

**IBM Backup, Archive and
Retrieval System/VM
General Information
Release 1.3**

Document Number SB11-8972-03

March 4, 1997 - 9:11 a.m.

Steve Garraway
Gerhard Widmayer

GARRAWAY at WINVMB
WIDMAYER at STUTVM1

IBM Backup, Archive and Retrieval System/VM

SB11-8972-03

General Information

Release 1.3



IBM Backup, Archive and Retrieval System/VM

SB11-8972-03

General Information

Release 1.3

artid=logo.

Note!

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

Fourth Edition (July 1995)

This edition, SB11-8972-03, applies to Release 1.3 of IBM Backup, Archive and Retrieval System/VM (BARS/VM), Program Number 5785-DJD, and to all subsequent releases and modifications until otherwise indicated in new editions.

Order publications through your IBM representative or the IBM branch office serving your locality. Publications are not stocked at the address given below.

A form for readers' comments appears at the back of this publication. If the form has been removed, address your comments to:

GARRAWAY at WINVMB
WIDMAYER at STUTVM1

When you send information to IBM, you grant IBM a nonexclusive right to use or distribute the information in any way it believes appropriate without incurring any obligation to you.

© **Copyright International Business Machines Corporation 1992, 1995. All rights reserved.**

Note to U.S. Government Users — Documentation related to restricted rights — Use, duplication or disclosure is subject to restrictions set forth in GSA ADP Schedule Contract with IBM Corp.

Contents

Notices	vii
Trademarks and Service Marks	vii
Preface	ix
Introduction	xi
1.0 Backup, Archive and Retrieval System / Virtual Machine (BARS/VM)	1
1.1 BARS/VM	1
1.1.1 General	1
1.2 Highlights	2
1.3 Potential Benefits	3
1.4 Operating Environment	4
1.4.1 Software Requirements	4
1.4.2 Hardware Requirements	4
1.4.3 Backup and Archive Minidisks	4
1.4.4 BARS/VM Minidisks	4
1.5 Installation Tasks	4
1.6 Documentation	5

Notices

References in this publication to IBM products, programs or services do not imply that IBM intends to make these available in all countries in which IBM operates. Any reference to an IBM product, program, or service is not intended to state or imply that only IBM's product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any of IBM's intellectual property rights may be used instead of the IBM product, program, or service. Evaluation and verification of operation in conjunction with other products, except those expressly designated by IBM, is the user's responsibility.

IBM may have patents or pending patent applications covering subject matter in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing, to the IBM Director of Commercial Relations, IBM Corporation, Purchase, NY 10577.

Trademarks and Service Marks

The following terms, denoted by an asterisk (*) in this publication, are trademarks or service marks of IBM Corporation in the United States and/or other countries:

IBM
VM/ESA

RACF

Preface

The objectives of IBM Backup, Archive and Retrieval System/VM are to improve the backup and retrieval of CMS and non-CMS user data for both the installation and users, provide an archive and retrieval facility for CMS files, an archive facility for minidisks, and a disaster backup and recovery facility for minidisks.

The BARS/VM product functions are implemented using certain specific resources (userID, EXEC, MODULE) named 'VMBARS'. In this document, the name VMBARS will be used to refer to these product functions.

BARS/VM is designed to run on VM/ESA* Release 1.1 and subsequent releases. Support for Access Verification Routines (ACI: Access Control Interface) is required unless RACF* (5740-XXH) is installed which provides an Access Control Interface by itself.

Introduction

The term “backup” is defined as a process of making copies of data by the installation. IBM Backup, Archive and Retrieval System/VM (BARS/VM) provides two types of backup which are complementary - incremental backup and disaster backup.

BARS/VM is designed to automatically back up new and changed CMS files. These files may reside in minidisks and the Shared File System (SFS). BARS/VM also backs up non-CMS minidisks when the user or installation requests it. These backup copies may reside on DASD or tape. The installation may choose one of three methods of backup - to DASD only, to DASD with spill to tape, or directly to tape with no DASD.

BARS/VM provides the user with a QUERY facility which permits the displaying of the current backup data. The user is also furnished with a retrieval capability which obtains the backup copies of data. BARS/VM also provides authorized users with the capability of restoring minidisks, SFS directories, SFS file spaces, SFS storage groups, and complete real volumes from the last backup.

The term “disaster backup” is defined as a process of making copies of data by the installation to be stored outside the computing center, so that data can be recovered after a disaster where the normal backup data is not useable. BARS/VM is designed to dump, on operator request, data to a disaster backup tape pool. This data may be from the original minidisks, or may be the compacted and inactive BARS/VM backup data. It can back up either the complete installation's minidisks (CMS and non-CMS data) or only just a single minidisk or a logical set of items (defined via the LSET command). There is no BARS/VM function to recover disaster backup data. Recovery is achieved by running a RECOVERY EXEC which does not rely on BARS/VM, and which is automatically dumped along with the data.

The archive facilities of BARS/VM provide a means for users to save seldom used CMS files and free the space they occupy. Commands are provided to allow users to send files to the archive, retrieve from the archive and query archived files. Archived files reside on DASD or tape. The installation may choose one of three methods of storing archived files. They may be placed on DASD only, on DASD with spill to tape, or they may go directly to tape with no DASD.

HELP is provided for all commands and messages.

The incremental backup, disaster backup, retrieval and archive processes operate under the control of parameters specified by the installation.

1.0 Backup, Archive and Retrieval System / Virtual Machine (BARS/VM)

1.1 BARS/VM

1.1.1 General

Data is the end product of most jobs performed on computers. The safekeeping and management of that data is of extreme importance. In most installations the volume of data to be managed is growing and at the same time installations are faced with demands for higher productivity. The reduction of manual intervention by the provision of an automated software tool to manage data is therefore very desirable. The Backup, Archive and Retrieval System / Virtual Machine (BARS/VM) is a system which ensures data integrity by providing automatic backup and retrieval, and which also helps to manage data growth by the provision of an archive facility which moves and compresses inactive files.

BARS/VM provides two types of backup which are complementary: incremental backup and disaster backup. BARS/VM incremental backup automatically backs up changed CMS files. These files may reside in minidisks and the Shared File System (SFS). BARS/VM also backs up non-CMS minidisks when requested by the user or installation. The backup copies may reside on either DASD or tape as specified by the installation. The general user has a query facility which allows him to display the current backup data for his minidisks and directories and a retrieval capability which allows him to obtain the backup copies of his data. Authorized commands allow the installation to restore complete minidisks, SFS directories, SFS file spaces, SFS storage groups, and complete real volumes from the last backup.

The disaster backup and recovery facility is available for minidisks only and it allows the installation to take periodic dumps of data to tape for removal to a safe place. Backup is done on the file level for CMS minidisks and on the minidisk level for non-CMS, and involves a base dump of all data followed by periodic delta dumps. The general user has no access to the backup data but can display the status of his minidisks. A BARS/VM system is not required to restore the data since all the necessary data and files are placed on tape.

The archive facilities of BARS/VM provide a means for users to save seldom-used CMS files and thus free space in their minidisks and file spaces. Commands are provided to allow users to send files to the archive, retrieve from the archive and query archived files. The archived data may reside on either DASD or tape as specified by the installation.

The backup, retrieval and archive processes operate under the control of parameters specified by the installation.

1.2 Highlights

- BARS/VM provides automatic incremental backup for CMS minidisks and SFS directories. It also provides automatic regular backup for non-CMS minidisks.
 - Backup is to DASD or tape. Backup may be directly to tape or the installation may choose to use a tape spill mechanism. In this case DASD is used as the initial backup medium and data is moved to to tape either automatically when the DASD becomes full or through an authorized command.
 - There are user commands to retrieve backed-up data, either immediately or overnight for large amounts of data. There are user commands to query backed-up data and to change the backup status and frequency. Full screen menus may be used as an alternative to line commands.
 - Authorized commands allow an installation to restore a complete minidisk, an SFS directory, an SFS file space, an SFS storage group, or an entire real DASD volume.
 - Multiple levels of backup data may be defined by the installation.
 - Remote backup and retrieval is supported. A BARS/VM system may be set up so that backup data is sent to a remote host system and retrieved from that host when required.
- BARS/VM disaster backup provides backup to tape which may be recovered in the event of a disaster.
 - Base and delta dumps may be used to save time and minimize the number of tapes required.
 - The installation may specify which minidisks are to be dumped or can specify all minidisks.
 - Logical sets of minidisks may be specified to be dumped.
 - Backup may be from the original data or from the BARS/VM backup data if the latter is on DASD.
 - No BARS/VM system is required for recovery.
- BARS/VM archive provides user commands to create and retrieve archive copies of CMS files, either immediately or overnight for large amounts of data. In addition there are user commands to modify and delete archived files.
 - Archive is to DASD or tape. It may be directly to tape or the installation may choose to use a tape spill mechanism. In this case DASD is used initially and data is moved to to tape through a spill process started by an authorized command.
 - BARS/VM records the erasure of archived files. This allows the user to list and recover such files in the event of accidental erasure.
 - Multiple levels of archived files may be created.
 - Retention dates and space limitations allow the installation control over the growth of archived data.
 - Commands are provided to allow the easy identification and erasure of redundant archived data.
 - Archived files may be assigned a CLASS and TAG for easy identification.

- Remote archive is supported. Files may be sent to a remote system and retrieved from that system when required.
- There is a comprehensive set of authorized commands allowing the installation to control and monitor the backup and archive systems.
- HELP is provided for all commands and messages.
- BARS/VM allows the use of multiple virtual machines to perform backup and archive processing. The number is defined by the installation.
- Detailed report data is produced giving measurements of the status and success of backup and archive activities. This makes it easy to determine the quality of the service provided to the users of BARS/VM.

1.3 Potential Benefits

The BARS/VM incremental backup facility ensures the integrity of data by protecting users from major disasters, media or device failures, from the actions of others and from accidental erasure. It saves time and resources for backup and retrieves. The backup facility is automatic and incremental. Operator intervention is required only if backup is done to tape and no tape robot is available. In this case backup may be made initially to DASD and the data moved to tape at a time convenient to the installation. Alternatively, backup may be directly to tape. Retrievals may be scheduled for a time when operators are available.

The installation can recover from hardware failures or other situations where data is lost by recovering data from the file level all the way up to a complete DASD volume. A single command is all that is required.

Because the general user can query and retrieve the backup of his own data, he can recover quickly from an accidental erasure. He does not have to seek help from administration staff. Some users are reluctant to ask for help to retrieve accidentally erased data and may try to recreate it. This wastes time and can create errors.

Unless authorized by the administrator, general users can only query and retrieve their own data. However they can be authorized to act for other specific users.

The BARS/VM disaster backup facility provides a way of backing up data in an automatic and reliable way. This creates a set of tapes for storage at an outside location which contain all the programs and data necessary to recover the data.

The BARS/VM archive facility provides a method of managing the growth of online data by the removal of inactive files from online DASD and compressing them. The user sees it as a valuable extension to his minidisk or SFS file space. Archived files are backed up automatically if they reside on DASD. Archived files on tape may be protected through the use of twin tapes.

1.4 Operating Environment

1.4.1 Software Requirements

VM/ESA Release 1.1 or later releases with support of Access Verification Routines ('ACI') included, especially support of the user-exit to the CP LINK command, module DMKRPI.

1.4.2 Hardware Requirements

Since BARS/VM is a CMS application, it supports any hardware which is supported by the system on which it runs.

1.4.3 Backup and Archive Minidisks

Backup and archive minidisks are defined in the VM Directory. Their size is defined by the installation.

1.4.4 BARS/VM Minidisks

Minidisks must be defined:

1. to contain incremental backup control information.
2. to contain a backup of the files in 1. and the same size.
3. to contain a backup of the files in 1. and the same size.
4. to contain BARS/VM operational files. This will require the equivalent of 8 cylinders on 3390.
5. to unpack data when retrieving and to provide general work space. This disk should be as large as the largest file to be processed.
6. to contain archive control information, if archive is used.
7. to contain a backup of the files in 6. and the same size.
8. to contain a backup of the files in 6. and the same size.
9. to contain disaster backup control information, if this facility is used.
10. to contain distributed BARS/VM files. This will require the equivalent of 30 cylinders on 3390.

1.5 Installation Tasks

1. Define the BARS/VM virtual machines in the VM directory.
2. Define all backup and archive minidisks in the VM directory.
3. Load the BARS/VM distribution tape to an online minidisk.
4. Set all Installation Options.
5. Run the special BARS/VM installation EXEC which is provided.
6. Start BARS/VM and reply to requests for additional information.

1.6 Documentation

- *BARS/VM Program Description and Operations Manual* - this contains the installation and administration documentation, as well as the command reference section
- *BARS/VM Messages and Codes Manual* - this contains a list of all abend codes and messages, together with a description of their meaning
- *BARS/VM General User's Guide* - this contains just the general user command reference section (also contained within the PDOM)



Program Number: 5785-DJD

Printed in Hursley Park

SB11-8972-03

