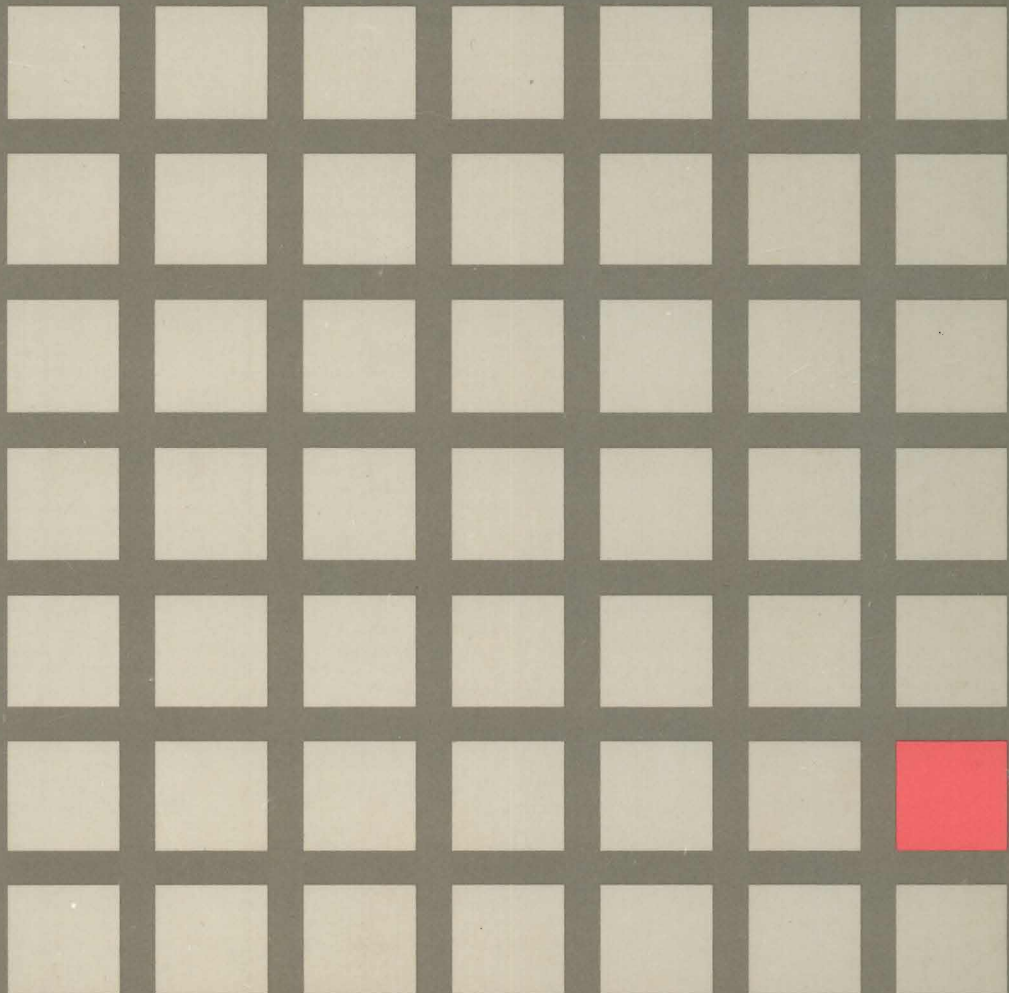




**Developing An Application :
Related Documentation**

5.1





Developing An Application : Related Documentation

5.1

Second Edition (May 1988)

This edition, SC24-5306-01, applies to the VM/Integrated System that is based on Release 5.1 of VM/Integrated System BASE (Program 5664-301). This edition applies to all subsequent releases until otherwise indicated in new editions. Changes are periodically made to the information herein; before using this publication in connection with the operation of IBM systems, consult the latest *IBM System/370, 30xx, 4300, and 9370 Processors Bibliography*, GC20-0001, for the editions that are applicable and current.

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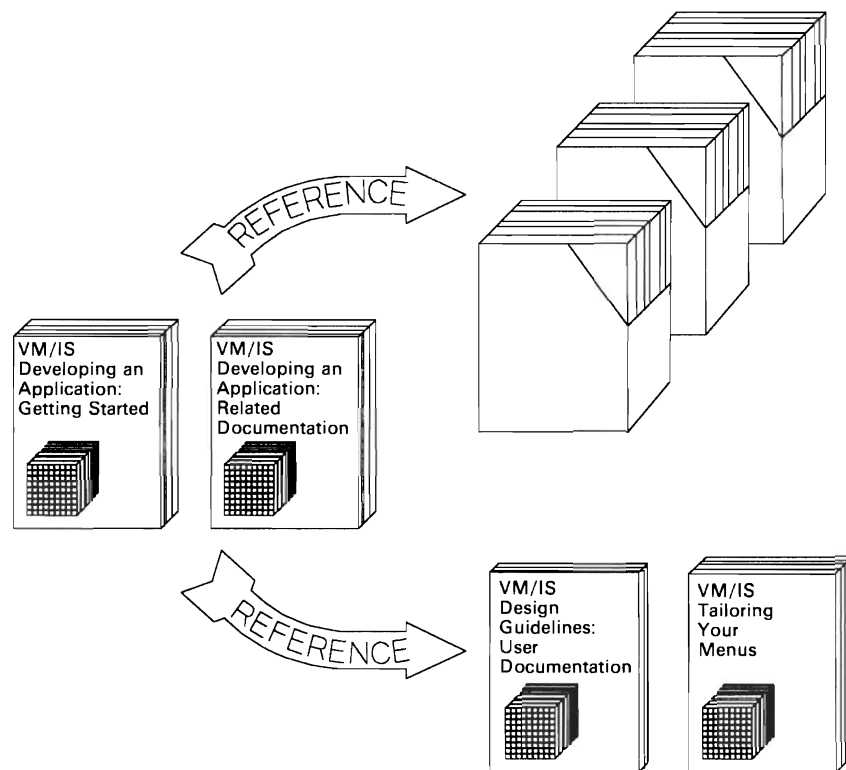
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About The Developing an Application Series

To help you create applications for the VM/Integrated System (VM/IS), IBM has many publications that contain application development information about the products and functions of VM/IS. These publications contain the information you need to help you plan, design, code, test, package, and document specialized applications.

Two publications, *Developing an Application: Related Documentation* and *Developing an Application: Getting Started* act as focal points to these publications. The following figure illustrates how these publications direct you to the VM/IS library and some key publications that you may need throughout the development of your application.



This publication, *Developing an Application: Related Documentation*, is intended to help you design and integrate software packages for VM/Integrated System (VM/IS). It lists many of the IBM documents to which you may need to refer, making the researching of VM/IS application interface information easier.

Developing an Application: Getting Started helps you design and integrate software packages for VM/Integrated System (VM/IS). It introduces the VM/IS system, its products, and its concepts and provides guidelines for packaging an application program. The book discusses tasks associated with developing an application package within the framework of VM/IS and describes special considerations for developing an application to work with a specific package or product.

Who Uses this Book

This book is for application programmers and planners who need to locate information to help them understand how to integrate their applications into VM/IS.

How to Use this Book

This book lists IBM reference publications and provides keys to each book that indicate the specific types of information that a programmer may need. The task-oriented view of the library is designed to help you find the information you need at any given stage of your program development cycle.

Each chapter deals with one of the major tasks or steps that you might perform to produce an application. Within each chapter or task, the subtasks of the program development cycle are shown as reference keys; each book listed is keyed with the type(s) of interface information it contains. A task-specific description of the contents of each book is included after its reference key notation. The subtask reference keys are intended to let you see at a glance the kind of information the book contains. This cuts down the time you need to spend reading about, instead of using, the information.

The subtask reference keys are defined near the beginning of each chapter and are shown at the bottom of the odd-numbered pages. The subtask reference keys look like this:

ESR **I/O** **P&C** **TD**

To determine the books that deal with the topic you are researching, you can:

- Note the manuals in the appropriate chapter that are keyed with the subtask(s) you are researching
- Refer to the index under the appropriate product listing
- Refer to the index under the task and subtask you are researching.

Appendix B, “The Interface Information Publications,” lists the product manuals referred to in this manual. Specifically, it includes manual numbers for use with VM/IS 5.1.

Please note that the information provided in this manual about the products that make up VM/IS is for guidance only. Specific product information is subject to change, and is only completely reflected in each product’s library of manuals. For the definitive descriptions of a product’s interfaces, data sets, macros, and other product information available for your use, always refer to the manuals provided with that product.

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Stages in Developing a VM/Integrated System Application

Chapter 1. Planning for VM/Integrated System Application Development

To develop a good plan of action, you should know as much as possible about the system with which you are working.

To plan a VM/Integrated System (VM/IS) application successfully, you should:

- Understand the system architecture and the tailorable files, including:
 - The USER DIRECT file
 - The DMKRIO ASSEMBLE file
 - The DMKSNT ASSEMBLE file
 - The DMKSYS ASSEMBLE file.
- Understand the system resources that are available for your application. You should consider the following:
 - The amount of virtual storage required to run your application
 - Recovery if a user runs the application with insufficient virtual storage
 - The amount of DASD storage required for your application
 - The amount of processor time required to run your application.
- Consider the design of the file and data structure of your applications. If you are using other applications, understand the file and data structures used by those applications.
- If you decide to use the resources of other applications, understand how to transfer data to and from those applications.
- If you decide to use the resources of other applications or require specific pieces of hardware, make sure that the applications or hardware satisfy your project's needs. Make sure that the customer is aware of the additional requirements to run your application.
- Be aware of the languages, tools, and utilities available with VM/IS to assist you in designing and building your application. Plan to use as much of the available resource as you can to make your job easier.
- Understand how to modify the VM/IS interface to include your application. Understand how to modify (if necessary) the tailorable parts of other applications to improve performance.
- Plan your methods of communication in the following areas:
 - The user interface
 - The operating system (VM/SP)
 - Other applications
 - Other systems.
- Be aware of the security offered by VM/IS and its component products and plan for additional security if your application handles data of a sensitive nature.
- Plan a backup and recovery strategy against the time when the system, the application, or the hardware fails, causing loss of data.
- Establish and update a project schedule. Try to estimate the time needed to complete individual sections or phases of your project. Set target dates for completing each section of the project and for completing the project itself.

This chapter discusses VM/IS and what you might need to know to begin planning for application development. In addition, *Developing Applications with AS*, SH45-5005-1, contains information that leads application developers through all necessary steps to produce an application. Currently this book is extensively used by non-IBM software development companies.

Reference Keys Used

The following list shows the reference keys used in this chapter and describes the type of information indicated by each key. This information is discussed in detail in *Developing an Application: Getting Started*.

Ref. Key	Type of Information
DR	<i>Data Recovery.</i> This key indicates publications that can help you to understand the recovery features available and help you ensure that they are adequate for your application.
ESR	<i>Estimating System Resources.</i> This key indicates publications that can help you to make accurate system resource estimates (for example, how much storage and processor time your application might require).
FDS	<i>Required File and Data Structures.</i> The application that you are developing might require the use of specific data file structures. Your application might also use the existing file and data structures created by products packaged in VM/IS. This key indicates publications that contain information about such structures.
I/O	<i>Input and Output Routines, Facilities, and Techniques.</i> This key indicates publications that discuss facilities and techniques for controlling input and output operations.
LTU	<i>Languages, Tools, and Utilities.</i> This key indicates publications that introduce you to the languages, tools, and utilities that you can use to develop your application.
MC	<i>Methods of Communication.</i> VM/IS provides several communication vehicles that allow you to pass data from one virtual machine to another, or from one physical device to another. This key indicates publications that contain information about these methods of communication.
P&C	<i>System Prerequisites and Corequisites.</i> Many of the products packaged under VM/IS have specific operating requirements. For many of these products to run properly, they must interact with other products. This key indicates manuals that discuss product dependencies.
SA	<i>System Architecture.</i> This key indicates publications that discuss the system architecture and the way it interacts with other products in VM/IS. It also indicates publications discussing ways you can change the operating environment to suit your needs.
SF	<i>System Security Features.</i> Many of the VM/IS products provide security features that allow you to restrict access to certain data and utilities. This key indicates publications that discuss these features.

Ref. Key	Type of Information
TD	<i>Transferring Data between Products.</i> Many of the VM/IS products provide specific paths of data transfer or an interface to one or more of the products of VM/IS. This key indicates publications that contain information about data transfer paths.
TPI	<i>Tailorable Product Interfaces.</i> Many of the VM/IS products are open-ended, allowing you to enhance or modify the basic operation of these products. This key indicates publications that can help you understand which products are tailorable and what the tailorable interfaces are.

Advanced Communications Function for the Virtual Telecommunications Access Method V3R1.2 (ACF/VTAM)

- *Network Program Products Planning*

ESR **P&C** **TPI**

This manual helps you plan a network containing VTAM, Advanced Communications Function for the Network Control Program (NCP), Advanced Communications Function for the System Support Program (SSP), and NetView. It discusses planning, installation, customization, and resource definition for single domain, multiple-domain, and interconnected networks. After reading this book, system planners can select the options that best suit the needs of their businesses.

- *Network Program Products Storage Estimates*

ESR **P&C**

This manual describes how to determine storage required for VTAM, NCP, SSP, and NetView.

Application System (AS)

- *Developing Applications with AS*

FDS **I/O** **LTU** **TPI**

This manual discusses all aspects of developing an application. It includes defining the application, getting information into the application, processing the information, getting the information out, controlling the flow of data, and documenting, testing, refining and installing applications.

- *Application System General Information*

LTU

This manual describes the facilities and features of Application System.

DR Data Recovery	FDS File and Data Structure	MC Methods of Communication	SF System Security Features
ESR Estimating System Resources	I/O Input/Output Routines and Facilities, and Techniques	P&C System Prerequisites and Corequisites	TD Transferring Data between Products
	LTU Languages, Tools and Utilities	SA System Architecture	TPI Tailorable Product Interfaces

- *Application System Reference*

I/O

This manual discusses input and output procedures.

- *Using Application System*

I/O **LTU** **TPI**

This manual describes AS as a programming language. It discusses input and output routines, using AS with SQL/DS, using non-AS data files, and tailoring panels and menus.

Cooperative Viewing Facility Version 2 (CVIEW)

- *Cooperative Viewing Facility Version 2 Guide*

ESR **LTU** **SA**

This manual provides a technical overview of the way CVIEW allows a number of users to share an interactive VM session.

Cross System Product/Application Development (CSP/AD)

- *Cross System Product/Application Development and Cross System Product/Application Execution General Information*

ESR **P&C**

This manual helps you determine the function of the products and the prerequisites needed to make them work at your installation.

- *Cross System Product/Application Development and Cross System Product/Application Execution System Administration*

DR **ESR** **FDS** **I/O** **LTU** **MC** **P&C** **SA** **SF** **TD** **TPI**

This manual provides information essential to planning for this product. It deals with the initial process of setting up the necessary files and procedures for beginning Cross System Product production.

- *Cross System Product/Application Development Operation-Development*

DR **I/O** **LTU** **MC** **P&C** **SF** **TD** **TPI**

This manual helps you to create, change, and maintain Cross System Product applications.

- *Cross System Product/Application Development Reference*

I/O **LTU**

This manual lists all the language elements available for developing Cross System Product applications. It defines the elements and discusses their purpose and use. It discusses the effects of execution on each element in the supported environment.

Cross System Product/Application Execution (CSP/AE)

- *Cross System Product/Application Development and Cross System Product/Application Execution General Information*

ESR **P&C**

This manual helps you determine the function of the products and the prerequisites needed to make them work at your installation.

- *Cross System Product/Application Development and Cross System Product/Application Execution System Administration*

DR **ESR** **FDS** **I/O** **LTU** **MC** **P&C** **SA** **SF** **TD** **TPI**

This manual provides information essential to planning for this product. It deals with the initial process of setting up the necessary files and procedures for beginning Cross System Product production.

Customer Information Control System/Virtual Machine (CICS/VM)

- *CICS/VM Application Programming*

FDS **I/O** **LTU** **TD**

This manual is for CICS application programmers who want to know how to develop CICS/VM application programs. Applications can be developed either from scratch or by modifying existing CICS/VS applications.

- *CICS/VM System Support and Administration*

DR **ESR** **FDS** **MC** **P&C** **SF** **TD** **TPI**

This manual tells you how to set up CICS/VM and make applications available to end-users. It covers prerequisites and corequisites, estimating system resources, setting run-time parameters, defining resources, performance considerations, security features, data recovery considerations, enabling access to data shared by multiple users, enabling access to data on remote systems, and supporting application development.

Data Base Edit Facility for VM/SP CMS (DBEDIT)

- *Data Base Edit Facility for VM/SP CMS Program Description/Operations Manual*

ESR **FDS** **LTU** **I/O** **MC** **P&C** **TPI**

This manual is for data base administrators and programmers responsible for installing, administering, and maintaining DBEDIT. It provides an overview of the DBEDIT program reference material about the DBEDIT modules. It includes installation procedures. It includes information on the use of DBEDIT as a subprogram of a higher-level application program.

FDS File and Data Structure	MC Methods of Communication	SF System Security Features
DR Data Recovery	I/O Input/Output Routines and Facilities, and Techniques	P&C System Prerequisites and Corequisites
ESR Estimating System Resources	LTU Languages, Tools and Utilities	SA System Architecture
		TD Transferring Data between Products
		TPI Tailorable Product Interfaces

- *Data Base Edit Facility User's Guide*

I/O **TPI**

This manual is for data entry clerks, terminal operators, secretaries, and other personnel without detailed data processing knowledge. It shows how to use DBEDIT and how to tailor the application panels by using predetermined “edit rules.”

Data Extract (DXT)

- *Data Extract Version 2: Features Planning and User's Guide*

ESR **I/O** **P&C** **SF** **TD** **TPI**

This manual discusses planning and administrative tasks for running the Data Extract Manager. It provides information on estimating storage for EXTLIB and FDTLIB and on writing Generic Data Interface exits.

- *Data Extract Version 2: Reference*

LTU

This manual provides the syntax and description for each DXT command.

DisplayWrite/370

- *DisplayWrite/370 Installation and Administration VM/CMS*

MC

This manual describes how to call DisplayWrite/370 from other applications.

- *Using CLISTs with DisplayWrite/370*

TD

This manual describes the commands and parameters used to call other programs with a command list (CLIST).

Environmental Record Editing and Printing Program (EREP)

- *Environmental Record Editing and Printing Program User's Guide and Reference*

ESR **FDS** **I/O** **MC** **P&C** **TD** **TPI**

This manual gives a general overview to EREP and covers the following topics: setting up and running EREP jobs, reference information, and product dependent information. It is the only external manual for EREP.

Graphical Data Display Manager Version 2 (GDDM)

- *GDDM Release Guide*

I/O **P&C** **TPI**

This manual describes the new function available in GDDM Version 2.

- *GDDM Performance Guide*

ESR

This manual provides guidelines on GDDM storage requirements.

Graphical Data Display Manager with the Presentation Graphics Feature (GDDM-PGF)

- *GDDM Release Guide*

I/O **P&C** **TPI**

This manual describes the new function available in GDDM-PGF Version 2.

IBM System/370 to IBM Personal Computer Enhanced Connectivity Facilities CMS Servers-Requesters (ECF Servers-Requesters)

- *Introduction to IBM System/370 to IBM Personal Computer Enhanced Connectivity Facilities*

ESR **P&C** **SA**

This manual gives an overview of ECF architecture, including requesters and servers, routers, the server-requester programming interface, and communications programs. It also contains a complete list of the hardware and software required for installing and using the ECF Server-Requesters.

- *IBM Enhanced Connectivity Facilities TSO/E Servers and CMS Servers Installation Planning and Programmer's Guide*

ESR **TPI**

This manual tells how to plan for the installation of ECF Servers-Requesters on your system. It includes the following topics: determining requirements for system disk space, user disk space, discontinuous shared segments (DCSS), and virtual storage; planning for Structured Query Language/Data System (SQL/DS); and planning for national language support. It describes user exits for ECF Servers-Requesters data transmission.

- *IBM Enhanced Connectivity Facilities PC Requesters Reference*

TPI

This manual includes information about using disk operating system (DOS) interrupt handling to perform ECF Servers-Requesters tasks within an application program.

IBM 3270 PC File Transfer Program

- *IBM 3270 Personal Computer Control Program User's Guide and Reference*

TD

This manual describes ways of transferring files between a personal computer and VM/IS.

DR Data Recovery	FDS File and Data Structure	MC Methods of Communication	SF System Security Features
ESR Estimating System Resources	I/O Input/Output Routines and Facilities, and Techniques	P&C System Prerequisites and Corequisites	TD Transferring Data between Products
	LTU Languages, Tools and Utilities	SA System Architecture	TPI Tailorable Product Interfaces

IBM 3812 Pageprinter VM Support (VM3812)

- *VM3812-IBM 3812 Pageprinter Support User's Guide*

FDS **SA**

This manual describes the VM3812 service machine processing, the user interface, and the file types supported.

- *VM3812-IBM 3812 Pageprinter Support Installation Guide*

DR **FDS** **P&C** **SF** **TPI**

This manual describes VM3812 INITS file and SHIDS EXEC (used to define printer resources, paper types, security titles, and operator commands that modify the operation of the system).

- *VM3812-IBM 3812 Pageprinter Support Application Programmer's Guide*

FDS **I/O** **MC** **TD**

This manual describes the input file formats for composed page data stream (CPDS), listing, and image data types.

Interactive System Productivity Facility (ISPF)

- *ISPF Dialog Management Guide*

FDS **I/O** **LTU** **TD**

This manual provides an overview of ISPF functions. It includes information on using the management service. It describes how to define ISPF data elements (such as panels and messages) and the way these elements reside in ISPF. It includes information on specifying graphic areas (to contain pictures or graphs generated by GDDM) within an ISPF panel.

- *ISPF and ISPF/PDF Installation and Customization*

TPI

This manual describes the parts of ISPF/PDF that you can tailor.

- *ISPF Dialog Management Services and Examples*

I/O **LTU** **TD**

This manual lists the services available with ISPF. For each service, the manual includes a syntax diagram, a brief description, parameter definitions, and return codes. It includes information on using GDDM with ISPF.

Interactive System Productivity Facility/Program Development Facility (ISPF/PDF)

- *ISPF/PDF Guide*

LTU

This manual provides a general overview of ISPF/PDF. It lists the programming languages supported under ISPF. It explains how to customize your terminal characteristics and output listing formats. It discusses the various options available with ISPF/PDF.

- *ISPF and ISPF/PDF Installation and Customization*

TPI

This manual describes the parts of ISPF/PDF that you can tailor.

NetView

- *Network Program Products General Information*

LTU MC P&C SA TPI

This manual provides an overview of a telecommunications network operating with VTAM, NCP, SSP, NetView, and NetView/PC. It describes the major tasks involved in using these products and contains information on hardware and software requirements.

- *Network Program Products Planning*

FDS I/O LTU MC P&C SA TD TPI

This manual describes how to plan a network containing VTAM, NCP, SSP, and NetView. It discusses planning, installation, customization, and resource definition for single domain, multiple-domain, and interconnected networks.

- *NetView Installation and Administration Guide*

FDS I/O LTU P&C TPI

This manual helps system programmers install and prepare the NETVIEW® Program for operation. It contains information on defining a production network to the NetView® Program and verifying that it functions properly.

- *Automated Operations Planning Guide*

MC P&C SA TPI

This manual is for system planners and system programmers who are developing a strategy for network automation using NetView. It covers an assortment of planning tasks, such as learning what automated operations are, deciding which network components can be automated, and identifying repetitive operator tasks.

- *Network Program Products Storage Estimates*

ESR P&C

This manual is intended for data processing managers, system designers, system programmers, and network planners. It contains worksheets for those individuals responsible for calculating storage requirements for the NetView® Program.

FDS File and Data Structure

MC Methods of Communication

SF System Security Features

DR Data Recovery

I/O Input/Output Routines and Facilities, and Techniques

P&C System Prerequisites and Corequisites

TD Transferring Data between Products

ESR Estimating System Resources

LTU Languages, Tools and Utilities

SA System Architecture

TPI Tailorable Product Interfaces

- *NetView Hardware Problem Determination Reference*

DR **LTU**

This manual provides alert information beyond that offered in the NetView panels. (The NetView panels are shipped with the NetView product tape.) It is designed to assist system programmers, help-desk operators, and network operators determine the specific component that is causing the alert. It includes formats of trace records sent to NetView from the products that NetView supports.

- *Network Program Products Samples*

MC **SA**

This manual describes a sample SNA network that is operated and managed through VTAM, the NetView® Program, and NCP/SSP. It contains samples that network planners and system programmers can use as a base for expanding an existing network or for building a new network.

Professional Office System (PROFS)

- *Planning for and Installing the Professional Office System*

ESR **MC** **P&C** **TPI**

This manual includes steps to follow to prepare for installation of PROFS and steps for the actual installation. A “cookbook” approach to arranging installation subjects in major segments permits you to easily follow directions for installation of the applications.

- *Professional Office System Programmer's Guide*

FDS **LTU** **SA** **SF** **TPI**

This manual provides an overview of PROFS and its relationship to the VM system. It discusses problem determination aids, source file information, and ways of coding user exits.

PROFS Notelog Maintenance Facility

- *LOGLIST PROFS Note Maintenance Facility Program Description/Operations Manual*

LTU

This manual contains the program description and operating procedures for the PROFS Notelog Maintenance Facility.

Query Management Facility for VM/SP (QMF/VM)

- *QMF: Application Development Guide for VM/SP*

FDS **TD** **TPI**

This manual describes what QMF applications are and what QMF provides in the way of application aids. These aids let you transfer data to and from QMF, tailor the QMF environment, and imbed QMF commands in the application components.

- *QMF: Planning and Administration Guide for VM/SP*

ESR **P&C** **SF** **TPI**

This manual discusses the administration environment under which QMF applications run and includes administrative ways of enhancing your QMF environment.

Remote Spooling Communications Subsystem (RSCS)

- *RSCS Diagnosis Reference*

MC **SA**

This manual provides a general overview of RSCS and its relationship to VTAM and Group Control System (GCS). It discusses the differences between System Network Architecture (SNA) and non-SNA connections. It includes a functional description of task structure and control, the RSCS control program, RSCS operation, and VTAM service use. It discusses the management of VTAM sessions. It provides intermediate detail of the logic of all the RSCS modules.

- *RSCS Exit Customization*

LTU

This manual discusses using the RSCS exit facilities to customize RSCS.

- *RSCS Operation and Use*

FDS **I/O** **LTU**

This manual defines all the RSCS commands and discusses the relationship of SPOOL and TAG commands to RSCS. It discusses parameters used when defining a link or starting a predefined link. It discusses the configuration file and the LINK and ROUTE tables defined by the configuration file, and the way RSCS uses them.

- *RSCS Planning and Installation*

ESR **I/O** **LTU** **MC** **SA** **TPI** **TD**

This manual provides a general overview of the nature and operation of RSCS and of SNA and non-SNA networks. It discusses the changes to VM/SP and VTAM needed for installing RSCS, and provides information about the calculation of storage requirements.

It deals with the PROFILE GCS, starting RSCS, and the starting of individual links. It describes the creation and use of user exits. It discusses using links, routes, and verification to customize RSCS. It discusses using EXEC procedures and Conversational Monitor System (CMS) commands to reduce the chance of error. It discusses using Configuration File statements to define the nature of the local RSCS system and its view of the network.

FDS File and Data Structure

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SA System Architecture

TPI Tailorable Product Interfaces

Structured Query Language/Data System (SQL/DS)

- *SQL/Data System Application Programming for VM/SP*

I/O **LTU**

This manual describes how to code a program in SQL/DS. It discusses using SQL/DS in the programming environment.

- *SQL/Data System Concepts and Facilities for VM/SP*

DR **FDS** **LTU** **SA** **SF**

This manual provides a general overview of the concepts involved in an SQL/DS data base. It describes the functional ideas of SQL/DS and shows methods of using SQL/DS. It includes information of interest to application programmers and data base administrators, such as data security, catalogs, concurrent access, data recovery, initialization, performance, and service aids and facilities. It includes detailed information about data base structure, generation, and expansion.

- *SQL/Data System Data Base Planning and Administration for VM/SP*

DR **SF**

This manual describes the security features of SQL/DS. It discusses data recovery support available in the case of application failures or user logic errors.

- *SQL/Data System Data Base Services Utility for VM/SP*

I/O **LTU**

This manual introduces the Data Base Services Utility (DBSU) and describes its function. It includes information about the loading and processing of data. It describes how to invoke DBSU from programs written in other languages.

- *SQL/Data System Diagnosis Reference for VM/SP*

I/O **LTU**

This manual provides an overview of the operations involved in running SQL/DS.

- *SQL/Data System Installation for VM/SP*

ESR **MC** **P&C**

This manual specifies the minimum minidisk space requirements and virtual machine requirements for SQL/DS. It lists the prerequisite program products needed to run SQL/DS. It discusses using Inter-User Communications Vehicle (IUCV) to allow or prevent communication between the SQL/DS virtual machine and other virtual machines.

- *SQL/Data System System Planning and Administration for VM/SP*

DR **ESR** **FDS** **P&C** **SF**

This manual summarizes the hardware, software, and storage requirements for SQL/DS. It outlines the defining and generating of new data bases. It discusses maintaining data base security. It describes facilities available for recovery from system failures and direct access storage device (DASD) failures.

Transmission Control Protocol/Internet Protocol for VM (TCP/IP)

- *IBM Transmission Control Protocol/Internet Protocol for VM Installation and Reference Manual*

ESR **I/O** **MC** **P&C** **SA** **TPI**

This manual includes information about the loading, setup, and customizing of TCP/IP for VM on your system. It contains information on the training or education that might be needed for maintaining system EXEC procedures.

Virtual Machine Monitor Analysis Program (VMMAP)

- *VM Monitor Analysis Program User's Guide and Reference*

ESR

This manual shows how to measure current system resources. Knowing the current state of the system enables you to identify potential system bottlenecks that may hinder some phase of the development of the application.

Virtual Machine Real Time Monitor (VM/RTM)

- *VM Real Time Monitor Program Description/Operations*

ESR

This manual shows how to measure current system resources. Knowing the current state of the system enables you to identify potential system bottlenecks that may hinder some phase of the application development.

Virtual Machine/File Storage Facility (VM FSF)

- *Virtual Machine/File Storage Facility Program Description/Operations Manual*

FDS **LTU** **P&C** **SF** **TPI**

This manual provides an overview of VM FSF as a manager of disk space and files. It describes the record formats of files created by VM FSF. These files can identify all data files stored by VM FSF that were updated, provide accounting information for disks lent to users, and maintain a log of all VM FSF commands and system responses. It describes the storing, retrieving, and sharing of data from "libraries" indexed in a hierarchical manner.

It shows how VM FSF allows users to borrow formatted disk space for specific periods of time, with protection of the disk space and its contents between sessions and across host-system program starts.

It describes the password security features of VM FSF.

It describes the two user exits from the VM FSF control program as well as the customizing options available with VM FSF.

It describes the use of system operations with VM FSF. It describes the role of RSCS when VM FSF is set up to transmit data files among remote VM FSF nodes.

FDS File and Data Structure

MC Methods of Communication

SF System Security Features

DR Data Recovery

I/O Input/Output Routines and Facilities, and Techniques

P&C System Prerequisites and Corequisites

TD Transferring Data between Products

ESR Estimating System Resources

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SA System Architecture

TPI Tailorable Product Interfaces

Virtual Machine/System Product (VM/SP)

- *Programmer's Guide to the Server-Requester Programming Interface for VM/System Products*

LTU **P&C** **SA**

This manual lists prerequisites for using the IBM Enhanced Connectivity Facility (ECF Servers-Requesters) in the VM/SP environment. It includes a list of languages supported for the host (VM/SP). It describes the use of ECF Servers-Requesters under VM/SP and shows how a supplier of applications might want to package the server(s).

- *VM Diagnosis Guide*

TPI

This manual includes detailed specifications for the control register allocation and control register assignments.

- *VM/SP Application Development Guide*

DR

This manual describes how to use the AUTOSAVE function of the System Product Editor to help prevent data loss when editing files.

- *VM/SP CMS for System Programming*

TPI

This manual explains register use, save area structuring, and control block relationships that you should understand before you change CMS. It describes how to add an auxiliary directory to reference modules located on any read-only CMS disk. It lists and describes the various CMS macros.

- *VM/SP CMS User's Guide*

FDS **TPI**

This manual explains CMS file formats, CMS file directories, naming of CMS files, and managing your CMS disks. It also describes ways you can tailor HELP files or menus.

- *VM/SP CP for System Programming*

I/O **TPI**

This manual explains the various timing facilities available with the VM/370 Control Program (CP). It explains the way to change command classes and the way to add a command to the VM/SP control program.

It discusses inserting your own accounting procedures into the system. It lists conventions for format, register use, module names, error messages, and other information needed to modify CP. It discusses fetch and storage protection for real storage and protection for shared segments. It describes the VM/SP monitor records; the data in these records is collected sequentially each time a monitor call interrupt occurs.

It describes the DASD Dump Restore (DDR) program and how to use it to dump, restore, print, and display data.

- *VM/SP Installation Guide*

TPI

This manual describes general service concepts for VM/SP. It includes: types of service, using the MAINT virtual machine to update VM/SP, accessing the minidisks required for loading service, updating and building, and module identifiers. It includes an overview of the programs available for servicing VM/SP.

It explains the updating of VM/SP products maintained by updating source statements and reassembling them into object files and the updating of VM/SP products maintained by full replacements. It discusses considerations and recommended procedures for updating service programs, CMS modules, printer modules, programmable operator modules, the Interactive Problem Control System (IPCS), and the VSE/VSAM and CMSDOS shared segments.

It provides command formats and detailed descriptions of all system generation and service EXEC procedures and commands.

- *VM/SP Introduction*

LTU SA SF

This manual explains the concepts of a virtual machine, as well as paging, spooling, and minidisks. It describes the development of application programs under CMS, including debugging and running programs in batch mode.

It describes CP functions such as the system directory, CP commands, the Inter-User Communication Vehicle (IUCV), and defining hardware configurations. It explains CMS functions such as CMS commands and subcommands, the PROFILE EXEC, command language (EXEC) procedures, the System Product Editor (XEDIT), the CMS file system, help facilities, and the console stack.

It describes applications for VM/SP, including programming language products, connectivity, and personal computers and their relationship to VM/SP. It includes discussions of security features such as the privilege classes for CP commands, user IDs and passwords, storage keys to protect information in real storage, and protecting shared segments of storage that another virtual machine has modified.

- *VM/SP Planning Guide and Reference*

ESR SA TPI

This manual describes such topics as CMS storage requirements, CMS libraries, disk and file management, system macro and text libraries, disk and file management, tape support, and saving copies of CMS. It also defines minidisks, how they are allocated and labeled, and how they can be shared. It discusses estimating the real storage requirements for VM/SP. It discusses estimating storage requirements for direct access, CMS minidisks, Group Control System (GCS), and the VM/SP directory. It describes ways of reducing the size of the CP nucleus.

FDS File and Data Structure	MC Methods of Communication	SF System Security Features
DR Data Recovery	I/O Input/Output Routines and Facilities, and Techniques	P&C System Prerequisites and Corequisites
ESR Estimating System Resources	LTU Languages, Tools and Utilities	SA System Architecture
		TD Transferring Data between Products
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It defines the following files and how to change them: DMKRIO, DMKSNT, and DMKSYS.

It describes ways of controlling access to the GCS supervisor, the supervisor state, and CP commands.

It includes virtual machine restrictions and certain execution characteristics.

- *VM/SP Transparent Services Access Facility Reference*

MC **TPI**

This manual describes Transparent Services Access Facility (TSAF). It includes the major steps involved in preparing to use the TSAF virtual machine, how to form TSAF collections, how collections merge, information about routes, and performance considerations.

It describes running and maintaining the TSAF virtual machine. It describes the function of the Collection Resource Management System Service (*CRM) and how the intended TSAF virtual machine connects to and severs from *CRM. It also describes the contents of the TSAF accounting and link statistics records.

- *VM System Facilities for Programming*

I/O **MC** **TPI**

This manual describes the service that provides a virtual machine with device-independent access to its minidisks. It explains the way a virtual machine can bypass the CMS file system and read or write directly from CP. It describes the way one user logged on to a single virtual machine can control multiple virtual machines. It describes how an application running in a virtual machine can create one or more nonextended logical 3270 display devices within CP.

It describes how a program running in a virtual machine can communicate with other virtual machines, CP, and itself. It discusses the support that provides VM/SP console capabilities to terminal operators on SNA terminal devices and allows VM/SP users to use SNA terminals as virtual operator consoles.

It describes how a virtual machine can read incoming messages and responses from CP. It discusses ways virtual machines in a virtual machine group can signal each other. It describes the use of the SMSG command to send messages between virtual machines.

Virtual Storage Extended/Virtual Storage Access Method (VSE/VSAM)

- *VSE/VSAM General Information*

DR **ESR** **FDS** **P&C** **SF**

This manual provides a general overview of VSE/VSAM, including information on file and data structures. It discusses the storage requirements and space management. It describes the backup and restore features. It discusses data protection and data recovery.

- *VSE/VSAM Programmer's Reference*

DR **ESR** **SF**

This manual provides information on the storage requirements of VSE/VSAM. It discusses data protection and integrity as well as data recovery.

VM Batch Facility

- *VM Batch Facility Installation, Customization, and Administration*

LTU SA TD TPI

This manual describes the monitor virtual machine and task virtual machines used, the control blocks and files, the VM message handling facilities used, and batch job processing procedures. It describes data transfer in the VM Batch Facility. It explains the customizing options available with VM Batch.

- *VM Batch Facility: Batch Processing and Job Scheduling for VM Systems*

ESR P&C

This general information manual describes the product's hardware and software requirements.

- *VM Batch Facility User's Guide*

LTU SF

This manual describes processing a job as a batch job. It includes information on making sure output files are stored securely.

VMBACKUP Management System (VMBACKUP-MS)

- *VMBACKUP Management System: VMBackup Subsystem User's Guide*

DR

This manual introduces and describes the features of the VMBackup subsystem. It provides information needed to use the restore capability of VMBackup. If for any reason data is lost or destroyed during the development of your application, a copy of the files can be restored from the last backup copy.

VM/Directory Maintenance (DIRMAINT)

- *Directory Maintenance Installation and System Administrator's Guide*

LTU SA SF TPI

This manual provides information on the system architecture and the operating characteristics of the DIRMAINT virtual machine. It discusses how DIRMAINT can help you maintain the system directory. It defines installation requirements, options, and tailoring considerations for DIRMAINT.

It includes information on tailoring the DIRMAINT DATA file to satisfy the installation's requirements. This task is done by the system programmer and determines the operating characteristics of DIRMAINT. For example, this file identifies the system owner, privileged users, monitoring functions, and the DIRMAINT options.

DR Data Recovery

ESR Estimating System Resources

FDS File and Data Structure

I/O Input/Output Routines and Facilities, and Techniques

LTU Languages, Tools and Utilities

MC Methods of Communication

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SA System Architecture

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TPI Tailorable Product Interfaces

VM/Distributed System Node Executive (VM/DSNX)

- *VM/Distributed System Node Executive Guide and Reference*

ESR **FDS** **LTU** **MC** **P&C** **SF** **TPI**

VM/DSNX is a tool that can distribute and carry out changes on remote systems in a distributed systems environment. This manual helps system programmers at a central site plan the routing of changes throughout the network and the way the changes are to be put into effect on the remote systems. Planning subtasks discussed include allocating system resources, limiting the load on the network, controlling access, modifying file formats for transmission, and ensuring that all prerequisite products are installed on the central and remote systems.

VM/Integrated System (VM/IS)

- *VM/IS Developing an Application: Getting Started*

LTU

This manual introduces VM/IS as an open-ended system to which you can add specialized applications. It discusses some of the features offered by VM/IS and describes in general terms how you can add applications to VM/IS.

- *VM/IS Tailoring your Menus*

FDS **LTU** **P&C** **TPI**

This manual describes the files required to tailor your menus and illustrates their use by example. It includes a list of files, file formats, and file naming conventions required for tailoring panels. It discusses the hierarchical structure of the VM/Integrated System – Productivity Facility “home menus” and describes ways to customize the home menu hierarchy using advanced panel tailoring techniques.

VM/Interactive Productivity Facility (VM/IPF)

- *VM/IPF System Reference*

ESR **SA**

This manual outlines the hardware and software requirements for installing VM/IPF. It lists the prerequisite and corequisite products for VM/IPF. It includes system generation requirements for the DMKSYS, DMKRIO, and DMKSNT assembler files. It lists and describes the system directory requirements.

It includes instructions for installing VM/IPF and setting up the connections between VM/IPF and the other elements of the system.

It provides a brief overview of the modules and EXEC procedures used by VM/IPF.

VM/Pass-Through Facility (PVM)

- *VM/Pass-Through Facility General Information*

DR **ESR** **MC** **P&C** **SF** **TD** **TPI**

This manual contains a high-level overview of the VM/Pass-Through Facility and its role in a distributed data processing environment. It describes the product in sufficient detail to permit you to decide whether VM/Pass-Through is useful for your installation.

- *VM/Pass-Through Facility Guide and Reference*

DR **ESR** **LTU** **MC** **P&C** **SF** **TD** **TPI**

This manual describes all the capabilities of the VM/Pass-Through Facility. Planners can use this manual to prepare for installing and maintaining the product on a VM system.

VM/System Product Interpreter Interface to SQL/DS (RXSQL)

- *VM/System Product Interpreter Interface to SQL/Data System Program Description/Operations Manual*

ESR **FDS** **I/O** **LTU** **MC** **P&C** **SA** **TD** **TPI**

This manual provides all the information describing the RXSQL interface between the System Product Interpreter (REXX) and SQL/DS. It provides initial installation information, the complete RXSQL command reference, and sample program guides to the use of RXSQL.

VS COBOL II

- *VS COBOL II Installation and Customization for CMS*

ESR **LTU** **P&C**

This manual describes the machine configuration, virtual storage, auxiliary storage, operating systems, and programs required to install and use VS COBOL II. It discusses the planning that should be done before installing the product.

- *VS COBOL II General Information*

FDS **LTU** **P&C**

This manual helps you to evaluate VS COBOL II for your data processing operation and to plan for its use.

VS FORTRAN Version 2

- *VS FORTRAN Version 2 Language and Library Reference*

FDS **I/O**

This manual describes the three general types of data that VS FORTRAN Version 2 can manipulate. It briefly describes the I/O statements available and provides some reference information about them.

- *VS FORTRAN Version 2 Programming Guide*

FDS **I/O** **LTU**

This manual provides basic information on the FORTRAN compiler. It discusses types of data and data entities, describes ways to declare data types and lengths, and discusses ways to use data efficiently. It provides information on input and output, including information on working with VSAM files.

DR Data Recovery	FDS File and Data Structure	MC Methods of Communication	SF System Security Features
ESR Estimating System Resources	I/O Input/Output Routines and Facilities, and Techniques	P&C System Prerequisites and Corequisites	TD Transferring Data between Products
	LTU Languages, Tools and Utilities	SA System Architecture	TPI Tailorable Product Interfaces

Chapter 2. Designing a VM/Integrated System Application

A well-thought-out design of your application can lead to a smooth implementation and test of your application. VM/IS provides many tools and utilities that can help in the design of your application.

To successfully design a VM/IS application, we recommend you do the following:

- Produce, as your objective, a set of detailed specifications from which your programmers can work.
- Design the file and data structures. Things to consider include:
 - The requirements and type of data used by your application as determined in your planning stages
 - Other applications with which your application may interact
 - Component codes and file naming conventions.
- Design the user interface. Your interface should contain the following characteristics:
 - Interactive and panel driven, but with an optional command-driven interface
 - Invoked by an EXEC
 - Similar in appearance to VM/IS menus and panels
 - Help panels provided for each panel as well as a tutorial to assist your customers in learning the use of your application
 - Error and informational messages to communicate with the customers
 - Program Function (PF) keys consistent with those used in VM/IS and defined for the customer on each panel
 - Panel flow organized in a task-oriented manner, proceeding from general tasks to specific tasks.
- Tailor the VM/Integrated System – Productivity Facility to include your application. This means creating and modifying files to create the redesigned menus.
- Include the following in your online introductory topic:
 - Overview
 - Information about available facilities
 - Instructions on using the application.
- Include the following types of information on your Help panels:
 - Explanations of each option on a menu
 - Format and type of information required for each input field
 - Tasks the customer can perform on a specific panel
 - A list of active PF keys.
- Consider the available subroutines when designing your application.
- Customize existing VM/IS products (if necessary) to improve or add function to your application.
- Include or optimize your application by tailoring the following:
 - DASD layout
 - Assembler files including DMKRIO, DMKSNT, and DMKSYS
 - The system directory file
 - Other files including the SYSTEM PROFILE.

- Design your application's internal communication. We recommend you consider using IUCV (Inter-User Communications Vehicle) for your internal communications.
- Design your application's inter-system communication using products included in VM/IS.

This chapter makes specific references to publications pertaining to the designing tasks and the tools of VM/IS that can help you design your application.

Reference Keys Used

The following list shows the reference keys used in this chapter and describes the type of information indicated by each key. This information is discussed in detail in *Developing an Application: Getting Started*.

Ref. Key	Type of Information
AF	<i>Assembler Files.</i> This key indicates publications that can help you make design changes to the shipped DMKRIO, DMKSYS, and DMKSNT assembler files as required by your application.
AP	<i>The Application Program.</i> This key indicates publications that can help you efficiently design your application program. The publications discuss specific design methods and give design tips.
CEP	<i>Customizing an Existing VM/IS Product.</i> This key indicates publications that can help you understand whether, and to what extent, an existing product is tailorable. These publications can help you make decisions about changing the product.
DFS	<i>Data and File Structures.</i> This key indicates publications that can help you to design the required data and file structures for your application. The publications discuss the different design strategies available to you and may make recommendations on design methods that best suit your needs.
DL	<i>DASD Layout.</i> This key indicates publications that can help you make design changes to the shipped DASD layout as required by your application.
HLP	<i>VM/IS Help Panels.</i> This key indicates publications that can help you to design VM/IS Help panels.
IC	<i>Internal Communication in Your Application.</i> This key indicates publications that can help you design internal communication applications using the Inter-User Communication Vehicle (IUCV). APPC/VM is recommended for new applications or for the migration of existing IUCV applications.
ISC	<i>Inter-System Communication Applications.</i> This key indicates publications that can help you design communication applications using SNA and BSC protocols.
NTM	<i>New or Tailored Home Menus.</i> This key indicates publications that can help you design new or tailored VM/IS home menus.

Ref. Key	Type of Information
OHT	<i>Online Help and Tutorial Information.</i> This key indicates publications that can help you design online help and tutorial information. These publications make specific recommendations on how the screen design and flow of the online information should look to the end-user.
OIT	<i>A VM/IS Online Introduction Topic.</i> This key indicates publications that can help you design a VM/IS online introduction topic for your application.
PF	<i>Panel Flow.</i> This key indicates the publications that can help you design the panel flow for the user interface. The publications may make recommendations about how the panel flow should look to the end user.
PFK	<i>Display Station Program Function Keys.</i> This reference key indicates publications that can help you choose what functions to give the PF keys on the user's keyboard. Consistent PF key assignment whenever possible plays an important part in user acceptance of a new VM/IS application.
PNL	<i>Panel Layout.</i> This key indicates publications that can help you design the individual interface panels for the end user. The publications make specific recommendations on choosing panel design.
SD	<i>The System Directory.</i> This key indicates publications that can help you make design changes to the shipped system directory as required by your application.

Advanced Communications Function for the Virtual Telecommunications Access Method V3R1.2 (ACF/VTAM)

- *VTAM Customization*

CEP **ISC**

This manual provides you with information about the customization and tuning of VTAM. It discusses modifying VTAM messages, modifying VTAM unformatted system services (USS) commands, installation exit routines and replaceable modules, and tuning VTAM.

- *VTAM Data Areas for VM*

DFS

This manual describes all data areas used by VTAM running under VM.

AF Assemble Files	DL DASD Layout	ISC Inter-System Communication Applications	PF Panel Flow
AP Application Program	HLP VM/IS Help Panels	NTM New or Tailored Home Menus	PFK Display Station Program Function Keys
CEP Customizing an Existing VM/IS Product	IC Internal Communication in your Application	OHT Online Help and Tutorial Information	PNL Panel Layout
		OIT VM/IS Online Introduction Topic	SD System Directory

- *VTAM Version 3 Releases 1.1 and 1.2 Expanded Networking Capabilities Support*
CEP

This manual, a supplement to the VTAM library, provides a variety of information about function available with VTAM Version 3 Releases 1.1 and 1.2.

Application System (AS)

- *Developing Applications with AS*

DFS **OHT** **PFK** **PF** **PNL**

This manual discusses all aspects of developing an application. It discusses defining the application, getting information into the application, processing the information, getting the information out, controlling the flow of data, and documenting, testing, refining and installing applications.

- *Using Application System*

DFS **PFK** **PNL**

This manual discusses creating and managing data files, designing data entry screens, and controlling applications.

Cross System Product/Application Development (CSP/AD)

- *Cross System Product/Application Development and Cross System Product/Application Execution System Administration*

AP **CEP** **DFS**

This manual describes application design considerations that are unique to each system environment.

- *Cross System Product/Application Development Operation-Development*

AP **DFS** **HLP** **NTM** **OHT** **PF** **PFK** **PNL**

This manual describes ways of designing your applications so that you can develop them efficiently with your Cross System Product. It discusses ways to develop your data, panels, and logic processes. It includes information about designing and developing a panel interface.

Customer Information Control System/Virtual Machine (CICS/VM)

- *CICS/VM Application Programming*

AP **DFS** **OHT** **PFK** **PNL**

This manual gives some guidance on designing CICS applications in a VM environment. Detailed guidance for designing CICS applications is in the existing CICS/VS library, to which this manual refers.

Data Base Edit Facility for VM/SP CMS (DBEDIT)

- *Data Base Edit Facility for VM/SP CMS Program Description/Operations Manual*

AP **DFS** **IC** **OHT** **PF** **PFK** **PNL**

This manual is for data base administrators and programmers responsible for installing, administering, and maintaining DBEDIT. It provides an overall description of the DBEDIT program, includes installation procedures, and provides reference material about the DBEDIT modules. It includes information on using DBEDIT as a subprogram of a higher-level application program. It describes internal program flow and panel structure.

- *Data Base Edit Facility User's Guide*

AP **OHT** **PF** **PFK** **PNL**

This manual is for data entry clerks, terminal operators, secretaries, and other personnel without detailed data processing knowledge. It provides documentation for using DBEDIT and for tailoring the application panels by using predetermined "edit rules." It includes sample applications and panels useful to people designing a new application that uses DBEDIT.

Data Extract (DXT)

- *Data Extract Version 2: Reference*

IC

This manual describes the control blocks used to communicate between DXT and user-written exits.

Environmental Record Editing and Printing Program (EREP)

- *Environmental Record Editing and Printing Program User's Guide and Reference*

AP **DFS**

This manual covers the following topics: general description, setting up and running EREP jobs, reference information and product dependent information. It is the only external manual for EREP.

Graphical Data Display Manager Version 2 (GDDM)

- *GDDM Application Programming Guide*

AP

This manual (two volumes) describes how to use GDDM to code application programs. It contains many examples of code used to achieve particular results. Volume 1 deals specifically with graphics, alphanumerics, and other GDDM/VM facilities. Volume 2 deals with presentation graphics (GDDM-PGF).

AF Assemble Files	DFS Data and File Structure	ISC Inter-System Communication Applications	PF Panel Flow
AP Application Program	DL DASD Layout	NTM New or Tailored Home Menus	PFK Display Station Program Function Keys
CEP Customizing an Existing VM/IS Product	HLP VM/IS Help Panels	OHT Online Help and Tutorial Information	PNL Panel Layout
	IC Internal Communication in your Application	OTI VM/IS Online Introduction Topic	SD System Directory

- *GDDM Base Programming Reference*

AP

This manual (two volumes) contains an overview of GDDM function available at the programming interface. Volume 2 provides specific information for programming under VM/SP.

Graphical Data Display Manager with the Presentation Graphics Feature (GDDM-PGF)

- *GDDM Application Programming Guide*

AP

This manual (two volumes) describes how to use GDDM to code application programs. It contains many examples of code used to achieve particular results. Volume 2 concentrates on business graphics (presentation graphics).

IBM System/370 to IBM Personal Computer Enhanced Connectivity Facilities CMS Servers-Requesters (ECF Servers-Requesters)

- *IBM Enhanced Connectivity Facilities PC Requesters Reference*

AP

This manual describes the ECF commands that you enter at the keyboard or call within an application program. It includes information about using DOS interrupt handling to perform ECF Servers-Requesters functions within an application program.

- *IBM Enhanced Connectivity Facilities TSO/E Servers and CMS Servers Installation Planning and Programmer's Guide*

DFS

This manual describes ways of writing host user exit routines for ECF Servers-Requesters data transformation.

IBM 3812 Pageprinter VM Support (VM3812)

- *VM3812-IBM 3812 Pageprinter Support User's Guide*

AP DFS

This manual describes all of the options available for the PRT3812 EXEC and all of the font names available for use.

- *VM3812-IBM 3812 Pageprinter Support Installation Guide*

AF DL ISC SD

This manual describes the installation and customization options for VM3812 for paper size and print class.

- *VM3812-IBM 3812 Pageprinter Support Application Programmer's Guide*

AP DFS

This manual describes the data streams that an application program should produce so that the output can be printed by VM3812.

Interactive System Productivity Facility (ISPF)

- *ISPF Dialog Management Guide*

DFS **HLP** **OHT** **OIT** **PF** **PFK** **PNL**

This manual provides information on ISPF data elements, including the way to define them and the way they reside in the system. It tells the way to define program function keys for the various ISPF applications. It describes how to define panel flow within dialogs. It provides an overview of help and tutorial information, including information on defining help and tutorial panels.

- *ISPF Dialog Management Services and Examples*

DFS **HLP** **PF** **PNL**

This manual provides examples of ISPF services and provides examples of how dialogs invoke ISPF services. For each service, the manual includes a syntax diagram, a brief description, parameter definition, and return codes.

- *ISPF and ISPF/PDF Installation and Customization*

CEP

This manual describes the parts of ISPF/PDF that you can tailor and explains how to perform this tailoring.

Interactive System Productivity Facility/Program Development Facility (ISPF/PDF)

- *ISPF and ISPF/PDF Installation and Customization*

CEP

This manual describes the parts of ISPF/PDF that you can tailor and explains how to perform this tailoring.

NetView

- *NetView Customization*

CEP **DFS** **HLP** **ISC** **PNL**

This manual is for system programmers and others who want to customize NetView to reflect their network's needs or operating procedures. It discusses writing exit routines, command processors, and subtasks and explains how to modify NetView help panels and problem determination displays.

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CEP Customizing an Existing VM/IS Product	HLP VM/IS Help Panels	OHT Online Help and Tutorial Information	PNL Panel Layout
	IC Internal Communication in your Application	OIT VM/IS Online Introduction Topic	SD System Directory

- *Automated Operations Using NetView Command Lists*

CEP **IC**

This manual is designed to help system analysts, system programmers, and operations personnel use the command lists (CLISTs) and other material in the automated operations sample set to begin to automate computer operations at an installation. It describes the material in the automated operations sample set and provides information about developing, writing, and testing CLISTs.

- *NetView Command Lists*

CEP **IC**

This manual explains how to simplify network operator tasks by using command lists (CLISTs). It provides step-by-step instructions for writing simple and advanced CLISTs, which can be used to obtain information from operators, other tasks, system resources, or the contents of messages. This information can be used to perform simple processing or it can be used for logically structured decision making.

- *NetView Operation*

CEP **PNL**

This manual provides a comprehensive explanation of network management using NetView. Topics covered include detailed command explanations and panel flows, as well as information on how the various components interact with each other.

- *NetView Command Summary*

CEP **DFS**

This reference card provides network operators with a quick way to find the format of all the commands and the more commonly used CLISTs for NetView. The commands are listed in alphabetical order by component.

- *NetView Operation Primer*

CEP **IC**

This manual provides a basic description of the network management task. Topics covered include starting and stopping a network, controlling resources, monitoring a network, and gathering the necessary data to report a problem.

- *NetView Online Help*

NetView online help (shipped with the product tape) provides online tools for investigating and controlling system status. It provides access to full-screen information about using commands, interpreting messages, understanding network status, and solving network problems step-by-step.

Professional Office System (PROFS)

- *Managing the Professional Office System*

OHT

This manual provides step-by-step instructions for running administrative functions of PROFS (for example, setting up profiles). It also provides instructions for running the user options of the application.

- *Professional Office System Programmer's Guide*

DFS **IC**

This manual provides an overview of PROFS and its relationship to the VM system. It discusses problem determination aids, source file information, and information on coding user exits.

- *Planning for and Installing the Professional Office System*

AF **SD**

This manual includes steps to follow to prepare for installing PROFS and steps for the actual installation. A “cookbook” approach to arranging installation subjects in major segments permits you to easily follow directions for installing the applications.

Query Management Facility for VM/SP (QMF/VM)

- *QMF: Application Development Guide for VM/SP*

AP **CEP** **DFS** **PF** **PFK** **PNL**

This manual discusses the QMF aids at your disposal. It includes program function key definition, installation-defined command definition, QMF’s own application support commands, and the QMF callable interface.

- *QMF: Planning and Administration Guide for VM/SP*

CEP **PFK**

This manual describes in detail how you can redefine QMF program function keys and how you can create installation-defined commands from QMF applications.

Remote Spooling Communications Subsystem (RSCS)

- *RSCS Diagnosis Reference*

DFS

This manual discusses the principal data structures used internally in RSCS.

- *RSCS Exit Customization*

AP

This manual explains the RSCS exit facility and transmission algorithms and their use. It includes information on ways of using the transmission algorithms and user exits to modify RSCS.

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	IC Internal Communication in your Application	OIT VM/IS Online Introduction Topic	SD System Directory

- *RSCS Planning and Installation*

AP **CEP** **DFS** **ISC** **SD**

This manual discusses SNA and non-SNA connections. It discusses preparing VTAM for SNA connections. It explains the use of the Configuration File to define the nature of the local RSCS system and its view of the network. It discusses the defining of virtual machines and minidisks. It describes the definition and use of user exits. It discusses using EXEC procedures and CMS commands to reduce the possibility of error.

Structured Query Language/Data System (SQL/DS)

- *SQL/Data System Application Programming for VM/SP*

AP

This manual explains ways of designing programs using SQL/DS.

- *SQL/Data System Concepts and Facilities for VM/SP*

DFS

This manual includes information of specific interest to programmers and persons involved in data base administration. It discusses data base structure, generation, and expansion.

- *SQL/Data System Data Base Planning and Administration for VM/SP*

DFS **OHT**

This manual provides guidelines and techniques for the design of tables and views to support the requirements of your application. It includes information on adding help text to an SQL/DS data base.

- *SQL/Data System System Planning and Administration for VM/SP*

CEP

This manual discusses various ways to customize SQL/DS.

Transmission Control Protocol/Internet Protocol for VM (TCP/IP)

- *IBM Transmission Control Protocol/Internet Protocol for VM Programming Manual*

DFS

This manual describes the data structure (functions and procedures with their corresponding parameters) for the Transmission Control Protocol/User Datagram Protocol/Internet Protocol (TCP/UDP/IP) interface called from C or Pascal.

Virtual Machine Monitor Analysis Program (VMMAP)

- *VM Monitor Analysis Program User's Guide and Reference*

DL

This manual describes the way to use VMMAP to show the effects of various DASD configurations on the overall system performance.

Virtual Machine Real Time Monitor (VM/RTM)

- *VM Real Time Monitor Program Description/Operations*

DL

This manual describes ways to use VM/RTM to show the effects of various DASD configurations on the overall system performance.

Virtual Machine/File Storage Facility (VM FSF)

- *Virtual Machine/File Storage Facility Program Description/Operations Manual*

CEP **DFS**

This manual describes the way VM FSF provides storage facilities for all standard CMS file formats. It outlines the various programs that make up VM FSF and describes their operation. It describes the customizing options for VM FSF.

Virtual Machine/System Product (VM/SP)

- *VM/SP CMS User's Guide*

CEP **OHT**

This manual explains the setup of the VM/SP help facility and the way to tailor its panels and menus to include your application.

- *VM/SP Planning Guide and Reference*

AF **SD**

This manual explains the control statements included in the directory and ways you can use them to define your system.

It describes the contents and use of the following assembler files: DMKRIO, DMKSYS, and DMKSNT. See "Glossary of Terms and Abbreviations" for a description of these files.

- *VM/SP Transparent Services Access Facility Reference*

IC

This manual provides a general overview of Advanced Program-to-Program Communications for VM (APPC/VM) communication (VM-to-VM communication). It includes a complete description of APPC/VM functions and related IUCV functions. It summarizes the mapping of SNA LU 6.2 (APPC architecture) verb functions to APPC/VM and IUCV macro functions.

AF Assemble Files	DFS Data and File Structure	ISC Inter-System Communication Applications	PF Panel Flow
AP Application Program	DL DASD Layout	NTM New or Tailored Home Menus	PFK Display Station Program Function Keys
CEP Customizing an Existing VM/IS Product	HLP VM/IS Help Panels	OHT Online Help and Tutorial Information	PNL Panel Layout
	IC Internal Communication in your Application	OIT VM/IS Online Introduction Topic	SD System Directory

- *VM System Facilities for Programming*

IC

This manual provides the formats and descriptions of the CMS macros HNDIUCV and CMSIUCV, which invoke IUCV functions.

Virtual Storage Extended/Virtual Storage Access Method (VSE/VSAM)

- *VSE/VSAM General Information*

DFS

This manual describes the physical structure of VSAM files.

- *VSE/VSAM Programmer's Reference*

DFS

This manual describes the data and file structures used with VSE/VSAM.

VM Batch Facility

- *VM Batch Facility User's Guide*

AP IC

This manual describes ways you can change the execution of programs by using variables from the Batch Facility.

VM/Directory Maintenance (DIRMAINT)

- *Directory Maintenance Installation and System Administrator's Guide*

SD

This manual provides details on tailoring the system directory (defining virtual machines and minidisk layouts). It describes the DIRMAINT command operands that the system administrator can use to create and maintain the system directory.

VM/Distributed System Node Executive (VM/DSNX)

- *VM/Distributed System Node Executive Guide and Reference*

CEP DFS ISC PNL

This manual describes the panels and other interfaces used to define the relationships among systems in a network of distributed systems and to initiate and control the distribution of changes to remote systems. EXEC procedures supplied with the product provide pre- and post-processing needed to modify the format of non-CMS files for distribution and to restore them to their original format for implementation on the remote systems. It describes the use of these EXEC procedures and ways to customize them for use in user applications.

VM/Integrated System (VM/IS)

- *VM/IS Tailoring your Menus*

DFS **HLP** **NTM** **OIT** **PNL**

This manual describes the files required to tailor your menus and illustrates their use by example. It includes a list of files, file formats, and file naming conventions required for tailoring panels. It describes the creating and adding online introduction topics and help panels. It discusses the hierarchical structure of the VM/Integrated System – Productivity Facility home menus. It describes ways of customizing the home menu hierarchy using advanced panel tailoring techniques.

VM/Interactive Productivity Facility (VM/IPF)

- *VM/IPF Maintenance*

AF

This manual describes in detail the procedures for tailoring the following system assembler files: DMKRIO, DMKSNT, DMKSYS, and DMKBOX. See “Glossary of Terms and Abbreviations” for a description of these files.

VM/Pass-Through Facility (PVM)

- *VM/Pass-Through Facility Guide and Reference*

CEP **SD**

VM/Pass-Through Facility lets you specify a configuration based on the way systems are connected. This manual describes ways of customizing or tailoring PVM. It also discusses exit routines. The exit routines allow you to add controls on sessions and use. This may assist in performance tuning, capacity analysis, and problem analysis for the VM/Pass-Through network.

VS COBOL II

- *VS COBOL II Application Programming: Language Reference*

DFS

This manual presents the rules for writing COBOL source programs to be compiled by the VS COBOL II compiler.

- *VS COBOL II Application Programming Guide*

DFS

This manual describes ways of designing a VS COBOL II program.

AF Assemble Files	DFS Data and File Structure	ISC Inter-System Communication Applications	PF Panel Flow
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	IC Internal Communication in your Application	OIT VM/IS Online Introduction Topic	SD System Directory

VS FORTRAN Version 2

- *VS FORTRAN Version 2 Language and Library Reference*

DFS

This manual provides detailed information on constants, variables and arrays used by VS FORTRAN Version 2.

- *VS FORTRAN Version 2 Programming Guide*

DFS

This manual provides information on access mode, file organization, and I/O statements. It includes information on processing and defining VSAM files.

Chapter 3. Coding a VM/Integrated System Application

VM/IS provides a number of development tools, utilities, and languages that you can use to implement your applications.

To successfully code a VM/IS application, you should:

- Use one of the application development languages to code your application. Languages you can use included with VM/IS are:
 - Assembler
 - REXX (Restructured Extended Executor Language)
 - RXXSQL (VM/SP Interpreter Interface to SQL/DS)
 - VS COBOL II
 - VS FORTRAN Version 2
 - Other languages that run under VM/SP and are available as part of the VM/SP System Offering. In this case, either the customer must be prepared to supply the language as a prerequisite to installing the application, or you must supply the application already compiled and link edited. Languages include:
 - APL2
 - IBM BASIC/VM
 - Pascal/VS
 - PL/I.

Remember that you can code most of your application using one language, and call subroutines that use other languages.

- Use the tools VM/IS includes to assist you in coding your application. These tools include:
 - Program development tools
 - Project management and control tools
 - Text editors.
- Code the user interface using either ISPF or GDDM dialogs.
- Customize the VM/IS – Productivity Facility by adding:
 - Your application to the VM/IS home menus
 - An online introductory topic
 - Help panels for your application.
- Tailor existing VM/IS products if necessary to provide function for your application that otherwise might not exist.

This chapter lists those publications that contain information about these development tools.

Reference Keys Used

The following list shows the reference keys used in this chapter and describes the type of information indicated by each key. This information is discussed in detail in *Developing an Application: Getting Started*.

Ref. Key	Type of Information
ADL	<i>Application Development Languages.</i> This key indicates publications that give details on using application development languages to develop your own VM/IS applications.
AHP	<i>Adding VM/IS Help Panels.</i> This key indicates publications that deal with adding VM/IS help panels to an application.
AOI	<i>Adding a VM/IS Online Introduction Topic.</i> This key indicates publications that deal with adding a VM/IS online introduction topic to an application.
AYA	<i>Adding Your Applications to Home Menus.</i> This key indicates publications that deal with adding your application to the VM/IS home menus.
MCT	<i>Project Management and Control Tools.</i> This key indicates publications that deal with the use of charge control mechanisms.
PDT	<i>Program Development Tools.</i> This key indicates publications that provide detailed references on using program development tools in coding your application.
PRU	<i>Predefined Routine and Utility Languages.</i> This key indicates publications that provide specific references on using the predefined routine and utility libraries in coding your application.
SLI	<i>System Languages and Interfaces.</i> This key indicates publications that deal with the use of system languages and interfaces.
TEP	<i>Tailoring Existing VM/IS System Products.</i> This key indicates publications that can help you code changes to existing VM/IS products.
TXT	<i>Text Editors.</i> This key indicates publications that deal with the use of text editors.
UI	<i>The User Interface.</i> This key indicates publications that deal with the development of ISPF and GDDM/VM dialogs.
2PL	<i>Using Two or More Programming Languages.</i> This key indicates publications that give specific details on coding your application using two or more of the VM/IS or other IBM programming languages.

Advanced Communications Function for the Virtual Telecommunications Access Method V3R1.2 (ACF/VTAM)

- *VTAM Programming*

SLI **TEP**

This manual describes how to use VTAM macroinstructions to send data to, and receive data from, a terminal in either the same or a different domain, or another application program in either the same or a different domain. It includes a dictionary of VTAM macroinstructions. This manual assumes that you are familiar with assembler language and the programming facilities of the operating system.

- *VTAM Version 3 Releases 1.1 and 1.2 Expanded Networking Capabilities Support*

TEP

This manual, a supplement to the VTAM library, provides a variety of information about functions that are available with VTAM Version 3 Releases 1.1 and 1.2.

Application System (AS)

- *Application System Reference*

ADL

This manual describes the Application System commands.

- *Creating Documents with Application System*

TXT

This manual contains information about including Application System information in your documents.

- *Developing Applications with AS*

ADL

This manual discusses all aspects of developing an application, including defining the application, getting information into the application, processing the information, getting the information out, controlling the flow of data, and documenting, testing, refining and installing applications.

- *Managing Projects with Application System*

MCT

This manual describes the various ways you can utilize the Application System tools to help you plan and control your development project.

- *Using Application System*

ADL

This manual describes Application System as a programming language.

ADL Application Development Languages

AYA Adding your Applications to Home Menus

PRU Predefined Routine and Utility Languages

TXT Text Editors

AHP Adding VM/IS Help Panels

MCT Project Management and Control Tools

SLI System Languages and Interfaces

UI User Interface

AOI Adding a VM/IS Online Introduction Topic

PDT Program Development Tools

TEP Tailoring Existing VM/IS System Products

2PL Using Two or More Programming Languages

Cross System Product/Application Development (CSP/AD)

- *Cross System Product/Application Development and Cross System Product/Application Execution System Administration*

SLI

This manual describes the system-unique characteristics to consider when coding an application.

- *Cross System Product/Application Development Operation-Development*

ADL **AHP**

This manual describes how to code an application using Cross System Product, IBM's fourth-generation language for application development.

- *Cross System Product/Application Development Reference*

ADL **PDT** **SLI**

This manual is a reference for process statements in Cross System Product. It shows the syntax for each statement and defines any system compatibility considerations.

Customer Information Control System/Virtual Machine (CICS/VM)

- *CICS/VM Application Programming*

ADL **UI**

This manual covers in detail the subset of the CICS application programming interface (API) supported by Release 1 of the CICS/VM product.

Data Base Edit Facility for VM/SP CMS (DBEDIT)

- *Data Base Edit Facility for VM/SP CMS Program Description/Operations Manual*

ADL **UI**

This manual is for data base administrators and programmers responsible for installing, administering, and maintaining DBEDIT. It provides an overall description of the DBEDIT program, includes installation procedures, and provides reference material about the DBEDIT modules. It includes the various DBEDIT panel rules and options used when coding an application panel.

- *Data Base Edit Facility User's Guide*

UI

This manual is for data entry clerks, terminal operators, secretaries, and other personnel without detailed data processing knowledge. It provides documentation showing ways to use DBEDIT and ways to tailor the application panels by using pre-determined "edit rules." This is the primary end-user reference book for DBEDIT.

- *Data Base Edit Facility Quick User's Guide to PQUERY*

UI

This manual is for data entry clerks, terminal operators, secretaries, and other personnel without detailed data processing knowledge. It provides them with documentation explaining the use of the PQUERY component of DBEDIT.

Data Extract (DXT)

- *Data Extract Version 2: Base Product Planning and Administration Guide*

UI

This manual describes the tasks for setting up end-user dialogs (DXT's user interface).

DisplayWrite/370

- *Using CLISTs with DisplayWrite/370*

SLI

This manual explains how to create and use command lists (CLISTs) that can call other application programs.

Environmental Record Editing and Printing Program (EREP)

- *Environmental Record Editing and Printing Program User's Guide and Reference*

PRU

This manual gives a general introduction to EREP and covers the following topics: setting up and running EREP jobs, reference information, and product dependent information. It is the only external manual for EREP.

Graphical Data Display Manager Version 2 (GDDM)

- *GDDM Base Programming Reference*

ADL

This manual (in two volumes) contains an overview of GDDM function available at the programming interface. Volume 1 documents all the GDDM base call statements. Volume 2 provides support material for programming to the interface.

- *GDDM Base Programming Reference Summary*

ADL

This booklet provides a summary of the information given in Volume 1 of the *GDDM Base Programming Reference* manual.

- *GDDM Performance Guide*

ADL

This manual describes ways of coding applications that use GDDM in the most effective way.

ADL Application Development Languages

AYA Adding your Applications to Home Menus

PRU Predefined Routine and Utility Languages

TXT Text Editors

AHP Adding VM/IS Help Panels

MCT Project Management and Control Tools

SLI System Languages and Interfaces

UI User Interface

AOI Adding a VM/IS Online Introduction Topic

PDT Program Development Tools

TEP Tailoring Existing VM/IS System Products

2PL Using Two or More Programming Languages

Graphical Data Display Manager with the Presentation Graphics Feature (GDDM-PGF)

- *GDDM-PGF Programming Reference*

ADL **SLI**

This manual contains an overview of GDDM-PGF business graphics function, as well as supporting reference information. It also contains a number of small programs to illustrate particular programming techniques.

- *GDDM-PGF Programming Reference Summary*

ADL **SLI**

This booklet contains a summary of the programming interface information in the *GDDM-PGF Programming Reference* manual.

IBM System/370 to IBM Personal Computer Enhanced Connectivity Facilities CMS Servers-Requesters (ECF Servers-Requesters)

- *IBM Enhanced Connectivity Facilities PC Requesters Reference*

ADL **UI**

This manual describes ECF commands that you enter at the keyboard or call within an application program. It includes information about using DOS interrupt handling to perform ECF Servers-Requesters functions within an application program.

- *IBM Enhanced Connectivity Facilities TSO/E Servers and CMS Servers Installation Planning and Programmer's Guide*

PRU

This manual tells ways of writing host user exit routines for ECF Servers-Requesters data transformation.

Interactive System Productivity Facility (ISPF)

- *ISPF Dialog Management Guide*

AHP **AOI** **UI**

This manual provides information on all aspects of creating and running dialogs within ISPF. It includes information on defining help and tutorial panels. It describes the parts of ISPF that you can tailor and explains ways of performing this tailoring.

- *ISPF Dialog Management Services and Examples*

ADL **UI** **ZPL**

This manual provides information about ISPF services. For each service, the manual includes a syntax diagram, a brief description, parameter definitions, and return codes. It includes examples of how dialogs invoke ISPF services.

- *ISPF and ISPF/PDF Installation and Customization*

TEP

This manual describes the parts of ISPF/PDF that you can tailor and explains ways if performing this tailoring.

Interactive System Productivity Facility/Program Development Facility (ISPF/PDF)

- *ISPF/PDF Guide*

PDT **TXT**

This manual describes ways of using PDF to create an ISPF dialog. It contains general information on the use of PDF as well as detailed information on each of the ISPF/PDF options.

- *ISPF and ISPF/PDF Installation and Customization*

TEP

This manual describes the parts of ISPF/PDF that you can tailor and explains ways of performing this tailoring.

- *ISPF/PDF Library Management*

MCT

This manual describes the Library Management Facility of ISPF/PDF. It includes information on the concept and responsibilities of the library administrator and on the way a programmer can access and promote members and change member version numbers.

- *ISPF and ISPF/PDF Primer*

PDT

This manual provides a brief overview of ISPF/PDF. It includes information on invoking ISPF/PDF and provides a short example of the use of the edit option.

NetView

- *NetView Command Lists*

PRU **SLI** **TEP**

This manual explains how to simplify network operator tasks by using command lists (CLISTs). It provides step-by-step instructions for writing simple and advanced CLISTs, which can be used to obtain information from operators, other tasks, system resources, or the contents of messages. This information can be used to perform simple processing or can be used for logically structured decision making.

- *Automated Operations Using NetView Command Lists*

PRU **SLI** **TEP**

This manual is designed to help systems analysts, systems programmers, and operations personnel use the command lists (CLISTs) and other material in the automated operations sample set to begin to automate computer operations at an installation. It describes the material in the automated operations sample set and provides information about developing, writing, and testing CLISTs.

ADL Application Development Languages

AYA Adding your Applications to Home Menus

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- *NetView Operation*

SLI **TEP**

This manual provides a comprehensive explanation of network management using NetView. Topics covered include detailed command explanations and panel flows, as well as information on how the various components interact with each other.

Query Management Facility for VM/SP (QMF/VM)

- *QMF: Application Development Guide for VM/SP*

ADL **UI** **2PL**

This manual discusses using REXX, COBOL, and PL/I in QMF applications. It discusses in general the use of other high-level programming languages, and the use of the callable interface to imbed QMF commands in the source coding of these languages.

- *QMF: Reference*

SLI

This manual describes the actions of the QMF commands that can be imbedded in QMF applications.

Remote Spooling Communications Subsystem (RSCS)

- *RSCS Planning and Installation*

TEP

This manual describes the definition and use of user exits to customize RSCS. It includes information about the definition and use of EXEC procedures to reduce the possibility of error.

Structured Query Language/Data System (SQL/DS)

- *SQL/Data System Application Programming for VM/SP*

ADL **2PL**

This manual describes the SQL/DS programming language and outlines the use of SQL in a variety of other programming languages.

- *SQL/Data System Data Base Services Utility VM/SP*

PRU

This manual discusses coding programs using routines predefined in DBSU. It describes how the calling program or EXEC procedure passes the DBSU control parameters or SQL commands or both.

Transmission Control Protocol/Internet Protocol for VM (TCP/IP)

- *IBM Transmission Control Protocol/Internet Protocol for VM Programmer's Manual*

ADL **SLI** **2PL**

This manual describes the functions and procedures for the TCP/UDP/IP interface called from the C language or Pascal. It also describes transactions between clients and the TCP/IP VM interface in a non-CMS environment.

- *IBM Transmission Control Protocol/Internet Protocol for VM Command Reference*

UI

This manual describes the commands and subcommands used by File Transfer Protocol (FTP) and Trivial File Transfer Protocol (TFTP), and the way to use them to transfer files.

Virtual Machine Monitor Analysis Program (VMMAP)

- *VM Monitor Analysis Program User's Guide and Reference*

SLI

This manual describes commands to alter program execution by analyzing performance variables.

Virtual Machine Real Time Monitor (VM/RTM)

- *VM Real Time Monitor Program Description/Operations*

SLI

This manual describes commands to alter program execution by analyzing performance variables.

Virtual Machine/File Storage Facility (VM FSF)

- *Virtual Machine/File Storage Facility Program Description/Operations Manual*

TEP

This manual describes the programs that make up VM FSF and their functions. It provides a description of all commands available through VM FSF. It includes a description of the customizing options provided by VM FSF.

Virtual Machine/System Product (VM/SP)

- *Programmer's Guide to the Server-Requester Programming Interface for VM/System Products*

ADL **SLI**

This manual explains how to send and receive server requests and server replies for assembler language, REXX, and EXEC 2 servers. It describes the loading and preloading of servers and the way to give servers control at some kinds of termination for assembler language programs.

It describes the IBM ECF Servers-Requesters macros needed to write assembler language programs. It explains the Servers-Requesters Programming Interface (SRPI) subcommands needed for writing REXX and EXEC 2 servers. It provides information about dynamically loading a server using an SRPI macro.

ADL Application Development Languages

AYA Adding your Applications to Home Menus

PRU Predefined Routine and Utility Languages

TXT Text Editors

AHP Adding VM/IS Help Panels

MGT Project Management and Control Tools

SLI System Languages and Interfaces

UI User Interface

AOI Adding a VM/IS Online Introduction Topic

PDT Program Development Tools

TEP Tailoring Existing VM/IS System Products

PPL Using Two or More Programming Languages

- *VM/SP Application Development Guide*

ADL **SLI**

This manual explains how to create, compile, and run a FORTRAN or COBOL program in CMS. It explains the different types of EXEC procedures available with VM/SP and their use. It provides information about defining input and output files and about loading object modules. It discusses the use of CMS macro files, text or program files, and load files to store and run programs.

- *VM/SP CMS Command Reference*

PDT **SLI** **TEP**

This manual provides the format, description, and usage notes for all CMS commands. These include the UPDATE command (used to modify program source files and keep a log of the changes made) and the various format words used for the VM/SP help facility.

- *VM/SP CMS Primer*

TXT

This manual explains for the beginning user how to create, change, and save files using XEDIT.

- *VM/SP CMS User's Guide*

SLI **TEP**

This manual lists the CMS commands used along with the System Product Interpreter EXEC procedures and provides examples of the commands.

It explains the way to create help files using help facility format words, and explains the way to create help menus.

- *VM/SP EXEC 2 Reference*

SLI

This manual includes formats, syntax rules, and descriptions of the EXEC 2 control statements, predefined functions, and user-defined functions. It includes two sample EXEC 2 files and an EXEC 2 primer for new users.

- *VM/SP Group Control System Command and Macro Reference*

SLI

This manual provides detailed information on the purpose and use of the GCS commands and macro instructions. It gives the formats, syntax rules, and parameter descriptions for the GCS commands and macros.

- *VM/SP Planning Guide and Reference*

TEP

This manual provides the formats, descriptions, and usage notes for directory control statements and for the macros that make up the DMKRIO, DMKSYS, and DMKSNT assembler files. See "Glossary of Terms and Abbreviations" for a description of these files.

- *VM/SP System Product Editor Command and Macro Reference*

TXT

This manual provides descriptions and command formats for the CMS XEDIT command, the XEDIT subcommands and macros, and the XEDIT prefix subcommands and macros.

- *VM/SP System Product Editor User's Guide*

TXT

This manual provides tutorial instruction on using XEDIT. It includes information on using the editor on both a display station and a typewriter-like terminal. It also includes information on using targets to locate lines in a file, editing multiple files, tailoring the XEDIT display screen, and writing and using XEDIT macros.

- *VM/SP System Product Interpreter Reference*

SLI

This manual is for programmers experienced in using a high-level language. It describes the VM/SP System Product Interpreter and the Restructured Extended Executor (REXX) language. It includes the use and syntax of the language as well as an explanation of the way the interpreter “interprets” the REXX language as a program executes.

- *VM/SP System Product Interpreter User's Guide*

SLI

This manual is a self-study guide for programming in the Restructured Extended Executor (REXX) language. It includes discussions of variables, expressions, conversations, commands, file processing, XEDIT, control, and programming techniques.

Virtual Storage Extended/Virtual Storage Access Method (VSE/VSAM)

- *Using the VSE/VSAM Backup/Restore Feature*

PRU **SLI**

This manual discusses using the Backup/Restore feature of VSE/VSAM. It includes detailed information on the BACKUP and RESTORE commands.

- *Using the VSE/VSAM Space Management for SAM Feature*

AP

This manual describes the use of the VSE/VSAM Space Management for SAM feature.

ADL Application Development Languages

AVA Adding your Applications to Home Menus

PRU Predefined Routine and Utility Languages

TXT Text Editors

AHP Adding VM/IS Help Panels

MCT Project Management and Control Tools

SLI System Languages and Interfaces

UI User Interface

AOI Adding a VM/IS Online Introduction Topic

PDT Program Development Tools

TEP Tailoring Existing VM/IS System Products

2PL Using Two or More Programming Languages

- *Using VSE/VSAM Commands and Macros*

AP

This manual provides an introduction to access method services. It includes information on access method services, the access method service commands, VSE/VSAM macros, and the VSE/VSAM macro instruction format.

- *VSE/VSAM Programmer's Reference*

PRU **SLI**

This manual discusses job control, VSE/VSAM catalogs, using VSE/VSAM objects as models, VSE/VSAM labels, the Indexed Sequential Access Method (ISAM) interface program, and optimizing VSE/VSAM's performance.

VM Batch Facility

- *VM Batch Facility Installation, Customization, and Administration*

TEP

This manual describes the options available for customizing the Batch Facility.

VM/Distributed System Node Executive (VM/DSNX)

- *VM/Distributed System Node Executive Guide and Reference*

PRU **TEP** **UI**

EXEC procedures supplied with the product provide the pre- and post-processing needed to modify the format of non-CMS files and to restore them to their original format for implementation on remote systems. You can use these EXEC procedures as supplied, or you can customize them for use in applications. The product also supplies an example of a change distribution and implementation schedule using VM/DSNX. This manual explains the use of the EXEC procedures and the distribution application. It also explains and gives examples of the user exits provided to enable you to customize VM/DSNX to specific processing requirements.

VM/Integrated System (VM/IS)

- *VM/IS Tailoring Your Menus*

AHP **AOI** **AYA**

This manual describes ways to customize an existing menu and to create a new menu using the customizing procedure. It discusses the hierarchical structure of the VM/IS Productivity Facility home menus. It describes ways to customize the home menu hierarchy using advanced panel tailoring techniques. It describes creating and adding online introduction topics and help panels.

VM/Pass-Through Facility (PVM)

- *VM/Pass-Through Facility Guide and Reference*

SLI **TEP**

This manual describes all commands and records for the product. It also describes the input and output parameters for exit routines that a system programmer can code.

VM/System Product Interpreter Interface to SQL/DS (RXSQL)

- *VM/System Product Interpreter Interface to SQL/Data System Program Description/Operations Manual*

ADL **PRU** **SLI** **2PL**

This manual provides all the information describing the RXSQL interface between REXX and SQL/DS. It provides initial installation information, the complete RXSQL command reference, and sample program guides to the use of RXSQL.

VS COBOL II

- *VS COBOL II Application Programming: Language Reference*

ADL

This manual presents the rules for writing COBOL programs to be compiled by the VS COBOL II compiler.

- *VS COBOL II Application Programming Guide*

ADL

This manual describes the way to code a VS COBOL II program.

- *VS COBOL II Application Programming: Supplement for CMS Users*

ADL

This manual provides specific information on the way to code a VS COBOL II program to run under CMS.

VS FORTRAN Version 2

- *VS FORTRAN Version 2 Language and Library Reference*

ADL

This manual provides detailed information on all elements of the programming language. It includes information on subroutines and subprograms.

- *VS FORTRAN Version 2 Programming Guide*

ADL

This manual describes the various types of data and data entities, ways to declare data types and lengths, and ways to use data efficiently. It provides detailed information on defining and using expressions, on assigning values to variables, array elements, and character substrings, and on I/O techniques.

It discusses program hierarchy, as well as subroutines and subprograms.

It provides detailed information on optimizing your VS FORTRAN programs.

ADL Application Development Languages

AYA Adding your Applications to Home Menus

PRU Predefined Routine and Utility Languages

TXT Text Editors

AHP Adding VM/IS Help Panels

MCT Project Management and Control Tools

SLI System Languages and Interfaces

UI User Interface

AOI Adding a VM/IS Online Introduction Topic

PDT Program Development Tools

TEP Tailoring Existing VM/IS System Products

2PL Using Two or More Programming Languages

Chapter 4. Testing Your VM/Integrated System Application

Testing is an important task in the application development cycle. You must make sure that your product does what it is designed to and that it interacts correctly with the rest of the VM/IS system.

The purpose of testing is not to prove that no errors exist, but rather to find as many errors as possible. Start testing with the assumption that the program contains errors. To successfully test a VM/IS application, you should do the following:

- Define an error. You must have complete and measurable specifications, you must define exactly what constitutes an error, and you must measure all of the measurable specifications.
- Begin testing early. You can test parts of your application while you are planning, designing, coding, documenting, and packaging.
- When testing your application, start by testing each function individually. Test the application as a whole only when you are satisfied that each function performs as defined in the specifications.
- Document your test plan, the data you intend to use for testing, and the results you obtain. Do not deviate from your test plan without documenting your actions.
- Test for performance as part of your test procedure. Performance testing may uncover other problems.
- Use tools and debugging aids, such as:
 - Messages and codes issued by the languages you use to code the application
 - Tracing facilities
 - Messages and codes issued by those products with which your application interacts
 - The *VM/IS Learning to Use Your System: Error and Information Messages* manual.
- Use real and verifiable data for your test cases. Document the data you intend to use for testing, and the type of tester (usually the type of end-user that uses the completed application).
- Use not only data that you know should work in the application, but also data that you know should not work.
- Test the entire application for usability. Use testers with the same level of skill as the intended users.
- Test the documentation as a normal part of your testing procedure.
- Test the entire system with the application installed. Test not only the application itself, but also the other products installed to make sure that all parts of the system interact without errors.

This chapter lists those publications that contain information about testing your application.

Reference Keys Used

The following list shows the reference keys used in this chapter and describes the type of information indicated by each key. This information is discussed in detail in *Developing an Application: Getting Started*.

Ref. Key	Type of Information
CTD	<i>Creating Test Data.</i> This key indicates publications that deal with the creation of test data for application testing purposes.
DA	<i>Using Debugging Aids and Tools.</i> This key indicates publications that deal with the use of the VM/IS debugging aids and messages.
EYA	<i>Executing Your Application.</i> This key indicates publications that deal with executing your application.
TP	<i>Testing for Performance.</i> This key indicates publications that deal with testing the performance of your application.
TST	<i>Testing the System.</i> This key indicates publications that deal with testing the entire system; that is, testing to see that all products, functions, and applications interact correctly with one another and with the operating environment of VM/IS.

Advanced Communications Function for the Virtual Telecommunications Access Method V3R1.2 (ACF/VTAM)

- *VTAM Data Areas for VM*

DA

This manual lists all data areas used by VTAM running under VM and can be used to help interpret VTAM dumps.

- *VTAM Diagnosis Guide*

DA

This manual describes how to identify the source of a VTAM problem. It shows how to collect the information needed by IBM service personnel to fix the problem.

- *VTAM Diagnosis Reference*

TST

This manual contains information that may be useful when diagnosing VTAM. It contains an overview of VTAM logic, control blocks, and components.

- *VTAM Messages and Codes*

DA

This manual contains a list of all messages and codes issued by VTAM.

- *VTAM Version 3 Releases 1.1 and 1.2 Expanded Networking Capabilities Support*

TST

This manual, a supplement to the VTAM library, provides a variety of information about functions that are available with VTAM Version 3 Releases 1.1 and 1.2.

Application System (AS)

- *Developing Applications with AS*

EYA TP

This manual discusses all aspects of developing an application, including testing and refining applications.

Cross System Product/Application Development (CSP/AD)

- *Cross System Product/Application Development and Cross System Product/Application Execution Messages, Codes, and Problem Determination*

DA

This reference manual contains messages and codes generated by CSP/AD and CSP/AE. It includes a section that helps you run the trace facility when working with level 2 support personnel.

- *Cross System Product/Application Development Operation-Development*

CTD EYA TP

This manual helps you to create, change, and maintain Cross System Product applications.

Cross System Product/Application Execution (CSP/AE)

- *Cross System Product/Application Development and Cross System Product/Application Execution Messages, Codes, and Problem Determination*

DA

This reference manual contains messages and codes generated by CSP/AD and CSP/AE. It includes a section to help you run the trace facility when working with level 2 support personnel.

Customer Information Control System/Virtual Machine (CICS/VM)

- *CICS/VM Application Programming*

DA EYA

This manual describes testing and executing CICS/VM applications in detail. It introduces the debugging strategy, referring to the CICS/VM System Support and Administration manual for detail.

- *CICS/VM System Support and Administration*

DA **TST**

This manual provides guidance and reference information for using the debugging tools available to CICS/VM application and system programmers. These tools include CICS tools (such as CEDF and CEBR), CICS/VM tools (program and server machine traces), and VM tools (such as PER, DEBUG, and VMDUMP).

Data Base Edit Facility for VM/SP CMS (DBEDIT)

- *Data Base Edit Facility for VM/SP CMS Program Description/Operations Manual*

DA **EYA**

This manual is for data base administrators and programmers responsible for installing, administering, and maintaining DBEDIT. It provides an overall view of the DBEDIT program. It includes installation procedures and provides reference material about the DBEDIT modules. It provides information about the DBEDIT diagnostic trace options and help messages.

DisplayWrite/370

- *DisplayWrite/370 Diagnosis Guide*

DA

This manual describes ways of identifying suspected program failures within DisplayWrite/370.

- *DisplayWrite/370 Messages and Codes*

DA

This manual lists all messages and return codes that DisplayWrite/370 generates, along with explanations for removing the conditions that caused the errors.

Environmental Record Editing and Printing Program (EREP)

- *Environmental Record Editing and Printing Program User's Guide and Reference*

EYA

This manual provides a general overview to EREP and covers the following topics: setting up and running EREP jobs, reference information, and product dependent information. It is the only external manual for EREP.

Graphical Data Display Manager Version 2 (GDDM)

- *GDDM Installation and System Management for VM*

TST

This manual describes procedures for verifying that GDDM/VM and any other GDDM programs are installed correctly.

- *GDDM Diagnosis and Problem Determination Guide*

DA

This manual describes ways to diagnose problems that may occur when using GDDM. It describes the use of the debugging and trace tools provided by GDDM and the correct way to report GDDM problems to an IBM representative.

- *GDDM Messages*

DA

This manual lists and describes all the error, information, and warning messages issued by GDDM/VM and other GDDM programs.

- *GDDM Performance Guide*

TP

This manual describes ways of tuning GDDM to give optimum performance.

Graphical Data Display Manager with the Presentation Graphics Feature (GDDM-PGF)

- *GDDM Installation and System Management for VM*

TST

This manual contains procedures to verify that GDDM-PGF and any other GDDM licensed programs are installed correctly.

- *GDDM Diagnosis and Problem Determination Guide*

DA

This manual describes ways to diagnose problems that may occur when using GDDM-PGF. It describes using the debugging and trace tools provided by GDDM and the correct way to report GDDM problems to an IBM representative.

- *GDDM Messages*

DA

This manual lists and describes all the error, information, and warning messages issued by GDDM-PGF and other GDDM programs.

IBM 3812 Pageprinter VM Support (VM3812)

- *VM3812-IBM 3812 Pageprinter Support User's Guide*

DA

This manual describes the FONTDISP utility program for displaying font data and the DEBUG option of the PRT3812 EXEC.

- *VM3812-IBM 3812 Pageprinter Support Installation Guide*

TST

This manual describes the sample files distributed with the VM3812 product tape and the way to print these files.

Interactive System Productivity Facility (ISPF)

- *ISPF Dialog Management Guide*

DA

EYA

This manual describes the way you can compile and execute a dialog in foreground or batch mode. It describes the use of the ISPF test mode and trace mode in debugging a dialog.

- *ISPF Dialog Management Services and Examples*

DA

This manual lists the services available with ISPF. For each service, the manual includes a syntax diagram, a brief description, parameter descriptions, and return codes.

Interactive System Productivity Facility/Program Development Facility (ISPF/PDF)

- *ISPF/PDF Guide*

DA

This manual describes ways to test either complete ISPF applications or ISPF dialog elements such as functions, panels, variables, messages, tables, and skeletons.

NetView

- *NetView Messages*

DA

This manual lists the messages produced by the NETVIEW® Program on your MVS, MVS/XA, or VM system. It gives an explanation of each message and describes the necessary response.

- *NetView Diagnosis*

DA

EYA

TST

This manual aids system programmers in identifying a NetView problem, classifying it, and accurately describing it to an IBM support center so a solution can be found.

- *NetView Hardware Problem Determination Reference*

DA

This manual provides alert information beyond that offered in the NetView panels. It is designed to assist you in determining the specific component that is causing the alert. It includes formats of trace records sent to NetView from the products that NetView supports.

- *NetView Problem Determination Supplement for Management Services Major Vectors 0001 and 0025*

DA

This manual describes major vectors 0001 and 0025. It is intended for system programmers and network operators involved in problem determination or diagnostic tasks.

Query Management Facility for VM/SP (QMF/VM)

- *QMF: Application Development Guide for VM/SP*

DA **EYA**

This manual describes using the QMF tracing facility and its debugging aids.

Remote Spooling Communications Subsystem (RSCS)

- *RSCS Diagnosis Reference*

DA **TST**

This manual describes a variety of tracing and error reporting facilities, including IPCS.

- *RSCS Operation and Use*

DA **TST**

This manual lists and explains error and information messages generated by RSCS.

- *RSCS Planning and Installation*

DA **TST**

This manual discusses the way to verify that RSCS is correctly installed. It lists and explains error and information messages generated during the installation of RSCS. It includes a checklist for problem diagnosis.

Structured Query Language/Data System (SQL/DS)

- *SQL/Data System Application Programming for VM/SP*

DA **EYA** **TP**

This manual describes the steps by which an application program using SQL, written in one of a variety of compiled programming languages, can be preprocessed and run. It discusses testing and debugging application programs. It describes performance considerations including which performance parameters to specify and what the various parameters should be set to.

- *SQL/Data System Data Base Planning and Administration for VM/SP*

DA **TP**

This manual discusses recovery support provided in case of application failure or user logic errors. It includes a section on improving data base performance.

- *SQL/Data System Data Base Services Utility VM/SP*

DA

This manual explains the use of the DBSU debug processing.

- *SQL/Data System Messages and Codes for VM/SP*

DA

This manual documents all messages and codes generated by SQL/DS.

- *SQL/Data System Diagnosis Guide for VM/SP*

DA TP

This manual provides a general description of the diagnosis task. It describes the analysis of problems you might encounter using SQL/DS, including possible causes and actions you might take to resolve the problems.

- *SQL/Data System Diagnosis Reference for VM/SP*

DA

This manual lists major SQL/DS modules, briefly describes their functions, and shows module-to-module cross-references. It describes the use of tools to correct programming problems. It identifies important data areas for SQL/DS working storage. (This information may be useful for interpreting storage dumps and for determining the program's or system's status at the time of failure.)

- *SQL/Data System System Planning and Administration for VM/SP*

DA TP

This manual outlines recovery from system failures and DASD failures. It discusses improving SQL/DS performance through the various methods. These methods include: making VM/SP changes, selecting and tuning SQL/DS operating parameters, reorganizing indexes on catalog tables, and defining discontinuous saved segments.

Transmission Control Protocol/Internet Protocol for VM (TCP/IP)

- *IBM Transmission Control Protocol | Internet Protocol for VM Programmer's Manual*

EYA DA

This manual provides numerous return codes and descriptions for functions and procedures at the TCP/UDP/IP interface.

- *IBM Transmission Control Protocol | Internet Protocol for VM Command Reference*

EYA DA

This manual provides numerous return codes and descriptions for functions and procedures at the user interface.

Virtual Machine Monitor Analysis Program (VMMAP)

- *VM Monitor Analysis Program User's Guide and Reference*

TP

This manual describes the way to use VMMAP to examine system performance under various testing situations. By examining key performance indicators during each test run, you can more easily develop an application that runs optimally on your system.

Virtual Machine Real Time Monitor (VM/RTM)

- *VM Real Time Monitor Program Description/Operations*

TP

This manual describes ways of using VM/RTM to examine system performance under various testing situations. By examining key performance indicators during each test run, you can more easily develop an application that runs optimally on your system.

Virtual Machine/File Storage Facility (VM FSF)

- *Virtual Machine/File Storage Facility Program Description/Operations Manual*

DA

This manual defines all messages and return codes generated by VM FSF.

Virtual Machine/System Product (VM/SP)

- *VM Diagnosis Guide*

DA

This manual includes information on debugging CP, CMS, GCS, and TSAF. It also describes all of the Interactive Problem Control System (IPCS) commands and subcommands used for reporting problems, diagnosing problems, and managing problems and data.

- *VM/SP CMS Command Reference*

DA

This manual includes the formats, descriptions, and usage notes for the subcommands you can use to debug your programs.

- *VM/SP CMS User's Guide*

EYA

This manual describes how to prepare jobs for batch execution, how to submit, purge, and reorder jobs, and how to use EXEC procedures to submit batch jobs.

- *VM/SP CP Command Reference*

DA

This manual provides formats, descriptions, and usage notes for CP commands. These commands are used to locate, display, trace, and alter the program instructions executed in your virtual storage.

- *VM/SP Planning Guide and Reference*

TP

This manual discusses performance measurement, performance analysis, and ways to improve performance.

- *VM/SP System Messages and Codes*

DA

This manual explains VM/SP return codes, wait state codes, and abnormal termination codes. It contains messages for CP, CMS, IPCS, GCS, TSAF, CMS EDIT, DEBUG, CMS EXEC, EXEC 2, and System Product Interpreter.

- *VM/SP System Messages Cross-Reference*

DA

This manual contains cross-reference listings of all VM/SP messages. Cross references are listed by command, module code, message number, and message text.

- *VM/SP Transparent Services Access Facility Reference*

DA

This manual provides a general overview of diagnosing problems of the TSAF virtual machine by using dumps or system trace data.

Virtual Storage Extended/Virtual Storage Access Method (VSE/VSAM)

- *VSE/VSAM General Information*

DA **TP**

This manual provides information on the performance options available with VSE/VSAM. It includes problem determination information.

- *VSE/VSAM Programmer's Reference*

DA **TP**

This manual provides information on optimizing the performance of VSE/VSAM. It discusses the diagnostic aids available with VSE/VSAM.

- *VSE/VSAM Messages*

DA

This manual lists and describes the VSE/VSAM messages and the Access Method Services messages.

VM Batch Facility

- *VM Batch Facility User's Guide*

EYA

This manual describes executing your job as a batch job.

VM/Directory Maintenance (DIRMAINT)

- *Directory Maintenance Installation and System Administrator's Guide*

DA TP

This manual provides information on manual testing of a new virtual machine to verify that the virtual machine operates correctly. It includes procedures for extended testing as well. It provides a list of all of the DIRMAINT messages and responses.

- *Directory Maintenance Guide for General Users*

DA

This manual provides common normal responses, common error responses, transmission error responses, and a comprehensive error list.

VM/Integrated System (VM/IS)

- *VM/IS Learning to Use Your System: Error and Information Messages*

DA

This manual lists the error messages and information messages produced by VM/IS.

- *VM/IS Tailoring Your Menus*

EYA

This manual discusses how to run applications from VM/IS.

VM/Pass-Through Facility (PVM)

- *VM/Pass-Through Facility Guide and Reference*

DA TST

This manual describes the syntax and restrictions for commands used in problem determination. It introduces the available problem determination aids. It provides a list of all messages issued by VM/Pass-Through, which includes explanations and responses.

- *VM/Pass-Through Facility Logic*

DA

This manual describes the problem determination facilities of the product. It provides samples of traces and dumps that you could generate. It describes the Pass-Through/IPCS support available including special commands and messages.

VS COBOL II

- *VS COBOL II Application Programming: Debugging*

DA

This manual contains procedures for debugging programs that end with abnormal termination during execution. It describes how to use tools provided with VS COBOL II to identify and correct problems in a VS COBOL II program.

- *VS COBOL II Application Programming: Application Programming Guide*

EYA

This manual describes how to execute VS COBOL II programs.

- *VS COBOL II Application Programming: Supplement for CMS Users*

EYA

This manual provides specific information on ways of executing a VS COBOL II program under CMS.

VS FORTRAN Version 2

- *VS FORTRAN Version 2 Interactive Debug Guide and Reference*

DA

This manual shows ways of using the interactive debug facility.

- *VS FORTRAN Version 2 Language and Library Reference*

DA

This manual discusses error handling subroutines, describes dump output, and provides information on error messages and interrupt procedures.

- *VS FORTRAN Version 2 Programming Guide*

DA **EYA**

This manual provides information on compiling and executing your programs in a CMS virtual machine running under VM/SP. It includes information on fixing execution-time errors and using the various debugging aids.

Chapter 5. Packaging a VM/Integrated System Application

To distribute your application to your customers, you must package the application on tape.

To successfully package a VM/IS application, you should do the following:

- Learn and understand the suggested format and restrictions for building the package tape.
- Understand the VM/SP installation procedure and the INSTFPP EXEC.
- Understand the requirements for and create an installation EXEC. Your application installation EXEC should do the following:
 - Use filemodes **E** through **O**.
 - The required entries in the VM/IS BASE were added as instructed in the application documentation (for example, directory entries or DMKRIO entries).
 - The customer defined a specific minidisk for your application, or made sure sufficient DASD space exists to load your application to a minidisk that contains other application files.
 - Format any application-specific minidisks.
 - Be executed by INSTFPP from the MAINT user ID, which defines virtual storage to be from 12M to 16M, and initiates CMS.
 - The tape is positioned at the beginning of the third logical tape file.
 - Keep track of tape position as the files are loaded.
 - Log off user IDs that own minidisks onto which you will load files.
 - Save spool state parameters for spooling unit record devices back to their initial parameters.
 - Use a temporary disk when assembling or compiling programs.
 - Link to proper minidisks in write mode and then load files from the tape.
 - Generate the shared segment, if there is one.
 - Send messages to the customer telling the status of the installation and verification process.
 - Release and detach all application-related minidisks before exiting.
 - Spool devices back to their original parameters before each exit from the EXEC.
 - Set the value of the return code into a variable, and exit with the variable.
 - Upon error, position the tape to the end of the application being installed, and exit with the appropriate error return code and message.
 - Include an epilogue that explains the EXEC.
- Understand the requirements for and create a verification routine. Your verification routine should do the following:
 - Check for the existence of any prerequisite program or EXEC before attempting the verification process.
 - Save spool state parameters for spooling unit record devices back to their initial parameters, if the EXEC changes those parameters.
 - Link to appropriate minidisks used in verifying the installation and functioning of your application.
 - Execute one or more applications to verify that your application runs properly. Document expected results in the Memo to Users.
 - Release and detach all minidisks linked before exiting.
 - Spool devices back to the way they were before each exit.
 - Issue a message to the customer stating whether or not the verification was completed successfully.
 - Include an epilogue that explains the EXEC.

- Write the Memo to Users and include it on the tape.
- Build the package tape using the VMFPLC2 command with the appropriate parameters.
- Test that your package can be successfully installed from the tape.

This chapter lists those publications that describe the tape packaging procedures.

Reference Keys Used

The following list shows the reference keys used in this chapter and describes the type of information indicated by each key. This information is discussed in detail in *Developing an Application: Getting Started*.

Ref. Key	Type of Information
BPT	<i>Building the Package Tape.</i> This key indicates publications that deal with building the package tape.
PTF	<i>Package Tape Format.</i> This key indicates publications that describe the Feature Program Product (FPP) package tape format.
TSI	<i>Testing for Successful Installation.</i> This key indicates publications that help you test your installation procedures.
VIP	<i>VM/SP Installation Process.</i> This key indicates publications that discuss the VM/SP FPP Installation Process.

Advanced Communications Function for the Virtual Telecommunications Access Method V3R1.2 (ACF/VTAM)

- *VTAM Installation and Resource Definition*

TSI **VIP**

This manual provides systems programmers with information on installing VTAM and defining a network to it. It discusses installing VTAM, coding start options, defining the network to VTAM, and testing VTAM definitions.

- *VTAM Version 3 Releases 1.1 and 1.2 Expanded Networking Capabilities Support*

TSI **VIP**

This manual, a supplement to the VTAM library, provides a variety of information about functions that are available with VTAM Version 3 Releases 1.1 and 1.2.

Cross System Product/Application Development (CSP/AD)

- *Cross System Product/Application Development and Cross System Product/Application Execution System Administration*

TSI

This manual discusses the system compatibilities to consider when promoting an application from development to production.

- *Cross System Product/Application Development Operation-Development*

TSI

This manual discusses how to test an application during development and how to promote the application from development to production.

DisplayWrite/370

- *DisplayWrite/370 Installation and Administration VM/CMS*

PTF **TSI** **VIP**

This manual describes the tape format and contents, as well as the process for installing and verifying the DisplayWrite/370 distribution tape.

Graphical Data Display Manager Version 2 (GDDM)

- *GDDM Installation and System Management for VM*

PTF **TSI** **VIP**

This manual describes the content of the GDDM tape, the installation process, and procedures for determining whether GDDM and other GDDM programs are installed correctly.

Graphical Data Display Manager with the Presentation Graphics Feature (GDDM-PGF)

- *GDDM Installation and System Management for VM*

PTF **TSI** **VIP**

This manual describes the content of the GDDM-PGF tape, the installation process, and procedures for determining whether GDDM-PGF and other GDDM programs are installed correctly.

NetView

- *NetView Installation and Administration Guide*

TSI

This manual helps you install and prepare the NETVIEW® Program for operation. It contains information on defining a production network to the NetView® Program and verifying that it functions properly.

- *Automated Operations Using NetView Command Lists*

TSI **VIP**

This manual is designed to help systems analysts, systems programmers, and operations personnel use the command lists (CLISTs) and other material in the automated operations sample set to begin to automate computer operations at an installation. It describes the material in the automated operations sample set and provides information about developing, writing, and testing CLISTs.

- *NetView Command Lists*

BPT **TSI** **VIP**

This manual explains how to simplify network operator tasks by using command lists (CLISTs). It provides step-by-step instructions for writing simple and advances CLISTs, which can be used to obtain information from operators, other tasks, system resources, or the contents of messages. This information can be used to perform simple processing or can be used for logically structured decision making.

- *NetView Online Help*

NetView online help (shipped with the product tape) provides online tools for investigating and controlling system status. The online help is not available if you are using NetView with the DASD Conservation Option.

Professional Office System (PROFS)

- *Planning for and Installing the Professional Office System*

PTF **TSI** **VIP**

This manual includes steps to follow to prepare for the installation of PROFS and steps for the actual installation. A “cookbook” approach to arranging installation subjects in major segments permits you to easily follow directions for installation of the applications.

Virtual Machine/System Product (VM/SP)

- *VM/SP Installation Guide*

BPT **VIP**

This manual contains step-by-step instructions for installing an application using the INSTFPP EXEC.

It includes the format, description, and usage notes for the VMFPLC2 command (used to dump one or more disk files to tape).

VM/Pass-Through Facility (PVM)

- *VM/Pass-Through Facility Guide and Reference*

PTF

This manual describes how to install PVM and the format of the product tape. It illustrates both automatic and stand-alone installation processes.

VM/Integrated System (VM/IS)

- *VM/IS Developing an Application: Getting Started*

BPT

This manual suggests a format to follow when creating your package tape. It outlines how the INSTFPP installation EXEC procedure works and how it interacts with your installation EXEC procedure to install your application. It describes the functional specifications your installation and verification EXEC procedures should follow so that your application can be installed successfully on a customer's VM/IS system.

Chapter 6. Documenting a VM/Integrated System Application

Good documentation is the key to a finished product. Along with documentation tools, VM/IS also provides a conventions guide that tells you the way to write your documentation so that it looks like an integral part of the VM/IS library.

The *VM/IS Application Design Guidelines: User Documentation* guide describes the way you can design and write your documentation to look like the documentation of the VM/IS library.

Document your application using the following suggestions:

- Use the planning phase of your project to determine the type of documentation you should use.
- Make your library similar in appearance and format to the existing VM/IS library.
- Although you can choose from several types of manual, you should supply at least an end-user primer and an administration primer. In addition, you should always supply a Memo to Users as a print file on the package tape.
- Your end-user manual should include some or all of the following topics or sections:
 - Introduction
 - Most important tasks
 - Examples
 - Glossary.
- Your administration manual should include some or all of the following topics or sections:
 - Introduction
 - Planning, installing, and customizing
 - Operating and administering
 - Servicing
 - Migrating
 - Contents of certain files
 - Glossary.
- Your Memo to Users should include some or all of the following topics or sections:
 - Preinstallation
 - Installation
 - Verification
 - Tailoring
 - Error Messages
 - Prerequisites
 - Corequisites
 - Service
 - Special Instructions.

- Plan to use tools supplied by VM/IS in the following categories to help you document your application:
 - Editors
 - Formatters
 - Graphics support
 - File management
 - Personal Computer support
 - Printer support
 - Administrative
 - Batch facilities
 - Communications.

This chapter lists those publications that contain information about documenting your application.

Reference Keys Used

The following list shows the reference keys used in this chapter and describes the type of information indicated by each key. This information is discussed in detail in *Developing an Application: Getting Started*.

Ref. Key	Type of Information
DP	<i>Designing Publications to VM/IS Standards.</i> This key indicates publications that outline IBM's printing specifications for VM/IS publications.
DT	<i>Documentation Tools of VM/IS.</i> This key indicates publications that describe ways of using the documentation tools available with VM/IS.
PL	<i>The Publications Library.</i> This key indicates the publications that describe the design of IBM's VM library publications.
WP	<i>Writing the Publications.</i> This key indicates the publications that outline IBM's writing style for VM publications.

Application System (AS)

- *Developing Applications with AS*

DT

This manual discusses all aspects of developing an application, including documenting applications.

Document Composition Facility (DCF)

- *Composing Documents with the Generalized Markup Language*

DT

This manual teaches you the way to use Generalized Markup Language (GML) in general and the way to use the starter set in particular, and prepares you to use any specific GML tags that your organization might develop. It describes ways of using GML tags to mark up a document. It includes information you need to know in addition to the tags themselves to take full advantage of the starter set and SCRIPT/VS.

- *Document Composition Facility: Generalized Markup Language*

DT

This manual describes the GML starter set tags and the formatting results that SCRIPT/VS produces when using these GML tags. It describes the structure of general documents and how you can identify the parts or elements with tags. It describes each tag in detail. It explains ways of using the SCRIPT command and its options to process documents marked up in GML. Appendixes list the messages produced by the GML starter set and describe the GML starter set profile (DSMPROF3), including the way parameters set in the profile can control formatting.

- *Document Composition Facility: SCRIPT/VS Language Reference*

DT

This reference manual describes all the SCRIPT control words. SCRIPT control words are the building blocks of GML tags; that is, GML tags are macros that execute SCRIPT control words. It describes ways to tailor SCRIPT/VS for your installation, the way to create a font library index, the way to create and maintain a user directory, and the way to change your index sort sequence.

- *Document Composition Facility: SCRIPT/VS Text*

DT

This manual describes the Document Composition Facility (DCF) and its component text processing program, SCRIPT/VS. It is basically a “how to” book that describes the many aspects of marking up a document with SCRIPT control words and formatting it with SCRIPT/VS. Some of the topics covered are: creating vertical space, vertically adjusting text, establishing page layout, composing multiple column pages, creating rules and boxes, creating tables, selecting fonts, creating footnotes, and translating characters.

- *Document Composition Facility Messages*

DT

This manual lists all of the messages produced by the SCRIPT control words. It provides an explanation, system action, and user response for each message.

- *Document Composition Facility: Generalized Markup Language Starter Set Implementation Guide*

DT

This manual is for text programmers responsible for maintaining, altering, or extending the GML starter set. It provides specific and detailed information about the way the starter set tags work. This manual is also helpful to those who modify or write their own GML tags and application processing functions (ACFs) independent of the starter set. This manual is not intended for end-users of either the GML starter set or SCRIPT control words.

- *Document Composition Facility Diagnosis Guide*

DT

This manual provides information to help the end-user diagnose failures in the Document Composition Facility and communicate those failures to an IBM representative. This manual sets forth a systematic way of selecting keywords so that the end-user can describe a suspected program failure.

DisplayWrite/370

- *DisplayWrite/370 Reference*

PL

This manual contains a comprehensive list of publications for products that work together with DisplayWrite/370.

Virtual Machine/System Product (VM/SP)

- *VM/SP CMS Primer*

DT

This manual explains, for the beginning user, the way to format a file for printing using SCRIPT/VS (part of DCF).

VM/Integrated System (VM/IS)

- *VM/IS Application Design Guidelines: User Documentation*

DP **PL** **WP**

This manual describes VM/IS library design. It explains how to write easy-to-use tutorials, as well as providing printing and style specifications for VM/IS manuals.

Appendix A. System Prerequisites and Corequisites

Many of the products packaged under VM/IS have specific operating requirements. For many of these products to run properly, they must interact with other products. Fortunately, VM/IS provides all the necessary prerequisite and corequisite products.

The following table shows the product dependencies. This table shows only the host-side dependencies. There may be some dependencies for peripheral equipment that are not listed.

Product Abbreviation	Some of the function depends on	All of the function depends on
AS	SQL/DS, QMF/VM, DXT	GDDM-PGF
CICS/VM	PVM, SQL/DS	VSE/VSAM
CSP/AD	SQL/DS	CSP/AE, VSE/VSAM
CSP/AE	SQL/DS	VSE/VSAM
CVIEW	PVM	
DBEDIT		GDDM/VM, PL/I R.L., PL/I T.L., SQL/DS
DisplayWrite/370	DCF	
DXT	AS, ECF, QMF/VM, RSCS, SQL/DS	
ECF Servers-Requesters	ACF/VTAM, DXT, SQL/DS	ISPF
GDDM-PGF		GDDM/VM
PL/I R.L.		PL/I T.L.
PROFS	DCF, DisplayWrite/370, GDDM-PGF, ISPF, RSCS	
PASF	AS, DCF, DisplayWrite/370, QMF/VM, SQL/DS	PROFS
PROFS Notelog Maintenance		DCF, PROFS
QMF/VM	DXT, ISPF/PDF	ISPF, GDDM-PGF, SQL/DS
RXSQL		SQL/DS
TCP/IP	RSCS, RXSQL, SQL/DS	
VM Batch Facility	RSCS	
VMMAP	GDDM-PGF	PL/I T.L.
VM3812	DCF	
VM/DSNX		RSCS
VM/IS PF	ISPF, VM/IPF	

Table 1 (Page 2 of 2). VM/IS Product Dependencies		
Product Abbreviation	Some of the function depends on	All of the function depends on
VS COBOL II	CICS/VM, ISPF/PDF	
VS FORTRAN	ISPF/PDF	

Appendix B. The Interface Information Publications

This appendix provides a list of all publications referenced in this guide. The publications are listed by product in alphabetical order.

Advanced Communications Function for the Virtual Telecommunications Access Method V3R1.2 (ACF/VTAM)

Network Program Products Planning, SC30-3351-1
Network Program Products Storage Estimates, GC30-3403-3
VTAM Customization, SC23-0112-3
VTAM Data Areas for VM, LY30-5583-0
VTAM Diagnosis Guide, SC23-0116-3
VTAM Diagnosis Reference, LY30-5582-1
VTAM Messages and Codes, SC23-0114-3
VTAM Programming, SC23-0115-2
VTAM Version 3 Releases 1.1 and 1.2 Expanded Networking Capabilities Support, LD21-0019-0

Application System (AS)

Application System General Information, SH45-5000
Application System Reference, SH45-5004-01
Creating Documents with Application System, SH45-5009-00
Developing Applications with AS, SH45-5005-01
Managing Projects with Application System, SH45-5008-00
Using Application System, SH45-5002-00

Cooperative Viewing Facility Version 2 (CVIEW)

Cooperative Viewing Facility Version 2 Guide, SC34-4006-01

Cross System Product/Application Development (CSP/AD) and Cross System Product/Application Execution (CSP/AE)

Cross System Product/Application Development and Cross System Product/Application Execution General Information, GH23-0500-01
Cross System Product/Application Development and Cross System Product/Application Execution Messages, Codes, and Problem Determination, SH23-0505-01
Cross System Product/Application Development and Cross System Product/Application Execution System Administration, SH23-0503-01
Cross System Product/Application Development Operation-Development, SH23-0502-01
Cross System Product/Application Development Reference, GH23-0515-00

Customer Information Control System/Virtual Machine (CICS/VM)

CICS/VM Application Programming, SC33-0570-00
CICS/VM System Support and Administration, SC33-0573-00

Data Base Edit Facility for VM/SP CMS (DBEDIT)

Data Base Edit Facility for VM/SP CMS Program Description/Operations Manual, SH20-0077-01

Data Base Edit Facility Quick User's Guide to PQUERY, SH20-6523-02

Data Base Edit Facility User's Guide, SH20-6522-02

Data Extract (DXT)

Data Extract Version 2: Base Product Planning and Administration Guide, SC26-4243-03

Data Extract Version 2: Features Planning and User's Guide, SC26-4315-01

Data Extract Version 2: Reference, SC26-4248-02

Document Composition Facility (DCF)

Composing Documents with the Generalized Markup Language, S544-3421-01

Document Composition Facility Diagnosis Guide, SY35-0067-01

Document Composition Facility Generalized Markup Language Starter Set Implementation Guide, SH35-0050-3

Document Composition Facility Generalized Markup Language Starter Set Reference, SH20-9187-4

Document Composition Facility Messages, SH35-0048-04

Document Composition Facility SCRIPT/VS Language Reference, SH35-0070-04

Document Composition Facility SCRIPT/VS Text Programmer's Guide, SH35-0069-04

DisplayWrite/370

DisplayWrite/370 Diagnosis Guide, LY12-5053-00

DisplayWrite/370 Installation and Administration for VM/CMS, SH12-5180-00

DisplayWrite/370 Messages and Codes, SH12-5184-00

DisplayWrite/370 Reference, SH12-5176-00

Using CLISTs with DisplayWrite/370, SH12-5196-00

Environmental Record Editing and Printing Program (EREP)

Environmental Record Editing and Printing Program User's Guide and Reference, GC27-1378-02

Graphical Data Display Manager Version 2 (GDDM) and Graphical Data Display Manager with Presentation Graphics Feature GDDM-PGF)

GDDM Application Programming Guide, SC33-0337-00

GDDM Base Programming Reference, SC33-0332-00

GDDM Base Programming Reference Summary, SX33-6053-00

GDDM Diagnosis and Problem Determination Guide, SC33-0326-01

GDDM Installation and System Management for VM, SC33-0323-01

GDDM Messages, SC33-0325-01

GDDM Performance Guide, SC33-0324-00

GDDM PGF Programming Reference, SC33-0333-00

GDDM PGF Programming Reference Summary, SX33-6054-00

GDDM Release Guide, GC33-0320-00

IBM System/370 to IBM Personal Computer Enhanced Connectivity Facilities CMS Servers-Requesters (ECF Servers-Requesters)

IBM Enhanced Connectivity Facilities PC Requesters Reference, SH20-9678-00
(Use publication number SK2T-0003-00 to order publication kit, including binder.)

IBM Enhanced Connectivity Facilities TSO/E Servers and CMS Servers Installation Planning and Programmer's Guide, SH20-9677-00

Introduction to IBM System/370 to IBM Personal Computer Enhanced Connectivity Facilities, GC23-0957-02

IBM 3270 PC File Transfer Program

IBM 3270 Personal Computer Control Program User's Guide and Reference, SC23-0103-02*

IBM 3812 Pageprinter VM Support (VM3812)

VM3812-IBM 3812 Pageprinter Support Application Programmer's Guide, SH20-6732-01

VM3812-IBM 3812 Pageprinter Support Installation Guide, SH20-6731-01

VM3812-IBM 3812 Pageprinter Support User's Guide, SH20-6730-01

Interactive System Productivity Facility (ISPF)

ISPF and ISPF/PDF Installation and Customization, SC34-4015-00

ISPF and ISPF/PDF Primer, SC34-4017-00

ISPF Dialog Management Guide, SC34-4009-0

ISPF Dialog Management Services and Examples, SC34-4010-00

Interactive System Productivity Facility/Program Development Facility (ISPF/PDF)

ISPF and ISPF/PDF Installation and Customization, SC34-4015-00

ISPF and ISPF/PDF Primer, SC34-4017-00

ISPF/PDF Guide, SC34-4011-00

ISPF/PDF Library Management, SC34-4013-00

NetView

Automated Operations Planning Guide, SC30-3474-00

Automated Operations Using Command Lists, SC30-3477-01

NetView Command Lists, SC30-3423-02

NetView Command Summary, SX30-3620-01

NetView Customization, SC30-3462-01

NetView Diagnosis, LY30-5587-02

NetView Hardware Problem Determination Reference, SC30-3366-01

NetView Installation and Administration Guide, SC30-3476-01

NetView Messages, SC30-3365-02

NetView Operation, SC30-3364-02

NetView Operation Primer, SC30-3363-01

NetView Problem Determination Supplement for Management Services Major Vectors 0001 and 0025, LD21-0023-00

Network Program Products General Information, GC30-3350-01

Network Program Products Planning, SC30-3351-01

* Available upon purchase of the IBM 3270 PC Control Program

Network Program Products Samples, SC30-3352-03
Network Program Products Storage Estimates, SC30-3403-03

Professional Office System (PROFS) and PROFS Application Support Feature (PASF)

Installing and Managing Professional Office System Applications Support, SH20-7251-01
Managing the Professional Office System, SH20-6799-01
Planning For and Installing the Professional Office System, SH20-6800-01
Professional Office System Programmer's Guide, SH20-6801-01

PROFS Notelog Maintenance Facility

LOGLIST PROFS Note Maintenance Facility Program Description/Operations Manual, SH20-6722-00

Query Management Facility for VM/SP (QMF/VM)

QMF: Application Development Guide for VM/SP, SC26-4238-01
QMF: Planning and Administration Guide for VM/SP, SC26-4236-01
QMF: Reference, SC26-4344-00

Remote Spooling Communications Subsystem (RSCS)

RSCS Diagnosis Reference, LY24-5228-01
RSCS Exit Customization, LY24-5240-01
RSCS General Information, GH24-5055-02
RSCS Operation and Use, SH24-5058-02
RSCS Planning and Installation, SH24-5057-02

Structured Query Language/Data System (SQL/DS)

SQL/Data System Application Programming for VM/SP, SH09-8019-00
SQL/Data System Concepts and Facilities for VM/SP, GH09-8044-00
SQL/Data System Data Base Planning and Administration for VM/SP, SH09-8017-00
SQL/Data System Data Base Services Utility VM/SP, SH09-8051-00
SQL/Data System Diagnosis Guide for VM/SP, LH09-8054-00
SQL/Data System Diagnosis Reference for VM/SP, LH09-8055-00
SQL/Data System Installation for VM/SP, SH09-8046-00
SQL/Data System Messages and Codes for VM/SP, SH09-8052-00
SQL/Data System System Planning and Administration for VM/SP, SH09-8018-00

Transmission Control Protocol/Internet Protocol for VM (TCP/IP)

Transmission Control Protocol/Internet Protocol for VM Command Reference, GC09-1204-01
Transmission Control Protocol/Internet Protocol for VM Installation and Reference Manual, GC09-1203-01
Transmission Control Protocol/Internet Protocol for VM Programmer's Manual, GC09-1206-01

Virtual Machine Monitor Analysis Program (VMMAP)

VM Monitor Analysis Program User's Guide and Reference, SC34-2166-02

Virtual Machine Real Time Monitor (VM/RTM)

VM Real Time Monitor Program Description/Operations, SH20-2337-06

Virtual Machine/File Storage Facility (VM FSF)

Virtual Machine/File Storage Facility Program Description/Operations Manual, SB21-3085-00

Virtual Machine/System Product (VM/SP)

Programmer's Guide to the Server-Requester Programming Interface for VM/System Product, SC24-5291-01

VM Diagnosis Guide, LY24-5241-00

VM System Facilities for Programming, SC24-5288-00

VM/SP Application Development Guide, SC24-5247-02

VM/SP CMS Command Reference, SC19-6209-04

VM/SP CMS for System Programming, SC24-5286-00

VM/SP CMS Primer, SC24-5236-03

VM/SP CMS User's Guide, SC19-6210-04

VM/SP CP Command Reference, SC19-6211-04

VM/SP CP for System Programming, SC24-5285-00

VM/SP EXEC 2 Reference, SC24-5219-03

VM/SP Group Control System Command and Macro Reference, SC24-5250-01

VM/SP Installation Guide, SC24-5237-03

VM/SP Introduction, GC19-6200-04

VM/SP Operator's Guide, SC19-6202-04

VM/SP Planning Guide and Reference, SC19-6201-05

VM/SP System Messages and Codes, SC19-6204-04

VM/SP System Messages Cross-Reference, SC24-5264-01

VM/SP System Product Editor Command and Macro Reference, SC24-5221-04

VM/SP System Product Editor User's Guide, SC24-5220-03

VM/SP System Product Interpreter Reference, SC24-5239-02

VM/SP System Product Interpreter User's Guide, SC24-5238-03

VM/SP Transparent Services Access Facility Reference, SC24-5287-00

Virtual Storage Extended/Virtual Storage Access Method (VSE/VSAM)

Using the VSE/VSAM Backup/Restore Feature, SC24-5216-01

Using the VSE/VSAM Space Management for SAM Feature, SC24-5192-00

Using VSE/VSAM Commands and Macros, SC24-5144-03

VSE/VSAM General Information, GC24-5143-02

VSE/VSAM Programmer's Reference, SC24-5145-03

VSE/VSAM Messages, SC24-5146-02

VM Batch Facility

VM Batch Facility: Batch Processing and Job Scheduling for VM Systems, GC34-4091-00

VM Batch Facility Installation, Customization, and Administration, SC34-4093-00

VM Batch Facility User's Guide, SC34-4094-00

VMBACKUP Management System (VMBACKUP-MS)

VMBACKUP Management System: VMBackup Subsystem User's Guide, SH20-6252-01

VM/Directory Maintenance (DIRMAINT)

Directory Maintenance Guide for General Users, SC20-1839-02
Directory Maintenance Installation and System Administrator's Guide, SC20-1840-02

VM/Distributed System Node Executive (VM/DSNX)

VM/Distributed System Node Executive Guide and Reference, SC24-5381-00

VM/Integrated System (VM/IS)

VM/IS Application Design Guidelines: User Documentation, SC24-5301-01
VM/IS Developing an Application: Getting Started, SC24-5305-01
VM/IS Learning to Use Your System: Error and Information Messages, SC24-5351-02
VM/IS Tailoring your Menus, SH24-5123-03

VM/Interactive Productivity Facility (VM/IPF)

VM/IPF Maintenance, SC24-5331-01
VM/IPF System Reference, SC24-5321-01

VM/Pass-Through Facility (PVM)

VM/Pass-Through Facility General Information, GC24-5206-05
VM/Pass-Through Facility Guide and Reference, SC24-5208-04
VM/Pass-Through Facility Logic, LY24-5208-03

VM/System Product Interpreter Interface to SQL/DS (RXSQL)

VM/System Product Interpreter Interface to SQL/Data System Program Description/Operations Manual, SH20-7051-01

VS COBOL II

VS COBOL II Application Programming Guide, SC26-4045-01
VS COBOL II Application Programming: Debugging, SC26-4049-02
VS COBOL II Application Programming: Language Reference, SC26-4047-03
VS COBOL II Application Programming: Supplement for CMS Users, SC26-4214-01
VS COBOL II General Information, GC26-4042-03
VS COBOL II Installation and Customization for CMS, SC26-4213-01

VS FORTRAN Version 2

VS FORTRAN Version 2 Interactive Debug Guide and Reference, SC26-4223-01
VS FORTRAN Version 2 Language and Library Reference, SC26-4221-02
VS FORTRAN Version 2 Programming Guide, SC26-4222-02

Glossary of Terms and Abbreviations

This glossary lists terms, abbreviations, and products referred to in the *Developing and Application* manuals. If you do not find the term you are looking for in this list, refer to the *IBM Dictionary of Computing*, SC20-1699.

A

A Programming Language (APL). A general purpose computing language for diverse applications.

ACF/VTAM. Advanced Communication Functions/Virtual Telecommunications Access Method.

Advanced Communication Functions/Virtual Telecommunications Access Method. An IBM licensed program that controls communication and the flow of data in an SNA network. It provides single-domain, multiple domain, and interconnected network capability.

Advanced program-to-program communications for VM (APPC/VM). An application program interface between two virtual machines that is mappable to the SNA LU 6.2 interface and is based on the way IUCV functions. Along with TSAF, it provides communication within a single system and throughout a collection of systems; part of VM/SP.

APL2. An IBM APL-based computing language that helps you to solve your everyday business problems interactively.

APPC/VM. Advanced program-to-program communications for VM.

Application System (AS). An IBM licensed program used largely for project management.

AS. Application System.

assembler language. A source language in which each instruction performs a single task. Assembler is one step removed from machine language.

B

BASE package. A set of system functions that provides the basic operation of VM/IS. This package is composed of several functions equivalent to products available for VM systems. This package is a prerequisite to any optional packages.

batch processing. The processing of data accumulated over a period of time in such a manner that the data so accumulated is processed in a single run. In a VM environment, batch processing is usually accomplished by one or more virtual machines installed solely for that purpose.

binary synchronous communication (BSC). A uniform procedure, using a standardized set of control characters and control character sequences for synchronous transmission of binary-coded data between systems.

BSC. Binary synchronous communication.

C

CICS/VM. Customer Information Control System for Virtual Machines.

CMS. Conversational Monitor System.

COBOL. A high-level programming language primarily for business applications. The version of COBOL that runs on VM/IS is VS COBOL II.

configuration. The definition and arrangement of devices that make up a computer system. The term can refer to either hardware or software.

Conversational Monitor System (CMS). A virtual machine operating system that provides general interactive time-sharing, problem solving, and program development capabilities, and operates only under the control of the VM/370 control program.

Cooperative Viewing Facility (CVIEW). An IBM program that allows from two to twelve users at separate display stations to view a single interactive terminal session. In addition, CVIEW supports one user acting as a consultant to another user at a different display station.

corequisite. A product that is not required to run your application but whose presence would provide additional function to your application. See also *prerequisite*.

CP. VM/370 Control Program.

Cross System Product/Application Development (CSP/AD). An interactive interface for defining, testing, maintaining, and generating applications.

Cross System Product/Application Execution (CSP/AE). A program that provides execution of applications defined by CSP/AD.

CSP/AD. Cross System Product/Application Development.

CSP/AE. Cross System Product/Application Execution.

Customer Information Control System for Virtual Machines (CICS/VM). An IBM licensed program that enables transaction processing applications to be integrated with office and commercial applications.

CVIEW. Cooperative Viewing Facility.

D

DASD. Direct access storage device.

Data Base Services Utility (DBSU). A tool provided with the SQL/DS licensed program.

Data Extract (DXT). An IBM licensed program that allows you to extract selected operational data.

Data Space/Sharing Facility (DSSF). A facility used in VM FSF.

Database Edit Facility (DBEDIT). A facility for quick and easy access to relational data base tables through a series of prompting screen panels. These panels provide full-screen data retrieval, updating, inserting, and deleting capabilities.

DBEDIT. Database Edit Facility.

DBSU. Data Base Services Utility.

DCF. Document Composition Facility.

dialog. A series of panels that prompts the customer for information. The panels use the information to lead the customer to a particular application required to perform a specific task.

Direct access storage device. Disk device used to store files and data.

DIRMAINT. VM/Directory Maintenance.

DisplayWrite/370. A host-based text editor and formatter used to create and revise many types of documents. An optional image and graphics feature is available with the program.

DMKBOX. System logo file. A file used to define the system logo.

DMKRIO. Real input/output (I/O) configuration file. A file used to define the peripheral I/O devices of a VM/IS operating environment.

DMKSNT. System name table file. A table used to allow the sharing of program segments between virtual machines. The table contains the name and location of saved systems, including discontinuous shared and non-shared segments.

DMKSYS. CP system control file. A file used to define the CP system residence disk, the real storage size, the CP-owned DASD volumes, the VM/370 system operator's user ID, the system timer value, and other system variables.

Document Composition Facility (DCF). A text formatting package, designed to be used on documents of any size.

DSSF. Data Space/Sharing Facility.

DXT. Data Extract.

E

ECF Servers-Requesters. Enhanced Connectivity Facility Servers-Requesters.

Enhanced Connectivity Facility Servers-Requesters (ECF Servers-Requesters). An IBM licensed program that allows personal computer users to access and work with host computing systems.

Environmental Record Editing and Printing (EREP). A hardware error tracking and recording program operating under VM/SP.

EREP. Environmental Record Editing and Printing.

EXEC procedure. A CMS function that allows you create new commands by setting up frequently used sequences of CP commands, CMS commands, or both, together with conditional branching facilities, into files with a file type of EXEC to eliminate the repetitious re-keying of those command sequences. When you enter the file name of the EXEC procedure, the commands in the file are executed.

F

Feature program product (FPP). A tape format used to package your application programs.

flat file. A flat file is one that uses only two dimensions. The first dimension is the record length (the number of spaces plus characters in a line), giving you the width of the file. The second dimension is the number of records in the file, giving you the length of the file. An example of a flat file is a text file. You can normally display the contents of a flat file on a terminal screen. When stored on a minidisk, a flat file can be stored in either fixed format (that is, the entire file is as wide as the longest record; shorter records are filled with blanks), or in variable format (that is, each record takes up only the amount of room used by its contents; this format takes less space).

FORTRAN. A programming language primarily designed for applications involving numeric computations. The version of FORTRAN that runs under VM/IS is VS FORTRAN Version 2.

FORTRAN Utilities. A set of utility programs (included in the VS FORTRAN Compiler and Library) that provide useful functions for your FORTRAN programs. These utilities allow you to perform such tasks as executing VM/SP commands from your program, reading the system time and date, and clearing an IBM 3270 terminal display.

FPP. Feature program product.

fullscreen. Applications that display an entire screen of information at a time. These screens include selection menus, data entry panels, and help panels.

G

GCS. Group control system.

GDDM. Graphical Data Display Manager.

GDDM-PGF. Graphical Data Display Manager with the Presentation Graphics Feature.

Generalized Markup Language (GML). A set of control words (tags) interspersed with actual document text and used with DCF to format documents.

GML. Generalized Markup Language. Used with DCF to format documents.

Go facility. A feature included in VM/IS by which a customer can bypass the normal menu flow to access a specific panel or product. A customer can use a special menu (the GO MENU), can enter a keyword, or can enter an option number to access the desired panel or product.

Graphical Data Display Manager (GDDM). A graphics package that you can use to produce graphics for many of IBM's advanced display stations, printers, and plotters.

Graphical Data Display Manager with the Presentation Graphic Feature (GDDM-PGF). A graphics package that you can use to produce many different types of charts and graphics.

Group control system (GCS). A component of VM/SP that provides simulated MVS services and unique supervisory services to help support a native SNA network.

I

IBM BASIC/VM. An IBM BASIC-based programming language. BASIC stands for *Beginner's All-purpose Symbolic Instruction Code*.

Indexed sequential access method (ISAM). An access method used to directly retrieve or update particular blocks of a data set on a direct access device, using an index to locate the data set.

INSTFPP EXEC. An EXEC program supplied with VM/IS that is designed to install applications, programs, or packages from one or more tapes when the tapes use FPP (feature program product) format.

Interactive problem control system (IPCS). A component of VM/370 that permits online problem management, interactive problem diagnosis, online debugging for disk-resident CPabend dumps, problem tracking, and problem reporting.

Interactive Structured Query Language (ISQL). A facility of SQL/DS that provides online data query and report writing support.

Interactive System Productivity Facility (ISPF). A facility used for defining and controlling interface dialogs. These dialogs are used extensively in developing user interfaces and online tutorial sessions for applications.

Interactive System Productivity Facility/Program Development Facility (ISPF/PDF). A menu-driven program development tool to help you efficiently create and maintain programs. It allows you to create, edit, compile, execute, and store your programs.

Inter-User Communication Vehicle (IUCV). A CP system service used to send information from one virtual machine to another.

IPCS. Interactive problem control system.

ISAM. Indexed sequential access method.

ISPF. Interactive System Productivity Facility.

ISPF/PDF. Interactive System Productivity Facility/Program Development Facility.

ISQL. Interactive Structured Query Language.

IUCV. Inter-User Communication Vehicle.

L

line mode. Pertaining to applications that display or accept information one line at a time.

load-and-go. A method of packaging an application or a system in which the application or system has been tailored to suit most customer's needs. Generally, a customer can use the application or system immediately after loading it.

M

menus. Panels consisting of a list of items from which the customer can select one item. The chosen item could lead to another more detailed menu, a panel requesting information, or directly into an application that the customer can use to complete a task.

migrate. The process of installing a higher level of the system or of one or more individual products without losing or reentering associated data. The process replaces changed system or application files and in some cases changes the format of existing data to be compatible with the new system or application.

minidisk. All, or a logical subdivision of, a physical disk storage device that has its own address, consecutive storage space for data, and an index or description stored so that data can be analyzed; synonym for virtual disk.

mirror-disk. A disk or minidisk of the same logical size as a disk or minidisk that contains critical data. The application places copies of all files contained on the main disk or minidisk onto the mirror-disk on a regular basis, either each day or each week on an automatic basis, or whenever necessary under the control of the administrator.

N

NAMESYS. Macro included in the system name table (DMKSNT) assembler file.

NetView. A licensed program used to monitor an SNA network, manage it, and diagnose its problems.

O

optional package. One or more application programs grouped according to related function and designed to be installed on the VM/IS BASE package. Each package is designed to be installed quickly and easily and to become an integrated part of VM/IS with a minimum of work.

P

package. One or more application programs or functions grouped according to function and provided to the customer as a complete system. VM/IS is composed of a BASE package and several optional packages.

packaging. The procedure and format used to put a copy of your application or a group of related applications onto a tape. The package includes documentation to install, customize, maintain, and use the application or group of applications.

panel. A complete set of information shown in a single display on a display station screen. See also *screen*

panel tailoring files. Files created by the user of an application to modify or customize the VM/Integrated System – Productivity Facility. These files are created to add one or more items to an existing menu or to add another complete menu or panel to the existing series of menus or panels.

Pascal/VS. An IBM Pascal-based programming language compiler.

PC. Personal computer.

personal computer (PC). A desk-top, floor-standing, or portable microcomputer designed primarily to give independent computing power to a single user.

PF keys. Program function keys. A set of keys on your terminal that can be programmed to perform specific commands when pressed.

PL/I (programming language/one). A programming language designed for numeric scientific computations, business data processing, systems programming, and other applications.

PL/I Resident Library. A collection of general support routines used by many of the products available through VM/IS and required to compile PL/I programs.

PL/I Transient Library. A collection of general support routines used by many of the products available through VM/IS and required to execute previously compiled PL/I programs.

prerequisite. A product that is required before you are able to run your application. See also *corequisite*.

Professional Office System (PROFS). An office product that you can use to manage many office tasks such as sending messages to other VM/IS users, maintaining your personal calendar, and preparing documents.

PROFS. Professional Office System.

PROFS Notelog Maintenance. An IBM licensed program to keep note logs up to date.

pseudo-code. A form of coding that closely resembles executable code, but which must be translated into formal code prior to execution. Pseudo-code can simplify both the testing of logic and the actual coding.

PVM. VM/Pass-Through Facility.

Q

QBE. Query-by-Example.

QMF/VM. Query Management Facility for VM.

Query Management Facility for VM. An IBM licensed program designed to provide interactive facilities to users with little or no data processing background.

Query-by-Example (QBE). A data query language provided in the IBM licensed program QMF/VM.

R

Remote Spooling Communication Subsystem (RSCS). A special-purpose subsystem that supports the transmission, relaying, and reception of messages, commands, files, and jobs over a computer network.

Restructured Extended Executor language (REXX). An EXEC language used in System Product Interpreter programs.

REXX. Restructured Extended Executor language.

RSCS. Remote Spooling Communication Subsystem.

RXSQL. The System Product Interpreter interface between REXX and SQL/DS.

S

SAM. Sequential access method.

saved segment. A characteristic of a saved system whereby one or more segments of reentrant code stored in real storage can be shared by several virtual machines. This can reduce real storage usage when multiple users work with an application concurrently. A saved segment is sometimes called a *shared segment*.

screen. A physical display surface. See also *panel*.

SCRIPT/VS. A text processing program; part of DCF.

sequential access method (SAM). An access method for storing or retrieving data blocks in a continuous sequence, using either a sequential access or direct access device.

Servers-requesters programming interface (SRPI). Part of the ECF Servers-Requesters package that allows you to develop your own servers and requesters.

SNA. Systems Network Architecture.

SQL/DS. Structured Query Language/Data System.

SRPI. Servers-requesters programming interface.

Structured Query Language/Data System (SQL/DS). An IBM licensed program that manages relational data bases.

System Product Editor. Synonymous with XEDIT.

Systems Network Architecture (SNA). A network communications protocol used between peripheral I/O devices, processors, and applications.

SYSVAR. System variables that can be used to control the processing of a document in SCRIPT/VS.

T

task-oriented. Pertaining to a method of guiding the customer to the product most suited to perform a specific job starting from a list of general tasks. Conventional (non-task-oriented) methods involve starting from a list of products, forcing the customer to define the task to fit the product.

TCP/IP. Transmission Control Protocol/Internet Protocol.

TNL. Technical Newsletter. An update to an existing manual (usually replacement pages and an updated table of contents).

transactional processing. A system of processing whereby a device (usually a user's virtual machine) submits a job to another device (this could be a service machine) for processing, after which the processing device returns information, data, or acknowledgment to the originating device.

Transmission Control Protocol/Internet Protocol (TCP/IP). An interface to transfer files, mail and user's jobs to a remote host in an Internet network.

Transparent Services Access Facility (TSAF). A VM/SP communications tool that lets users connect to and communicate with local or remote virtual machines within a collection of as many as eight systems.

TSAF. The Transparent Services Access Facility.

U

USERSCOM. A segment of the VM Batch Facility that can be tailored to fit the local environment.

USERSJOB. A segment of the VM Batch Facility that can be tailored to fit the local environment.

USERSRJE. A segment of the VM Batch Facility that can be tailored to fit the local environment.

V

virtual disk. See *minidisk*

virtual machine. A functional equivalent of an IBM System/370 computing system. Many virtual machines can run on a single real computer under

the VM/SP operating system. Each virtual machine appears to the user to be a fully functional computer, with its own card reader, card punch, printer and disk space.

Virtual Machine Monitor Analysis Program (VMMAP). A performance analysis tool that generates reports and graphs that help you portray the performance and utilization of a running VM/SP system.

Virtual Machine/Distributed Systems Node Executive (VM/DSNX). An IBM licensed program for the distribution and implementation of changes on remote systems in a distributed systems environment.

Virtual Machine/System Product (VM/SP). The operating environment of VM/IS; an IBM licensed program that manages the resources of a single computer so that multiple computing systems appear to exist.

Virtual Storage Access Method (VSAM). An access method for direct or sequential processing of fixed and variable length records on direct access devices.

Virtual Telecommunications Access Method (VTAM). A set of programs that control communication between display stations and application programs running under VM/SP. See also *ACF/VTAM*.

VM Batch Facility. A licensed program that allows you to submit and control batch jobs under VM.

VM File Storage Facility (VM FSF). A licensed program that controls the sharing of files among virtual machines.

VM FSF. VM File Storage Facility.

VM Real Time Monitor (VM/RTM). A real-time monitor and diagnostic tool for short term monitoring, analysis, and problem solving. It is used mainly for monitoring hardware or software to help in validating the system components and establishing requirements for additional hardware or software.

VMBACKUP Management System. A licensed product that performs CMS and non-CMS backup and restore functions. The VM Archive Subsystem

of VMBACKUP-MS provides the capability to archive files and retrieve them when needed.

VMMAP. Virtual Machine Monitor Analysis Program.

VM3812. 3812 Pageprinter Support.

VM/Directory Maintenance (DIRMAINT). A utility program that is used to maintain the system directory.

VM/DSNX. Virtual Machine/Distributed Systems Node Executive.

VM/Integrated System (VM/IS). A computing system for business and engineering/scientific professionals, designed for use with the IBM 43xx and IBM 9370 families of processors.

VM/Interactive Productivity Facility (VM/IPF). An IBM licensed program that is used both by end-users and by system administrators to perform routine operations such as sending messages, notes, and documents, maintaining the system directory, and reporting and managing problems.

VM/IPF. VM/Interactive Productivity Facility.

VM/IS. VM/Integrated System. A computing system for business and engineering/scientific professionals, designed for use with the IBM 43xx and IBM 9370 families of processors.

VM/IS – Productivity Facility. The interface to products and functions available through VM/IS.

VM/Pass-Through Facility (PVM). A facility that allows you to log on and use your VM/IS system from a remote system in your computer network or to log on and use a remote system from your VM/IS system.

VM/RTM. VM Real Time Monitor.

VM/SP. Virtual Machine/System Product.

VM/370 Control Program (CP). A component of VM/SP that controls the resources of the real machine so that multiple computing systems appear to exist. Each virtual machine is the functional equivalent to an IBM System/370.

VS COBOL II. An IBM COBOL-based programming language compiler that can run under VM/IS.

VS FORTRAN. An IBM FORTRAN-based programming language compiler with a subroutine library.

VS FORTRAN IAD. VS FORTRAN Interactive Debug.

VS FORTRAN Interactive Debug. An interactive debugging tool for your VS FORTRAN programs included as part of VS FORTRAN.

VSAM. Virtual Storage Access Method.

VTAM. Virtual Telecommunications Access Method.

X

XEDIT. The System Product Editor; part of VM/SP.

Numerics

3270 PC File Transfer. 3270 Personal Computer File Transfer Program. An application that allows you to create a file on your 3270 PC and send it to your personal storage on VM/IS, or to create a file on VM/IS and send it to your 3270 PC for revision or printing.

3812 Pageprinter Support. An interface to the IBM 3812 Pageprinter that simplifies sending a print job to the printer.

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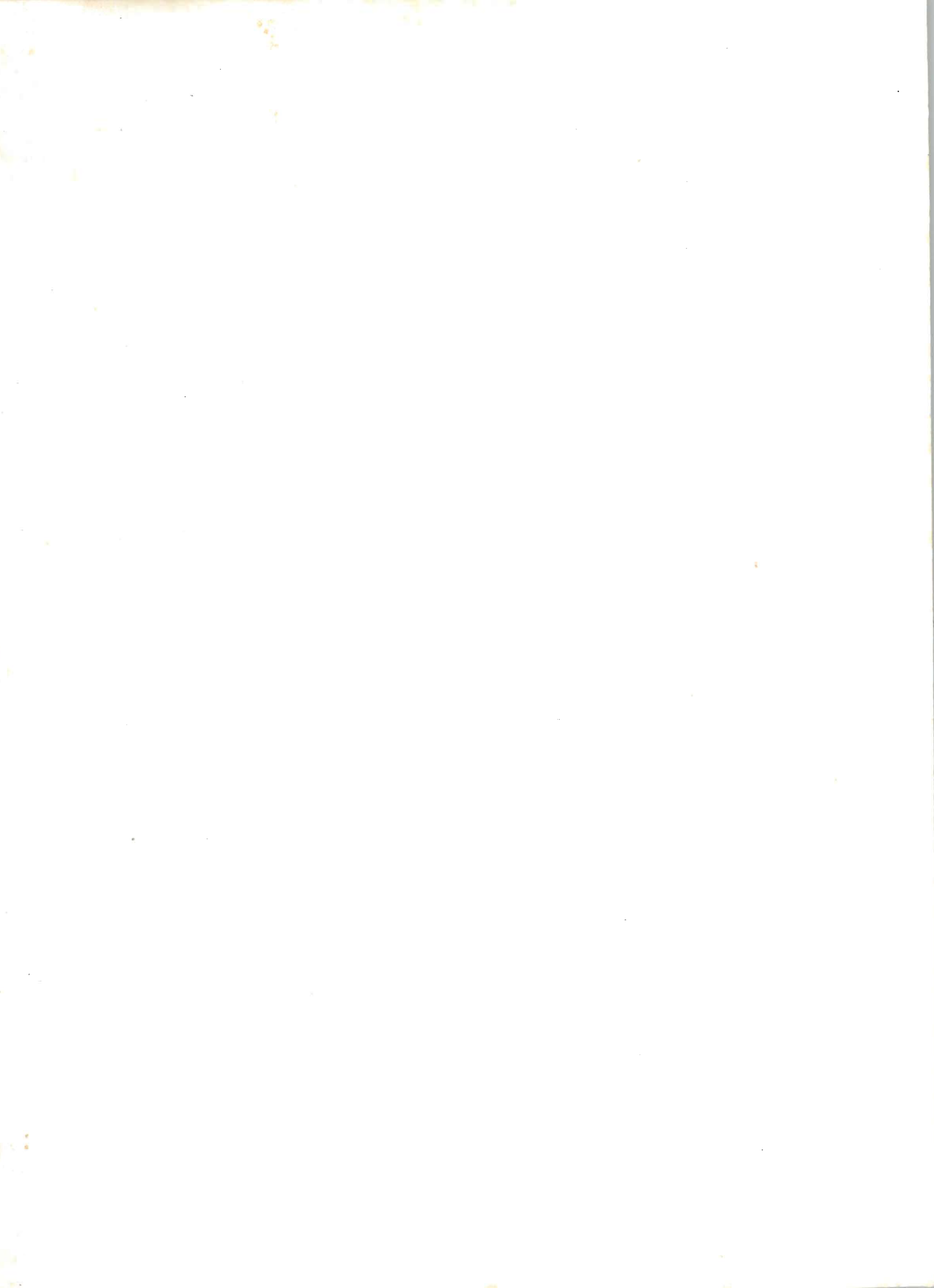


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