



# **Program Directory for z/VM**

version 5 release 4

Program Number 5741-A05

for Use with  
z/VM V5.4

Document Date: July 2009

GI11-2888-01

**Note!**

Before using this information and the product it supports, be sure to read the general information under "Notices" on page 37.

This program directory, dated July 2009, applies to IBM® z/VM® version 5 release 4 , 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. It contains information concerning the material and procedures associated with the installation of z/VM version 5 release 4. You should read all of this program directory before installing the program and then keep it for future reference. Section 3.1, "Preventive Service Planning" on page 10, tells you how to find any updates to the information and procedures in this program directory.

The program directory contains the following sections:

- 2.0, "Program Materials" on page 2 identifies the basic and optional program materials and documentation for z/VM.
- 3.0, "Program Support" on page 10 describes the IBM support available for z/VM.
- 4.0, "Program and Service Level Information" on page 14 lists the program levels of the required licensed products and the service level of z/VM.
- 5.0, "Installation Requirements and Considerations" on page 15 identifies the resources and considerations for installing and using z/VM.
- 6.0, "Installation Instructions" on page 21 provides information regarding the installation process for z/VM.
- 7.0, "Service Instructions" on page 23 provides information regarding the service process for z/VM.
- Appendix A, "z/VM APARs Included From Previous Release" on page 24 lists the APARs and PTFs incorporated into z/VM.
- Appendix B, "z/VM Inclusion of FINs" on page 27 lists the FIN APARs and FIN PITS problem records incorporated into z/VM.
- Appendix C, "z/VM Object Code Only Modules" on page 28 lists the Object Code Only modules within z/VM.

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## 2.0 Program Materials

An IBM program is identified by a program number. The program number for z/VM version 5 release 4 is 5741-A05.

The program announcement material describes the features supported by z/VM version 5 release 4. Ask your IBM marketing representative for this information if you have not already received a copy.

The following sections identify:

- The basic and optional program materials available with this program
- National Language Support (NLS).

---

### 2.1 Basic Machine-Readable Material

Refer to the *IBM z/VM V5.4 - Extending virtualization technology leadership for System z™* Software Announcement for information about ordering z/VM version 5 release 4 and its features. This announcement can be found using the links under the heading 'Summary of News and Updates' on the the z/VM home page:

[www.ibm.com/servers/eserver/zseries/zvm/](http://www.ibm.com/servers/eserver/zseries/zvm/)

The distribution medium for the z/VM System Deliverable is 3590 tape cartridge, 3592 tape cartridge, DVD or electronic internet delivery. (The DVD and electronic deliverables are a binary image and not DDR format.) The tapes, DVD and electronic delivery support install to 3390 DASD model 3 and model 9. The DVDs and electronic delivery also support install to FCP-attached IBM TotalStorage® SCSI disks or equivalent.

**Note:** The electronic internet delivery of the z/VM operating system (z/VM System Deliverable) and the licensed products is only available when ordered through ShopzSeries at url:

[www.ibm.com/software/ShopzSeries](http://www.ibm.com/software/ShopzSeries)

**Please refer to the Media Description Report, that comes with your order, for a description of the contents of each individual deliverable.**

See section 6.0, "Installation Instructions" on page 21 for more information about how to install the program.



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## 2.2 National Language Support (NLS)

The distribution medium for NLS is 3590 tape cartridge, 3592 tape cartridge, or electronic, if ordering the z/VM SDO through ShopzSeries.

**Note:** The program machine-readable materials contain “Restricted Materials of IBM.”

### 2.2.1 NLS Basic Machine-Readable Material

The NLS basic material that is available is DFSMS/VM™ Kanji. It is shipped as a separately orderable free feature of the z/VM V5.4 SDO (5741-A06). If you need DFSMS/VM Kanji you can order it when you order z/VM through the SDO. If you are installing on SCSI disks and you need DFSMS/VM Kanji, you must order it electronically.

---

## 2.3 Optional Machine-Readable Material

The DFSMS/VM feature of z/VM does not come as part of the z/VM system deliverable. It is an optionally orderable free feature of the z/VM V5.4 SDO.

The z/VM Restricted Source feature and the PL/X Source feature are not shipped with the z/VM system deliverable. Both are available as no-charge downloads from IBM Resource Link™ at:

[www.ibm.com/servers/resource link/](http://www.ibm.com/servers/resource link/)

In order to download either of these features you need to:

- be registered with Resource Link
- have a license for z/VM V5.4

Entitlement will be verified when you request this source code. After your verification, you will receive instructions describing how to download the source code for these features.

Information on downloading the source features can be found in section 6.1.1.1, “(Optional) Restricted and PL/X Source Installation” on page 21.

### Notes:

1. The optional machine-readable source material contains “Restricted Materials of IBM.”

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## 2.4 Program Publications

The following sections identify the basic and optional publications for z/VM version 5 release 4.

### 2.4.1 Basic Program Publications

Figure 1 identifies the basic program publications for the z/VM base. One copy of each of these publications is included when you order the basic materials for z/VM version 5 release 4. For additional copies of any publication, visit the IBM Publications Center at their World Wide Web site:

[www.ibm.com/shop/publications/order](http://www.ibm.com/shop/publications/order)

*Figure 1. Basic Material: Publications for z/VM - New Editions*

<b>Publication Title</b>	<b>Form Number</b>
z/VM: Guide for Automated Installation and Service	GC24-6099
z/VM: Summary for Automated Installation and Service (TAPE Installation)	GA76-0407
z/VM: Summary for Automated Installation and Service (DVD Installation)	GA76-0406
z/VM: License Information	GC24-6102
z/VM: Getting Started with Linux™ on System z	SC24-6096

Figure 2 identifies the informal documentation for z/VM. One copy of each publication is included with your z/VM V5.4 order.

*Figure 2. Basic Material: Informal Documentation*

<b>Publication Title</b>	<b>Form Number</b>
Program Directory for z/VM	GI11-2888
Program Directory for TCP/IP for z/VM	GI11-2890
Program Directory for Open Systems Adapter Support Facility Feature	GI11-4801-01
Program Directory for Hardware Configuration Definition and Hardware Configuration Manager for z/VM	GI11-2895
Program Directory for Remote Spooling Communications Subsystem (RSCS) Networking for z/VM	GI11-2893
Program Directory for Environmental Record Editing and Printing (EREP)	GI10-8140
Program Directory for Device Support Facilities ICKDSF	GI10-4514
RSU Stacked Tape Memo	GI11-2889

## 2.4.2 Optional Base Program Publications

The following figures contain information on the optional publications available for z/VM.

Optional publications are supplied in Adobe® Portable Document Format (PDF) or BookManager® format with z/VM. Some of these publications have printed versions. They can be ordered separately, for a fee, using the specific publication number through the IBM Publications Center at:

[www.ibm.com/shop/publications/order](http://www.ibm.com/shop/publications/order)

Also at this site, many of the publications are available online in various file formats, which can be downloaded free of charge.

z/VM offers unlicensed publications in softcopy displayable form for approximately 60 products that run on z/VM. The *IBM Online Library: z/VM Collection* DVD contains all of the IBM libraries (unlicensed books only) that are available in IBM BookManager format for current VM system products and IBM licensed programs that run on z/VM. It also contains all of the z/VM base, additional facility and optional feature publications that are currently available in Adobe PDF. One copy of the *IBM Online Library: z/VM Collection on DVD* is shipped automatically with the z/VM product at no additional charge. Figure 3 identifies the z/VM softcopy displayable feature and order numbers for the online library collection DVD and CD-ROM media. Use the order numbers shown if you need to order additional copies (for a fee).

Figure 3. Optional Material: Softcopy Displayable

Publication Title	Feature Number	Order Number
IBM Online Library: z/VM Collection on DVD	7222	SK5T-7054 (DVD)
IBM Online Library: z/VM Collection	7000	SK2T-2067 (CD-ROM)

PDF and Bookmanager versions of the z/VM publications can also be found at:

[www.ibm.com/servers/eserver/zseries/zvm/library/](http://www.ibm.com/servers/eserver/zseries/zvm/library/)

For more information on the contents of the z/VM Collection, and to find out which format each publication comes in, refer to the chapter "z/VM Library Guide" in the *z/VM: General Information* manual.

Figure 4 identifies the optional unlicensed program publications for z/VM that have new editions.

Figure 4 (Page 1 of 4). Optional Material: Publications for z/VM - New Editions

Publication Title	Form Number
z/VM: General Information	GC24-6095
z/VM: Service Guide	GC24-6117
z/VM: CMS Callable Services Reference	SC24-6072
z/VM: CMS Commands and Utilities Reference	SC24-6073
z/VM: CP Planning and Administration	SC24-6083

Figure 4 (Page 2 of 4). Optional Material: Publications for z/VM - New Editions

<b>Publication Title</b>	<b>Form Number</b>
z/VM: CP Commands and Utilities Reference	SC24-6081
z/VM: I/O Configuration	SC24-6100
z/VM: CP Messages and Codes	GC24-6119
z/VM: CMS and REXX/VM Messages and Codes	GC24-6118
z/VM: Other Components Messages and Codes	GC24-6120
z/VM: VMSES/E Introduction and Reference	GC24-6130
z/VM: Performance	SC24-6109
z/VM: Program Management Binder and Loader for CMS	SC24-6110
z/VM: Migration Guide	GC24-6103
z/VM: System Operation	SC24-6121
z/VM: CP Programming Services	SC24-6084
z/VM: Group Control System	SC24-6098
z/VM: VM Dump Tool	GC24-6129
z/VM: Systems Management Application Programming	SC24-6122
z/VM: TCP/IP Diagnosis Guide	GC24-6123
z/VM: TCP/IP LDAP Administration Guide	SC24-6140
z/VM: TCP/IP Messages and Codes	GC24-6124
z/VM: TCP/IP Planning and Customization	SC24-6125
z/VM: TCP/IP Programmer's Reference	SC24-6126
z/VM: TCP/IP User's Guide	SC24-6127
z/VM: Running Guest Operating Systems	SC24-6115
z/VM: Connectivity	SC24-6080
z/VM: OpenExtensions™ Command Reference	SC24-6106
z/VM: Saved Segments Planning and Administration	SC24-6116
Secure Configuration Guide	GC24-6158
z/VM: Dump Viewing Facility	GC24-6093
z/VM: Language Environment® User's Guide	SC24-6101
z/OS®: Language Environment Concepts Guide	SA22-7567
z/OS: Language Environment Programming Guide	SA22-7561
z/OS: Language Environment Programming Reference	SA22-7562
z/OS: Language Environment Debugging Guide	SA22-7560
z/OS: Language Environment Run-Time Messages	SA22-7566

Figure 4 (Page 3 of 4). Optional Material: Publications for z/VM - New Editions

Publication Title	Form Number
z/OS and z/VM: Hardware Configuration Manager User's Guide	SC33-7989
z/OS and z/VM: Hardware Configuration Definition Messages	SC33-7986
Device Support Facilities: User's Guide and Reference	GC35-0033
z/OS MVS® Program Management: Advanced Facilities	SA22-7644
z/OS MVS® Program Management: User's Guide and Reference	SA22-7643
z/OS IBM Tivoli® Directory Server Plug-in Reference for z/OS	SA76-0148

Figure 5 identifies the optional unlicensed program publications for z/VM that do not have new editions.

Figure 5 (Page 1 of 2). Optional Material: Publications for z/VM - Not New Editions

Publication Title	Form Number
z/VM: XEDIT Command and Macro Reference	SC24-6131
z/VM: XEDIT User's Guide	SC24-6132
z/OS: Language Environment Writing Interlanguage Communication Applications	SA22-7563
Network Job Entry: Formats and Protocols	SA22-7539
CMS/TSO Pipelines: Author's Edition	SL26-0018
z/VM: CMS Application Development Guide	SC24-6069
z/VM: CMS File Pool Planning, Administration, and Operation	SC24-6074
z/VM: CMS Application Development Guide for Assembler	SC24-6070
z/VM: CMS Planning and Administration	SC24-6078
z/VM: CMS Application Multitasking	SC24-6071
z/VM: CMS Macros and Functions Reference	SC24-6075
z/VM: CMS Pipelines Reference	SC24-6076
z/VM: CMS Pipelines User's Guide	SC24-6077
z/VM: CMS Primer	SC24-6137
z/VM: CMS User's Guide	SC24-6079
z/VM: CP Exit Customization	SC24-6082
z/VM: Glossary	GC24-6097
z/VM: OpenExtensions Advanced Application Programming Tools	SC24-6104
z/VM: OpenExtensions Callable Services Reference	SC24-6105
z/VM: OpenExtensions POSIX Conformance Document	GC24-6107
z/VM: OpenExtensions User's Guide	SC24-6108
z/VM: Reusable Server Kernel Programmer's Guide and Reference	SC24-6112

Figure 5 (Page 2 of 2). Optional Material: Publications for z/VM - Not New Editions

Publication Title	Form Number
z/VM: REXX/VM User's Guide	SC24-6114
z/VM: REXX/VM Reference	SC24-6113
z/VM: Virtual Machine Operation	SC24-6128
z/VM: CPI Communications User's Guide	SC24-6085
z/VM: Diagnosis Guide	GC24-6092
z/VM: Enterprise Systems Architecture/Extended Configuration Principles of Operation	SC24-6094
Common Programming Interface Communications Reference	SC26-4399
Common Programming Interface Resource Recovery Reference	SC31-6821
EREP: User's Guide	GC35-0151

**Note:** The CP and CMS control block information is not provided in book form. This information is available on the z/VM home page ([www.ibm.com/servers/eserver/zseries/zvm/library/](http://www.ibm.com/servers/eserver/zseries/zvm/library/)) or you can use the BLOCKDEF utility against control blocks on your system to get the most current data.

Figure 6 and Figure 7 identify the optional unlicensed program publications for OSA/SF for VM.

Figure 6. Optional Material: OSA/SF Publications - New Editions

Publication Title	Form Number
System z10™, System z9® and eServer™ zSeries®: Open Systems Adapter-Express Customer's Guide and Reference	SA22-7935

Figure 7. Optional Material: OSA/SF Publications - Not New Editions

Publication Title	Form Number
eServer zSeries 900: Planning for Open Systems Adapter-2 Feature	GA22-7477
System z9 and eServer zSeries 890 and 990: Systems Adapter-Express Integrated Console Controller User's Guide	SA22-7990

Figure 8 and Figure 9 identify the optional unlicensed program publications for DFSMS/VM FL221.

Figure 8. Optional Material: DFSMS/VM Publications - New Editions

Publication Title	Form Number
z/VM: DFSMS/VM Customization	GC24-6086
z/VM: DFSMS/VM Removable Media Services	SC24-6090

Figure 9 (Page 1 of 2). Optional Material: DFSMS/VM Publications - Not New Editions

Publication Title	Form Number
Z/VM: DFSMS/VM Messages and Codes	GC24-6088

Figure 9 (Page 2 of 2). Optional Material: DFSMS/VM Publications - Not New Editions

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<b>Publication Title</b>	<b>Form Number</b>
z/VM: DFSMS/VM Diagnosis Guide	GC24-6087
z/VM: DFSMS/VM Planning Guide	SC24-6089
z/VM: DFSMS/VM Storage Administration	SC24-6091

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The publications provided by the other pre-installed priced features of z/VM or products can be found in the their Program Directory.

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## **2.5 Program Source Materials**

Customers with access to View Program Listings (VPL) can use the VPL facility for online viewing of available program listings. Those customers without access to VPL can contact their IBM representative.

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## 3.0 Program Support

This section describes the IBM support available for z/VM.

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### 3.1 Preventive Service Planning

#### 3.1.1 Recommended Service Upgrade (RSU)

**Before installing z/VM, you should see if you received the most current Stacked RSU available. If there is a higher RSU available, or if you did not receive an RSU with your order and there is now one available, you should order it and apply it when you install z/VM.**

Be aware that there is a Stacked RSU package level which includes products at their individual RSU level. These levels are different. When checking for the current level you would check the current individual product RSU level. If you are not at the current product RSU level then you would order the z/VM Stacked RSU, UM97540. Refer to following z/VM RSU internet site at url:

[www.ibm.com/servers/eserver/zseries/zvm/service/rsu/stk540.html](http://www.ibm.com/servers/eserver/zseries/zvm/service/rsu/stk540.html)

to see information about the Stacked RSU package level and corresponding product individual RSU level. You can also find information about ordering z/VM service, preventive (RSU) or CORrective, at the z/VM service internet Web site.

**Note:** You can click on 'Notify me' in the left navigation area of the VM home page and complete the form that is displayed so that you will be notified whenever the stk540.html file gets changed. A change to this file is an indication that a new RSU is available.

#### 3.1.2 Obtaining Preventive Service

**Before installing z/VM, check with your IBM Support Center or use IBMLink™ (ServiceLink) to see whether there is additional Preventive Service Planning (PSP) information and service recommendations that you should have.** You should request the PSP information for the z/VM components and z/VM features that you are using. Refer to Figure 10 for PSP Upgrade and Subset information.

Use the appropriate product Service Procedures to apply any service recommendations in the PSP Bucket AFTER installation has been completed.

To obtain the PSP information, specify the UPGRADE and SUBSET values from Figure 10.

The features and other pre-installed products are shown after the double line in the figure.



Figure 10. PSP Upgrade and Subset ID - z/VM

<b>Upgrade</b>	<b>Subset</b>	<b>RETAIN® Release</b>
ZVM540	CP	540
ZVM540	DVF	540
ZVM540	GCS	540
ZVM540	CMS	540
ZVM540	TSAF	540
ZVM540	VMSES	540
ZVM540	REXX	540
ZVM540	AVS	540
ZVM540	LE	540
ZVM540	yynnRSU	RSU
TCPIP540	VM540	540
TCPIP540	yynnRSU	RSU
VMOSASF440	OSASF	440
VMOSASF440	yynnRSU	RSU
ZVMHCD540	ZVMHCD/540	540
ZVMHCD540	yynnRSU	RSU
VMPTK540	PTK/540	540
VMPTK540	yynnRSU	RSU
DIRM540	DIRM/540	540
DIRM540	yynnRSU	RSU
RACFVM540	RACF540	540
RACFVM540	yynnRSU	RSU
RSCS540	RSCS/540	540
RSCS540	yynnRSU	RSU
DFSMSVM221	SMS221	221
ICKDSF017	CMS0H14	H14
EREP350	VMEREP/350	500

## 3.2 Statement of Support Procedures

With z/VM you are entitled to support under the basic warranty for z/VM. Also, note that the z/VM Software Subscription and Support (5741-SNS) is **automatically** added when you order z/VM - this provides zSeries service to which you are likely accustomed. If you do not want the z/VM Software Subscription and Support for z/VM you must take specific action to decline it when ordering z/VM.

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

Figure 11 identifies the component IDs (COMPID), Retain Release and Field Engineering Service Numbers (FESN) for z/VM.

Figure 11 (Page 1 of 2). Component IDs and Field Engineering Numbers

Retain				
COMPID	Release	Component Name	PRODID	FESN
568411201	540	CMS	5VMCMS40	0460181
568411202	540	CP	5VMCPR40	0460647
568411204	540	AVS	5VMAVS40	0460648
568411205	540	REXX™	5VMREX40	0460185
568411206	540	TSAF	5VMTSA40	0460186
568411208	540	DVF	5VMDVF40	0460188
568411209	540	VMSES/E	5VMSES40	0460646
568411211	540	GCS	5VMGCS40	0460191
568411220	540	LE	5VMLEN40	0410741
568819802	540	LE COBOL RTL	5VMLEN40	0562227
568819803	540	LE PL/I RTL	5VMLEN40	0562228
568411201	A54	CMS JAPANESE KANJI	5VMCMS40	0460181
568411201	E54	CMS GERMAN	5VMCMS40	0460181
568411202	A54	CP JAPANESE KANJI	5VMCPR40	0460647
568411202	E54	CP GERMAN	5VMCPR40	0460647
568411204	A54	AVS JAPANESE KANJI	5VMAVS40	0460648
568411204	E54	AVS GERMAN	5VMAVS40	0460648
568411205	A54	REXX JAPANESE KANJI	5VMREX40	0460185
568411205	E54	REXX GERMAN	5VMREX40	0460185
568411206	A54	TSAF JAPANESE KANJI	5VMTSA40	0460186
568411206	E54	TSAF GERMAN	5VMTSA40	0460186
568411208	A54	DVF JAPANESE KANJI	5VMDVF40	0460188

Figure 11 (Page 2 of 2). Component IDs and Field Engineering Numbers

<b>Retain</b>				
<b>COMPID</b>	<b>Release</b>	<b>Component Name</b>	<b>PRODID</b>	<b>FESN</b>
568411208	E54	DVF GERMAN	5VMDVF40	0460188
568411209	A54	VMSES/E JAPANESE KANJI	5VMSES40	0460646
568411209	E54	VMSES/E GERMAN	5VMSES40	0460646
568411211	A54	GCS JAPANESE KANJI	5VMGCS40	0460191
568411211	E54	GCS GERMAN	5VMGCS40	0460191
568411220	A54	LE JAPANESE KANJI	5VMLEN40	0410741
568819802	A54	LE COBOL RTL JAPANESE KANJI	5VMLEN40	0562227
568819803	A54	LE PL/I RTL JAPANESE KANJI	5VMLEN40	0562228

For your convenience, Figure 12 identifies the component IDs (COMPID), Retain Release and Field Engineering Service Numbers (FESN) for the features and products that are pre-installed on the z/VM deliverable.

Figure 12. Component IDs and Field Engineering Numbers

<b>Retain</b>				
<b>COMPID</b>	<b>Release</b>	<b>Component Name</b>	<b>PRODID</b>	<b>FESN</b>
568411219	540	HCD/HCM for z/VM	5VMHCD40	0409974
565510400	440	OSA/SF for VM	4OSASF40	0401298
5735FAL00	540	TCP/IP for z/VM	5VMTCP40	0461035
568411218	540	Performance Toolkit for VM™	5VMPTK40	0408274
5749DVH00	540	DirMaint™	5VMDIR40	6415301
576700201	540	RACF®	5VMRAC40	6700201
568409601	540	RSCS	5VMRSC40	0401165
565899201	H14	ICKDSF	5684042J	5499201
565426001	500	EREP VM	n/a	5426001

---

## 4.0 Program and Service Level Information

This section identifies the program and any relevant service levels of z/VM. The program level refers to the APAR fixes incorporated into the program. The service level refers to the PTFs integrated.

---

### 4.1 Program Level Information

z/VM version 5 release 3 APARs, which are fixed in z/VM version 5 release 4, are listed in Appendix A, "z/VM APARs Included From Previous Release" on page 24 of this document.

---

### 4.2 Service Level Information

EREP V3.5 is at SDO service level SDO-0800 available June 2008 and ICKDSF V1.17 is at the SDO service level ESO-0712 available June 2008.

When you complete installation, the following products will be at the Service Level provided on the GA z/VM System Deliverable plus the GA RSU, if applicable. (If you install a higher level RSU then the products may be at a higher level.)

*Figure 13. Feature/Product RSU Levels GA System Deliverable*

---

Product Name	Release Level	RSU Level
OSA/SF for VM	FL 440	0801 (plus PTF UA40616 for APAR OA23824)

---

#### Notes:

1. Products not listed are at base level (or an RSU level, if serviced on an RSU that you installed).

---

### 4.3 Cumulative Service

The Recommended Service Upgrade (RSU) for z/VM version 5 release 4 is cumulative.

The RSU is used to provide service updates for all z/VM components, features or products, in VMSES/E format, that are pre-installed on the z/VM System Deliverables. It is referred to as a stacked RSU.

The RSU can be ordered using the PTF number **UM97540**.

---

## 5.0 Installation Requirements and Considerations

The following sections identify the system requirements for installing z/VM.

### 5.1.1 Programming Requirements

A license for the following products is required to order z/VM version 5 release 4. These products are already installed on the z/VM System Deliverables.

Figure 14. Products Required for z/VM version 5 release 4

Product Name	Product Level	Product Number
EREP	3.5.0	5654-260
ICKDSF*	1.17.0	5747-DS1
ICKDSF/VM*	1.17.0	5684-042

**Note:** \*Only one ICKDSF product license (ICKDSF or ICKDSF/VM) is required.

**A license for the following products is required in order to enable and run them.** These products are installed on the z/VM System Deliverables disabled. Refer to the z/VM V5.4 Software Announcement for information on obtaining a license for these products.

Figure 15. Products Requiring a License

Product Name	Product Level	Product Number
Performance Toolkit for VM	540	5741-A05
DirMaint	540	5741-A05
RACF	540	5741-A05
RSCS	540	5741-A05

### 5.1.2 DASD Storage Requirements

Figure 16 and Figure 17 on page 16 identify the DASD required to install z/VM version 5 release 4. The total amount of DASD you will need is what you choose from both figures.

**Note:** During installation INSTPLAN will tell you exactly how many DASD volumes are required.

Figure 16. DASD Requirements for System Residence and Work

DASD Type	Number of DASD	Reason
3390-Mod 3 (3339 cylinders)	3	if you select to load to minidisk or to SFS
	3 or 4	if you select to load to both minidisk and SFS. Note that three volumes might be enough but you should have a fourth volume available.
3390-Mod 9 (10017 cylinders)	1	if you select to load to minidisk or SFS
	1 or 2	if you select to load to both minidisk and SFS. Note that one volume might be enough but you should have a second volume available.
FBA (DVD install only)	1 - 3.5GB to 10GB SCSI Disk	for the 540RES volume
	1 or 2 - SCSI Disks	for additional work volumes depending on the size you use for 540RES volume. Work volumes are assumed to be same size as 540RES volume.

Figure 17. DASD Requirements for SPOOL and PAGE

DASD Type	Number of DASD	Reason
Any Model 3390 install	2	the 3390-mod 3 DASD is suggested
FBA (DVD SCSI install only)	2 - SCSI DISKs (any size, minimum 1GB)	can only use these if doing a DVD install

### 5.1.3 Media/Tape Drive Requirements

The following devices are supported:

- 3590
- 3592
- DVD and electronic install requires Hardware Management Console (HMC) V1.8 or later, or a Windows™ or Linux™ FTP server

**Note:** If you use an Automatic Tape Library controlled by DFSMS/VM then you need to have DFSMS/VM APAR VM63746 applied to utilize the full function of the ATL when installing the RSU tapes.

### 5.1.4 Hardware Requirements

For installation hardware requirements make sure you review the appropriate 'Understand the Requirements' section in the *z/VM: Guide for Automated Installation and Service*. **This is especially important if you will be installing from DVD.**

For z/VM product hardware requirements refer to the 'Hardware and storage requirements' section in the *z/VM: General Information*.

## 5.1.5 Software Program Requirements

For z/VM software program requirements refer to the 'Software (program) requirements' section in the *z/VM: General Information*.

## 5.1.6 Programming and Migration Considerations

### 5.1.6.1 Migration Considerations

The *z/VM:General Information*, *z/VM:Migration Guide* and the product Program Directories **should be reviewed** as they contain important information needed when migrating from one release to another.

The following information can be found in the *z/VM:Migration Guide* or in a product's Program Directory, but is highlighted here.

#### 5.1.6.1.1 Product Changes in z/VM V5.4 That Are Noteworthy:

Language Environment is upgraded to the V5.4 level. Therefore, you **should not** migrate your existing Language Environment to the new z/VM system. If you end up with a mismatch of Language Environment code levels between the minidisks and segments your applications will fail with various errors.

For TCP/IP:

- Starting with TCP/IP FL530, the TCP/IP installation and service user ID, *wMTCPrm*, has been enrolled as a file pool administrator for the VMSYS file pool. This is required to accommodate service update processing for LDAP server components that reside in the z/VM Byte File System (BFS). If you choose to use a different user ID to service TCP/IP or elect to use a file pool other than VMSYS for maintaining the Byte File System, you then will need to enroll the appropriate user ID as an administrator for the applicable file pool. Also, note that the file pool server virtual machines, defaults are VMSERVS, VMSERVU, and VMSERVER, must be logged on and running.
- TCP/IP level 540 is supported on corresponding level 540 releases of CP and CMS only. If TCP/IP level 540 services and functions are used with other CP or CMS levels (as might be the case for migration testing purposes), certain capabilities may be limited or may not function. In some instances, non-TCP/IP service updates may be available to facilitate the temporary use of TCP/IP in such a transitory environment. Refer to the section 'Migration Considerations' in the *Program Directory for TCP/IP for z/VM, level 540* for more information.

#### 5.1.6.1.2 Product Changes from Previous z/VM Releases:

**You must create a new stand-alone dump tape** to use with z/VM V5.4. When you run the HCPSADMP EXEC (reference *z/VM: Guide for Automated Installation and Service*, Chapter 4 Step 11, or Chapter 8 Step 15) you must answer YES to the question on 'DO YOU WANT TO CREATE A NEW HCPSDC MODULE?'. This will create new HCPSDC ASSEMBLE and HCPSDC TEXT files.

If you are currently running a VM version or release prior to z/VM V4.4, then you should take note of the following.

- For TCP/IP, **RESTRICTLOWPORTS** is now active by default in the PROFILE TCPIP, therefore, if appropriate port authorizations have not been provided, applications that rely upon well-known ports (for example, VM-based web servers or remote printing functions such as **lpr**, like with RSCS) are likely to report "Unable to open port(s)" or "Permission denied" conditions.
- z/VM Language Environment V4.4 has changed the default values for the runtime options **STACK** and **ALL31**. The new defaults are **STACK=(128K,128K,ANYWHERE,KEEP,512K,128K)** and **ALL31=(ON)** (prior release defaults were **STACK=(128K,128K,BELOW,KEEP)** and **ALL31=(OFF)**). This was done in z/OS Language Environment V1R4, which the new z/VM Language Environment is based off of, in the belief that most, if not all, application programs have been updated to run in AMODE 31. If your application set is predominantly running AMODE 24, then it is recommended you run the CUSTLE EXEC to change the value of the STACK option to BELOW and the value of the ALL31 option to OFF. If you have a small number of application programs running AMODE 24, you can create a local copy of CEEUOPT ASSEMBLE and TEXT with these options changed to their previous defaults and then relink the application programs and include the CEEUOPT TEXT.

The list above is by no means all inclusive, therefore, you should still review the *z/VM:Migration Guide* and product Program Directories for changes that have taken place in this release that would affect migration.

#### **5.1.6.1.3 Packaging Changes for z/VM V5 That Still Apply:**

The following items reflect changes that occurred in the packaging of z/VM version 5.

- Changes to the pre-defined CP User Directory entries can be found in the *z/VM: Migration Guide*.
- Spool and paging space has been removed from the System Residence volume and separate volumes for spooling and paging are now required during z/VM installation.
- The 3270 PC File Transfer product (5664-281) is available as part of the z/VM product. Its module, IND\$FILE MODULE, is shipped as a sample tool on the system 'S' disk (190).
- DFSMS/VM is no longer included in your z/VM order. It can be ordered as a no-charge feature with the z/VM SDO. DFSMS/VM Kanji can also be ordered the same way.
- The Restricted Source and PL/X Source features are no longer shipped with z/VM but they are available as no-charge downloads from IBM Resource Link. See section 6.1.1.1, "(Optional) Restricted and PL/X Source Installation" on page 21 for more information.
- The RealTime Monitor (RTM) and Performance Reporting Facility (PRF) features are no longer provided on the z/VM System deliverables, nor can they be licensed with z/VM. Performance Toolkit for VM is provided as a replacement for these products.
- z/VM only includes a 64-bit CP module and it is called CPLOAD MODULE. The 32-bit and dual-mode modules are no longer provided.

#### **5.1.6.1.4 Product Parameter File (PPF) Changes**

##### **5.1.6.1.4.1 Changes in z/VM V5.4**

- A new component name of BLDDOS was added to the CMS Product Parameter File, 5VMCMS40 \$PPF. It is now the compname used when building the DOSINST, CMSDOS and CMSBAM



segments. This new component name is present in the ZVM PPF but not the SERVP2P PPF. It is the ZVM PPF that is specified in the segment definition that is used to build the actual segments.

- In z/VM version 5 the PRODIDs are in the format of **vMaaarm**, where *vrm* is the z/VM version, release and modification and *aaa* is an identifier for the component. The following table shows the new file names (PRODIDs) for the \$PPF files for the z/VM components and features for z/VM V5.4.

Figure 18. New \$PPF File Names

Componet/Feature	\$PPF file name and file type
AVS	5VMAVS40 \$PPF
CMS	5VMCMS40 \$PPF
CP	5VMCPR40 \$PPF
Dump Viewing Facility	5VMDVF40 \$PPF
GCS	5VMGCS40 \$PPF
REXX	5VMREX40 \$PPF
TSAF	5VMTSA40 \$PPF
VMSES/E	5VMSES40 \$PPF
Language Environment	5VMLEN40 \$PPF
TCPIP	5VMTCP40 \$PPF
HCD/HCM for z/VM	5VMHCD40 \$PPF
Performance Toolkit for VM	5VMPTK40 \$PPF
DirMaint	5VMDIR40 \$PPF
RSCS	5VMRSC40 \$PPF
RACF	5VMRAC40 \$PPF

**Notes:**

1. OSA is still at FL440 level and its PRODID is still 4OSASF40.
2. Language Environment is now at FL540 with PRODID of 5VMLEN40.

5.1.6.1.4.2 PPF Changes in Previous Releases

- The \$PPF files, updated in z/VM version 5 release 3, were changed to use the new PPF variable substitution override function of VMSES/E. \$MAINT\$ and \$VMSYS\$ are now used in the \$PPF files. These are variables that will get replaced by the values assigned to them in the VMSESE PROFILE file by VMFPPF.
- New z/VM Base Component

In z/VM V4.4, Language Environment for z/VM became a base component of z/VM. It is included in the ZVM \$PPF file. It is serviced using the MAINT user ID. The code resides on MAINT disks that have an address that begins with 4, for example 4B2. It's production build (code) disk is MAINT 19E.

- Shared File System (SFS) Component Names for z/VM Base Components

All of the base components of z/VM now allow their service disks, apply, delta, local and base, to be in SFS. Each z/VM component \$PPF file now has a component override for SFS.

- z/VM Base Component Source Disks

The source disks 5B4, 394 and 393, for VMSES/E, CP/DV and CMS/REXX, respectfully, have been combined with the component's base disk and therefore, deleted from the component's \$PPF file.

- PPF name used for Automated Service

The default PPF used by the automated service commands, SERVICE and PUT2PROD, is SERVP2P. In the SERVP2P \$PPF there is a set of component overrides used by the SERVICE command and a set used by the PUT2PROD command. The SERVP2P \$PPF overrides the base component in the component or product \$PPF file (for example, 5vmaaa30 \$PPF). If you have created an override to the ZVM \$PPF it will not get picked up by SERVP2P \$PPF. You may want to change your PPF override to override all the appropriate components in the SERVP2P \$PPF file instead of the zVM \$PPF file.

If you have created a PPF override, you can update the VM SYSSUF file to reflect your PPF override name by issuing the VMFUPDAT SYSSUF command. You want to do this so that your PPF override will be used by the SERVICE and PUT2PROD commands.

## 5.1.7 Programming Considerations

z/VM z/Architecture® CMS is shipped as a sample program with **no formal support available**. The z/CMS nucleus and related files are shipped on the MAINT 990 disk. There is also a ZCMS named saved segment shipped. For z/Architecture CMS details and restrictions, refer to the z/VM Web site at:

[www.ibm.com/servers/eserver/zseries/zvm/related/zcms](http://www.ibm.com/servers/eserver/zseries/zvm/related/zcms)

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## 6.0 Installation Instructions

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### 6.1 z/VM Base Installation

Installation instructions are contained in the *z/VM: Guide for Automated Installation and Service* or the *z/VM Summary for Automated Installation and Service* included in your z/VM product shipment.

**Note:** The z/VM System Deliverable is received as part of your SDO (System Delivery Option) Package order. You should review Chapters 1 and 2 in the SDO Program Directory to get an overview of the SDO package. Chapter 2 in the SDO Program Directory will point you to the *z/VM: Guide for Automated Installation and Service* in order to install the z/VM System Deliverable, any z/VM optional features and stacked RSU.

For information on tailoring the z/VM component customizable files refer to the appropriate z/VM component (CP, CMS, VMSES, LE, etc) publications.

#### 6.1.1.1 (Optional) Restricted and PL/X Source Installation

If you have a need for the z/VM Restricted or PL/X source code you can download it from Resource Link on the internet at:

[www.ibm.com/servers/resourceink/](http://www.ibm.com/servers/resourceink/)

You need to have a license for z/VM V5.4 in order to access this source code.

**Note:** All of the source code needs approximately 157,500 4K blocks (875 cyls on 3390 or 1,260,000 FB-512 blocks) on the VM host. You also need approximately another 198,000 4K blocks (1100 cyls 3390 or 1,584,000 FB-512 blocks) to hold the compacted and de-compacted envelope files.

You will need to register with Resource Link so you can sign in to it. If you are a new user to Resource Link you need to use your IBM ID to sign in to Resource Link. If you do not have an IBM ID you can register for one at:

[www.ibm.com/account/profile](http://www.ibm.com/account/profile)

If you are a current Resource Link user you can use your Resource Link user ID until told to use your IBM ID.

Once signed in to Resource Link you need to:

- click on [Tools](#) on the left navigation
- click on [z/VM and VM/ESA®](#) under the **Software** heading
- click on [Restricted and PL/X Source](#) under the **z/VM and VM/ESA** heading
- click on [Register for the Restricted and PL/X Source](#)

First you will be asked to sign in to another server. Use the same user ID and password that you used to sign on to Resource Link.

Next you will be asked to fill out the Restricted and PL/X Source Registration form so that your entitlement to z/VM V5.4 can be verified. This form will ask for your customer number. **The customer number you enter must be the same customer number you used when you ordered z/VM V5.4.** You will also need to provide a phone number where you can be reached in case IBM needs to contact you about your entitlement. Once the form is filled out, click on the submit button. You will receive a confirmation screen with a control identification number. You should make a note of this number, in case you need to call IBM about your registration.

Once you have submitted the registration you should be provided with access within two business days. Once you receive confirmation that you are registered to access the Restricted and PL/X source, you will see a new link on the z/VM version 5 Restricted and PL/X Source web page (the page where you originally clicked on [Register for the Restricted and PL/X Source](#)). This link says **"If you are already registered and authorized access the restricted and PL/X source."** You can click on the access the restricted and PL/X source part of that sentence.

The next web page will display the files that can be downloaded and a pointer to the installation instructions. You should review the installation instructions before downloading the files. The installation instructions have information on how to upload the envelope files to the z/VM host including detailed information on the resources you need to install the files on z/VM, how to de-compact the envelope files and the installation instructions.

When you click on any one of the downloadable files you will be asked to review the License Agreement and select either "I agree" or "I disagree". If you select "I agree" you will begin to download the source code, which is stored on the server as tersed (compacted) servlink envelope files. (If you are asked to sign in again, use the same user ID and password.) On the File Download window you should click on the Save button to save the files to your workstation. You will be presented with the License Agreement for each file that you choose to download. You must select "I agree" for each file. After the files are on your workstation you need to follow the installation instructions.

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## 7.0 Service Instructions

The **preferred** method for installing service, preventive (RSU) and CORrective, to z/VM is to use the z/VM automated service procedure (use of the **SERVICE** and **PUT2PROD** commands). The automated service procedure is documented in Part 4 'Service Procedure' in the *z/VM: Guide for Automated Installation and Service* manual. If you choose, you can still use the traditional service procedure documented in the *z/VM: Service Guide*.

### Notes:

1. You can use MAINT's 500 disk to hold your electronically delivered service. You should access it as file mode 'C'.
2. VMSES/E uses MAINT's A-disk as a work disk. You must not reduce the size of the A-disk to save space.
3. The "Memo to Users" for each component on an RSU contains information about the service applied to that component; such as APAR/PTF numbers, additional disk requirements, etc.
4. If you are running a SCSI only system, and you have no supported tape drives, then you will need to order service on CD-ROM or electronically from ServiceLink in IBMLink, if you have it, or from ShopzSeries web site at:

[www.ibm.com/software/ShopzSeries](http://www.ibm.com/software/ShopzSeries)

### 7.1.1 Additional Place into Production steps for z/Architecture CMS Sample Program

z/Architecture CMS is shipped as a sample program with z/VM version 5 release 4 with no formal support available. The z/Architecture CMS nucleus is shipped as ZCMS LOADDECK. If this file ever gets serviced there are additional steps to follow in order to place the serviced nucleus into production. Refer to z/VM Web site:

[www.ibm.com/servers/eserver/zseries/zvm/related/zcms](http://www.ibm.com/servers/eserver/zseries/zvm/related/zcms)

for the additional steps and for additional z/Architecture CMS details and usage.

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## Appendix A. z/VM APARs Included From Previous Release

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### A.1 z/VM version 5 release 3 APARs for the VMSES/E component

There are no z/VM version 5 release 3 APARs for VMSES/E included in the z/VM version 5 release 4 base code.

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### A.2 z/VM version 5 release 3 APARs for the CP component

The following z/VM version 5 release 3 CP APARs have been included in the z/VM version 5 release 4 base code.

*Figure 19. z/VM version 5 release 3 CP APARs included in z/VM version 5 release 4 Base*

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VM63884	VM63968	VM64016	VM64031	VM64071	VM64082	VM64111
VM64140	VM64149	VM64156	VM64168	VM64175	VM64180	VM64182
VM64184	VM64189	VM64190	VM64199	VM64210	VM64212	VM64215
VM64220	VM64222	VM64224	VM64225	VM64226	VM64227	VM64228
VM64230	VM64235	VM64236	VM64239	VM64240	VM64242	VM64243
VM64244	VM64245	VM64246	VM64248	VM64249	VM64251	VM64253
VM64254	VM64255	VM64256	VM64257	VM64258	VM64259	VM64260
VM64262	VM64265	VM64267	VM64268	VM64269	VM64273	VM64277
VM64281	VM64282	VM64287	VM64288	VM64292	VM64293	VM64295
VM64296	VM64297	VM64298	VM64301	VM64303	VM64304	VM64305
VM64306	VM64307	VM64309	VM64310	VM64312	VM64315	VM64316
VM64320	VM64322	VM64323	VM64324	VM64325	VM64329	VM64330
VM64335	VM64336	VM64341	VM64342	VM64347	VM64348	VM64349
VM64351	VM64352	VM64353	VM64354	VM64355	VM64357	VM64358
VM64372	VM64374	VM64379	VM64380	VM64381	VM64382	VM64385
VM64387	VM64389	VM64390	VM64394	VM64398	VM64399	VM64400
VM64404	VM64407	VM64412	VM64413	VM64414	VM64415	VM64416
VM64417	VM64418	VM64419	VM64422	VM64424	VM64425	VM64428
VM64432	VM64440	VM64441	VM64442	VM64445	VM64448	

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### A.3 z/VM version 5 release 3 APARs for the DVF component

There are no z/VM version 5 release 3 APARs for DVF included in the z/VM version 5 release 4 base code.

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## A.4 z/VM version 5 release 3 APARs for the CMS component

The following z/VM version 5 release 3 CMS APARs have been included in the z/VM version 5 release 4 base code.

*Figure 20. z/VM version 5 release 3 CMS APARs included in z/VM version 5 release 4 Base*

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VM64166	VM64194	VM64233	VM64234	VM64284	VM64285	VM64291
VM64302	VM64308	VM64331	VM64350	VM64356	VM64397	VM64401
VM64408						

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## A.5 z/VM version 5 release 3 APARs for the VM/REXX component

The following z/VM version 5 release 3 REXX APAR has been included in the z/VM version 5 release 4 base code.

*Figure 21. z/VM version 5 release 3 VM/REXX APARs included in z/VM version 5 release 4 Base*

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VM64171

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## A.6 z/VM version 5 release 3 APARs for the GCS component

There are no z/VM version 5 release 3 APARs for GCS included in the z/VM version 5 release 4 base code.

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## A.7 z/VM version 5 release 3 APARs for the TSAF component

There are no z/VM version 5 release 3 APARs for TSAF included in the z/VM version 5 release 4 base code.

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## A.8 z/VM version 5 release 3 APARs for the AVS component

There are no z/VM version 5 release 3 APARs for AVS included in the z/VM version 5 release 4 base code.

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## A.9 Language Environment version 4 release 4 APARS for the LE component

The following z/VM Language Environment version 4 release 4 APARs have been included in Language Environment version 5 release 4 base code.

*Figure 22. z/VM Language Environment version 4 release 4 APARs included in z/VM version 5 release 4 Base*

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VM63363	VM63409	VM63425	VM63485	VM63501	VM63504	VM63507
VM63559	VM63574	VM63593	VM63596	VM63638	VM63690	VM63755
VM63778	VM63795	VM63820	VM63885	VM63972	VM64055	VM64066
VM64117	VM64124	VM64148	VM64195			



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## Appendix B. z/VM Inclusion of FINs

In addition to the APARs identified in Appendix A, “z/VM APARs Included From Previous Release,” z/VM version 5 release 4 includes the following FIN (Fixed In Next Release) problems that were reported against previous releases and officially opened requirements. In some cases, an APAR was opened and closed with a closing code of FIN.

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### B.1 VM FINs or Requirements for all components

The following VM FINs or Requirements have been included in the z/VM version 5 release 4 base code.

*Figure 23. VM FINs included in z/VM version 5 release 4 Base*

Internal Problem ID	FIN APAR or Requirement	Description
Base code	MR0818062420	Changes the SCSIDISC EXEC to close output files
Base code	MR1128061336	Provides encryption capability for z/VM dumps
Base code	MR0213074316	Provides Layer 2 support for the TCP/IP for z/VM stack
Base code	MR1217023011	Provides Path MTU Discovery in TCP/IP for z/VM
Base Code	MR0419075712	Provides system ID option on the CP SHUTDOWN COMMAND to validate that the correct system is shutdown
Base Code	MR0225085223	Usability enhancement allowing RPCINFO (used by PORTMAPPER/NFS) to use ETC HOSTS file for host name resolution
Base Code	MR1213064413	Provides SNMP Trap Generator program usable from CMS
Base Code	MR0319076316	Provides AUTORESTART as default for OSA devices
Base Code	MR0603055731	RAS enhancements for REXECD Server
2U00291	VM64336	CMSBATCH DOES NOT PREVENT DETACH OF 19E Y-DISKds
2U00066	n/a	HCPWU2843E A stall was detected for TCP/IP control
2U00083	n/a	HCPMONEQ COPY file value for MONTSXPC is incorrect
2U00089	n/a	Deadlock: heavy system usage and > 8 VSWITCH controllers
2U00094	n/a	Document VSWITCH Controller "rules"
2U00253	n/a	"SPACE 1" -after- the HCPEPILG in HCPLGM
2U00602	n/a	Improve recovery in HCPPRF when missing interrupts are detected
2U00824	n/a	CP INDICATE command shows real xstore paging too low
2U00102	n/a	Addressing exception in LFS when vnode pointer is zero
2T0S317	n/a	NETSTAT incorrectly reporting IPv6 addresses after NETSTAT/PING
2T0R275	n/a	Update ZAP command to take 31-bit ADDRESS/DISP input
2U00128	n/a	PUT2PROD / SERVICE not come back from BLDxxx if user not MAINT
2U00277	n/a	Storage in use building CMSBAM segment
2U00363	n/a	SERVICE RESTART ENVFN fails if CMS nuc was previous failure

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## Appendix C. z/VM Object Code Only Modules

Object Code Only modules are distributed only in object code form. No source program materials are available for these modules.

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### C.1 VMSES/E Object Code Only Modules

There are no OCO modules for VMSES/E in z/VM version 5 release 4 base.

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### C.2 CP Object Code Only Modules

The following CP Object Code Only modules are ASSEMBLE source files.

Figure 24. CP OCO Assemble Modules

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HCPACL	HCPALC	HCPALE	HCPALM	HCPAPJ	HCPARP	HCPASI
HCPASM	HCPASN	HCPBIE	HCPBOT	HCPCBI	HCPCCG	HCPCCM
HCPCCN	HCPCCO	HCPCCY	HCPCWB	HCPDGE	HCPDMV	HCPDMW
HCPCESS	HCPFOB	HCPGDT	HCPGLP	HCPGMC	HCPHMS	HCPHPM
HCPHPV	HCPHTT	HCPIDX	HCPLOT	HCPIOX	HCPIPM	HCPIPQ
HCPIPP	HCPIPX	HCPIPY	HCPIQD	HCPIQE	HCPIQQ	HCPIQR
HCPKAE	HCPKAI	HCPKAP	HCPKAQ	HCPKAR	HCPKAU	HCPKEY
HCPKFC	HCPKFF	HCPKFK	HCPKFL	HCPKFR	HCPKFV	HCPKII
HCPLDF	HCPLLN	HCPLFP	HCPLFS	HCPLLT	HCPLLX	HCPMCB
HCPMCH	HCPMCI	HCPMEO	HCPMEP	HCPMFA	HCPMFB	HCPMFC
HCPMFE	HCPMFF	HCPMFG	HCPMFH	HCPMFI	HCPMFJ	HCPMFK
HCPMFL	HCPMFM	HCPMFN	HCPMFO	HCPMFP	HCPMFQ	HCPMFR
HCPMFT	HCPMFU	HCPMFV	HCPMFW	HCPMFX	HCPMFY	HCPMFZ
HCPMF1	HCPMF2	HCPMIX	HCPMPA	HCPMPC	HCPMPX	HCPMVP
HCPOFI	HCPPAB	HCPPCB	HCPPCD	HCPPCM	HCPPCQ	HCPPCR
HCPPCS	HCPPCT	HCPPCU	HCPPCV	HCPPCW	HCPPCX	HCPPFC
HCPPTY	HCPPTZ	HCPRFG	HCPRFI	HCPRID	HCPRQU	HCPSPAS
HCPSAT	HCPSDP	HCPSDQ	HCPSDU	HCPSDV	HCPSEA	HCPSED
HCPSEI	HCPSEW	HCPSGF	HCPSIT	HCPSWA	HCPSWB	HCPSWC
HCPSWD	HCPSWI	HCPSWM	HCPSWP	HCPSWR	HCPSWS	HCPSWU
HCPSYE	HCPTER	HCPTES	HCPTGD	HCPTGF	HCPTGR	HCPTPO
HCPTPS	HCPTPT	HCPTPX	HCPTRD	HCPTRF	HCPTRI	HCPTRP
HCPTRR	HCPTRW	HCPTRX	HCPTXO	HCPTZI	HCPVAI	HCPVAP
HCPVAQ	HCPVAT	HCPVLC	HCPVNS	HCPVOP	HCPVOU	HCPVPD
HCPVQA	HCPVQB	HCPVQE	HCPVQF	HCPVQG	HCPVQO	HCPVQP
HCPVQQ	HCPVQR	HCPVQS	HCPVQT	HCPVQU	HCPWAT	HCPWAU
HCPWCI	HCPWED	HCPWIS	HCPWKY	HCPWLB	HCPWLG	HCPWPR
HCPWRU	HCPWRW	HCPWSA	HCPWSI	HCPWVS	HCPWZD	HCPXDS
HCPXPG	HCPXSC	HCPXSM	HCPYCI	HCPZMG	HCPZMI	HCPZMX
HCPZSI						

The following CP Object Code Only modules are PL/X source files.

Figure 25. CP OCO PL/X Modules

HCPADQ	HCPAMR	HCPAST	HCPA2F	HCPCCS	HCPCDM	HCPCDR
HCPCDT	HCPCIO	HPCPM2	HPCPM3	HPCPM4	HPCPM5	HPCPCUP
HCPDDP	HCPDDQ	HCPDD1	HCPDEX	HCPDMC	HCPDUF	HCPDUP
HCPGIS	HCPGRB	HCPHCD	HCPHDS	HCPHSE	HCPHSR	HCPICP
HCPIDF	HCPIGA	HCPKFM	HCPMDF	HCPMDP	HCPMD1	HCPMD2
HCPMD3	HCPMD4	HCPMD5	HCPMOG	HCPMTS	HCPMXD	HCPMXW
HCPMXX	HCPMXY	HCPNFC	HCPNTP	HCPQDD	HCPQDE	HCPQED
HCPQTZ	HCPQVO	HCPQVW	HCPSTR	HCPSVI	HCPTAM	HCPTPP
HCPTTR	HCPTUP	HCPTZF	HCPTZO	HCPTZS	HCPTZT	HCPVAR
HCPVDU						

The following CP Object Code Only modules are C source files.

Figure 26. CP OCO C Modules

HCPGRR	HCPSZB	HCPSZD	HCPSZE	HCPSZG	HCPSZJ	HCPSZK
HCPSZL	HCPSZM	HCPSZN	HCPSZO	HCPSZQ	HCPSZR	HCPSZT
HCPSZW	HCPSZX	HCPSZY	HCPSZZ			

### C.3 DVF Object Code Only Modules

The following DVF Object Code Only modules are ASSEMBLE source files.

Figure 27. DVF OCO Assemble Modules

HCSAMP	HCSCLR	HCSCVT	HCSDMR	HCSDTA	HCSFRD	HCSFRI
HCSHEX	HCSIDT	HCSINT	HCSLOC	HCSMPA	HCSMPN	HCSMTA
HCSPMA	HCSUPA	HCSUPAA	HCSUPAB	HCSUPAE	HCSUME	HCSUMEA
HCSUMEB	HCSUMEE					

The following DVF Object Code Only modules are PL/X source files.

Figure 28 (Page 1 of 2). DVF OCO Modules

HCSACC	HCSACF	HCSADD	HCSADI	HCSADM	HCSADP	HCSADV
HCSAMX	HCSASF	HCSASI	HCSASW	HCSBLC	HCSBLD	HCSBLE
HCSBLF	HCSBLI	HCSBLP	HCSBLS	HCSCDT	HCSCFP	HCSCMP
HCSCMS	HCSCOM	HCSCPA	HCSCPR	HCSCPU	HCSCSP	HCSCST
HCSCVP	HCSC2D	HCSDFP	HCSDFR	HCSDID	HCSDIR	HCSDIS
HCSDSA	HCSDSC	HCSDSG	HCSDSI	HCSDSM	HCSDSP	HCSDSR
HCSDSS	HCSDST	HCSDSX	HCSDVS	HCSDXC	HCSDXI	HCSDXT
HCSD2C	HCSEDA	HCSEDB	HCSEDE	HCSEDF	HCSEDH	HCSEDI
HCSEDJ	HCSEDS	HCSEQU	HCSEXR	HCSFDS	HCSFOR	HCSFRE

Figure 28 (Page 2 of 2). DVF OCO Modules

HCSFTV	HCSGET	HCSGPA	HCSGPP	HCSGPV	HCSGSO	HCSGTR
HCSHLP	HCSHSA	HCSHSB	HCSHSC	HCSHSD	HCSHSE	HCSHSF
HCSHSG	HCSLMOVE	HCSLMP	HCSLOD	HCSMAP	HCSMIM	HCSMLK
HCSMNP	HCSMOD	HCSMPP	HCSMPR	HCSMPS	HCSMPT	HCSMSG
HCSMSG2	HCSMSR	HCSMVS	HCSNMP	HCSNOT	HCSPAR	HCSPCM
HCSPFN	HCSPID	HCSPMP	HCSPOP	HCSPRC	HCSPRI	HCSPRN
HCSPRO	HCSPRP	HCSPRT	HCSPRY	HCSPUP	HCSPVD	HCSQUI
HCSRAB	HCSRAB	HCSRFB	HCSRDB	HCSRDM	HCSRDS	HCSRED
HCSRER	HCSRIB	HCSRIF	HCSRIG	HCSRIH	HCSRII	HCSRIJ
HCSRIK	HCSRIO	HCSRIT	HCSRIX	HCSRIZ	HCSRSR	HCSSAV
HCSSCD	HCSSCI	HCSSCQ	HCSSCR	HCSSDF	HCSSSEL	HCSSHV
HCSSIO	HCSSNP	HCSSPF	HCSSPT	HCSSRC	HCSSRS	HCSSRU
HCSSTA	HCSSUB	HCSSYD	HCSSYM	HCSSYP	HCSS5U	HCSTBS
HCSTCD	HCSTES	HCSTOD	HCSTPF	HCSTRA	HCSTRC	HCSTRD
HCSTRM	HCSTRP	HCSTRR	HCSTRS	HCSTRT	HCSTSA	HCSTSC
HCSTSD	HCSTSF	HCSTSG	HCSTSK	HCSTSM	HCSTSO	HCSTSP
HCSTSS	HCSTST	HCSTSV	HCSTSX	HCSUPPER	HCSVCI	HCSVDF
HCSVFI	HCSVLF	HCSVRG	HCSVRP	HCSVUI	HCSVUT	HCSXED
HCSX2C						

## C.4 CMS Object Code Only Modules

The following CMS Object Code Only modules are ASSEMBLE source files.

Figure 29. CMS OCO Assemble Modules

AMQERROR	DMSBAESW	DMSBXMLD	DMSBXMLC	DMSBXMLV	DMSBXMLP	DMSBXMLC
DMSBXMLC	DMSBXMLP	DMSBXMLM	DMSBXMLA	DMSBXMLS	DMSBXMLS	DMSBXMLS
DMSICP	DMSINV	NM_BIND	RXMVQLT	RXMVQLT	UAMQMSGT	

The following CMS Object Code Only modules are PL/X source files.

Figure 30 (Page 1 of 4). CMS OCO PL/X Modules

AMQZASMA	AMQZASM0	AMQZASM1	AMQZASM2	AMQZASM3	AMQZASM4	AMQZASM5
AMQZASM6	AMQZASM7	AMQZASM8	AMQZASM9	DMSBAEC1	DMSBAEJ1	DMSBAEO1
DMSBAET1	DMSBAIE1	DMSBAIE2	DMSBAIS0	DMSBAIX0	DMSBAI00	DMSBAXC1
DMSBAXI1	DMSBAXO1	DMSBAXP1	DMSBAXR1	DMSBAXSD	DMSBAXS1	DMSBAXS2
DMSBAXWD	DMSBCC00	DMSBCILK	DMSBCILS	DMSBCMEX	DMSBCOPC	DMSBCOPP
DMSBCOPS	DMSBCPLS	DMSBKEI0	DMSBKTIO	DMSBLCLX	DMSBLCLO	DMSBLCL9
DMSBLDRL	DMSBLINT	DMSBLMSG	DMSBLPOF	DMSBLRLC	DMSBLSV0	DMSBXMLD
DMSBXMLSG	DMSBXMLC	DMSBXMLP	DMSBXMLS	DMSBXMLS	DMSBXMLS	DMSBXMLS
DMSBXMLS14	DMSBXMLS28	DMSBXMLS40	DMSBXMLS63	DMSBXMLS7A	DMSBXMLS1CH	DMSBXMLS1CL
DMSBXMLS1FT	DMSBXMLS1LN	DMSBXMLS1OP	DMSBXMLS1RE	DMSBXMLS1ST	DMSBXMLS1WR	DMSBXMLS2WX
DMSJMD	DMSJSD	DMSRJR	DMSZCTR	DMSZEDAT	DMSZEDCM	DMSZEDEX
DMSZEDFN	DMSZEDSK	DMSZEEHT	DMSZEFAI	DMSZEGAI	DMSZEGA2	DMSZEGHA
DMSZEGHC	DMSZEGHN	DMSZEGHT	DMSZEGH2	DMSZEGH3	DMSZEGNI	DMSZEGSN

Figure 30 (Page 2 of 4). CMS OCO PL/X Modules

DMSZEGSP	DMSZEOPN	DMSZERIN	DMSZERMQ	DMSZERQD	DMSZERQU	DMSZERSN
DMSZERSR	DMSZESHT	DMSZESMT	DMSZESRT	DMSZETRR	DMSZLOCK	DMSZPTON
DMSZSPRN	DMSZUNLO	DMS2AE	DMS2CA	DMS2CB	DMS2CC	DMS2CD
DMS2CE	DMS2LA	DMS2TA	DMS2TB	DMS2TC	DMS2TD	DMS2TE
DMS2TF	DMS2TG	DMS2TR	DMS2TX	DMS3AA	DMS3AB	DMS3AC
DMS3AD	DMS3AE	DMS3AF	DMS3AG	DMS3AH	DMS3AI	DMS3AJ
DMS3AK	DMS3AL	DMS3AM	DMS3AN	DMS3AO	DMS3AP	DMS3AQ
DMS3AR	DMS3AS	DMS3AT	DMS3AU	DMS3AV	DMS3AW	DMS3AX
DMS3AY	DMS3AZ	DMS3BA	DMS3BB	DMS3BC	DMS3BD	DMS3BE
DMS3BF	DMS3BG	DMS3BH	DMS3BI	DMS3BJ	DMS3BK	DMS3BL
DMS3BM	DMS3BN	DMS3BO	DMS3BP	DMS3BQ	DMS3BR	DMS3BS
DMS3BT	DMS3BU	DMS3BV	DMS3BW	DMS3BX	DMS3BY	DMS3BZ
DMS3CA	DMS3CB	DMS3CC	DMS3CD	DMS3CE	DMS3CF	DMS3CG
DMS3CH	DMS3CI	DMS3CJ	DMS3CK	DMS3CL	DMS3CM	DMS3CN
DMS3CS	DMS3CZ	DMS3DA	DMS3DB	DMS3DC	DMS3DD	DMS3DE
DMS3DF	DMS3DW	DMS3DX	DMS3EZ	DMS3GL	DMS3GM	DMS3LA
DMS3LB	DMS3LC	DMS3LF	DMS3MF	DMS3NA	DMS3NB	DMS3NC
DMS3ND	DMS3NE	DMS3NF	DMS3N1	DMS3N2	DMS3N3	DMS3N4
DMS3N5	DMS3N6	DMS3N7	DMS3N8	DMS3N9	DMS3OF	DMS3ON
DMS3OR	DMS3RA	DMS3RB	DMS3RC	DMS3RD	DMS3RE	DMS3RF
DMS3RU	DMS3RV	DMS3RW	DMS3SB	DMS3SC	DMS3SM	DMS3SN
DMS3SP	DMS3SR	DMS3TA	DMS3TB	DMS3TC	DMS3TD	DMS3TE
DMS3TF	DMS3TG	DMS3TH	DMS3TI	DMS3TO	DMS3TP	DMS3TQ
DMS3TR	DMS3UP	DMS3VA	DMS3VB	DMS3VC	DMS3VD	DMS3VE
DMS3WM	DMS3WR	DMS3XG	DMS3XH	DMS3XL	DMS3XM	DMS3XP
DMS3XU	DMS3XX	DMS3XZ	DMS4AA	DMS4AB	DMS4AC	DMS4AD
DMS4AE	DMS4AF	DMS4AG	DMS4AH	DMS4AI	DMS4AJ	DMS4AK
DMS4AL	DMS4AM	DMS4AN	DMS4AO	DMS4AP	DMS4AQ	DMS4AR
DMS4AS	DMS4AT	DMS4AU	DMS4AV	DMS4AW	DMS4AX	DMS4AY
DMS4AZ	DMS4BA	DMS4BB	DMS4BC	DMS4BD	DMS4BE	DMS4BF
DMS4BG	DMS4BH	DMS4BI	DMS4BJ	DMS4BK	DMS4BL	DMS4BM
DMS4BN	DMS4BO	DMS4BP	DMS4BQ	DMS4BR	DMS4BS	DMS4BT
DMS4BU	DMS4BV	DMS4BW	DMS4BX	DMS4BY	DMS4CI	DMS4CJ
DMS4CK	DMS4CL	DMS4CN	DMS4DB	DMS4DC	DMS4DD	DMS4DE
DMS4DF	DMS4DH	DMS4DI	DMS4DJ	DMS4DK	DMS4DL	DMS4DM
DMS4DN	DMS4DO	DMS4DP	DMS4DQ	DMS4DR	DMS4DS	DMS4DT
DMS4DU	DMS4DV	DMS4DW	DMS4DX	DMS4DY	DMS4DZ	DMS4EA
DMS4EB	DMS4EC	DMS4ED	DMS4EE	DMS4EF	DMS4EG	DMS4EH
DMS4EX	DMS4EY	DMS4EZ	DMS4FA	DMS4FB	DMS4FD	DMS4FE
DMS4FG	DMS4FH	DMS4FI	DMS4FJ	DMS4FK	DMS4FL	DMS4FM
DMS4FO	DMS4FP	DMS4FR	DMS4GA	DMS4GB	DMS4GD	DMS4GE
DMS4GH	DMS4GI	DMS4GJ	DMS4GK	DMS4GL	DMS4GM	DMS4GN
DMS4GO	DMS4GP	DMS4GQ	DMS4GR	DMS4GS	DMS4GT	DMS4GW
DMS4GY	DMS4GZ	DMS4HA	DMS4HC	DMS4HZ	DMS4JA	DMS4JB
DMS4JC	DMS4JD	DMS4JE	DMS4JF	DMS4JG	DMS4JH	DMS4JI
DMS4JJ	DMS4JK	DMS4JL	DMS4JS	DMS4KA	DMS4KB	DMS4KC
DMS4KD	DMS4KE	DMS4KF	DMS4KH	DMS4KI	DMS4KJ	DMS4KK
DMS4KM	DMS4KO	DMS4KP	DMS4KR	DMS4LA	DMS4LB	DMS4LC
DMS4LD	DMS4LE	DMS4LF	DMS4LG	DMS4LH	DMS4LI	DMS4LJ

Figure 30 (Page 3 of 4). CMS OCO PL/X Modules

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DMS4LK	DMS4LL	DMS4LM	DMS4LN	DMS4LO	DMS4LP	DMS4LQ
DMS4LR	DMS4LS	DMS4LT	DMS4LU	DMS4LV	DMS4LW	DMS4LX
DMS4LY	DMS4NA	DMS4NB	DMS4NC	DMS4ND	DMS4NE	DMS4NF
DMS4NG	DMS4NH	DMS4NI	DMS4NJ	DMS4NK	DMS4NL	DMS4NM
DMS4NO	DMS4NP	DMS4NQ	DMS4NR	DMS4NS	DMS4NT	DMS4NU
DMS4NV	DMS4NW	DMS4NX	DMS4ON	DMS4OP	DMS4OQ	DMS4OR
DMS4OS	DMS4OT	DMS4OU	DMS4PA	DMS4PB	DMS4PC	DMS4PD
DMS4PF	DMS4PG	DMS4PI	DMS4QA	DMS4QB	DMS4QC	DMS4QD
DMS4QE	DMS4QF	DMS4QG	DMS4QH	DMS4QJ	DMS4QK	DMS4QL
DMS4QM	DMS4QN	DMS4QO	DMS4QP	DMS4QQ	DMS4QR	DMS4QS
DMS4QX	DMS4QY	DMS4QZ	DMS4RA	DMS4RB	DMS4RC	DMS4RD
DMS4RE	DMS4RF	DMS4RG	DMS4RH	DMS4RI	DMS4RJ	DMS4RL
DMS4RM	DMS4RN	DMS4RX	DMS4RY	DMS4RZ	DMS4SB	DMS4SR
DMS4SS	DMS4SU	DMS4UA	DMS4UB	DMS4UE	DMS5AA	DMS5BA
DMS5BB	DMS5BC	DMS5BD	DMS5BE	DMS5BF	DMS5BG	DMS5BH
DMS5BI	DMS5BJ	DMS5BK	DMS5BM	DMS5BT	DMS5CA	DMS5CB
DMS5CC	DMS5CD	DMS5CE	DMS5CF	DMS5CP	DMS5CS	DMS5CV
DMS5CX	DMS5DA	DMS5DB	DMS5DC	DMS5DD	DMS5DE	DMS5DF
DMS5DG	DMS5DH	DMS5DI	DMS5DK	DMS5DS	DMS5DT	DMS5DU
DMS5FA	DMS5FB	DMS5FC	DMS5FD	DMS5FE	DMS5FF	DMS5GA
DMS5GB	DMS5GC	DMS5GD	DMS5GM	DMS5GN	DMS5GO	DMS5GR
DMS5HA	DMS5HB	DMS5HC	DMS5HE	DMS5IA	DMS5IB	DMS5IC
DMS5ID	DMS5IE	DMS5IF	DMS5IG	DMS5IL	DMS5IN	DMS5IP
DMS5JE	DMS5MA	DMS5MB	DMS5MT	DMS5MU	DMS5MV	DMS5NA
DMS5NB	DMS5NC	DMS5ND	DMS5NE	DMS5NF	DMS5PQ	DMS5PR
DMS5PS	DMS5PT	DMS5PW	DMS5PX	DMS5PY	DMS5PZ	DMS5QA
DMS5QB	DMS5QE	DMS5SB	DMS5SC	DMS5SD	DMS5SE	DMS5SF
DMS5SH	DMS5SI	DMS6LA	DMS6LB	DMS6LC	DMS6LD	DMS6LE
DMS6LF	DMS6LG	DMS6LH	DMS6LI	DMS6LJ	DMS6LK	DMS6LL
DMS6LM	DMS6LN	DMS6LO	DMS6LP	DMS6LQ	DMS6SA	DMS6SB
DMS6SC	DMS6SD	DMS6SE	DMS6SF	DMS6SG	DMS6SH	DMS6SI
DMS6SJ	DMS6SK	DMS6SL	DMS6SM	DMS6SN	DMS6SO	DMS6SP
DMS6SQ	DMS6SR	DMS6SS	DMS6ST	DMS6SU	DMS6SV	DMS7AA
DMS7AB	DMS7AC	DMS7AD	DMS7AE	DMS7AF	DMS7AG	DMS7AH
DMS7AI	DMS7AJ	DMS7AK	DMS7AL	DMS7AM	DMS7AN	DMS7AO
DMS7AP	DMS7AQ	DMS7AS	DMS7AT	DMS7AU	DMS7AV	DMS7AW
DMS7AX	DMS7BA	DMS7BB	DMS7BC	DMS7BD	DMS7BE	DMS7BI
DMS7BJ	DMS7BK	DMS7BR	DMS7BS	DMS7BX	DMS7BY	DMS7CC
DMS7CD	DMS7CE	DMS7CF	DMS7CG	DMS7CH	DMS7CI	DMS7CL
DMS7CP	DMS7CR	DMS7CS	DMS7CT	DMS7CU	DMS7CW	DMS7CX
DMS7CY	DMS7CZ	DMS7DA	DMS7DB	DMS7DC	DMS7DD	DMS7DE
DMS7DF	DMS7DG	DMS7DH	DMS7DI	DMS7LF	DMS7MC	DMS7MF
DMS7NH	DMS7RA	DMS7RB	DMS7RC	DMS7RD	DMS7RE	DMS7SI
DMS7SM	DMS7TA	DMS7TC	DMS7TD	DMS7TE	DMS7TF	DMS7TG
DMS7TI	DMS7TJ	DMS7TN	DMS7TP	DMS7TQ	DMS7TR	DMS7TS
DMS7TU	DMS7TV	DMS7TW	DMS7TX	DMS7TY	DMS7TZ	DMS7VC
DMS7WC	DMS7WU	DMS8BA	DMS8BB	DMS8BC	DMS8BD	DMS8BE
DMS8BF	DMS8BG	DMS8BH	DMS8BI	DMS8BJ	DMS8BK	DMS8BL
DMS8BM	DMS8BN	DMS8BO	DMS8BP	DMS8BQ	DMS8BR	DMS8BS

Figure 30 (Page 4 of 4). CMS OCO PL/X Modules

DMS8BT	DMS8BU	DMS8BV	DMS8BW	DMS8BX	DMS8BY	DMS8BZ
DMS8CC	DMS8CE	DMS8CF	DMS8CG	DMS8CH	DMS8CI	DMS8CJ
DMS8CL	DMS8CR	DMS8CS	DMS8CU	DMS8CW	DMS8CX	DMS8CY
DMS8CZ	DMS8C1	DMS8C2	DMS8C3	DMS8C4	DMS8DA	DMS8DB
DMS8DC	DMS8DD	DMS8DE	DMS8FX	DMS8GC	DMS8GD	DMS8GG
DMS8GM	DMS8GZ	DMS8G9	DMS8LI	DMS8LM	DMS8LS	DMS8LU
DMS8LX	DMS8LY	DMS8LZ	DMS8L1	DMS8L2	DMS8L3	DMS8L4
DMS8L5	DMS8L6	DMS8L7	DMS8L8	DMS8OV	DMS8VU	IEWBODEF
RXMQVBAK	RXMQVBDL	RXMQVBGO	RXMQVBMD	RXMQVBOD	RXMQVBPO	RXMQVBRO
RXMQVBXH	RXMQVEPA	RXMQVEVT	RXMQVGET	RXMQVHXT	RXMQVINQ	RXMQVMGO
RXMQVMMD	RXMQVMOD	RXMQVMPO	RXMQVPUT	RXMQVQSI	RXMQVSET	RXMQVSYC
RXMQVTMM						

The following CMS Object Code Only modules are C source files.

Figure 31 (Page 1 of 2). CMS OCO C Modules

ALLOENV	AMQCCCXA	AMQCCITA	AMQCCI6A	AMQCCMXA	AMQCDLLA	AMQCERRA
AMQCLIBA	AMQCMEMA	AMQCPRSA	AMQRAFNA	AMQRCDFa	AMQRCMSV	AMQRERRA
AMQREXTA	AMQRFILA	AMQRFPTA	AMQRMSSA	AMQRREQA	AMQRREQB	AMQRSCFA
AMQZSIA0	AMQZSJBX	AMQZUTR0	AR	AWK	AWK0	AWK1
AWK2	AWK3	AWK4	BASE	BASENAME	BC	BC_EXEC
BC_LEX	BC_MAIN	BCXMEM	BUFF	C_CMS	C_MALLOC	C_TEST
CATCLOSE	CATGETS	CATOPEN	CHGRP	CHMOD	CHOWN	CKSUM
CMP	CMSFILE	COMM	COMPRESS	CONFSTR	COPYRITE	CP
CPIO	CPIOFNS	CRCCCITT	CRC16	DAG	DATE	DC
DC_ADD	DC_ARRAY	DC_COM	DC_DIV	DC_ELT	DC_EXP	DC_INPUT
DC_MUL	DC_N	DC_NUM	DC_OP	DC_PARSE	DC_PRINT	DC_REL
DC_SQRT	DC_STACK	DD	DIFF	DIFFH	DIFF1	DIRNAME
DMAKE	DUMP	ECHO	ED0	ED1	ED2	ED3
ENV	EPRINTF	EXPR	FALSE	FEXECVE	FEXECVP	FNMATCH
FNS	FOLD	FSPEC	FUNCS	GENCAT	GETCONF	GETINP
GETOPT	GETPASS	GETUT	GLOB	GREP	GSUCAT	GSUCUT
GSUCXX	GSUC89	GSUFIND	GSUJOIN	GSULINK	GSUPARSE	GSUPASTE
GSUPRNTF	GSUSORT	GSUTIME	HEAD	ICONV	ID	INFER
ISABSNAM	ISWABSNA	ISYES	L_BASE	L_DFA	L_MAIN	L_OUT
LDCONV	LEX	LN	LOCALE	LOGGER	LOGGER2	LOGNAME
LP	LP2	LS	M_ARCOPY	M_ARLOOK	M_ARMEMB	M_ARNEXT
M_ARTOUC	M_AUDMOD	M_BINSRC	M_CESCAP	M_CMDNAM	M_COMP	M_CONFST
M_CRCPOS	M_CUSERI	M_DEC	M_DIRNAM	M_ERROR	M_ERRORR	M_ERRORX
M_ESCAPE	M_FGETS	M_FGETWS	M_FPUTMB	M_FSOPEN	M_FTW	M_FWOPEN
M_GETAUD	M_GROUPL	M_LLOXOP	M_LLOXSE	M_LLOXTY	M_LL0XCL	M_LOCK
M_LOXCLO	M_LOXOPE	M_LOXSEC	M_LOXSTR	M_LOXTYP	M_MALLOC	M_MBSCHR
M_MBSPBR	M_MBSRCH	M_MBSTOW	M_MBSWID	M_MKPARD	M_NAMEMA	M_NLSPAT
M_ORD	M_PATHCA	M_PATHMA	M_PSREAD	M_READDA	M_READMO	M_READNU
M_REALLO	M_SIG	M_STRDUP	M_STRMOD	M_STRMSG	M_SYMBOL	M_TEXT
M_TMPNAM	M_TOPRIN	M_VARIAN	M_WALLOW	M_WCSDUP	M_WCSSET	M_WCSTOM

Figure 31 (Page 2 of 2). CMS OCO C Modules

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M_WINSIZ	MACPARSE	MAILDATE	MAIL0	MAIL1	MAIL2	MAIL3
MAIL4	MAIL5	MAIN	MAKE	MAKE_EXP	MKDIR	MKFIFO
MKNOD	MKTEMP	MV	NEWGRP	NM	NMEXESYM	NOHUP
OD	PATH	PATHCHK	PAX	PAXFNS	PERCENT	POPEN
PORT	PR	PS	PUTENV	PWD	QUIT	REG
REGCOMP	REGDOSBA	REGDOSUB	REGERROR	REGEX	REGEXEC	RM
RMDIR	RULES	RULETAB	RULPARSE	SED0	SED1	SED2
SH	SHBLTIN	SHBUF	SHDATE	SHFORK	SHMVS	SHSTAT
SH1	SH2	SH3	SH4	SH5	SH6	SH7
SH8	SH9	SLEEP	SNASTUBS	SSIGNAL	STAT	STRBTOK
STRDSTR	STRDUP	STRING	STRIP	STRSAN	STRTOCOL	STTY
STUBS	SU	SUFFIX	SWAB	SWAW	SYM	SYSINTF
SYSTEM	TAIL	TAR	TARFNS	TEE	TEMPNAM	TOUCH
TR	TRUE	TSMAIL	TTY	ULIMIT	UNAME	UNCOMPRES
UNIQ	UPDATE	VAR	WC	WORDEXP	XARGS	XMEM
Y_CLOSE	Y_CONF	Y_COPYP	Y_ECHO	Y_EPRED	Y_ERROR	Y_EXTERN
Y_GOTO	Y_GRAM	Y_INIT	Y_ITEM	Y_LALIST	Y_LALR	Y_LEX
Y_LLIST	Y_MAIN	Y_MEM	Y_NEWR	Y_NEWSYM	Y_NULL	Y_PRED
Y_PUTD	Y_SET	Y_SETI	Y_SETP	Y_SGEN	Y_SIG	Y_SQUEEZ
Y_STATE	Y_TAB	Y_TGEN	Y_TOPT	Y_TWRITE	Y_USELES	Y_WRAPUP
YYCOMMNT	YYERROR	YYMAIN	YYMAPCH	YYWRAP		

---

## C.5 VM/REXX Object Code Only Modules

There are no OCO modules for VM/REXX in z/VM version 5 release 4 base.

## C.6 GCS Object Code Only Modules

There are no OCO modules for GCS in z/VM version 5 release 4 base.

## C.7 TSAF Object Code Only Modules

There are no OCO modules for TSAF in z/VM version 5 release 4 base.

## C.8 AVS Object Code Only Modules

The following AVS Object Code Only modules are PL/X source files.

Figure 32 (Page 1 of 2). AVS OCO PL/X Modules

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AGWACF	AGWACS	AGWACT	AGWCMC	AGWCMD	AGWCMF	AGWCMH
--------	--------	--------	--------	--------	--------	--------

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Figure 32 (Page 2 of 2). AVS OCO PL/X Modules

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AGWCMJ	AGWCMQ	AGWCTR	AGWDGW	AGWDSP	AGWEOT	AGWFAS
AGWGAB	AGWGGW	AGWGMD	AGWGSP	AGWIIS	AGWINI	AGWIOM
AGWIUE	AGWMGM	AGWOLM	AGWPGT	AGWSET	AGWTIM	AGWTRM
AGWTRS	AGWUSM	AGWVAF	AGWVBC	AGWVCB	AGWVCC	AGWVCP
AGWVDA	AGWVFD	AGWVGB	AGWVIP	AGWVMC	AGWVME	AGWVMF
AGWVMP	AGWVMR	AGWVMS	AGWVMX	AGWVMY	AGWVPS	AGWVRA
AGWVRC	AGWVRM	AGWVRS	AGWVRT	AGWVRX	AGWVTA	AGWVTB
AGWVTC	AGWVTD	AGWVTE	AGWVTF	AGWVTP	AGWVTS	AGWVTT
AGWVTX	AGWZAM	AGWZCV	AGWZDS	AGWZEN	AGWZEX	AGWZGC
AGWZGW	AGWZMA	AGWZMN	AGWZMO	AGWZRS	AGWZSG	AGWZTD
AGWZTE	AGWZTF	AGWZTO	AGWZTR	AGWZTS	CSIYTXEB	

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## C.9 Language Environment Object Code Only Modules

All of Language Environment is Object Code Only, except for the supplied sample files.



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RATING SCALE					
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Installation Verification Programs	1	2	3	4	5	N
Time to install the product	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
Ease of getting the system into production after installation	1	2	3	4	5	N

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