL TASK STARTED - ESFMNDSE-mm/dd/yy-hh.mm-Vv.r.m(nnn)
```

This message reports:

- ◆ *mm/dd/yy-hh.mm* — The date, hour, and minute the latest module was assembled.
- ◆ *Vv.r.m* — ResourcePak Base release information:
 - v* — Version
 - r* — Release
 - m* — Modification level
- ◆ (*nnn*) — The latest EMC PTF maintenance update that was applied to ResourcePak Base.

MSC

To determine the latest maintenance level that has been applied to the MSC modules, look at the initial task startup messages:

```
SCF1315I MSC MODULE= EHCMSCMA VER= Vv.r.m PATCH= SRvrmnn
SCF1315I MSC MODULE= EHCMSCMB VER= Vv.r.m PATCH= SRvrmnn
SCF1315I MSC MODULE= EHCMSCMC VER= Vv.r.m PATCH= SRvrmnn
SCF1315I MSC MODULE= EHCMSCMD VER= Vv.r.m PATCH= SRvrmnn
SCF1315I MSC MODULE= EHCMSCM8 VER= Vv.r.m PATCH= SRvrmnn
```

This message reports:

- ◆ VER= *Vv.r.m* — SRDF Host Component release information:
 - v* — Version
 - r* — Release
 - m* — Modification level
- ◆ PATCH= *SRvrmnn* — The latest EMC maintenance update that was applied to SRDF Host Component (PATCH):
 - v* — Version
 - r* — Release
 - m* — Modification level
 - nn* — The latest EMC PTF maintenance that was applied to ResourcePak Base. If no maintenance updates have been applied, the PTF value is 00.

SRDF Host Component

To determine the latest maintenance level that has been applied to SRDF Host Component, issue the #SQ GLOBAL command. This example illustrates the output:

```
EMCMN03I SRDF HOST COMPONENT Vn.n.n NOW ACCEPTING COMMANDS
EMCMN81I SRDF HOST COMPONENT Vn.n.n NOW PROCESSING COMMANDS

EMCMN00I SRDF-HC : (5) &SQ GLOBAL
EMCQG00I SRDF-HC DISPLAY FOR (5) &SQ GLOBAL 084
VERSION:  n.n.n SYNCH DIR CURR: R1>R2      MSG PROC:  YES,512
OPER VERIFY:  NONE      SYNCH DIR ALWD: R1<>R2      LOG_DDNAM:  HCLOG1
CONFIG FBA:   ENABLED   MAX_QUERY:      4096      MAX_CMDQ:   4096
DISPLAY SORT ORDER:  SYMDEV      MESSAGE_EXIT:  INACTIVE
HC-PTF:      0001      SCF-VERSION:   s.s.s      SCF-PTF:    0001
CRPAIR_NCPY:  STAR
```

The command output displays the following:

- ◆ SRDF Host Component version information (HC-VERSION).
- ◆ The last 4 digits of the latest EMC maintenance update applied to SRDF Host Component (HC-PTF).
- ◆ ResourcePak Base version information (SCF-VERSION).
- ◆ The last 4 digits of the latest EMC maintenance update applied to ResourcePak Base (SCF-PTF).

Note: Refer to the *SRDF Host Component Product Guide* for details.

If no maintenance updates have been applied, the PTF value is 0000.

TimeFinder/Clone Mainframe Snap Facility

To determine the latest maintenance level that has been applied to the high-level TimeFinder/Clone Mainframe Snap Facility module, look at the header of the initial task startup message:

```
SCF2023I SCFGBLSN MODULE FOUND, LFC WAS SPECIFIED, SNAP Vv.r ACTIVE
```

This message reports:

- ◆ SNAP module release information:
 - v*— Version
 - r*— Release

TimeFinder/Mirror

To determine the maintenance level that has been applied to TimeFinder/Mirror, look at the header of the application batch report:

```
hh:mm:ss BCVM046I *** EMC TimeFinder Vv.r.m (nn) - SCF Vv.r.m (nn) *** mm/dd/yyyy
```

This message reports:

- ◆ *hh:mm:ss*— The hour, minute, and second in *hh:mm:ss* format.
- ◆ *Vv.r.m*— TimeFinder release information:
 - v*— Version
 - r*— Release
 - m*— Modification level
- ◆ *(nn)*— The last two digits (in parentheses) of the latest EMC maintenance update (PTF) that was applied to TFCMSF. If no maintenance updates have been applied, the value is (00).
- ◆ *SCF Vv.r.m*— SCF (ResourcePak Base) release information:
 - v*— Version
 - r*— Release
 - m*— Modification level
- ◆ *(nn)*— The last two digits of the latest EMC maintenance update (PTF) that was applied to SCF. If no maintenance updates have been applied, the value is (00).
- ◆ *mm/dd/yyyy*— The month, day, and year when the maintenance update was built. If no maintenance updates have been applied, the date is the build date of the module.

ConGroup

To determine the latest maintenance level that has been applied to ConGroup, look at the initial task startup message:

```
CGRP000I ConGroup Vv.r (mm/dd/yy-hh.mm ConGroup module-PTF) Initializing
```

This message reports:

- ◆ *Vv.r*— ConGroup release information:
 - v*— Version
 - r*— Release
- ◆ *mm/dd/yy-hh.mm*— The date, hour, and minute of the build. If there is no PTF, the build date-time shows the build date-time of the ConGroup main module. If there is a PTF, the build time is the build date-time is that of the PTF.
- ◆ *ConGroup module* — The name of the ConGroup module, including the version, release, and modification level.
- ◆ *PTF*— The full name of the PTF (for example, SC64001). If no maintenance updates have been applied, the name of the PTF contains multiple zeros.

Note: You can also find the information in CGRP281I, a message that documents the data on which the most recently assembled module (or PTF) was assembled. The *Mainframe Enablers Message Guide* provides information about CGRP281I.

AutoSwap

To determine the latest maintenance level that has been applied to AutoSwap, look at the initial task startup message:

```
SCFS234I AutoSwap version v.r.m, level xxx (SFvrmnn mm/dd/yy)
```

This message reports:

- ◆ *Vv.r.m*— AutoSwap release information:
 - v*— Version
 - r*— Release
 - m*— Modification level
- ◆ level *xxx*— An additional release level.
- ◆ SF VR*mnn*— ResourcePak Base release information:
 - v*— Software version
 - r*— Software release level
 - m*— Software modification level
 - nn*— The latest EMC PTF maintenance update that was applied to ResourcePak Base.
- ◆ *mm/dd/yy* — The date the latest module was assembled.

