IBM

Program Directory for

Resource Access Control Facility (RACF) Feature for z/VM

Version 1 Release 10.0

Program Number 5741-A05

for Use with
z/VM Version 5

Document Date: September 2004

GI11-4803-00

Attention

Before using this information and the product it supports, be sure to read the general information under "Notices" on page 148.

This program directory, dated September 2004, applies to Resource Access Control Facility Feature for z/VM Version 1 Release 10.0 (RACF), Program Number 5741-A05.

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1.0 Introduction

This program directory is intended for the system programmer responsible for program installation and maintenance of the Resource Access Control Facility (RACF) Feature for z/VM. It contains information concerning the material and procedures associated with the **installation of RACF Version 1 Release 10 on z/VM Version 5**. (Note that the Resource Access Control Facility (RACF) Feature for z/VM is equivalent to the standalone RACF V1R10M0, product number 5740-XXH, base plus RSU service.) You should read all of this program directory before installing the program and then keep it for future reference.

The program directory contains the following sections:

- 2.0, "Program Materials" on page 3 identifies the basic and optional program materials and documentation for RACF.

- 3.0, "Program Support" on page 7 describes the IBM support available for RACF.

- 4.0, "Program and Service Level Information" on page 9 lists the APARs (program level) and PTFs (service level) incorporated into RACF.

- 5.0, "Installation Requirements and Considerations" on page 16 identifies the resources and considerations for installing and using RACF.

- 6.0, "Installation Instructions" on page 26 provides detailed installation instructions for RACF.

- 7.0, "Service Instructions" on page 97 provides detailed servicing instructions for RACF.

- Appendix A, "Applying an RSU for RACF" on page 124 provides detailed Recommended Service Upgrade instructions for RACF.

- Appendix B, "RACF Local Modifications - Examples" on page 133 provides examples for putting on local modifications to RACF.

- Appendix C, "Starting, Stopping, and Removing RACF" on page 144 provides information on starting, stopping and removing RACF.

Before installing RACF, read 3.1, "Preventive Service Planning" on page 7. This section tells you how to find any updates to the information and procedures in this program directory.

1.1 Program Description

RACF Version 1 Release 10 is a product that works together with the existing system features of VM to provide improved data security for an installation. To help an installation meet its unique security objectives, RACF provides:

- Protection of installation-defined resources
- Flexible control of access to protected resources
- The ability to store information for other products
- A choice of centralized or decentralized control profiles
- An ISPF panel interface and a command interface
- Transparency to end users
- Exits for installation-written routines

For a more detailed description of RACF see *RACF: General Information*. For a list of the books in the RACF library see 2.3.1, "Program Publications" on page 4.

2.0 Program Materials

An IBM program is identified by a program number. The program number for Resource Access Control Facility Feature for z/VM Version 1 Release 10.0 is 5741-A05.

The program announcement material describes the features supported by RACF. Ask your IBM marketing representative for this information if you have not already received a copy.

The following sections identify:

* Basic and optional program materials available with this program

* Publications useful during installation

2.1 Basic Machine-Readable Material

With z/VM Version 5 Resource Access Control Facility (RACF) Release 10.0 and its Kanji Feature, as delivered with program number 5740-XXH, are pre-installed on the z/VM System deliverable. It is referred to as the Resource Access Control Facility Feature for z/VM. Therefore, there are no basic machine readable materials.

The RACF Feature for z/VM is a priced feature, so it is installed disabled. You **MUST** order, and obtain a license for, the RACF Feature to enable and use it. Refer to the appropriate z/VM Version 5 announcement letter for information on ordering z/VM Version 5 and its features; including RACF.

2.2 Optional Machine-Readable Material

There are no optional machine-readable materials for RACF.

2.3 Program Publications

The following sections identify the basic and optional publications for RACF as a feature for z/VM Version 5.

2.3.1 Program Publications

1   Figure 1 and Figure 2 identify the unlicensed program publications available for
1   RACF.

1 *Figure 1. Optional: Unlicensed Publications - New Editions*

Publication Title	Form Number
RACF: Command Language Reference	SC28-0733
RACF: Security Administrator's Guide	SC28-1340

Figure 2. Material: Unlicensed Publications - Not new editions

Publication Title	Form Number
External Security Interface (RACROUTE) Macro Reference for MVS and VM	GC28-1366
RACF: Migration and Planning	GC23-3054
RACF: System Programmer's Guide	SC28-1343
RACF: Auditor's Guide	SC28-1342
RACF: General Information	GC28-0722
RACF: General User's Guide	SC28-1341
RACF: Macros and Interfaces	SC28-1345
RACF: Messages and Codes	SC38-1014
RACF: Diagnosis Guide	GY28-1016

These publications are available on the *IBM eServer zSeries® Online Library: z/VM Collection CD-ROM*, SK2T-2067, in Adobe™ Portable Document Format (PDF) and in BookManager format. The VM Collection Kit CD-ROM is included in your order of z/VM.

All the publications and CD-ROM collection kits can be ordered separately for a fee using the specific publication number through the IBM Publication Center at :

    www.ibm.com/shop/publications/order

The Publications Center is a world wide central repository for IBM product publications and marketing material. Furthermore, a large number of publications are available online in various file formats (e.g. Adobe PDF), which can currently be downloaded free of charge.

The following publication is licensed material of IBM and will not be included with your z/VM order, nor on the VM Collection Kit CD-ROM. It can be ordered through the IBM Publication Center.

Figure 3. Basic Material: Licensed Publications

Publication Title	Form Number
RACF Data Areas	LY28-1830

The previous editions of the following RACF publications are still available. If you are migrating from a previous release of RACF for VM other than RACF Version 1 Release 9.2, you should review the migration and planning considerations described in one or both of these books. To order copies, contact your IBM representative.

Figure 4. Previous Editions of RACF Publications

Publication Title	Form Number
RACF: Migration and Planning for RACF 1.9	GT00-5380
RACF: Migration and Planning for RACF 1.9.2	GT01-0159

The RACF library is also available on the *OS/390 SecureWay Security Server RACF Information Package*, SK2T-2180, CD-ROM and it contains:

- The RACF 1.9, RACF 1.9.2, RACF 1.10, RACF 2.1, and RACF 2.2 product libraries, with the exception of the licensed publications

- Books that refer to RACF from the MVS and VM collections

- International Technical Support Organization (ITSO) books that contain information related to RACF

- Washington System Center (WSC) books that contain information related to RACF

The updated RACF for VM publications will not be on this collection kit. You can order this CD-ROM through the IBM Publication Center.

2.4 Microfiche Support

There is no microfiche for RACF.

See 2.5, "View Program Listings (VPL) Support."

2.5 View Program Listings (VPL) Support

Microfiche support for RACF for VM has been replaced by equivalent support through the View Program Listings (VPL) application from ISMS, Boulder, Colorado. VPL is replacing the microfiche by providing this information online. External customers can access this information by using ServiceLink or Dial IBM. Internal users can access VPL by dialing to VPL.

2.6 Publications Useful During Installation and Service

The publications listed in Figure 5 may be useful during the installation of RACF. To order copies, contact your IBM representative.

Figure 5. Publications Useful During Installation / Service on z/VM Version 5

Publication Title	Form Number
z/VM: VMSES/E Introduction and Reference	GC24-6130
z/VM: Service Guide	GC24-6117
z/VM: CP Planning and Administration	SC24-6083
z/VM: CMS Commands and Utilities Reference	SC24-6073
z/VM: CMS File Pool Planning, Administration, and Operation	SC24-6074
z/VM: System Messages and Codes - AVS, Dump Viewing Facility, GCS, TSAF, and VMSES/E	GC24-6120
z/VM: System Messages and Codes - CMS and REXX/VM	GC24-6118
z/VM: System Messages and Codes - CP	GC24-6119
z/VM: Running Guest Operating Systems	SC24-6115
z/VM: System Operation	SC24-6121
VM/ESA with RACF C2/B1 Trusted Facility Manual	SC24-5563

3.0 Program Support

This section describes the IBM support available for RACF.

3.1 Preventive Service Planning

Before installing RACF, check with your IBM Support Center or use IBMLink (ServiceLink) to see whether there is additional Preventive Service Planning (PSP) information. To obtain this information, specify the following UPGRADE and SUBSET values:

Figure 6. PSP Upgrade and Subset ID

	Retain		
COMPID	**Release**	**Upgrade**	**Subset**
576700201	1A0	RACFVM1100	RACF110
576700201	1A0	RACFVM1100	yynnRSU
576700201	1A0	RACFVM1100	RSU-BY-LVL
576700201	1A0	RACFVM1100	RSU-BY-APAR
576700201	1A0	RACFVM1100	RSU-BY-PTF

Note: RSU-BY-LVL information can be obtained from the VM service RSU web site at:

www..ibm.com/eserver/zseries/zvm/service/rsu

3.2 Statement of Support Procedures

Note: With the Resource Access Control Facility feature that comes pre-installed on z/VM Version 5, you are entitled to support under the basic warranty for z/VM Version 5. Also, note that the Software Subscription and Support for the RACF Feature of z/VM is *automatically* added to your order - this provides zSeries service to which you are likely accustomed. If you do not want the Software Subscription and Support for RACF then you must take specific action to decline it when ordering.

Report any difficulties you have using the RACF product to your IBM Support Center. If an APAR is required, the Support Center will provide the address to which any needed documentation can be sent.

Figure 7 identifies the component ID (COMPID), Retain Release and Field Engineering Service Number (FESN) for RACF.

Figure 7. Component IDs

COMPID	Retain Release	Component Name	FESN
576700201	1A0	RACF 1.10.0	6700201
576700201	1A3	RACF 1.10.0 - Kanji Feature	6700201

4.0 Program and Service Level Information

This section identifies the program and any relevant service levels of RACF. The program level refers to the APAR fixes incorporated into the program. The service level refers to the PTFs shipped with this product. Information about the cumulative service tape is also provided.

4.1 Program Level Information

The following APAR fixes against the previous release of RACF have been incorporated into this release.

4.1.1 VM APAR fixes

VM38249 VM38529 VM38998 VM39736 VM40558 VM41800 VM42026 VM42355
VM42403 VM42667 VM43278 VM43358 VM43397 VM43427 VM43468 VM43487
VM43488 VM43489 VM43492 VM43493 VM43494 VM43656 VM43747 VM43748
VM43749 VM43772 VM43860 VM43905 VM43938 VM44054 VM44070 VM44127
VM44214 VM44413 VM44454 VM44738 VM44741 VM44743 VM44966 VM45455
VM45498 VM45516 VM45525 VM45573 VM45601 VM45685 VM45704 VM45738
VM45759 VM45848 VM45961 VM45989 VM46043 VM46078 VM46082 VM46116
VM46236 VM46253 VM46267 VM46291 VM46385 VM46386 VM46509 VM46511
VM46554 VM46604 VM46613 VM46614 VM46677 VM46683 VM46719 VM46728
VM46796 VM46812 VM46839 VM46875 VM46897 VM46986 VM47003 VM47044
VM47047 VM47066 VM47080 VM47118 VM47210 VM47219 VM47226 VM47227

VM47279 VM47321 VM47337 VM47350 VM47372 VM47404 VM47454 VM47546
VM47565 VM47609 VM47641 VM47671 VM47673 VM47730 VM47750 VM47800
VM47835 VM47885 VM47888 VM47895 VM47896 VM47898 VM47941 VM47996
VM48037 VM48042 VM48120 VM48148 VM48203 VM48389 VM48445 VM48531
VM48738 VM48744 VM48997 VM49099 VM49399 VM49666 VM49740 VM49898
VM49993 VM49997 VM50012 VM50109 VM50290 VM50326 VM50333 VM50389
VM50412 VM50478 VM50506 VM50553 VM50626 VM50719 VM50739 VM50792
VM50824 VM50891 VM51124 VM51153 VM51170 VM51174 VM51191 VM51218
VM51351 VM51395 VM51428 VM51433 VM51590 VM51597 VM51642 VM51715
VM51725 VM51763 VM51782 VM51791 VM51809 VM51910 VM52078 VM52115
VM52141 VM52237 VM52311 VM52315 VM52334 VM52337 VM52372 VM52406

VM52407 VM52458 VM52461 VM52477 VM52481 VM52491 VM52545 VM52709
VM52745 VM52930 VM52935 VM53100 VM53115 VM53156 VM53169 VM53273
VM53861 VM53887 VM53901 VM53905 VM53919 VM53973 VM53992 VM54030
VM54239 VM54254 VM54327 VM54429 VM54487 VM54570 VM54572 VM54602
VM54654 VM54738 VM54745 VM54765 VM54767 VM54768 VM54770 VM54791
VM54792 VM54895 VM54897 VM54900 VM54901 VM54943 VM54966 VM55052

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VM55060 VM55102 VM55108 VM55185 VM55186 VM55321 VM55375 VM55408
VM55471 VM55518 VM55520 VM55554 VM55610 VM55619 VM55731 VM55739
VM55744 VM55798 VM55857 VM55924 VM55956 VM55968 VM55989 VM56005
VM56099 VM56119 VM56192 VM56272 VM56281 VM56332 VM56432 VM56478
VM56482 VM56486 VM56589 VM56590 VM56621 VM56628 VM56667 VM56690

VM56733 VM56786 VM57094 VM57116 VM57143 VM57172 VM57183 VM57270
VM57305 VM57308 VM57361 VM57381 VM57383 VM57386 VM57459 VM57479
VM57568 VM57578 VM57600 VM57736 VM57745 VM57774 VM57806 VM57866
VM57868 VM57873 VM57954 VM57956 VM57966 VM57983 VM58037 VM58229
VM58310 VM58321 VM58399 VM58411 VM58431 VM58448 VM58500 VM58519
VM58541 VM58542 VM58570 VM58655 VM58672 VM58830 VM59221 VM59232
VM59245 VM59359 VM59421 VM59708 VM59710 VM59731 VM59754 VM59761
VM59796 VM59924 VM60078 VM60079 VM60091 VM60146
```

4.1.2 MVS APAR fixes

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OW00022 OW00112 OW00113 OW00217 OW00230 OW00233 OW00278 OW00283
OW00332 OW00359 OW00409 OW00585 OW00719 OW00722 OW00990 OW01206
OW01241 OW01443 OW01469 OW01696 OW01916 OW02010 OW02152 OW02238
OW02311 OW02709 OW02974 OW02992 OW03024 OW03128 OW03314 OW03368
OW03482 OW03552 OW03598 OW03826 OW03833 OW03945 OW03949 OW04107
OW04190 OW04268 OW04283 OW04320 OW04350 OW04461 OW04746 OW04882
OW04917 OW04920 OW04935 OW04994 OW05307 OW05381 OW05390 OW05429
OW05513 OW05551 OW05566 OW05572 OW05640 OW05931 OW06134 OW06164
OW06215 OW06312 OW06530 OW07105 OW07215 OW07438 OW07518 OW07519
OW07542 OW07753 OW07799 OW07890 OW07914 OW08036 OW08107 OW08117
OW08152 OW08238 OW08369 OW08457 OW08534 OW08761 OW08823 OW08842

OW08940 OW09011 OW09134 OW09150 OW09182 OW09299 OW09330 OW09339
OW09348 OW09454 OW09690 OW09738 OW09838 OW09929 OW09976 OW09981
OW10005 OW10092 OW10180 OW10232 OW10250 OW10348 OW10524 OW10526
OW10544 OW10625 OW10664 OW10909 OW10966 OW11056 OW11133 OW11186
OW11251 OW11416 OW11500 OW11665 OW11926 OW12027 OW12271 OW12279
OW12494 OW12676 OW12879 OW13069 OW13074 OW13078 OW13105 OW13653
OW13914 OW13967 OW14035 OW14106 OW14157 OW14182 OW14255 OW14440
OW14451 OW14615 OW14773 OW14929 OW14930 OW15408 OW15790 OW15990
OW15997 OW16054 OW16094 OW16301 OW16752 OW17114 OW17568 OW17969
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OY58432 OY58470 OY58508 OY58520 OY58545 OY58563 OY58739 OY58766
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OY59046 OY59079 OY59137 OY59138 OY59148 OY59161 OY59322 OY59439

OY59441 OY59507 OY59511 OY59532 OY59553 OY59571 OY59591 OY59759
OY59798 OY59841 OY59890 OY59984 OY60010 OY60011 OY60078 OY60111
OY60196 OY60197 OY60233 OY60234 OY60258 OY60274 OY60298 OY60299
OY60371 OY60461 OY60473 OY60556 OY60624 OY60641 OY60785 OY60846
OY60854 OY60934 OY60951 OY60972 OY61080 OY61153 OY61197 OY61338
OY61444 OY61500 OY61556 OY61667 OY61839 OY62006 OY62057 OY62062
OY62090 OY62174 OY62214 OY62259 OY62331 OY62395 OY62575 OY62638
OY62650 OY62695 OY62725 OY62756 OY62796 OY62800 OY63059 OY63328
OY63329 OY63336 OY63646 OY63702 OY63797 OY63860 OY63863 OY63869
OY63958 OY64053 OY64068 OY64075 OY64328 OY64388 OY64533 OY64635
OY64713 OY64720 OY64745 OY64801 OY64807 OY64812 OY64884 OY64887

OY64888 OY65009 OY65022 OY65084 OY65107 OY65138 OY65181 OY65239
OY65242 OY65281 OY65304 OY65351 OY65390 OY65418 OY65425 OY65463
OY65486 OY65499 OY65699 OY65728 OY65756 OY65975 OY66023 OY66100
OY66104 OY66152 OY66175 OY66190 OY66334 OY66446 OY66468 OY66606
OY66639 OY66683 OY66826 OY66959 OY66997 OY67020 OY67084 OY67186
OY67364 OY67383 OY67391 OY67618 OY67630 OY67883 OY68003

4.1.3 APARS Incorporated Since the GA of RACF 1.10

The code shipped for RACF 1.10 has been updated. The following APAR fixes
against RACF 1.10 have been incorporated into the product as shipped on z/VM
Version 5 z/VM System deliverable.

RSU9701:
VM60210 VM60436 VM60657 VM60719 VM60739 VM60824

RSU9702:
VM60497 VM60674 VM60690 VM60741 VM60792 VM61048
VM61062 VM61070 VM61105 VM61137 VM61143 VM61182

RSU9901:
VM61034 VM61069 VM61200 VM61290 VM61291 VM61311
VM61390 VM61542 VM61559 VM61653 VM61712 VM61950

VM62073 VM62079 VM62095 VM62204

RSU0101:
VM61397 VM61803 VM62274 VM62074 VM62314 VM62362
VM62381 VM62405 VM62421 VM62481 VM62570 VM62572
VM62591 VM62598 VM62628 VM62709 VM62761 VM62831

RSU0401:
VM63076 VM63156

Additional APARs
VM63452

4.2 Service Level Information

Check the RACFVM1100 PSP bucket for any additional PTFs that should be
installed or any additional install information.

4.3 Cumulative Service

Cumulative service for RACF Version 1 Release 10.0 is available through a
periodic Recommended Service Upgrade (RSU). See upgrade bucket
RACFVM1100 subset *yynn*RSU (where *yynn* is the RSU service level) for the latest
RSU available. For the list of PTF's included on the RSU, the PSP subsets sorted
by PTF, APAR or RSU level (LVL), or the VM service RSU web site.

The RSU that should be ordered if you are running RACF on z/VM Version 5, is the
z/VM V5 Stacked RSU applicable to the release of z/VM you are running. The PTF
number will be in the format of UM975*nn*, where *nn* is the release and modification
number of your system. For example if you are running z/VM 5.1.0 then the PTF to
order would be UM97510. It will contain service for all of the components, features,
or products, in VMSES/E format, that are pre-installed on the z/VM System
deliverable.

4.4 How to Determine Your RSU Service Level

The service contained on each RSU constitutes a new service level. Use this
service level when ordering corrective service. The service level is updated in the
system inventory when the RSU is installed.

If you use the automated service procedures to install service then use the
following command to query the current RSU service level of RACF.

1 service racf status The output from this command is similar to the
1 following console log. The VMFSRV1225I
1 message indicates the RSU service level: 0401

```
VMFSRV2760I SERVICE processing started
VMFSRV1225I RACF (5767002P%RACF) is at service level RSU-0401
VMFSRV2760I SERVICE processing completed successfully
```

Or, you can use the following command anytime to query the RSU service level of RACF.

vmfsim query vm sysrecs tdata :ppf *ppfname* **:stat** The output from this command is similar to the following console log. The last part of the status line indicates the RSU service level: 0401

Note: You need to use the entry with the latest time stamp.

```
VMFSIP2408I RESULTS FOR
            TDATA :PPF ppfname :STAT
:PPF ppfname compname
  :STAT RECEIVED.mm/dd/yy.hh:mm:ss.userid.RSU-0401
```

5.0 Installation Requirements and Considerations

The following sections identify the system requirements for installing and activating RACF. These requirements apply whether you are installing RACF for the first time, or updating an existing system.

5.1 Hparameter Requirements

5.1 Hardware Requirements

RACF Version 1 Release 10.0 for VM will operate on any processor supported by:

1
- z/VM Version 5

! On z/VM Version 5 the minidisks for the RACF database (defined at virtual
! addresses 200 and 300) can reside on all DASD supported by z/VM Version 5.

! For the most current information on devices supported by z/VM Version 5, refer to
! *z/VM General Information* manual. For more information on using FBA DASD
   devices, see 5.2.7, "Restrictions When Using FBA Devices" on page 20.

5.2 Program Considerations

The following sections list the programming considerations for installing RACF and activating its functions.

5.2.1 Operating System Requirements

RACF supports the following VM operating systems:

1
- z/VM Version 5

| - RACF APAR VM63028 for enablement support.

| This APAR is installed on RACF as it comes on the z/VM System deliverable.

5.2.2 Other Program Product Requirements

5.2.2.1 General
! ISPF Version 3 Release 2 or later or ISPF/PDF is needed if you are planning on
! using the RACF ISPF code.

   Ensure that the ICKDSF level supports the DASD that you intend to use for the
| RACF databases. At least ICKDSF level 14 is required. ICKDSF level 17 or higher
| comes with VM.

! HLASM Version 1.4.0 or higher is required if you intend to make changes to the
! RACF CP Parts or other RACF customization assemble files.

5.2.2.2 Dual Registration

If you have DirMaint installed, RACF provides dual registration panels so that you can add, change or delete information in the RACF database and the CP directory at the same time.

To use dual registration, you must have:

- ISPF Version 3.2 or later
- DirMaint Version 1 Release 5 or higher

5.2.2.3 Trusted Computing Base (TCB)

For information on the VM/ESA TCB requirements, refer to *VM/ESA with RACF C2/B1 Trusted Facility Manual*, SC24-5563.

5.2.3 Understanding RACF Interaction with CP

The RACF modules residing in the VM control program provide the interaction between RACF and VM. By convention, the module names begin with the prefix HCP. RACF modules residing in VM CP are:

HCPRPD
HCPRPF
HCPRPG
HCPRPI
HCPRPW
HCPRWA

The RACF tape includes UPDATE files for HCPRWA, HCPRPD, HCPRPF, HCPRPG, HCPRPI, and HCPRPW with a filetype of RPIBASE0. During installation, the contents of these RACF UPDATE files replace the contents of the corresponding VM/CP ASSEMBLE files.

For information on steps you need to perform to ensure that the CP part of RACF is installed properly, refer to 6.18, "Task 16. Install the CP Part of RACF" on page 73.

5.2.4 RACF Database Format

RACF 1.10 requires that the database be in the restructured format introduced in RACF 1.9.0. If you are migrating from an earlier release of RACF, and your database is not in the restructured format, you must restructure it before you install RACF 1.10.

- If you are migrating from RACF 1.9.2, your database is already restructured.

- If you are migrating from RACF 1.9.0, your database might not be restructured. RACF 1.9.0 supports both the restructured and nonrestructured formats. If your database is not restructured, before you install RACF 1.10 follow the instructions in the RACF 1.9.0 program directory to restructure your database.

- If you are migrating from RACF 1.8.2, your database is not restructured. Before you can install RACF 1.10 you must install either RACF 1.9.0 or 1.9.2 and follow the instructions in the program directory for that release to restructure your database.

5.2.5 Sharing a RACF Database

A RACF database can be shared with another operating system, either MVS or VM. In general a RACF database can be shared with a system that has another level of RACF installed. Note, however, that because RACF 1.10 requires a restructured database, it cannot share a database with a previous release of RACF that does not support the restructured format. A RACF database residing on FBA DASD cannot be shared. See *RACF: System Programmer's Guide* for more information on sharing a RACF database.

During installation, RACF assumes that the database is being shared. If the database is not being shared, RACF issues a warning message:

```
CSTERP001W - Warning: Device xxx was configured as shared;
                      now configured as non-shared.
```

If you are not sharing a database you can ignore the message. If you are sharing a database and receive the message, you have not set up your database correctly. You must correct the situation to prevent database damage. Refer to the information in the following sections about sharing RACF databases.

When sharing databases, consider the following options when defining DASD:

- If sharing between real systems (for example, two separate processors):

    - Use the `DEDICATE` directory statement

- If sharing between virtual systems (for example, virtual and second-level guest systems):

    - The MDISK directory statement must use the `V` statement (for example, `MWV`)

- If sharing between real and virtual systems (for example, two separate processors with at least one second-level guest):

    - Use the full-pack minidisk
    - The System Configuration file requires RDEVICE statement with SHARED YES specified (new way). (Or for the older way, HCPRIO requires `SHR=YES`)
    - The MDISK directory statement must use the `V` statement (for example, `MWV`)

- If sharing with another system, ensure that the full pack minidisk on which the RACF database resides is not on a CSE formatted volume.

5.2.5.1 Sharing RACF Databases with Another VM System

The VM restrictions and requirements for sharing DASD must be met. Information concerning VM requirements can be found in the VM library and should be reviewed for planning purposes:

- *z/VM System Operation*
- *z/VM CP Planning and Administration*
- *z/VM Running Guest Operating Systems.*

Decide where the RACF databases and libraries will be located, and whether there will be a single database or multiple databases. Information on splitting a database is in *RACF: System Programmer's Guide*.

5.2.5.1.1 Shared DASD Considerations: Consider the following points if your installation plans to share the RACF database between two or more systems:

- System design in terms of DASD mapping
- Resource and load balancing
- Recovery and restart
- Operational control of the multi-processor environment
- Programming considerations for user resource protection
- Data integrity

5.2.5.2 Sharing RACF Databases with an MVS System

You can share a RACF database between an MVS and a VM system. The following items must be considered:

- **RACF databases during installation**

  The CP directory entry for the RACF service machine must be set up to refer to the MVS volumes where the RACF databases are located. These volumes must be accessible by the VM system that is to share them. If the MVS system is in a different host CPU (rather than a second level guest), the databases cannot be on VM minidisks. Attach or dedicate the volumes to the RACF service machine.

  You **must not** run the installation steps to format, allocate and initialize the RACF databases. You must allocate and reformat the RACF databases from MVS.

  You must also system-generate the database as a shared device from the MVS system that you are sharing the database with. For information about how to system-generate a device (the database) as shared in MVS, refer to

  – *z/OS: HCD User's Guide*

  The RACF database names on the MVS system will probably be different from those for VM. If this is the case, the RACF database names in ICHRDSNT ASSEMBLE must be changed to match the RACF database names used in the MVS system. See *RACF: System Programmer's Guide* for more information.

The templates must be at the same level on the sharing systems. Running the RACFCONV EXEC or running IRRMIN00 from MVS with *PARM=UPDATE* ensures that the templates are at the same level. See *RACF: System Programmer's Guide* for more information. If the MVS system has RACF Version 2 installed, you must install APAR OW18980 before you update the templates.

- **RACF utilities**

  If you are running comparable levels of RACF on your VM and MVS systems, it is recommended that you run the utilities from the MVS system. However, if you are not running the same level of RACF on your VM and MVS systems, you **must** run the RACF utilities from the system with the higher level of RACF. (Note that RACF Version 2 for MVS is a higher level of RACF than RACF 1.10 for VM, even though RACF Version 2 was available before RACF 1.10.)

5.2.6 Dynamic Parse Initialization

On VM, dynamic parse is started automatically by the RACF service machine during its initialization sequence. Refer to *RACF: System Programmer's Guide* for more information about dynamic parse.

5.2.7 Restrictions When Using FBA Devices

RACF supports the use of FBA devices, with the following restrictions:

- The minidisks defined at virtual addresses 200 and 300 for the RACF service machine must be 3370, 9332, 9335, 9336 or SCSI disks (which appear as 9336-20 DASD or SCSI FCP LUNs).

  For the most current information on FBA DASD devices supported by z/VM, refer to *z/VM: General Information* manual.

- RACF databases *cannot* be shared on FBA device types.

- The primary RACF database must have SYSRACF as the DDNAME in its FILEDEF statement. The backup RACF database must have RACFBKUP as the DDNAME in its FILEDEF statement.

- The number of RACF databases is limited to one primary and one backup.

- If the RACF database resides on an FBA DASD device, the multiple RACF service machines capability cannot be used.

5.2.8 VMSES/E Program Installation and Service Considerations

This section describes items that should be considered before you install or service RACF.

- VMSES/E is required to install and service this product.

- If multiple users install and maintain licensed products on your system, there may be a problem getting the necessary access to MAINT's 51D disk. If you

find that there is contention for write access to the 51D disk, you can eliminate it by converting the Software Inventory from minidisk to shared file system (SFS). See *VMSES/E Introduction and Reference* , section 'Changing the Software Inventory to an SFS Directory', for information on how to make this change.

- Customers now install and service RACF using a new user ID, 5767002P. This is the IBM-suggested user ID name. You are free to change this to any user ID name you wish, however, a PPF override must be created. The MAINT user ID is also used to install RACF and it can be used to service RACF.

Note - z/VM Automated Service Procedure

If you modify any of the IBM-supplied default user IDs, minidisk addresses, or SFS directory names associated with RACF and you plan on using the z/VM automated service procedure (the **SERVICE** and **PUT2PROD** commands) to service your z/VM system, then you must create a PPF override for the **SERVP2P $PPF** file.

You must also use the **VMFUPDAT** command to update the VM SYSSUF Software Inventory file, so that your PPF override for SERVP2P is used for automated service processing. For more information about PPF overrides, see the *VMSES/E Introduction and Reference*.

- RSU deliverables will be supplied as necessary. Service between RSUs can be obtained through CORrective service.

5.3 DASD Storage and User ID Requirements

Figure 8 lists the user IDs and minidisks that are used to install and service RACF.

Important Installation Notes:

- User ID(s) and minidisks defined in 6.3, "Task 1. Plan Your Installation for RACF" on page 31 and are listed here so that you can get an idea of the resources that are needed. Figure 8 shows minimum space allocations. Depending on the requirements of your system, you might have to increase these sizes.

Figure 8 (Page 1 of 3). DASD Storage Requirements for Target Minidisks						
Minidisk Owner (user ID)	**Default Address**	**Storage in Cylinders**		**FB-512 Blocks**	**SFS 4K Blocks**	**Usage**
		DASD	**CYLS**			**Default SFS Directory Name**
5767002P	2B2	3390 3380 9345	85 102 102	122 400	15 300	Contains all the base code shipped with RACF **VMSYS:5767002P.RACF.OBJECT**
5767002P	2C2	3390 3380 9345	9 10 10	12 000	1500	Contains customization files. This disk can also be used for local modifications. **VMSYS:5767002P.RACF.SAMPLE**
5767002P	2D2	3390 3380 9345	70 84 84	12 600	100 800	Contains serviced files **VMSYS:5767002P.RACF.DELTA**
5767002P	2A6	3390 3380 9345	9 10 10	12 000	1500	Contains AUX files and software inventory tables that represent the test service level of RACF **VMSYS:5767002P.RACF.APPLYALT**
5767002P	2A2	3390 3380 9345	9 10 10	12 000	1500	Contains AUX files and software inventory tables that represent the service level of RACF that is currently in production. **VMSYS:5767002P.RACF.APPLYPROD**
5767002P	29E	3390 3380 9345	2 3 3	3600	NOSFS	Test general user disk. Code on this disk is copied to a production disk (for example MAINT 19E), so the production disk also requires this amount of free space.
5767002P	590	3390 3380 9345	38 46 46	55 200	NOSFS	Test CST/CMS system build disk.
5767002P	505	3390 3380 9345	41 50 50	60 000	NOSFS	Test server code build disk.
5767002P	599	3390 3380 9345	31 38 38	45 600	NOSFS	OPTIONAL. Needed if installing with the RACF ISPF Panels.
5767002P	2B3	3390 3380 9345	31 38 38	45 600	5700	OPTIONAL. Needed if installing the RACF Kanji Feature. Base disk for RACF Kanji ISPF panels. **VMSYS:5767002P.RACF.KANJIOBJ**
See the notes following the table.						

| Minidisk Owner (user ID) | Default Address | Storage in Cylinders | | FB-512 Blocks | SFS 4K Blocks | Usage |
		DASD	CYLS			Default SFS Directory Name
5767002P	799	3390 3380 9345	31 38 38	45 600	NOSFS	OPTIONAL. Needed if installing the RACF Kanji Feature. Test build disk for RACF Kanji ISPF panels.
5767002P	191	3390 3380 9345	25+ 25+ 25+	30 000+	NOSFS	5767002P user ID's 191 minidisk. See note 4 on page 25 for additional storage requirements.
RACFVM	490	3390 3380 9345	38 46 46	55 200	NOSFS	Production CST/CMS system build disk.
RACFVM	305	3390 3380 9345	68 80 80	96 000	NOSFS	Production server code build disk.
RACFVM	200	3390 3380 9345	17 20 20	24 000	NOSFS	RACFVM primary database.
RACFVM	300	3390 3380 9345	17 20 20	24 000	NOSFS	RACFVM backup database.
RACFVM	301	3390 3380 9345	7 8 8	9600	NOSFS	Primary SMF recording minidisk
RACFVM	302	3390 3380 9345	7 8 8	9600	NOSFS	Secondary SMF recording minidisk
RACFVM	191	3390 3380 9345	9 10 10	12 000	NOSFS	RACFVM user ID's 191 minidisk
RACFSMF	191	3390 3380 9345	10+ 10+ 10+	12 000+	NOSFS	RACFSMF user ID's 191 minidisk See note 5 on page 25 for additional storage requirements.
RACFSMF	192	3390 3380 9345	10+ 10+ 10+	12 000+	NOSFS	RACFSMF user ID's 192 minidisk See note 5 on page 25 for additional storage requirements.
AUTOLOG1	191	3390 3380 9345	5 5 5	6000	NOSFS	AUTOLOG1 user ID's 191 minidisk

Figure 8 (Page 2 of 3). DASD Storage Requirements for Target Minidisks

See the notes following the table.

| Minidisk Owner (user ID) | Default Address | Storage in Cylinders | | FB-512 Blocks | SFS 4K Blocks | Usage |
		DASD	CYLS			Default SFS Directory Name
AUTOLOG2	191	3390 3380 9345	5 5 5	6000	NOSFS	AUTOLOG2 user ID's 191 minidisk
RACMAINT	191	3390 3380 9345	9 10 10	12000	NOSFS	Backup RACFVM user ID's 191 minidisk.
IBMUSER	191	3390 3380 9345	1 1 1	____	____	IBMUSER user ID's 191 minidisk
SYSADMIN	191	3390 3380 9345	1 1 1	____	____	Optional. Security administrator's 191 minidisk. Not required if you are using an existing user ID for the security administrator.

Figure 8 (Page 3 of 3). DASD Storage Requirements for Target Minidisks

See the notes following the table.

Notes:

1. Cylinder values defined in this table are based on a 4K block size. FB-512 block and SFS values are derived from the 3380 cylinder values in this table. The FBA blocks are listed as 512-byte blocks but should be CMS-formatted at 1K size. At least 34500 4K blocks are needed for SFS install.

2. Primary and backup minidisks should be on separate physical packs so that physical damage to one pack does not affect both primary and backup minidisks. If possible, the minidisks should also be on separate control units. For example, RACFVM's 191, 305, and 490 disks should not be on the same physical volumes as 5767002P's 191, 29E, 505, and 590 disks, and if possible they should be on separate control units. Also, the RACFVM 200 and 300 database disks should be on separate physical packs and separate control units.

3. RACF supplies required virtual addresses and labels for the RACF databases; **you must not change them**. The label for the primary database is RACF at virtual address 200; the label for the backup database is RACFBK at virtual address 300.

   Do not place any of these minidisks on cylinder 0 in the CP directory. When the RACDSF EXEC executes, it could destroy the volume identifier on the pack.

4. On the 5767002P 191 disk, plan on 1 additional megabyte of storage for each 10 000 commands created by the RPIDIRCT EXEC. (If you run RPIDIRECT from another user ID, plan on the same amount of storage for that ID.)

5. The size of the SMF recording minidisks should be governed by the amount of audit data recorded and the number of SECLABELS being audited.

6. If you are allocating the minidisks that RACFVM owns on 3390 DASD that has been configured in 3380 track-compatibility mode, you should use the minidisk size allocations listed in the 3380 CYLS column.

7. Refer to section 5.2.7, "Restrictions When Using FBA Devices" on page 20 for FBA restrictions.

8. NOSFS means this disk cannot be a shared file system directory.

9. The 5767002P 590 disk and the RACFVM 490 disk must be the same DASD type and size.

6.0 Installation Instructions

This chapter describes the installation methods and the step-by-step procedures to install and activate RACF.

The step-by-step procedures are in two-column format. The steps to be performed are in bold large numbers. Commands for these steps are on the left hand side of the page in bold print. Additional information for a command might exist to the right of the command.

Each step of the installation instructions must be followed. Do not skip any step unless directed to do so.

Throughout these instructions, the use of IBM-supplied default minidisk addresses and user IDs is assumed. If you use different user IDs, minidisk addresses, or SFS directories to install RACF, adapt these instructions as needed for your environment.

> **Note!**
>
> The sample console output presented throughout these instructions was produced on a z/VM V5 R1.0 system.

6.1 Overview of the VMSES/E Installation Process

> **Have you a License for RACF Feature for z/VM?**
>
> RACF Feature for z/VM is pre-installed on z/VM Version 5 using VMSES/E, in a DISABLED state. **If and only if**, you have a license for RACF Feature for z/VM proceed with the installation to enable it for use.

The following is a brief description of the main steps in installing RACF using VMSES/E. During an initial install the first three steps below, and some of the fourth step, were already completed on the z/VM System deliverable.

- Plan your installation

  Use the VMFINS command to load several VMSES/E files from the product tape and to obtain RACF resource requirements.

- Allocate resources

  Use the information obtained from the previous step to allocate the appropriate minidisks (or SFS directories) and user IDs needed to install and use RACF.

- Install the RACF product

  Use the VMFINS command to load the RACF product files from tape to the test BUILD and BASE minidisks or directories. Then use VMFINS to update the VM SYSBLDS file used by VMSES/E for software inventory management.

- Perform post-installation tasks

  Information about file tailoring and initial activation of the program is presented in 6.9, "Task 7. Create PROFILE EXEC and SMF CONTROL Files for the RACF Service Machines" on page 46 through 6.27, "Task 25. Set Up the RACF ISPF Panels (Optional)" on page 85.

- Place RACF files into production

  Once the product files have been tailored and the operation of RACF is satisfactory, copy the product files from the test BUILD disk(s) to the production BUILD disk(s).

For a complete description of all VMSES/E installation options refer to *VMSES/E Introduction and Reference.*

6.2 Overview of the RACF Installation Steps

This overview describes the steps involved in installing RACF 1.10. Instructions are provided for:

- Installing RACF 1.10 on a system for the first time
- Migrating to a new level of RACF 1.10 on a system that already has RACF 1.10 installed

6.2.1 Installing RACF on a System for the First Time

If you are installing RACF on a system for the first time, use the procedural checklist that follows to track the installation steps as you complete them.

__   Task 1. Skip this step as it has already been completed on the z/VM System deliverable.

__   Task 2. Allocate resources for RACF. Refer to 6.4, "Task 2. Allocate Resources for Installing RACF" on page 34. Most of these instructions have already been completed on the z/VM System deliverable but you need to do some extra work if you plan on sharing the RACF databases.

__   Task 3. Skip this step as it has already been completed on the z/VM System deliverable.

__   Task 4. Skip this step as it has already been completed on the z/VM System deliverable.

__   Task 5. Skip this step as it has already been completed on the z/VM System deliverable.

___ Task 6. Skip this step as it has already been completed on the z/VM System deliverable.

___ Task 7. Skip this step as it has already been completed on the z/VM System deliverable.

___ Task 8. Skip this step as it has already been completed on the z/VM System deliverable.

___ Task 9. Skip this step, unless you are sharing an existing RACF database.

___ Task 10. Skip this step as it has already been completed on the z/VM System deliverable.

___ Task 11. Create an RPIDIRCT SYSUT1 file of RACF commands. Refer to 6.13, " Task 11. Prepare to Update RACF with Existing CP Directory Data" on page 54.

___ Task 12. (*Optional*) Customize the RACFSMF user ID. Refer to 6.14, "Task 12. Customize the Processing of SMF Records (Optional)" on page 59.

___ Task 13. (*Optional*) Change the message routing table. Refer to 6.15, "Task 13. Change the Message Routing Table (Optional)" on page 63.

___ Task 14. (*Optional*) Delete or replace the ICHDEX01 and ICHRCX02 Exits. Refer to 6.16, "Task 14. Delete or Replace the ICHDEX01 and ICHRCX02 Exits (Optional)" on page 65.

___ Task 15. (*Optional*) Customize RACF within CP. Refer to 6.17, "Task 15. Customize RACF Within CP (Optional)" on page 68.

___ Task 16. Enable and Install the CP part of RACF for VM. Refer to 6.18, "Task 16. Install the CP Part of RACF" on page 73.

___ Task 17. (*Customers sharing RACF databases*) Change RACF database names. Refer to 6.19, "Task 17. Change RACF Database Names If Sharing with MVS System" on page 74.

___ Task 18. IPL the CP system with RACF. Follow the instructions in 6.20, "Task 18. IPL the CP System with RACF" on page 75.

___ Task 19. Initialize or update the RACF database. Refer to 6.21, "Task 19. Update the RACF Database with Existing CP Directory Information" on page 77.

___ Task 20. (*Optional*) Create the global access table. Refer to 6.22, "Task 20. Create the Global Access Table (Optional)" on page 82.

___ Task 21. (*Optional*) Set RACF options. Refer to 6.23, "Task 21. Set RACF Options (Optional)" on page 82.

__ Task 22. (*Optional*) Determine audit and control options for VM events. Refer to 6.24, "Task 22. Determine Audit and Control Options for VM Events (Optional)" on page 83.

__ Task 23. (*Optional*) Split the RACF database. Refer to 6.25, "Task 23. Split the RACF Database (Optional, Performance-Related)" on page 84.

__ Task 24. (*Optional*) Set up dual registration. Refer to 6.26, "Task 24. Set Up Dual Registration If DirMaint Is Installed (Optional)" on page 84.

__ Task 25. (*Optional*) Install the RACF ISPF panels. Refer to 6.27, "Task 25. Set Up the RACF ISPF Panels (Optional)" on page 85.

__ Task 26. Place RACF into production. Refer to 6.28, "Task 26. Place RACF Into Production" on page 93.

6.2.2 Migrating from a Previous RACF Release

If you are installing RACF, using a RACF product installation tape, on a system that already has RACF installed, use the procedural checklist that follows to track the installation steps as you complete them. The checklist assumes that RACFVM and RACMAINT are your service machines and that you are using the 5767002P and MAINT user IDs to install with. Before proceeding through the checklist, read *RACF: Migration and Planning* to understand special migration considerations that apply.

Before you begin the install process, make sure that your RACF database is in the restructured format. See 5.2.4, "RACF Database Format" on page 17. Back up your current RACF service machine's 305 and 490 minidisks.

__ Task 1. Plan your installation for RACF. Follow the instructions in 6.3, "Task 1. Plan Your Installation for RACF" on page 31.

__ Task 2. Allocate resources for RACF. Follow the instructions in 6.4, "Task 2. Allocate Resources for Installing RACF" on page 34.

__ Task 3. Install RACF on the 5767002P user ID. Follow the instructions in 6.5, "Task 3. Install RACF" on page 40.

__ Task 4. (*Optional*) Install the RACF Kanji ISPF panels. Refer to 6.6, "Task 4. Install the RACF Kanji ISPF Panels (Optional)" on page 43.

__ Task 5. Load the recommended service upgrade (RSU) tape. Refer to 6.7, "Task 5. Load the Recommended Service Upgrade (RSU)" on page 44.

__ Task 6. Update to force build of RACF CP Parts. Refer to 6.8, "Task 6. Update to Force Build of RACF CP Parts" on page 46.

__ Task 7. Create the PROFILE EXEC for the service machine. Follow the instructions in 6.9, "Task 7. Create PROFILE EXEC and SMF CONTROL Files for the RACF Service Machines" on page 46, except **DO NOT** create the SMF CONTROL file, as you can use your existing one.

___ Task 8. Generate a new CMS nucleus. Follow the instructions in 6.10, "Task 8. Generate a RACF-Modified CMS Nucleus" on page 47.

___ Task 9. Convert the output database templates. Refer to 6.11, "Task 9. Convert the Database Templates" on page 49.

___ Task 10. Skip this step.

___ Task 11. Skip this step.

___ Task 12. (*Optional*) Customize the RACFSMF user ID. Refer to 6.14, "Task 12. Customize the Processing of SMF Records (Optional)" on page 59.

___ Task 13. (*Optional*) Change the message routing table. Refer to 6.15, "Task 13. Change the Message Routing Table (Optional)" on page 63.

___ Task 14. (*Optional*) Delete or replace the ICHDEX01 and ICHRCX02 exits. Refer to 6.16, "Task 14. Delete or Replace the ICHDEX01 and ICHRCX02 Exits (Optional)" on page 65.

___ Task 15. (*Optional*) Customize RACF within CP. Refer to 6.17, "Task 15. Customize RACF Within CP (Optional)" on page 68.

| ___ Task 16. Enable and Install the CP part of RACF for VM. Follow the instructions in 6.18, "Task 16. Install the CP Part of RACF" on page 73.

___ Task 17. Skip this step.

___ Task 18. IPL the CP system with RACF. Follow the instructions in 6.20, "Task 18. IPL the CP System with RACF" on page 75.

___ Task 19. Skip this step.

___ Task 20. Skip this step.

___ Task 21. Skip this step.

___ Task 22. (*Optional*) Determine audit and control options for VM events. Follow the instructions in 6.24, "Task 22. Determine Audit and Control Options for VM Events (Optional)" on page 83.

___ Task 23. Skip this step.

___ Task 24. Skip this step

___ Task 25. Skip this step.

___ Task 26. Place RACF into production. Follow the instructions in 6.28, "Task 26. Place RACF Into Production" on page 93.

6.3 Task 1. Plan Your Installation for RACF

Procedural Note

Customers doing migration installs should perform this step.

The VMFINS command is used to plan the installation. This section has 2 main steps that:

- Load the first tape file, containing installation files

- Generate a 'PLANINFO' file listing:

    - All user ID and minidisk requirements
    - Required products

To obtain planning information for your environment:

1 Log on as the RACF installation planner.

This user ID can be any ID that has read access to MAINT's 5E5 minidisk and write access to the MAINT 51D minidisk.

2 Mount the RACF installation tape and attach it to the user ID at virtual address 181. The VMFINS EXEC requires the tape drive to be at virtual address 181.

3 Establish read access to the VMSES/E code.

link MAINT 5e5 5e5 rr The 5E5 disk contains the VMSES/E code.
access 5e5 b

4 Establish write access to the Software Inventory disk.

link MAINT 51d 51d mr The MAINT 51D disk is where the VMSES/E
access 51d d system-level Software Inventory and other dependent files reside.

Note: If another user already has the MAINT 51D minidisk linked in write mode (R/W), you'll only obtain read access (R/O) to this minidisk. If this occurs, you need to have that user relink the 51D in read-only mode (RR), and then you must reissue the above LINK and ACCESS commands. Do not continue with these procedures until you have established a R/W link to the 51D minidisk.

5 Load the RACF product control files to the 51D minidisk.

vmfins install info (nomemo

The NOMEMO option loads the memos from the tape but does not issue a prompt to send them to the system printer. Specify the MEMO option if you want to be prompted for printing the memo.

This command performs the following:

- Load Memo-to-Users

- Load various product control files, including the Product Parameter File (PPF) and the PRODPART files

- Create VMFINS PRODLIST on your A-disk. The VMFINS PRODLIST contains a list of products on the installation tape.

```
VMFINS2767I Reading VMFINS DEFAULTS B for additional options
VMFINS2760I VMFINS processing started
VMFINS1909I VMFINS PRODLIST created on your A-disk
VMFINS2760I VMFINS processing completed successfully
Ready;
```

6 Obtain resource planning information for RACF.

The *compname* used throughout these installation instructions is **RACF**, **RACFSFS**, **RACFPANL** or **RACFPANLSFS**, which assumes you are using the component name within the 5767002P PPF file. If you specify your own *ppfname*, use the *compname* from that file instead of **RACF**, **RACFSFS**, **RACFPANL** or **RACFPANLSFS**. The *compname* you use should be used **throughout** the rest of this procedure.

Note: The VMFINS command does **not** load the product at this time.

vmfins install ppf 5767002P {RACF | RACFSFS | RACFPANL | RACFPANLSFS} (plan nomemo

Use:	to install:
RACF	on minidisks
RACFSFS	in SFS directories
RACFPANL	on minidisks with RACF ISPF panels
RACFPANLSFS	in SFS directories with RACF ISPF panels.

The PLAN option indicates that VMFINS will perform requisite checking, plan system resources, and provide an opportunity to override the defaults in the product parameter file.

You can override any of the following:

- The name of the product parameter file (PPF)
- The default user IDs
- Minidisk or directory definitions

Notes:

a. If you change the PPF name, a default user ID, or other parameters via a PPF override, use your changed values instead of those indicated (when appropriate), throughout the rest of the installation instructions, as well as the instructions for servicing RACF. For example, you'll need to specify your PPF override file name instead of 5767002P for certain VMSES/E commands.

b. If you're not familiar with creating PPF overrides using VMFINS, review the section 'Using the Make Override Panel' in Chapter 3 of *VMSES/E Introduction and Reference* before you continue. (This section includes information about changing the VMSYS file pool name.)

c. If you need help deciding whether to install in SFS directories or on minidisk, see the chapter 'Planning for CMS' in *z/VM Planning and Administration*.

```
VMFINS2767I Reading VMFINS DEFAULTS B for additional options
VMFINS2760I VMFINS processing started
VMFINS2601R Do you want to create an override for :PPF 5767002P RACF
            :PRODID 5767002P%RACF?
            Enter 0 (No), 1 (Yes) or 2 (Exit)
0
VMFINS2603I Processing product :PPF 5767002P RACF :PRODID 5767002P%RACF
VMFREQ2805I Product :PPF 5767002P RACF :PRODID 5767002P%RACF has passed
            requisite checking
VMFINT2603I Planning for the installation of product :PPF 5767002P RACF
            :PRODID 5767002P%RACF
VMFRMT2760I VMFRMT processing started
VMFRMT2760I VMFRMT processing completed successfully
VMFINS2760I VMFINS processing completed successfully
```

7 Review the install message log ($VMFINS $MSGLOG). If necessary, correct
any problems before going on. For information about handling specific error
messages, see *z/VM: System Messages and Codes,* or use on-line HELP.

vmfview install

6.4 Task 2. Allocate Resources for Installing RACF

Procedural Note

Customers doing new installs and not sharing existing RACF databases should
review the information in 6.4.1, "General RACF User ID Information" of this step
and then skip to 6.13, " Task 11. Prepare to Update RACF with Existing CP
Directory Data" on page 54.

Customers doing new installs and sharing existing RACF databases should
review the information in section 6.4.1, "General RACF User ID Information" and
perform section 6.4.2, "Sharing a RACF Database Information" on page 36 of
this step and then should skip to 6.11, "Task 9. Convert the Database
Templates" on page 49.

Customers doing migration installs should perform all of this step.

6.4.1 General RACF User ID Information

The planning information in the 5767002P PLANINFO file (which was already
created on the z/VM System deliverable, but was recreated if you are following the
migration steps) was used to create the 5767002P, RACFVM, RACFSMF,
RACMAINT, IBMUSER, AUTOLOG1, AUTOLOG2 and security administrator,
SYSADMIN, user directory entries for minidisk install or SFS install. These user
IDs are already supplied in the CP USER DIRECT file as supplied on the z/VM
System deliverable.

If you are migrating, you may have to update these directories according to the
information in the new PLANINFO file create in 6.3, "Task 1. Plan Your Installation
for RACF" on page 31

The following is general information about the set up of the different RACF user ID
directories:

- The RACMAINT user ID is used:

  – During installation as the RACF installation verification service machine

– As a RACF service machine to test applied service

This user ID can also be used as a backup RACF service machine to the RACFVM user ID, if that user ID becomes unusable. RACMAINT links to the test build disks that the 5767002P user ID owns.

- To facilitate the recovery procedure, allow RACFVM and RACMAINT all privilege classes except F. Do *not* specify class F, because you will want to have I/O errors reported, and specifying F inhibits the reporting of I/O errors. The minimum required classes are B and G. Specifying class B allows RACFVM and RACMAINT to enter MSGNOH commands. Always specify the same minimum and maximum storage sizes on the USER statement for the RACFVM and RACMAINT directory entries.

- The RACF service machines must run in XA mode. The default names for the RACF service machines are RACFVM and RACMAINT.

> ┌─ **Attention** ──┐
>
> Previously, RACF service machines had to run in 370 mode. APAR VM60792 (PTF UV99313) removes RACF's dependency on the 370 architecture. When this APAR is installed RACF service machines must run in XA mode. This APAR is included on the RACF Feature for z/VM.
>
> └──┘

- The minimum virtual storage size for the RACF service machines must be 20MB.

- You should use the recommended IUCV message limit settings for the RACF service machines as follows:

```
IUCV *RPI PRIORITY MSGLIMIT 100
IUCV  ANY PRIORITY MSGLIMIT  50
```

This limit protects your RACF service machines from being overdriven by CP, as when a networking machine goes into recovery, and potentially leading to over-commitment of virtual resources within the RACF server.

- RACF supplies required virtual addresses and labels for the RACF databases; **you must not change these**. The label for the primary database is RACF at virtual address 200; the label for the backup database is RACFBK at virtual address 300.

- An AUTOLOG1 user ID must be set up.

- You can elect to use an existing user ID for the security administrator. The default user ID, shipped on the z/VM System deliverable, is SYSADMIN.

6.4.2 Sharing a RACF Database Information

The MDISK statement for the 200 and 300 disks should specify `MW`, unless you are sharing the RACF database between different systems or multiple servers. If you are sharing the RACF database between different systems, see 5.2.5, "Sharing a RACF Database" on page 18. If you are sharing the RACF database between multiple servers, see *RACF: System Programmer's Guide*.

> **Attention**
>
> It is **very important** that you review the above information about sharing and set up the appropriate RACF CP user directory entries, etc, if you plan on sharing.

6.4.3 Installing RACF on Minidisk or in SFS Directories

You should still be logged on as the RACF installation planner.

1 Obtain the user directory entries from the 5767002P PLANINFO file.

Note: The user directory entries are located at the bottom of the resource section in the PLANINFO file. These entries contain all of the links and privilege classes necessary for the 5767002P, RACFVM, RACFSMF, RACMAINT, IBMUSER, AUTOLOG1, AUTOLOG2 and security administrator user IDs. Use the directory entries found in the PLANINFO file as a model for the input to your system directory.

2 Add the MDISK statements to the directory entries for 5767002P, RACFVM, RACMAINT, AUTOLOG1 (if not there), AUTOLOG2, and RACFSMF. Use Figure 8 on page 21 to obtain the minidisk requirements.

The MDISK statement for the 200 and 300 disks should specify `MW`, unless you are sharing the RACF database between different systems or multiple servers. If you are sharing the RACF database between different systems, see 5.2.5, "Sharing a RACF Database" on page 18. If you are sharing the RACF database between multiple servers, see *RACF: System Programmer's Guide*.

3 You need to identify a user ID that will be your security administrator. This user ID can be an existing one or a new one. If you choose to select a user ID already defined, continue with the next step. If you choose to create a new user ID, you must create a directory entry for it. Use the sample SYSADMIN directory entry from the PLANINFO file.

4 Add the following directory entries to the system directory if they do not already exist:

- 5767002P
- RACFVM
- RACFSMF
- RACMAINT
- IBMUSER
- AUTOLOG1
- AUTOLOG2
- Security administrator

! Change the passwords for all newly added user IDs to a valid password, in accordance with your security guidelines.

5 Place the new directory entries on-line using VM/Directory Maintenance (DirMaint) or an equivalent CP directory maintenance method.

If RACF is currently active on your system, you must also add any new user IDs, minidisks, and SFS directories to the RACF database.

Procedural Note

In the next step, format only those minidisks that do not already exist.

Customers doing migration installs should only format the minidisks for the 5767002P user ID.

---

6 Format all **new** minidisks for the 5767002P, RACFVM, RACFSMF, RACMAINT, AUTOLOG1 (if it does not already exist), AUTOLOG2, and IBMUSER user IDs before installing RACF, with the **exception** of the RACF

databases (addresses 200 and 300 owned by RACFVM). These will be formatted in 6.12, "Task 10. Set Up the RACF Databases" on page 52, if formatting is required.

Note: When you log on to the RACFVM and RACMAINT user IDs to format their minidisks, first enter:

```
IPL CMS
```

On RACFVM you need to do this because you will see the following messages when you log on:

```
HCPVMI232E  IPL UNIT ERROR;  CSW 00000010 00200000
HCPGIR450W  CP entered;  disabled wait PSW 00060000 00000232
```

These messages are displayed because the directory IPLs the 490 disk which has not been formatted yet. On RACMAINT you want to format with the new CMS and not the CMS shipped with RACF.

7 The 5767002P 590 disk needs to be recomped to allow room for the CMS nucleus shipped with RACF. (To *recomp* is to redefine the number of cylinders or blocks available to you on a disk.) Use the following figure to obtain the recomp amount for your DASD type to replace the *xxxx* value in the format command.

Figure 9. CMS Recomp Amounts

Device Type	Recomp (*xxxx*)
3390	32
3380	37
9345	37
FBA	46500

a Log on to the 5767002P user ID.

b Recomp the 590 disk.

acc 590 z
format 590 z *xxxx* **(recomp**

Procedural Note

Do the following steps only if you are installing RACF in SFS directories. If you are installing RACF on minidisks, skip to 6.5, "Task 3. Install RACF" on page 40.

An SFS install also requires the following steps:

8 Determine the number of 4K blocks that are required for SFS directories by adding up the 4K blocks required for each SFS directory you plan to use.

If you intend to use all of the default RACF SFS directories, the 4K block requirements for each are summarized in Figure 8 on page 21.

This information will be used when enrolling the 5767002P user ID to the VMSYS file pool.

9 Enroll user 5767002P in the VMSYS file pool using the ENROLL USER command:

enroll user 5767002P vmsys: (blocks *blocks*   *blocks* is the number of 4K blocks that you calculated in the previous step.

Note: You must do this from a user ID that is an administrator for the VMSYS file pool.

10 Determine if there are enough blocks available in the file pool to install RACF. You can obtain this information from the QUERY FILEPOOL STORGRP command. The output from this command is a list of storage groups in the file pool and the number of 4K blocks free. If the number of blocks free is smaller than the total 4K blocks needed to install RACF you need to add space to the file pool. See *z/VM: CMS File Pool Planning, Administration, and Operation* for information on adding space to a file pool.

11 Create the necessary subdirectories listed in the 5767002P PLANINFO file using the CREATE DIRECTORY command.

set filepool vmsys: See *z/VM CMS Command and Utilities Reference*
create directory vmsys:5767002P.racf   for more information about the CREATE
create directory vmsys:5767002P.racf.object   DIRECTORY command.
create directory vmsys:5767002P.racf.sample
create directory vmsys:5767002P.racf.delta
create directory vmsys:5767002P.racf.applyprod
create directory vmsys:5767002P.racf.applyalt

The list of default RACF SFS directories is provided in Figure 8 on page 21. Note that if you are installing Kanji in SFS directories, you must also create a Kanji subdirectory.

6.5 Task 3. Install RACF

> **Procedural Note**
>
> Customers doing migration installs should perform this step.

The *ppfname* used throughout these installation instructions is **5767002P**, which assumes you are using the PPF supplied by IBM for RACF. If you have your own PPF override file for RACF, use your file's *ppfname* instead of **5767002P**. The *ppfname* you use should be used **throughout** the rest of this procedure.

The *compname* used throughout these installation instructions is either **RACF**, **RACFSFS**, **RACFPANL** or **RACFPANLSFS**, which assumes you are using the component name within the 5767002P PPF file. If you specify your own *ppfname*, you should use the *compname* from that file instead of **RACF**, **RACFSFS**, **RACFPANL** or **RACFPANLSFS**. The *compname* you use should be used **throughout** the rest of this procedure.

1 Log on to the installation user ID **5767002P**.

2 Create a PROFILE EXEC containing the ACCESS commands for the MAINT 5E5 and 51D minidisks.

xedit profile exec a **===> input /**/** **===> input 'access 5e5 b'** **===> input 'access 51d d'** **===> input 'access 590 t'** **===> file**	If either 5E5 or 51D is in an SFS directory, substitute your SFS directory name in the access command. You MUST use **t** as the file mode for the 590 disk, because this is what the default PPF file specifies.

3 Execute the profile to access MAINT's minidisks.

profile

4 If the Software Inventory disk (51D) was accessed R/O (read only) then establish write access to the Software Inventory disk.

Note: If the MAINT 51D minidisk was accessed R/O, you will need to have the user who has it linked R/W link it as R/O. You then can issue the following commands to obtain R/W access to it.

link MAINT 51d 51d mr
access 51d d

5 Have the RACF installation tape mounted and attached to 5767002P at virtual address 181. The VMFINS EXEC requires the tape drive to be at virtual address 181.

6 Install RACF.

Notes:

a. If you have already created a PPF override file, you should specify your override file name, in place of the default PPF name (5767002P), after the **PPF** keyword for the following VMFINS command.

b. You might be prompted for additional information during VMFINS INSTALL processing depending on your installation environment. If you are unsure how to respond to a prompt, refer to the chapters 'Installing Products with VMFINS' and 'Install Scenarios' in *VMSES/E Introduction and Reference* to decide how to proceed.

vmfins install ppf 5767002P {RACF | RACFSFS | RACFPANL | RACFPANLSFS} (nomemo nolink

Use:	to install:
RACF	on minidisks
RACFSFS	in SFS directories
RACFPANL	on minidisks with RACF ISPF panels
RACFPANLSFS	in SFS directories with RACF ISPF panels.

The NOLINK option indicates that you don't want VMFINS to link to the appropriate minidisks, only access them if not accessed.

```
VMFINS2767I Reading VMFINS DEFAULTS B for additional options
VMFINS2760I VMFINS processing started
VMFINS2601R Do you want to create an override for :PPF 5767002P RACFPANL :PRODID
            5767002P%RACFPANL?
            Enter 0 (No), 1 (Yes) or 2 (Exit)
0
VMFINS2603I Processing product :PPF 5767002P RACFPANL :PRODID 5767002P%RACFPANL
VMFREQ2805I Product :PPF 5767002P RACFPANL :PRODID 5767002P%RACFPANL has passed
            requisite checking
VMFINT2603I Installing product :PPF 5767002P RACFPANL :PRODID 5767002P%RACFPANL
VMFSET2760I VMFSETUP processing started for 5767002P RACFPANL
VMFUTL2205I Minidisk|Directory Assignments:
            String    Mode  Stat  Vdev  Label/Directory
VMFUTL2205I LOCALSAM  E     R/W   2C2   14DSK
VMFUTL2205I APPLY     F     R/W   2A6   16DSK
VMFUTL2205I           G     R/W   2A2   17DSK
VMFUTL2205I DELTA     H     R/W   2D2   15DSK
VMFUTL2205I BUILD0    I     R/W   29E   18DSK
VMFUTL2205I BUILD6    J     R/W   599   23DSK
VMFUTL2205I BUILD4    K     R/W   505   22DSK
VMFUTL2205I BUILD2    T     R/W   590   21DSK
VMFUTL2205I BASE      U     R/W   2B2   13DSK
VMFUTL2205I --------  A     R/W   191   26DSK
VMFUTL2205I --------  B     R/O   5E5   12DSK
VMFUTL2205I --------  D     R/W   51D   11DSK
VMFUTL2205I --------  S     R/O   608   604RAC
VMFUTL2205I --------  Y/S   R/O   19E   19EMNT
VMFSET2760I VMFSETUP processing completed successfully
VMFREC2760I VMFREC processing started
VMFREC1852I Volume 1 of 1 of INS TAPE 9700
VMFREC1851I (1 of 10) VMFRCAXL processing AXLIST
VMFRCX2159I Loading 2 part(s) to DELTA 2D2 (H)
VMFREC1851I (2 of 10) VMFRCPTF processing PARTLST
VMFRCP2159I Loading 15 part(s) to DELTA 2D2 (H)
VMFREC1851I (3 of 10) VMFRCCOM processing DELTA
VMFRCC2159I Loading 142 part(s) to DELTA 2D2 (H)
VMFREC1851I (4 of 10) VMFRCALL processing APPLY
VMFRCA2159I Loading part(s) to APPLY 2A6 (F)
VMFRCA2159I Loaded 4 part(s) to APPLY 2A6 (F)
VMFREC1851I (5 of 10) VMFRCALL processing BASE
VMFRCA2159I Loading part(s) to BASE 2B2 (U)
VMFRCA2159I Loaded 785 part(s) to BASE 2B2 (U)
VMFREC1851I (6 of 10) VMFRCALL processing BASEPAN
VMFRCA2159I Loading part(s) to BASE 2B2 (U)
VMFRCA2159I Loaded 1436 part(s) to BASE 2B2 (U)
VMFREC1851I (7 of 10) VMFRCALL processing BUILD490
VMFRCA2159I Loading part(s) to BUILD2 590 (T)
VMFRCA2159I Loaded 41 part(s) to BUILD2 590 (T)
VMFREC1851I (8 of 10) VMFRCALL processing BUILD505
VMFRCA2159I Loading part(s) to BUILD4 505 (K)
VMFRCA2159I Loaded 111 part(s) to BUILD4 505 (K)
VMFREC1851I (9 of 10) VMFRCALL processing BUILD29E
VMFRCA2159I Loading part(s) to BUILD0 29E (I)
VMFRCA2159I Loaded 50 part(s) to BUILD0 29E (I)
VMFREC1851I (10 of 10) VMFRCALL processing BUILDPAN
VMFRCA2159I Loading part(s) to BUILD6 599 (J)
VMFRCA2159I Loaded 43 part(s) to BUILD6 599 (J)
VMFREC2189I Updating Requisite table 5767002P SRVREQT, Description table
            5767002P SRVDESCT and Receive Status table 5767002P SRVRECS with 15
            new PTFs from INS 9700
VMFREC2760I VMFREC processing completed successfully
VMFINT2603I Product installed
VMFINS2760I VMFINS processing completed successfully
```

7 Review the install message log ($VMFINS $MSGLOG). If necessary, correct any problems before going on. For information about handling specific error messages, see *z/VM: System Messages and Codes*, or use on-line HELP.

vmfview install

6.6 Task 4. Install the RACF Kanji ISPF Panels (Optional)

┌─ **Procedural Note** ───┐

This is an optional step. Customers doing migration installs should perform this step only if you plan to use the RACF Kanji ISPF panels.

Otherwise, skip to 6.7, "Task 5. Load the Recommended Service Upgrade (RSU)" on page 44.

└──┘

RACF's NLS feature is installed through VMSES/E support using the same user ID, 5767002P, as the base. To install the RACF Kanji ISPF panels, follow these steps:

1 Get the requirements for the 2B3 and 799 minidisks for the Kanji ISPF panels from Figure 8 on page 21. Add the minidisks to the 5767002P user ID directory and place the directory on-line.

2 Log on to the 5767002P user ID.

3 Format the disks.

4 Have the NLS Kanji ISPF Feature installation tape mounted and attached to **5767002P** at virtual address 181.

5 Install the RACF Kanji ISPF panels.

vmfins install ppf 5767002Q {RACFK|RACFKSFS} (nomemo nolink

Use **RACFK** if installing using minidisks or **RACFKSFS** if installing using SFS.

6.7 Task 5. Load the Recommended Service Upgrade (RSU)

> **Procedural Note**
>
> Customers doing migration installs should perform this step if an IBM
> Recommended Service Upgrade (RSU) tape was included with the RACF
> product tape.
>
> Otherwise, if an RSU tape has not been included with RACF, continue with 6.8,
> "Task 6. Update to Force Build of RACF CP Parts" on page 46.

1 You should still be logged on to the 5767002P user ID. Mount the RSU tape
on the tape drive as virtual device 181. You must use 181.

2 Receive the documentation on the tape. This step also loads the cumulative
apply status table (SRVAPPS) which identifies all preapplied service
contained on the tape. These files are loaded to the 51D disk.

vmfins install info (nomemo

3 Determine the DASD sizes for the disks to receive service.

In order to receive the service from the RSU, you need to have adequate
space available on the alternate APPLY and DELTA disks. The required
sizes are identified in the RACF documentation (5767002P MEMO D)
received in the previous step.

4 Enter the VMFINS command to load the contents of the RSU tape.

vmfins install ppf 5767002P {RACF | RACFSFS | RACFPANL | RACFPANLSFS} (nomemo nolink

Refresh the RACF service disks by loading new
service from the RSU tape.

Use:	to install:
RACF	on minidisks
RACFSFS	in SFS directories
RACFPANL	on minidisks with RACF ISPF panels
RACFPANLSFS	in SFS directories with RACF ISPF panels.

The NOLINK option indicates that you don't need
VMFINS to link to the appropriate minidisks, only
access them if not accessed.

```
VMFINS2601R Do you want to create an override for :PPF 5767002P RACFPANL :PRODID
            5767002P%RACFPANL?
            Enter 0 (No), 1 (Yes) or 2 (Exit)
0
VMFINS2603I Processing product :PPF 5767002P RACFPANL :PRODID 5767002P%RACFPANL
VMFREQ2805I Product :PPF 5767002P RACFPANL :PRODID 5767002P%RACFPANL has passed
            requisite checking
VMFINT2603I Installing product :PPF 5767002P RACFPANL :PRODID 5767002P%RACFPANL
VMFSET2760I VMFSETUP processing started for 5767002P RACFPANL
VMFUTL2205I Minidisk|Directory Assignments:
            String    Mode  Stat  Vdev  Label/Directory
VMFUTL2205I LOCALSAM  E     R/W   2C2   2C2INS
VMFUTL2205I APPLY     F     R/W   2A6   2A6INS
VMFUTL2205I           G     R/W   2A2   2A2INS
VMFUTL2205I DELTA     H     R/W   2D2   2D2INS
VMFUTL2205I BUILD0    I     R/W   29E   29EINS
VMFUTL2205I BUILD6    J     R/W   599   599INS
VMFUTL2205I BUILD4    K     R/W   505   505INS
VMFUTL2205I BUILD2    T     R/W   590   590INS
VMFUTL2205I BASE      U     R/W   2B2   2B2INS
VMFUTL2205I --------  A     R/W   191   191INS
VMFUTL2205I --------  B     R/W   5E5   MNT5E5
VMFUTL2205I --------  C     R/W   A22   A22TMP
VMFUTL2205I --------  D     R/W   51D   MNT51D
VMFUTL2205I --------  S     R/O   608   604RAC
VMFUTL2205I --------  Y/S   R/O   19E   19EMNT
VMFSET2760I VMFSETUP processing completed successfully
VMFREC2760I VMFREC processing started
VMFREC1852I Volume 1 of 1 of INS TAPE yynn
⋮
VMFREC2760I VMFREC processing completed successfully
VMFINT2603I Product installed
VMFINS2760I VMFINS processing completed successfully

Ready; T=20.25/21.69 16:48:02
```

In message VMFREC1852I, *yynn* is filled in with the RSU number.

5 Review the install message log ($VMFINS $MSGLOG). If necessary, correct
any problems before going on. For information about handling specific install
messages, see *z/VM: System Messages and Codes*, or use on-line HELP.

vmfview install

6 Service Next Component

Refer to the 5767002Q MEMO on the 51D disk, section 'RSU Tape
Recommended', to see if there is service for the RACF Kanji ISPF code on
the RSU tape. If so, and you have RACF Kanji ISPF installed, continue with
step 3 on page 44 in 6.7, "Task 5. Load the Recommended Service Upgrade
(RSU)." Use the following substitutions in the commands:

- Use **5767002Q** instead of **5767002P** for the ppfname
- Use **RACFK** (for installing on minidisks) or **RACFKSFS** (for installing in SFS directories), instead of **RACF** or **RACFSFS** for the compname.

6.8 Task 6. Update to Force Build of RACF CP Parts

> **Procedural Note**
>
> Customers doing migration installs should perform this step.

1 Update the $SELECT file to force a build of the RACF CP Parts by VMSES/E.

vmfrepl hcprpf rpibase0 SERVP2P {RACF | RACFSFS} ($select nocopy
vmfrepl hcprpg rpibase0 SERVP2P {RACF | RACFSFS} ($select nocopy
vmfrepl hcprpi rpibase0 SERVP2P {RACF | RACFSFS} ($select nocopy
vmfrepl hcprpw rpibase0 SERVP2P {RACF | RACFSFS} ($select nocopy
vmfrepl hcprpd rpibase0 SERVP2P {RACF | RACFSFS} ($select nocopy
vmfrepl hcprwa rpibase0 SERVP2P {RACF | RACFSFS} ($select nocopy

Use:	to install:
RACF	on minidisks
RACFSFS	in SFS directories

6.9 Task 7. Create PROFILE EXEC and SMF CONTROL Files for the RACF Service Machines

> **Procedural Note**
>
> Customers doing migration installs should perform this step.
>
> Migration installs should copy only the PROFILE EXEC file. You can use your existing SMF CONTROL file. If RACF is currently active on your system you must inactivate it now in order to properly link to its minidisks. To inactivate RACF, issue the following commands from the operator's console, replacing RACFVM with your RACF service machine user ID:
>
> ```
> SEND RACFVM SETRACF INACTIVE
> YES
> FORCE RACFVM
> ```

1 Copy the PROFILE SAMPLE and SMF CONTROL files to RACFVM's A-disk and RACMAINT's A-disk.

link RACFVM 191 199 MR   Where *fm-505* is the current file mode of
acc 199 Z   5767002P's 505 test build disk.
copyfile profile sample *fm-505* **profile exec z (replace**
copyfile smf control *fm-505* **smf control z (replace**
det 199
link RACMAINT 191 199 MR
acc 199 Z
copyfile profile sample *fm-505* **profile exec z (replace**
copyfile smf control *fm-505* **smf control z (replace**
det 199

6.10 Task 8. Generate a RACF-Modified CMS Nucleus

```
┌─ Procedural Note ─────────────────────────────────────────────┐
│                                                               │
│  Customers doing migration installs should perform this step. │
│                                                               │
└───────────────────────────────────────────────────────────────┘
```

1 Generate a new RACF CMS nucleus

def 590 490
def 505 305
acc 305 e
gennuc

2 The following screens appear:

```
A modified version of CMS is about to be generated.
```

```
The modified CMS nucleus must be generated with a virtual machine size of
20M.

The GENNUC EXEC will automatically set the virtual machine size to 20M
and IPL the modified nucleus.

Note:  Please reply to the DMSINQ609R Message by Entering:   32
```

Note: The number displayed is dependent on the type of DASD your
installation has (it might not be 32).

Type in what appears for your installation and press Enter to continue the
IPL.

The IPL might take a few minutes, depending on your system setup. RACF's
modified CMS is IPLed as it is being written to DASD.

A copy of the CMS nucleus map will be placed in your reader. Receive the
file and keep it for use in future problem determination.

3 Reset the environment

def 490 590
def 305 505
acc 590 t
vmfsetup 5767002P {RACF | RACFSFS | RACFPANL | RACFPANLSFS}

Use:	to install:
RACF	on minidisks
RACFSFS	in SFS directories
RACFPANL	on minidisks with RACF ISPF panels
RACFPANLSFS	in SFS directories with RACF ISPF panels.

6.11 Task 9. Convert the Database Templates

> **Procedural Note**
>
> Customers doing migration installs should perform this step.
>
> Customers doing new installs and sharing an existing RACF database should perform this step.
>
> Customers doing new installs and not sharing the RACF database should skip to 6.13, " Task 11. Prepare to Update RACF with Existing CP Directory Data" on page 54.

The RACF database must have templates at the 1.10 level for RACF to function properly. If you are migrating from a previous release of RACF to RACF 1.10, you must run the RACFCONV EXEC to convert the existing database templates to the current release.

Be sure to run RACFCONV against each primary and backup database on your system.

Note: This is not a conversion to the restructured database format.

If you are sharing the RACF database, you must convert the templates from the system with the highest level of RACF. (Note that RACF Version 2 is a higher level of RACF than RACF 1.10.)

If you are sharing the RACF database with an MVS system that has RACF Version 2 installed, in order to update the templates from the MVS system you must have APAR OW18980 installed on the MVS system. If you do not update the templates, all VM logon attempts will fail while RACF is up.

To convert the database templates from a VM system:

   1 Run RACFCONV EXEC to convert the templates.

link RACFVM 200 200 mr
racfconv

```
This exec is used to run the Racf utility IRRMIN00 to
convert existing Racf datasets for a new release of Racf.

Press ENTER to continue....
```

⬛ ENTER

```
Enter the device address to be converted
```

200

```
About to update templates in 'RACF.DATASET' at virtual address '200'
Do you wish to continue?

Enter YES or NO
```

yes

```
Processing begins
All output will be placed in the MIN00U OUTPUT file on the 'A' disk.
Program 'IRRMIN00' is being executed - Please wait -


Processing complete
Return code from 'IRRMIN00' = 0
Ready; T=0.07/0.10 11:41:46
```

link RACFVM 300 300 mr
racfconv

```
This exec is used to run the Racf utility IRRMIN00 to
convert existing Racf datasets for a new release of Racf.

Press ENTER to continue....
```

ENTER

```
Enter the device address to be converted
```

300

```
About to update templates in 'RACF.BACKUP' at virtual address '300'
Do you wish to continue?

Enter YES or NO
```

yes

```
Processing begins
All output will be placed in the MIN00U OUTPUT file on the 'A' disk.
Program 'IRRMIN00' is being executed - Please wait -


Processing complete
Return code from 'IRRMIN00' = 0
Ready; T=0.07/0.10 11:44:44
```

det 200
det 300

To convert the database templates from an MVS system, see *RACF: System Programmer's Guide*.

6.12 Task 10. Set Up the RACF Databases

<div style="border:1px solid black">

—— **Procedural Note** ——

Customers doing new installs and not sharing existing RACF databases should skip to 6.13, " Task 11. Prepare to Update RACF with Existing CP Directory Data" on page 54.

Customers doing new installs and sharing existing RACF databases should skip to 6.13, " Task 11. Prepare to Update RACF with Existing CP Directory Data" on page 54.

Customers doing migration installs should skip to 6.14, "Task 12. Customize the Processing of SMF Records (Optional)" on page 59.

</div>

Notes:

1. RACF supplies required virtual addresses and labels for the RACF databases; **you must not change these**. The label for the primary database is RACF at virtual address 200; the label for the backup database is RACFBK at virtual address 300.

2. **Do not** place any of these minidisks on cylinder 0 in the CP directory. When the RACDSF EXEC executes, it could destroy the volume identifier on the pack.

6.12.1 Format the RACF Database Minidisks

This section and the next two sections show how to format, allocate and initialize the RACF database minidisks. The database minidisks are 200 and 300. They are owned by the RACFVM user ID.

1 If the RACF databases are on CKD DASD, format using ICKDSF.

link RACFVM 200 200 mr
link RACFVM 300 300 mr
racdsf 200 RACF
racdsf 300 RACFBK

2 If the RACF databases are on FBA DASD, use the CMS format command.

format 200 r (blk 4096
yes
racf
format 300 q (blk 4096
yes
racfbk

6.12.2 Allocate the RACF Database Space

1 If the RACF databases are on CKD DASD, allocate the database space.
(This step is not needed if the databases are on FBA DASD.)

racalloc   200 and 300 are the addresses for the primary and
200   backup databases.
racalloc
300

6.12.3 Initialize the RACF Databases

1 Initialize the RACF databases. 200 and 300 are the addresses for the
primary and backup databases.

racinitd

```
Is Initialization for Racf Primary or Backup data sets?
        or
Is Initialization for a Racf Work data set?

Enter Primary - to Initialize a Single Primary Dataset

Enter Backup  - to Initialize a Single Backup Dataset

Enter Cuu     - to Initialize a Specific Dataset

Enter Quit    - to Terminate Processing
```

200

```
Initialization of 'RACF.DATASET' at virtual address '200' begins.
All output will be placed in the Min00 Output file on the A disk.

Program  IRRMIN00  is being executed - Please wait -
Initialization of  RACF.DATASET  completes
Return code from  IRRMIN00  = 0
Ready; T=0.12/0.33 16:03:17
```

racinitd

```
 Is Initialization for Racf Primary or Backup data sets?
         or
 Is Initialization for a Racf Work data set?

 Enter Primary - to Initialize a Single Primary Dataset

 Enter Backup  - to Initialize a Single Backup Dataset

 Enter Cuu     - to Initialize a Specific Dataset

 Enter Quit    - to Terminate Processing
```

300

```
Initialization of 'RACF.DATASET' at virtual address '300' begins.
All output will be placed in the Min00 Output file on the A disk.

Program  IRRMIN00  is being executed - Please wait -
Initialization of  RACF.DATASET  completes
Return code from  IRRMIN00  = 0
Ready; T=0.12/0.33 16:03:17
```

6.13 Task 11. Prepare to Update RACF with Existing CP Directory Data

--- **Procedural Note** ---

Only customers doing new installs should perform this step.

Customers doing migration installs should skip to 6.14, "Task 12. Customize the Processing of SMF Records (Optional)" on page 59.

The RPIDIRCT EXEC helps you to migrate existing CP directory data to a RACF database. It scans the CP directory and translates directory statements into RACF commands. It places the RACF commands in an output file called RPIDIRCT SYSUT1. You can use this file to initialize new RACF databases if you are not planning on sharing an existing RACF database, or to modify an existing database if you are planning on sharing an existing RACF database.

Before you run RPIDIRCT, you might need to make some changes to the CP directory. After you run RPIDIRCT, you might need to make some changes to the RPIDIRCT SYSUT1 file. The following sections have information on CP directory requirements, the RPIDIRCT SYSUT1 file and running the RPIDIRCT EXEC.

6.13.1 General CP Directory Requirements

To avoid potential problems, before running RPIDIRCT check for the following in the CP directory:

- Duplicate user IDs
- NOLOG passwords
- Unacceptable characters in user IDs
- ACIGROUP considerations
- Group names on POSIXGROUP statements that are duplicates except for case
- OpenExtensions-related entries added by the DIRPOSIX EXEC

! **Note:** The use of OpenEdition has been changed to OpenExtensions.

Duplicate User IDs

If you plan to have VM systems share the RACF database, review their CP directories for cases where a user on one system has the same user ID as a different user on another system. If you find cases where this occurs, you must change one of the user IDs.

NOLOG Passwords

Some user passwords may appear in the directory as NOLOG. You can treat these users in one of two ways:

- Allow the password to remain as NOLOG.

  VM will not permit those users to log on to the system.

- Change the password to UNLOG.

  The users will be defined in the RACF database with their user ID revoked. Later, their ability to log on can be resumed.

Unacceptable Characters in User IDs

RACF does not allow a dash (-), plus (+), colon (:), or underscore (_) in a user ID. Remove these characters from all user IDs that contain them.

RPIDIRCT changes any unacceptable character it finds in a user ID to a dollar sign ($).

Understanding the Effect ACIGROUP Has on Resource Names

IBM recommends that the ACIGROUP statement **not** be used in the USER DIRECT file. If ACIGROUP is used, RPIDIRCT creates the output file RPIDIRCT SYSUT1 with the GROUP name appended to the resource name for the VMMDISK and VMRDR class profiles. For example, USER.191 will appear as GROUP.USER.191. If ACIGROUP is used, VM LOGON processing passes the group ID to RACF (making it necessary for the user to be both defined and connected to the group).

If ACIGROUP is not specified, RPIDIRCT defines the user to default group SYS1. SYS1 *is not* appended to the resource name.

Group Names on POSIXGROUP Statements that Are Duplicates Except For Case

Although VM supports mixed-case group names, RACF does not. For example, if your CP directory contains the statements:

```
POSIXGROUP Payroll 10
POSIXGROUP payroll 20
```

RACF creates a PAYROLL group profile, assigning it a GID value of 10. RPIDIRCT issues a warning message when it encounters the second POSIXGROUP statement.

OpenExtensions-Related Entries Added by the DIRPOSIX EXEC

When you run the DIRPOSIX utility with the SYSENTRIES option, the utility creates entries that RACF does not support. If you have run this utility, you might need to change some UID and GID values, and some group names. For more information, see *RACF: Security Administrator's Guide*.

6.13.1.1 The RPIDIRCT SYSUT1 File

The commands generated by the RPIDIRCT EXEC are placed in an output file called RPIDIRCT SYSUT1. The commands can:

- Add a user to the RACF database
- Define a user's minidisks (MDISK statement in the CP directory)
- Define a reader for each VM user, permitting the user to access the reader

- Define access to batch service machines
- Permit access for users having LINK statements in the directory
- Define OpenExtensions information

The objectives of your installation might require you to change some of the commands.

If you have a large installation, you might want to break up the RPIDIRCT SYSUT1 file into several smaller files. In that way, several jobs of a more manageable size can be run to initialize the RACF database. For example, you could place all the ADDUSER commands in one file, all the RDEFINE commands in another file, and the PERMIT commands in still another file. If you do this, remember to run the ADDUSER command file first, then the RDEFINE command file, and lastly, the PERMIT command files.

The general format of the commands generated by the EXEC is as follows:

```
ADDUSER userid DFLTGRP(SYS1) UACC(NONE) PASSWORD(pppppppp)
RDEFINE VMMDISK userid.vadr OWNER(userid) UACC(NONE)
PERMIT userid.vadr CLASS(VMMDISK) ID(userid) ACCESS(aaaaaaa)
RDEFINE VMBATCH userid OWNER(userid) UACC(NONE)
PERMIT userid CLASS(VMBATCH) ACCESS(ALTER) RESET
RDEFINE VMRDR userid UACC(NONE) OWNER(userid)
PERMIT userid CLASS(VMRDR) ID(userid) ACCESS(ALTER) RESET
PERMIT userid.vadr CLASS(VMMDISK) ID(userida) ACCESS(aaaaaaa)
```

Where:

- *userid* and *userida* are users defined in the CP directory

- *SYS1* = is the user's default group

- *pppppppp* = is the password from the user's directory entry.

- *vadr* = is the virtual address of a minidisk.

- *aaaaaaa* = is the authorization level based on link mode (NONE, READ, UPDATE, CONTROL, or ALTER).

  Note: RACF bases the level of access that it grants on the authorization it finds in the directory LINK or MDISK statement.

See *RACF: Security Administrator's Guide* for information on how RPIDIRCT processes OpenExtensions-related CP directory statements.

The maximum number of users allowed in a group is 5200. If your system has more than 5200 users and the group fills up, you are prompted to supply a new group name.

Consider editing the RPIDIRCT SYSUT1 file to change the UACC from NONE to UPDATE for those readers that any user ID can spool to.

<div style="border:1px solid">

In order to use z/VM Automated Service

In order to use the z/VM automated service commands you need to give UACC of UPDATE for VMRDR to the MAINT user ID.

</div>

Move your key VM users and their minidisks to the front of the file so that RACF defines them first (for example, your own user ID and the operator user IDs). These users can then log on shortly after the build process begins.

Notes:

1. The ADDUSER command for a user ID might fail if you have already defined that user ID. This situation can occur if you are sharing your RACF database, and the same user ID is defined on both sharing systems. To prevent the failure, remove or comment out the ADDUSER command by placing an asterisk in column one.

2. The LINK information in a CP directory entry is transferred to the RACF profiles now protecting the various minidisks.

   If minidisk owners want to change this arrangement, they must wait until after RACF has been installed. After reviewing the access lists for their minidisks, they should decide who should have continued access. If the owners wish to delete users from an access list, they should enter a PERMIT command or use the RACFPERM EXEC. Refer to *RACF: Command Language Reference* or *RACF: General User's Guide*.

6.13.2 Run RPIDIRCT to Create the RPIDIRCT SYSUT1 File

The RPIDIRCT EXEC needs access to three minidisks:

- A minidisk with the CP directory
- A minidisk with the DirMaint cluster files (if applicable)
- A minidisk for the RACF command output generated by the RPIDIRCT EXEC

1 You should be logged on to the 5767002P user ID.

2 Link and access the disk that contains your CP directory file. (The default CP directory file name is USER DIRECT and it resides on MAINT's 2CC minidisk.)

3 If applicable, link and access the disk that contains DirMaint cluster files.

4 Ensure that the 191 disk has enough free space and that the user ID building the database (later in the installation) has access to the 191 disk.

5 Make sure the CP directory entries will not cause any problems. See 6.13.1, "General CP Directory Requirements" on page 55 for the problem areas you should check for.

6 Create the CMS file of RACF commands, RPIDIRCT SYSUT1. This file will be used by another step further on in the install process.

| **access 505 e** | Where *fn ft fm* is the name of your CP directory file |
| **rpidirct** *fn ft fm outmode* | and *outmode* is the file mode where you want the created RPIDIRCT SYSUT1 file placed. The default for outmode is A. |

> **Note:** This step might take a while to run, and the output comes to the console. If you do not want to see the output then spool your console before you enter the command (so that you will be able to view any error messages) and type HT after the RPIDIRCT command starts.

7 Make any changes to the RPIDIRCT SYSUT1 file that your installation requires, as discussed in 6.13.1.1, "The RPIDIRCT SYSUT1 File" on page 56.

6.14 Task 12. Customize the Processing of SMF Records (Optional)

```
┌─ Procedural Note ─────────────────────────────────────────

  This step is optional.

└──────────────────────────────────────────────────────────
```

The RACFSMF user ID can be set up to automatically perform SMF switching and archiving tasks. RACF keeps track of unauthorized attempts to log on to the system by writing an SMF record to the SMF DATA file. An installation can optionally have RACF write SMF records for any authorized attempts and/or unauthorized attempts for the following activities:

- Attempts to access RACF-protected resources
- Attempts to enter RACF commands or certain CP commands and diagnose codes
- Attempts to modify profiles in the RACF database

A single-record file named SMF CONTROL exists on RACFVM's 191 disk. It identifies two SMF minidisks (301 as the primary minidisk, 302 as the secondary minidisk) that RACF uses to record audit information. RACF refers to this file to determine which disk to use first. When RACF fills that minidisk, RACF switches to

the other SMF minidisk, updates the SMF CONTROL file to reflect the change, and autologs the RACFSMF user ID.

For detailed information on the RACFSMF user ID and the SMF CONTROL file, see *RACF: Auditor's Guide*.

6.14.1 Setting Up the RACFSMF PROFILE EXEC (Optional)

A sample profile exec for the RACFSMF user ID is provided on the RACF product tape. The file SMFPROF EXEC can be copied to the RACFSMF user ID and renamed to be its PROFILE EXEC. Without changing any of the variables in the exec, RACFSMF will automatically perform SMF switching and archiving tasks. Your installation can change the default values.

The variables and their defaults are:

- *SMFDISK* gives the virtual address of the disk on which archived SMF DATA is to be copied. The default value is 192.

- *SMFPCT* is the percentage to which the SMF archive disk fills. The default setting is 80. If the SMF archive disk gets more than 80% full, a message is sent to a designated user ID.

- *SMFINFO* is the user ID that receives the disk full message. The default user ID is OPERATOR.

- *SMFFREQ* controls the frequency of SMF switching and archiving. Valid values are DAILY, WEEKLY, or MONTHLY. If you initialize *SMFFREQ* as MONTHLY, you should also initialize variable *SMFDAY* to a day of the week.

  If you chose TUESDAY and MONTHLY, for example, SMF switching and archiving takes place on the first Tuesday of each month.

  The default settings are SMFFREQ=WEEKLY and SMFDAY=MONDAY.

- *SMFSWTCH* indicates whether RACFSMF is to be autologged by RACFVM when the SMF disk is full or on a regular basis. The default is YES (archiving on a regular basis). If you want to use this exec only when the SMF disk is full, specify SMFSWTCH NO.

RACFSMF requires ALTER access to RACFVM's 301 and 302 disks, and requires READ access to RACFVM's 191 disk. The links to the 301 and 302 disks are performed during the RACFSMF autolog. IBM recommends that you define RACFSMF to a group with TERMUACC(NONE) so that no one can manually log on to RACFSMF.

When the SMF DATA files are copied to the 192 disk, they will always have a file name that reflects the Julian date on which switching took place, as an example, SMF86122. If more than one file is archived on one day the *file type* will reflect the backup number (DATA, DATA0001, DATA0002, etc.).

RACFSMF is automatically logged off. The SMF records on the 192 disk are ready for processing by your installation. Refer to *RACF: Auditor's Guide* for more information on using SMF records.

1 Link and access RACFSMF's 191 disk.

link racfsmf 191 291 mr
access 291 m

2 Copy the sample PROFILE EXEC for the RACFSMF user ID.

copyfile smfprof exec *fm-505* **profile exec m (olddate replace**

> Where *fm-505* is the current file mode of 5767002P's 505 test build disk.

3 Make any required updates to the PROFILE EXEC.

4 Detach the RACFSMF disk.

det 291

6.14.2 Setting Up the SMF CONTROL File (Optional)

At initialization, RACF uses the SMF CONTROL file to determine on which of two minidisks to record SMF records. When RACF fills up the minidisk on which it began recording, it uses the SMF CONTROL file to determine the location of the alternate minidisk.

When it switches minidisks, RACFVM updates the CURRENT field in the SMF CONTROL file (on RACFVM's A-disk) to reflect the minidisk that it is now recording on.

If the default addresses, filemodes, and CPU IDs specified in the file shipped with RACF do not fit the needs of your installation, you can edit the SMF CONTROL file and change them.

Following is the default SMF control record contained in the SMF CONTROL file:

CURRENT 301 K PRIMARY 301 K SECONDARY 302 K 10000 VMSP CLOSE 001 SEVER NO 0 RACFSMF

In this record, the virtual addresses of the SMF minidisks are 301 and 302. The filemode is K, the default maximum buffer size for the SMF DATA file is 10000, and VMSP is the ID of the CPU where RACF generates the SMF records. CLOSE *nnn* specifies the number of audit records RACF buffers before they are written to the SMF file. You can specify 000-999; the default value is 001.

RACF limits the CPU ID to four characters. It is used as an identifier for SMF records and should not be confused with the larger CPU ID in VM systems.

The CLOSE 001 ensures that the audit requests processed by RACF are not buffered before being written to the SMF data file.

If you specify CLOSE 000, the file is not explicitly closed by RACF; CMS writes the audit records when the internal buffer is full. Note that if *nnn* is large, RACF can write more audit records per second, thereby improving system performance. However, more audit records could be lost during a system failure.

The SEVER keyword is initially set to NO. If the installation chooses to set SEVER to YES, RACF will sever the path between CP and RACF when the SMF disks are full, and RACF is unable to continue recording SMF records. Before setting SEVER to YES, installations should consider its effect on system availability.

The 0 is an internal flag used by RACF, and should not be altered by the user.

RACFSMF is the user ID that is autologged when the 301 or 302 minidisks are filled.

If you XEDIT the SMF CONTROL file, you must not alter the format of the control record: a single space must separate operands. In addition, the SMF CONTROL file must be a fixed block logical record length of 100.

If you change the SMF CONTROL file, you need to copy it to RACMAINT's 191 disk.

1 Link and access RACFSMF's 191 disk.

link racfsmf 191 291 mr
access 291 m

2 Copy the SMF CONTROL file.

link racfvm 191 391 mr
access 391 n
copyfile smf control n = = m (olddate replace

3 Make any required updates to the SMF CONTROL file on the 291 minidisk.

4 Copy the new SMF CONTROL file to the RACFVM and RACMAINT 191 A-disks.

link racmaint 191 491 mr
access 491 o
copyfile smf control m = = o (olddate replace
copyfile smf control m = = n (olddate replace

5 Detach the RACFSMF, RACFVM, and RACMAINT disks.

det 291
det 391
det 491

6.15 Task 13. Change the Message Routing Table (Optional)

```
┌─ Procedural Note ──────────────────────────────────────────────────┐
│                                                                     │
│  This step is optional.                                             │
│                                                                     │
└─────────────────────────────────────────────────────────────────────┘
```

RACF simulates OS multiple console support by using the VM MSG, WNG, SMSG, and MSGNOH commands. The simulation uses a routing table (CSTCONS) to send console messages to VM user IDs.

The CSTCONS routing table shown in Figure 10 is the table shipped with RACF and is called CSTCONS ASSEMBLE. It contains the following:

- The user IDs that receive the text of WTO/WTOR SVCs
- The commands (MSG, WNG, SMSG, or MSGNOH) used to send the text of the WTO/WTOR SVCs
- A list of the routing codes each user ID in the table should receive

```
CSTCONS  CSECT           MCS TABLE OF USER IDS
* ENTRY FORMAT:
*
* |---------------------------------------------------------------------|
* | ROUTCODES  |          TARGET USERID           |       MSG MODE       |
* |---------------------------------------------------------------------|
* 0             2                                 10                   15
MCSR1    EQU   X'80'           MASTER CONSOLE
MCSR2    EQU   X'40'           MASTER CONSOLE INFORMATIONAL
MCSR3    EQU   X'20'           TAPE POOL
MCSR4    EQU   X'10'           DIRECT ACCESS POOL
MCSR5    EQU   X'08'           TAPE LIBRARY
MCSR6    EQU   X'04'           DISK LIBRARY
MCSR7    EQU   X'02'           UNIT RECORD POOL
MCSR8    EQU   X'01'           TELEPROCESSING POOL
MCSR9    EQU   X'80'           SYSTEM SECURITY
MCSR10   EQU   X'40'           SYSTEM/ERROR MAINTENANCE
MCSR11   EQU   X'20'           PROGRAMMER INFO
MCSR12   EQU   X'10'           EMULATOR INFORMATION
MCSR13   EQU   X'08'           USER ROUTING
MCSR14   EQU   X'04'           USER ROUTING
MCSR15   EQU   X'02'           USER ROUTING
MCSR16   EQU   X'01'           AUTHORIZATION FOR SMSG TO RACF SERVER
*
FF       EQU   255
         SPACE 3
MASTRCON DC    AL1(FF),AL1(FF-MCSR9-MCSR11),CL8'*',CL6'MSGNOH'
SECCON   DC    X'00',AL1(MCSR9),CL8'OPERATOR',CL6'MSGNOH'
SEC2CON  DC    X'00',AL1(MCSR16),CL8'RACFSMF',CL6'MSGNOH'
END      DC    XL2'00'
         END
```

Figure 10. Example of CSTCONS Routing Table.

If your installation uses the CSTCONS routing table shipped with RACF, RACFVM receives messages with all routing codes, except security routing codes (route code 9) that go to the OPERATOR, and "Write to Programmer" messages (route code 11) that are ignored.

If you want a user ID other than OPERATOR to receive the messages with security routing codes, replace OPERATOR with that user ID in the CSTCONS table. If you want another user ID (such as a system administrator), in addition to OPERATOR, to receive the messages with security routing codes, add that user ID to the CSTCONS table without deleting OPERATOR. You must add any additional user IDs to the table after the MASTRCON statement and before the END statement.

The SECCON statement identifies the OPERATOR in the CSTCONS table.

For example, if you want the user ID SYSDA to receive the messages with security routing codes, add the statement below after the SECCON statement and before the END statement.

```
THRDCON  DC  X'00', AL1(MCSR9), CL8'SYSDA', CL6'MSGNOH'
```

This entry in the table causes the system to route security messages to SYSDA in addition to routing them to the operator.

Notes:

1. If a message is sent to a user who is not logged on when the message is sent, the message is forwarded to RACFVM. The user ID (in parentheses) of the user for whom the message was intended precedes the message.

2. IBM recommends placing the security administrator in the CSTCONS table so that the security administrator can receive security-relevant messages and respond to RACF prompts.

6.15.1 Updating the Message Routing Table

To update the message routing table, do a VMSES/E local modification to the CSTCONS ASSEMBLE and CSTCONS TEXT file.

Follow the steps documented in B.1, "Assemble Full Part Replacement - Example" on page 133 to perform the local modification to CSTCONS files. Use the following substitution values:

- For *fn* use **CSTCONS**
- For *nnnn* use **0001**
- For *blist* use **RPIBL505**
- For *memname* use **CSTCONS**

At the end of the procedure your modified copy of CSTCONS ASSEMBLE and CSTCONS TEXT will be on 5767002P's 505 test build disk. It will be copied to RACFVM's 305 production build disk in the copy to production step later on.

6.16 Task 14. Delete or Replace the ICHDEX01 and ICHRCX02 Exits (Optional)

```
┌─ Procedural Note ──────────────────────────────────────────────────┐
│                                                                     │
│  This step is optional.                                             │
│                                                                     │
└─────────────────────────────────────────────────────────────────────┘
```

Another way to customize RACF is to delete or replace the ICHDEX01 and ICHRCX02 exits.

6.16.1 The ICHDEX01 Exit

To provide password protection, early releases of RACF included a routine for masking passwords stored on the RACF database. Later, RACF offered the option of improved password protection using the Data Encryption Standard (DES) algorithm to encrypt passwords. However, some installations already had installation-written exit routines in place that expect masking, not encryption. To remain compatible with those installations, RACF 1.10 includes a dummy installation exit which activates the masking algorithm. This exit (ICHDEX01) always returns a return code of 4 which in turn causes RACF to use the masking algorithm for passwords.

If you choose to use the DES algorithm instead of the masking algorithm, you must delete the dummy exit from RACFLPA LOADLIB, and re-IPL RACFVM. This same change should be made to the service machine's 505 disk.

If you deleted the RACF ICHDEX01 exit in a previous release of RACF, make sure you do the same for RACF 1.10.

Note: If you choose to use the DES algorithm, you must use it on all systems that share the RACF database.

For more information, refer to *RACF: System Programmer's Guide*.

6.16.1.1 Modifying ICHDEX01

To local modify the ICHDEX01 TEXT file, create the ASSEMBLE file and then follow the instructions in B.3, "Local Modification to Full Part Replacement Text Files" on page 136, using the following substitution values:

- For *fn* use **ICHDEX01**
- For *nnnn* use **0002**

Note that you will build libraries RACFOBJ TXTLIB and RACFLPA LOADLIB.

6.16.1.2 Deleting ICHDEX01

To delete ICHDEX01 TEXT, follow the instructions in B.3, "Local Modification to Full Part Replacement Text Files" on page 136 using the following substitution values:

- For *fn* use **ICHDEX01**

- For *blist* use **RPIBLLPA**. You will need to do the steps to get the highest level of a part and the remove object step for the build list.

- For *libname* use **RACFLPA** and for *libftype* use **LOADLIB**. You need to copy the library into production.

Notes:

1. Note that you will comment out ICHDEX01 TEXT from the RACFLPA LOADLIB only.

2. You will do the VMFSETUP command and then continue with the step to get the highest level of the build list.

3. You should not do the last step, which is to re-ipl the RACF service machine.

6.16.2 The ICHRCX02 Exit

The RACROUTE REQUEST=AUTH (also known as RACHECK) postprocessing exit, ICHRCX02, is shipped with the RACF for VM product. This exit allows an alternate user to access data that a user can access, but which the alternate user cannot normally access. It can be used, for example, to allow users to access a restricted compiler only when submitting a batch job to a specified batch machine. If you do not want this postprocessing exit, delete it.

6.16.2.1 Modifying ICHRCX02

If you want to modify ICHRCX02 ASSEMBLE and TEXT, follow the instructions in B.4, "Local Modification to Full Part Assemble and Text Files and Possible Build List Update" on page 139, using the following substitution values:

- For *fn* use **ICHRCX02**
- For *nnnn* use **0002**

Note: You will not be adding or deleting anything to a build list, so you can skip those steps.

6.16.2.2 Deleting ICHRCX02

If you are deleting ICHRCX02, you need to local modify the RPIBLLPA build list to reflect this. Follow the instructions in B.4, "Local Modification to Full Part Assemble and Text Files and Possible Build List Update" on page 139, using the following substitution values:

- For *fn* use **ICHRCX02**
- For *blist* use **RPIBLLPA**

Note: You need to do the VMFSETUP step, and then start with the step to get the highest level of the build list. You should not do the last step, which is to re-ipl the RACF service machine.

6.17 Task 15. Customize RACF Within CP (Optional)

Procedural Note

This step is optional.

There are several RACF options that you can customize within the CP modules, including the following:

- SYSSEC parameters
- Issuance of RACF messages
- Public minidisks
- The requirement for passwords for a RACF command session
- User IDs for RACF service machines
- Multiple RACF service machines
- The value of the POSIX constant NGROUPS_MAX

6.17.1 Setting the CP Disposition for Access Requests (Optional)

Until you have RACF installed to your satisfaction, you might want CP to continue to make access decisions for some of your resources; for example, nodes, minidisks, and commands. (For the protected commands in VM, refer to *RACF: Security Administrator's Guide*)

The SYSSEC macro establishes a relationship between RACF's response to an access request and the final disposition of that request.

The defaults for SYSSEC parameters are shown in Figure 11.

You should be careful about changing the "CP Disposition" on minidisk relationships. *Do not change it to "Disallow Access."* Resources are not defined when IBMUSER logs on after the initial IPL. If you disallow access, IBMUSER is not granted access to CMS minidisks that IBMUSER requires to initialize the RACF database.

See *RACF: Macros and Interfaces* for a description of the SYSSEC macro.

RACF Response	CP Disposition
Access Permitted	Allow Access
Resource Undefined	Defer to CP
Access Denied	Disallow Access
Access denied, but warning mode is set for resource	Defer to CP

Figure 11. Initial Relationships between Access Decisions Made by RACF and Final Disposition by CP

In the figure, if a user attempts to LINK to a minidisk that has not been defined to RACF, the request is deferred to VM. VM permits the user to link if the user has supplied a valid LINK password.

To update or change the SYSSEC macro invocation parameters in HCPRWA, put a local modification on to HCPRWA RPIBASE0. See 6.17.8, "Performing a Local Modification to HCPxxx" on page 71 for the steps to local mod HCPRWA.

6.17.2 Suppressing Issuance of RACF Messages (Optional)

Options in the SYSSEC macro allow you to suppress the issuance of RACF-defined error messages which result from unsuccessful authorization checks by RACF (messages issued by the VM operating system are still displayed). Messages can be suppressed for any combination of the resource classes VMMDISK, VMRDR, VMNODE, and VMCMD.

The default is for messages to be displayed. To change the settings, you need to change the SYSSEC parameters in HCPRWA.

Refer to *RACF: Macros and Interfaces* for a description of the SYSSEC macro.

To update or change the SYSSEC macro invocation parameters in HCPRWA, put a local modification on to HCPRWA RPIBASE0. See 6.17.8, "Performing a Local Modification to HCPxxx" on page 71 for the steps to local mod HCPRWA.

6.17.3 Defining Public Minidisks (Optional)

Within the CP modules, you can define public minidisks (minidisks for public access). Defining public minidisks can improve performance because read access to them is automatically granted without calling the RACF service machine. To define a minidisk as public, use the GLBLDSK macro to define the minidisk in the global minidisk table. For information on the global minidisk table and how to identify minidisks that can be considered public minidisks, refer to *RACF: System Programmer's Guide* and *RACF: Macros and Interfaces*. For information on the GLBLDSK macro, see *RACF: Macros and Interfaces*.

To update or change the GLBLDSK macro invocation parameters in HCPRWA, put a local modification on to HCPRWA RPIBASE0. See 6.17.8, "Performing a Local Modification to HCPxxx" on page 71 for the steps to local mod HCPRWA.

6.17.4 Requiring Passwords for RACF Command Sessions (Optional)

RACF does not require that users enter their passwords to establish RACF command sessions. However, if your installation wants its users to enter passwords for RACF command sessions, you must change the assembler statement in HCPRPD from:

```
&NPWD SETB 1
```

to

```
&NPWD SETB 0
```

To update or change HCPRPD, put a local modification on to HCPRPD RPIBASE0. See 6.17.8, "Performing a Local Modification to HCPxxx" on page 71 for the steps to local mod HCPRPD.

For information on RACF command sessions, see *RACF: Command Language Reference.* Note that a logon password is always required, even if a password is not required for RACF command sessions.

6.17.5 Changing User IDs for RACF Service Machines (Optional)

If you are using user IDs other than RACFVM and RACMAINT for the RACF service machines, you need to update the RACSERV macro statements in HCPRWA. See *RACF: Macros and Interfaces* for details on the RACSERV macro.

To update the RACSERV macro statements in HCPRWA, put a local modification on to HCPRWA RPIBASE0. See 6.17.8, "Performing a Local Modification to HCPxxx" on page 71 for the steps to local mod HCPRWA.

Note: The RACSERV statements must immediately follow the HCPRWATB entry definition label in HCPRWA.

6.17.6 Defining Multiple RACF Service Machines (Optional)

It is strongly recommended that you install the RACF product and determine the overall system performance characteristics before you install multiple RACF service machines. See *RACF: System Programmer's Guide* for information on the benefits of using multiple RACF service machines, how to determine if you need more than a single RACF service machine, and the procedure for installing multiple service machines.

If you plan to install multiple RACF service machines, IBM recommends that you make changes to the RACSERV invocations in HCPRWA as part of RACF installation, leaving the other multiple service machine installation tasks for a later time. This allows you to avoid a CP nucleus regeneration at that time.

To update the RACSERV macro statements in HCPRWA, put a local modification on to HCPRWA RPIBASE0. See 6.17.8, "Performing a Local Modification to HCPxxx" on page 71 for the steps to local mod HCPRWA.

Note: The RACSERV statements must immediately follow the HCPRWATB entry definition label in HCPRWA.

6.17.7 Specifying the Value of the POSIX Constant NGROUPS_MAX (Optional)

The POSIX constant NGROUPS_MAX defines the number of supplemental GIDs that are associated with a POSIX process for authorization. You specify the value of the NGROUPS_MAX constant on the ICHNGMAX macro. See *RACF: Macros and Interfaces* for a description of the ICHNGMAX macro. If a valid value for the NGROUPS_MAX constant is specified on the ICHNGMAX macro at initialization, RACF support for OpenExtensions for VM is activated.

We do not recommend that you specify a value for NGROUPS_MAX at install time unless you are sure that you want RACF support for OpenExtensions for VM activated at install time. *RACF: Security Administrator's Guide* contains a complete description of the steps required to activate the RACF support for OpenExtensions for VM. If you specify a value for NGROUPS_MAX at install time, make sure that you also perform the steps documented in *RACF: Security Administrator's Guide*.

6.17.8 Performing a Local Modification to HCPxxx

To update or change the HCP*xxx* files you need to put a local modification on to HCP*xxx* RPIBASE0, where *xxx* can be RWA, RPD, RPI, RPW, RPF, or RPG.

Follow the steps below to perform the local modification to HCP*xxx* RPIBASE0. Use the following substitution values:

- For *fn* use **HCP***xxx*, where *xxx* is RWA, RPD, RPI, RPW, RPF or RPG.
- For *ft* use **RPIBASE0**.
- For *nnnn* use **0001**.

1 Make sure you are logged on to the 5767002P user ID.

2 Establish the 5767002P's minidisk access order.

vmfsetup SERVP2P {RACF | RACFSFS}

> SERVP2P is a z/VM system supplied PPF file that overrides the 5767002P RACF PPF file. Use RACF if installing on minidisks or RACFSFS if installing on SFS directories.

3 Copy the file to the 2C2 (E-disk) using the local modification identifier and update the VVT table for the part or file.

vmfrepl *fn ft* **SERVP2P {RACF | RACFSFS} ($select logmod L***nnnn* **outmode localsam**

> **Note:** *nnnn* is a user-defined number assigned to this fix, usually starting with 0001.

| **4** Make your local modification changes to the copy on the LOCALSAM 2C2
| disk.

| The modified HCP*xxx* RPIBASE0 files will be built on 5767002P's 505 test build
| disks and then will be copied to the CP maintenance user ID's local modification
| disk in step 6.18, "Task 16. Install the CP Part of RACF" on page 73. It is in that
| step that your changes will be assembled and built into the CP nucleus.

6.18 Task 16. Install the CP Part of RACF

Procedural Note

All customers should perform this step.

| The enablement of RACF is needed before RACF can be used.

| The installation of the CP part of RACF, into the CP nucleus, is needed in order to
| run RACF.

| Modules HCPRPI, HCPRPD, HCPRPF, HCPRPG, HCPRPW, and HCPRWA are
| placeholders in the VM control program and provide the interaction between RACF
| and VM. The RACF install replaces the contents of these VM/CP ASSEMBLE files.

| Follow these steps to enable RACF and apply the RACF updates to CP:

| **1** Log on to the CP maintenance ID, MAINT (which is the default user ID).

| **2** Enable RACF, install the CP part of RACF and generate new CP nucleus.

| **service racf enable**

| The new CP nucleus, with the RACF CP parts, was placed on the secondary
| parm disk (default disk address of CF2).

For your information, a copy of the previous (or currently running) CPLOAD
MODULE is still on the primary (CF1) and tertiary (CF3) parm disks as
CPLOAD MODULE. It is also saved on the secondary parm disk as CPLOLD
MODULE.

Note: If you update the HCPMDLAT macro to add or modify the position of the
RACF modules in the CP load list, you should **not** add these entries to an
AUXRPI file. The preferred AUX file will prevent the VM updates from
being included when the macro is built. See *z/VM: Service Guide* for
instructions on updating the CP load list.

6.19 Task 17. Change RACF Database Names If Sharing with MVS System

If the RACF database names on the MVS system are different than those defaulted for VM, you need to change the RACF database names in the ICHRDSNT ASSEMBLE and ICHRDSNT TEXT files to match the MVS system. These files reside on 5767002P's 505 test build disk. See *RACF: System Programmer's Guide* for information on the ICHRDSNT files.

To change the ICHRDSNT ASSEMBLE and TEXT files you must perform a local modification against them. Follow the steps documented in B.1, "Assemble Full Part Replacement - Example" on page 133 to perform the local modification, using the following substitution values:

- For *fn* use **ICHRDSNT**.
- For *nnnn* use **0001**.
- For *blist* use **RPIBL505** and **RPIBLLNK**. (Do the VMFBLD twice, once for each buildlist.)
- For *memname* use **ICHRDSNT**.

At the end of the procedure your modified copies of ICHRDSNT ASSEMBLE, ICHRDSNT TEXT, and the RACFLINK LOADLIB (containing the new ICHRDSNT) will be on 5767002P's 505 test build disk.

6.20 Task 18. IPL the CP System with RACF

Procedural Note

All customers should perform this step.

| In this task you will IPL your system with the NOAUTOLOG option. After the
| system IPL, XAUTOLOG the RACMAINT user ID, which will initialize RACF. At this
| time, the CP nucleus with RACF in it, is on the secondary (CF2) parm disk.

If RACF cannot find the database name in the database name table (ICHRDSNT)
during initialization, it might be for one of the following reasons:

- The database name specified in ICHRDSNT does not match the data set name
  on the database DASD volumes.

- The database name contains an asterisk (*).

- No FILEDEF exists for the RACF database.

In each instance, the system prompts the system operator for a RACF database
name.

From the system operator's console, do **one** of the following:

> Enter: `SEND RACMAINT 1RACF.DATASET`

replacing RACF.DATASET with your installation's RACF database name

OR

> Enter: `SEND RACMAINT 1NONE`

Note: If you specify `SEND RACMAINT 1NONE`, RACF is not active for this IPL. This is
not recommended, because most users will not be able to log on to the
system. (Only RACF servers, or the primary system operator, will be able
to log on using the directory password.)

| **1** Make sure you are logged onto MAINT or equivalent user ID in order to
| shutdown the system.

| **shutdown**

| **2** IPL the system using the CF2 parm disk, as this is where the new CP
| nucleus was placed in 6.18, "Task 16. Install the CP Part of RACF" on
| page 73.

| To IPL from the CF2 parm disk you need to use the loadparm parameter on
| the IPL command; which will display the Stand-Alone Program Loader panel.

| You will need to know your console address. You can get this by doing a
| QUERY CONSOLE.

| **Note:** The following instruction can be used if you are IPLing second level.
| If you are IPLing first level, see the appropriate processor operator's guide for
| the system console, for instructions.

| **IPL** *rdev* **CLEAR LOADPARM** *cons*   *rdev* is the address of the real DASD device
| containing your system residence volume.

| *cons* is the address of your console

| **3** Change the **EXTENT** field to a **2** and press the **PF10 key** to LOAD on the
| Stand Alone Program Loader screen. Following is an example of the screen
| with EXTENT field filled in with a 2.

```
STAND ALONE PROGRAM LOADER: z/VM VERSION 5 RELEASE 1.0

DEVICE NUMBER: rdev      MINIDISK OFFSET:  00000000   EXTENT: 2

MODULE NAME:   CPLOAD    LOAD ORIGIN:      1000
------------------------------IPL PARAMETERS--------------------------


---------------------------------COMMENTS----------------------------



----------------------------------------------------------------------


9= FILELIST  10= LOAD  11= TOGGLE EXTENT/OFFSET
```

| **4** IPL with **NOAUTOLOG**.

| When you see the following on the console:

| ```
| hh:mm:ss Start ((Warm|Force|COLD|CLEAN) (DRain) (DIsable) (NODIRect)
| hh:mm:ss   (NOAUTOlog)) or (SHUTDOWN)
| ```

| Reply with the following; along with any other parameters you need:

| **NOAUTOLOG**

| Answer any other replies the way you would for any other IPL of your VM
| system.

5 Once the system is IPLed you need to type in the following from the system
operator's console.

| **XAUTOLOG RACMAINT**

| **6** You can then disconnect from the operator and continue with the next task.

> ┌─ **Procedural Note** ───
>
> Customers doing migration installs who had previously inactivated RACF should
> activate it now by issuing:
>
> ```
> SEND RACMAINT SETRACF ACTIVE
> ```

6.21 Task 19. Update the RACF Database with Existing CP Directory Information

> ┌─ **Procedural Note** ───
>
> Only customers doing new installs should perform this step.
>
> Customers doing migration installs should skip to 6.22, "Task 20. Create the
> Global Access Table (Optional)" on page 82.

If you are not sharing another system's existing RACF database you are creating a
new RACF database, and you need to initialize your new RACF database with
information that is in your CP directory.

If you are sharing another system's existing RACF database, then you need to
update the shared RACF database with information that is in your CP directory.

The CP directory information that you need to update or migrate to the RACF
database is contained in the RPIDIRCT SYSUT1 file, in the form of RACF
commands. You created this file in 6.13, " Task 11. Prepare to Update RACF with
Existing CP Directory Data" on page 54.

Procedural Note

If you are **not sharing** existing RACF databases with another system, continue with section 6.21.1, "Initialize the RACF Database (If You Are Not Sharing an Existing Database)" on page 78.

If you **are sharing** existing RACF databases with another system, continue with section 6.21.2, "Update the RACF Database (If You Are Sharing an Existing Database)" on page 81.

6.21.1 Initialize the RACF Database (If You Are Not Sharing an Existing Database)

To initialize the RACF database, you need to:

- Log on to the IBMUSER user ID.
- Run RPIBLDDS to build the RACF database.
- Define the security administrator.

6.21.1.1 Logging On to the IBMUSER User ID

The first time you IPL your system with RACF active, RACF automatically initializes the RACF database with a set of basic profiles to help you achieve system security quickly. One of these is the IBMUSER user ID.

IBMUSER is connected to three group profiles named SYS1, VSAMDSET, and SYSCTLG. (VSAMDSET and SYSCTLG are subgroups of SYS1.)

This user ID gives you full authority, including the SPECIAL and OPERATIONS attributes, to use any of the RACF functions. Links in IBMUSER's CP directory entry (for the system 190 and system 19E disks) are not in the RACF database at this point. If you are deferring minidisk access decisions for undefined resources to CP, you can ignore the warning messages that RACF is generating.

For more information, refer to *RACF: Security Administrator's Guide*.

Note: If you specified the CP disposition for `Resource Undefined` to be "Disallow Access" (you are *not* deferring minidisk access decisions), CP does not allow IBMUSER to link to the CMS minidisks. If you did this by mistake, you must go back to 6.17.1, "Setting the CP Disposition for Access Requests (Optional)" on page 68. Correct any incorrect entries in HCPRWA. You will then have to regenerate the CP nucleus (see step 6.18, "Task 16. Install the CP Part of RACF" on page 73, using only the options $SELECT and NOCOPY on the VMFREPL command and then update the HCPxxx existing part on 5767002P's 2C2 (localsam) disk) and then IPL (see step 6.20, "Task 18. IPL the CP System with RACF" on page 75).

1 Log on to the IBMUSER user ID. Enter a password of SYS1. You will be prompted to enter a new password. Enter the password that you set up for IBMUSER in the CP directory.

Note: You cannot run RPIBLDDS from RACMAINT or RACFVM.

6.21.1.2 Building the RACF Database

1 Link and access 5767002P's 505, 191, and 29e disks

link 5767002P 505 305 rr   Need to have access to the RPIDIRCT SYSUT1
acc 305 c   file (created by RPIDIRCT earlier in the install) and
link 5767002P 191 192 rr   the RPIRAC MODULE.
acc 192 b
link 5767002P 29e 29e rr
acc 29e d

2 Run RPIBLDDS

RPIBLDDS runs the commands contained in RPIDIRCT SYSUT1, the output file created by RPIDIRCT.

Depending on the size of the database you are building, the job might take a long time. You might want to split the RPIDIRCT file into smaller files, thereby breaking the task into several more manageable tasks. Each of the smaller files **must** have a FILETYPE of SYSUT1. You would then invoke RPIBLDDS with the filename of each smaller file supplied as a parameter. For example, you could split RPIDIRCT SYSUT1 into 2 files called RPIDIR1 SYSUT1 and RPIDIR2 SYSUT1. You would then invoke RPIBLDDS with the following commands: `RPIBLDDS RPIDIR1` and `RPIBLDDS RPIDIR2`.

rpibldds *fn*   Where *fn* is the name of the SYSUT1 file. The
                                                   default *fn* is RPIDIRCT. Keep in mind that if you
                                                   split the RPIDIRCT SYSUT1 file then you need to
                                                   execute RPIBLDDS for each file.

| 6.21.1.3 Defining the Security Administrator and Maintenance
| User IDs.

| In 6.4, "Task 2. Allocate Resources for Installing RACF" on page 34 the
| default user ID, SYSADMIN, was supplied on the z/VM System deliverable as
| the security administrator user ID. You must now change the RACF user
| profile to give the security administrator RACF "special" authority. (Do this
| while logged on to the IBMUSER user ID.)

1 Define the Security Administrator User ID

RAC ALTUSER *userid* **SPECIAL**   Where *userid* is the user ID of your security administrator. There is a default user ID, SYSADMIN, set up in the z/VM CP directory that you can use.

2 Define two Maintenance User IDs (needed in order to use the automated service procedure to install service to RACF)

RAC ALTUSER MAINT SPECIAL OPERATIONS   MAINT is the default maintenance user ID that is
RAC ALTUSER BLDSEG SPECIAL OPERATIONS   used by the automated VMSES/E service commands.

3 Log off IBMUSER and log on to the security administrator user ID.

You are now ready to begin using this user ID for security administration.

4 Because IBMUSER is an IBM-defined user ID, it might be a target for unauthorized accesses to your system. To prevent further use of the IBMUSER user ID, we recommend that you revoke the user ID:

link 5767002P 29e 29e rr   **Note:** The IBMUSER user ID cannot be deleted.
acc 29e d
RAC ALTUSER IBMUSER REVOKE

We also suggest that you remove the SPECIAL and OPERATIONS attributes from the IBMUSER user ID:

RAC ALTUSER IBMUSER NOOPERATIONS NOSPECIAL

Where to Next?

6.21.2 Update the RACF Database (If You Are Sharing an Existing Database)

1 Make sure the RACMAINT service machine is active.

2 Log on to the security administrator ID or any user ID with SPECIAL authority.

Note: You cannot run RPIBLDDS from RACMAINT or RACFVM.

3 Link and access 5767002P's 505, 191, and 29e disks.

! **detach 505**	Need to have access to the RPIDIRCT SYSUT1
! **detach 305**	file (created by RPIDIRCT earlier in the install) and
link 5767002P 505 305	the RPIRAC MODULE.
acc 305 c	
link 5767002P 191 192	
acc 192 b	
link 5767002P 29e 29e rr	
acc 29e d	

4 Run RPIBLDDS.

RPIBLDDS runs the commands contained in RPIDIRCT SYSUT1, the output file created by RPIDIRCT.

Depending on the size of the database you are building, the job might take a long time. You might want to split the RPIDIRCT file into smaller files, thereby breaking the task into several more manageable tasks. Each of the smaller files **must** have a FILETYPE of SYSUT1. You would then invoke RPIBLDDS with the filename of each smaller file supplied as a parameter. For example, you could split RPIDIRCT SYSUT1 into 2 files called RPIDIR1 SYSUT1 and RPIDIR2 SYSUT1. You would then invoke RPIBLDDS with the following commands: `RPIBLDDS RPIDIR1` and `RPIBLDDS RPIDIR2`.

rpibldds *fn*	Where *fn* is the name of the SYSUT1 file. The default fn is RPIDIRCT. Keep in mind that if you split the RPIDIRCT SYSUT1 file then you need to execute RPIBLDDS for each file.

6.22 Task 20. Create the Global Access Table (Optional)

> ┌─ **Procedural Note** ───┐
>
> This step is optional.
>
> If you choose not to perform this step, skip to 6.23, "Task 21. Set RACF
> Options (Optional)."
>
> If you are doing a migration install and you have previously created a global
> access table, you can continue to use your existing global access table.
> └──┘

You can create the global access table to define your global resources to RACF.
See *RACF: Security Administrator's Guide* for information on creating and updating
the global access table.

The global access table is not required, but it is recommended because it can
improve performance. If you choose not to create the global access table at this
time, the security administrator can create it at a later time.

6.23 Task 21. Set RACF Options (Optional)

> ┌─ **Procedural Note** ───┐
>
> This step is optional.
>
> If you choose not to perform this step, skip to 6.24, "Task 22. Determine Audit
> and Control Options for VM Events (Optional)" on page 83.
>
> If you are doing a migration install, RACF options that were in effect on your
> original system will still be in effect after you install RACF 1.10. You do not
> need to set these options again.
> └──┘

Use the SETROPTS command to set RACF options. See *RACF: Security
Administrator's Guide* for information on the SETROPTS options and how to set
them.

If you choose not to set RACF options at this time, the security administrator can
set them at a later time.

Note: If you decide to wait to provide access authorization for general resource
classes then you will see many RPIMGR031E (Resource xxxxx specified by link
command not found) messages. This is okay as the resource will be linked. The
command that provides access authorization for general resource classes is; where
you would supply the name of the resource:

```
1                        RAC SETROPTS CLASSACT(resource)
```

1   In order to use the automated service procedures to service RACF you have to
1   provide access authorization for the following general resource classes:

```
1                        RAC SETROPTS CLASSACT(VMMDISK)
1                        RAC SETROPTS CLASSACT(VMRDR)
1                        RAC SETROPTS CLASSACT(VMBATCH)
1                        RAC SETROPTS CLASSACT(VMSEGMT)
```

1   If you are using SFS directories for any product's service disks then you will need
1   to provide access authorization to the SFS (shared filel system) general resource
1   classes.

6.24 Task 22. Determine Audit and Control Options for VM Events (Optional)

> **Procedural Note**
>
> This step is optional.
>
> If you choose not to perform this step, skip to 6.25, "Task 23. Split the RACF Database (Optional, Performance-Related)" on page 84.
>
> If you are doing a migration install, and you have VMXEVENT profiles in place that are auditing and controlling VM events on your system, these profiles will remain active after RACF 1.10 is installed.

When you install RACF 1.10 on VM, by default the following VM events are protected by RACF:

- APPCPWVL
- DIAG0A0
- DIAG0D4
- DIAG0E4
- DIAG280
- LINK
- MDISK
- RSTDSEG
- STORE.C
- TAG
- TRANSFER.D
- TRANSFER.G
- TRSOURCE

By default, no VM events are audited.

If you want to change these default control or audit settings, you must create a VMXEVENT profile and activate it using the SETEVENT command.

For information on controlling VM events, see *RACF: Security Administrator's Guide*. For information on auditing VM events, see *RACF: Auditor's Guide*.

6.25 Task 23. Split the RACF Database (Optional, Performance-Related)

> **Procedural Note**
>
> This step is optional.
>
> If you choose not to perform this step, skip to 6.26, "Task 24. Set Up Dual Registration If DirMaint Is Installed (Optional)."

If all you need is one primary and one backup database, and you are satisfied with the default performance options, you can skip this step. If you plan to split your database, see *RACF: System Programmer's Guide* for information on splitting databases.

6.26 Task 24. Set Up Dual Registration If DirMaint Is Installed (Optional)

> **Procedural Note**
>
> This step is optional.
>
> If you choose not to perform this step, skip to 6.27, "Task 25. Set Up the RACF ISPF Panels (Optional)" on page 85.

RACF can coexist with the VM Directory Maintenance (DirMaint) product installed. However, to avoid dual maintenance of password processing, you must do the following:

1. Set the CONFIG DATADVH item `ESM_PASSWORD_AUTHENTICATION_EXIT=` to `DVHDAØ MODULE` (the default is `DVHDAØ MODULE` but it is commented out in the CONFIG DATADVH file). For this to take effect, either IPL DirMaint or enter the DIRM RLDDATA command.

2. Cancel the DirMaint automatic password expiration warning and user revoking options specified in the CONFIG DATADVH file (set options `PW_WARN_MODE` and `PW_LOCK_MODE` to `MANUAL`).

3. If you want to record DirMaint activity in RACF SMF records, enable the ESM_LOG_RECORDING_EXIT. To do this, set the CONFIG DATADVH item in ESM_LOG_RECORDING_EXIT to DVHESMLR EXEC. The default is DVHESMLR EXEC, but it is commented out in the CONFIG DATADVH file. For this to take effect, either IPL DirMaint or enter the DIRM RLDDATA command.

You must also authorize the DirMaint service machines DIRMAINT,
! DATAMOVE, and DIRMSAT to use the RACROUTE interface. For more
! information, see *Directory Maintenance Facility FL410 Tailoring and*
! *Administration Guide* and *External Security Interface (RACROUTE) Macro*
Reference for MVS and VM.

For further information about using DirMaint with RACF see the information on
! external security manager considerations in *Directory Maintenance Facility FL410*
! *Tailoring and Administration Guide* (SC24-6024), Appendix A 'External Security
Manager Considerations'.

6.27 Task 25. Set Up the RACF ISPF Panels (Optional)

> **Procedural Note**
>
> ! If you want to use the RACF ISPF panels then you need to follow the steps in
> ! this section to set them up.
>
> Otherwise, skip to 6.28, "Task 26. Place RACF Into Production" on page 93.

6.27.1 Modify the ISPF EXECs

Refer to *ISPF Version 3 for VM Dialog Management Guide* (SC34-4221) for information about updating the ISPF panel libraries.

6.27.1.1 Step 1 - Modify the Filedefs
Figure 12 on page 86 shows an example of how you should modify the filedefs in your installation's ISPF EXEC if PDF is installed on your system. For your convenience, this example is included on the RACF tape in a file named ISPFRACF EXECSAMP.

```
/*                                                          */
/* FILEDEFS FOR PANEL LIBRARIES                             */
/*                                                          */
'FILEDEF ISPPLIB DISK DUALPLIB MACLIB  * (PERM CONCAT'
'FILEDEF ISPPLIB DISK HRFPANL  MACLIB  * (PERM CONCAT'
'FILEDEF ISPPLIB DISK ISRNULL PANEL  * (PERM CONCAT'
'FILEDEF ISPPLIB DISK ISRPLIB MACLIB * (PERM CONCAT'
'FILEDEF ISPPLIB DISK ISPPLIB MACLIB * (PERM CONCAT'
/*                                                          */
/* FILEDEFS FOR MESSAGE LIBRARIES                           */
/*                                                          */
'FILEDEF ISPMLIB DISK DUALMLIB MACLIB  * (PERM CONCAT'
'FILEDEF ISPMLIB DISK HRFMSG   MACLIB  * (PERM CONCAT'
'FILEDEF ISPMLIB DISK ISRNULL MESSAGE * (PERM CONCAT'
'FILEDEF ISPMLIB DISK ISRMLIB MACLIB * (PERM CONCAT'
'FILEDEF ISPMLIB DISK ISPMLIB MACLIB * (PERM CONCAT'
/*                                                          */
/* FILEDEFS FOR SKELETON LIBRARIES                          */
/*                                                          */
'FILEDEF ISPSLIB DISK HRFSKEL  MACLIB  * (PERM CONCAT'
'FILEDEF ISPSLIB DISK ISRNULL SKELETON * (PERM CONCAT'
'FILEDEF ISPSLIB DISK ISRSLIB MACLIB * (PERM CONCAT'
/*                                                          */
/* FILEDEFS FOR TABLE LIBRARIES                             */
/*                                                          */
'FILEDEF ISPTLIB DISK ISRNULL TABLE A (PERM CONCAT'
'FILEDEF ISPTLIB DISK TABLES MACLIB A (PERM CONCAT'
'FILEDEF ISPTLIB DISK ICHTLIB  MACLIB  * (PERM CONCAT'
'FILEDEF ISPTLIB DISK ISRTLIB MACLIB * (PERM CONCAT'
'FILEDEF ISPTLIB DISK ISPTLIB MACLIB * (PERM CONCAT'
/*                                                          */
'FILEDEF ICHTABL DISK DUALTLIB MACLIB  * (PERM CONCAT'
/*                                                          */
/* FILEDEF FOR LOAD LIBRARY                                 */
/*                                                          */
'FILEDEF ISPLLIB DISK ICHSPF00 LOADLIB * (PERM CONCAT'
/*                                                          */
/* FILEDEF FOR ISPF LOG/LIST FILE                           */
/*                                                          */
'FILEDEF ISPFILE DISK SPFCNTL1 EXEC    A (PERM LRECL 80 RECFM F'
```

Figure 12. Sample Filedefs for the ISPF EXEC for Systems with PDF

If PDF is not installed on your system, modify your ISPSTART EXEC as shown in Figure 13 on page 87.

```
/*                                              */
/* FILEDEFS FOR PANEL LIBRARIES                 */
/*                                              */
'filedef ispplib disk dualplib maclib * (perm concat'
'filedef ispplib disk hrfpanl maclib * (perm concat'
'filedef ispplib disk ispplib maclib * (perm concat'
/*                                              */
/* FILEDEFS FOR MESSAGE LIBRARIES               */
/*                                              */
'filedef ispmlib disk dualmlib maclib * (perm concat'
'filedef ispmlib disk hrfmsg maclib * (perm concat'
'filedef ispmlib disk ispmlib maclib * (perm concat'
/*                                              */
/* FILEDEFS FOR SKELETON LIBRARIES              */
/*                                              */
'filedef ispslib disk hrfskel maclib * (perm concat'
/*                                              */
/* FILEDEFS FOR TABLE LIBRARIES                 */
/*                                              */
'filedef isptlib disk ispnull table a (perm concat'
'filedef isptlib disk ichtlib maclib * (perm concat'
'filedef isptlib disk isptlib maclib * (perm concat'
/*                                              */
'filedef ichtabl disk dualtlib maclib  * (perm concat'
/*                                              */
/* FILEDEF FOR LOAD LIBRARY                     */
/*                                              */
'filedef ispllib disk ichspf00 loadlib * (perm concat'
/*                                              */
/* FILEDEF FOR ISPF LOG/LIST FILE               */
/*                                              */
'FILEDEF ISPFILE DISK SPFCNTL1 EXEC    A (PERM LRECL 80 RECFM F'
```

Figure 13. Sample Filedefs for the ISPSTART EXEC for Systems without PDF

The concatenations required for RACF are:

- RACF ISPF library DUALPLIB MACLIB to the FILEDEF for ISPPLIB
- RACF ISPF library HRFPANL MACLIB to the FILEDEF for ISPPLIB
- RACF ISPF library DUALMLIB MACLIB to the FILEDEF for ISPMLIB
- RACF ISPF library HRFMSG MACLIB to the FILEDEF for ISPMLIB
- RACF ISPF library HRFSKEL MACLIB to the FILEDEF for ISPSLIB
- RACF ISPF library ICHTLIB MACLIB to the FILEDEF for ISPTLIB
- RACF ISPF library DUALTLIB MACLIB to the FILEDEF for ICHTABL
- The ICHSPF00 LOADLIB file to the FILEDEF for ISPLLIB
- The SPFCNTL1 EXEC file to the FILEDEF for ISPFILE

6.27.1.2 Step 2 - Modify the ISPDCS Line

IF PDF is installed on your system, modify the following line of the ISPF EXEC:

```
'ISPDCS ISPDCSS ISPVM PANEL(ISR@PRIM) NEWAPPL(ISR) DMMMODE(T)' ISPFPARM
```

to look like this:

```
'ISPDCS ISPDCSS ISPVM PANEL(ISR@PRIM) NEWAPPL(ISR) DMMMODE(T) OPT('ISPFPARM')'
```

If PDF is not installed on your system, modify the following line of the ISPSTART EXEC:

```
'ISPDCS ISPDCSS ISPVM 'argstring
```

to look like this:

```
'ISPDCS ISPDCSS ISPVM PANEL(ISP@PRIM) OPT('argstring')'
```

Note: After you modify the ISPF EXEC, you might receive the following messages during execution of the RACF panels:

```
DMSOPN002E File PASRTLIB LOADLIB * not found
DMSOPN002E File VSPASCAL TXTLIB * not found
```

If this occurs, change the SCLM SWITCH=YES in the ISPF EXEC to SCLM SWITCH=NO. For more information, refer to ISPF information APAR II08650.

6.27.2 Modify the ISPF Primary Option Panel

A sample ISPF Primary Option Panel (ISRPRIM SAMPLE) is supplied on the RACF tape. It includes entries for modifying your panel.

Under %OPTION ===>_ZCMD there is an entry:

```
%   R +RACF        - RACF security panels
```

and under

```
)PROC
  &ZSEL = TRANS( TRUNC (&ZCMD,'.')
```

an entry:

```
R,'CMD(EXEC RACF ISPF) NEWAPPL(ICH)'
```

These statements put an option for RACF on the ISPF Primary Option Panel.

6.27.3 PDF Users: Modify ISPF-Supplied Files

6.27.3.1 Use the ISPF/PDF Browse Facility

If your installation has PDF installed, and you want to use the ISPF/PDF browse
facility (rather than XEDIT under CMS), you must modify panel ICHP00 in the
RACF ISPF library, DUALPLIB.

In order to use PDF browse, specify &ICHXEDIT='NO' in the ICHP00 COPY file.
(The default on the panel is &ICHXEDIT='YES', which provides XEDIT capability).

To update ICHP00 COPY, do a VMSES/E local modification to it.

Follow the steps documented in B.2, "Full Part Replacement (Not Assemble) -
Example" on page 135 to perform the local modification to the ICHP00 COPY file.
Use the following substitution values:

- For *fn* use **ICHP00**.
- For *ft* use **COPY**.
- For *ft-abbrv* use **CPY**.
- For *nnnn* use **0001**.
- For *blist* use **RPIBLDPL**.
- For *memname* use **ICHP00**.

At the end of the procedure your modified copy of ICHP00 COPY is in the
DUALPLIB MACLIB on 5767002P's 599 test build disk.

6.27.4 Non-PDF Users: Modify ISPF-Supplied Files

┌─── **Procedural Note** ───┐

If you do not have ISPF/PDF installed, follow the instructions in this section.
└───┘

6.27.4.1 Update ICHSFSIN EXEC

If PDF is not installed, remove the PDF dependency by ensuring that `ichpdf = "NO"` is in the ICHSFSIN EXEC.

To update ICHSFSIN EXEC, do a VMSES/E local modification to it.

Follow the steps documented in B.2, "Full Part Replacement (Not Assemble) - Example" on page 135 to perform the local modification to the ICHSFSIN EXEC file. Use the following substitution values:

- For *fn* use **ICHSFSIN**.
- For *ft* use **EXEC**.
- For *ft-abbrv* use **EXC**.
- For *nnnn* use **0001**.
- For *blist* use **RPIBL599**.
- For *memname* use **ICHSFSIN**.

At the end of the procedure your modified copy of ICHSFSIN EXEC is on 5767002P's 599 test build disk.

6.27.4.2 Update RACF EXEC

If you do not have PDF installed, modify the INIT routine in the RACF EXEC.

Follow the steps documented in B.2, "Full Part Replacement (Not Assemble) - Example" on page 135 to perform the local modification to the RACF EXEC file. Use the following substitution values:

- For *fn* use **RACF**.
- For *ft* use **EXEC**.
- For *ft-abbrv* use **EXC**.
- For *nnnn* use **0001**.
- For *blist* use **RPIBL599**.
- For *memname* use **RACF**.

At the end of the procedure your modified copy of RACF EXEC is on 5767002P's 599 test build disk.

The following example shows what needs to be changed. The changes are denoted by the highlighted, commented out, commands.

Note: This exec has been converted from EXEC2 to REXX.

```
INIT:
/*   Note highlighted, commented out, commands               */
/*                                                            */
/******* filedef the RACF and ISPF panel libraries           */
"filedef ispplib disk dualplib maclib * (perm concat"
"filedef ispplib disk hrfpanl maclib * (perm concat"
/*                                                            */
/* "filedef ispplib disk isrplib maclib * (perm concat"      */
/*                                                            */
"filedef ispplib disk ispplib maclib * (perm concat"
/*                                                            */
/******** filedef the RACF and ISPF skeleton libraries       */
"filedef ispslib disk hrfskel maclib * (perm concat"
"filedef ispslib disk ispslib maclib * (perm concat"
/*                                                            */
/* "filedef ispslib disk isrslib maclib * (perm concat"      */
/*                                                            */
/******** filedef the RACF and ISPF table libraries          */
"filedef isptlib disk isptlib maclib * (perm concat"
/*                                                            */
/******** filedef the ISPF userprof maclib                    */
"filedef ispprof disk userprof maclib a (perm lrecl 80 recfm f"
/*                                                            */
/******* filedef the RACF EXEC file                          */
"filedef ispfile disk spfcntl1 exec a (perm lrecl 80 recfm f"
/*                                                            */
/******* filedef the the RACF panel driver load library      */
"filedef ispllib disk ichspf00 loadlib * (perm lrecl 13000 recfm u"
/*                                                            */
/*** go to the ISPF PRIMARY OPTION panel with option(R) for RACF  */
/******  Replace the following line                          */
/* "ISPDCS ISPDCSS ISPVM PANEL(ISR@PRIM) OPT(R)" */
/***** with                                                  */
"ISPDCS ISPDCSS ISPVM PANEL(ISP@PRIM) OPT(R)"
Exit rc
```

6.27.5 Dual Registration Users Only

> ─ **Procedural Note** ─────────────────────────────────
>
> If you are not using dual registration, skip to 6.27.6, "Invoke the RACF ISPF
> Panels" on page 93.

6.27.5.1 Set Defaults in PROFILE

The installation of the RACF ISPF panels loads the DUALREG PROFILE file. This file contains default settings for certain fields on the dual registration panels.

To update DUALREG PROFILE you need to do a VMSES/E local modification to it.

Follow the steps documented in B.2, "Full Part Replacement (Not Assemble) - Example" on page 135 to perform the local modification to the DUALREG PROFILE file. Use the following substitution values:

- For *fn* use **DUALREG**.
- For *ft* use **PROFILE**.
- For *ft-abbrv* use **PRF**.
- For *nnnn* use **0001**.
- For *blist* use **RPIBL599**.
- For *memname* use **DUALREG**.

At the end of the procedure your modified copy of DUALREG PROFILE will be on 5767002P's 599 test build disk.

6.27.5.2 Verify directory entries

The file DUALREG SKELETON is used by dual registration to create user directory entries. The directory statements in this file are included in each directory entry created by dual registration. You need to make sure its contents are suitable to your installation.

To modify the DUALREG SKELETON file, do a VMSES/E local modification to it.

Follow the steps documented in B.2, "Full Part Replacement (Not Assemble) - Example" on page 135 to perform the local modification to the DUALREG SKELETON file. Use the following substitution values:

- For *fn* use **DUALREG**.
- For *ft* use **SKELETON**.
- For *ft-abbrv* use **SKL**.
- For *nnnn* use **0001**.
- For *blist* use **RPIBL599**.
- For *memname* use **DUALREG**.

At the end of the procedure your modified copy of DUALREG SKELETON will be on 5767002P's 599 test build disk.

6.27.6 Invoke the RACF ISPF Panels

In a CMS environment, invoke the RACF ISPF panels by entering either:

```
RACF (PANEL
```

or

```
ISPF R
```

Either command initializes ISPF and then invokes ISPF with option(R).

In ISPF, selection of option 6 allows you to enter EXECs and CMS and CP commands. From option 6, you can enter `RACF ISPF` to invoke ISPF option(R).

Note: Because the RACF EXEC initializes ISPF, the FILEDEFs in the RACF EXEC must be identical to the FILEDEFs in the installation's ISPF EXEC.

6.28 Task 26. Place RACF Into Production

```
┌─ Procedural Note ──────────────────────────────────────────┐
│                                                            │
│  All customers should perform this step.                   │
│                                                            │
└────────────────────────────────────────────────────────────┘
```

6.28.1 Copy RACF Files Into Production

Once you are satisfied with your testing of the RACF code using the RACMAINT user ID, you must copy the production files to the RACFVM user ID.

1 Log on to MAINT to put RACF code on to the production build disks.

2 If you have RACF installed into shared file (SFS) then you need to start the shared filepool server machines.

xautolog autolog1

3 This step will:

- Copy the RACF system code from the test build disk to RACFVM 305 production build disk.
- Copy the RACF CMS/CST files from the test build disk (5767002P's 590) to the production build disk (RACFVM 490 disk) using the DDR process.
- Copy the RACF GCS files to your GCS production system disk.
- Puts RACF general use code on the 'Y' disk (MAINT's 19E disk).

put2prod

4 (Optional) If you did the optional install steps to set up the RACF ISPF Panels then copy the RACF ISPF code from the test build disk to the ISPF system disk.

link 5767002P 599 599 rr   Where *ispf-fm* is the ISPF product system disk.
access 599 e   The default is ISPVM 192.
access *ispf-fm* **f**
vmfcopy * * e = = f (prodid 5767002P%RACF olddate replace

           The VMFCOPY command updates the VMSES PARTCAT file on the ISPF code disk.

5 (Optional) If you want the RACF Kanji ISPF code, copy the RACF Kanji ISPF code from the test build disk to the ISPF system disk.

link 5767002P 799 799 rr   Where *ispf-fm* is the ISPF product system disk.
access 799 e   The default is ISPVM 192.
access *ispf-fm* **f**
vmfcopy * * e = = f (prodid 5767002P%RACF olddate replace

           The VMFCOPY command updates the VMSES PARTCAT file on the ISPF code disk.

6 (Optional) If you want to use the RACF ISPF or Kanji ISPF code, copy the ISPF general use code on to the 'Y' disk (MAINT's 19E disk).

    a Log on to MAINT.

    b If the English ISPF code is installed, copy the ISPF general user code.

link 5767002P 599 599 rr   The VMFCOPY command updates the VMSES
access 599 e   PARTCAT file on the 19E disk.
access 19e f
vmfcopy RACF EXEC e = = f2 (prodid 5767002P%RACF olddate replace
vmfcopy ICHSPF00 LOADLIB e = = f2 (prodid 5767002P%RACF olddate replace
vmfcopy DUALREG PROFILE e = = f2 (prodid 5767002P%RACF olddate replace
vmfcopy DUALREG SKELETON e = = f2 (prodid 5767002P%RACF olddate replace

    c If the Kanji ISPF code is installed, copy the Kanji ISPF general user code.

```
link 5767002P 799 799 rr                          The VMFCOPY command updates the VMSES
access 799 e                                      PARTCAT file on the 19E disk.
access 19e f
vmfcopy RACF EXEC e = = f2 (prodid 5767002P%RACF olddate replace
vmfcopy ICHSPF00 LOADLIB e = = f2 (prodid 5767002P%RACF olddate replace
vmfcopy DUALREG PROFILE  e = = f2 (prodid 5767002P%RACF olddate replace
vmfcopy DUALREG SKELETON e = = f2 (prodid 5767002P%RACF olddate replace
```

7 Set up the AUTOLOG1 and AUTOLOG2 user IDs.

Procedural Note

Customers doing new installs should perform this step.

Customers doing migration installs should already have these user IDs set up.

Note: If you have changed AUTOLOG1 to another user ID, substitute the new user ID for all references to AUTOLOG1 in this program directory.

AUTOLOG1 normally logs on all service machines automatically. To get maximum security protection from RACF, AUTOLOG1 should allow **only** the RACF service machine (RACFVM) to be logged on. This prevents other products from being logged on before RACF is initialized.

If your installation has functions that are automatically logged on by AUTOLOG1, you should move those functions to AUTOLOG2.

Include the following in the PROFILE EXEC of AUTOLOG1:

`XAUTOLOG RACFVM`

During CP initialization, AUTOLOG1 logs on RACFVM, which then logs on AUTOLOG2. AUTOLOG2 then logs on its contents.

8 Initialize RACF; from the system operator's console.

```
force 5767002P
force MAINT
force RACMAINT
xautolog RACFVM
```

9 At this time your system is still IPL'ed off of the secondary parm disk (CF2). The next time you IPL, you will IPL from the primary parm (CF1) disk; which is the default for IPL. If you want to, you can shutdown and IPL your VM system at this time.

RACF is now installed and built on your system.

7.0 Service Instructions

!

┌─── **Attention - RSU Note** ───────────────────────

If you are applying a RACF RSU, follow the instructions in Appendix A,
"Applying an RSU for RACF" on page 124. You will return to a step in this
chapter as specified in that appendix.
└──

This section of the program directory contains the procedure to install CORrective
service to RACF. VMSES/E is used to install service for RACF.

To become more familiar with service using VMSES/E, you should read the
introductory chapters in *VMSES/E Introduction and Reference*. This manual also
contains the command syntax for the VMSES/E commands listed in the procedure.

Note: Each task in the service instructions must be performed. Each step of each
task must be followed. Do not skip any step unless directed to do so. All
instructions showing accessing of disks assume the use of default minidisk
addresses. If you are using different minidisk addresses, or if you are using
a shared file system, change the instructions appropriately.

7.1 VMSES/E Service Process Overview

The following is a brief description of the main steps in servicing RACF using
VMSES/E.

- Receive Service

  The VMFREC command receives service from the delivery media and places it
  on the Delta disk.

- Merge Service

Use the VMFMRDSK command to clear the alternate apply disk before receiving new service. This allows you to easily remove the new service if a serious problem is found.

- Apply Service

  The VMFAPPLY command updates the version vector table (VVT), which identifies the service level of all the serviced parts. In addition, AUX files are generated from the VVT for parts that require them.

- Reapply Local Service (if applicable)

  All local service (mods) must be entered into the software inventory to allow VMSES/E to track the changes and build them into the system. Refer to Chapter 7 in the *z/VM Service Guide* for this procedure.

- Build New Levels

  The build task generates the serviced level of an object and places the new object on a test BUILD disk.

- Place the New Service into Production

  Once the service is satisfactorily tested it should be put into production by copying the new service to the production disk.

7.2 Servicing RACF

7.2.1 Task 1. Prepare to Receive Service

!

> **Electronic Service (envelope file)**
>
> ! If you have received the service electronically or on CD-ROM, follow the
> ! appropriate instructions to retrieve and decompress the envelope file to your
> ! A-disk. The decompression is currently done by using the DETERSE MODULE
> ! (shipped with VMSES/E). The file names of the decompressed files will be of
> ! the format:
>
> ! - VLST*num* for the documentation envelope
> ! - VPTF*num* for the service envelope
>
> ! The file type for both of these files must be SERVLINK. You will need to enter
> ! the file name on the VMFREC commands that follow.

The *ppfname* used throughout these servicing instructions is **5767002P**, which assumes you are using the PPF supplied by IBM for RACF. If you have your own PPF override file for RACF, you should use your file's *ppfname* instead of **5767002P**. The *ppfname* you use should be used **throughout** the rest of this procedure, unless otherwise stated differently.

The *compname* used throughout these servicing instructions is **RACF**, **RACFSFS**, **RACFPANL** or **RACFPANLSFS**, which assumes you are using the component name within the 5767002P PPF file. If you specify your own *ppfname*, you should use the *compname* from that file instead of **RACF**, **RACFSFS**, **RACFPANL** or **RACFPANLSFS**. The *compname* you use should be used **throughout** the rest of this procedure.

1 Log on to RACF service user ID **5767002P**.

2 Establish access to the software inventory disk.

Note: If the MAINT 51D minidisk was accessed R/O, you will need to have the user that has it accessed R/W link it R/O. You then can issue the following commands to obtain R/W access to it.

link maint 51d 51d mr
access 51d d

The 51D minidisk is where the VMSES/E Software Inventory files and other product-dependent files reside.

3 Have the RACF CORrective service tape mounted and attached to *5767002P* at virtual address 181.

4 Establish the correct minidisk access order.

vmfsetup 5767002P {RACF | RACFSFS | RACFPANL | RACFPANLSFS}

5767002P is the PPF that was shipped with the product. If you have your own PPF override you should substitute your PPF name for 5767002P.

Use:	to install:
RACF	on minidisks
RACFSFS	in SFS directories
RACFPANL	on minidisks with RACF ISPF panels
RACFPANLSFS	in SFS directories with RACF ISPF panels.

5 Receive the documentation. VMFREC, with the INFO option, loads the documentation and displays a list of all the products on the tape.

! **a** If receiving the service from tape

vmfrec info

This command loads the service memo to the 191 disk.

!   **b** If receiving the service from an envelope file

! **vmfrec info (env vlst***num*   This command loads the service memo to the 191
!   disk.

6 Check the receive message log ($VMFREC $MSGLOG) for warning and error
messages.

vmfview receive   Also make note of which products and components
have service on the tape. To do this, use the PF5
key to show all status messages which identify the
products on the tape.

7 Clear the alternate APPLY disk to ensure that you have a clean disk for new
service.

vmfmrdsk 5767002P {RACF | RACFSFS | RACFPANL | RACFPANLSFS} apply

Use:	to install:
RACF	on minidisks
RACFSFS	in SFS directories
RACFPANL	on minidisks with RACF ISPF panels
RACFPANLSFS	in SFS directories with RACF ISPF panels.

This command clears the alternate APPLY disk.

8 Review the merge message log ($VMFMRD $MSGLOG). If necessary,
correct any problems before going on. For information about handling
specific error messages, see *z/VM: System Messages and Codes*, or use
on-line HELP.

vmfview mrd

7.2.2 Task 2. Receive the Service

1 Receive the service.

        Note: If you are installing multiple service tapes, you can receive all of the
!   service for this prodid before applying and building it.

!   For **each** service tape or electronic envelope you want to receive repeat the
!   respective vmfrec command.

!   **a** If receiving the service from tape

vmfrec ppf 5767002P {RACF | RACFSFS | RACFPANL | RACFPANLSFS}

Use:	to install:
RACF	on minidisks
RACFSFS	in SFS directories
RACFPANL	on minidisks with RACF ISPF panels
RACFPANLSFS	in SFS directories with RACF ISPF panels.

This command receives service from your service tape. All new service is loaded to the DELTA disk.

!   **b** If receiving the service from the PTF envelope file

! **vmfrec ppf 5767002P {RACF | RACFSFS | RACFPANL | RACFPANLSFS} (env vptf*num***

	Use:	to install:
!	**RACF**	on minidisks
!	**RACFSFS**	in SFS directories
!	**RACFPANL**	on minidisks with RACF ISPF panels
!	**RACFPANLSFS**	in SFS directories with RACF ISPF panels.

! This command receives service from your service
! envelope. All new service is loaded to the DELTA
! disk.

2 Review the receive message log ($VMFREC $MSGLOG). If necessary, correct any problems before going on. For information about handling specific error messages, see *z/VM: System Messages and Codes*, or use on-line HELP.

vmfview receive

7.2.3 Task 3. Apply the Service

1 Apply the new service.

vmfapply ppf 5767002P {RACF | RACFSFS | RACFPANL | RACFPANLSFS}

Use:	to install:
RACF	on minidisks
RACFSFS	in SFS directories
RACFPANL	on minidisks with RACF ISPF panels
RACFPANLSFS	in SFS directories with RACF ISPF panels.

This command applies the service that you just received. The version vector table (VVT) is updated with all serviced parts and all necessary AUX files are generated on the alternate apply disk.

You must review the VMFAPPLY message log if you receive a return code (RC) of a 4, as this may indicate that you have local modifications that need to be reworked.

2 Review the apply message log ($VMFAPP $MSGLOG). If necessary, correct any problems before going on. For information about handling specific error messages, see *z/VM: System Messages and Codes*, or use on-line HELP.

vmfview apply

> **Attention**
>
> If you get the message VMFAPP2120W, rework any local modifications before building the new RACF. Refer to chapter 7 in *z/VM Service Guide*. Follow the steps that are applicable to your local modification. For local modifications applied during initial installation also refer to Appendix B, "RACF Local Modifications - Examples" on page 133, to see how the local modification was put on.
>
> Use the following substitution values:
>
> * **zvm** should be **5767002P**.
>
> * *compname* should be **RACF** (for installing on minidisks), **RACFSFS** (for installing in SFS directories), **RACFPANL** (for installing on minidisks with RACF ISPF panels), or **RACFPANLSFS** (for installing if SFS directories with RACF ISPF panels).
>
> * *fm-local* should be the file mode of the 2C2 disk.
>
> * *localmod* should be **localsam**
>
> If you have changed any of the installation parameters through a PPF override, you need to substitute your changed values where applicable.
>
> Keep in mind that when you get to the "Rebuild Remaining Objects" step in *z/VM Service Guide*, you should return back to this program directory at 7.2.4, "Task 4. Update the Build Status Table" on page 103.

7.2.4 Task 4. Update the Build Status Table

1 Update the build status table with serviced parts.

vmfbld ppf 5767002P {RACF | RACFSFS | RACFPANL | RACFPANLSFS} (status

Use: to install:
RACF   on minidisks
RACFSFS   in SFS directories
RACFPANL   on minidisks with RACF ISPF panels
RACFPANLSFS   in SFS directories with RACF ISPF panels.

This command updates the build status table.

```
┌─ Attention ──────────────────────────────────────────────────────────────┐
│                                                                          │
│ If the $PPF files have been serviced you get the following prompt:       │
│                                                                          │
│ VMFBLD2185R The following source product parameter files have been       │
│             serviced:                                                    │
│ VMFBLD2185R 5767002P $PPF                                                │
│ VMFBLD2185R When source product parameter files are serviced, all        │
│             product parameter files built from them must be recompiled   │
│             using VMFPPF before VMFBLD can be run.                        │
│ VMFBLD2185R Enter zero (0) to have the serviced source product           │
│             parameter files built to your A-disk and exit VMFBLD so      │
│             you can recompile your product parameter files with VMFPPF.  │
│ VMFBLD2185R Enter one (1) to continue only if you have already           │
│             recompiled your product parameter files with VMFPPF.         │
│                                                                          │
```

0   Enter a 0 and complete the following steps
                                           before you continue.

```
VMFBLD2188I Building 5767002P $PPF
            on 191 (A) from level $PFnnnnn
```

vmfppf 5767002P *   **Note:** If you have created your own PPF
                                           override, use your PPF name instead of
                                           5767002P.

copy 5767002P $PPF a = = d (olddate replace   **Note:** **Do not** use your own PPF name in
erase 5767002P $PPF a   place of 5767002P for the COPY and ERASE
                                           commands.

vmfbld ppf 5767002P {RACF | RACFSFS | RACFPANL | RACFPANLSFS} (status

1   Reissue VMFBLD to complete updating the
                                           build status table. If you have your own PPF
                                           name then use it on the VMFBLD command.

Use:	to install:
RACF	on minidisks
RACFSFS	in SFS directories
RACFPANL	on minidisks with RACF ISPF panels
RACFPANLSFS	in SFS directories with RACF ISPF panels.

When you receive the prompt that was
previously displayed, enter a 1 to continue.

2 Use VMFVIEW to review the build status messages, and see what objects need to be built.

vmfview build

7.2.5 Task 5. Build Serviced Objects

1 Rebuild RACF serviced parts.

vmfbld ppf 5767002P {RACF | RACFSFS | RACFPANL | RACFPANLSFS} (serviced

Use:	to install:
RACF	on minidisks
RACFSFS	in SFS directories
RACFPANL	on minidisks with RACF ISPF panels
RACFPANLSFS	in SFS directories with RACF ISPF panels.

2 Review the build message log ($VMFBLD $MSGLOG). If necessary, correct any problems before going on. For information about handling specific error messages, see *z/VM: System Messages and Codes*, or use on-line HELP.

vmfview build

3 If you received message VMFBDU2180I that stated a status of 'REBUILD CP NUCLEUS', you need to rebuild the CP Nucleus. This is because HCPRPI, HCPRPD, HCPRPF, HCPRPW or HCPRWA was changed by RACF service.

The following steps should be followed to get the new RACF serviced HCP*xxx* files into the CP nucleus.

a Log on to the CP maintenance ID (the default is the MAINT user ID).

b Set up the CP disk access order.

! **vmfsetup zvm cp**   *zvm* is the default PPF for z/VM Version 5. If you
!   have a PPF override, substitute your override
                                                                 name.

c Copy or replace the HCP*xxx* RPIBASE0 files from 5767002P's 505 test build disk to the CP local modification disk (the default is MAINT's 2C4 disk).

link 5767002P 505 505 rr
! **acc 505 z**
! **listfile hcp* rpibase0 z (exec args**
exec cms copyfile % = = *fm-2c4* **(oldd replace**

1   **d** If you are using Common Criteria LSPP-conformant version of
1   HCPRWA (which is HCPRWAC), as documented in the *z/VM: Secure*
1   *Configuration Guide*, then issue the following commands. If not, then
1   skip this step.

1 **erase hcprwa rpibase0** *fm-2c4*
1 **rename hcprwac rpibase0** *fm-2c4* **hcprwa = =**

e Copy the RACF MACLIB from the 5767002P 505 test build disk to your normal CP maintenance 19E disk (in case the RACF MACLIB was also serviced).

! **vmfcopy racf maclib z = =** *fm-19E***2 (prodid 5767002P%RACF olddate replace**

f Assemble the HCPRPD, HCPRPF, HCPRPG, HCPRPI, HCPRPW, and HCPRWA modules. Issue the VMFHLASM for each HCP*xxx* file.

! **vmfhlasm hcprpf zvm cp ($select outmode localmod**
! **vmfhlasm hcprpg zvm cp ($select outmode localmod**
! **vmfhlasm hcprpi zvm cp ($select outmode localmod**
! **vmfhlasm hcprwa zvm cp ($select outmode localmod**
! **vmfhlasm hcprpw zvm cp ($select outmode localmod**
! **vmfhlasm hcprpd zvm cp ($select outmode localmod**
!   Where *zvm* is the default PPF for z/VM Version 5. If you have a PPF override, substitute your override name.

g Generate or build the CP Nucleus.

! **vmfbld ppf zvm cp (serviced**   *zvm* is the default PPF for z/VM Version 5. If you
!   have a PPF override, substitute your override name.

h To ensure that you have included the proper HCP*xxx* files, examine the output CP nucleus map. The six HCP*xxx* files should contain the RACF updates.

It is also recommended that you check to ensure that the modules in Figure 14 are *approximately* the size indicated in the table.

Figure 14. RACF Modules and Sizes

Module Name	Approximate Hexadecimal Byte Size
HCPRPF	1000
HCPRPG	7D8
HCPRPI	C78
HCPRWA	AC
HCPRPW	A20
HCPRPD	DD0

If the modules are not approximately this size, you might not be using the RACF versions of the modules.

> **Attention**
>
> When applying service to CP, be careful that you do not overlay the RACF functional modules with the VM serviced replacement modules. You will get a message during CP VMFAPPLY processing to rework your HCP*xxx* local modifications but you DO NOT want to rework them as you want to keep what RACF ships. You will rework the RACF functional modules when they have service applied to them.

i Verify the CP load map by XEDITing CPLOAD MAP to check for any unresolved or undefined references.

j Copy the new CP nucleus to the primary parm disk and save a copy of your current CPLOAD MODULE. See *z/VM Service Guide* for information on copying to the parm disk.

4 If part RACFVM NUCLEUS was serviced, perform these additional steps:

a Log on to the 5767002P user ID.

b Generate a new RACF CMS nucleus

def 590 490
def 505 305
acc 305 e
gennuc

c The following screens appear:

```
A modified version of CMS is about to be generated.
```

```
The modified CMS nucleus must be generated with a virtual machine
size of 20M.

The GENNUC EXEC will automatically set the virtual machine size to
20M and IPL the modified nucleus.

Note:  Please reply to the DMSINQ609R Message by Entering:   32
```

Note: The number displayed is dependent on the type of DASD your installation has (it might not be 32).

Type in the number that appears and press Enter to continue the IPL.

The IPL might take a few minutes, depending on your system setup. RACF's modified CMS is IPLed as it is being written to DASD.

A copy of the CMS nucleus map will be placed in your reader. Receive the file and keep it for use in future problem determination.

d Reset the environment

def 490 590
def 305 505
acc 590 t
vmfsetup 5767002P {RACF | RACFSFS | RACFPANL | RACFPANLSFS}

Use:	to install:
RACF	on minidisks
RACFSFS	in SFS directories
RACFPANL	on minidisks with RACF ISPF panels
RACFPANLSFS	in SFS directories with RACF ISPF panels.

5 If part IRRTEMP1 COPY was serviced, update the RACF database templates by following these additional steps.

Note: If you are sharing a RACF database, understand the considerations in 5.2.5, "Sharing a RACF Database" on page 18.

Be sure to run RACFCONV against each primary and backup database on your system.

To convert the database templates from a VM system:

a Make sure that RACF is not running.

b Run RACFCONV EXEC to convert the templates.

link RACFVM 200 200 wr
racfconv

```
This exec is used to run the Racf utility IRRMIN00 to
convert existing Racf datasets for a new release of Racf.

Press ENTER to continue....
```

 ENTER

```
Enter the device address to be converted
```

200

```
About to update templates in 'RACF.DATASET' at virtual address '200'
Do you wish to continue?

Enter YES or NO
```

yes

```
Processing begins
All output will be placed in the MIN00U OUTPUT file on the 'A' disk.
Program 'IRRMIN00' is being executed - Please wait -


Processing complete
Return code from 'IRRMIN00' = 0
Ready; T=0.07/0.10 11:41:46
```

link RACFVM 300 300 wr
racfconv

```
This exec is used to run the Racf utility IRRMIN00 to
convert existing Racf datasets for a new release of Racf.

Press ENTER to continue....
```

 ENTER

```
Enter the device address to be converted
```

300

```
About to update templates in 'RACF.BACKUP' at virtual address '300'
Do you wish to continue?

Enter YES or NO
```

yes

```
Processing begins
All output will be placed in the MIN00U OUTPUT file on the 'A' disk.
Program 'IRRMIN00' is being executed - Please wait -


Processing complete
Return code from 'IRRMIN00' = 0
Ready; T=0.07/0.10 11:44:44
```

det 200
det 300

To convert the database templates from an MVS system, see *RACF: System Programmer's Guide*.

6 If parts ICHPERM TEXT or ICHPERMT TEMPLATE have been serviced and you have enabled RACF OpenExtensions support, copy part ESMLIB CSLLIB from the 505 disk to the SFS file pool server's 'A' disk.

7 If part PROFILE SAMPLE has been serviced, copy the PROFILE SAMPLE file to RACFVM's A-disk and RACMAINT's A-disk.

link RACFVM 191 199 MR **acc 199 Z** **copyfile profile sample** *fm-505* **profile exec z** **det 199** **link RACMAINT 191 199 MR** **acc 199 Z** **copyfile profile sample** *fm-505* **profile exec z** **det 199**	Where *fm-505* is the current file mode of 5767002P's 505 test build disk.

8 If part SMF CONTROL has been serviced, copy the SMF CONTROL file to RACFVM's A-disk and RACMAINT's A-disk.

link RACFVM 191 199 MR **acc 199 Z** **copyfile smf control** *fm-505* **smf control z** **det 199** **link RACMAINT 191 199 MR** **acc 199 Z** **copyfile smf control** *fm-505* **smf control z** **det 199**	Where *fm-505* is the current file mode of 5767002P's 505 test build disk.

7.2.6 Task 6. IPL the CP System and Test RACF Service

Before you place the new service into production you should test it out to make sure it works. You can use the test or backup server user ID RACMAINT.

IPL your system with the NOAUTOLOG option. After the system IPL, XAUTOLOG the RACMAINT user ID, which initializes RACF.

If ICHRDSNT was serviced and RACF cannot find the database name in the database name table (ICHRDSNT) during initialization, it might be for one of the following reasons:

- The database name specified in ICHRDSNT does not match the data set name on the database DASD volumes.

- The database name contains an asterisk (*).

- No FILEDEF exists for the RACF database.

In each instance, the system prompts the system operator for a RACF database name.

From the system operator's console, do **one** of the following:

Enter: `SEND RACFVM 1racf.dataset`

where *racf.dataset* is your installation's RACF database name

or

Enter: `SEND RACFVM 1NONE`

Note: If you specify `SEND RACFVM 1NONE`, RACF is not active for this IPL. This is not recommended, because no one will be able to log on to the system.

7.2.7 Task 7. Copy the New RACF Serviced Files Into Production

Once you are satisfied with your testing of the RACF code using the RACMAINT user ID, you must copy the production files to the RACFVM user ID.

1 Log on to 5767002P to put RACF code on to the production build disks.

2 Copy the RACF system code from the test build disk to the RACFVM 305 production build disk.

access 505 e
link RACFVM 305 305 mr
access 305 f
vmfcopy * * e = = f (prodid 5767002P%RACF olddate replace

The VMFCOPY command updates the VMSES PARTCAT file on the 305 disk.

3 Copy the RACF CMS/CST files from the test build disk (5767002P's 590) to the production build disk RACFVM 490 disk using DDR process.

a Link and access RACF's test and production minidisks.

access 590 t
link RACFVM 490 490 mr
access 490 v

b Do the DDR copy.

ddr

```
VM/ENTERPRISE SYSTEMS ARCHITECTURE DASD DUMP/RESTORE PROGRAM
ENTER:
```

	The system prompts you to enter a DDR control statement.
sysprint cons	Route messages to the console (rather than a printer).
`ENTER:`	Enter 590 as the source minidisk for the DDR.
input 590 dasd *590-label*	Enter the label of 5767002P's 590 minidisk for *590-label* (for example, RAC590).
	590 is the virtual device number of the test RACF system disk. **dasd** causes DDR to determine the device type of the real DASD volume on which the 590 minidisk resides (for example, 3380).
`ENTER:`	Enter 490 as the target minidisk for the DDR.
output 490 dasd *490-label*	Enter the label of RACFVM's 490 minidisk for *490-label* (for example, RVM490).
	490 is the virtual device number of the production RACF system disk you are creating. **dasd** causes DDR to determine the device type of the real DASD volume on which the 490 minidisk resides. The 490 disk must be the same DASD type as the 590 disk.
`ENTER:`	Enter the COPY control statement to copy the entire 590 minidisk.
copy all	

`COPYING   590-label`
`   ⋮`
`END OF COPY`
`ENTER:`
	DDR copies and displays messages about the operation. When the processing is complete, DDR prompts you to enter another control statement.

ENTER	At the prompt, press ENTER to enter a null line.
`END OF JOB` `Ready: T=n.nn/n.nn hh:mm:ss`	The system reports end-of-job status.

C Relabel the 490 minidisk as *490-label*. When you copied the 590 minidisk to the 490 minidisk, the DDR program copied the 590 minidisk label also.

```
access 490 r
format 490 r (label
```
```
DMSFOR605R Enter disk label:
```
490-label

Enter the original label of RACFVM's 490 minidisk for *490-label* (for example, RVM490) to change the label of the 490 disk.

Access 490 read/write. You **must** use the LABEL option. If you do not, you will erase all of the files on the 490 minidisk.

4 (Optional) If you use GCS, copy the RACF GCS files to your GCS disk.

access 29e e
access *gcs-fm* **f**
vmfcopy rpigcs loadlib e = = f (prodid 5767002P%RACF olddate replace
vmfcopy rpicdx loadlib e = = f (prodid 5767002P%RACF olddate replace

gcs-fm is the GCS production system disk. The default is MAINT 193. If you copy to MAINT 193 you also need to copy these files to MAINT 493, which is the GCS test build disk.

The VMFCOPY command updates the VMSES PARTCAT file on the ISPF code disk.

5 (Optional) If you installed the RACF ISPF code (used the the RACFPANL or RACFPANLSFS compname), copy the RACF ISPF code from the test build disk to the ISPF system disk.

access 599 e
access *ispf-fm* **f**
vmfcopy * * e = = f (prodid 5767002P%RACF olddate replace

ispf-fm is the ISPF product system disk. The default is ISPVM 192.

The VMFCOPY command will update the VMSES PARTCAT file on the ISPF code disk.

6 (Optional) If you installed the RACF ISPF code, copy the ISPF general use code to the 'Y' disk (MAINT's 19E disk).

   a Log on to MAINT.

   b If the English ISPF code is installed, copy the ISPF general user code.

```
link 5767002P 599 599 rr                          The VMFCOPY command updates the VMSES
access 599 e                                      PARTCAT file on the 19E disk.
access 19e f
vmfcopy RACF EXEC e = = f2 (prodid 5767002P%RACF olddate replace
vmfcopy ICHSPF00 LOADLIB e = = f2 (prodid 5767002P%RACF olddate replace
vmfcopy DUALREG PROFILE  e = = f2 (prodid 5767002P%RACF olddate replace
vmfcopy DUALREG SKELETON e = = f2 (prodid 5767002P%RACF olddate replace
```

7 Log on to MAINT if you plan to put RACF general use code on the 'Y' disk (MAINT's 19E disk). Or log on to the owner of the disk that will contain the 'production' level of the RACF code.

```
link 5767002P 29e 29e rr                          The VMFCOPY command updates the VMSES
access 29e e                                      PARTCAT file on the 19E disk.
access 19e f
vmfcopy * * e = = f2 (prodid 5767002P%RACF olddate replace
```

8 Re-save the CMS saved system, to return the 19E minidisk (Y-disk) to 'shared' status. See the section 'Placing (Serviced) Components into Production' in *z/VM Service Guide* for detailed information about how to save the CMS saved system.

9 Initialize RACF.

```
force RACMAINT
xautolog RACFVM
```

You have finished servicing RACF.

7.3 Servicing the RACF Kanji ISPF Panels

7.3.1 Task 1. Prepare to Receive Service

┌─ **Electronic Service (envelope file)** ─────────────────────────┐

If you have received the service electronically or on CD-ROM, follow the
appropriate instructions to retrieve and decompress the envelope file to your
A-disk. The decompression is currently done by using the DETERSE MODULE
(shipped with VMSES/E). The file names of the decompressed files will be of
the format:

- VLST*num* for the documentation envelope
- VPTF*num* for the service envelope

The file type for both of these files must be SERVLINK. You will need to enter
the file name on the VMFREC commands that follow.

└──┘

The *ppfname* used throughout these servicing instructions is **5767002Q**, which
assumes you are using the PPF supplied by IBM for RACF. If you have your own
PPF override file for RACF, use your file's *ppfname* instead of **5767002Q**. The
ppfname you use should be used **throughout** the rest of this procedure, unless
otherwise stated.

The *compname* used throughout these servicing instructions is either **RACFK** or
RACFKSFS, which assumes you are using the component name within the
5767002Q PPF file. If you specify your own *ppfname*, use the *compname* from that
file instead of **RACFK** or **RACFKSFS**. The *compname* you use should be used
throughout the rest of this procedure.

1 Log on to the RACF service user ID **5767002P**.

2 Establish access to the software inventory disk.

Note: If the MAINT 51D minidisk was accessed R/O, you need to have the
user that has it accessed R/W link it R/O. You then can issue the following
commands to obtain R/W access to it.

link MAINT 51d 51d mr	The 51D minidisk is where the VMSES/E Software
access 51d d	Inventory files and other product dependent files
	reside.

3 Have the RACF CORrective service tape mounted and attached to **5767002P**
at virtual address 181.

4 Establish the correct minidisk access order.

vmfsetup 5767002Q {RACFK | RACFKSFS}

5767002Q is the PPF that was shipped with the product. If you have your own PPF override, substitute your PPF name for 5767002Q.

Use **RACFK** for installing on minidisks or **RACFKSFS** for installing in shared file system directories.

5 Receive the documentation. VMFREC, with the INFO option, loads the documentation and displays a list of all the products on the tape.

! **a** If receiving the service from tape

vmfrec info

This command loads the service memo to the 191 disk.

! **b** If receiving the service from the PTF envelope file

! **vmfrec info (env vlst**num

This command loads the service memo to the 191
! disk.

6 Check the receive message log ($VMFREC $MSGLOG) for warning and error messages.

vmfview receive

Also make note of which products and components have service on the tape. To do this, use the PF5 key to show all status messages which identify the products on the tape.

7 Clear the alternate APPLY disk to ensure that you have a clean disk for new service.

vmfmrdsk 5767002Q {RACFK | RACFKSFS} apply

Use **RACFK** for installing on minidisks or **RACFKSFS** for installing in shared file system directories with RACF ISPF panels.

This command clears the alternate APPLY disk.

8 Review the merge message log ($VMFMRD $MSGLOG). If necessary, correct any problems before going on. For information about handling

specific error messages, see *z/VM: System Messages and Codes*, or use on-line HELP.

vmfview mrd

7.3.2 Task 2. Receive the Service

1 Receive the service.

!   **a** If receiving the service from tape

vmfrec ppf 5767002Q {RACFK | RACFKSFS}

> Use **RACFK** for installing on minidisks or **RACFKSFS** for installing in shared file system directories with RACF ISPF panels.
>
> This command receives service from your service tape. All new service is loaded to the DELTA disk.

!   **b** If receiving the service from the PTF envelope file

! **vmfrec ppf 5767002Q {RACFK | RACFKSFS} (env vptf*num***

! > Use **RACFK** for installing on minidisks or
! > **RACFKSFS** for installing in shared file system
! > directories with RACF ISPF panels.

! > This command receives service from your service
! > envelope file. All new service is loaded to the
! > DELTA disk.

2 Review the receive message log ($VMFREC $MSGLOG). If necessary, correct any problems before going on. For information about handling specific error messages, see *z/VM: System Messages and Codes*, or use on-line HELP.

vmfview receive

7.3.3 Task 3. Apply the Service

1 Apply the new service.

vmfapply ppf 5767002Q {RACFK | RACFKSFS}

Use **RACFK** for installing on minidisks or **RACFKSFS** for installing in shared file system directories with RACF ISPF panels.

This command applies the service that you just received. The version vector table (VVT) is updated with all serviced parts and all necessary AUX files are generated on the alternate apply disk.

You must review the VMFAPPLY message log if you receive a return code (RC) of 4, as this might indicate that you have local modifications that need to be reworked.

2 Review the apply message log ($VMFAPP $MSGLOG). If necessary, correct any problems before going on. For information about handling specific error messages, see *z/VM: System Messages and Codes*, or use on-line HELP.

vmfview apply

```
                              ┌─ Attention ──────────────────────────────────────┐
                              │                                                  │
                              │ If you get message VMFAPP2120W, rework any local modifications │
                              │ before building the new RACF.  Refer to chapter 7 in *z/VM Service Guide*. │
                              │ Follow the steps that are applicable to your local modification.  For local │
                              │ modifications applied during initial installation also refer to Appendix B, │
                              │ "RACF Local Modifications - Examples" on page 133, to see how the │
                              │ local modification was put on.                   │
```

Use the following substitution values:

- **zvm** should be **5767002Q**
- *compname* should be **RACFK** or **RACFKSFS**
- *fm-local* should be the file mode of the 2C2 disk
- *localmod* should be **localsam**

If you have changed any of the installation parameters through a PPF
override, substitute your changed values where applicable.

Keep in mind that when you get to the "Rebuild Remaining Objects" step
in *z/VM Service Guide*, you should return back to this program directory at
7.3.4, "Task 4. Update the Build Status Table" on page 120.

7.3.4 Task 4. Update the Build Status Table

1 Update the build status table with serviced parts.

vmfbld ppf 5767002Q {RACFK | RACFKSFS} (status

> Use **RACFK** for installing on minidisks or
> **RACFKSFS** for installing in shared file system
> directories with RACF ISPF panels.
>
> This command updates the build status table.

```
┌─ Attention ─────────────────────────────────────────────────────────────────┐
│                                                                                │
│ If the $PPF files have been serviced, you get the following prompt:            │
│                                                                                │
│ VMFBLD2185R The following source product parameter files have been             │
│             serviced:                                                          │
│ VMFBLD2185R 5767002Q $PPF                                                      │
│ VMFBLD2185R When source product parameter files are serviced, all             │
│             product parameter files built from them must be recompiled         │
│             using VMFPPF before VMFBLD can be run.                             │
│ VMFBLD2185R Enter zero (0) to have the serviced source product                 │
│             parameter files built to your A-disk and exit VMFBLD so            │
│             you can recompile your product parameter files with VMFPPF.        │
│ VMFBLD2185R Enter one (1) to continue only if you have already                 │
│             recompiled your product parameter files with VMFPPF.               │
│                                                                                │
```

0   Enter a 0 and complete the following steps
                                        before you continue.

```
VMFBLD2188I Building 5767002Q $PPF
            on 191 (A) from level $PFnnnnn
```

vmfppf 5767002Q *   **Note:** If you have created your own PPF
                                        override, use your PPF name instead of
                                        5767002Q.

copy 5767002Q $PPF a = = d (olddate replace   **Note:** **Do not** use your own PPF name in
erase 5767002Q $PPF a   place of 5767002P for the COPY and ERASE
                                        commands.

vmfbld ppf 5767002Q {RACFK | RACFKSFS} (status

1   Reissue VMFBLD to complete updating the
                                        build status table. If you have your own PPF
                                        name then use it on the VMFBLD command.

                                        Use **RACFK** for installing on minidisks or
                                        RACFKSFS for installing in shared file system
                                        directories with RACF ISPF panels.

                                        When you receive the prompt that was
                                        previously displayed, enter a 1 to continue.

> **2** Use VMFVIEW to review the build status messages, to see what objects need to be built.

vmfview build

7.3.5 Task 5. Build Serviced Objects

> **1** Rebuild RACF serviced parts.

vmfbld ppf 5767002Q {RACFK | RACFKSFS} (serviced

> Use **RACFK** for installing on minidisks or **RACFKSFS** for installing in shared file system directories with RACF ISPF panels.

> **2** Review the build message log ($VMFBLD $MSGLOG). If necessary, correct any problems before going on. For information about handling specific error messages, see *z/VM: System Messages and Codes*, or use on-line HELP.

vmfview build

7.3.6 Task 6. Copy the New RACF Serviced Files Into Production

> **1** Log on to 5767002P to put RACF ISPF Kanji code on to the production build disks.

> **2** Copy the RACF Kanji ISPF serviced files from the test build disk to the production build disks.

access 799 e
access *ispfvm-disk* **f**
vmfcopy * * e = = f (prodid 5767002P%RACF olddate replace

> *ispf-fm* is the ISPF product system disk. The default is ISPVM 192.

> The VMFCOPY command updates the VMSES PARTCAT file on the ISPFVM code disk.

> **3** Log on to MAINT to put RACF Kanji ISPF general use code on the 'Y' disk (MAINT's 19E disk).

```
link 5767002P 799 799 rr                  The VMFCOPY command updates the VMSES
access 799 e                              PARTCAT file on the 19E disk.
access 19e f
vmfcopy RACF EXEC e = = f2 (prodid 5767002P%RACF olddate replace
vmfcopy ICHSPF00 LOADLIB e = = f2 (prodid 5767002P%RACF olddate replace
vmfcopy DUALREG PROFILE  e = = f2 (prodid 5767002P%RACF olddate replace
vmfcopy DUALREG SKELETON e = = f2 (prodid 5767002P%RACF olddate replace
```

4 Re-save the CMS saved system, to return the 19E minidisk (Y-disk) to 'shared' status. See the 'Placing (Serviced) Components into Production' section of *z/VM Service Guide* for detailed information about how to save the CMS saved system.

You have finished servicing the RACF Kanji ISPF panels.

Appendix A. Applying an RSU for RACF

The recommended service upgrade (RSU) is structured to install all PTFs included on the RSU plus the files containing the preapplied service and prebuilt objects. All PTF-related files are loaded to the delta disk. The file containing the preapplied service, that is, containing the results of VMFAPPLY, is loaded to the alternate apply disk and the contents of the tape files containing prebuilt objects are loaded to the appropriate build disks.

Points to consider about using the Product Service Upgrade procedure are:

- This process does not alter any of your tailored flat files (files serviced full part replacement only) in any way. Local modifiable assemble files you might have updated will have to be re-worked to include any new service to these files.

- Planning must be done (such as determining disk sizes, and determining what service, if any, on your existing system is not contained on the RSU) prior to actually loading the service from the RSU. These tasks will be discussed.

The following outline is an overview of what tasks need to be performed during the Product Service Update (PSU) procedure using the RSU:

- Prepare System

  In this task, you receive the documentation contained on the RSU and determine the DASD required to install the RSU.

- Merge Service

  Use the VMFMRDSK command to clear the alternate apply disk before receiving the RSU. This allows you to easily remove the new service if a serious problem is found.

- Receive Service

  The VMFINS command receives service from the RSU and places it on the Delta disk.

- Apply Additional Service

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The VMFAPPLY command updates the version vector table (VVT), which identifies the service level of all the serviced parts. In addition, AUX files are generated from the VVT for parts that require them. These steps are used to reapply service that was not contained on the RSU that was already installed for RACF.

- Reapply Local Modifications (if applicable)

  All local modifications must be entered into the software inventory to allow VMSES/E to track the changes and build them into the system.

- Build New Levels

  The build task generates the serviced level of an object and places the new object on a BUILD disk.

- Place the New Service into Production

  Once the service is satisfactorily tested it should be put into production by copying the new service to the production disk.

A.1.1 Prepare Your System for Service Refresh

Electronic Service (envelope file)

If you have received the RSU electronically or on CD-ROM, follow the appropriate instructions to retrieve and decompress the envelope file to your A-disk. The decompression is currently done by using the DETERSE MODULE (shipped with VMSES/E). The file names of the decompressed files will be of the format:

- RPTF*num* for the service envelope

The file type for both of these files must be SERVLINK. You will need to enter the file name on the VMFREC commands that follow.

The *ppfname* used throughout these instructions is **5767002P**, which assumes you are using the PPF supplied by IBM for RACF. If you have your own PPF override file for RACF you should use your file's *ppfname* instead of **5767002P**. The *ppfname* you use should be used **throughout** the rest of this procedure.

The *compname* used throughout these servicing instructions is **RACF**, **RACFSFS**, **RACFPANL**, or **RACFPANLSFS**. If you specify your own *ppfname*, you should use the *compname* from that file instead of **RACF**, **RACFSFS**, **RACFPANL**, or **RACFPANLSFS**. The *compname* you use should be used **throughout** the rest of this procedure.

1 Read through the latest RSU information hard copy memo.

2 Log on to the RACF service user ID 5767002P.

3 Establish write access to the Software Inventory disk if it is not already linked in write mode.

Note: If the MAINT 51D minidisk was accessed R/O, you need to have the user who has it linked R/W link it as R/O. You then can issue the following commands to obtain write access to it. Do not use *mw* mode.

link maint 51d 51d mr   The MAINT 51D disk is where the VMSES/E
access 51d d   system level software inventory files reside.

4 Mount the RSU tape on the tape drive as virtual device 181. You must use 181. Or if you have the RSU as a servlink envelope file, then make sure that the servlink file is on the A-disk or a disk accessed as C.

5 Receive the documentation for the RSU.

This step loads the cumulative apply status table (SRVAPPS) which identifies all preapplied service contained on the RSU. These files are loaded to the 51D disk.

!   **a** If receiving the RSU from tape

vmfins install info (nomemo

!   **b** If receiving the RSU from an envelope file

! **vmfins install info (nomemo env rptf*num***

6 Determine DASD sizes for the disks to receive service.

In order to receive the service from the RSU, you need to have adequate space available on the alternate APPLY and DELTA disks. The required sizes are identified in the RACF documentation (5767002P MEMO D) received in the previous step.

7 Setup the correct minidisk access order.

vmfsetup 5767002P {RACF | RACFSFS | RACFPANL | RACFPANLSFS}

Use:	to install:
RACF	on minidisks
RACFSFS	in SFS directories
RACFPANL	on minidisks with RACF ISPF panels
RACFPANLSFS	in SFS directories with RACF ISPF panels.

8 Merge the APPLY disks for RACF.

Next, you must prepare your system to receive the service from the RSU. To do this, you must first clear the alternate apply disk for receipt of the service from the RSU.

Enter the VMFMRDSK command to merge the alternate apply disk to the apply disk. This will clear the alternate apply disk.

vmfmrdsk 5767002P {RACF | RACFSFS | RACFPANL |RACFPANLSFS} apply

Use:	to install:
RACF	on minidisks
RACFSFS	in SFS directories
RACFPANL	on minidisks with RACF ISPF panels
RACFPANLSFS	in SFS directories with RACF ISPF panels.

9 Obtain additional information about the service on the RSU and how it will affect your local modifications by invoking the VMFPSU command. This command creates an output file, **appid PSUPLAN**, which you can review. See *z/VM Service Guide* for an explanation of this file.

vmfpsu 5767002P {RACF | RACFSFS | RACFPANL | RACFPANLSFS}

Use:	to install:
RACF	on minidisks
RACFSFS	in SFS directories
RACFPANL	on minidisks with RACF ISPF panels
RACFPANLSFS	in SFS directories with RACF ISPF panels.

This command produces an output file that contains information about the service on the RSU compared against the service and local modifications on your system. The file name is **appid PSUPLAN**, where **appid** is specified in the PPF file.

Note: In the **appid PSUPLAN** file, the local modifications shown are only the ones that need to be reworked. All other local modifications to be rebuilt will be reflected in the created **PSU $SELECT** file. See step 3 on page 131 for more information on the **PSU $SELECT** file.

A.1.2 Receive the Preapplied, Prebuilt Service

1 Refresh the RACF service disks by loading new service from the RSU.

! **a** If receiving the RSU from tape

vmfins install ppf 5767002P {RACF | RACFSFS| RACFPANL | RACFPANLSFS} (nomemo nolink

Use:	to install:
RACF	on minidisks
RACFSFS	in SFS directories
RACFPANL	on minidisks with RACF ISPF panels
RACFPANLSFS	in SFS directories with RACF ISPF panels.

! **b** If receiving the RSU from an envelope file

! **vmfins install ppf 5767002P {RACF | RACFSFS| RACFPANL | RACFPANLSFS} (nomemo nolink env rptf**num

!	Use:	to install:
!	**RACF**	on minidisks
!	**RACFSFS**	in SFS directories
!	**RACFPANL**	on minidisks with RACF ISPF panels
!	**RACFPANLSFS**	in SFS directories with RACF ISPF panels.

```
VMFINS2601R Do you want to create an override for :PPF 5767002P RACFPANL :PRODID
            5767002P%RACFPANL?
            Enter 0 (No), 1 (Yes) or 2 (Exit)
0
VMFINS2603I Processing product :PPF 5767002P RACFPANL :PRODID 5767002P%RACFPANL
VMFREQ2805I Product :PPF 5767002P RACFPANL :PRODID 5767002P%RACFPANL has passed
            requisite checking
VMFINT2603I Installing product :PPF 5767002P RACFPANL :PRODID 5767002P%RACFPANL
VMFSET2760I VMFSETUP processing started for 5767002P RACFPANL
VMFUTL2205I Minidisk|Directory Assignments:
            String    Mode  Stat  Vdev  Label/Directory
VMFUTL2205I LOCALSAM  E     R/W   2C2   2C2INS
VMFUTL2205I APPLY     F     R/W   2A6   2A6INS
VMFUTL2205I           G     R/W   2A2   2A2INS
VMFUTL2205I DELTA     H     R/W   2D2   2D2INS
VMFUTL2205I BUILD0    I     R/W   29E   29EINS
VMFUTL2205I BUILD6    J     R/W   599   599INS
VMFUTL2205I BUILD4    K     R/W   505   505INS
VMFUTL2205I BUILD2    T     R/W   590   590INS
VMFUTL2205I BASE      U     R/W   2B2   2B2INS
VMFUTL2205I --------  A     R/W   191   191INS
VMFUTL2205I --------  B     R/W   5E5   MNT5E5
VMFUTL2205I --------  C     R/W   A22   A22TMP
VMFUTL2205I --------  D     R/W   51D   MNT51D
VMFUTL2205I --------  S     R/O   608   604RAC
VMFUTL2205I --------  Y/S   R/O   19E   19EMNT
VMFSET2760I VMFSETUP processing completed successfully
VMFREC2760I VMFREC processing started
VMFREC1852I Volume 1 of 1 of INS TAPE yynn
⋮
VMFREC2760I VMFREC processing completed successfully
VMFINT2603I Product installed
VMFINS2760I VMFINS processing completed successfully

Ready; T=20.25/21.69 16:48:02
```

In message VMFREC1852I, *yynn* is filled in with the RSU number.

2 Check the receive message log ($VMFREC $MSGLOG) for warning and error messages. If necessary, correct any problems before going on. For information about handling specific receive messages, see *z/VM System Messages and Codes*, or use online HELP.

vmfview install

A.1.3 Process Additional Service

1 Apply additional service.

The VMFAPPLY command is used to reapply service that was not contained on the refresh tape that was already installed for the component.

Applying service with preapplied, prebuilt service will reapply any reach-ahead service that may be on the system **or** indicate that there are no reach-ahead PTFs to be applied.

vmfapply ppf 5767002P {RACF | RACFSFS | RACFPANL | RACFPANLSFS}

Use:	to install:
RACF	on minidisks
RACFSFS	in SFS directories
RACFPANL	on minidisks with RACF ISPF panels
RACFPANLSFS	in SFS directories with RACF ISPF panels.

Messages VMFAPP2122E and VMFAPP2109R are displayed only if you have reach-ahead service that needs to be reapplied. If you receive these messages, enter **1** in reply to VMFAPP2109R to reapply the reach-ahead service (as shown in the example below).

```
VMFAPP2122E The set of PTFs in the Apply Status Table (5767002P
            SRVAPPS) on the 2A2 (G) disk is not a subset of the
            PTFs in the highest level Apply Status Table on the
            2A6 (F) disk.  This is an inconsistent state.
VMFAPP2109R VMFAPPLY will automatically correct the problem identified
            by message 2122E by including the missing PTFs in the
            current Apply List.  Enter (1) to continue; (0) to quit.
```

1   Enter **1** for VMFAPPLY to reapply the reach-ahead service.

2 Check the apply message log ($VMFAPP $MSGLOG) for warning and error messages. If necessary, correct any problems before going on. For information about handling specific apply messages, see *z/VM System Messages and Codes*, or use online HELP.

vmfview apply

3 If necessary, rework **local modifications**.

The output from the VMFPSU command (which was run in an earlier step), *appid* **PSUPLAN** file, can be used to indicate what local service or mods are affected by the RSU. If a PTF is applied and it contains service to a part for which you have a local modification, you will need to rework the local modification. Refer to *z/VM Service Guide*.

VMFPSU creates a **PSU $SELECT** file on the A-disk if you have any local modifications against RACF. This file has in it the local modifications affected by service, whether they required rework or just a rebuild. To ensure that your local modifications are rebuilt, append this file to the **TOP** of the 5767002P $SELECT file on the alternate APPLY disk.

If the **PSU $SELECT** file indicates that you have local modifications to HCPRPI, HCPRPD, HCPRPF, HCPRPG, HCPRPW, or HCPRWA that require rework, issue the following command before you rework the local modifications, to ensure that you have access to the latest copy of the RACF MACLIB:

vmfcopy racf maclib *fm-505* **= =** *fm-19E2* **(prodid 5767002P%RACF olddate replace**

A.1.4 Build the RACF Base New Service Level and Place Into Production

To rebuild all objects that were flagged serviced on the RSU, affected by reach-ahead service that was reapplied and local modifications, continue with the instructions in 7.2.4, "Task 4. Update the Build Status Table" on page 103. This also leads you into the steps to place RACF into production. After placing the RACF base into production, return here to process the Kanji part of RACF.

A.1.5 Service the RACF Kanji Code

Refer to the 5767002Q MEMO on the 51D disk, section 'RSU Tape
Recommended', to see if there is service for the RACF Kanji ISPF code on the
RSU tape. If there is not, you are through with service. Otherwise, continue with
A.1.1, "Prepare Your System for Service Refresh" step 7 on page 126, and
continue until A.1.4, "Build the RACF Base New Service Level and Place Into
Production" on page 131. Then, to complete the service for the Kanji code, go to
A.1.6, "Build the New Kanji Service Level and Place into Production."

Use the following substitutions in the commands:

* **5767002Q** instead of **5767002P** for the ppfname
* **RACFK** (if you are installing on minidisks) or **RACFKSFS** (if you are installing
  in SFS directories) instead of **RACF** or **RACFSFS** for the compname.

A.1.6 Build the New Kanji Service Level and Place into Production

To rebuild all objects that were affected by any RACF Kanji service continue with
the instructions in 7.3.4, "Task 4. Update the Build Status Table" on page 120.
This also leads you into the steps to place RACF Kanji ISPF panels into production.

Appendix B. RACF Local Modifications - Examples

All local modifications to serviceable parts must be entered into the software inventory to allow VMSES/E to track the changes and build them into the system. The following examples show how to put a local modification on to a RACF full part replacement assemble file or full part replacement part. For generic commands for all types of local modifications refer to *z/VM Service Guide*.

B.1 Assemble Full Part Replacement - Example

1 Establish the 5767002P's minidisk access order.

VMFSETUP 5767002P {RACF | RACFSFS | RACFPANL | RACFPANLSFS}

Use:	to install:
RACF	on minidisks
RACFSFS	in SFS directories
RACFPANL	on minidisks with RACF ISPF panels
RACFPANLSFS	in SFS directories with RACF ISPF panels.

2 Copy the assemble file to the 2C2 (E-disk). If you are following these procedures after installing, it is possible that this file already exists on the LOCALSAM 2C2 disk. If you have a copy of the file on the 2C2 disk, use this copy of the file to make your new local modification.

3 Make your local modification changes to the copy on your LOCALSAM 2C2 disk.

4 Issue the assemble command for the file:

vmfhlasm *fn* **5767002P {RACF | RACFSFS | RACFPANL | RACFPANLSFS}**

Use:	to install:
RACF	on minidisks
RACFSFS	in SFS directories
RACFPANL	on minidisks with RACF ISPF panels
RACFPANLSFS	in SFS directories with RACF ISPF panels.

Notes:

1. Other options are available for the assemble commands. Consult *z/VM: VMSES/E Introduction and Reference* for additional information. You should use the VMFHLASM assemble exec supplied by VMSES/E.

2. If the assemble function is successful, the file *fn* TXT00000 is placed on the A-disk.

5 Copy the *fn* TXT00000 file from the A-disk to the 2C2 E-disk as *fn* TXTL*nnnn*.

copyfile *fn* **txt00000 a = txtl***nnnn* **e**   **Note:** TXTL is a required filetype for local modified text. *nnnn* is a user-defined number assigned to this fix, usually starting with 0001.

6 Erase the TXT00000 file from your A-disk.

erase *fn* **txt00000 a**

7 Rename the assemble file on the 2C2 E-disk as *fn* ASML*nnnn* E.

rename *fn* **assemble** *2c2-fm* **= asml***nnnn* *2c2-fm*

8 Update the VVT tables for both the TXT and ASM files by issuing the following VMFSIM against both the text and the assemble files:

vmfsim logmod 5767002P vvtlcl e tdata :mod lcl*nnnn* **:part** *fn* **txt**
vmfsim logmod 5767002P vvtlcl e tdata :mod lcl*nnnn* **:part** *fn* **asm**

9 Build your new local modification on the test build disk by issuing the following command.

vmfbld ppf 5767002P {RACF | RACFSFS | RACFPANL | RACFPANLSFS} *blist memname* **(all**

Use:	to install:
RACF	on minidisks
RACFSFS	in SFS directories
RACFPANL	on minidisks with RACF ISPF panels
RACFPANLSFS	in SFS directories with RACF ISPF panels.

B.2 Full Part Replacement (Not Assemble) - Example

The following example can be used for putting a local modification on to a RACF part that is serviced by full part replacement. The commands have substitution values that you need to supply. The instructions that pointed you to this example should have the substitution values for that particular local modification.

1 Establish the 5767002P's minidisk access order.

access 590 t
vmfsetup 5767002P {RACF | RACFSFS | RACFPANL | RACFPANLSFS}

Use:	to install:
RACF	on minidisks
RACFSFS	in SFS directories
RACFPANL	on minidisks with RACF ISPF panels
RACFPANLSFS	in SFS directories with RACF ISPF panels.

2 Copy the file to the 2C2 (E-disk) using the local modification identifier along with the file type abbreviation of the file type.

copyfile *fn ft fm* **=** *ft-abbrv***L***nnnn* **e**   **Note:**   *nnnn* is a user-defined number assigned to this fix, usually starting with 0001.

3 Make your local modification changes to the copy on your LOCALSAM 2C2 disk.

4 Update the VVT table for the part or file by issuing the following VMFSIM against the assemble file:

vmfsim logmod 5767002P vvtlcl e tdata :mod lcl*nnnn* **:part** *fn ft-abbrv*

5 Build your new local modification on the test build disk by issuing the
following command. (If the part appears in more than one build list then you
need to issue the VMFBLD command for each build list.)

vmfbld ppf 5767002P {RACF | RACFSFS | RACFPANL | RACFPANLSFS) *blist memname* **(all**

Use:	to install:
RACF	on minidisks
RACFSFS	in SFS directories
RACFPANL	on minidisks with RACF ISPF panels
RACFPANLSFS	in SFS directories with RACF ISPF panels.

B.3 Local Modification to Full Part Replacement Text Files

During customization of RACF you might have to modify TEXT files that are
serviced as full part replacement, using your created ASSEMBLE file.

Follow the instructions here to create and build the new TEXT file. You should
have been given any substitution command values in the instructions that pointed
you to this section.

1 Establish the 5767002P's minidisk order.

access 590 t
vmfsetup 5767002P {RACF | RACFSFS | RACFPANL | RACFPANLSFS}

2 If you are deleting a part from a build list continue with step 10 on page 138.

3 Create your assemble file on the 2C2 (E) disk.

4 Make your local modification to the copy of the ASSEMBLE file on your
LOCALSAM 2C2 disk.

5 Issue the assemble command for the file:

vmfhlasm *fn* **5767002P {RACF | RACFSFS | RACFPANL | RACFPANLSFS} ($select outmode** *fm-2c2*

Use **RACF** for installing on minidisks or **RACFSFS** for installing in shared file system directories *OR* **RACFPANL** for installing on minidisks with RACF ISPF panels or **RACFPANLSFS** for installing in shared file system directories with RACF ISPF panels.

Notes:

1. Other options are available for the assemble commands. Consult *z/VM: VMSES/E Introduction and Reference* for additional information. You should use the VMFHLASM assemble exec supplied by VMSES/E.

2. If the assemble function is successful, the file *fn* TXT00000 is placed on the LOCALSAM 2C2 (E) disk.

6 Rename the *fn* TXT00000 file on the 2C2 E-disk to *fn* TXTL*nnnn*.

rename *fn* **txt00000** *2c2-fm* *fn* **txtl***nnnn* *2c2-fm*   **Note:** TXTL is a required filetype for local modified text. *nnnn* is a user-defined number assigned to this fix.

7 Update the VVT tables for both TEXT (TXT) file by issuing the following VMFSIM command against the text file:

vmfsim logmod 5767002P vvtlcl *2c2-fm* **tdata :mod lcl***nnnn* **:part** *fn* **txt**

8 Build your new local modification on the test build disk.

vmfbld ppf 5767002P {RACF | RACFSFS | RACFPANL | RACFPANLSFS} (serviced

Use:	to install:
RACF	on minidisks
RACFSFS	in SFS directories
RACFPANL	on minidisks with RACF ISPF panels
RACFPANLSFS	in SFS directories with RACF ISPF panels.

9

10 Get the highest level of the build list used to build the library that the file resides in. You need this to determine the file type to use in the next step.

vmfsim getlvl 5767002P {RACF | RACFSFS | RACFPANL | RACFPANLSFS} tdata :part *blist* **exc (history**

Use: to install:
RACF on minidisks
RACFSFS in SFS directories
RACFPANL on minidisks with RACF ISPF panels
RACFPANLSFS in SFS directories with RACF ISPF panels.

If the response **does not contain** the :PTF tag or :MOD tag, then there is no service to the build list (you will see **exc00000 base-filetype**). In this case you will use **exec** in the next step as the file type.

If the response **contains** the :PTF tag or :MOD tag then there is a local modification or IBM service against the build list. VMSES/E takes a local modification as the highest level of a part followed by the PTF level as the next highest. If there was a local modification then the file type to use in the next command will be **exc***modid* (where *modid* is the Lmmmm part of LCLmmmm in the VMFSIM output). If there was no local modification then the file type to use in the next command will be **exc***-ptfnumber* (where *-ptfnumber* is filled in with the real PTF number).

11 Copy the highest level of the build list to the 2C2 (E-disk) local disk.

copyfile *blist ft fm* **= excl***nnnn 2c2-fm*

Where *ft* is the file type from the previous step.

Where *nnnn* is a free local modification number, eg. 0002.

12 If you need to remove an object, for example ICHDEX01, from the build list then do this whole step. Otherwise, continue with the next step.

a Comment out (put an asterisk in front of each line) the following lines, for the object (ICHDEX01) from the *blist* build list on the 2C2 (E-disk).

The following example is for a LOADLIB build list.

```
:OBJNAME. ICHDEX01 LEPARMS RENT REUS LET NCAL XREF DCBS SIZE 100K,80K
:BLDREQ. RPIBLOBJ.ICHDEX01
:OPTIONS. CONCAT SYSLIB RACFOBJ
:OPTIONS. INCLUDE RACFOBJ(ICHDEX01)
:OPTIONS. ENTRY ICHDEX01
:EOBJNAME.
```

b Update the local VVT table for the modified build list.

vmfsim logmod 5767002P vvtlcl e tdata :mod lcl*nnnn* **:part** *blist* **exc**

c Build your new local modification on the test build disk by issuing the
following command.

vmfbld ppf 5767002P {RACF | RACFSFS | RACFPANL | RACFPANLSFS} *blist* **(all**

Use:	to install:
RACF	on minidisks
RACFSFS	in SFS directories
RACFPANL	on minidisks with RACF ISPF panels
RACFPANLSFS	in SFS directories with RACF ISPF panels.

13 Place the new local modification into production.

link RACFVM 305 305 MR
acc 505 e
acc 305 f
| **vmfcopy** *libname* *** e = = f (prodid 5767002P%RACF replace oldd**

The use of RACF in the prodid parameter is
correct.

14 Re-IPL each RACF service machine.

B.4 Local Modification to Full Part Assemble and Text Files and Possible Build List Update

During customization of RACF you might have to modify ASSEMBLE files and
corresponding TEXT files that are serviced as full part replacement.

Use the following instructions to create and build the new part. You should have been given any substitution command values in the instructions that pointed you to this section.

1 Establish the 5767002P's minidisk order.

access 590 t
vmfsetup 5767002P {RACF | RACFSFS | RACFPANL | RACFPANLSFS}

2 If you are deleting a part from a build list continue with step 10 on page 141.

3 Copy the assemble file to the 2C2 disk (E-disk). Make sure you use the version of the assemble file that is on the production build disk or the test build disk.

4 Make your local modification to the copy of the ASSEMBLE file on your LOCALSAM 2C2 disk.

5 Issue the assemble command for the file:

vmfhlasm *fn* **5767002P {RACF | RACFSFS | RACFPANL | RACFPANLSFS} ($select outmode** *2c2-fm*

Use:	to install:
RACF	on minidisks
RACFSFS	in SFS directories
RACFPANL	on minidisks with RACF ISPF panels
RACFPANLSFS	in SFS directories with RACF ISPF panels.

Notes:

1. Other options are available for the assemble commands. Consult *z/VM: VMSES/E Introduction and Reference* for additional information. You should use the VMFHLASM assemble exec supplied by VMSES/E.

2. If the assemble function is successful, the file *fn* TXT00000 will be placed on the LOCALSAM 2C2 (E) disk.

6 Rename the *fn* TXT00000 file on the 2C2 E-disk to *fn* TXTL*nnnn*.

rename *fn* **txt00000** *2c2-fm fn* **txtl***nnnn 2c2-fm*   **Note:** TXTL is a required filetype for local modified text. *nnnn* is a user-defined number assigned to this fix.

7 Rename the assemble file on the 2C2 E-disk as *fn* ASML*nnnn*.

rename *fn* **assemble** *2c2-fm fn* **asml***nnnn 2c2-fm*

8 Update the VVT tables for both the TXT and ASM files by issuing the following VMFSIM commands against both the text and the assemble files:

vmfsim logmod 5767002P vvtlcl *2c2-fm* **tdata :mod lcl***nnnn* **:part** *fn* **txt**
vmfsim logmod 5767002P vvtlcl *2c2-fm* **tdata :mod lcl***nnnn* **:part** *fn* **asm**

9 If you are not adding to or deleting from a build list then continue with step 15 on page 142.

10 To add objects to or take objects from a build list you need to get the highest level of the build list used to build the library that the part resides in. You need this to determine the file type to use in the next step.

vmfsim getlvl 5767002P {RACF | RACFSFS | RACFPANL | RACFPANLSFS} tdata :part *blist* **exc (history**

Use:	to install:
RACF	on minidisks
RACFSFS	in SFS directories
RACFPANL	on minidisks with RACF ISPF panels
RACFPANLSFS	in SFS directories with RACF ISPF panels.

If the response **does not contain** the :PTF tag or :MOD tag, there is no service to the build list (you will see **exc00000 base-filetype**). In this case use **exec** in the next step as the file type.

If the response **contains** the :PTF tag or :MOD tag, there is a local modification or IBM service against the build list. VMSES/E takes a local modification as the highest level of a part followed by the PTF level as the next highest. If there was a local modification, the file type to use in the next command id **exc***modid* (where *modid* is the Lmmmm part of LCLmmmm in the VMFSIM output). If there was no local modification, the file type to use in the next command id **exc***-ptfnumber* (where *-ptfnumber* is filled in with the real PTF number).

11 Copy the highest level of the build list to the 2C2 (E-disk) local disk.

copyfile *blist ft fm* **= excl***nnnn 2c2-fm*   *ft* is the file type from the previous step.

nnnn is a free local modification number, for example 0002.

12 Do this step if you need to add a new command part to a build list. Add the following statements to the new copy of the build list, on the 2C2 disk, at the end of the build list.

The following is an example of what you would add into a TXTLIB build list:

```
:OBJNAME. memname.
:OPTIONS. NOGETLVL
:PARTID. memname TEXT
:EOBJNAME.
*
```

Where *memname* is the file name of your new command TEXT file.

The following is an example of what you would add into a LOADLIB build list:

```
:OBJNAME. memname LEPARMS RENT REUS LET NCAL XREF SIZE 100K,80K
:OPTIONS. NOGETLVL
:PARTID.  memname TEXT
:EOBJNAME.
*
```

Where *memname* is the file name of your new command TEXT file.

13 If you need to remove an object from the build list(s), for example ICHRCX02, comment out (put an asterisk in front of each line) the following lines from the *blist* build list on the 2C2 (E-disk). Otherwise continue with the next step.

```
:OBJNAME. ICHRCX02 LEPARMS RENT REUS LET NCAL XREF DCBS SIZE 100K,80K
:OPTIONS. CONCAT SYSLIB RACFOBJ
:PARTID. ICHRCX02 TXT
:OPTIONS. ENTRY ICHRCX02
:EOBJNAME.
```

14 Update the local VVT table for the modified build list.

vmfsim logmod 5767002P vvtlcl e tdata :mod lcl*nnnn* **:part** *blist* **exc**

15 Build your new local modification on the test build disk.

    a If you are deleting a part from a build list, for example ICHRCX02, do this step.

vmfbld ppf 5767002P {RACF | RACFSFS | RACFPANL | RACFPANLSFS} *blist* **(all**

Use:	to install:
RACF	on minidisks
RACFSFS	in SFS directories
RACFPANL	on minidisks with RACF ISPF panels
RACFPANLSFS	in SFS directories with RACF ISPF panels.

b If you are local modifying the ASSEMBLE and TEXT file, do this step.

vmfbld ppf 5767002P {RACF | RACFSFS | RACFPANL | RACFPANLSFS} (serviced

Use:	to install:
RACF	on minidisks
RACFSFS	in SFS directories
RACFPANL	on minidisks with RACF ISPF panels
RACFPANLSFS	in SFS directories with RACF ISPF panels.

c If you are adding to a build list, do this step.

vmfbld ppf 5767002P {RACF | RACFSFS | RACFPANL | RACFPANLSFS} *blist memname* **(all**

Use:	to install:
RACF	on minidisks
RACFSFS	in SFS directories
RACFPANL	on minidisks with RACF ISPF panels
RACFPANLSFS	in SFS directories with RACF ISPF panels.

16 Place the new local modification into production.

link RACFVM 305 305 MR
acc 505 e
acc 305 f
vmfcopy * * e = = f (prodid 5767002P%RACF olddate replace

The use of RACF in the prodid parameter is correct.

17 Re-IPL each RACF service machine.

Appendix C. Starting, Stopping, and Removing RACF

This appendix describes how to start, stop (temporarily suspend), reactivate, and remove RACF.

For information about:	Refer to:
Starting and restarting RACF	page 144
Suspending RACF temporarily	page 144
Reactivating RACF (after suspension)	page 146
Removing RACF	page 146

C.1 Starting and Restarting RACF

To start or restart a RACF service machine, for example RACFVM, you can use **one** of the following methods:

- Log on to RACFVM and enter:

  ```
  CP IPL 490
  RACSTART
  ```

- From the primary system operator, enter:

  ```
  FORCE RACFVM
  XAUTOLOG RACFVM
  ```

- From a user defined as a secondary console of RACFVM, enter:

  ```
  SEND RACFVM CP IPL 490
  ```

  Note: It is not necessary to enter RACSTART because RACFVM is running disconnected; the RACSTART is performed automatically from within RACFVM's PROFILE EXEC.

C.2 Temporarily Suspending and Reactivating RACF

Use the SETRACF command to temporarily suspend (deactivate) or reactivate RACF.

> ┌─ **Attention** ──
>
> Use care when issuing the SETRACF command to deactivate RACF. When
> you deactivate RACF, access control reverts to CP. CP uses the information in
> the CP directory to control a user's access to the system (using the user's
> password) and to minidisks (using CP links). The information in the CP
> directory is probably not current with the equivalent information in the RACF
> database.
>
> For example, if your installation changes a user's access authority to a minidisk
> from CONTROL to READ in the RACF data base, this change is not reflected
> automatically in the CP directory.
> └──

If you find it necessary to deactivate RACF, you should not allow general users to
log on to the system while RACF is inactive.

SETRACF is a CMS command, not a RACF command; therefore you cannot enter
SETRACF using RAC or during a RACF command session.

You can issue the SETRACF command only from a RACF service machine. The
RACF service machine can, however run disconnected, thereby allowing a
secondary console to issue this command.

By default, RACF sets up the OPERATOR as the secondary console for the RACF
service machine; the OPERATOR can issue the command to deactivate RACF.
For example,

```
SEND RACFVM SETRACF INACTIVE
```

If you issue SETRACF for any RACF service machine in a multiple service machine
environment, it applies to all service machines.

For additional information about SETRACF, see *RACF: Command Language
Reference*.

C.2.1 Temporarily Suspending RACF

To suspend RACF, enter:

```
SETRACF INACTIVE
```

The operator receives the following messages:

```
HCPRPD001I REQUEST TO SET RACF INACTIVE MADE BY RACFVM
HCPRPD001I REQUEST TO SET RACF INACTIVE MADE BY RACFVM
HCPRPD001I REQUEST TO SET RACF INACTIVE MADE BY RACFVM
HCPRPD002A REPLY YES TO ALLOW DEACTIVATION - ANYTHING ELSE WILL CANCEL REQUEST
```

The operator must respond YES.

C.2.2 Reactivating RACF

To reactivate RACF when it has been suspended, enter:

```
SETRACF ACTIVE
```

C.3 Removing RACF From Your VM System

You can use the following procedure to remove RACF:

__ Step 1. From OPERATOR user ID you need to FORCE RACFVM and XAUTOLOG RACMAINT. Need to do this so that PUT2PROD can run in the next step.

__ Step 2. Regenerate the CP nucleus to replace the RACF modules with the VM modules: HCPRWA, HCPRPI, HCPRPF, HCPRPG, HCPRPD, and HCPRPW. To do this the the RACF local modification to CP needs to be removed. RACF also needs to be disabled. To accomplish this you need to issue the following commands from the MAINT user ID:

service racf disable
put2prod

__ Step 3. Remove directory entries for all RACF server machines and the installation user ID, 5767002P.

__ Step 4. Remove XAUTOLOG statements for all RACF service machines from the AUTOLOG1 profile.

__ Step 5. Move the functions from AUTOLOG2 back to AUTOLOG1.

__ Step 6. Remove user LINKs to the RACFVM disks.

__ Step 7. Modify DirMaint:

a. Comment out the CONFIG DATADVH item ESM_PASSWORD_AUTHENTICATION_EXIT.

b. Change the CONFIG DATADVH items PW_WARN_MODE and PW_LOCK_MODE to AUTOMATIC, if appropriate for your installation.

c. Comment out the CONFIG DATADVH item ESM_LOG_RECORDING_EXIT.

For these changes to take effect, either IPL DIRMAINT or enter the DIRM RLDDATA command.

__ Step 8. Remove RACF files from the 19E system disk, ISPF disk and GCS disk. You can use the VMFERASE command to remove those files if you used VMFCOPY to place the files on those disks. For example:

```
ACC 19E Z
VMFERASE PROD 5767002P%RACF FROM Z
```

__ Step 9. Modify SFS file pool servers.

If you are using RACF to protect SFS resources, disable RACF support by changing the *server_id* DMSPARMS file on each SFS file pool server to specify `NOESECURITY` instead of `ESECURITY`.

___ Step 10. Modify BFS file pool servers.

If you are using RACF to protect BFS resources, disable RACF support by doing the following:

a. Change the *server_id* DMSPARMS file on each BFS file pool server to specify `NOESECURITY` instead of `ESECURITY`.

b. Delete the file ESMLIB CSLLIB from each BFS file pool server. This file probably resides on the A-disk of the server.

c. In the PROFILE EXEC of each BFS file pool server, remove the `RTNLOAD DSMPERM` statement.

___ Step 11. Modify RACROUTE applications.

If you have applications or other program products which use the RACROUTE interface, you might have to change them. If you are replacing RACF with an equivalent security product, that product might or might not support the RACROUTE interface.

To assist you in determining if any applications are using the RACROUTE interface, you can display which user IDs are authorized by RACF to issue RACROUTE requests. To do this, use the RLIST command to display the access list for the ICHCONN profile in the FACILITY class:

`RLIST FACILITY ICHCONN AUTH`

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MVS/ESA
MVS/XA
OpenExtensions
OS/390
RACF
RETAIN
SecureWay
SystemPac
System/370
VM/ESA
z/Series
z/VM

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Glossary

This glossary includes terms and definitions from the *IBM Dictionary of Computing*, New York: McGraw-Hill, 1994.

A

access.   The ability to obtain the use of a protected resource.

access authority.   An authority related to a request for a type of access to protected resources. In RACF, the access authorities are NONE, EXECUTE, READ, UPDATE, CONTROL, and ALTER.

access list.   Synonym for standard access list. See also *conditional access list*.

authority.   The right to access objects, resources, or functions. See *access authority, class authority,* and *group authority*.

authorization checking.   The action of determining whether a user is permitted access to a protected resource. RACF performs authorization checking as a result of a RACHECK or FRACHECK request.

B

BFS.   Byte file system.

byte file system (BFS).   On VM, a file system for OpenExtensions POSIX files that is organized in a tree-like structure of directories. Each directory can contain files or other directories.

C

CDT.   Class descriptor table.

class.   A collection of RACF-defined entities (users, groups, and resources) with similar characteristics. The class names are USER, GROUP, DATASET, and the classes that are defined in the class descriptor table.

class authority (CLAUTH).   An authority enabling a user to define RACF profiles in a class defined in the class descriptor table. A user can have class authorities to one or more classes.

class descriptor.   RACF-supplied control block for all the classes in the class descriptor table (which are all the classes except the USER, GROUP, and DATASET classes).

class descriptor table (CDT).   A table consisting of an entry for each class except the USER, GROUP, and DATASET classes. The table is generated by executing the ICHERCDE macro once for each class.

CLAUTH.   Class authority.

conditional access list.   An access list within a resource profile that associates a condition with a user ID or group ID and the corresponding access authority. If a user does not otherwise have the requested access, a conditional access-list entry can allow access if the specified condition is true. For example, for program access to data sets, the condition is that the user must be executing the program specified in the access list. See also *access list*. Contrast with *standard access list*.

CST (CMS subtasking).   An interface program that enables RACF to execute programs written to run in an OS/VS environment. This is a function of RACF, not VM.

current connect group.   The group with which a user is associated, for access-checking purposes, during a terminal session or batch job. On MVS, if a user does not specify the current connect group on the LOGON command or batch JOB statement, the current connect group is the user's default group. On VM, users cannot specify a group other than their default group. If list-of-groups processing is in effect, a user is associated with all the groups to which the user is connected. An exception would be that, if the current connect group is also found in the global access table, then list-of-groups checking is ignored.

D

data security. The protection of data from unauthorized disclosure, modification, or destruction, whether accidental or intentional.

data set profile. A profile that provides RACF protection for one or more data sets. The information in the profile can include the data-set profile name, profile owner, universal access authority, access list, and other data. See *discrete profile* and *generic profile*.

default group. In RACF, the group specified in a user profile that is the default current connect group.

DFP segment. The portion of a RACF profile containing information relating to the users and resources that are managed by the data facility product (DFP).

directory. A file that contains directory entries. No two directory entries in the same directory can have the same name.

directory entry. In OpenExtensions MVS and VM, an object that associates a filename with a file. Several directory entries can associate names with the same file.

discrete profile. A resource profile that can provide RACF protection for only a single resource. For example, a discrete profile can protect only a single data set or minidisk.

dual registration. An interface enabling the security administrator of a VM system to add a user to the CP system directory and the RACF database simultaneously.

E

effective user ID. In OpenExtensions MVS and VM, the current user ID, but not necessarily the user's login ID. For example, a user logged in under a login ID may change to another user's ID. The ID to which the user changes becomes the effective user ID until the user switches back to the original login ID. See also *user identifier (UID).*

ESM. External security manager

external security manager. On VM, a program that either augments or completely replaces the authorization checking done by file pool server processing.

F

FRACHECK request. The issuing of the FRACHECK macro or the RACROUTE macro with REQUEST=FASTAUTH specified. The primary function of a FRACHECK request is to check a user's authorization to a RACF-protected resource or function. A FRACHECK request uses only in-storage profiles for faster performance. See also *authorization checking*.

G

GCS. Group Control System.

general resource. Any system resource, other than an MVS data set, that is defined in the class descriptor table (CDT). On MVS, general resources are DASD volumes, tape volumes, load modules, terminals, IMS and CICS transactions, and installation-defined resource classes. On VM, general resources are terminals, minidisks, virtual unit record devices, and RSCS nodes.

general resource profile. A profile that provides RACF protection for one or more general resources. The information in the profile can include the general resource profile name, profile owner, universal access authority, access list, and other data.

generic profile. A resource profile that can provide RACF protection for one or more resources. The resources protected by a generic profile have similar names and identical security requirements. For example, a generic data-set profile can protect one or more data sets.

GID. Group identifier

global access checking. The ability to allow an installation to establish an in-storage table of default values for authorization levels for selected resources. RACF refers to this table before performing normal RACHECK processing and grants the request without performing a RACHECK if the requested access authority does not exceed the global value. Global

access checking can grant the user access to the resource, but it cannot deny access.

group.   A collection of RACF-defined users who can share access authorities for protected resources.

group authority.   An authority specifying which functions a user can perform in a group. The group authorities are USE, CREATE, CONNECT, and JOIN.

group control system (GCS).   A component of VM that provides multiprogramming and shared memory support to virtual machines. It is a saved system intended for use with SNA products.

group ID.   A string of 1 to 8 characters that identifies a group to RACF. The first character must be A through Z, #, $, or @. The rest can be A through Z, #, $, @, or 0 through 9.

group identifier (GID).   In OpenExtensions MVS and VM, a unique number assigned to a group of related users. The GID can often be substituted in commands that take a group name as an argument.

group name.   A name that uniquely identifies a group of users to the system.

group profile.   A profile that defines a group. The information in the profile includes the group name, profile owner, and users in the group.

L

logging.   The recording of data about specific events.

M

MVS.   Multiple virtual storage. Implies MVS/370, MVS/XA, and MVS/ESA.

O

operator identification card (OIDCARD).   A small card with a magnetic stripe encoded with unique characters and used to verify the identity of a terminal operator to RACF on an MVS system.

owner.   The user or group who creates a profile, or is

named the owner of a profile. The owner can modify, list, or delete the profile.

P

password.   In computer security, a string of characters known to the computer system and a user, who must specify it to gain full or limited access to a system and to the data stored within it. In RACF, the password is used to verify the identity of the user.

POSIX.   Portable Operating System Interface for Computer Environments. An IEEE standard for computer operating systems.

profile.   Data that describes the significant characteristics of a user, a group of users, or one or more computer resources. See also *dataset profile, discrete profile, general resource profile, generic profile, group profile,* and *user profile*.

program access to data sets (PADS).   On MVS, a RACF function that enables an authorized user or group of users to access one or more data sets at a specified access authority only while running a specified RACF-controlled program. See also *program control*.

program control.   On MVS, a RACF function that enables an installation to control who can run RACF-controlled programs. See also *program access to data sets*.

protected resource.   A resource defined to RACF for the purpose of controlling access to the resource. Some of the resources that can be protected by RACF are DASD and tape data sets, VM minidisks, DASD volumes, tape volumes, terminals, IMS/VS transactions, IMS/VS transaction groups, and any other resources defined in the class descriptor table.

R

RACDEF request.   The issuing of the RACDEF macro or the RACROUTE macro with REQUEST=DEFINE specified. Also, using a RACF command to add or delete a resource profile causes a RACDEF request.

RACF.   Resource Access Control Facility.

RACF database. A collection of interrelated or independent data items stored together without unnecessary redundancy, to serve Resource Access Control Facility (RACF).

RACF-indicated. In MVS, pertaining to a data set for which the RACF indicator is set on. For VSAM data sets, the indicator is in the catalog entry. For non-VSAM data sets, it is in the data-set control block (DSCB). For data sets on tape, the indicator is in the RACF tape volume profile of the volume that contains the data set. If a data set is RACF-indicated, a user can access the data set only if a RACF profile or an entry in the global access checking table exists for that data set. On a system without RACF, a user cannot access a RACF-indicated data set until the indicator is turned off.

RACF-protected. Pertaining to a resource that has either a discrete profile or an applicable generic profile. A data set that is RACF-protected by a discrete profile must also be RACF-indicated.

RACHECK request. The issuing of the RACHECK macro or the RACROUTE macro with REQUEST=AUTH specified. The primary function of a RACHECK request is to check a user's authorization to a RACF-protected resource or function. See also *authorization checking*.

RACINIT request. The issuing of the RACINIT macro or the RACROUTE macro with REQUEST=VERIFY or REQUEST=VERIFYX specified. A RACINIT request is used to verify the authority of a user to enter work into the system.

RACROUTE macro. An assembler macro that provides an means of calling RACF to provide security functions. See also *FRACHECK request*, *RACINIT request*, *RACHECK request*, and *RACDEF request*.

Resource Access Control Facility (RACF). An IBM-licensed product that provides for access control by identifying and verifying users to the system, authorizing access to protected resources, logging detected unauthorized attempts to enter the system, and logging detected accesses to protected resources.

resource profile. A profile that provides RACF protection for one or more resources. User, group, and connect profiles are not resource profiles. The

information in a resource profile can include the data set profile name, profile owner, universal access authority, access list, and other data. Resource profiles can be discrete profiles or generic profiles. See *discrete profile* and *generic profile*.

S

security. See *data security*.

security classification. The use of security categories, a security level, or both, to impose additional access controls on sensitive resources. An alternative way to provide security classifications is to use security labels.

security level. An installation-defined name that corresponds to a numerical security level; the higher the number, the higher the security level.

SFS. Shared file system

shared file system (SFS). A part of CMS that lets users organize their files into groups known as directories and selectively share those files and directories with other users.

standard access list. A list within a profile of all authorized users and their access authorities. Synonymous with access list. See also *conditional access list*.

T

TSO segment. The portion of a RACF profile containing TSO/E logon information.

U

UACC. Universal access authority.

UID. User identifier

universal access authority (UACC). The default access authority that applies to a resource if the user or group is not specifically permitted access to the resource. The universal access authority can be any of the access authorities.

user. A person who requires the services of a computing system.

user ID. A string of characters that uniquely identifies a user to a system. On VM, a user ID is 1 to 8 alphanumeric characters. On TSO, user IDs cannot exceed 7 characters and must begin with an alphabetic, #, $, or @ character.

user identification. See *user ID*.

user identification and verification. The acts of identifying and verifying a RACF-defined user to the system during logon or batch job processing. RACF identifies the user by the user ID and verifies the user by the password or operator identification card (MVS only) supplied during logon processing or the password supplied on a batch JOB statement.

user identifier (UID). (1) A nonnegative integer that is used to identify a system user. When the identity of the user is associated with a process, a user ID value is referred to as a real user ID, an effective user ID, or an (optional) saved set-user-ID. (2) The identification associated with a user or job. The two types of user IDs are:

- **RACF user ID:** A string of characters that uniquely identifies a RACF user or a batch job owner to the security program for the system. The batch job owner is specified on the USER parameter on the JOB statement or inherited from the submitter of the job. This user ID identifies a RACF user profile.

- **OMVS or OVM user ID:** A numeric value between 0 and 2147483647, called a UID (or sometimes a user number), that identifies a user to

OpenExtensions services. These numbers appear in the RACF user profile for the user.

(3) Synonymous with user identification.

user name. (1) In RACF, one to 20 alphanumeric characters that represent a RACF-defined user. (2) In OpenExtensions MVS and VM, a string that is used to identify a user.

user name. One to 20 alphanumeric characters that represent a RACF-defined user.

user profile. A description of a RACF-defined user that includes the user ID, user name, default group name, password, profile owner, user attributes, and other information. A user profile can include information for subsystems such as TSO and DFP. See *TSO segment* and *DFP segment*.

V

verification. See *user identification and verification*.

Virtual Machine Serviceability Enhancements Staged/Extended (VMSES/E). A tool used to install and service VM products.

VM. A licensed program that controls "virtual machines" and runs on two main command languages, CP and CMS. Can be VM/SP, VM/HPO, VM/XA, VM/ESA or z/VM.

VMSES/E. Virtual Machine Serviceability Enhancements Staged/Extended

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Reader's Comments

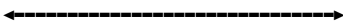**Resource Access Control Facility Feature for z/VM Version 1 Release 10.0**

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┌─ RATING SCALE ──────────────────────────────────────────────────────────────────┐
│                                                                                  │
│      very                                           very            not          │
│    satisfied      <----------------------------->  dissatisfied  applicable      │
│                                                                                  │
│       1         2         3         4                 5              N            │
│                                                                                  │
└──────────────────────────────────────────────────────────────────────────────────┘
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	Satisfaction					
Ease of product installation	1	2	3	4	5	N
Time required to install the product	1	2	3	4	5	N
Contents of program directory	1	2	3	4	5	N
Readability and organization of program directory tasks	1	2	3	4	5	N
Necessity of all installation tasks	1	2	3	4	5	N
Accuracy of the definition of the installation tasks	1	2	3	4	5	N
Technical level of the installation tasks	1	2	3	4	5	N
Installation verification procedure	1	2	3	4	5	N
Ease of customizing the product	1	2	3	4	5	N
Ease of migrating the product from a previous release	1	2	3	4	5	N
Ease of putting the system into production after installation	1	2	3	4	5	N
Ease of installing service	1	2	3	4	5	N

- If you ordered this product as part of a package, then what type of package was ordered?

  - □ CustomPac
    - □ SystemPac
  - □ System Delivery Offering (SDO)
  - □ Other - Please specify type: _____

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   ☐ Yes
   ☐ No

- Were the people who did the installation experienced with the installation of VM products using VMSES/E?

   ☐ Yes

      How many years of experience do they have? _____

   ☐ No

- How long did it take to install this product? _____

- If you have any comments to make about your ratings above, or any other aspect of the product installation, please list them below:

   _____

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