MAREN V12.0A

Volume 2: User Interfaces

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1 Preface

This manual describes the MAREN magnetic volume archiving system for computer networks.

The MAREN system is used to manage volume inventories in BS2000 computer centers. It stores all information on the volumes in a separate MAREN catalog, which can be set up as a central catalog for several systems.
Cross-computer data transfer is handled either exclusively in SPD mode or shared in RFA mode.

MAREN is closely linked to other BS2000 products, such as HSMS, ARCHIVE, ETERNUS CS (CentricStor), TLS and ROBAR, and thus contributes to the optimization of the computer center organization.

1.1 Target group and summary of contents

This manual, "MAREN Volume 2: User Interfaces", is aimed at BS2000 users, computer center managers, operators, and systems support staff.

In order to use the SDF statements and commands, you will require a basic knowledge of the SDF dialog interface. The SDF syntax is described in section "SDF syntax representation" on page 528. For more in-depth information on SDF, please refer to the manual "Introductory Guide to the SDF Dialog Interface" [22].

This manual consists of 11 chapters and various indices at the end of the manual. It is structured as follows:

– Preface (chapter 1)

– Part 1: "MAREN for Systems Support" (chapters 2-6)

– Part 2: "MAREN for Nonprivileged Users" (chapters 7-9)

– Part 3: "Overviews" (chapters 10-12)

– Glossary, Related publications, Index

Summary of contents

Chapter 1: *Preface*

> Chapter 1 provides an overview of the structure and contents of the manual. It contains information on the target group and concept of the manual followed by a brief overview of changes since the previous versions (MAREN V11.0A).

Part 1: MAREN for Systems Support

Chapter 2: *Configuring and installing MAREN*

> Chapter 2 describes the integration of MAREN in BS2000, version dependencies, and the installation procedure.
> It contains a detailed description of the MARENCP control program, including information on starting and terminating the program and the multiprocessor capability in RFA and SPD modes.
> This is followed by an explanation of the MARENUCP utility for automatic free tape allocation (e.g. information on starting and terminating the program). The last items in this chapter are the bulletin file and details of how to print export receipts on SPOOL printers.

Chapter 3: *MARENADM: administering MAREN*

> The MARENADM administration program is the main utility routine used by the MAREN administrator to manage archive entries in the MAREN catalog and administer the MAREN system.
> Following a detailed description of the MARENADM statements for privileged users, this chapter describes the subroutine interfaces of MARENADM.

Chapter 4: *MARENEKM: managing encryption keys*

> The MARENEKM program is used by the MAREN administrator as a central utility routine for managing the encryption keys when encrypted volumes are used.

Chapter 5: *Examples of frequent MARENADM applications*

> Chapter 5 describes the common applications of MARENADM in computer centers:
> – adding and removing volumes to/from the MAREN catalog
> – exchanging volumes with other computer centers and working with foreign volume types
> – setting up volumes and moving them to other storage locations
> – releasing volumes and adding them to the free volume pool
> – data backup

Chapter 6: *Error handling*

During a MAREN session, a variety of error situations can occur. This chapter describes the necessary remedial measures. Examples of the topics covered include:

– inconsistencies in the catalog or loss of the catalog
– system crashes or power failures
– abnormal termination of the MARENCP control program or user jobs
– critical messages

Part 2: MAREN for Nonprivileged Users

Chapter 7: *The MAREN user program*

The MAREN program is used by nonprivileged BS2000 users to manage the volumes archived under his/her user ID in the MAREN catalog.
This chapter provides an overview of various procedures from the reservation to the release of a volume, contains instructions on starting and terminating MAREN, and offers detailed descriptions of the MAREN statements and subroutine interfaces for nonprivileged users.

Chapter 8: *Commands for working with the MAREN TFT*

This chapter describes the option provided when accessing a tape file not entered in the TSOSCAT file catalog of identifying the volume belonging to this file from the MAREN catalog. It also contains detailed descriptions of the command interfaces.

Chapter 9: *Examples of frequent MAREN applications*

Chapter 8 describes the common applications of MAREN for nonprivileged users:
– reserving, exporting and releasing a volume
– returning a foreign volume
– requesting a reserved volume
– outputting and modifying archive entries
– editing file versions in the MAREN catalog

Part 3: Overviews

Chapter 10: *Messages output by the MAREN system*

The messages generated by the MAREN system, its subsystem, and its individual programs are output via the BS2000 MSG7 interface. This chapter lists all messages of the MAREN system in accordance with their message code, and provides information on their meaning and the necessary remedial action.

Chapter 11: *Assembler and COBOL interfaces*

The macros MARENA and MARENP generate a DSECT for the symbolic addressing of individual fields of the MAREN parameter set.
The COPY compile statement can be used to incorporate the MARENAC and MARENPC source elements in a COBOL source program. They define the MAREN archive record.
This chapter describes the DSECTs of the macros MARENA (nonprivileged users) and MARENP (privileged users), as well as the copy elements MARENAC (nonprivileged users) and MARENPC (privileged users).

Chapter 12: *Appendix*

The appendix contains the following overviews and tables:

– allocation of statement operands in SDF format to archive entry fields
– function names in the MAREN system
– MAREN service accounting
– SDF syntax representation
  Basis for the correct interpretation of the SDF interfaces
– SDF standard statements for MAREN and MARENADM
  Overview of the available SDF standard statements
– aliases for MARENADM and MAREN statements and for MAREN commands

At the back of the manual, you will find the following sections:

– Glossary

– Related publications
  Related publications in the body of the text are identified by a short title accompanied by a number in square brackets. The full title can be found under "Related publications" starting on page 551.

– Index

The MAREN manual "Volume 1: Basics of MTC Mnagamenet" [1] contains an introduction to working with MTC. It forms the basis for understanding the manual "MAREN Volume 2" and covers the following subjects among others:

– the MAREN catalog

– the management of magnetic tape cartridges (MTCs) and storage locations

– the use of domains and the associated user roles

– the use of volume encryption on LTO-4 drives

– the use of a reservation file for volume assignment in the event of new reservation and how to edit it with MARENLM

– support by MAREN for data backup programs and archive systems

– computer center exits in the MAREN system

Note

All commands referred to in this manual (apart from those used to process the MAREN TFT) are described in the manual "Commands, Volumes 1 - 5" [5], unless specified otherwise.

1.2 Notational conventions

The following notational conventions are used in this manual:

[1]

Numbers enclosed in square brackets refer to the text in the corresponding position in the bibliography at the end of the manual.

Bold type

Wherever syntax representations are explained, the lines that are currently being explained are shown in bold type.
The text entered on the screen in the examples is also shown in bold type. Note the significance of bold text in the "SDF syntax representation" on page 528ff.

```
SYNTAX/Example
```

I/O from the examples is highlighted using a fixed-pitch font.

Format

The metasyntax of the statement formats is described in "SDF syntax representation" on page 528ff.
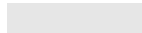
The gray highlighting of operands in the syntax representations means that the operand is only available to the ADA. The DA cannot see the operand concerned on the SDF interface.

1.3   Changes since the preceding version

The sections below provide an overview of the new and changed functions since MAREN V11.0A.

Changes in MARENADM

Statement	Program	Operand	Meaning
ADD-FREE-VOLUMES	(MARENADM)	INITIALIZATION=*YES(...) INIT-FILE=	Extended to structure: New operand: creates input file for initialization
ADD-PRIVATE-VOLUME	(MARENADM)		Information on volume encryption
ENTER-MAREN-PROCEDURE	(MARENADM)	New statement	Starts a procedure as a batch job with propagation of the MAREN rights
EXPORT-VOLUME	(MARENADM)		Information on volume encryption
MODIFY-MAREN-PARAMETERS	(MARENADM)	MOUNT-CHECK-INTERVAL=	New operand: interval after which MARENUCP checks whether tape has been mounted
		RESERVATION-SEQUENCE=	New operand: criterion for selection of free tapes by MARENUCP
		OPERATOR-ROLE=	New operand: operator role for MARENUCP and the INITIALIZE-VOLUMES statement
		ALL-DOMAIN-ADMIN= *ALLOWED(... DEFAULT-ADMIN-SCOPE=	Extended to structure: New operand: determines which administration scope applies when MARENADM is started

Statement	Program	Operand	Meaning
PRINT-VOLUME-ATTRIBUTES	(MARENADM)	OUTPUT=*STD(...)/ <filename>(...) FORMAT= SEND-BY-MAIL=	Output to file extended New operand: format of the output file New operand: sends file by email (default here is DELETE=YES)
REMOVE-USER-VOLUMES	(MARENADM)	OUTPUT=	Behavior changed: additional output to SYSOUT no longer applies
RESERVE-FREE-VOLUME	(MARENADM)	OUTPUT=<filename>(...) FORMAT= SEND-BY-MAIL=	Output to file extended New operand: format of the output file New operand: sends file by email
SHOW-FREE-VOLUMES	(MARENADM)	OUTPUT=<filename>(...) FORMAT= SEND-BY-MAIL=	Output to file extended New operand: format of the output file New operand: sends file by email
SHOW-MAREN-PARAMETERS	(MARENADM)	Output information	Extended output
SHOW-VOLUME-ATTRIBUTES	(MARENADM)	OUTPUT= OUTPUT=*NONE	Renamed New: no output
		OUTPUT=<filename>(...) FORMAT= SEND-BY-MAIL=	Output to file extended New operand: format of the output file New operand: sends file by email
		DIRECTORY-NAME= DIRECTORY-ON-VOLUME=	Extended: New operand: restricts output to volumes which contain the directory
SHOW-VSNS	(MARENADM)	OUTPUT=	New operand: can suppress output to SYSOUT
UPDATE-MAREN-CATALOG	(MARENADM)	INPUT=	New operand: recovery of the MAREN catalog from HSMS or ARCHIVE directories; previous operands integrated as a structure

Changes in MAREN

Statement	Program	Operand	Meaning
PRINT-VOLUME-ATTRIBUTES	(MAREN)	OUTPUT=*STD(...)/ <filename>(...) FORMAT= SEND-BY-MAIL=	Output to file extended New operand: format of the output file New operand: sends file by email (default here is DELETE=YES)
RESERVE-FREE-VOLUME	(MAREN)	OUTPUT=<filename>(...) FORMAT= SEND-BY-MAIL=	Output to file extended New operand: format of the output file New operand: sends file by email
SHOW-VOLUME-ATTRIBUTES	(MAREN)	DIRECTORY-ON-VOLUME= OUTPUT=<filename>(...) FORMAT= SEND-BY-MAIL=	New operand: selects volumes according to the directory they contain Output to file extended New operand: format of the output file New operand: sends file by email

MARENEKM

The encryption key administrator uses the MARENEKM (MAREN Encryption Key Manager) administrator program as a central utility routine for managing the encryption keys which enable the hardware feature "tape encryption" to be used by LTO-4 drives.

MARENEKM statements	Meaning
ADD-ENCRYPTION-KEY	Enters an encryption key in the key box
COPY-ENCRYPTION-KEYS	Copies encryption keys to another key box
CREATE-ENCRYPTION-KEY	Generates an encryption key and enters it in the key box
DELETE-KEY-BOX	Deletes a key box
EXPORT-KEY-BOX	Generates a transfer key box for another domain
IMPORT-KEY-BOX	Imports a transfer key box into a domain
MODIFY-VOLUME-ENCRYPTION-ATTR	Updates the encryption attributes of an encrypted volume
REMOVE-ENCRYPTION-KEYS	Removes encryption keys from the key box
REPAIR-KEY-BOX	Repairs a key box
SET-WRITE-ENCRYPTION-KEY	Defines an encryption key for encryption

MARENEKM statements	Meaning
SHOW-ENCRYPTION-KEYS	Outputs the encryption keys of a key box
SHOW-VOLUME-ENCRYPTION-ATTR	Displays the encryption attributes of volumes

Changes in MARENUCP

All MARENUCP parameters have been removed:

– The INIT and PROPOSE parameters have been removed and not replaced.

– The UCON-USER-ID parameter is still supported for reasons of compatibility.

– The MOUNT-CHECK-INTERVAL and RESERVATION-SEQUENCE parameters are now available as host-specific MAREN parameters and can be set using the MARENADM statement MODIFY-MAREN-PARAMETERS.

MARENADM.ARCHIVE utility routine

This utility routine is supported for the last time in MAREN V12.0 as all the functions of the program are provided by the MARENADM statement UPDATE-MAREN-CATALOG.

1.4 README file

Any additions to the manuals are described in the Readme files for the various product versions. These Readme files are available at *http://manuals.ts.fujitsu.com* under the various products.

Readme files under BS2000/OSD

On your BS2000 system you will find Readme files for the installed products under the file name:

```
SYSRME.<product>.<version>.E
```

Please refer to the appropriate system administrator for the user ID under which the required Readme file can be found. You can also obtain the path name of the Readme file directly by entering the following command:

```
/SHOW-INSTALLATION-PATH INSTALLATION-UNIT=<product>,LOGICAL-ID=SYSRME.E
```

You can view the Readme file with /SHOW-FILE or by opening it in an editor or print it on a standard printer using the following command (example for MAREN V12.0):

```
/PRINT-DOCUMENT FROM-FILE=SYSRME.MAREN.120.D,LINE-SPACING=*BY-EBCDIC-CONTROL
```

Additional product information

Current information, version and hardware dependencies and instructions for installing and using a product version are contained in the associated Release Notice. These Release Notices are available at *http://manuals.ts.fujitsu.com*.

Part 1: MAREN for Systems Support

2 Configuring and installing MAREN

2.1 System environment and software requirements

Version 12.0A of the MAREN system runs under BS2000/OSD-BC V6.0 or later.

Further prerequisites for MAREN operation are:

- the software product SORT (BS2000), which is required among other things for generating printer lists (see the "SORT" manual [24]).

- the component RFA, if multiprocessor capability in MAREN is to be implemented via RFA.

- an SPD (shareable private disk), together with the required hardware (MCS, TCF), if multiprocessor capability in MAREN is to be implemented via SPD.

- the software product LMS (BS2000), if the parameter sets are managed in libraries in the PRINT-VOLUME-ATTRIBUTES statement (see the "LMS" manual [17]).

- the chargeable software product HIPLEX MSCF, if cross-computer information transfer is required for some MARENADM and MARENEKM statements (see the "HIPLEX MSCF" manual [13] or the "JV" manual [16]).

- BS2000/OSD V8.0 or higher if one of the following functions is to be used:
  - Sending the output file by email (in the case of MAREN and MARENADM statements which create an output file)
  - Use of LTO-4 drives (in particular the volume encryption which is offered on them)

2.2 Installation

2.2.1 Preparing for installation

Setting up the user ID

The system ID SYSMAREN which is set up with the system privileges TAPE-
ADMINISTRATION and TAPE-KEY-ADMINISTRATION (BS2000/OSD V8.0 and higher) is
provided to run MAREN. The files must also be read in from the MAREN product tape under
this ID. The MARENCP control program must be started under this ID later on.
If the chargeable software product SECOS is in use, the TAPE-ADMINISTRATION and
TAPE-KEY-ADMINISTRATION privileges can be assigned to any IDs.

The account number under which the MARENCP task is subsequently started should have
TP authorization (entry in the user catalog: MAX-ALLOWED-CATEGORY=TP).

Allocating storage space for catalog files

Depending on the mode of operation selected (RFA or SPD), storage space on the selected
disks must be allocated for the files of the MAREN catalog.

The MAREN catalog files can be stored under any ID, but it is recommended that you make
the catalog available under the ID SYSMAREN. The advantage to this approach is that it
enables MARENCP to access the catalog files without having to make them shareable. In
this case, MARENADM can only access the catalog files directly under TSOS or
SYSMAREN.

To avoid scattering the MAREN catalog files and thereby impairing performance, sufficiently
large values should be selected when allocating primary and secondary storage areas.

The size of the individual files can be estimated based on the following criteria:

Volume catalog: In an NK-ISAM catalog a PAM block can store a maximum of one archive entry
For instance, 6000 V9.0B archive entries will require 6000 PAM pages. This must be taken into consideration in the primary allocation. (For information on the volume catalog, see the section entitled "**Volume catalog"** in the **MAREN** manual "Volume 1: Basics of MTC Management**"** [1]**.**)

Logging file: One PAM block contains one logging record. Since one logging record is written each time an archive entry is changed, the size of the file steadily increases. Thus, at least two new logging records are added just to create a tape output file. Therefore, when allocating space, a rough estimate should be made of how many updates will be made in the archive entries during the period the logging file remains assigned. For security reasons and to avoid adversely affecting performance, each system should have its own logging file.
A variable block size can also be selected for the logging file (see the section entitled "MAREN Logging file" in the **MAREN** manual "Volume 1: Basics of MTC Management" [1]).

2.2.2   Installation components

Components with an asterisk ("*") in front of their name are, by default, expected to be found under the TSOS user ID. All other components are expected under the SYSMAREN user ID. All files under TSOS must be cataloged with USER-ACCESS=*ALL-USERS and ACCESS=*READ.

Component	Meaning
*SIPLIB.MAREN.120	Library containing privileged macros and SPL includes
SYSDAT.MAREN.120.CATALOG	Empty MAREN catalog in the NK-ISAM format
SYSENT.MAREN.120.MARENUCP	Start procedure for MARENUCP
SYSENT.MAREN.120.RFA.MARENCP	Start procedure for MARENCP (RFA mode)
SYSENT.MAREN.120.SPD.MARENCP	Start procedure for MARENCP (SPD mode)
*SYSFHS.MAREN.120.D *SYSFHS.MAREN.120.E	FHS module library (German) FHS module library (English)
SYSLIB.MAREN.120	Library containing MAREN GCs and MAREN linkage modules
*SYSLNK.MAREN.120	Library containing all TU link and load modules (LLMs) for MAREN, MARENADM, MARENCP and MARENUCP
*SYSLNK.MAREN.120.TPR	Library from which the subsystem is loaded on S servers. This contains the MAREN subsystem and the TPR link and load modules.
*SPMLNK.MAREN.120.TPR	Library from which the subsystem is loaded on SX machines. This contains the MAREN subsystem and the TPR link and load modules.
*SKMLNK.MAREN.120.TPR	Library from which the subsystem is loaded on SQ machines. This contains the MAREN subsystem and the TPR link and load modules.
*SYSMES.MAREN.120	MAREN message file
*SYSNRF.MAREN.120	NOREF file
*SYSPRC.MAREN.120	Procedures for starting MARENCP in a HIPLEX-AF environment
SYSPRG.MAREN.120.ARCHIVE	Program for analyzing ARCHIVE directories
SYSPRG.MAREN.120.MAREN	MAREN user program (prephase)
SYSPRG.MAREN.120.MARENADM	MARENADM administrator program (prephase)
SYSPRG.MAREN.120.MARENCP	MARENCP control program (prephase)
SYSPRG.MAREN.120.MARENUCP	MARENUCP automatic free tape allocation (prephase)
*SYSREP.MAREN.120	Correction file
*SYSRMS.MAREN.120	RMS selectable unit for MAREN

Component	Meaning
*SYSSDF.MAREN.120.USER	User syntax file (START-MARENADM command) for systems without SECOS
*SYSSDF.MAREN.120	SDF syntax file
*SYSSII.MAREN.120	Structure and installation information file for installation with IMON
SYSSPR.MAREN.120	Library containing implementation procedures for the START commands
*SYSSSC.MAREN.120	Subsystem declaration

The following files are also supplied:

Component	Meaning
*SYSFGM.MAREN.120.D	Release Notice (German)
*SYSFGM.MAREN.120.E	Release Notice (English)

2.2.3   Notes on installation with IMON

Fixed file names are no longer required for the IMON supply and installation procedure (see the IMON manual [15]). Structure and installation information for IMON is supplied with MAREN V12.0A for BS2000/OSD in the form of the file SYSSII.MAREN.120. In this file, each supplied MAREN file is assigned a logical ID under which it can be accessed. The following logical IDs are used for the MAREN product files:

File name	Logical ID
MAREN.BULLETIN [*]	SYSDAT.BULLETIN
MAREN.LAYOUT.EXPORT-RECEIPT [*]	SYSDAT.EXPORT
MAREN.LOCK.FILE [*]	SYSDAT.LOCKFILE
MAREN.PARAMETER-FILE [*]	SYSPAR.PRINT
SIMLNK.MAREN.120.TPR	SYSLNK.TPR
SIPLIB.MAREN.120	SIPLIB
SKMLNK.MAREN.120.TPR	SYSLNK.TPR
SPMLNK.MAREN.120.TPR	SYSLNK.TPR
SYSDAT.MAREN.120.CATALOG	SYSDAT.VOID-CAT
SYSENT.MAREN.120.MARENUCP	SYSENT.UCP
SYSENT.MAREN.120.RFA.MARENCP	SYSENT.RFA
SYSENT.MAREN.120.SPD.MARENCP	SYSENT.SPD
SYSFGM.MAREN.120.D	SYSFGM.D
SYSFGM.MAREN.120.E	SYSFGM.E
SYSFHS.MAREN.120.D SYSFHS.MAREN.120.E	SYSFHS.D SYSFHS.E
SYSLIB.MAREN.120	SYSLIB
SYSLNK.MAREN.120	SYSLNK
SYSLNK.MAREN.120.TPR	SYSLNK.TPR
SYSMES.MAREN.120	SYSMES
SYSNRF.MAREN.120	SYSNRF
SYSPRC.MAREN.120	SYSPRC
SYSPRG.MAREN.120.ARCHIVE	SYSPRG.ARCHIVE
SYSPRG.MAREN.120.MAREN	SYSPRG.MAREN
SYSPRG.MAREN.120.MARENADM	SYSPRG.MARENADM
SYSPRG.MAREN.120.MARENCP	SYSPRG.MARENCP
SYSPRG.MAREN.120.MARENUCP	SYSPRG.MARENUCP

File name	Logical ID
SYSREP.MAREN.120 *)	SYSREP
SYSRMS.MAREN.120	SYSRMS
SYSSDF.MAREN.120.USER	SYSSDF.USER
SYSSDF.MAREN.120	SYSSDF
SYSSII.MAREN.120	SYSSII
SYSSPR.MAREN.120	SYSSPR
SYSSSC.MAREN.120	SYSSSC

*) Dummy release items

Dummy release items

In addition to the files supplied with MAREN V12.0A, there are also dummy release items
for which a logical name is also allocated (product files marked with "*)" in the overview
above). MAREN has five dummy release items (their default names are given in brackets):

MAREN bulletin   ($SYSMAREN.MAREN.BULLETIN)

Export receipt layout   ($SYSMAREN.MAREN.LAYOUT.EXPORT-RECEIPT)

MAREN print parameters   ($SYSMAREN.MAREN.PARAMETER-FILE)

MAREN lock file   ($SYSMAREN.MAREN.LOCK.FILE)

MAREN correction file   ($TSOS.SYSREP.MAREN.120)

The first three files are optional and can be created if and when needed. The lock file is
opened by MARENCP when booting in OUTPUT mode. The sole function of this empty file
is to prevent MARENCP from being loaded more than once on the same system. The
correction file is generated from the RMS selectable unit during the standard installation of
MAREN.

The names for these MAREN product files can be freely selected by assigning a different
file name to the logical ID via the SET-INSTALLATION-PATH command. However, this can
be done only under a user ID with the SUBSYSTEM-MANAGEMENT privilege.

Example

```
/SET-INSTALLATION-PATH LOGICAL-ID=SYSDAT.BULLETIN,
     PATH-NAME=$SYSMAREN.USERINFO,INSTALLATION-UNIT=MAREN
```


The MAREN bulletin will be read and output from $SYSMAREN.USERINFO after the
MAREN and MARENADM programs are loaded.

Note

Before a new path name can be assigned to the MAREN lock file (logical ID SYSDAT.LOCKFILE), MARENCP must first be terminated on the relevant computer.

The current names of the MAREN files can be queried with the following command:

`/SHOW-INSTALLATION-PATH INSTALLATION-UNIT=MAREN`

By also specifying a logical ID, the query can be restricted to a particular MAREN file. For instance, the following command allows you to query the name of the MAREN bulletin:

`/SHOW-INSTALLATION-PATH INSTALLATION-UNIT=MAREN,LOGICAL-ID=SYSDAT.BULLETIN`

2.2.4 Preparations for startup

Specifying the message file

The message file of the MAREN system must be specified as the message output file either right away during startup or subsequently by means of the MODIFY-MIP-PARAMETERS command (or MODIFY-MSG-FILE-ASSIGNMENT in BS2000/OSD-BC < V3.0).

Assigning the syntax file

The MAREN syntax file must be activated by means of the MODIFY-SDF-PARAMETERS command or merged with the current BS2000 system syntax file.

Preparing and starting the control program

The MARENCP control program must be started under the user ID SYSMAREN or another ID which has the TAPE-ADMINISTRATION privilege.

Before this can be done, the start procedures supplied must be provided with the current file names and the required local MARENCP parameters (see section "Basic structure of the MARENCP start files" on page 37).

In the supplied start procedures for MARENCP, the programs are now called by means of START-MARENCP.
However, MARENCP can still be called by means of START-PROGRAM for compatibility reasons.

In order to test MARENCP, you can use the MARENCP parameter TESTMODE to run the program in test mode. After the test phase has been completed, test mode must be deactivated. See the MODIFY-MAREN-PARAMETERS statement.

Declaring and starting the subsystem

The MAREN subsystem must be declared in the current subsystem catalog and started. The subsystem declaration is SYSSSC.MAREN.120.

Automatic free tape allocation

If automatic free tape allocation is required, proceed as described in section "Notes for the privileged user" on page 56 (MARENUCP).

In the supplied start procedures for MARENUCP, the relevant programs are now called by means of START-MARENUCP.
However, MARENUCP can still be called by means of START-PROGRAM for compatibility reasons.

Preparing the MAREN catalog

You must decide if you want to use an existing old MAREN catalog in MAREN V9.0B or if you want to start over with an empty catalog.

1. Working with an old MAREN catalog

    It is possible to work with an old MAREN catalog if the catalog is available in NK-ISAM format.

2. Working with a new, empty MAREN catalog

    – There is an empty catalog file provided with MAREN V12.0A ($SYSMAREN.SYSDAT.MAREN.120.CATALOG) that contains a parameter records but does not contain volume records. This file must be copied to the file that is intended to be used for the future MAREN catalog, e.g. $SYSMAREN.MAREN.CAT.

    – The MODIFY-MAREN-PARAMETERS statement and possibly MODIFY-GLOBAL-PARAMETERS must be used to set the MAREN system to the requirements of the particular computer center.

    – The MAREN catalog can be edited with the administration program MARENADM. For example, free volumes could be added to the list of volumes available for reservation with the MARENADM statement ADD-FREE-VOLUMES.

    – Furthermore, the MARENADM statement ADD-RESERVED-VOLUME (operand VOLUME=*BY-TSOSCAT) can be used to add volumes contained in the catalog entries of tape files (in TSOSCAT) to the MAREN catalog.

    – If you want to add a large number of existing volume files in an incompatible format to the MAREN catalog, please contact a Competence Center or the Sales & Marketing Dept. of Fujitsu. The systems engineers will help you with internal tools.

    – You must check free volumes to see if they need to be initialized so that they can be written to after being reserved. If the free volume to be added needs to be initialized, the INIT=*YES operand must be used in the MARENADM statement ADD-FREE-VOLUMES.

Setting up domains

A MAREN network can operate with domains. Working with domains is described in the section "Managing domains" in "MAREN Volume 1" [1].

Other computer center-specific adaptations

– If the standard form implemented in MAREN is not to be used for export receipts, a customized layout for export receipts and return notes must be designed (see section "Sending export receipts to a SPOOL printer" on page 61).

– If required, all users of the MAREN user program can be sent a message with the aid of the MAREN bulletin feature. The relevant text should be stored in the file defined during installation with IMON (see section "MAREN system bulletin" on page 59).

– If required, computer center exit routines can be created and incorporated in a module library in order to modify certain MAREN system activities (see the manual "MAREN Volume 1" [1]).

Security aspects

In cases where data security is the top priority, the computer center should give due consideration to the following recommendations:

– Setting the host-specific MAREN parameters

```
FOREIGN-TAPE-CHECK  = YES
INPUT-TAPE-CHECK    = YES
INPUT-FILE-CHECK    = YES
RETPD-CHECK         = YES
TSOS-PRIV           = NO
PRIVILEGED-USER-ID  = *NONE
MAREN-PASSWORD      = YES
LOGGING             = YES
AUDIT               = YES
```

– The MAREN catalog must have the attribute USER-ACCESS=*OWNER-ONLY.

– The MAREN catalog and the logging files should be situated on different pubsets.

– There should only ever be one MAREN catalog within a given computer center, so as to preclude the risk of confusion between identical VSNs.

– All the cartridges of an archive system should belong to a single MAREN catalog.

– Before the MAREN subsystem is unloaded, the computer center must take the necessary organizational steps to ensure that tape processing is no longer possible.

2.3 The MARENCP control program

To access the MAREN catalog, the MAREN system requires a permanent background task which has loaded the MARENCP control program.

2.3.1 Starting and terminating

Starting the MARENCP task

The sections below describe working with the MARENCP control program without taking domains into consideration. What you need to take into consideration when working with domains is described in "MAREN Volume 1" [1].

The control program must run under the user ID SYSMAREN or another ID which has the TAPE-ADMINISTRATION privilege, and is loaded in a separate task using an ENTER file or procedure.

Note

Local and lobal parameters which to date were defined when starting the MARENCP procedure are meaningless as of MAREN V10.0A. They have been combined to form the host-specific parameters.

The following exception applies in the case of hosts which had an earlier version in the MAREN network: The first time MARENCP is started the MARENCP parameters are combined with the current global parameters to form host-specific parameters and are stored (for details see "MAREN Volume 1" [1]). The HOSTNAME parameter is not taken into consideration here.
The host name define in BCAM is used.

The MAREN subsystem cannot be activated until after the MARENCP task has been started during a BS2000 session. Prior to this, all interactive tasks involving tape processing are rejected, and all batch tasks wait for input from the operator. Therefore, when starting up a system, suitable start procedures must be used to ensure that the control program and the MAREN subsystem are loaded when the session is opened.

Loading the MARENCP control program

The MARENCP control program is started by issuing the START-MARENCP command.

START-MARENCP	Alias: **MARENCP**
VERSION = ***STD** / <product-version mandatory-man-corr> / <product-version mandatory-man-without-corr> / <product-version without-man-corr>	
,**MONJV** = ***NONE** / <filename 1..54 without-gen-vers>	
,**CPU-LIM**IT = ***JOB-REST** / <integer 1..32767>	

VERSION =
The selected MARENCP version is used.

VERSION = *STD
Before MARENCP is called, the version is set by means of the SELECT-PRODUCT-VERSION command (in system mode). This set version is used as the default version.

VERSION = <product-version mandatory-man-corr>
Full version identifier.

VERSION = <product-version mandatory-man-without-corr>
Version identifier excluding the correction status.

VERSION = <product-version without-man-corr>
Version identifier excluding the release and correction status.

MONJV =
Specification of a job variable for monitoring the MARENCP run.

MONJV = *NONE
A monitoring job variable is not used.

MONJV = <filename 1..54 without-gen-vers>
Explicit specification of the job variable for monitoring the MARENCP run.

CPU-LIMIT =
Maximum CPU time in seconds that the program can run.

CPU-LIMIT = *JOB-REST
The remaining CPU time is to be used for the job.

CPU-LIMIT = <integer 1..32767 seconds>
Only the specified time is to be used.

Terminating the MARENCP task

The control program is terminated normally via the MARENADM statement STOP-CONTROL-PROGRAM. All open files of the MAREN catalog are closed.

In the event of a fatal error, the control program automatically terminates and generates a memory dump. The following spin-off mechanism is triggered within a procedure or ENTER file: all commands through to the next SET-JOB-STEP, EXIT-JOB, LOGOFF, CANCEL-PROCEDURE, END-PROCEDURE or EXIT-PROCEDURE statement, or to the end of the procedure or the ENTER file are skipped.

If the errors that lead to termination of the MARENCP run are easy to diagnose and therefore do not require a memory dump, they are simply logged by MARENCP. Appropriate messages are issued to SYSOUT and/or CONSOLE and task switch 29 is set.

2.3.2 Control program execution

To prevent MARENCP from being loaded more than once on the same computer, which could lead to system dumps, a file with the link name MARENLCK is opened in OUTPUT mode at the beginning of the control program. By default, the name of this file is $SYSMAREN.MAREN.LOCK.FILE. If IMON is being used, however, this name is freely selectable (see section "Notes on installation with IMON" on page 28). Restart of the control program is not possible until this file has been closed when the current MARENCP task is terminated.

MAREN searches all HOST records of MARENCAT and checks whether a MAREN version which is suitable for working with MAREN V12.0 is present on all the hosts. If this is not the case, MARENCP terminates and reports the hosts concerned on the console and in the SYSOUT log.

The control program changes the task attribute of the MARENCP task to TP in order to enhance performance, provided the job class definition or the user entry permits this.

2.3.3 Basic structure of the MARENCP start files

In order to start the MARENCP control program in a separate task, several start files (ENTER or procedure files) are supplied with MAREN. These differ in structure depending on their purpose, and may have to be adapted to suit customer-specific requirements:

Two ENTER files for RFA and SPD mode (see):
SYSENT.MAREN.120.RFA.MARENCP and SYSENT.MAREN.120.SPD.MARENCP

The structure of the ENTER files for starting the MARENCP control program differs, depending on whether MAREN has been installed in SPD or RFA mode.

Assigning files

In all start files, the addressed files of the MAREN catalog must be assigned with link names before MARENCP is called. The names of the catalog files and the ID(s) under which they are stored are freely selectable. In the interests of clarity, however, it is better to keep these files under the execution ID of the MARENCP task (SYSMAREN). The following link names are expected:

MARENCAT   for the volume catalog

MARENLOG   for the logging file

MARENLMF   for the reservation file

MARENLIB   for a module library with computer center exits for MAREN

The MAREN module library must be assigned if computer center exit routines are to be activated.

Offline logging

If no volume catalog is assigned (e.g. because there are none available), MARENCP activates offline logging. In this case, only logging records are written and the remaining files of the MAREN catalog are not accessed. As soon as the volume catalog becomes available again, the logging records can be "merged" using the MARENADM statement UPDATE-MAREN-CATALOG.

Since the protection attributes of a volume cannot be evaluated without accessing the volume catalog, the operator is entirely responsible for permitting or rejecting tape requests (e.g. on the basis of a printed MAREN catalog).

Activating logging

If the host-specific parameter LOGGING is used to enable logging and no logging file is allocated, MARENCP creates a logging file with a default name and opens this in shared update mode. The default name is:

`$SYSMAREN.MAREN.LOGGING.yyyymmdd.hhmmss.hostname`

where:

yyyymmdd   Current date (ISO4 format);

hhmmss   Time of day

hostname   BCAM name of the user's own computer

If an empty logging file is assigned, it is created anew in OPEN mode OUTIN. Otherwise, writing continues to this file in OPEN mode INOUT.

The MARENCP ENTER files

To support MAREN operation in RFA or SPD mode (for the operating modes see the section "Operating modes in MAREN" on page 40), two sample ENTER files are supplied:

– SYSENT.MAREN.120.RFA.MARENCP
– SYSENT.MAREN.120.SPD.MARENCP

Each system requires its own ENTER file, and each ENTER file must be adapted to suit local conditions.

Notes on RFA mode

If MAREN multiprocessor capability is implemented via RFA and the MAREN catalog files are not on the local system, the connection to the partner must be established using the SET-RFA-CONNECTION command before assigning these files. Since this involves simultaneous access to the MAREN catalog by several systems, the catalog files should be opened in shared update mode (see the operand SHARED-UPDATE=*YES in the ADD- or SET-FILE-LINK command). The logging file should always be located on the local system.

In RFA mode, there is no guarantee that the connection to the RFA central processor of the MAREN network will always be established immediately when the MARENCP task is started on an RFA subprocessor. The RFA central processor is any computer on which the MAREN catalog is located. A sufficiently long time period should therefore be specified for the TIME operand in the SET-RFA-CONNECTION command, within which the MARENCP task on the subprocessor will attempt to set up a connection. If the TIME operand is set too low, the MARENCP task on the RFA subprocessor will terminate prematurely without a connection being established.

If MARENCP on an RFA subprocessor receives a DMS error code when accessing the MAREN catalog indicating a failure of the RFA connection to the RFA central processor, MARENCP sets task switch 28 and terminates. This switch should be queried in the MARENCP ENTER file for RFA mode. If it was set by MARENCP, the connection should be cleared using REM-RFA-CONNECTION and attempts made at regular intervals to open a connection to the RFA central processor using SET-RFA-CONNECTION.

The command format of the ENTER files should be identical on all systems, so that major modifications to the start procedures do not have to be undertaken when transferring the MAREN catalog. For this reason, the ENTER file on the RFA central processor should also include a SET-RFA-CONNECTION command.

2.3.4   Operating modes in MAREN

MAREN has multiprocessor capability, offering two operating modes which differ depending on the way in which the computers involved access the MAREN catalog:

– In **SPD mode**, access to the MAREN catalog is **exclusive**.

– In **RFA mode**, access to the MAREN catalog is **shared**.

RFA mode / ACCESS-MODE SHARED (default value)

In RFA mode, the BS2000 component RFA is used for the transfer of data between the attached systems and the MAREN catalog. The data flow for three processors, for example, is illustrated by the following diagram:
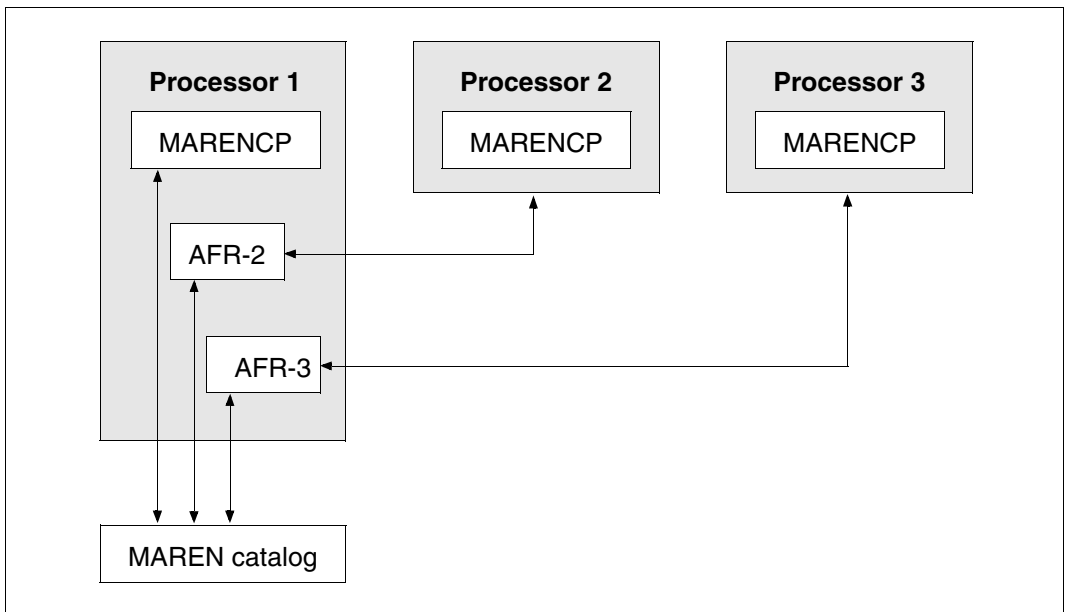
Figure 1: Data flow in RFA mode

The MAREN catalog can reside on a private disk or on a pubset disk (but not on the home pubset, so that it can be switched to another computer in the event of a pubset failure). DMS ISAM access to the MAREN catalog must take place in shared update mode.

SPD mode / ACCESS-MODE EXCLUSIVE

In SPD mode, each processor has a hardware connection to the disk on which the MAREN catalog is located. The BS2000 data communication component is not required. The data flow for three processors, for example, is illustrated by the following diagram:
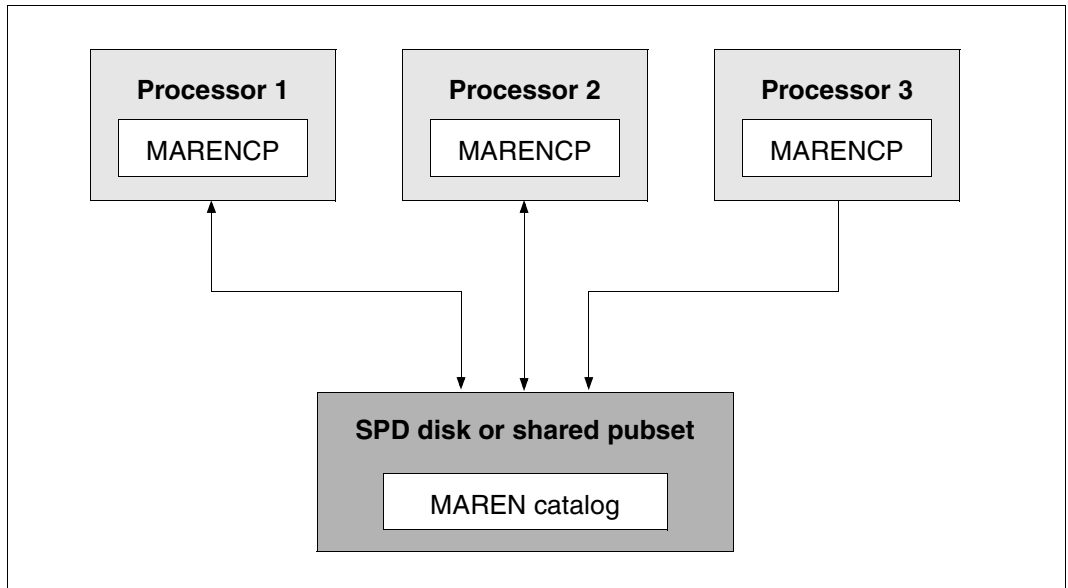
Figure 2: Data flow in SPD mode

DMS ISAM access to the MAREN catalog need not take place in shared update mode, since only one task from each processor can open the catalog.
However, each attempt to access the catalog must be preceded by an internal OPEN and followed by an internal CLOSE, so that access by other computers is not blocked.
To avoid deadlock situations, no MAREN catalog files should be transferred to tape or cartridge during a MAREN session in SPD mode. Suitable precautions must therefore be taken to ensure that the volume catalog or the logging files are included in any computer center backup runs. However, since the catalog must be restored in the event of a fault or loss, and a backup version is required for this, it is advisable to create copies of the MAREN volume catalog before a computer center backup run (using the MARENADM statement COPY-VOLUME-CATALOG) and to include these copies in the backup run.

Notes on selecting the mode

The mode is set using the global MAREN parameter ACCESS-MODE. By default the RFA mode / ACCESS-MODE=SHARED is set.

In the MAREN system, a distinction between RFA and SPD mode is made with respect to the open status of the MAREN catalog:

● In RFA mode, the MAREN catalog is permanently opened for I/O operations.

● In SPD mode, the MAREN catalog is always closed in the intervals between individual accesses to the catalog. The catalog is re-opened with each new access.

As a result of these different approaches, the following should be noted when selecting the mode:

● In RFA mode, the performance of the RFA component has a direct effect on MAREN performance.

● In multiprocessor operation, SPD mode is feasible only if there are relatively few accesses to the MAREN catalog, both implicitly via the tape processing facility and explicitly via the MAREN and MARENADM programs. Frequent attempts to access the MAREN catalog in SPD mode lead to impaired performance.

● In SPD mode, only a few files or seldom used files should be located on the disk in addition to the MAREN catalog.

● If MAREN is operated on one processor only, it should run in RFA mode. The ENTER file for SPD mode can be used as the ENTER file for MARENCP.

2.3.5 MAREN in a HIPLEX configuration

In order to maximize the availability of MAREN in a HIPLEX configuration, it must be possible for all computers to access the MAREN catalog at all times (irrespective of the BS2000 systems currently operating). The MAREN catalog must therefore be installed on a shared pubset via RFA. All computers that access the same MAREN catalog must be linked together via HIPLEX MSCF (and BCAM). In the event of a master failure, another computer (backup master) automatically assumes the role of master and continues running the MAREN applications without interruption.

Prerequisites

1. HIPLEX MSCF must be installed and started under TSOS on all computers that require access to the MAREN catalog. The computers involved must be interlinked via an MSCF connection. This can take place either statically with the help of the MSCF parameter file or dynamically using the following command:

    ```
    /START-MSCF-CONNECTION PARTNER-NAME=<processor-name>,CLOSELY-COUPLED
    ```

2. The pubset containing the shared MAREN catalog must be entered as a shared pubset in the MRSCAT of the computers involved:

    ```
    /ADD-MASTER-CATALOG-ENTRY ENTRY=<spvs-catid>,SHARED-PUBSET=*YES
    ```

3. The master and backup master must be defined for the shared pubset:

    ```
    /SET-PUBSET-ATTRIBUTES PUBSET=<spvs-catid>,
                           MASTER=<master-sysid>,
                           BACKUP-MASTER=<backup-sysid>,
                           ALTERNATE-BACKUP=*BY-SHARER
    ```

    The shared pubset is imported into the master:

    ```
    /IMPORT-PUBSET PUBSET=<spvs-catid>,USE=*SHARE,SHARER-TYPE=*MASTER
    ```

    and into all the other computers (i.e. slaves):

    ```
    /IMPORT-PUBSET PUBSET=<spvs-catid>,USE=*SHARE,SHARER-TYPE=*SLAVE
    ```

4. The user ID SYSMAREN must be set up on the home pubset of all computers that have access to the MAREN catalog. By default, the catalog ID of the respective home pubset is entered:

    ```
    /ADD-USER USER-ID=SYSMAREN,...PUBSET=*HOME,DEF-PUBSET=*HOME
    ```

5. The user ID SYSMAREN must be set up on the shared pubset. By default, the catalog
    ID of the home pubset is entered:

    `/ADD-USER USER-ID=SYSMAREN, ..PUBSET=<spvs-catid>,DEF-PUBSET=*HOME`

    If the SYSMAREN user ID has different access privileges on the master computer than
    on the local system, the account number and the password for the master computer
    must be specified when calling the MARENCP enter file. They are needed to establish
    the RFA connection to the shared pubset with the MAREN catalog.

6. The MAREN catalog must be created or installed on the shared pubset under the user
    ID SYSMAREN.

7. The MARENLIB facility (for using MAREN exits) and the MAREN program files must be
    installed on the home pubset of all computers that have access to the MAREN catalog.
    This is because the source and target user IDs must match for an RFA connection to a
    shared pubset.

8. On slaves, direct access to the MAREN catalog via MARENADM is possible only under
    the user ID SYSMAREN. This is because the source and target user IDs must match a
    user ID on the shared pubset for an RFA connection. Access to the MAREN catalog by
    other user IDs is handled via the MARENCP task.

If the master of the shared pubset fails, the backup master automatically assumes the role
of master. Within the MARENCP task, the RFA connection to the shared pubset is restored
on all computers and MARENCP is restarted.

Cross-computer communication and administration

In a HILPEX configuration, the MAREN administrator can communicate with the other hosts
in the MAREN network and perform cross-computer administration tasks.

To permit this, in addition to meeting all the aforementioned requirements all hosts which
are indended for MAREN administrators must be linked to all hosts of the MAREN network
via BCAM connections.

The hosts exchange messages and signals using HIPLEX MSCF. The administrator can
forward changes of status such as the opening of the MAREN catalog and a change of
logging file to the other hosts in the MAREN network. To do this, he/she uses the HOST-
NAME operand of the following MARENADM statements to specify that the changes should
be forwarded to the network hosts. For details on communication in a MAREN network,
please refer to the manual "MAREN Volume 1" [1].

The following MARENADM statements are provided for cross-computer communication and adminsitration:

2.4 MARENUCP: automatic free tape allocation

The MARENUCP component automates the allocation of free tapes for users.

If a tape is requested without specifying the VSN (scratch request), the MARENUCP automatic free tape allocation facility selects a free tape and marks it as reserved in the MAREN catalog.

MARENUCP assumes the responsibilities of the operator. It finds a free tape in the MAREN catalog, reserves it for the user, and ensures that the tape is readied for processing. Due account is taken of any computer center exit routines that may be present.

MARENUCP is executed as a permanent batch task under a user ID which has been assigned the privilege TAPE-ADMINISTRATION and the operator role which was entered in the host-specific MAREN parameters (default: SYSMAREN). Via the UCON interface, it reads all messages relating to tape processing.

The request for a free tape initiates the following actions in MARENUCP:

–   Determination of the tapes mounted on the tape devices.

–   Search for a mounted free tape and its reservation in the MAREN catalog, taking into consideration any computer center exit routines and a reservation file.

–   If no free mounted tape is found, the operator is requested to mount one. This request contains the application-oriented number range, as necessary.
    It need not be answered, since MARENUCP automatically recognizes that the tape has been mounted by checking the device occupation at regular intervals.

–   When a free tape has been mounted, it is reserved in the MAREN catalog for the user.

2.4.1 Starting and terminating

Preparations

The following preparations must be made before using MARENUCP:

● Set up a connection to UCON

A connection to UCON can be set up under any ID for which the system privilege TAPE-ADMINISTRATION and the operator role which was entered in the host-specific MAREN parameters (default: SYSMAREN). No authorization name is required for connection setup.

Note

For compatibility reasons the old procedure for setting up a connection to UCON, which requires the UCON authorization name and was used by default up to MAREN V10.0A, is still supported. Here the MAREN administrator is restricted to the TSOS ID. If connection setup using the operator role fails, MAREN automatically starts connection setup using the old procedure when it is running under TSOS. To permit this, an authorization name must be specified in the MARENUCP procedure by means of the MARENUCP parameter UCON-USER-ID=... The default value is the name MARE.

● Define the mandatory and optional parameters

Using the MODIFY-MAREN-PARAMETERS statement of the administration program MARENADM, the following mandatory or optional host-specific parameters must be defined which are also or only evaluated by MARENUCP:

– CID-UID
– DEFAULT-FREE-DATE
– DEFAULT-HOME-LOCATION
– RESERVE-DEVICE-TYPES
– TESTMODE
– MOUNT-CHECK-INTERVAL
– RESERVATION-SEQUENCE
– OPERATOR-ROLE

These parameters may be changed during operation. The changes come into effect immediately.

● Use of a reservation file

The reservation file to be used must be assigned with the link name MARENLMF before calling MARENUCP (see the chapter entitled "MARENLM" in the MAREN manual "Volume 1: Basics of MTC Management" [1]).

● Use a computer center exit routine

   If a computer center exit routine is to be used, the corresponding module library must
   be assigned with th-e link name MARENLIB before calling MARENUCP The exit routine
   is called after any assigned reservation files have been evaluated.

Starting MARENUCP

MARENUCP is executed as a permanent batch task under an ID which has been assigned
the TAPE-ADMINISTRATION privilege and the operator role which was entered in the host-
specific MAREN parameters (default: SYSMAREN). It must be started after the BS2000
operating system and BCAM (DCSTART command) have been loaded.

MARENUCP is called by means of the START-MARENUCP command. This command is
permitted only under user IDs with the TAPE-ADMINISTRATION privilege.

START-MARENUCP   Alias: **MARENUCP**

VERSION = ***STD** / <product-version mandatory-man-corr> / <product-version mandatory-man-without-corr> /
          <product-version without-man-corr>

,**MONJV** = ***NONE** / <filename 1..54 without-gen-vers>

,**CPU-LIM**IT = ***JOB-REST** / <integer 1..32767 *seconds*>

VERSION =
The selected MARENUCP version is used.

VERSION = *STD
Before MARENUCP is called, the version is set by means of the SELECT-PRODUCT-
VERSION command (in system mode). This set version is used as the default version.

VERSION = <product-version mandatory-man-corr>
Full version identifier.

VERSION = <product-version mandatory-man-without-corr>
Version identifier excluding the correction status.

VERSION = <product-version without-man-corr>
Version identifier excluding the release status and correction status.

MONJV =
Specification of a job variable for monitoring the MARENUCP run.

MONJV = *NONE
A monitoring job variable is not used.

MONJV = <filename 1..54 without-gen-vers>
Explicit specification of the job variable used to monitor the MARENUCP run.

CPU-LIMIT =
Maximum CPU time in seconds that the program can run.

CPU-LIMIT = *JOB-REST
The remaining CPU time is to be used for the job.

CPU-LIMIT = <integer 1..32767 seconds>
Only the specified time is to be used.

Terminating MARENUCP

MARENUCP is terminated by means of the MARENADM statement

```
//STOP-CONTROL-PROGRAM PROGRAM-NAME= MARENUCP
```

or using the command (TSOS or OPERATING privilege)

```
/INFORM-JOB MSG=C'H[ALT][,KILL]', JOB-ID=*TSN(<tsn>)
```


If HALT is specified, MARENUCP usually ends immediately. If, however, a tape has already been reserved in response to a request, processing of this request is completed, after which MARENUCP is terminated. Further requests are not processed.

If HALT KILL is specified, MARENUCP is terminated regardless of the processing status and any possible consequences.
If the errors that lead to termination of the MARENUCP run are easy to diagnose and therefore do not require a memory dump, they are simply logged by MARENUCP. Appropriate messages are issued to SYSOUT and/or CONSOLE and task switch 29 is set.

2.4.2 Notes for the nonprivileged user

If a tape output file is to be created, a tape is automatically assigned in the following cases:

– In the CREATE-FILE or CREATE-FILE-GENERATION command, the operand VOLUME=*NO (default value) or *ANY is used in conjunction with SUPPORT=*TAPE.

– When using the ARCHIVE statement SAVE or EXPORT, TAPES=OPERATOR or TAPES=POOL is specified, and there are no more free tapes available in the ARCHIVE directory.

When allocating a free tape, the MAREN archive entry fields listed in the table below are set:

Field name	Field values subsequent to allocation
USER-IDENTIFICATION ACCOUNT CREATION-JOB-NAME	The user ID, account number, and job name are taken from the user's SET-LOGON-PARAMETERS command. In the case of HSMS tasks, the user ID of the HSMS directory and the first account number of the user entry are used. In the case of SPOOL output to magnetic tape, the account number is filled with blanks.
FILE-NAME or DIRECTORY-NAME	The file name or directory name specified by the user is used.
USER-ACCESS	As set by the MAREN administrator.
RESERVATION-DATE	Current date.
FREE-DATE	The volume release date is determined from the value set by the MAREN administrator in DEFAULT-FREE-DATE.
DEVICE-TYPE	The value set by the MAREN administrator for DEFAULT-DEVICE-TYPE (or DEFAULT-DENSITY) is used.
HOME-LOCATION	The value set by the MAREN administrator for DEFAULT-HOME-LOCATION is used.

All other fields are set immediately after the free tape is assigned during OPEN processing.

2.4.3 Follow-on processing of a VSN

Each VSN reserved by MARENUCP can be stored in a job variable, provided the system component "job variable" is available (see the "Job Variables" manual [16]).
This function is activated when the user issues the SET-JV-LINK command to assign the link name MARENJV to any job variable or sets up a job variable with the name <filename>.MAREN, <filename>.<jobname> or <filename>.M<tsn>, where <filename> is the name of the relevant output file, <tsn> is the TSN and <jobname> the job name or HSMS request name of the user task. If several such job variables exist, only one is set. A job variable assigned using the link name has the highest priority, then come the variants with the extensions ".M<tsn>", ".<jobname>" and ".MAREN".
If the file name includes a generation number or a version ID, this must be omitted (including parentheses). This permits separate follow-on processing of VSNs from several output files.

In the case of a multivolume file, a list of VSNs (vsn1,vsn2,...) is created dynamically in the job variable and extended by one entry for each further output tape. A maximum of 36 VSNs per job variable is possible.

When evaluating a job variable, please note that a job variable already containing a VSN will be extended dynamically to form a VSN list each time the free tape allocation facility is used.

The neatest method of follow-on processing takes place indirectly via SDF, where a job variable is specified in place of part of a command or statement.

The follow-on processing of a VSN is also supported by the following components:

– The name of the ARCHIVE directory must be specified for <filename> in the case of HSMS or ARCHIVE applications with a directory file.
  The name "ARCHIVE.SAVE.FILE" is used for <filename> in the case of ARCHIVE applications without a directory file. The job variable with the extension .M<tsn> cannot be used in HSMS/ARCHIVE applications.

– If a job variable named $TSOS.FDDRL.DUMP.DISK.<vsn>.MAREN exists, MARENUCP writes all VSNs of the associated backup tapes to this job variable.

Restrictions

– In HSMS and ARCHIVE the job variables cannot be assigned by means of the link name. Furthermore, the name variant with the extension ".M<tsn>" is not supported.

– In FDDRL V16 and higher, MAREN sets no job variables. This task is performed by FDDRL itself.

Example 1

In the task with the job name BACKUP, an ARCHIVE backup is to be carried out with
the directory file TAPE.DIR. The volume is requested by means of automatic free tape
allocation.

```
/set-logon-parameters .. user-identification=userxy01,...,job-name=backup
:
:
/show-jv-attr tape.dir.
%0000000 :20SG:$USERXY01.TAPE.DIR.MAREN
%0000000 :20SG:$USERXY01.TAPE.DIR.BACKUP
%SUM    00002 JV'S; JV-VALUE = 00000000 BYTES
/start-archive
%  BLS0523 ELEMENT 'ARCHIVE', VERSION '060' FROM LIBRARY
':20SH:$TSOS.SYSLNK.ARCHIVE.060' IN PROCESS
%  BLS0524 LLM 'ARCHIVE', VERSION '06.0A00' OF '2001-08-30 10:14:10'
LOADED
%  BLS0551 COPYRIGHT (C) FUJITSU ...
%  ARC0001 ARCHIVE READY
*f na=datenbank.auswertung.0499
*save directory=tape.dir,tapes=operator,device=tape-c4
%  ARC0002 STATEMENT ACCEPTED. ARCHIVE SEQUENCE NUMBER 'A.990510.171336',
VERSION '6.0'
%  ARC0033 ARCHIVE SUBTASK TSN '04AS' GENERATED
%  ARC0003 ARCHIVE STATEMENT COMPLETED
*end
%  ARC0009 ARCHIVE TERMINATED
/show-jv-attr tape.dir.
%0000000 :20SG:$USERXY01.TAPE.DIR.MAREN
%0000006 :20SG:$USERXY01.TAPE.DIR.BACKUP
%SUM    00002 JV'S; JV-VALUE = 00000006 BYTES
/show-jv tape.dir.backup
%M5660K
```

Example 2

An output tape allocated by MARENUCP is to be created. The volume release date is to be set to 60 days in the corresponding MAREN archive entry. The tape (with the VSN TC1001 in the example) is then to be sent to the computer center in Hamburg.

```
:
/create-jv jv-name=tape.file.jv
/set-jv-link link-name=marenjv,jv-name=tape.file.jv
/create-file file-name=tape.file,supp=tape(vol=*no,dev-type=tape-c4)
/add-file-link link-name=...,file-name=tape.file
/start-prog from-file=...
:
/show-jv jv=tape.file.jv
%TC1001
/start-maren
%  MARM100 MAREN VERSION '12.0E11' STARTED
//modify-vol-attr vol=&(*marenjv),protection=par(free-date=60)
%MARM121  MAREN CATALOG ENTRY 'TC1001'/'0001' MODIFIED
//export-vol vol=&(*marenjv),export-addr='RZ Hamburg'
%MARM134  GET VOLUME 'TC1001' FROM CENTRAL ARCHIVE
%MARM170  STATEMENT 'EXPORT-VOLUME' PROCESSED
//end
%MARM098 MAREN TERMINATED NORMALLY
/export-file file=name(file-name=tape.file)
/del-jv jv-name=tape.file.jv
:
```

2.4.4   VSN proposal

MARENUCP requests the operator to mount a free tape (`MOUNT TAPE vsn`...).

The operator can mount the proposed tape or a different free tape, which is then automatically allocated.

If a free tape is already premounted, this is allocated without a request being issued to the operator.

The sequence of the tapes proposed is determined by the criterion which is defined in the host-specific MAREN parameter RESERVATION-SEQUENCE. The possible criteria are:

–   the alphanumeric sequence of the VSNs,

–   the tape reservation counter RESERVATION-COUNT,

–   the last access date LAST-ACCESS-DATE,

–   or the volume expiration date Freigabedatum FREE-DATE.

2.4.5 Free tape allocation with FDDRL

When performing a backup with the FDDRL statement DUMP-PUBSET, MARENUCP reserves and allocates free volumes in the MAREN catalog. This also applies when using the FDDRL statement DUMP-DISK, provided the operand TAPE=*ANY is specified. In the archive entries for these volumes, the following file name is initially entered for FILE-NAME:

- For the single disk recovery unit:
  - **FDDRL.D.<vsn_1..6>** with `//DUMP-DISK` or `//DUMP-FOREIGN-DISK`
  - **FDDRL.P.<catid_1..4>.<vsn_6..6>** with `//DUMP-PUBSET`
- For the disk set recovery unit (in FDDRL V16.0 or higher):
  - **FDDRL.D.<vsn_1..6>-1** with `//DUMP-DISK` or `//DUMP-FOREIGN-DISK`
  - **FDDRL.P.<catid_1..4>.<date>.<time>.<disk-set-no>** with `//DUMP-PUBSET`

Meaning:

FDDRL.P	Prefix for backing up a pubset disk (in the case of DUMP-PUBSET)
FDDRL.D	Prefix for backing up single disks
<catid_1..4>	Pubset ID, 1 to 4 positions (catalog ID)
<vsn_6..6>	VSN of a pubset disk, 6 positions
<vsn_1..6>	VSN of a single disk, 1 to 6 positions
<date>	Date of the backup (format yyyy-mm-dd)
<time>	Time of the backup (format hhmm00)
<disk-set-no>	Number of the disk set (depends on NUMBER-OF-DISK-SETS)

2.4.6 Basic structure of the MARENUCP ENTER file

```
/SET-LOGON-PARAMETERS USER-ID=TSOS, ACCOUNT=*NONE, JOB-NAME=MARENUCP
/MOD-TEST DUMP=YES
/REMARK * ASSIGNMENT OF THE CC EXIT LIBRARY (OPTIONAL) *
/SET-FILE-LINK LINK=MARENLIB,F-NAME=$SYSMAREN.MARENLIB
/START-MARENUCP
END
/SKIP-COMMAND TO-LABEL=NOSPOOL,IF=JOB-SW(OFF=29)
/EXIT-JOB MODE=NORMAL
/.NOSPOOL EXIT-JOB MODE=NORMAL,SYSTEM-OUTPUT=NONE
```

2.4.7 Notes for the privileged user

Notes for the operator

–   The prompt `MOUNT TAPE vsn` is output as messages which must be acknowledged under
    the user's TSN.
    You can use the SHOW-PENDING-MSG command to output any messages that have
    not yet been acknowledged. Messages can be rejected with "tsn.N".

–   The assignment of free tapes is accelerated if MARENUCP finds free tapes on the tape
    devices. For this reason, it is advisable to mount free tapes on free devices as a precau-
    tionary measure, especially if free tapes are frequently required.
    The provision of free tapes which are to be mounted in advance or as a result of a
    MARENUCP request can be handled by means of the MARENADM statement
    SECURE-FREE-VOLUME ...,USAGE=*BY-MARENUCP. This ensures that these tapes
    will be available to MARENUCP alone and cannot be explicitly reserved by users by
    means of the MAREN statement RESERVE-FREE-VOLUME.

    The statement SHOW-FREE-VOLUMES USAGE=*BY-MARENUCP can be used to
    display the tapes which have been readied.

–   A prerequisite for the automatic tape allocation facility is that the mount parameters for
    tapes include the operand ALLOCATE-TAPE=*YES (see the MODIFY-MOUNT-
    PARAMETER command). Otherwise, the user will have to acknowledge PREMOUNT
    messages for tapes that have already been mounted. The current settings for the mount
    parameters can be queried using the SHOW-MOUNT-PARAMETER command.

Notes for the MAREN administrator

–   Free tapes to be assigned by the automatic free tape allocation facility must contain
    standard labels and must not be protected by the operating system, e.g. by means of
    an expiration date.

    This is achieved during MAREN operation either by specifying an output file (INIT-FILE)
    in the MARENADM statement FREE-VOLUMES when releasing reserved tapes and
    processing this file, or by means of the function for automatically initializing magnetic
    tapes (see).
    For tapes which are newly added to the MAREN system, the MAREN administrator
    must ensure that these conditions are satisfied.

–   If the archive entries of tapes already mounted in tape devices are modified, any
    changes made generally do not come into effect for MARENUCP until the following
    message is output after dismounting:

    `NKVT011 TAPE IS DISMOUNTED ...`

Notes on volume types TAPE-C1,-C2,-C3,-C4

MARENUCP does not differentiate between TAPE-C1 and TAPE-C2 or between TAPE-C3 and TAPE-C4.
This means that a request with type TAPE-C1 can be met by allocating a cartridge of type TAPE-C2.

Special situations

In the event of errors within the MAREN system, MARENUCP terminates after it has reported the error. In most cases, the other components of the MAREN system will also be affected. MARENUCP must be restarted after the error, whereupon it processes all open requests.

Changes to the input/output configuration implemented by means of dynamic reconfiguration are not detected automatically by the active MARENUCP task. To ensure that these changes come into effect, you must terminate and restart MARENUCP. This applies in particular if automatic initialization is used and new devices or device types have been added to the configuration dynamically.

2.4.8   Automatic initialization of magnetic tapes

In addition to the option of initializing magnetic tapes manually using the INITIALIZE-VOLUMES statement, it is also possible to initialize magnetic tapes automatically should this be necessary prior to a new reservation.

If automatic initialization is to be used, the operand INIT-FILE=*NONE must be specified in the FREE-VOLUMES statement. This allows tapes to be released which have still to be initialized.

If such a tape is later mounted for reservation by MARENUCP, MARENUCP carries out initialization.

Restrictions

Automatic initialization is impossible in the following cases:

– Reservation is performed via the RESERVE-FREE-VOLUME statement in the MAREN and MARENADM programs.

– If several tapes (n > 1) are requested by specifying the operand VOLUME=*ANY(NUMBER-OF-DEVICES=n) in the CREATE-FILE or CREATE-FILE-GENERATION command, only the first tape can be initialized.

In these cases, reservation is still carried out. However, problems may arise during the new owner's first access attempts if there is still a valid expiration date or a foreign owner ID in the tape labels. In this case, initialization must be performed manually by the operator.

2.5 **MAREN system bulletin**

Similar to the LOGON bulletin in BS2000, a file containing information for the MAREN user can be set up by the MAREN administrator. The messages deposited therein are automatically output to the user after the MAREN program is called. If IMON is not being used, the name of the MAREN bulletin must be $SYSMAREN.MAREN.BULLETIN.
The file can be created in SAM format using any file editor (e.g. EDT). It must be shareable (USER-ACCESS=*ALL-USERS) and protected against inadvertent overwriting (ACCESS=*READ). A message may consist of several records, the maximum record length depending on the size of the I/O buffer of the data display terminal.

The BULLETIN file must be constructed in such a way as to allow the interactive user to request further follow-up messages step by step following the first message. In each case, the following message is issued before further messages are output:

```
CONTINUE OUTPUT OF BULLETIN? REPLY (Y=YES; N=NO)
```

In the case of batch jobs, this possibility of optional output does not exist; merely the first message block of the BULLETIN file is output to SYSOUT. For this reason, the most recent messages should always be placed at the beginning of the BULLETIN file.
Apart from messages addressed to all users, special information can also be provided for defined users. The message

```
CONTINUE OUTPUT OF BULLETIN FOR USERID (&OO)? (Y=YES; N=NO)
```

offers this option to the interactive user.

In batch tasks, this special message is output via the SPOOLOUT log.
With regard to this option, it is good practice to structure the file in three parts, as follows:

1. General information for all users. Follow-up messages begin with a data record containing a STOP statement:

    ```
    **STOP**
    ```

2. Special information for defined users. (Grouping of messages for a particular user is not necessary). This information begins with a data record containing a STOP statement for the defined user:

    ```
    **STOP** <userid>
    ```

3. Additional information which can be queried for all users. Follow-up messages begin with a data record containing a STOP statement:

    ```
    **STOP**
    ```

The STOP statement separates the individual groups of messages. At this point, the user specified in the STOP statement is asked whether bulletin output is to be continued.

Example

The BULLETIN file was created with the following contents (displayed with /SHOW-FILE)

:

```
    *******************************************************************
    *******************************************************************
    *  Normal MAREN operation from 07:00 to 19:00                     *
    *  To contact the administrator, dial 77889                       *
    *                                                                 *
    *******************************************************************
**STOP** USER1
    *                                                                 *
    *  This is a message for USER1: ...........................       *
    *  ......................................................         *
    *                                                                 *
    *******************************************************************
**STOP** USER2
    *                                                                 *
    *  This is a message for USER2: ...........................       *
    *  ......................................................         *
    *                                                                 *
    *******************************************************************
**STOP** USER1
    *  This is another message for USER1: ..........                  *
    *  ......................................................         *
    *                                                                 *
    *******************************************************************
e                                                  S*SOF+    1(    1)
```

The following command should then be issued:

```
/MODIFY-FILE-ATTRIBUTES MAREN.BULLETIN, USER-ACCESS=*ALL-USERS, ACCESS=*READ
```

After MAREN is started, USER1 receives the following output:

```
/start-maren
    *******************************************************************
    *******************************************************************
    *  Normal MAREN operation from 07:00 to 19:00                     *
    *  To contact the administrator, dial 77889                       *
    *                                                                 *
    *******************************************************************
%  MARM1B2 CONTINUE OUTPUT OF BULLETIN FOR USERID 'USER1'? REPLY (Y=
YES; N=NO)?y
    *                                                                 *
    *  This is a message for USER1: ...........................       *
    *  ......................................................         *
    *                                                                 *
    *******************************************************************
%  MARM1B2 CONTINUE OUTPUT OF BULLETIN FOR USERID 'USER1'? REPLY (Y=
YES; N=NO)?y
    *  This is another message for USER1: ..........                  *
    *  ......................................................         *
    *                                                                 *
    *******************************************************************
%//
```

2.6 Sending export receipts to a SPOOL printer

An export receipt can be generated for the EXPORT-VOLUME statement, written to a file,
and printed out.
The output device can be a local high-speed printer or any RSO printer (if available).

The layout of the export receipt can be freely defined by the MAREN administrator
depending on current computer center requirements.

Defining working procedures

The following MARENADM statement must be issued if export receipts are to be output to
a printer:

```
//MODIFY-MAREN-PARAMETERS EXPORT-RECEIPT=*PRINTER(
     DEVICE-NAME=..,FORM-NAME=...)
```

The individual settings of the MAREN parameter EXPORT-RECEIPT are described in more
detail in the description of the MODIFY-MAREN-PARAMETERS statement.

Before it is printed, each export receipt is stored temporarily in a file with the name
$user-id.MAREN.EXPORT-RECEIPT.vsn. Further details can be found in the notes in the
description of the EXPORT-VOLUME statement.

The transport lists generated by the MARENADM statements RETURN-VOLUMES and
SECURE-FREE-VOLUMES can also be output to the specified printer if required. Further
details can be found in the notes on the two statements.

2.6.1 Standard layout

If no customized computer center layout exists, the export receipts are created using the
MAREN system's standard layout. The figure on the next page shows an example of an
export receipt in the standard layout:

```
A   +----------------------------------------------------------------+
    |                                                                |
    |                                                                |
    |      M     M     AA      RRRRRR     EEEEEEEE    N     NN       |
    |      MM   MM    AAAA     RR   RR    EEEEEEEE    NN    NN       |
    |      MMM MMM    AA AA    RR   RR    EE          NNN   NN       |
    |      M MMMM M   AA  AA   RR   RR    EE          NNNN  NN       |
    |      MM MM MM   AA  AA   RRRRRR     EEEEEEE     NN NN NN       |
    |      MM   MM    AA  AA   RR RR      EEEEEEE     NN NN NN       |
    |      MM   MM    AAAAAAAA RR  RR     EE          NN  NNNN       |
    |      MM   MM    AA  AA   RR   RR    EE          NN   NNN       |
    |      MM   MM    AA  AA   RR    RR   EEEEEEEE    NN    NN       |
    |      MM   MM    AA  AA   RR     R   EEEEEEEE    NN     N       |
    |                                                                |
    |                                                                |
    +----------------------------------------------------------------+
    |                                                                |
    |           M A R E N    E X P O R T    R E C E I P T            |
    |                                                                |
    +----------------------------------------------------------------+
    |          +----------+                                          |
    |  VOLUME: |  SY1701  |          (LAST-TEMP-LOCATION: MANUAL  )  |
    |          +----------+                                          |
    |                                                                |
    |                                                                |
    |  EXPORT-AD: MRSY0017 - EXPORT TEST                             |
    |                                                                |
    |                                       DATE: 2006-07-03         |
    |                                       TIME: 17:01:18           |
    |  SIGNATURE: _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _               |
    |                                                                |
    +----------------------------------------------------------------+
    |  ORDERED BY: USER-ID : MAREN001                                |
    |             ACCOUNT : MAREN                                    |
    |             JOB-NAME: TEST00X1                                 |
    |             CPU     : D051ZE19                                 |
    |             TSN     : 4KWW                                     |
    +----------------------------------------------------------------+
    |MAREN CATALOG ENTRY:                                            |
    |                                                                |
    |VOLUME    =SY1701        FILE-SEQ=0001      DEV-TYPE   =TAPE-V1 |
    |                                                                |
    |USER-ID   =MAREN001      HOME-LOC=MANUAL    RESERV-DATE=2006-05-04 |
    |ACCOUNT   =MAREN001      FREE-LOC=MANUAL    FREE-DATE=2008-05-03 |
    |USER-ACC  =ALL-USERS     TEMP-LOC=MANUAL    EXPORT-DATE=2006-05-04 |
    |PASSWORD  =YES                                                  |
    |REMARK    =                                                     |
    |EXPORT-AD =MRSY0017 - EXPORT TEST                               |
    |USER-FIELD=                                                     |
    |FILE-NAME =MRSY0017.001.DMSFILE.1                               |
    |DIR-NAME  =                                                     |
    |ARCH-USAGE=*NO                                                  |
    |OPEN-MODE =OUTPUT     CR-DATE     =2006-05-04LA-A-DATE  =2006-05-04|
    |DEV-NAME  =MN         CR-TIME     =16:56:51  LA-A-TIME  =17:01:18 |
    |VOL-SEQ   =0001       CR-CAT-ID   =TDQA      LA-A-USER  =MAREN001 |
    |FIRST-VOL =SY1701     CR-USER-ID  =MAREN001 LA-A-ACC   =MAREN    |
    |CLOSE-IND =CLOSED     CR-JOB-NAME =MAREN001 LA-A-JOB-N =MAREN001 |
    |EXPIR-DATE=2006-05-03 LAST-CL-DATE=2006-05-04LA-A-TSN   =       |
    |AUDIT     =NO         LAST-CL-TIME=16:57:53  LA-A-SNO   =087    |
    |VOL-STATUS=RESERVED   RESERV-COUNT=0001      LA-A-CPU-N =D241ZE49 |
    |INIT      =YES        ACCESS-COUNT=00000003 LA-A-FUNC-N=GET     |
    |ADM-FIELD =$$$$$$$$   CHECK-COUNT =07        LA-A-FUNC-F=23      |
    |                                                                |
    +----------------------------------------------------------------+
```

2.6.2 Customized layout

The standard layout supplied by the MAREN system can be modified by any computer center, or even be completely redesigned from scratch. A customized layout must be stored in a file. This file name can be freely selected (see also "Dummy release items" on page 29). The file must possess the following attributes:

```
ACCESS-METHOD = SAM
RECORD-FORMAT = V
USER-ACCESS = ALL-USERS
ACCESS=READ
```

In a computer network, the file must be available on every computer on which it is required, although the individual layouts can be different if necessary. The standard layout is used on all computers where this file is not available.

There are no restrictions on the characters used in the layout file, i.e. special characters and non-printable characters are supported. The MAREN administrator is entirely responsible for how the export receipt is actually output on the printer.
There is no limit on the number of records. The individual records can contain up to 141 characters (including the record length field).

So-called layout variables are defined to allow the export receipts to be provided with current values. These variables are 7 or 8 characters long and all begin with the character '&'. The MAREN system searches the layout file for these variables. Each record of the layout file can contain any number of variables at any position. This is limited only by the maximum length of the record.

Variables can be used more than once. When an export receipt is generated, the layout file is read record by record, all variables are replaced by current values, and all the records are written to the output file.

The following table shows all possible layout variables:

Name	Length	Meaning
&ACCNT8*	8	ACCESS-COUNT
&ACCOUNT	8	ACCOUNT
&ADMFIEL	8	ADMINISTRATOR-FIELD
&ADMFI2*	16	ADMINISTRATOR-FIELD-2
&ARCHUSA	54	FREE-POOL
&AUDITV*	3	AUDIT
&CHECNT*	2	CHECK-COUNT
&CLOSEI*	6	CLOSE-INDICATOR
&CRECAT*	4	CREATION-CATALOG-ID
&CREDATE	10	CREATION-DATE
&CREJOBN	8	CREATION-JOB-NAME
&CRETIME	8	CREATION-TIME
&CREUSID	8	CREATION-USER-ID
&DEVNAM*	4	DEVICE-NAME
&DEVTYPE	8	DEVICE-TYPE
&DIRNAME	54	DIRECTORY-NAME
&DIROVOL	3	DIRECTORY-ON-VOLUME
&DOMAIN	8	DOMAIN
&EXPADDR	50	EXPORT-ADDRESS
&EXPDATE	10	EXPORT-DATE
&EXPIRAT	10	EXPIRATION-DATE
&FILENAM	41	FILE-NAME
&FILSEQ*	4	FILE-SEQ
&FIRSTV*	6	FIRST-VOLUME
&FREDATE	10	FREE-DATE
&FREELOC	8	FREE-LOCATION
&HOMELOC	8	HOME-LOCATION
&INITFL*	3	INITIALIZATION
&LACACCO	8	LAST-ACC-ACCOUNT
&LACCPUN	8	LAST-ACC-CPU-NAME
&LACDATE	10	LAST-ACC-DATE
&LACFFL*	2	LAST-ACC-FUNCTION-FLAG

Name	Length	Meaning
&LACFNAM	8	LAST-ACC-FUNCTION-NAME
&LACJOBN	8	LAST-ACC-JOB-NAME
&LACSNO*	3	LAST-ACC-SNO
&LACTIME	8	LAST-ACC-TIME
&LACTSN*	4	LAST-ACC-TSN
&LACUSER	8	LAST-ACC-USER-ID
&LATEMPL	8	Last temporary location
&LAWRBCN	10	LAST-WRITE-BLOCK-CNT
&LCLDATE	10	LAST-CLOSE-DATE
&LCLTIME	8	LAST-CLOSE-TIME
&OPENMOD	8	OPEN-MODE
&ORDACCO	8	Ordering account number
&ORDCPUN	8	Ordering system name
&ORDJOBN	8	Ordering job name
&ORDTSN*	4	Ordering TSN
&ORDUSER	8	Ordering user ID
&PASSWO*	4	PASSWORD
&REGDATE	10	REGISTRATION-DATE
&REMARKF	24	REMARK
&REMAR2	10	REMARK-2
&REMAR3	12	REMARK-3
&RESCNT*	4	RESERVATION-COUNT
&RESDATE	10	RESERVATION-DATE
&SUBSAVE	2	SubSave #
&SUBSEQU	3	SubSequence #
&SVIDSFI	15	SVID / SFID from ARCHIVE/HSMS
&TEMPLOC	8	TEMP-LOCATION
&TODDATE	10	Creation date for the receipt
&TODTIME	8	Creation time for the receipt
&USERACC	12	USER-ACCESS
&USERFIE	54	USER-FIELD
&USERIDE	8	USER-ID
&VOLGROU	32	VOLUME-GROUP

Name	Length	Meaning
&VOLSEQ*	4	VOLUME-SEQUENCE
&VOLSTAT	8	VOLUME-STATUS
&VOLUME*	6	VOLUME-VSN

Those variables which end with an asterisk can be specified using 7 characters (without *) or 8 characters (with *).
Since the length of variables names (7 or 8 characters) is generally not the same as the length of the current values (2 to 54 characters), a number of rules must be observed when designing a layout.

Case 1:

The simplest case is when all variables are specified with 8 characters (i.e. using * where applicable) and (if the length > 8) padded with blanks on the right to allow sufficient space for the current values to be incorporated in their entirety. This ensures that text is not misplaced when the export receipt is generated. This procedure has the advantage that the complete layout including all texts (particularly the right margin characters) can be designed with everything in the correct position. Current values with lengths between 2 and 6 are padded with blanks to a length of 8 characters.

Example

The following layout lines:

```
$&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&$
$         VSN = &VOLUME*                    FSEQ = &FILSEQ*         $
$                                                                  $
$      REMARK = &REMARKF                                           $
$      ACCESS# = &ACCCNT*                   SHARE = &USERACC        $
$&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&$
```

produce the following printed lines:

```
$&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&$
$         VSN = TAPE01                      FSEQ = 0001            $
$                                                                 $
$      REMARK = FILE BACKUP FEBRUARY                              $
$      ACCESS# = 0005                       SHARE = FOREIGN−READ   $
$&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&$
```

Case 2:

If the current value of a layout variable is not required in its full length, the output length can be restricted by any character other than a blank. The minimum length is 8 characters.

Example

> Only the first 20 characters of the file name are to be output.
> The following layout line :
>
> ```
> |  FILENAME = &FILENAM           *  |
> ```
>
> would produce the following printed line for the current value
> FILE-BACKUP-LIST.FEBRUARY:
>
> ```
> |  FILENAME = FILE-BACKUP-LIST.FEB    |
> ```

Case 3:

By default, the current values for layout variables with a terminating asterisk are padded with blanks to a length of 8 characters. If this padding is not required, the variable names must be specified with 7 characters (i.e. without *).

Example

> The following layout lines:
>
> ```
> +-----------------+
> | &VOLUME/&FILSEQ |
> +-----------------+
> ```
>
> produce the following printed lines:
>
> ```
> +-------------+
> | TAPE01/0001 |
> +-------------+
> ```

2.6.3   Printer control characters

If the export receipts are to be automatically output immediately (parameter EXPORT-RECEIPT=*PRINTER; see description of the MODIFY-MAREN-PARAMETERS statement on page 168), a SPOOL task is generated. The contents of column 1 will be interpreted as printer feed control characters (e.g. the letter "A" for a page feed). The result is the same as that produced with the command

```
/PRINT-DOCUMENT ...,DOCUMENT-FORMAT=*TEXT(LINE-SPACING=*BY-EBCDIC-CONTROL).
```

A page feed is automatically inserted at the beginning of the standard layout.

The export receipt in the standard layout shown on page 62 could be generated from the following layout file:

```
A  +----------------------------------------------------------------+
   |                                                                |
   |                                                                |
   |      M     M     AA     RRRRRR    EEEEEEEE   N     NN          |
   |      MM   MM    AAAA    RR   RR   EEEEEEEE   NN    NN          |
   |      MMM MMM   AA  AA   RR    RR  EE         NNN   NN          |
   |      M MMMM M  AA  AA   RR   RR   EE         NNNN  NN          |
   |      MM MM MM  AA  AA   RRRRRR    EEEEEEE    NN NN NN          |
   |      MM   MM   AA  AA   RR RR     EEEEEEE    NN NN NN          |
   |      MM   MM   AAAAAAAA RR  RR    EE         NN  NNNN          |
   |      MM   MM   AA  AA   RR   RR   EE         NN   NNN          |
   |      MM   MM   AA  AA   RR    RR  EEEEEEEE   NN    NN          |
   |      MM   MM   AA  AA   RR     R  EEEEEEEE   NN     N          |
   |                                                                |
   |                                                                |
   +----------------------------------------------------------------+
   |                                                                |
   |         M A R E N    E X P O R T   R E C E I P T               |
   |                                                                |
   +----------------------------------------------------------------+
   |            +----------+                                        |
   |  VOLUME:   | &VOLUME* |         (LAST-TEMP-LOCATION: MANUAL  )  |
   |            +----------+                                        |
   |                                                                |
   |                                                                |
   |  EXPORT-AD: &EXPADDR                                           |
   |                                                                |
   |                                             DATE: &TODDATE     |
   |                                             TIME: &TODTIME     |
   |  SIGNATURE: _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _                |
   |                                                                |
   +----------------------------------------------------------------+
   |  ORDERED BY: USER-ID : &ORDUSER                                |
   |              ACCOUNT : &ORDACCO                                |
   |              JOB-NAME: &ORDJOBN                                |
   |              CPU     : &ORDCPUN                                |
   |              TSN     : &ORDTSN*                                |
   +----------------------------------------------------------------+
   |MAREN CATALOG ENTRY:                                            |
   |                                                                |
   |VOLUME    =&VOLUME*     FILE-SEQ=&FILSEQ*    DEV-TYPE  =&DEVTYPE |
   |                                                                |
   |USER-ID   =&USERID      HOME-LOC=&HOMELOC    RESERV-DATE=&RESDATE|
   |ACCOUNT   =&ACCOUNT     FREE-LOC=&FREELOC    FREE-DATE =&FREDATE |
   |USER-ACC  =&USERACC     TEMP-LOC=&TEMPLOC    EXPORT-DATE=&EXPDATE|
   |PASSWORD  =&PASSWO*                                             |
   |REMARK    =&REMARKF                                             |
   |EXPORT-AD =&EXPADDR                                             |
   |USER-FIELD=&USERFIE                                             |
   |FILE-NAME =&FILENAM                                             |
   |DIR-NAME  =&DIRNAME                                             |
   |FREE-POOL =&ARCHUSA                                             |
   |OPEN-MODE =&OPENMOD   CR-DATE    =&CREDATE LA-A-DATE =&LACDATE   |
   |DEV-NAME  =&DEVNAM*   CR-TIME    =&CRETIME LA-A-TIME =&LACTIME   |
   |VOL-SEQ   =&VOLSEQ*   CR-CAT-ID  =&CRECAT  LA-A-USER =&LACUSID   |
   |FIRST-VOL =&FIRSTV*   CR-USER-ID =&CREUSID LA-A-ACC  =&LACACCO   |
   |CLOSE-IND =&CLOSEI*   CR-JOB-NAME=&CREJOBN LA-A-JOB-N=&LACJOBN   |
   |EXPIR-DATE=&EXPIRAT   LAST-CL-DATE=&LCLDATE LA-A-TSN =&LACTSN*   |
   |AUDIT     =&AUDITV*   LAST-CL-TIME=&LCLTIME LA-A-SNO =&LACSNO*   |
   |VOL-STATUS=&VOLSTAT   RESERV-COUNT=&RESCNT* LA-A-CPU-N=&LACCPUN  |
   |INIT      =&INITFL*   ACCESS-COUNT=&ACCCNT* LA-A-FUNC-N=&LACFNAM |
   |ADM-FIELD =&ADMFIEL   CHECK-COUNT =&CHECNT* LA-A-FUNC-F=&LACFFL* |
   |                                                                |
   +----------------------------------------------------------------+
```

3 MARENADM: administering MAREN

The MARENADM administration program is the main utility routine used by the MAREN administrator to manage archive entries in the MAREN catalog and administer the MAREN system.

Note

In the MAREN manuals the term "MAREN Administrator" is used to mean the following:

– Generic term for all users with administrator rights regardless of whether or not domains are used

– Administrator in the MAREN network without domains

The meaning is made clear by the context. When this is not the case the particular administrator roles are named explicitly: ADA (All-Domain Administrator), DA (Domain Administrator) or administrator without domains.

3.1 Starting and terminating

The MARENADM program is normally started using the START-MARENADM command, but can also be called with the MARENADM command.
The START-MARENADM command can be entered under any ID which has been configured with the system privilege TAPE-ADMINISTRATION. The system ID SYSMAREN has this privilege. If the product SECOS is being used, any ID can be assigned the TAPE-ADMINISTRATION privilege.

If the product SECOS is not in use, MARENADM can be started under any user ID provided systems support activates the group syntax file SYSSDF.MAREN.120.USER which is supplied and has assigned an administrator password (see the MAREN statements MODIFY-MAREN-PARAMETERS and MODIFY-GLOBAL-PARAMETERS). Users legitimate themselves as the administrator by entering the password in their password table (BS2000 command ADD-PASSWORD).

START-MARENADM	Alias: **MARENADM**

VERSION = ***STD** / <product-version mandatory-man-corr> / <product-version mandatory-man-without-corr> /
             <product-version without-man-corr>

,**MONJV** = ***NONE** / <filename 1..54 without-gen-vers>

,**CPU-LIM**IT = ***JOB-REST** / <integer 1..32767 *seconds*>

VERSION =
The selected MARENADM version is used.

VERSION = *STD
Before MARENADM is called, the version is set using the SELECT-PRODUCT-VERSION
command (in system mode). This set version is used as the default version.

VERSION = <product-version mandatory-man-corr>
Full version identifier.

VERSION = <product-version mandatory-man-without-corr>
Version identifier excluding the correction status.

VERSION = <product-version without-man-corr>
Version identifier excluding the release status and correction status.

MONJV =
Specification of a job variable for monitoring the MARENADM run.

MONJV = *NONE
No monitoring job variable is used.

MONJV = <filename 1..54 without-gen-vers>
Explicit specification of the job variable for monitoring the MARENADM run.

CPU-LIMIT =
Maximum CPU time in seconds allocated for the program.

CPU-LIMIT = *JOB-REST
The remaining CPU time is to be used for the job.

CPU-LIMIT = <integer 1..32767 *seconds*>
Only the specified time is to be used.

Terminating MARENADM

MARENADM is terminated by issuing the statement //END

3.2 Operating modes and error handling

MARENADM can be run in either interactive or batch mode.

It expects to receive all statements from the system file SYSDTA. SYSDTA is assigned to the terminal during interactive operation, and to the ENTER file during batch operation.

If MARENADM is to be invoked in a procedure, the system file SYSDTA must be assigned as follows:

```
//ASSIGN-SYSDTA TO=*SYSCMD
```

Error handling

Task switches set by MARENADM during or at the end of procedures and batch jobs provide information on the progress of a MARENADM process.

Task switch 30 is set when MARENADM successfully executes a statement but also issues a warning.
Warnings are issued, for example, if an attempt is made to delete an archive entry which does not exist in the MAREN catalog.

Task switch 31 is set if MARENADM aborts or fails to execute a statement because of an error.
This happens, for example, when an attempt is made to output an archive entry which does not exist in the MAREN catalog, or when no suitable free volume is available for reservation.

If MARENADM rejects a statement because of a syntax error, or if the statement is aborted or not executed due to a processing error, all subsequent statements through to the next STEP statement are skipped. If the sequence of statements contains no further STEP statement, MARENADM triggers the following spin-off mechanism when the program is ended (END): all commands through to the next SET-JOB-STEP, EXIT-JOB, LOGOFF, CANCEL-PROCEDURE, END-PROCEDURE or EXIT-PROCEDURE statement, or to the end of the procedure or the ENTER file are skipped.
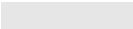
3.3 MARENADM statements

Overview

MARENADM statements	Meaning
ADD-FOREIGN-DEVICE-TYPE	This statement declares device types which are not administered by BS2000 to the MAREN system.
ADD-FREE-VOLUMES	This statement enters new VSNs of free volumes in the MAREN catalog.
ADD-HOST	This statement adds a new computer to the MAREN network.
ADD-PRIVATE-VOLUME	This statement catalogs foreign volumes.
ADD-RESERVED-VOLUME	This statement generates complete archive entries.
CHANGE-LOGGING-FILE	This statement closes the current logging file and opens a new one.
CHECK-TSOSCAT	This statement indicates discrepancies between the MAREN catalog and TSOSCAT and releases tapes reserved by older file generations.
CLOSE-MAREN-FILES	This statement closes and locks the MAREN catalog.
COPY-VOLUME-CATALOG	This statement creates a copy of the current volume catalog.
DELETE-VOLUME-ENTRY	This statement deletes archive entries from the MAREN catalog.
EDIT	This statement allows an archive entry to be edited.
END	This statement terminates input to the program.
ENTER-MAREN-PROCEDURE	This statement starts a procedure as a batch job with propagation of the MAREN rights.
EXPORT-VOLUME	This statement defines volumes as having been exported from the MAREN catalog.
FREE-VOLUMES	This statement releases volumes whose expiration date has elapsed.
IMPORT-VOLUME	This statement defines volumes as no longer being exported.
INITIALIZE-VOLUMES	This statement initializes tapes and releases them.
MODIFY-ADMINISTRATION-SCOPE	This statement modifies the administration area.
MODIFY-DOMAIN-ASSIGNMENT	This statement modifies the assignment of a host to a domain.
MODIFY-DOMAIN-PARAMETERS	This statement modifies the domain-specific parameters.
MODIFY-GLOBAL-PARAMETERS	This statement modifies the the global parameters of a MAREN network.

MARENADM statements	Meaning
MODIFY-MAREN-PARAMETERS	This statement modifies the host-specific parameters of the MAREN system.
MODIFY-TAPE-SET-ATTRIBUTES	This statement changes the attributes of all volumes in a tape set.
MODIFY-VOLUME-ATTRIBUTES	This statement modifies the volume attributes.
OPEN-MAREN-FILES	This statement opens and unlocks the MAREN catalog.
PRINT-VOLUME-ATTRIBUTES	This statement creates lists of archive entries for outputting to file or printer .
REMOVE-FOREIGN-DEVICE-TYPE	This statement removes a foreign device type from the administration of the MAREN system.
REMOVE-FREE-VOLUMES	This statement removes free volumes from the MAREN catalog.
REMOVE-HOST	This statement removes a host from the MAREN catalog.
REMOVE-USER-VOLUMES	This statement removes a user's archive entries from the MAREN catalog.
RENAME-FOREIGN-DEVICE-TYPE	This statement renames a foreign device type.
RESERVE-FREE-VOLUME	This statement reserves free volumes for a user.
RETURN-TO-PROGRAM	This statement returns you from MARENADM to the loaded main program.
RETURN-VOLUMES	This statement returns volumes to their permanent storage location.
SECURE-FREE-VOLUMES	This statement flags and relocates free volumes.
SHOW-ADMINISTRATION-SCOPE	This statement shows which domains are currently being administered.
SHOW-DOMAIN-PARAMETERS	This statement shows the domain-specific parameters.
SHOW-FOREIGN-DEVICE-TYPES	This statement shows all foreign device types.
SHOW-FREE-VOLUMES	This statement displays information on free volumes.
SHOW-GLOBAL-PARAMETERS	This statement shows the global parameters of a MAREN network.
SHOW-MAREN-FILE	This statement outputs information from a MAREN catalog file.
SHOW-MAREN-PARAMETERS	This statement displays the host-specific parameters of a host.
SHOW-MAREN-STATUS	This statement displays the MAREN system's current status.
SHOW-VOLUME-ATTRIBUTES	This statement outputs information from the MAREN catalog.
SHOW-VSNS	This statement displays the VSNs of volumes.
STOP-CONTROL-PROGRAM	This statement terminates the MARENCP control program.

MARENADM statements	Meaning
SYSTEM	This statement causes a switch to BS2000 system mode.
UPDATE-MAREN-CATALOG	This statement updates the MAREN catalog.
VERIFY-MAREN-CATALOG	This statement eliminates inconsistencies in the MAREN catalog.
WRITE-ACCOUNTING-RECORDS	This statement creates accounting records in RAV format.

The gray background   for operands in the syntax representation of the statements means that the operand is only available to the ADA. The DA cannot see this operand on the SDF interface.
The standard SDF statements which are always available are not described (see section "SDF standard statements" on page 545).

ADD-FOREIGN-DEVICE-TYPE
Declare device types which are not administered by BS2000 to the MAREN system

Privilege   ADA, administrator without domains

This statement notifies the MAREN system of device types which are not administered by BS2000/OSD.

Subsequently devices of this type can be added to the MAREN system using ADD-FREE-VOLUME, ADD-PRIVATE-VOLUME or ADD-RESERVED-VOLUME.

Format

ADD-FOREIGN-DEVICE-TYPE	Alias: **ADFDT**
DEVICE-TYPE = <structured-name 1..8>	

Operands

DEVICE-TYPE = <structured-name 1..8>
Specifies an arbitrary name under which the foreign device type is administered.
You can only use names which the system does not yet know.

Restrictions

– Only names which are not known by BS2000/OSD may be used for. Abbreviations are also allowed.
– The MARENADM statement FREE-VOLUMES does not evaluate the INIT flag.
– When the expiration date is reached MAREN immediately releases volumes.
– The free tape administrator MARENUCP does not support foreign device types.
– The MARENADM command INIT-VOLUME rejects a FOREIGN-DEVICE-TYPE under DEVICE-TYPE.
– In MAREN V9.0B a FOREIGN-DEVICE-TYPE is displayed with C'??'.

ADD-FREE-VOLUMES
Enter VSNs of free volumes in MAREN catalog

Privilege   ADA, administrator without domains

The ADD-FREE-VOLUMES statement adds free volumes to the MAREN catalog. During
this process, some of the fields in the archive entry may be preset. When domains are used,
free volumes are also assigned to the specified domain.

Format

```
ADD-FREE-VOLUMES                                                      Alias: ADFV

 VOLUME = *INTERVAL(...) / list-poss(10): <vsn>

    *INTERVAL(...)
              │     FROM = <vsn>

              │    ,TO = <vsn>

              │    ,INCREMENT = 1 / <integer 1..999>
,FREE-LOCATION = CENTRAL / <alphanum-name 1..8>

,DEVICE-TYPE = *STD / <structured-name 1..8>

,FREE-POOL = *NO / *GLOBAL / *TSOS / <filename 1..54 without-gen-vers> /
              <text 2..32 without-sep>

,DOMAIN = *STD-DOMAIN / *OWN / <alphanum-name 1..8>

,INITIALIZATION = *NO / *YES(...)

    *YES(...)
              │    ,INIT-FILE = MARENADM.INIT-FILE / *NONE / <filename 1..54 without-gen-vers>(...)
              │       <filename 1..54 without-gen-vers>(...)
              │              │     INIT-LOCATION = *NONE / <alphanum-name 1..8>

              │              │    ,USER-IDENTIFICATION = SYSMAREN / <name 1..8>

              │              │    ,ACCOUNT = *NONE / <alphanum-name 1..8>
,OVERFLOW-CONTROL = *BY-PROGRAM / *BY-SYSTEM
```

Operands

VOLUME =
VSNs of the free volumes to be added to the MAREN catalog.

VOLUME = *INTERVAL(...)
The VSNs of the free volumes are defined by the following operands:

>   **FROM = <vsn>**
>   VSN defining the lower interval limit. This operand must contain at least one number.
>
>   **TO = <vsn>**
>   VSN defining the upper interval limit. This operand must contain at least one number.
>
>   **INCREMENT = 1 / <integer 1..999>**
>   Increment. The VSNs to be added are formed by adding the increment to the numerical part, beginning with the lower interval limit (FROM operand), until the upper interval limit (TO operand) is reached.

VOLUME = list-poss(10): <vsn>
A maximum of 10 VSNs can be specified.

FREE-LOCATION =
Archive or location where the volumes to be added are to be found.

FREE-LOCATION = CENTRAL
Indicates that the volumes are in the central archive.

FREE-LOCATION = <alphanum-name 1..8>
Location name or symbolic location name.

DEVICE-TYPE =
Device type of the volumes to be added.

DEVICE-TYPE = *STD
Volumes of the standard device type specified with the MODIFY-MAREN-PARAMETERS statement (DEFAULT-DEVICE-TYPE operand) are involved.

DEVICE-TYPE = <structured-name 1..8>
Device type. For a list of possible entries (depending on the BS2000/OSD version), see manual "System Installation" [9].

FREE-POOL =
Specifies whether the volumes are already assigned to an free tape pool. If this is the case, the relevant pool must be specified.

FREE-POOL = *NO
The volumes are assigned to the free tape pool *NO.

FREE-POOL = *GLOBAL
The volumes are prereserved for general ARCHIVE applications under any ID.

FREE-POOL = *TSOS
The volumes are prereserved for ARCHIVE applications under the TSOS ID.

FREE-POOL = <filename 1..54 without-gen-vers>
The volumes are allocated to the ARCHIVE directory specified here. If this directory is
located under a remote ID, both the user ID and the catalog ID must be specified. The user's
own ID and standard catalog ID can be omitted.

FREE-POOL = <text 2..32 without-sep>
Specifies the name of a free tape pool.

The name of the free tape pool must begin with "*" followed by at least one character from
A-Z or 0-9. The characters ".", "-" and "_" are permitted, but not at the end and not next to
each other. If the relevant free tape pool does not yet exist, it will be created. Otherwise, it
is extended to include the specified volumes.

DOMAIN =
Specifies which domain the free volumes are assigned to.

DOMAIN = *STD-DOMAIN
The free volumes are assigned to the standard domain.

DOMAIN = *OWN
The free volumes are assigned to the user's own domain.
The user's own domain is the domain on the host in which the ADA is currently working.

DOMAIN = <alphanum-name 1..8>
The free volumes are assigned to the specified domain.

INITIALIZATION = *NO / *YES
Specifies whether the magnetic tapes must be initialized before being used for the first time
(e.g. brand new tapes). The default is *NO, i.e. no initialization is required.

INITIALIZATION = *YES(...)
The magnetic tapes must be initialized. An output file with preset values for initialization can
be created using the INIT-FILE operand. The actual initialization must be performed using
the INITIALIZE-VOLUMES statement.

   INIT-FILE =
   Specifies the file to which the archive entries of the volume to be initialized are to be
   written (output file). The file type is SAM. This file is created only if at least one volume
   needs to be initialized.

   INIT-FILE = MARENADM.INIT-FILE
   The initialization file with the default name MARENADM.INIT-FILE is generated. This
   name is also used as the default name for the INITIALIZE-VOLUMES statement.

INIT-FILE = *NONE
No initialization file is generated. In this case the initialization file must be created using the FREE-VOLUMES statement before INIT-VOLUMES is called.

INIT-FILE = <filename 1..54 without-gen-vers>(...)
Name of the output file to be created.

> **INIT-LOCATION =**
> Location name or symbolic location name. Specifies where the tapes are to be initialized.
>
> **INIT-LOCATION = *NONE**
> The archive entry field HOME-LOCATION is not modified.
>
> **INIT-LOCATION = <alphanum-name 1..8>**
> This location name is stored in the archive entry field HOME-LOCATION. After successful initialization and release, the HOME-LOCATION field is filled with the content of the FREE-LOCATION field.
>
> **USER-IDENTIFICATION = SYSMAREN / <name 1..8>**
> Specifies the user ID to which the volumes in the MAREN catalog are to be assigned until they have been initialized and subsequently finally released. By default the volumes are transferred to the SYSMAREN user ID.
>
> **ACCOUNT = *NONE / <alphanum-name 1..8>**
> Account number of the specified user ID.

OVERFLOW-CONTROL =
Type of screen overflow control in interactive mode.

OVERFLOW-CONTROL = *BY-PROGRAM
Control by the program: After eighteen archive entries have been processed, a message is displayed inquiring whether the current operation is to be continued or aborted.

OVERFLOW-CONTROL = *BY-SYSTEM
Control by the system: Screen overflow control is based entirely on the system parameter TCHOFLO or the value set in the MODIFY-TERMINAL-OPTIONS command.

Notes

– When entering an interval for the VOLUME operand, you must ensure that the numeric parts within the two interval limits have the same length and position. The following entries will be rejected with an error message:

Entry	Reason for error
*INT(AAA3AA,AA9AAA)	Positions not identical
*INT(AAA3AA,AA99AA)	Lengths not identical
*INT(A3AAA3,A9AAA9)	Positions not clearly defined due to a number of numerical parts
*INT(AAA9AA,AAA3AA)	FROM operand greater than TO operand
*INT(AAA3AA,BAA9AA)	Non-numeric parts not identical

– The numeric part may be up to six digits in length. The two interval limits may be identical.

– VSNs with less than six characters are padded with trailing blanks.

– If a VSN to be added already exists in the MAREN catalog, a message to this effect is issued and processing is continued with the next number.

– Each VSN added is logged.

– When processing has ended, the total number of VSNs added is output.

– To keep administration requirements to a minimum, directory-specific free tape pools should only be configured for a few important ARCHIVE directories (e.g. those used for computer center backup runs).

– If tapes which have to be initialized before being used (e.g. brand new tapes) are entered in the MAREN catalog, the parameter INITIALIZATION =*YES must be specified. The tapes are then not identified as free tapes.
The catalog entries then have the following values:

```
VOL-STATUS = *RESERVED
INIT = *YES
USER-ID = SYSMAREN
ACCOUNT = *NONE
USER-ACC = *OWNER-ONLY
PASSWORD = *YES
```

– If the aliases for the values *NO, *GLOBAL or *TSOS of the FREE-POOL operand are specified, then these operand values are expanded to their full length for compatibility reasons (e.g. the entry *GL is expanded to *GLOBAL).

– The date on which the free volume was entered in the MAREN catalog for the first time is stored in the archive entry field REGISTRATION-DATE. The MARENADM statement MODIFY-VOLUME-ATTRIBUTES enables the administrator to update the date. The date is output using the SHOW- or PRINT-VOLUME-ATTRIBUTES statement.

– Device type TAPE-U4E is not permissible for this statement as free volumes are not encrypted.

Examples

Example 1

```
//add-free-vol vol=tape01
%  MARM108 MAREN CATALOG ENTRY TAPE01/0001 ADDED
```

The VSN tape01 has been added to the MAREN catalog as a free volume stored in the central archive. The value set in the MAREN parameter DEFAULT-DEVICE-TYPE (e.g. TAPE-C4) is entered as the device type.

Example 2

```
//add-free-vol vol=(corrtp,id0001,id0002),free-loc=system13,dev-type=tape-c4
%  MARM108 MAREN CATALOG ENTRY CORRTP/0001 ADDED
%  MARM108 MAREN CATALOG ENTRY ID0001/0001 ADDED
%  MARM108 MAREN CATALOG ENTRY ID0002/0002 ADDED
%  MARM170 STATEMENT '//ADD-RESERVED-VOLUME *BY-TSOSCAT' PROCESSED
```

Three free tapes of device type tape-c4 have been added and assigned to the location designated system13.

Example 3

```
//add-free-vol vol=*int(id0001,id0015),dev-type=tape-c4
%  MARM107 MAREN CATALOG ENTRY 'ID0001'/'0001' ALREADY EXISTS
%  MARM107 MAREN CATALOG ENTRY 'ID0002'/'0001' ALREADY EXISTS
%  MARM108 MAREN CATALOG ENTRY 'ID0003'/'0001' ADDED
%  MARM108 MAREN CATALOG ENTRY 'ID0004'/'0001' ADDED
%  MARM108 MAREN CATALOG ENTRY 'ID0005'/'0001' ADDED
%  MARM108 MAREN CATALOG ENTRY 'ID0006'/'0001' ADDED
%  MARM108 MAREN CATALOG ENTRY 'ID0007'/'0001' ADDED
%  MARM108 MAREN CATALOG ENTRY 'ID0008'/'0001' ADDED
%  MARM108 MAREN CATALOG ENTRY 'ID0009'/'0001' ADDED
%  MARM108 MAREN CATALOG ENTRY 'ID0010'/'0001' ADDED
%  MARM108 MAREN CATALOG ENTRY 'ID0011'/'0001' ADDED
%  MARM108 MAREN CATALOG ENTRY 'ID0012'/'0001' ADDED
%  MARM108 MAREN CATALOG ENTRY 'ID0013'/'0001' ADDED
%  MARM108 MAREN CATALOG ENTRY 'ID0014'/'0001' ADDED
%  MARM108 MAREN CATALOG ENTRY 'ID0015'/'0001' ADDED
%  MARM120 TOTAL OF 13 MAREN CATALOG ENTRIES PROCESSED
%  MARM171 PROCESSING OF STATEMENT '//ADD-FREE-VOLUMES' TERMINATED WITH
   ERRORS
```

Of the 15 VSNs in question, only 13 were added since the VSNs id0001 and id0002 already
existed in the MAREN catalog (see Example 2).

ADD-HOST
Add a new host to the MAREN network

Privilege   ADA, administrator without domains

The ADD-HOST statement adds a new host to the MAREN network. When domains are used the host is assigned to a domain. The host-specific parameters are generated. These parameters can be modified later using the MODIFY-MAREN-PARAMETERS statement.

When you use domains a host must be added to the network using ADD-HOST before MARENCP can be started on this host. Without domains a host can also be added implicitly to the network by MARENCP being started on the host.

Format

ADD-HOST	Alias: **ADHO**
HOST = <alphanum-name 1..8>	
,**PARAM**ETER = ***FROM-OWN-HOST /** <alphanum-name 1..8>	
,**DOMAIN** = ***STD-DOMAIN** / ***OWN** / <alphanum-name 1..8>	
,**ALL-DOMAIN-ADMIN** = ***NOT-ALLOWED** / ***UNCH**ANGED / ***ALLOWED**	

Operands

HOST = <alphanum-name 1..8>
Specifies the name of the host which is to be added. The BCAM name must be used as this name.

PARAMETER =
Specifies the host from which the host-specific parameters are taken over.

PARAMETER = *FROM-OWN-HOST
The host-specific parameters are taken over from the user's own host.

PARAMETER = <alphanum-name 1..8>
The host-specific parameters are taken over from the specified host.

DOMAIN =
Specifies the domain to which the host is added.

DOMAIN = *STD-DOMAIN
The host is assigned to the standard domain.

DOMAIN = *OWN
The host is assigned to the user's own domain.
The user's own domain is the domain of the host on which the ADA is currently working.

DOMAIN = <alphanum-name 1..8>
The host is assigned to the selected domain.

ALL-DOMAIN-ADMIN =
Defines whether or not the ADA may work on the host. As soon as a host has been released for the ADA, he/she can work on that host.

ALL-DOMAIN-ADMIN = *NOT-ALLOWED
The ADA is not permitted to use the host.

ALL-DOMAIN-ADMIN = *UNCHANGED
The setting from the host-specific parameters that have been taken over remains valid.

ALL-DOMAIN-ADMIN = *ALLOWED
The host is released for the ADA.

Notes

When a host is added to a domain two cases can be distinguished for the domain-specific parameters:

– At least one host exists in the domain. The existing domain-specific parameters then also apply for the new host (FREE-VOLUMES = *FROM-STD-DOMAIN / *FROM-OWN-DOMAIN).

– No host exists in the domain. The domain-specific parameters are then taken over from the domain to which the host specified in PARAMETER belongs.

ADD-PRIVATE-VOLUME
Catalog foreign volumes

Privilege   ADA, DA, administrator without domains

The ADD-PRIVATE-VOLUME statement creates an archive entry in the MAREN catalog for a foreign volume which was previously not defined in the MAREN system. It also allows you to add multifile archive entries with an FSEQ > 1. The MAREN administrator can assign the foreign volume a location.

DAs can only execute the statement in their own domain. The DOMAIN operand is thus meaningless for them. Furthermore, the DA can only add a foreign volume if no volume with the same VSN exists in the MAREN catalog or an existing volume with this VSM belongs to the DA's own domain.

When a foreign volume is encrypted, the MAREN administrator must enter it in the MAREN catalog by means of DEVICE-TYPE=TAPE-U4E and then start a procedure to enter this volume's encryption data in the local system's key box (see page 90).

Format

ADD-PRIVATE-**VOL**UME   Alias: **ADPV**
VOLUME = list-poss(10): <vsn>
,**FI**LE-**SEQ**UENCE = **1** / <integer 1..9999>
,**USER-ID**ENTIFICATION = <name 1..8>
,**ACCOUNT** = ***NONE** / <alphanum-name 1..8>
,**DEV**ICE-**TYPE** = ***STD** / <structured-name 1..8>
,**DIR**ECTORY-**NAME** = ***NONE** / <filename 1..54 without-gen-vers>
,**DOMAIN** = ***STD-DOMAIN** / ***OWN** / <alphanum-name 1..8>
,**LOC**ATION = **CENTRAL** / <alphanum-name 1..8>

Operands

VOLUME = list-poss(10): <vsn>
VSNs of the foreign volumes.

FILE-SEQUENCE = 1 / <integer 1..9999>
File sequence number of a file within a file set (multifile/multivolume set).

USER-IDENTIFICATION = <name 1..8>
User ID to which the volume is to be assigned.

ACCOUNT = *NONE / <alphanum-name 1..8>
Account number of the specified user ID.

DEVICE-TYPE =
Device type of the volumes.

DEVICE-TYPE = *STD
The volumes are of the default device type (DEFAULT-DEVICE-TYPE) whose value was
specified with the MODIFY-MAREN-PARAMETERS statement.

DEVICE-TYPE = <structured-name 1..8>
Device type. For a list of possible entries (depending on the BS2000/OSD version), see
manual "System Installation" [9].

DIRECTORY-NAME =
Defines whether the volume is assigned to an ARCHIVE directory.

DIRECTORY-NAME = *NONE
The volume is not assigned to an ARCHIVE directory.

DIRECTORY-NAME = <filename 1..54 without-gen-vers>
Name of an ARCHIVE directory to which the volume is assigned. If this directory is located
under a remote ID, both the user ID and the catalog ID must be specified. The user's own
ID and standard catalog ID can be omitted.

DOMAIN =
Specifies the domain to which a foreign tape is to be added.
If an existing volume belongs to a foreign domain the statement can only be issued by the
ADA. The required domain must then be specified.

DOMAIN = *STD-DOMAIN
The foreign volume is added to the standard domain.

DOMAIN = *OWN
The foreign volume is added to the user's own domain.
The user's own domain is the domain of the host on which the ADA is currently working or
the domain in which he/she has taken over the DA role.

DOMAIN = <alphanum-name 1..8>
The foreign volume is added to the specified domain.

LOCATION = <u>CENTRAL</u> / <alphanum-name 1..8>
Specifies the location of the private volume. If a location is assigned which is accessed by a robot, the TEMP-LOCATION archive entry fields with CENTRAL and HOME-LOCATION are set to the specified location. In the case of manually controlled locations, all of a volume's locations are set uniformly to the specified value.

Notes

– The generated archive entries have the attribute VOLUME-STATUS = PRIVATE. Archive entries for free volumes and volumes of the computer center can only be created by means of the statements ADD-FREE-VOLUMES and ADD-RESERVED-VOLUME.

– If the MAREN checks have also been activated for foreign volumes (MAREN parameter FOREIGN-TAPE-CHECK = YES) or domains are being used, it is absolutely essential that each foreign volume be made known to the MAREN system by means of the ADD-PRIVATE-VOLUME statement before initial processing takes place.

– The archive entry is generated with the volume attribute USER-ACCESS = OWNER-ONLY.

– On completion of the archiving process, the user may modify fields in the archive entry using the MAREN statement MODIFY-VOLUME-ATTRIBUTES.

– If a foreign tape is to be archived with a VSN which already exists in the MAREN catalog, MARENADM responds as follows:

  – The archivist is asked whether the old tape is to be locked internally on a temporary basis so that the new tape can be added. If the response is affirmative, the FSEQ is set to '*001' for the old tape. This means that the old tape can no longer be requested, although it continues to be displayed by the SHOW-VOL-ATTR statement. The new tape is added to the MAREN catalog with the valid FSEQ '0001'. A third tape with the same VSN cannot be archived.

  – If MARENADM is executed in batch mode, the statement is rejected.

  – When using the program interface (see section "MARENADM as a subroutine" on page 336ff) on the other hand, an attempt is made in both interactive mode and batch mode to migrate the volume already archived.

  – If a list of volumes is entered in the VOLUME operand, of which one is already contained in the MAREN catalog and should not be locked internally, the statement is aborted with an error message.

– The date on which the foreign volume was entered in the MAREN catalog for the first time is stored in the archive entry field REGISTRATION-DATE. The MARENADM statement MODIFY-VOLUME-ATTRIBUTES enables the administrator to update the date. The date is output using the SHOW- or PRINT-VOLUME-ATTRIBUTES statement.

– When a foreign volume is encrypted, the MAREN administrator must first enter it in the MAREN catalog by means of DEVICE-TYPE=TAPE-U4E and then start a procedure to enter this volume's encryption data in the local system's key box. This procedure generates the owner CC implicitly when the EXPORT-VOLUME statement is called and transfers the statement to the exporting CC. This procedure is generated with the file name S.PRC.MAREN.ENCRYPTION.DATA.vsn on a volume-specific basis.

– As separate encryption data is generated for each volume, the tape contents can only be encrypted using the associated procedure file. To prevent the volume plus the encryption data from falling into the wrong hands, the two should be sent separately. The recipient must also store the procedure carefully.

Example

```
//add-priv-vol vol=tape07,user-id=user1,dev-type=tape-c4
%  MARM108 MAREN CATALOG ENTRY 'MBKX07'/'0001' ADDED
```

A foreign tape with the VSN tape07 is archived in the MAREN catalog for the user ID user1.

ADD-RESERVED-VOLUME
Generate complete archive entries

Privilege   ADA, administrator without domains

If a computer center volume which is assigned to a user ID has not been archived in the
MAREN catalog, the ADD-RESERVED-VOLUME statement can be used for this volume to
generate an appropriate archive entry.

Format

(part 1 of 2)

ADD-RESERVED-**VOL**UME

VOLUME = <vsn>(...) / ***ALL**(...) / ***BY-TSOSCAT**(...)

  <vsn>(...)

      USER-IDENTIFICATION = <name 1..8>

      ,**ACCOUNT** = ***NONE** / <alphanum-name 1..8>

      ,**PROT**ECTION = ***STD** / ***PAR**AMETERS(...)

        *PARAMETERS(...)

            PASSWORD = ***NONE** / <c-string 1..4> / <x-string 1..8> /
                        <integer -2147483648..2147483647> / ***SECRET**

            ,**USER-ACCESS** = ***OWNER-ONL**Y / ***FOREIGN-READ**-ONLY / ***ALL-USERS**

            ,**FREE-DATE** = ***STD** / <date> / <integer 0..32767 *days*>

      ,**LOCATION** = ***STD** / ***PAR**AMETERS(...)

        *PARAMETERS(...)

            HOME-LOCATION = **CENTRAL** / <alphanum-name 1..8>

            ,**FREE-LOC**ATION = **CENTRAL** / <alphanum-name 1..8>

            ,**TEMP**ORARY-**LOC**ATION = **CENTRAL** / <alphanum-name 1..8>

      ,**REMARK** = ***NONE** / <c-string 1..24>

      ,**USER-FIELD** = ***NONE** / <c-string 1..54>

      ,**ADM**INISTRATOR-**FIELD** = ***NONE** / <c-string 1..8>

      ,**DEV**ICE-**TYPE** = ***STD** / <structured-name 1..8>

      ,**DIR**ECTORY-**NAME** = ***NONE** / <filename 1..54 without-gen-vers>

,**FI**LE-**NAME** = ***NONE** / <filename 1..41 without-cat-user>

,**FI**LE-**SEQ**UENCE = **1** / <integer 1..9999>

,**VOL**UME-**SEQ**UENCE = **1** / <integer 1..255>

,**NEW-DOMAIN** = ***STD-DOMAIN** / ***OWN** / <alphanum-name 1..8>

*ALL(...)

   INPUT-**FILE** = <filename 1..54>

   ,**DOMAIN** = ***BY-INP**UT-**FILE** / ***OWN** / ***STD-DOMAIN** / <alphanum-name 1..8>

   ,**NEW-DOMAIN** = ***STD-DOMAIN** / ***OWN** / ***UNCH**ANGED / <alphanum-name 1..8>

*BY-TSOSCAT(...)

   SELECT = ***ALL** / ***BY-ATTR**IBUTES(...)

      *BY-ATTRIBUTES(...)

         FROM = ***FIRST** / <vsn>

         ,**TO** = ***LAST** / <vsn>

         ,**PUB**LIC-**VOL**UME-**SET** = ***ALL** / ***HOME** / <catid 1..4>

         ,**USER-ID**ENTIFICATION = ***ALL** / <name 1..8>

   ,**ACCOUNT** = ***NONE** / <alphanum-name 1..8>

   ,**PROT**ECTION = ***STD** / ***PAR**AMETERS(...)

      *PARAMETERS(...)

         USER-ACCESS = ***OWNER-ONLY** / ***FOREIGN-READ**-ONLY / ***ALL-USERS**

         ,**FREE-DATE** = ***STD** / <date> / <integer 0..32767 *days*>

   ,**LOCATION** = ***STD** / ***PAR**AMETERS(...)

      *PARAMETERS(...)

         HOME-LOCATION = **CENTRAL** / <alphanum-name 1..8>

         ,**FREE-LOC**ATION = **CENTRAL** / <alphanum-name 1..8>

         ,**TEMP**ORARY-**LOC**ATION = **CENTRAL** / <alphanum-name 1..8>

   ,**ADM**INISTRATOR-**FIELD** = ***NONE** / <c-string 1..8>

   ,**DOMAIN** = ***OWN** / ***STD-DOMAIN** / <alphanum-name 1..8>

Operands

VOLUME =
Volumes to be added to the MAREN catalog.

VOLUME = <vsn>(...)

    USER-IDENTIFICATION = <name 1..8>
    User ID to which the volume is to be assigned.

    ACCOUNT = <u>*NONE</u> / <alphanum-name 1..8>
    Account number of the specified user ID.

    PROTECTION =
    Volume protection attributes.

    PROTECTION = <u>*STD</u>
    The default values listed below are used.

    PROTECTION = *PARAMETERS(...)

        PASSWORD = <u>*NONE</u> / <c-string 1..4> / <x-string 1..8> /
        <integer -2147483648..2147483647> / *SECRET
        A password protecting against unauthorized access to the volume is defined and
        specified here.
        The operand has the following special features:
        –   The value entered is not logged.
        –   In guided dialog, the entry field is automatically blanked out.
        –   If *SECRET or ^ is specified, in unguided dialog and in foreground procedures
            SDF provides a non-displaying entry field for concealed entry of the password.

    USER-ACCESS =
    Specifies whether foreign user IDs may access the volume.

    USER-ACCESS = <u>*OWNER-ONLY</u>
    Access to the volume is possible only under the specified user ID.

    USER-ACCESS = *FOREIGN-READ-ONLY
    Read-only access to the volume is possible under a foreign user ID.

    USER-ACCESS = *ALL-USERS
    Unrestricted access to the volume is possible under a foreign user ID.

    FREE-DATE =
    Expiration date of the volume. Up to this date, the volume remains reserved for the
    given user ID.

    FREE-DATE = <u>*STD</u>
    The expiration date defined by the MAREN administrator applies.

FREE-DATE = <date>
Date in the format yyyy-mm-dd.

FREE-DATE = <integer 0..32767 *days*>
Time specification in days. The MAREN system internally adds this number to the current date to generate the expiration date.

LOCATION =
Location name or symbolic location name.

LOCATION = *STD*
The default values listed below are used.

LOCATION = *PARAMETERS(...)

HOME-LOCATION = CENTRAL / <alphanum-name 1..8>
Location name or symbolic location name specifying the archive or the location where the volume is normally to be stored.

FREE-LOCATION = CENTRAL / <alphanum-name 1..8>
Location name or symbolic location name specifying the archive or location where the volume is to be relocated when it is transferred to the pool of free volumes after the expiration date has been reached.

TEMPORARY-LOCATION = CENTRAL / <alphanum-name 1..8>
Location name or symbolic location name specifying the archive or location where the volume is currently located. Archive system locations are not permitted here (does not apply for locations with the operating mode ROBAR-2).

REMARK = *NONE / <c-string 1..24>
Comment text. This field is output on the screen when the MAREN statement SHOW-VOLUME-ATTRIBUTES is issued.

USER-FIELD = *NONE / <c-string 1..54>
Comment text. This field may contain any user-specific data, e.g. name, department, telephone number, etc.

ADMINISTRATOR-FIELD = *NONE / <c-string 1..8>
Comment text. This field may contain any computer-center-specific information. It cannot be read or changed by the user.

DEVICE-TYPE =
Device type of the volumes.

DEVICE-TYPE = *STD
The volumes are of the default device type (DEFAULT-DEVICE-TYPE) whose value was specified with the MODIFY-MAREN-PARAMETERS statement.

DEVICE-TYPE = <structured-name 1..8>
Device type. For a list of possible entries (depending on the BS2000/OSD version), see manual "System Installation" [9].

DIRECTORY-NAME = *NONE / <filename 1..54 without-gen-vers>
Defines whether the volume is assigned to an ARCHIVE directory.

DIRECTORY-NAME = *NONE
The volume is not assigned to an ARCHIVE directory.

DIRECTORY-NAME = <filename 1..54 without-gen-vers>
Name of an ARCHIVE directory to which the volume is assigned. If this directory is located under a remote ID, both the user ID and the catalog ID must be specified. The user's own ID and standard catalog ID can be omitted.

FILE-NAME = *NONE / <filename 1..41 without-cat-user>
Name of the file located on the volume.

FILE-SEQUENCE = 1 / <integer 1..9999>
File sequence number of a file within a file set (multifile/multivolume set).

VOLUME-SEQUENCE = 1 / <integer 1..255>
File section number within a multivolume file (MV set).

NEW-DOMAIN =
The volume is reassigned to the specified domain.

NEW-DOMAIN = *STD-DOMAIN
The volume is assigned to the standard domain.

NEW-DOMAIN = *OWN
The volume is assigned to the user's own domain.
The user's own domain is the domain of the host on which the ADA is currently working.

NEW-DOMAIN = <alphanum-name 1..8>
The volume is assigned to the specified domain.

VOLUME = *ALL(...)
The VSNs of the volumes to be added are to be taken from a file oder einer Domäne.

INPUT-FILE = <filename 1..54>
Name of a SAM file containing archive entries in MAREN format. For instance, this may be an output file created using the SHOW-VOLUME-ATTRIBUTES statement.

DOMAIN =
The archive entries of the specified domain are selected.

DOMAIN = *BY-INPUT-FILE
The archive entries are taken from the domain or domains whose names are contained in a SAM file.

DOMAIN = *OWN
The archive entries of the user's own domain are selected.
The user's own domain is the domain of the host on which the ADA is currently working.

DOMAIN = *STD-DOMAIN
The archive entries of the standard domain are selected.

DOMAIN = <alphanum-name 1..8>
The archive entries of the specified domain are selected.

NEW-DOMAIN = <u>*STD-DOMAIN</u> / *OWN / *UNCHANGED / <alphanum-name 1..8>
The archive entries are reassigned to the selected domain.

VOLUME = *BY-TSOSCAT(...)
The VSNs of the volumes to be added are to be taken from the catalog entries for tape files
in the file catalog (TSOSCAT). When the MAREN administrator specifies VOLUME=*BY-
TSOSCAT(...), he/she must work under the system ID TSOS.

SELECT =
Criteria for volume selection.

SELECT = <u>*ALL</u>
No restrictions apply to the volumes to be added.

SELECT = *BY-ATTRIBUTES(...)
Only those volumes which fulfill all the following conditions are added.

FROM = <u>*FIRST</u> / <vsn>
Only those volumes whose VSNs are greater than or equal to the one specified here
are added.

FROM = <u>*FIRST</u>
All volumes are added, starting with the lowest VSN available.

TO = <u>*LAST</u> / <vsn>
Only those volumes whose VSNs are less than or equal to the one specified here
are added.

TO = <u>*LAST</u>
All volumes are added up to the highest VSN available.

PUBLIC-VOLUME-SET =
Specifies the catalog ID of the pubset from whose system catalog entries for tape
files the VSNs of the volumes to be added to the MAREN catalog are to be taken.

PUBLIC-VOLUME-SET = <u>*ALL</u>
The volumes are taken from all the system catalogs of all the available pubsets.

PUBLIC-VOLUME-SET = *HOME
The volumes are only taken from the system catalog of the home pubset.

PUBLIC-VOLUME-SET = <cat-id>
The volumes are taken from the system catalog of the specified pubset.

USER-IDENTIFICATION =
Specifies whether the volumes to be added are to be selected by user ID.

USER-IDENTIFICATION = *ALL
The IDs are not evaluated during selection.

USER-IDENTIFICATION = <name 1..8>
Only volumes from the catalog entries for tape files under the specified user ID are to be added to the MAREN catalog.

ACCOUNT = *NONE / <alphanum-name 1..8>
Account number to which the added volumes are to be assigned.

PROTECTION =
Volume protection attributes.

PROTECTION = *STD
The default values listed below are used.

PROTECTION = *PARAMETERS(...)

USER-ACCESS =
Specifies whether foreign user IDs can access the volumes.

USER-ACCESS = *OWNER-ONLY
Access to the volume is only permitted under the specified user ID.

USER-ACCESS = *FOREIGN-READ-ONLY
Read-only access to the volume is possible under a foreign user ID.

USER-ACCESS = *ALL-USERS
Unrestricted access to the volume is possible under a foreign user ID.

FREE-DATE =
Expiration date of the volume. Up to this date, the volume remains reserved for the given user ID. If the date specified here is earlier than the file expiration date in the TSOSCAT entry, it is replaced by the latter date for the volume involved.

FREE-DATE = *STD
The expiration date defined by the MAREN administrator applies.

FREE-DATE = <date>
Date in the format yyyy-mm-dd.

FREE-DATE = <integer 0..32767 *days*>
Time specification in days. The MAREN system internally adds this number to the current date to generate the expiration date.

LOCATION =
Location name or symbolic location name.

LOCATION = <u>*STD</u>
The default values listed below are used.

LOCATION = *PARAMETERS(...)

> **HOME-LOCATION = <u>CENTRAL</u> / <alphanum-name 1..8>**
> Location name or symbolic location name specifying the archive or the location
> where the volume is normally to be stored.
>
> **FREE-LOCATION = <u>CENTRAL</u> / <alphanum-name 1..8>**
> Location name or symbolic location name specifying the archive or location where
> the volume is to be relocated when it is transferred to the pool of free volumes after
> the expiration date has been reached.
>
> **TEMPORARY-LOCATION = <u>CENTRAL</u> / <alphanum-name 1..8>**
> Location name or symbolic location name specifying the archive or location where
> the volume is currently located.

ADMINISTRATOR-FIELD = <u>*NONE</u> / <c-string 1..8>
Comment text. This field may contain any computer center-specific information. It
cannot be read or changed by the user.

DOMAIN = <u>*OWN</u> / *STD-DOMAIN / <alphanum-name 1..8>
Defines the domain in which the volumes to be added are entered.

Notes

– The archive entries created have the attribute VOLUME-STATUS = RESERVED.
   Archive entries for free volumes and foreign volumes can only be created using the
   ADD-FREE-VOLUMES and ADD-PRIVATE-VOLUME statements.

– The FILE-NAME and DIRECTORY-NAME parameters must not be entered simulta-
   neously.

– The date on which the computer center volume was entered in the MAREN catalog for
   the first time is stored in the archive entry field REGISTRATION-DATE. The
   MARENADM statement MODIFY-VOLUME-ATTRIBUTES enables the administrator to
   update the date. The date is output using the SHOW- or PRINT-VOLUME-ATTRIBUTES
   statement.

– In the case of a volume which was added to the MAREN catalog with DEVICE-
   TYPE=TAPE-U4E, all read and write accesses must take place with DEVICE=TAPE-
   U4E. The tape contents are encrypted when they are written. When the volume is
   released by means of //FREE-VOLUMES, the volume type is changed to TAPE-U4
   because the type TAPE-U4E only exists for reserved tapes.

- The statement is aborted and the spin-off mechanism triggered if:
    - the specified expiration date is earlier than the current date
    - the archive entry already exists
- When adding archive entries by means of a file:
    - The values for VOLUME, FILE-SEQUENCE, VOLUME-SEQUENCE, CHECK-COUNT, ACCESS-COUNT and RESERVATION-COUNT in the archive entries to be added are checked for syntax errors.
    - The expiration date is not checked.
    - Passwords with the contents C'$$$$' are converted to NONE (X'00000000').
    - Each archive entry added is acknowledged.
    - If an archive entry already exists, the one from the input file is ignored, the spin-off mechanism is triggered, and the statement is continued.
    - The sum total of records read and archive entries added is logged.
    - If an archive system location is specified in the TEMPORARY-LOCATION field, this is replaced by the value "CENTRAL" (does not apply for storage locations with the operating mode ROBAR-2).
    - If the assigned input file also contains archive entries of free and foreign volumes, these are likewise added to the MAREN catalog.
    - A MAREN catalog must have a FREE-POOL record for all free tape pools that have been allocated volumes. These FREE-POOL records are set up when starting MAREN. Such records are produced during operation when needed. HOwever, this is not guaranteed when expanding a catalog beyond one file. The MAREN administrator must take care of this, and we recommend the following procedure:
        1. SHOW-MAREN-PARAMETERS allows the creation of a list of FREE-POOL records of the catalog containing the archive entries having to be transferred to the target catalog via a file.
        2. All FREE-POOL records in this list that are not already in the target catalog are then added to it. This is done with the MODIFY-MAREN-PARAMETERS FREE-POOL=*PAR(FREE-POOL=name, ACTION=*ADD) statement.
        3. The archive entries from the file are added to the target catalog (with the statement ADD-RESERVED-VOLUME).
        4. All FREE-POOL records that were added in the second step although they were superfluous are deleted with the MODIFY-MAREN-PARAMETERS FREE-POOL=*PAR(FREE-POOL=name, ACTION=*REMOVE) statement.

– When adding volumes from TSOSCAT entries for tape files:

– The operand VOLUME = *BY-TSOSCAT allows a MAREN catalog to be created from all available entries for tape files in TSOSCAT when the MAREN system is first installed. The operands PUBLIC-VOLUME-SET and USER-IDENTIFICATION allow for selection by catalog or user ID. Because access is permitted to archive entries of foreign user IDs, it makes sense to use this function only under the system administrator ID. For this reason, any attempt to execute this statement under a nonprivileged ID will be rejected.

– Since only the file catalogs of the local computer are used in this function, this statement must be executed on each individual computer in the MAREN network.

– The catalog entries for temporary tape files are ignored, i.e. the volumes contained in such entries are not added to the MAREN catalog.

– All volumes added to the MAREN catalog are logged. If any of the volumes found in the TSOSCAT entries are already contained in the MAREN catalog, they are ignored and an appropriate error message is issued.

– If for some reason not all the volumes of a multivolume file are added to the MAREN catalog (e.g. at least one volume is already contained in the MAREN catalog or is outside the number range specified), the following error message is issued:

```
MARM1C7 IN MAREN CATALOG NOT ALL VOLUMES ADDED FOR FILE '(&00)'
```

– After the statement has been terminated, the number of volumes added to the MAREN catalog is output.

Examples

Example 1

```
//add-res-vol vol=id0101(user-id=user1,account=ho11,free-date=+100,
    dev-type=tape-c4,remark='Reserved by ADM')
%  MARM108 MAREN CATALOG ENTRY 'ID0101'/'0001' ADDED
```

With this statement, a magnetic tape cartridge of type tape-c4 is archived under the user ID user1. A reservation period of 100 days is defined for the volume. The remark field informs the user that the reservation was made by the administrator.

Example 2

```
//add-reserved-vol vol=idx002,user-id=user2,account=acc801,pass='xtst'
%  MARM108 MAREN CATALOG ENTRY 'ID0002'/'0001' ADDED
```

The magnetic tape cartridge with the VSN idx002 is archived under the user ID user2 with the account number acc801. The volume is protected against unauthorized access with the password 'xtst'. The user can access the volume and the archive entry (e.g. to change the password) by obtaining the password from the administrator and issuing a corresponding ADD-PASSWORD command.

Example 3

```
//add-res-vol vol=*all(input-file=list.volume.3)
%  MARM107 MAREN CATALOG ENTRY 'ID0001'/'0001' ALREADY EXISTS
%  MARM107 MAREN CATALOG ENTRY 'ID0002'/'0001' ALREADY EXISTS
%  MARM108 MAREN CATALOG ENTRY 'ID0003'/'0001' ADDED
%  MARM108 MAREN CATALOG ENTRY 'ID0004'/'0001' ADDED
%  MARM108 MAREN CATALOG ENTRY 'ID0005'/'0001' ADDED
%  MARM108 MAREN CATALOG ENTRY 'ID0006'/'0001' ADDED
%  MARM108 MAREN CATALOG ENTRY 'ID0007'/'0001' ADDED
%  MARM108 MAREN CATALOG ENTRY 'ID0008'/'0001' ADDED
%  MARM108 MAREN CATALOG ENTRY 'ID0009'/'0001' ADDED
%  MARM108 MAREN CATALOG ENTRY 'ID0010'/'0001' ADDED
%  MARM108 MAREN CATALOG ENTRY 'ID0011'/'0001' ADDED
%  MARM108 MAREN CATALOG ENTRY 'ID0012'/'0001' ADDED
%  MARM103 CONTINUE ACTION? REPLY (Y=YES; N=NO)?y
%  MARM108 MAREN CATALOG ENTRY 'ID0013'/'0001' ADDED
%  MARM108 MAREN CATALOG ENTRY 'ID0014'/'0001' ADDED
%  MARM108 MAREN CATALOG ENTRY 'ID0015'/'0001' ADDED
%  MARM108 MAREN CATALOG ENTRY 'ID0016'/'0001' ADDED
%  MARM108 MAREN CATALOG ENTRY 'ID0017'/'0001' ADDED
%  MARM108 MAREN CATALOG ENTRY 'ID0018'/'0001' ADDED
%  MARM108 MAREN CATALOG ENTRY 'ID0019'/'0001' ADDED
%  MARM108 MAREN CATALOG ENTRY 'ID0020'/'0001' ADDED
%  MARM123 20 RECORDS READ FROM FILE 'LIST.VOLUME.3'
%  MARM120 TOTAL OF 18 MAREN CATALOG ENTRIES PROCESSED
%  MARM171 PROCESSING OF STATEMENT '//ADD-RESERVED-VOLUME' TERMINATED WITH
   ERRORS
```

All archive entries found in the file list.volume.3 are added to the MAREN catalog. Since the catalog already contains two of the archive entries, only 18 entries out of a total of 20 are added.

Example 4

```
//add-res-vol vol=*by-tsoscat(select=*by-attr(from=tls001,to=tls001,
   pub-vol-set=*home,user-id=userxy01),account=mrsy0004,
   prot=*par(user-access=foreign-read,free-date=2020-12-31),
   location=*par(home-loc=robtls,free-loc=robtls),adm-field='12345678')
%  MARM108 MAREN CATALOG ENTRY 'TLS001'/'0001' ADDED
%  MARM105 TOTAL OF 000001 MAREN CATALOG ENTRIES ADDED
%  MARM170 STATEMENT '//ADD-RESERVED-VOLUME *BY-TSOSCAT' PROCESSED

//show-vol-attr vol=tls001,INFO=*V8.1
VOLUME    = TLS001       FILE-SEQ     = 0001         DEV-TYPE    = TAPE-C4

USER-ID   = USERXY01     HOME-LOCATION = ROBTLS      RESERV-DATE = 2006-09-20
ACCOUNT   = MRSY0004     FREE-LOCATION = ROBTLS      FREE-DATE   = 2020-12-31
USER-ACC  = FOREIGN-READ TEMP-LOCATION = CENTRAL     EXPORT-DATE =
PASSWORD  = NONE
REMARK    = C'                          '
EXPORT-AD = C'                                          '
USER-FIELD= C'                                           '
FILE-NAME = MRSY0004.TAPE.FILE
FREE-POOL = *NO
OPEN-MODE =             CR-DATE      = 2006-09-20 LAST-ACC-DATE   = 2006-09-20
DEV-NAME  =             CR-TIME      =            LAST-ACC-TIME   =
VOL-SEQ   = 0001        CR-CAT-ID    = QA1        LAST-ACC-USER-ID =
FIRST-VOL = TLS001      CR-USER-ID   = TSOS       LAST-ACC-ACCOUNT =
CLOSE-IND =             CR-JOB-NAME  =            LAST-ACC-JOB-NAME=
EXPIR-DATE= 2006-09-20 LAST-CL-DATE =            LAST-ACC-TSN    =
AUDIT     = NO          LAST-CL-TIME =            LAST-ACC-SNO    =
VOL-STATUS= RESERVED    RESERV-COUNT = 0001       LAST-ACC-CPU-NAME=
INIT      = YES         ACCESS-COUNT = 00000001   LAST-ACC-FUN-NAME= ADDBYCAT
ADM-FIELD = C'12345678'CHECK-COUNT  = 01          LAST-ACC-FUN-FLAG= 11
```

All volumes contained in the TSOSCAT entries for tape files under the user ID userxy01 are added to the MAREN catalog and reserved for this user ID.

CHANGE-LOGGING-FILE
Open new logging file

Privilege   ADA, DA, administrator without domains

The CHANGE-LOGGING-FILE statement closes the previous logging file and opens a new one. The administrator uses the HOST-NAME operand to specify whether the change of logging file is to apply for his/her own host, for a particular host, or for all hosts in a MAREN network.

Format

CHANGE-**LOG**GING-**FILE**	Alias: **CHLF**
FILE-**NAME** = ***STD** / <filename 1..54>	
,**SUP**PORT = ***PUB**LIC-**DISK** / ***PRIVATE-DISK**(...)	
*PRIVATE-DISK(...)	
│ **VOL**UME = <vsn>	
│ ,**DEV**ICE-**TYPE** = <structured-name 1..8>	
,**HOST**-**NAME** = ***OWN** / ***ALL** / <alphanum-name 1..8> / ***ALL**-**FROM**-**DOMAIN**(...)	
*ALL-FROM-DOMAIN(...)	
│ **DOMAIN** = ***STD-DOMAIN** / ***OWN** / <alphanum-name 1..8>	

Operands

FILE-NAME =
Name of the new logging file.

FILE-NAME = *STD
The new logging file is created under the name:

$SYSMAREN.MAREN.LOGGING.yyyymmdd.hhmmss.hostname

yyyymmdd	Current date (ISO4 format);
hhmmss	Time of day
hostname	Name of the local computer

FILE-NAME = <filename 1..54>
If no user ID is specified in the file name, the new logging file is created under the ID
SYSMAREN.

SUPPORT =
Type of volume.

SUPPORT = *PUBLIC-DISK
The new logging file is to be created on a public disk.

SUPPORT = *PRIVATE-DISK(...)
The new logging file is to be created on a private disk.

   VOLUME = <vsn>
   VSN of the disk.

   DEVICE-TYPE = <structured name 1..8>
   Device type. For a list of possible entries (depending on the BS2000/OSD version), see
   manual "System Installation" [9].

HOST-NAME =
Specifies the hosts for which the logging file is to be changed.

HOST-NAME = *OWN
The logging file is only changed on the local host.
If the ADA has used the MODIFY-ADMINISTRATION-SCOPE DOMAIN=... statement to
become the DA of a domain, HOST=*OWN addresses the host which was determined by
the HOST operand in the MODIFY-ADMINISTRATION-SCOPE statement.

HOST-NAME = *ALL
When domains are used, the logging file is changed for all hosts in a DA's own domain; for
the ADA, the logging files are changed for all hosts.

HOST-NAME = <alphanum-name 1..8>
BCAM name of a host.
When domains are used and the DA enters a host name, this host must belong to the DA's
own domain.

HOST-NAME = *ALL-FROM-DOMAIN (...)
The logging file is changed for all hosts of a particular domain. This operand may only be
used by the ADA.

   DOMAIN =
   Selects the domain.

   DOMAIN = *STD-DOMAIN
   The logging file is changed for the hosts in the standard domain.

DOMAIN = *OWN
The logging file is changed for the hosts in the local domain.
The own domain is the domain of the host on which the ADA is currently working.

DOMAIN = <alphanum-name 1..8>
The logging file is changed for the hosts in the specified domain.

Notes

– If the host-specific parameter LOGGING was not set when the control program was started, no logging file is opened. In this event, the statement is rejected and no new logging file is created.

– If other users still have the old log file open, then it will only be closed after these other user accesses the log file for writing.

– New entries are always written to the new logging file.

– If the specified file already exists, it is updated. A further check is carried out to ensure that an existing file possesses the attributes required by a MAREN logging file (ACCESS-METHOD= ISAM, KEY-LENGTH=32, KEY-POSITION=5). If this is not the case, the statement is rejected. If an error occurs when opening the new MAREN logging file even though its file attributes are correct, the MARENCP task is terminated abnormally.

– If a file with the specified name does not exist, a new logging file is opened with the same block size and secondary allocation as the current logging file and with the attribute SHARED-UPDATE=*YES. If the new logging file is to be created on an NK4 pubset, the old logging file must have an even-numbered standard block size, e.g. (STD,2).

Example

```
//change-log-file file-name=:data:$sysmaren.marenlog.14.2
%  MARCP32 MAREN LOGGING FILE ':DATA:$SYSMAREN.MARENLOG.14.2' OPENED
```

The current logging file is closed. MARENCP creates a new logging file under the ID SYSMAREN on the pubset DATA and then opens the file in shared update mode.

CHECK-TSOSCAT
Indicate discrepancies between MAREN catalog and TSOSCAT

Privilege   Administrators who work under TSOS

The CHECK-TSOSCAT statement allows any discrepancies between the file catalog
(TSOSCAT) and the MAREN catalog regarding tape files to be identified and removed in
the case of file generation groups.
It also releases tapes reserved by older file generations.

Format

CHECK-TSOSCAT	Alias: **CHTS**

TYPE-OF-FILES = ***ANY** (...) / ***FGG**-ONLY(...)

   *ANY(...)
        ATTRIBUTES = ***FI**LE-**NAME** / list-poss(7): ***FI**LE-**NAME** / ***USER-ID**ENTIFICATION /
                  *USER-ACCESS / ***CRE**ATION-**DATE** / ***EXPIR**ATION-**DATE** /
                  *LAST-ACCESS-DATE / ***FIRST-VOL**UME
   *FGG-ONLY(...)
        FREE-DATE = ***UNCH**ANGED / ***TODAY** / ***DIALOG**

Operands

TYPE-OF-FILES =
Types of tape files to be checked.

TYPE-OF-FILES = *ANY(...)
Specifies that the catalog entries for all tape files are to be checked (see notes on
page 108).

   ATTRIBUTES = *FILE-NAME / list-poss(7): *FILE-NAME / *USER-
   IDENTIFICATION / *USER-ACCESS / *CREATION-DATE / *EXPIRATION-DATE /
   *LAST-ACCESS-DATE / *FIRST-VOLUME
   File or volume attributes which are to be checked for discrepancies.

TYPE-OF-FILES = *FGG-ONLY(...)
Specifies that all file generation groups cataloged in TSOSCAT are to be checked to establish whether the MAREN catalog still contains entries for older generations which are no longer contained in TSOSCAT (see notes below).

FREE-DATE =
Specifies whether older file generations are only to be logged or whether the relevant volumes are also to be released in the MAREN catalog.

FREE-DATE = *UNCHANGED
Older file generations are only logged.

FREE-DATE = *TODAY
Older file generations are logged and the relevant volumes are released.

FREE-DATE = *DIALOG
If an older file generation is found, the complete archive entry for the relevant volume is output. The user can then decide whether or not the volume is to be released. If required, execution of the statement can be terminated at this point. The specification DIALOG is not permitted in batch mode.

Notes

General

Since only systems support staff have unrestricted access to the catalog entries under foreign user IDs, use of this statement is only feasible under the TSOS ID. If the MARENADM statement CHECK-TSOSCAT is entered under a nonprivileged ID, it is rejected with the following message:

```
MARM1CO SPECIFIED STATEMENT RESTRICTED TO SYSTEM ADMINISTRATOR
```

If the MAREN administrator wants to match TSOSCAT for his/her own ID, he/she must use the statement with the same name in the MAREN user program.

*TYPE-OF-FILES = *FGG-ONLY*

–   If entries for file generations which no longer exist in a TSOSCAT cataloged file generation group are found in the MAREN catalog, and FREE-DATE = *UNCHANGED or *TODAY is specified, these entries are logged with the following attributes:

```
VOLUME
USER-IDENTIFICATION
FILE-NAME
CREATION-DATE
FREE-DATE
```

– If FREE-DATE = *TODAY is specified, the expiration date for the volume is replaced by the current date in the MAREN catalog. This reserves the volume for the user's own ID until the next release run.

– If FREE-DATE = *TODAY or *DIALOG is specified, those volumes whose expiration date has already elapsed are neither output nor modified since they will be released anyway the next time the MAREN administrator carries out a release run.

– Archive entries are not generated for temporary tape files or for volumes which are assigned to a different user ID in the MAREN catalog to that in TSOSCAT.

*TYPE-OF-FILES = *ANY*

– This function merely logs any discrepancies between the entries for tape files in TSOSCAT and in the archive. It does not make any changes to the MAREN catalog. Only those attributes specified explicitly in the ATTRIBUTES operand are compared.

– The relevant archive entry is read for each volume contained in the TSOSCAT entries for tape files if that volume has actually been written to. If the volume does not exist in the MAREN catalog or if it is entered as a free volume, a line is output which contains the file name from TSOSCAT followed by the tape VSN and the note "NOT EXISTING" or "NOT RESERVED". In this event, the individual entries are not compared.

– If the volume contains the attribute USER-ACCESS = *FOREIGN-READ-ONLY in the archive entry (the volume can be accessed in read mode only from a foreign user ID), comparison of the user access attribute is suppressed since there is no corresponding value in the TSOSCAT entry.

– No comparisons are carried out for temporary tape files.

Examples

Example 1

```
//check-tsoscat
 THE FOLLOWING DIFFERENCES EXIST BETWEEN MAREN CATALOG AND TSOSCAT:
FILENAME IN TSOSCAT                                          VSN /FSEQ  IN MARENCAT
--------------------------------------------------------------------------------
:2OSG:$USER1.TAPE.FILE.2                                     M5637K/0001
FILENAME IN TSOSCAT :   TAPE.FILE.2
FILENAME IN MAREN   :   TAPE.FILE.2(1)
--------------------------------------------------------------------------------
:2OSG:$USER1.TAPE.FILE.2(3)                                  M5637K/0003
FILENAME IN TSOSCAT :   TAPE.FILE.2(3)
FILENAME IN MAREN   :   TAPE.FILE.2(4)
--------------------------------------------------------------------------------
:DATA:$MAREN005.MRTP0007.001.TAPE.FILE-0                     TLS017/0001 NOT RESERVED
--------------------------------------------------------------------------------
:DATA:$MAREN005.MRTP0007.001.TAPE.FILE-1                     TLS018/0001 NOT RESERVED
--------------------------------------------------------------------------------
%  MARM170 STATEMENT '//CHECK-TSOSCAT' PROCESSED
```

All discrepancies between the file catalog and the MAREN catalog are output to SYSOUT.

Example 2

```
//check-tsoscat type-of-files=*fgg(free-date=*unch)
THE FOLLOWING MAREN CATALOG ENTRIES HAVE NO CORRESPONDING ENTRIES IN TSOSCAT:
--------------------------------------------------------------------------------
VOLUME  USER-ID   FILE-NAME                                 CR-DATE   FREE-DATE
--------------------------------------------------------------------------------
SLED02 TSOS     MAREN.SAMPLE(*0001)                         2004-09-30 2005-09-29
% MARM170 STATEMENT '//CHECK-TSOSCAT' PROCESSED
```

A check is carried out to establish whether file generations which are no longer present in the file catalog still exist in the MAREN catalog for file generation groups which are contained in the file catalog. The names of the older file generation groups are output only to SYSOUT (FREE-DATE=*UNCHANGED).

CLOSE-MAREN-FILES
Close and lock MAREN catalog

Privilege   ADA, DA, administrator without domains

The CLOSE-MAREN-FILES statement closes all the files of the MAREN catalog which
have been opened by the MARENCP control program. In addition, it temporarily blocks all
access to the MAREN catalog via MARENCP. The administrator uses the HOST-NAME
operand to specify whether the catalog lock is to apply for his/her own host, for a particular
host, or for all hosts in a MAREN network.

Format

CLOSE-**MAR**EN-**FI**LES	Alias: **CL** / **CLMF**

HOST-NAME = ***OWN** / ***ALL** / <alphanum-name 1..8> / ***ALL-FROM-DOMAIN**(...)

   *ALL-FROM-DOMAIN(...)
     | **DOMAIN** = ***STD-DOMAIN** / ***OWN** / <alphanum-name 1..8>

Operands

HOST-NAME =
Specifies the hosts for which the files of the MAREN catalog are to be closed.

HOST-NAME = *OWN
The files of the MAREN catalog are only closed for the local host.
If the ADA has used the MODIFY-ADMINISTRATION-SCOPE DOMAIN=... statement to
become the DA of a domain, HOST=*OWN addresses the host which was determined by
the HOST operand in the MODIFY-ADMINISTRATION-SCOPE statement.

HOST-NAME = *ALL
When domains are used, the files of the MAREN catalog are closed for all hosts in a DA's
own domain; for the ADA, the files of the MAREN catalog are closed for all hosts.

HOST-NAME = <alphanum-name 1..8>
BCAM name of a host.
When domains are used and the DA enters a host name, this host must belong to the DA's
own domain.

HOST-NAME = *ALL-FROM-DOMAIN (...)
The files of the MAREN catalog are closed for hosts of particular domains. This operand may only be used by the ADA.

DOMAIN =
Selects the domain.

DOMAIN = *STD-DOMAIN
The files of the MAREN catalog are closed for the hosts in the standard domain.

DOMAIN = *OWN
The files of the MAREN catalog are closed for the hosts in the local domain. The own domain is the domain of the host on which the ADA is currently working.

DOMAIN = <alphanum-name 1..8>
The files of the MAREN catalog are closed for the hosts in the specified domain.

Notes

– The volume catalog and the logging file (if there is one) are closed.

– If the MARENADM program opened the catalog directly, the open files are likewise closed. When carrying out repair work on the MAREN catalog, all other MARENADM applications which have opened the catalog directly must be terminated or the CLOSE-MAREN-FILES statement must be issued.

– After the CLOSE-MAREN-FILES statement is executed, only the following MARENADM statements can be executed via the control task:

```
OPEN-MAREN-FILES
SHOW-MAREN-STATUS
STOP-CONTROL-PROGRAM
```

All other MARENADM access attempts via the control task, all MAREN access, and all implicit access to the MAREN catalog via the MAREN subsystem are rejected.

– The administrator uses the CLOSE-MAREN-FILES statement to prevent access to the MAREN catalog from the local host and from other hosts in the MAREN network. When carrying out repair work on the MAREN catalog, the administrator must issue the CLOSE-MAREN-FILES statement for all hosts in the MAREN network.

– The catalog lock is lifted by means of the OPEN-MAREN-FILES statement or by reloading the BS2000 system. However, it cannot be lifted by reloading the MARENCP control program or the MAREN subsystem.

Example

```
//close-maren-files host-name=*all
%  MARM118 ALL FILES OF MAREN CATALOG CLOSED
```

When performing repair work, the administrator closes the files of the MAREN catalog which were opened by MARENCP on all hosts. The MAREN catalog is temporarily locked.

COPY-VOLUME-CATALOG
Create copy of current catalog

Privilege   ADA, administrator without domains

The COPY-VOLUME-CATALOG statement allows the administrator to create a copy of the current volume catalog without the aid of utilities and without having to close the MAREN catalog (CLOSE-MAREN-FILES). By default, the copy is created in the same catalog format.

A copy of the catalog which can be generated with TO-CATALOG-VERSION = *CURRENT can also be used by MAREN V9.0B. This only applies if no domains are being used.

The copy of the volume catalog can be incorporated in computer center backups, and is therefore available for any restore operations that prove necessary (see notes on page 114).

Format

COPY-VOLUME-**CAT**ALOG   Alias: **CPVC**
TO-FILE = ***MARENCVC** / <filename 1..54>   ,**TO-CAT**ALOG-**VERS**ION = ***CURRENT** / ***V81**

Operands

TO-FILE =
File name of the copy of the volume catalog.

TO-FILE = *MARENCVC
The file name and any special file attributes of the backup copy have already been specified using the command ADD-FILE-LINK LINK-NAME = MARENCVC. If the backup copy is to be created in V8.1 format (operand TO-CATALOG-VERSION= *V81), the operand BLOCK-CONTROL-INFO=*WITHIN-DATA-BLOCK must be specified in the ADD-FILE-LINK command.

TO-FILE = <filename 1..54>
File name of the copy of the volume catalog.

TO-CATALOG-VERSION =
Format of the copy of the volume catalog.

TO-CATALOG-VERSION = <u>*CURRENT</u>
The copy of the volume catalog is created in the format of the currently catalog, i.e. the catalog expanded by MAREN V11.0.

TO-CATALOG-VERSION = *V81
The copy of the volume catalog is created in the V8.1 format of the current catalog.

Notes

– In the interests of good performance, this statement should only be issued at the RFA central processor with direct access to the MAREN catalog.

– If the file specified in the TO-FILE operand does not exist, it is created on public volumes with the attributes BUFFER-LENGTH=STD(SIZE=1) and SPACE= RELATIVE(180,180). If it does exist, it is overwritten without prior warning, provided the file attributes allow this.

– If the output file is to possess special attributes, the ADD-FILE-LINK command must first be issued with the link name MARENCVC. The file attributes specified when this command is issued are taken into consideration when the output file is created. When creating the output file with the TO-CATALOG-VERSION=*CURRENT/*V81 operand, the BLOCK-CONTROL-INFO=*WITHIN-DATA-BLOCK operand must be specified.

– Since the MAREN catalog is usually open when the computer center backup is taken and is therefore not included in the backup, it is advisable to make a copy of the volume catalog before starting the backup run.
If the volume catalog were to be destroyed the next day because of a disk error, it can be restored using the copy created with COPY-VOLUME-CATALOG and the logging files of the MAREN catalog (see description of the UPDATE-MAREN-CATALOG statement on).

Examples

Example 1

```
//copy-volume-cat to-file=backup.marencat
%  MARM119 FILE ':TQA2:$TSOS.BACKUP.MARENCAT' WITH 216 RECORDS CREATED
%  MARM170 STATEMENT '//COPY-VOLUME-CATALOG' PROCESSED
```

The current volume catalog is copied to the file backup.marencat (and the catalog format remains unchanged). The catalog contains FREE-POOL records and 11 secondary indexes.

Example 2

```
//copy-volume-catalog to-file=new.format.marencat,to-catalog-version=*v81
% MARM119 FILE ':ABC2:$TSOS.NEW.FORMAT.MARENCAT' WITH 216 RECORDS CREATED
% MARM170 STATEMENT '//COPY-VOLUME-CATALOG' PROCESSED
```

The current volume catalog is copied to the file NEW.FORMAT.MARENCAT in V8.1 format without FREE-POOL records and with only 7 secondary indexes.

DELETE-VOLUME-ENTRY
Delete archive entries from MAREN catalog

Privilege   ADA, administrator without domains

The DELETE-VOLUME-ENTRY statement deletes archive entries from the MAREN catalog.

It does so without carrying out any kind of check and should therefore be used with caution. If there are still volumes in an archive system, this may cause discrepancies between the archive record and the MAREN catalog.

Format

DELETE-**VOL**UME-**ENTRY**   Alias: **DL** / **DLVE**
VOLUME = <vsn> / <c-string 1..6> / <x-string 1..12>   ,**FI**LE-**SEQ**UENCE = **<u>*ALL</u>** / <integer 1..9999>

Operands

VOLUME = <vsn> / c-string 1..6> / <x-string 1..12>
VSN of the volume whose archive entry is to be deleted from the MAREN catalog.

FILE-SEQUENCE =
File sequence number of the VSN to be deleted.

FILE-SEQUENCE = <u>*ALL</u>
Specifies that all existing file sequence numbers of the VSN in question are to be deleted. If a migrated volume with the same VSN exists, its archive entry is likewise deleted.

FILE-SEQUENCE = <integer 1..9999>
The archive entry with the file sequence number specified here is deleted.

Examples

Example 1

```
//del-vol-ent m5636k
%  MARM106 MAREN CATALOG ENTRY 'M5636K'/'0001' ERASED
%  MARM170 STATEMENT '//DELETE-VOLUME-ENTRY' PROCESSED
```

The archive entry of volume m5636k is deleted from the MAREN catalog with all of its existing file sequence numbers.

Example 2

```
//del-vol-entry m5637k,f-seq=4
%  MARM106 MAREN CATALOG ENTRY 'M5637K'/'0004' ERASED
%  MARM170 STATEMENT '//DELETE-VOLUME-ENTRY' PROCESSED
```

Only the archive entry of volume m5637k with the file sequence number 4 is deleted.

EDIT
Edit archive entry

Privilege   ADA, DA, administrator without domains

The EDIT statement activates guided dialog for the MODIFY-VOLUME-ATTRIBUTES statement and sets the operands to the current values from an archive entry.

After the EDIT statement has been entered in guided dialog, the system branches to the menu for the MODIFY-VOLUME-ATTRIBUTES statements. The default values for the individual statement operands in this menu are taken from the current values in the archive entry for the specified volume, and replace the default value *UNCHANGED which would normally be used in this statement. This allows the user to modify the archive entry taking into consideration the current values. If the user does not wish the next statement executed to be MODIFY-VOLUME-ATTRIBUTES, he/she should press the K1 key or enter *CANCEL in the NEXT field and select any other program statement.

– The EDIT statement is only permitted in interactive mode. It must not be used in command files (procedure and ENTER files).

– If the EDIT statement is used in unguided dialog, the user is prompted for the next statement by "//" or "%STMT". Only if the user switches temporarily to guided dialog by entering "?" is the menu for the MODIFY-VOLUME-ATTRIBUTES statement output containing the current values from the archive entry for the volume.

Format

EDIT
VOLUME = \<vsn\> ,**FILE-SEQ**UENCE = <u>1</u> / \<integer 1..9999\>

Operands

VOLUME = \<vsn\>
VSN of the volume whose archive entry is to be modified.

FILE-SEQUENCE = <u>1</u> / \<integer 1..9999\>
File sequence number of the VSN to be modified.

Example

```
//edit c0725k
//?
```

```
PROGRAM  : MARENADM                     STATEMENT: MODIFY-VOLUME-ATTRIBUTES


--------------------------------------------------------------------------------
VOLUME               = C0725K(
SELECT               = *RESERVED(
ACCOUNT              = M0815ACC
PROTECTION           = *PARAMETERS(
LOCATION             = *PARAMETERS(
REMARK               = 'SF-AUSWERTUNG V11       '
REMARK-2             = *NONE
REMARK-3             = *NONE
USER-FIELD           = *NONE
ADMINISTRATOR-FIELD  = '  152856'
ADMINISTR-FIELD-2    = *NONE
EXPORT-ADDRESS       = *NONE
EXPORT-DATE          = *NONE


--------------------------------------------------------------------------------
NEXT = +
KEYS : F1=?   F3=*EXIT   F5=*REFRESH   F6=*EXIT-ALL   F8=+   F9=REST-SDF-IN
       F11=*EXECUTE   F12=*CANCEL

MESSAGE:  CMD0175 OTHER OPERATIONS DESIRED? PRESS *EXIT KEY
```

The archive entry for the volume c0725k is read and the current values for this entry are used as the default values for the operands of a subsequent MODIFY-VOLUME-ATTRIBUTES statement.

ENTER-MAREN-PROCEDURE
Start command sequence (procedure file) as batch job with MAREN rights

Privilege   ADA, DA, administrator without domains

The ENTER-MAREN-PROCEDURE statement starts a procedure as a batch job and propagates the current MAREN authorizations of the calling task to the batch job. It is consequently not necessary to specify the administrator password or to provide authentication as the All-Domain Administrator in the procedure file or when the procedure is called:

MAREN initially stores the authorizations for the batch job in central MAREN tables and then, via the CMD macro interface, calls an ENTER-PROCEDURE command with the operands specified in the statement. The stored authorizations are taken into account when the started batch job is executed.

Format

(part 1 of 2)

ENTER-MAREN-PROCEDURE	Alias: **ENMP**

FROM-FILE = \<filename 1..54 without-gen\> / ***LIB**RARY-**ELEM**ENT(...)

   *LIBRARY-**ELEM**ENT(...)
         LIBRARY = \<filename 1..51 without-gen\>

         ,**ELEM**ENT = \<composed-name 1..38\>(...)

            \<composed-name 1..38\>(...)
                VERSION = ***HIGH**EST-**EXIST**ING / \<composed-name 1..24\>

         ,**TYPE** = ***STD** / ***BY-LATEST-MODIFICATION** / \<alphanum-name 1..8\>

,**PROC**EDURE-**PAR**AMETERS = ***NO** / \<text 0..1800 with-low\>

,**PROC**EDURE-**PASS**WORD = ***NONE** / \<x-string 1..8\> / \<c-string 1..4\> /
                       \<integer -2147483648..2147483647\> / ***SECRET**

,**CRYPTO-PASS**WORD = ***NONE** / \<c-string 1..8\> / \<x-string 1..16\> / ***SECRET**

,**JOB-CLASS** = ***STD** / \<name 1..8\>

,**JOB-NAME** = ***NO** / \<name 1..8\>

,**MONJV** = ***NONE** / \<filename 1..54 without-gen-vers\>

,**JV-PASS**WORD = ***NONE** / \<c-string 1..4\> / \<x-string 1..8\> / ***SECRET** / \<integer -2147483648..2147483647\>

,**JOB-PRIO**RITY = ***STD** / \<integer 1..9\>

Continued ➡

(part 2 of 2)

```
,SCHEDULING-TIME = *STD / *PARAMETERS(...)

    *PARAMETERS(...)

        START = *STD / *SOON / *IMMEDIATELY / *WITHIN(...) / *AT(...) / *EARLIEST(...) / *LATEST(...)
            *WITHIN(...)
                HOURS = 0 / <integer 0..23 hours>
                ,MINUTES = 0 / <integer 0..59 minutes>

            *AT(...)
                DATE = *TODAY / <date>
                ,TIME = <time>

            *EARLIEST(...)
                DATE = *TODAY / <date>
                ,TIME = <time>

            *LATEST(...)
                DATE = *TODAY / <date>
                ,TIME = <time>

,RESOURCES = *PARAMETERS (...)

    *PARAMETERS(...)

        RUN-PRIORITY = *STD / <integer 30..255>

        ,CPU-LIMIT = *STD / *NO / <integer 1..32767 seconds>

        ,SYSLST-LIMIT = *STD / *NO / <integer 0..999999>

,LOGGING = *STD / *YES / *NO

,LISTING = *NO / *YES

,JOB-PARAMETER = *NO / <c-string 1..127>

,SYSTEM-OUTPUT = *STD / *PRINT / *DELETE

,ASSIGN-SYSTEM-FILES = *STD / *PARAMETERS(...)

    *PARAMETERS(...)

        SYSLST = *STD / *PRIMARY / *DUMMY / <filename 1..54>

        ,SYSOUT = *STD / *PRIMARY / *DUMMY / <filename 1..54>

,PROTECTION = *NONE / *CANCEL
```

Operands

The statement's operands correspond to the operands of the same name in the ENTER-PROCEDURE command in BS2000/OSD V6.0 and higher. For a description of the operands, please refer to ENTER-PROCEDURE in the "Commands" manual [5].

The default settings of the command apply for the operands not contained in the statement. MAREN sets the value *YES instead of the default value only for FLUSH-AFTER-SHUTDOWN.

EXPORT-VOLUME
Define volumes as exported from MAREN catalog

Privilege   ADA, DA, administrator without domains

The EXPORT-VOLUME statement corresponds to the statement of the same name in the MAREN user program. It defines computer center volumes as exported.

For an encrypted volume, a file is also created which contains the volume's encryption data. This file must be transferred to the foreign CC in addition to the volume (separately from the volume if possible). For details, see the notes on .

In the case of foreign volumes the entry is removed from the MAREN catalog, and in the case of encrypted volumes the associated encryption data in the key box is also deleted.

DAs can only execute the statement in their own domain. The DOMAIN operand is thus meaningless for them.

Format

(part 1 of 2)

EXPORT-**VOL**UME   Alias: **EXV**

VOLUME = ***BY-FILE**(...) / ***BY-DIR**ECTORY(...) / ***INT**ERVAL(...) /
              list-poss(10): <vsn> / ***BY-VOL**UME-**GR**OUP (...)

   *BY-FILE(...)
   │   **FI**LE-**NAME** = <filename 1..41 without-cat-user>
   │
   │   ,**VERSION** = ***LATEST** / <integer -9999..0> / ***ALL**
   │
   │   ,**USER-ID**ENTIFICATION = ***ALL** / <name 1..8>
   │
   │   ,**TYPE-OF-VOL**UMES = ***VALID** (...) / ***OBSOLETE** / ***ANY**
   │
   │   ***VALID**(...)
   │   │   **CLOSE-CHECK** = ***Y**ES / ***NO**
   │
   *BY-DIRECTORY(...)
   │   **DIR**ECTORY-**NAME** = <filename 1..54 without-gen-vers>
   │
   │   ,**SAVE-FILE-ID** = ***LATEST** / <integer -32767..0> / <composed-name 15..15>

(part 2 of 2)

```
*INTERVAL(...)
     |   FROM = <vsn>
     |   ,TO = <vsn>
     |   ,FROM-FSEQ = 1 / <integer 1..9999>
*BY-VOLUME-GROUP(...)
     |   VOLUME-GROUP = <text 1..32 without-sep>
,DOMAIN = *ANY / *OWN / *STD-DOMAIN / <alphanum-name 1..8>

,EXPORT-ADDRESS = <c-string 1..50> / *BY-CATALOG

,LAYOUT = *STD / <filename 1..54 without-gen-vers>
```

Operands

VOLUME =
VSNs of the volumes to be exported.

VOLUME = *BY-FILE(...)
All volumes belonging to a file or a tape set are to be exported.

FILE-NAME = <filename 1..41 without-cat-user>
File name to which a tape set is to be exported.

VERSION =
This operand can be used to select a specific version (or status) of the file specified.

VERSION = *LATEST
Selects the latest version of the file (i.e. the last version created).

VERSION = <integer -9999..0>
Specifying 0 is equivalent to specifying *LATEST, specifying -1 indicates the penultimate file status, etc.

VERSION = *ALL
Selects all the volumes which exist for the specified file name.

USER-IDENTIFICATION =
This operand selects the user ID to which tapes are assigned (archive entry field USER-ID).

USER-IDENTIFICATION = *ALL
The IDs are not evaluated during selection.

USER-IDENTIFICATION = <name 1..8>
Only those VSNs which are assigned to the specified ID are selected.

TYPE-OF-VOLUMES =
This operand selects the volume sequences (archive entry field VOLUME-SEQUENCE) within a tape set. These numbers are usually unique, but some numbers may be duplicated following a restart.

TYPE-OF-VOLUMES = *VALID(...)
If a volume sequence occurs more than once in a tape set, the one created most recently is selected.

> **CLOSE-CHECK =**
> This operand allows you to select whether the archive entry field CLOSE-INDICATOR should be evaluated.
>
> **CLOSE-CHECK = *YES**
> If the CLOSE-INDICATOR field is not set to CLOSED for one of the tapes in the selected tape set, the statement is rejected.
>
> **CLOSE-CHECK = *NO**
> The CLOSE-INDICATOR field is not evaluated.

TYPE-OF-VOLUMES = *OBSOLETE
If the same volume sequence occurs more than once in a tape set, all of them are selected except for the one created most recently.

TYPE-OF-VOLUMES = *ANY
The volume sequences of a tape set are not checked to establish if they occur more than once.

VOLUME = *BY-DIRECTORY(...)
All volumes listed in the specified ARCHIVE directory (as saved files) are exported.

> **DIRECTORY-NAME = <filename 1..54 without-gen-vers>**
> Name of the ARCHIVE directory. Only reserved volumes that are allocated to the POOL of the specified ARCHIVE directory are selected.
> If this directory is located under a remote user ID, both the user ID and the catalog ID must be entered. The user's own ID and standard catalog ID can be omitted.
>
> **SAVE-FILE-ID =**
> The tapes that are to be exported are selected using the save file of the ARCHIVE directory specified above.
>
> **SAVE-FILE-ID = *LATEST**
> All volumes listed in the latest, i.e. in the most recent save file are selected.

SAVE-FILE-ID = <integer -32767..0>
All volumes listed in the nth save file are selected (the older the save file, the larger the number n). 0 equals *LATEST. Example: if -5 is specified, the volumes are selected from the last save file but five.

SAVE-FILE-ID = <composed-name 15..15>
All volumes in a save file with the specified SAVE-FILE-ID are selected. The SAVE-FILE-ID has the following format: S.yymmdd.hhmmss.

VOLUME = *INTERVAL(...)
All volumes whose VSN falls within the specified range are exported.

FROM = <vsn>
VSN. All volumes whose VSN is greater than or equal to the specified VSN are exported.

TO = <vsn>
VSN. All volumes whose VSN is less than or equal to the specified VSN are exported.

FROM-FSEQ = 1 / <integer 1..9999>
File sequence number of the FROM operand; specifies the precise file sequence number at which processing is to begin. This operand is relevant only if the statement is issued via the program interface.

VOLUME = list-poss(10): <vsn>
VSNs of the volumes which are to be exported.

VOLUME = *BY-VOLUME-GROUP(...)
All volumes of the specified volume group are exported.

VOLUME-GROUP = <text 1..32 without-sep>
Specifies the volume group to which a volume must belong for it to be exported. "*" can be entered as the last character. In this case all volume groups which begin with the specified string are selected.

DOMAIN =
The volumes of the selected domain are exported.

DOMAIN = *ANY
The volumes of all domains are exported.

DOMAIN = *OWN
The volumes of the user's own domain are exported.
The user's own domain is the domain of the host on which the ADA is currently working.

DOMAIN = *STD-DOMAIN
The volumes of the standard domain are exported.

DOMAIN = <alphanum-name 1..8>
The volumes of the specified domain are exported.

VOLUME = list-poss(10): <vsn>
VSNs of the volumes to be exported.

EXPORT-ADDRESS = <c-string 1..50> / *BY-CATALOG
Mailing address. Specifies the destination to which the volume is to be sent if mailed. If the volume is to be picked up personally, any text to this effect can be specified, e.g. "Mailbox G7" or "will be picked up by UPS".

EXPORT-ADDRESS = *BY-CATALOG
The mailing address defined in the volume's archive entry is to be used in the export operation.

LAYOUT =
Specifies the layout of the export receipt.

LAYOUT = *STD
The export receipt is generated using the standard layout, provided the MAREN administrator did not set the EXPORT-RECEIPT parameter to *NO in the statement MODIFY-MAREN-PARAMETERS (see).

LAYOUT = <filename 1..54 without-gen-vers>
Layout file. The export receipt is created according to the definitions contained in the layout file. The file has to be created as described in . This, too, is only possible if the MAREN administrator did not set the EXPORT-RECEIPT parameter to *NO in the statement MODIFY-MAREN-PARAMETERS.

Notes

– The MAREN administrator can define whether an export receipt is to be created for every export operation. This receipt is first written to a file and then printed (if desired). The file is saved as MAREN.EXPORT-RECEIPT.vsn under the user ID of the calling task.
  If the file already exists, it is extended; if not, it is created. If immediate printing is specified in the MAREN system (by means of the statement MODIFY-MAREN-PARAMETERS EXPORT-RECEIPT=*PRINTER(...)), the file is automatically deleted after it has been printed. If a volume in a list cannot be exported, the EXPORT statement is aborted.

– If the MAREN administrator has specified that export receipts are to be generated but not printed automatically, the computer center must decide what users are to do with the MAREN.EXPORT-RECEIPT.vsn file under their IDs.

– Since individual computer centers can customize the layout of the export receipt according to their requirements, no example of such a receipt is given here.

– A computer center volume is identified as exported by entering the export date in the archive entry field EXPORT-DATE and by specifying CENTRAL in the TEMPORARY-LOCATION field.

– When a foreign volume is returned, the archive entry is deleted from the MAREN catalog. All existing multifile archive entries with an FSEQ > 1 are likewise deleted. In the case of an encrypted volume the associated encryption data in the key box is also deleted.

– The specification for the EXPORT-ADDRESS operand is entered in the appropriate archive entry field.

– In the case of a foreign volume, the archive entry is deleted but the mailing address specification is still not superfluous, since it is retained in the logging file and may possibly be printed output in the export receipt.

– When exporting a foreign tape, any other tape with the same VSN which has been temporarily locked is reactivated. For more details, please refer to the description of the ADD-PRIVATE-VOLUME statement.

– The administrator can select the output medium for export receipts using the MAREN parameter EXPORT-RECEIPT (see section "Sending export receipts to a SPOOL printer" on page 61).

– When this statement is called to export an encrypted home volume, a compiled S procedure with the volume's encryption data is created implicitly. At the same time the procedure is assigned the following standard file name: S.PRC.MAREN.ENCRYPTION.DATA.vsn.

> **i** The chargeable subsystem SDF-P is required to create the compiled S procedure.

The MAREN administrator of the foreign CC must call this procedure after the //ADD-PRIVATE-VOLUME statement has been executed and before the encrypted tape contents are read in order to enter the volume's encryption data into the key box of his/her system.

– With regard to data privacy and data protection, the following must be observed for encrypted volumes when a volume and encryption data are transferred:

As separate encryption data can be generated for each volume, the tape contents can be encrypted only using the associated procedure file. To prevent the volume plus the encryption data from falling into the wrong hands, the two should be sent separately. The following procedure is recommended:

► Send the volume to the partner.

► Wait for confirmation of receipt.

► Send the encryption data (procedure file) to the partner (e.g. by means of File Transfer or by email).

– In the following cases, the statement aborts with an error message and the spin-off mechanism is triggered:

– The volume is not contained in the MAREN catalog.

– The volume is currently being processed.

– The volume has already been exported.
Exception: The volume is already at the specified address.
In this case, a message to this effect is displayed and processing continues as normal.

– The parameter EXPORT-ADDRESS=*BY-CATALOG has been specified, but the archive entry contains no mailing address.

– All the volumes in a tape set are to be exported and one of the selected archive entries contains the attribute FILE-SEQUENCE > 1 (i.e. the file specified is not the first on the tape in question).

– One of the volumes belonging to a tape set has been exported.

– The volume is assigned to a storage location with the operating mode ROBAR-2, in which case it cannot be moved or exported.

– The volumes are selected using a save file from HSMS, and at least one tape has been displaced, is being processed or has been locked by the operating system.

– The file specified in the LAYOUT parameter does not exist.

Examples

Example 1

```
//export-vol vol=id0101,exp-addr='zn hamburg, attn. mr. meier'
%  MARM134 GET VOLUME 'ID0101' FROM CENTRAL ARCHIVE
%  MARM170 STATEMENT '//EXPORT-VOLUME' PROCESSED
```

The volume id0101 is exported.

Example 2

```
//export-vol vol=*by-file(f-name=tape.out),exp-addr=*by-cat
%  MARM134 GET VOLUME 'ID0106' FROM CENTRAL ARCHIVE
%  MARM170 STATEMENT '//EXPORT-VOLUME' PROCESSED
```

All tapes used when the tape file tape.out was last created are exported. The mailing address contained in the archive entries of these volumes is to be used.

FREE-VOLUMES
Release volumes whose expiration date has elapsed

Privilege   ADA, DA, administrator without domains

The FREE-VOLUMES statement is used to release reserved volumes whose expiration date has elapsed. Exceptions to this are exported volumes and those volumes undergoing processing at the time.

DAs can only execute the statement in their own domain. The DOMAIN operand is thus meaningless for them.

Format

(part 1 of 2)

```
FREE-VOLUMES                                                                   Alias: FRV

 VOLUME = *ALL / *INTERVAL(...) / *BY-FILE(...) / list-poss(10):<vsn> / *BY-VOLUME-GROUP(...)

    *INTERVAL(...)
          FROM = *FIRST / <vsn>

          ,TO = *LAST / <vsn>

          ,FROM-FSEQ = 1 / <integer 1..9999>

    *BY-FILE(...)
          FILE-NAME = <filename 1..41 without-cat-user>

          ,VERSION = *ALL / *LATEST / <integer -9999..0>

          ,USER-IDENTIFICATION = *ALL / <name 1..8>

          ,TYPE-OF-VOLUMES = *ANY / *OBSOLETE

    *BY-VOLUME-GROUP(...)
          VOLUME-GROUP = <text 1..32 without-sep>

,FREE-LOCATION = *ANY / <alphanum-name 1..8>

,DOMAIN = *ANY / *OWN / *STD-DOMAIN / <alphanum-name 1..8>
```

Continued ➡

(part 2 of 2)

```
,INIT-FILE = MARENADM.INIT-FILE / <filename 1..54 without-gen-vers>(...) / *DUMMY(...) / *NONE

    <filename 1..54 without-gen-vers>(...)
          SELECT = *BY-INIT-FLAG / *ALL

          ,INIT-LOCATION =  *NONE / <alphanum-name 1..8>

          ,USER-IDENTIFICATION = SYSMAREN / <name 1..8>

          ,ACCOUNT =  *NONE / <alphanum-name 1..8>

    *DUMMY(...)
          SELECT = *BY-INIT-FLAG / *ALL

          ,INIT-LOCATION =  *NONE / <alphanum-name 1..8>

          ,USER-IDENTIFICATION = SYSMAREN / <name 1..8>

          ,ACCOUNT =  *NONE / <alphanum-name 1..8>

,CHECK-DIRECTORY = *YES / *NO

,OVERFLOW-CONTROL = *BY-PROGRAM / *BY-SYSTEM
```

Operands

VOLUME =
Volumes from the MAREN catalog which are to be examined for elapsed expiration dates
and then released if required.

VOLUME = *ALL
All volumes from the MAREN catalog are to be examined for elapsed expiration dates and
released if required.

VOLUME = *INTERVAL(...)
All volumes whose VSN lies within the range specified below are processed.

   FROM = *FIRST / <vsn>
   VSN. All volumes whose VSN is greater than or equal to the specified VSN are
   processed.

   FROM = *FIRST
   All volumes are processed, starting with the lowest available VSN.

   TO = *LAST / <vsn>
   VSN. All volumes whose VSN is less than or equal to the specified VSN are processed.

   TO = *LAST
   All volumes are processed up to the highest existing VSN.

FROM-FSEQ = 1 / <integer 1..9999>
File sequence number of the FROM operand. Specifies the precise file sequence number at which processing is to begin. This operand is relevant only if the statement is issued via the program interface.

VOLUME = *BY-FILE(...)
All volumes of a file or tape set are to be released.

FILE-NAME = <filename 1..41 without-cat-user>
Specifies the file name for which a tape set is to be released.

VERSION =
This operand can be used to select a specific version (or status) of the specified file for which the tapes are to be released.

VERSION = *ALL
All existing versions of the specified file are released.

VERSION = *LATEST
Selects the latest version of the file (i.e. the last one created).

VERSION = <integer -9999..0>
Specifying 0 is equivalent to specifying *LATEST, specifying -1 indicates the penultimate file status, etc.

USER-IDENTIFICATION =
This operand selects the user ID to which the tapes are assigned (archive entry field USER-ID).

USER-IDENTIFICATION = *ALL
The IDs are not evaluated during selection.

USER-IDENTIFICATION = <name 1..8>
Only those VSNs assigned to the specified user ID are selected.

TYPE-OF-VOLUMES =
This operand selects the volume sequences (archive entry field VOLUME-SEQUENCE) within a tape set. These numbers are usually unique, but some numbers may be duplicated after a restart.

TYPE-OF-VOLUMES = *ANY
The volume sequences for a tape set are not checked to establish whether they occur more than once.

TYPE-OF-VOLUMES = *OBSOLETE
If the same volume sequence occurs more than once in a tape set, all of them are selected except for the one created most recently.

VOLUME = list-poss(10):<vsn>
VSN. Up to 10 VSNs may be specified.

VOLUME = *BY-VOLUME-GROUP(...)
All volumes of the specified volume group are released.

VOLUME-GROUP = <text 1..32 without-sep>
Specifies the volume group to which a volume must belong for it to be released. "*" can be entered as the last character. In this case all volume groups which begin with the specified string are selected.

FREE-LOCATION =
Selects according to the location to which the volumes are to be moved (cf. the operand of the same name in the statements MODIFY-VOLUME-ATTRIBUTES on and ADD-RESERVED-VOLUMES on).
The explicit specification of FREE-LOCATION may not be combined with the VOLUME = *BY-FILE operand.

FREE-LOCATION = *ANY
The volumes of all locations are moved.

FREE-LOCATION = <alphanum-name 1..8>
The volumes of the specified location are selected.

DOMAIN =
The volumes are selected according to domains.

DOMAIN = *ANY
The volumes of all domains are selected.

DOMAIN = *OWN
The volumes of the user's own domain are selected.
The user's own domain is the domain of the host on which the ADA is currently working or the domain in which he/she has taken over the DA role.

DOMAIN = *STD-DOMAIN
The volumes of the standard domain are selected.

DOMAIN = <alphanum-name 1..8>
The volumes of the specified domain are selected.

INIT-FILE =
Specifies the file to which archive entries belonging to the volume to be initialized are to be written (output file). This file is a SAM file which is only created of at least one volume has to be initialized.

INIT-FILE = MARENADM.INIT-FILE
Default file name which is also used in connection with the INITIALIZE-VOLUMES statement.

INIT-FILE = <filename 1..54 without-gen-vers>(...)
Name of the output file to be generated.

SELECT =
Specifies which of the released volumes is to be initialized.

SELECT = <u>*BY-INIT-FLAG</u>
Only those volumes whose archive entries contain INIT=YES are to be initialized, i.e. only those volumes which were written to while protection characteristics were set. Volumes whose archive entries have the value OPENED for CLOSE-INDICATOR are also initialized (see Notes).

SELECT = *ALL
All released volumes are to be initialized.

INIT-LOCATION =
Location name or symbolic location name specifying where the tapes are to be initialized.

INIT-LOCATION = <u>*NONE</u>
The archive entry field HOME-LOCATION is not modified.

INIT-LOCATION = <alphanum-name 1..8>
This location name is stored in the archive entry field HOME-LOCATION. After initialization and release, the contents of the FREE-LOCATION field are copied to the HOME-LOCATION field.

USER-IDENTIFICATION = <u>SYSMAREN</u> / <name 1..8>
Specifies the user ID to which volumes in the MAREN catalog are to be assigned until initialization and subsequent final release. Unless otherwise specified, the volumes are reassigned to the ID SYSMAREN.

ACCOUNT = <u>*NONE</u> / <alphanum-name 1..8>
Account number of the specified user ID.

INIT-FILE = *DUMMY(...)
No output file is created. The volumes affected are simply assigned to the specified user ID and account number and moved to the desired storage location. If an output file is specified in a subsequent release run, the archive entries of these volumes are likewise output there and are thus available for initialization.

SELECT =
Specifies which of the released volumes is to be initialized.

SELECT = <u>*BY-INIT-FLAG</u>
Only those volumes whose archive entries contain INIT=YES are to be initialized, i.e. only those volumes which were written to while protection characteristics were set. Volumes whose archive entries have the value OPENED for CLOSE-INDICATOR are also initialized (see Notes).

SELECT = *ALL
All released volumes are to be initialized.

INIT-LOCATION =
Location name or symbolic location name specifying where the tapes are to be initialized.

INIT-LOCATION = <u>*NONE</u>
The archive entry field HOME-LOCATION is not modified.

INIT-LOCATION = <alphanum-name 1..8>
This location name is stored in the archive entry field HOME-LOCATION. After initialization and release, the contents of the FREE-LOCATION field are copied to the HOME-LOCATION field.

USER-IDENTIFICATION = <u>SYSMAREN</u> / <name 1..8>
Specifies the user ID to which volumes in the MAREN catalog are to be assigned until initialization and subsequent final release. Unless otherwise specified, the volumes are reassigned to the ID SYSMAREN.

ACCOUNT = <u>*NONE</u> / <alphanum-name 1..8>
Account number of the specified user ID.

INIT-FILE = *NONE
No file is created. Tapes with INIT=YES are likewise released without being initialized. Initialization takes place automatically using MARENUCP. These tapes cannot be reserved using RESERVE-FREE-VOLUMES.

CHECK-DIRECTORY =
Specifies whether or not to check if there is another volume allocated to a ARCHIVE directory before the tape is released.

CHECK-DIRECTORY = *YES
A volume that is still allocated to an ARCHIVE directory is not released.

CHECK-DIRECTORY = *NO
The volume is released regardless of whether or not it is still allocated to an ARCHIVE directory.

OVERFLOW-CONTROL =
Type of screen overflow control in interactive mode.

OVERFLOW-CONTROL = <u>*BY-PROGRAM</u>
Control by the program: after eighteen archive entries have been processed, a message is displayed inquiring whether the current operation is to be continued or aborted.

OVERFLOW-CONTROL = *BY-SYSTEM
Control by the system: screen overflow control is based entirely on the system parameter TCHOFLO or the value set in the MODIFY-TERMINAL-OPTIONS command.

Notes

–   If the INIT-FILE operand is specified, the tapes to be initialized are not released. Instead, the archive entries in question are modified as follows:

USER-ID	=	User ID (USER-IDENTIFICATION operand)
ACCOUNT	=	Account number (ACCOUNT operand)
HOME-LOCATION	=	Initialization storage location (INIT-LOCATION operand)
USER-ACCESS	=	OWNER-ONLY
PASSWORD	=	YES
FILE-NAME	=	Blanks

Subsequent to modification, the entries are written to the specified file. This file should then be used as the input file for a subsequent initialization run using the INITIALIZE-VOLUMES statement.

–   The initialization flag is not given the correct value until a tape file is closed or a volume is swapped. If generation of an output tape is aborted, e.g. due to a hardware fault, you will not be able to tell from the archive entry whether the tape has been written with security attributes. Tapes of this kind have the value OPENED in the CLOSE-INDICATOR field of the archive entry. They should, however, be initialized just in case.

–   During the release procedure, the volume status is reset internally from "reserved" to "free", the contents of the FREE-LOCATION field are copied to the HOME-LOCATION field, and the PASSWORD field is deleted. All other field contents remain unchanged until a new reservation is made. Modifying HOME-LOCATION causes the tapes involved to be moved to the location specified in FREE-LOCATION the next time a clear-up run is performed.

–   Any existing multifile entries with an FSEQ > 1 are deleted.

–   Only magnetic tapes and MTCs are included in a release run where VOLUME=*ALL or *INTERVAL(...). Other volume types can only be released on an individual basis using the statement FREE-VOLUMES VOLUME=vsn, INIT-FILE=*NONE.

–   If a file name is specified in the FILE-NAME operand, the VOLUME operand must be set to the default value *ALL. If one of the selected archive entries contains the attribute FILE-SEQ > 1 with this type of file-name-specific release, processing is aborted and an error message is displayed.

–   For performance reasons, the FREE-VOLUMES statement should only be executed on the MAREN central processor if RFA mode is used.

–   If the aliases for the values *NO, *GLOBAL or *TSOS of the FREE-POOL operand are specified, then these operand values are expanded to their full length for compatibility reasons (e.g. the entry *GL is expanded to *GLOBAL).

–   If a reserved volume is released which was entered in the MAREN catalog with
    DEVICE-TYPE=TAPE-U4E (encrypted LTO-4 volume), MAREN changes the volume
    type to TAPE-U4 because the type TAPE-U4E does not exist for free volumes.

Examples

Example 1

```
//free-vol vol=(id4001,tape01,idx005),init-file=*none
%  MARM137 VOLUME 'ID4001' NOW FREE ( USER ID 'USER1', FILE NAME ' ' )
%  MARM137 VOLUME 'TAPE01' NOW FREE ( USER ID 'USERxy08', FILE NAME ' ' )
%  MARM137 VOLUME 'IDX005' NOW FREE ( USER ID 'USER1', FILE NAME ' ' )
%  MARM122 TOTAL OF 3 VOLUMES RELEASED
%  MARM170 STATEMENT '//FREE-VOLUMES' PROCESSED
```

The volumes with the specified VSNs are released, provided their expiration date has
elapsed. They can now be used for new reservations.

Example 2

```
//free-vol vol=*int(id5000,id6000),init-file=*none
%  MARM137 VOLUME 'ID5001' NOW FREE ( USER ID 'USER1', FILE NAME ' ' )
%  MARM137 VOLUME 'ID5002' NOW FREE ( USER ID 'USER1', FILE NAME ' ' )
%  MARM137 VOLUME 'ID5003' NOW FREE ( USER ID 'USER1', FILE NAME ' ' )
%  MARM137 VOLUME 'ID5004' NOW FREE ( USER ID 'USER1', FILE NAME ' ' )
%  MARM137 VOLUME 'ID5005' NOW FREE ( USER ID 'USER1', FILE NAME ' ' )
%  MARM137 VOLUME 'ID5006' NOW FREE ( USER ID 'USER1', FILE NAME ' ' )
%  MARM137 VOLUME 'ID5007' NOW FREE ( USER ID 'USER1', FILE NAME ' ' )
%  MARM137 VOLUME 'ID5008' NOW FREE ( USER ID 'USER1', FILE NAME ' ' )
%  MARM137 VOLUME 'ID5009' NOW FREE ( USER ID 'USER1', FILE NAME ' ' )
%  MARM137 VOLUME 'ID5010' NOW FREE ( USER ID 'USER1', FILE NAME ' ' )
%  MARM122 TOTAL OF 10 VOLUMES RELEASED
%  MARM170 STATEMENT '//FREE-VOLUMES' PROCESSED
```

All volumes whose VSNs are in the range id5000 to id6000 are released, provided their
expiration date has elapsed.

Example 3

```
%//free-vol vol=*int(tlt001,tlt020),init-file=maren.init(select=*by-init-
flag,init-loc=robtls,user-id=init0001)
hier sind englische Texte drin  !!!
% MARM130 VOLUME 'TLT001' RELEASED FOR INITIALIZATION; USER ID 'SYSMAREN', FILE
 NAME ' ', CURRENT LOCATION 'CENTRAL'
% MARM130 VOLUME 'TLT002' RELEASED FOR INITIALIZATION; USER ID 'SYSMAREN', FILE
 NAME ' ', CURRENT LOCATION 'CENTRAL'
:
:
% MARM130 VOLUME 'TLT010' RELEASED FOR INITIALIZATION; USER ID 'SYSMAREN', FILE
 NAME ' ', CURRENT LOCATION 'CENTRAL'
% MARM137 VOLUME 'TLT011' NOW FREE ( USER ID 'INIT0001', FILE NAME ' ' )
% MARM137 VOLUME 'TLT012' NOW FREE ( USER ID 'INIT0001', FILE NAME ' ' )
:
:
% MARM137 VOLUME 'TLT016' NOW FREE ( USER ID 'INIT0001', FILE NAME ' ' )
% MARM122 TOTAL OF 6 VOLUMES RELEASED
% MARM119 FILE 'MAREN.INIT' WITH 10 RECORDS CREATED
% MARM170 STATEMENT '//FREE-VOLUMES' PROCESSED


//show-vol-attr vol=tlt001,information=*normal
VOLUME   = TLT001      FILE-SEQ     = 0001       DEV-TYPE   = TAPE-C5

USER-ID  = INIT0001    HOME-LOCATION = ROBTLS       RESERV-DATE =
ACCOUNT  =             FREE-LOCATION = CENTRAL       FREE-DATE   = 2006-07-16
USER-ACC = OWNER-ONLY  TEMP-LOCATION = CENTRAL       EXPIR-DATE  =
PASSWORD = C'INIT'     /-0908736029/
EXPORT   = C'                                            ' /
REMARK /1 = C'                       ' /2 = C'          ' /3 = C'            '
USER-FIELD= C'                                                    '
FILE-NAME =
SAVE-FILE =              SUBSAVE/SEQ =   /    CR-JOB/REQUEST-NA =
FREE-POOL = *NO                              CR-CAT-ID         =
VOL-GROUP =                                  CR-USER-ID        =
VOL-SEQ  = 0001    CR-DATE     =        LAST-ACC-DATE     =
FIRST-VOL =        CR-TIME     =        LAST-ACC-TIME     =
CLOSE-IND =        LAST-CL-DATE =       LAST-ACC-USER-ID  =
VOL-STATUS= RESERVED   LAST-CL-TIME =   LAST-ACC-ACCOUNT  =
INIT     = YES    REG-DATE     =        LAST-ACC-JOB-NAME =
ADM-FIELD = C'       ' /2 = C'            ' LAST-ACC-TSN     =
                                           LAST-ACC-CPU-NAME =
                                           LAST-WRITE-BLK-CNT =
```

```
//show-vol-attr vol=tlt016,information=*normal
VOLUME    = TLT016      FILE-SEQ    = 0001          DEV-TYPE   = TAPE-C5

USER-ID   = INIT0001    HOME-LOCATION = CENTRAL     RESERV-DATE = 2006-07-16
ACCOUNT   =             FREE-LOCATION = CENTRAL     FREE-DATE   = 2006-07-16
USER-ACC  = OWNER-ONLY  TEMP-LOCATION = CENTRAL     EXPIR-DATE  =
PASSWORD  = NONE
EXPORT    = C'                                      ' /
REMARK /1 = C'                       ' /2 = C'         ' /3 = C'            '
USER-FIELD= C'                                       '
FILE-NAME =
SAVE-FILE =               SUBSAVE/SEQ =    /    CR-JOB/REQUEST-NA  =
FREE-POOL = *NO                              CR-CAT-ID          =
VOL-GROUP =                                  CR-USER-ID         =
VOL-SEQ   = 0001    CR-DATE     =            LAST-ACC-DATE      =
FIRST-VOL =         CR-TIME     =            LAST-ACC-TIME      =
CLOSE-IND =         LAST-CL-DATE =           LAST-ACC-USER-ID   =
VOL-STATUS= FREE    LAST-CL-TIME =           LAST-ACC-ACCOUNT   =
INIT      = NO      REG-DATE    =            LAST-ACC-JOB-NAME  =
ADM-FIELD = C'       ' /2 = C'             ' LAST-ACC-TSN       =
                                             LAST-ACC-CPU-NAME  =
                                             LAST-WRITE-BLK-CNT =
```

All volumes between TLT001 and TLT020 whose expiration date has elapsed are released.
All volumes with INIT=NO whose expiration date has elapsed are released (total of 6 with
the VSNs TLT011 to TLT016; see also output of the archive entryTLT016).
All volumes with INIT=YES whose expiration date has elapsed are shifted to the user ID
INIT0001, i.e. they are still reserved but are no longer available for the original user ID. The
modified MAREN catalog entries are written to the file MAREN.INIT (total of 10 with the
VSNs TLT001 to TLT010; see also output of the archive entry TLT001).
If this file is subsequently assigned as an input file in an initialization run (INITIALIZE-
VOLUMES statement), the volumes are then first definitively released and are thus
available for new reservations.

Example 4

```
//free-vol vol=*by-file(fi-name=sample.dmsfile.1,version=-3),
    init-file=*dummy(select=*all,init-loc=da11loc)
%  MARM130 VOLUME 'GRA002' RELEASED FOR INITIALIZATION; USER ID 'MAREN001',
FILE NAME 'SAMPLE.DMSFILE.1', CURRENT LOCATION 'LOCESSAI'
%  MARM122 TOTAL OF 0 VOLUMES RELEASED
%  MARM170 STATEMENT '//FREE-VOLUMES' PROCESSED

//show-vol-attr vol=gra002, info=*v8.1
VOLUME    = GRA002       FILE-SEQ    = 0001          DEV-TYPE    = TAPE-C4

USER-ID   = SYSMAREN     HOME-LOCATION = DA11LOC      RESERV-DATE = 2006-03-02
ACCOUNT   =              FREE-LOCATION = LOCESSAI     FREE-DATE   = 2006-09-21
USER-ACC  = OWNER-ONLY   TEMP-LOCATION = LOCESSAI     EXPORT-DATE =
PASSWORD  = C'INIT'    X'C9D5C9E3'       /-0908736029/
REMARK    = C'                          '
EXPORT-AD = C'                                        '
USER-FIELD= C'                                        '
FILE-NAME =
FREE-POOL = *NO
OPEN-MODE = OUTPUT     CR-DATE     = 2006-03-02 LAST-ACC-DATE   = 2006-03-02
DEV-NAME  = MN         CR-TIME     = 13:30:13   LAST-ACC-TIME   = 13:35:33
VOL-SEQ   = 0001       CR-CAT-ID   =            LAST-ACC-USER-ID = MAREN001
FIRST-VOL = GRA002     CR-USER-ID  =            LAST-ACC-ACCOUNT = MAREN001
CLOSE-IND = CLOSED     CR-JOB-NAME = MAREN001   LAST-ACC-JOB-NAME= MAREN001
EXPIR-DATE= 2006-09-21 LAST-CL-DATE = 2006-03-02 LAST-ACC-TSN    =
AUDIT     = NO         LAST-CL-TIME = 13:34:33   LAST-ACC-SNO    = 230
VOL-STATUS= RESERVED   RESERV-COUNT = 0001        LAST-ACC-CPU-NAME= D049ZE70
INIT      = YES        ACCESS-COUNT = 00000002    LAST-ACC-FUN-NAME= FREE
ADM-FIELD = C'       'CHECK-COUNT  = 05          LAST-ACC-FUN-FLAG= 23
```

The volumes recorded when creating version -3 of the file sample.dmsfile.1 (GRA0002) whose expiration date has elapsed are relocated to the user ID SYSMAREN (default value) and transported to the storage location da11loc. There is no selection on the basis of the initialization ID in the MAREN catalog entry (SELECT=*ALL) and no file is created for a subsequent initialization run.

IMPORT-VOLUME
Define volumes as no longer exported

Privilege   ADA, DA, administrator without domains

If a reserved, previously exported volume is returned by the user, the IMPORT-VOLUME statement can be used to delete the export date in the archive entry. The volume thus becomes available again.

Format

IMPORT-VOLUME	Alias: **IMV**

VOLUME = ***INT**ERVAL(...) / list-poss(10): <vsn>

   *INTERVAL(...)

      │   **FROM** = <vsn>

      │ ,**TO** = <vsn>

      │ ,**FROM-FSEQ** = <u>1</u> / <integer 1..9999>

Operands

VOLUME =
Volumes that have been returned.

VOLUME = *INTERVAL(...)
All volumes whose VSNs are in the specified range have been returned.

   FROM = <vsn>
   VSN. All volumes whose VSN is greater than or equal to the specified VSN have been returned.

   TO = <vsn>
   VSN. All volumes whose VSN is less than or equal to the specified VSN have been returned.

   FROM-FSEQ = <u>1</u> / <integer 1..9999>
   File sequence number of the FROM operand. Specifies the precise file sequence number at which processing is to begin. This operand is relevant only if the statement is issued via the program interface.

VOLUME = list-poss(10): <vsn>
VSN. Up to 10 VSNs may be specified.

Note

When an exported volume is returned, it is possible that it has been overwritten or written with security attributes while exported. For this reason, the initialization flag (INIT=YES) is always set for the IMPORT-VOLUME statement in the archive entry.

Example

```
//import-vol vol=xytape
```

The exported computer center volume xytape was returned by the user. The export date in the archive entry is deleted.

INITIALIZE-VOLUMES
Initialize and then release volumes

Privilege   ADA, DA, administrator without domains

The INITIALIZE-VOLUMES statement is used to initialize and then release volumes which have been included in the output file of volumes to be initialized (INIT-FILE operand) on release with the FREE-VOLUMES statement. It can also be used to change existing VSNs.

Format

```
INITIALIZE-VOLUMES                                                          Alias: INV

  INIT-FILE = MARENADM.INIT-FILE / <filename 1..54 without-gen-vers>(...) / *NONE(...)

     <filename 1..54 without-gen-vers>(...)
          │    INIT-LOCATION = *ANY / <alphanum-name 1..8>
          │    ,USER-IDENTIFICATION = SYSMAREN / *ANY / <name 1..8>
          │    ,ACCOUNT = *ANY / <alphanum-name 1..8>
     *NONE(...)
          │    VOLUME = <vsn> (...)
          │       <vsn> (...)
          │          │    VOLUME-OWNER = *NO / *YES
          │    ,OLD-VSN = *SAME / <vsn>
  ,UCON-USER-ID = *NONE / <name 4..4>
  ,DEVICE-TYPE = *STD / <structured-name 1..8>
  ,ERASE = *NO / *YES
  ,NEW-VOLUMES = *NO / *YES
  ,FORMAT-VOLUMES = *NO / *YES
  ,LABEL-FORMAT = *EBCDIC / *ISO7
  ,MESSAGE-DESTINATION = *CONSOLE / *SYSOUT / *BOTH / *NONE
```

Operands

INIT-FILE =
Name of the file containing the archive entries for the volumes to be initialized.
This file must be created with FREE-VOLUMES.

INIT-FILE = <u>MARENADM.INIT-FILE</u>
The archive entries are taken from the file MARENADM.INIT-FILE.

INIT-FILE = <filename 1..54 without-gen-vers>(...)
Name of the input file.

> **INIT-LOCATION =**
> Location or symbolic location name entered in the archive entry field HOME-LOCATION
> during the release run.
> The location name of an archive system must always be specified.
>
> **INIT-LOCATION = <u>*ANY</u>**
> The volume location is not checked.
>
> **INIT-LOCATION = <alphanum-name 1..8>**
> The volumes must belong to the specified location.
>
> **USER-IDENTIFICATION =**
> User ID assigned to the volume during the release run.
>
> **USER-IDENTIFICATION = <u>SYSMAREN</u>**
> The volumes must be assigned to the user ID SYSMAREN.
>
> **USER-IDENTIFICATION = *ANY**
> The user ID of the volumes is not checked.
>
> **USER-IDENTIFICATION = <name 1..8>**
> The volumes must be assigned to the specified user ID.
>
> **ACCOUNT =**
> Account number assigned to the volume during the release run.
>
> **ACCOUNT = <u>*ANY</u>**
> The account number of the volumes is not checked.
>
> **ACCOUNT = <alphanum-name 1..8>**
> The volumes must have the specified account number.

INIT-FILE = *NONE(...)
An input file is not evaluated. This operand can also be used to change a VSN during initial-ization (see "Changing the VSN during initialization" on page 149).

> **VOLUME = <vsn>**
> Only the specified volume is initialized. The device type selected in the subsequent DEVICE-TYPE operand is not evaluated. A private volume can be initialized if required, provided the EXPIRATION-DATE defined in the archive entry has elapsed.
>
>> **VOLUME-OWNER =**
>> Specified if an owner will be entered in the volume label.
>>
>> **VOLUME-OWNER = *NO**
>> An owner is not entered in the volume label.
>>
>> **VOLUME-OWNER = *YES**
>> The owner is entered in the volume label.
>> The statement is only executed for reserved or private volumes.
>
> **OLD-VSN =**
> Specifies the VSN with which the volume was last initialized.
>
> **OLD-VSN = *SAME**
> The volume was last initialized with the same VSN. If there is a VOL1 label, the VSNs must be the same.
>
> **OLD-VSN = <vsn>**
> The specified VSN must be in the VOL1 label.

UCON-USER-ID = *NONE
A connection to UCON is set up without authorization name (see "Prerequisites for use" on page 149).

UCON-USER-ID = <name 4..4>
Still supported for compatibility reasons.
Four-character UCON user ID (not the same as the MARENUCP ID, e.g. MARE) which can be used as the authorization name for the connection to UCON.

DEVICE-TYPE =
Volume type of the volumes to be initialized.

DEVICE-TYPE = *STD
The volumes are of the default device type (DEFAULT-DEVICE-TYPE) whose value was specified with the MODIFY-MAREN-PARAMETERS statement.

DEVICE-TYPE = <structured-name 1..8>
Volume type to be used during initialization (for a list of possible entries, see also manual "System Installation" [9]).

Special features of the individual types

T1600, T6250	All the tapes (9-track) to be initialized are initialized with a recording density of 1600 or 6250 bpi and are designated as the appropriate type.
TAPE-C1,-C2	Cartridges of type TAPE-C1 <u>and</u> C2 are initialized. The current type is retained.
TAPE-C3,-C4	Cartridges of type TAPE-C3 <u>and</u> C4 are initialized. The current type is retained.

ERASE = <u>*NO</u> / *YES
Specifies whether all tapes are to be erased through to the end of the tape.

NEW-VOLUMES = <u>*NO</u> / *YES
Specifies whether error handling is to be suppressed when the labels are read. This function is intended for use with new tapes.

FORMAT-VOLUMES =
Specifies whether the volume is to be formatted during initialization, i.e. provided with servo tracks. Normally these tapes are supplied with servo tracks anyway, so that formatting is necessary only after a corresponding error ("Servo tracks defective").

FORMAT-VOLUMES = <u>*NO</u>
No formatting is carried out.

FORMAT-VOLUMES = *YES
Volumes are formatted simultaneously.

LABEL-FORMAT = *EBCDIC / *ISO7
Specifies which code is to be used when writing the labels on the tapes.

LABEL-FORMAT = *EBCDIC
The labels are written in EBCIDIC code.

LABEL-FORMAT = *ISO7
The labels are written in ISO7 code.

MESSAGE-DESTINATION = <u>*CONSOLE</u> / *SYSOUT / *BOTH / *NONE
Output medium for messages. If *BOTH is specified, messages are output to both SYSOUT and the console.
The response to the message

```
MARM1IO INITIALIZE VOLUME MOUNTED ON DEVICE '(&OO)'?
        REPLY (<VSN>=YES; ⌴=NO)
```

is expected from SYSOUT if MESSAGE-DESTINATION=*SYSOUT and from the console if *CONSOLE or *BOTH is specified.

Notes

–   INITIALIZE-VOLUMES evaluates the input file INIT-FILE. It checks whether the file was created using the FREE-VOLUMES or ADD-FREE-VOLUMES statement. If not, initialization aborts prematurely.
    The parameters INIT-LOCATION, USER-ID, and ACCOUNT are checked for each tape. The following values which are set by the release run are also checked to ensure that they have not changed:

    ```
    USER-ACCESS = *OWNER-ONLY
    INITIALIZATION = *YES
    LAST-ACC-FUN-NAME = FREE
    ```

    If any of the checks produces a negative result, this indicates that the archive entry or the tape has been changed since the release run, or that the administrator has specified an incorrect input file. For security reasons, the initialization process is aborted in this case.

–   The operator is requested to mount the tapes on free tape devices which correspond to the specified volume type.

    ```
    MARM1I1 MOUNT FOLLOWING VOLUMES ON DEVICE TYPE '(&OO)' FOR INITIALIZATION
    MARM1I2 vsn1, vsn2, ...
    ```

    He/she can mount one tape after another or several simultaneously; the sequence is arbitrary. The system automatically recognizes which tapes have been mounted. These tapes are initialized and released in the MAREN catalog. Successful execution of this procedure is reported by the message:

    ```
    MARM1I3 TAPE vsn INITIALIZED
    ```

–   The tape device is unloaded after initialization and the operator is requested to mount the rest of the tapes. As long as no tape is mounted, this request is repeated periodically.

–   INIT-VOL cannot recognize tapes with no standard label. The operator is requested to enter the VSN of the tape.

```
MARM1IO INITIALIZE VOLUME MOUNTED ON DEVICE 'mn'?
        REPLY (<VSN>=YES; ⌴=NO)
```

The following message then appears:

```
NKVT013 MOUNT *SCRATCH ... INIT ...,VSN=...
```

This message must be acknowledged by the operator with "tsn.mn" after checking that the correct tape is still mounted on the device.

–   If you wish to initialize cartridges from an archive system, please refer to the notes in the section entitled "Archive system support with MAREN" in the MAREN manual "Volume 1: Basics of MTC Management" [1].

–   If cartridges are prepared in a stacker, the stacker must be set to automatic mode.

–   If device errors occur during initialization, the relevant BS2000 messages must be dealt with. For tapes without standard labels, initialization can only be performed on the device specified in message NKVT013.

–   If initialization is unsuccessful, analysis of the console log (CONSLOG) during the initialization attempt often helps you to ascertain the cause of initialization failing.

–   INIT-VOL terminates when all tapes have been initialized. It can also be terminated prematurely but normally as follows:

   –   using the INFORM-PROGRAM command after the program is interrupted when processing in a dialog task:

   ```
   /INFORM-PROGRAM MSG='STOP-INIT'
   ```

   –   by systems support using the INFORM-PROGRAM command from another task when processing in a batch task:

   ```
   /INFORM-PROGRAM MSG='STOP-INIT',JOB-ID=*TSN(TSN=<tsn>)
   ```

   Neither of these options affects the current initialization process.

–   Up to 20000 volumes can be initialized by a single INITIALIZE-VOLUMES statement. If the input file contains more than 20000 archive entries, any additional archive entries are ignored.

–   If ERASE=*YES and/or FORMAT-VOLUME=*YES is/are specified, the connection to UCON is interrupted because processing take longer.

–   The volumes are also erased when ERASE = *NO is specified if the INITIALIZATION operand had already been set to ERASE for them in the MODIFY-TAPE-SET-ATTRIBUTES or MODIFY-VOLUME-ATTRIBUTES statement.

Changing the VSN during initialization

When initializing a single volume, you can specify the current VSN as an additional operand in order to change the VSN of a volume in an existing VOL1 label (INIT-VOL INIT-FILE=*NONE(VOLUME=..., OLD-VSN=...).

Thus, if a volume has an incorrect VSN in the VOL1 label, e.g. because a volume used for swapping on the external system has been overwritten or some other error has occurred, this can be corrected with INIT-VOL.
The VSN can also be changed simply because a new VSN is required.

Prerequisites for use

The connection to UCON is set up automatically under any ID for which the system privilege TAPE-ADMINISTRATION and the operator role entered in the host-specific MAREN parameters (default: SYSMAREN) have been defined. No authorization name is required for connection setup.

The SYSMAREN ID which is configured with the system privilege TAPE-ADMINISTRATION must be assigned the operator role to permit this, see "MAREN Volume 1" [1].

Note

> For compatibility reasons the old procedure for setting up a connection to UCON, which requires the UCON authorization name and was used by default up to MAREN V10.0A, is still supported. Here the MAREN administrator is restricted to the TSOS ID. If connection setup using the operator role fails, MAREN automatically starts connection setup using the old procedure if it is running under TSOS. To permit this, a UCON authorization name must then be specified by means of the UCON-USER-ID=... operand.

> The SYSLNK.INIT.vvv file (component part of BS2000 Version vvv) must exist under the user ID TSOS.

A four-character user ID with an alphanumeric password is presumed as the authorization name for the connection to UCON. User IDs which have already been assigned (e.g. TSOS, BCAM, DCAM) are not permitted and the UCON user ID of MARENUCP should not be used.

In BS2000, this user ID must be assigned to routing code 'T'. This can be carried out by systems support either at startup in the parameter service using the SET-CODE statement, or dynamically using the command ASR ADD,CS=<userid>,CD=T. If a different routing code is entered for message NKVT010, NKVT011 or NKVT091, or for the CHECK-TAPE command, the user ID must also be assigned to this code.

Other routing codes should not be assigned as this would cause message processing in BS2000 to be delayed and temporarily blocked in places in cases of heavy message traffic.

The file SYSLNK.INIT.vvv (component of BS2000 version vvv) must be available under the user ID TSOS.

Example

The following ENTER file contains a release run with subsequent initialization:

```
/.marenini set-logon-parameters user-id=tsos
/start-marenadm
//free-volumes init-file=maren.initfile
//init-volumes init-file=maren.initfile
//end
/exit-job
```

MODIFY-ADMINISTRATION-SCOPE
Modify the administration area

Privilege   ADA, DA

The MODIFY-ADMINISTRATION-SCOPE statement is used to change the administration area. This change remains effective until MARENADM is terminated or the statement is entered again.

The DA can enter the statement without operands, thus becoming the ADA. The ADA, on the other hand, becomes the DA of a domain.

Format

MODIFY-ADMINISTRATION-**SCOPE**   Alias: **MDAS**
DOMAIN = ***OWN** / ***ALL /** <alphanum-name 1..8>(...) / ***STD-DOMAIN**(...)

<alphanum-name 1..8>(...)
      │ **HOST**= ***FIRST /** <alphanum-name 1..8>(...)
   *STD-DOMAIN(...)
      │ **HOST** = ***FIRST /** <alphanum-name 1..8>(...)

Operands

DOMAIN =
Specifies a domain.

DOMAIN = *OWN
(Default for ADA) The ADA becomes the DA of the user's own domain.
The user's own domain is the domain of the host on which the ADA is currently working.

DOMAIN = *ALL
(Default for DA) The DA becomes the ADA. The following requirements must be met here:
– The host which is being used has been allowed using the MARENADM statement MODIFY-MAREN-PARAMETERS ALL-DOMAIN-ADMIN = *ALLOWED.
– A password specified with MODIFY-GLOBAL-PARAMETERS ALL-DOMAIN-ADM-PASSW = ... has already been specified with the BS2000 command ADD-PASSWORD.

DOMAIN = <alphanum-name 1..8> (...)
The ADA becomes the DA of the selected domain.

HOST =
Defines which host-specific parameters are to be valid for the subsequent statements.

HOST = *FIRST
The host-specific parameters of the first host (in the alphabetical order of the names) of the specified domain are valid.

HOST = <alphanum-name 1..8> (...)
The host-specific parameters of the selected host in the specified domain are valid.

DOMAIN = *STD-DOMAIN (...)

HOST =
Defines which host-specific parameters are to be valid for the subsequent statements.

HOST = *FIRST
The host-specific parameters of the first host (in the alphabetical order of the names) of the standard domain are valid.

HOST = <alphanum-name 1..8> (...)
The host-specific parameters of the selected host in the standard domain are valid.

Note

When DOMAIN = *OWN / *ALL all the host-specific parameters of the user's own host apply.

MODIFY-DOMAIN-ASSIGNMENT
Modify the assignment of a host to a domain

Privilege   ADA

This statement assigns a host to another domain. The new asssignment is stored in the domain-specific parameters. The "old" assignment of volumes to a domain is not changed here. It can happen therefore that volumes remain associated with a domain even though no host is now assigned to this domain.

Format

MODIFY-DOMAIN-ASSIGNMENT	Alias: **MDDA**
HOST = <alphanum-name 1..8> ,**NEW-DOMAIN** = **<u>*UNCH</u>**ANGED / ***STD-DOMAIN /** <alphanum-name 1..8>	

Operands

HOST = <alphanum-name 1..8>
Specifies the name of the host which is assigned to another domain. The BCAM name must be used as the name.

NEW-DOMAIN =
Defines which deomain the host is assigned to.

NEW-DOMAIN = <u>*UNCHANGED</u>
The current assignment of the host to a domain is retained.

NEW-DOMAIN = *STD-DOMAIN
Assigns the host to the standard domain.

NEW-DOMAIN = <alphanum-name 1..8>
Assigns the host to the selected domain.

Note

When a host is added to a domain, two cases are distinguished:

–   At least one host exists in the domain. The existing domain-specific parameters then also apply for the new host (FREE-VOLUMES = *FROM-STD-DOMAIN / *FROM-OWN-DOMAIN).

–   No host exists in the domain. The domain-specific parameters are then taken over from the domain to which the host specified in HOST belongs.

MODIFY-DOMAIN-PARAMETERS
Modify the domain-specific parameters

Privilege   ADA

This statement is used to define or modify the domain-specific parameters.

Format

MODIFY**-DOMAIN-PARAM**ETERS	Alias: **MDDP**
DOMAIN = ***STD-DOMAIN** **/** ***OWN** / ***ALL** / <alphanum-name 1..8>	
,**FREE-VOL**UMES = ***UNCH**ANGED / ***FROM-OWN-DOMAIN / *FROM-STD-DOMAIN**	

Operands

DOMAIN =
Defines the domain whose parameters are to be defined or modified.

DOMAIN = *STD-DOMAIN
The domain-specific parameters are assigned to the standard domain.

DOMAIN = *OWN
The domain-specific parameters are assigned to the user's own domain.
The user's own domain is the domain of the host on which the ADA is currently working.

DOMAIN = *ALL
The domain-specific parameters are assigned to all domains.

DOMAIN = <alphanum-name 1..8>
The domain-specific parameters are assigned to the selected domain.

FREE-VOLUMES =
Defines the domain from which free volumes are taken when reserving.

FREE-VOLUMES = *UNCHANGED
The current assignment remains unchanged.

FREE-VOLUMES = *FROM-OWN-DOMAIN
Free volumes are taken from or assigned to the user's own domain.

FREE-VOLUMES = *FROM-STD-DOMAIN
Free volumes are taken from or assigned to the standard domain.

MODIFY-GLOBAL-PARAMETERS
Modify the global parameters of a MAREN network

Privilege   ADA, administrator without domains

The MODIFY-GLOBAL-PARAMETERS statement is used to modify the global parameters of a MAREN network.

The default value *UNCHANGED in a given operand signifies that the previous declaration is applicable.

Format

MOD**IFY-GLOBAL-PARAM**ETERS	Alias: **MDGP**
DOMAIN-PROTECTION = ***UNCH**ANGED / *ACTIVE / *NON-ACTIVE	
,**ALL-DOMAIN-ADM-PASSW** = ***UNCH**ANGED / ***NONE** / ***SECRET** / <c-string 1..4> / <x-string 1..8> / <integer -2147483648..2147483647>	
,**ACCESS-MODE** = ***UNCH**ANGED **/ *SHARED / *EXCLUSIVE**	

Operands

DOMAIN-PROTECTION =
Specifies whether or not domains are used.

DOMAIN-PROTECTION = *ACTIVE
Defines that domains are used. The change takes effect immediately. The MAREN subsystem need not be reloaded. As soon as you work with domains, no MAREN version lower than 10 may be used on any host of the MAREN network.

For details on how to set up domains see "MAREN Volume 1" [1].

DOMAIN-PROTECTION = *NON-ACTIVE
Defines that you will not work with domains. The change takes effect immediately.

ALL-DOMAIN-ADM-PASSW = <u>*UNCHANGED</u> / *NONE / *SECRET / <c-string 1..4> / <x-string 1..8> / <integer -2147483648..2147483647>
Defines whether or not an ADA must be legitimated with a password.
The password must be specified when obtaining legitimation using the BS2000 command /ADD-PASSWORD.
The operand has the following special features:
– The value entered is not logged.
– In guided dialog, the entry field is automatically blanked out.
– If *SECRET or ^ is specified, in unguided dialog and in foreground procedures SDF provides a non-displaying entry field for concealed entry of the password.

ALL-DOMAIN-ADM-PASSW = *NONE
No password is assigned.

ACCESS-MODE =
This parameter is used to notify the control program of the mode in which the MAREN catalog is accessed.

ACCESS-MODE = *SHARED
Defines that access to the MAREN catalog takes place in shared mode (see RFA mode on page 40).

ACCESS-MODE = *EXCLUSIVE
Defines that access to the MAREN catalog takes place exclusively (see SPD mode on page 41).

MODIFY-MAREN-PARAMETERS
Modify host-specific parameters of MAREN system

Privilege   ADA, DA, administrator without domains

This statement is used to modify the host-specific MAREN parameters.

If a MAREN parameter is changed on the user's own host using this statement, this modification becomes effective immediately without reloading the control program. This modification also becomes effective on the other hosts in the MAREN network from the time at which the program running there first reads the modified parameter set, e.g. because the MAREN administrator has entered the MARENADM statement SHOW-MAREN-PARAMETERS.

The default value *UNCHANGED in a given operand signifies that the previous declaration is applicable.

Format

(part 1 of 3)

MODIFY**-MAR**EN**-PAR**AMETERS   Alias: **MDMP**
LOCATION**-ENTRIES** = ***UNCH**ANGED / ***PAR**AMETERS(...)
*PARAMETERS(...)
LOCATION**-NAME** = <alphanum-name 1..8>
,**ACTION** = ***ADD** (...) / ***REM**OVE
*ADD(...)
SYMBOLIC**-NAME** = ***SAME** / <alphanum-name 1..8>
,**TYPE** = ***LOCAL** / ***REMOTE**
,**OPER**ATING**-MODE** = ***MANUAL** / ***ROBAR-1** / ***ROBAR-2** / ***TLS-1** / ***EXT**ERNAL
,**VOL**UME**-ACCESS-CHECKS** = ***UNCH**ANGED / ***PAR**AMETERS(...)
*PARAMETERS(...)
INPUT-TAPE-CHECK = ***UNCH**ANGED / ***Y**ES / ***NO**
,**INPUT-FI**LE**-CHECK** = ***UNCH**ANGED / ***Y**ES / ***NO**
,**TSOS-PRIV**ILEGED = ***UNCH**ANGED / ***Y**ES / ***NO**
,**PRIV**ILEGED**-USER-ID** = ***UNCH**ANGED / ***NONE** / <name 1..8>

Continued ➡

(part 2 of 3)

```
        ,RETPD-CHECK = *UNCHANGED / *YES / *NO

        ,FOREIGN-TAPE-CHECK = *UNCHANGED / *YES / *NO

        ,DEVICE-COMPLETION = *UNCHANGED / *YES / *NO

        ,AUDIT = *UNCHANGED / *YES / *NO / *OPTIONAL

        ,TEST-MODE = *UNCHANGED / *YES / *NO

,LOGGING = *UNCHANGED / *YES / *NO

,CID-UID = *UNCHANGED / *YES / *NO

,MOUNT-CHECK-INTERVAL = *UNCHANGED / <integer 9..9999 seconds>

,RESERVATION-SEQUENCE = *UNCHANGED / *BY-VSN / *BY-RESERVATION-COUNT /
                        *BY-LAST-ACCESS-DATE / *BY-FREE-DATE

,OPERATOR-ROLE = *UNCHANGED / <name 1..8>

,MAREN-DEFAULTS = *UNCHANGED / *PARAMETERS(...)

   *PARAMETERS(...)

        DEFAULT-FREE-DATE = *UNCHANGED / <integer 0..9999>

        ,DEFAULT-DENSITY = *UNCHANGED / *T800 / *T1600 / *T6250

        ,DEFAULT-HOME-LOC = *UNCHANGED / *HOST / <alphanum-name 1..8>

        ,DEFAULT-DEVICE-TYPE = *UNCHANGED / <alphanum-name 1..8>

        ,DEFAULT-USER-ACCESS = *UNCHANGED / *OWNER-ONLY / *FOREIGN-READ-ONLY /
                               *ALL-USERS

,RESERVE-DEVICE-TYPES = *UNCHANGED / *PARAMETERS(...)

   *PARAMETERS(...)
        DEVICE-TYPE = <structured-name 1..8>

        ,ACTION = *ADD / *REMOVE

,EXPORT-RESTRICTIONS = *UNCHANGED / *PARAMETERS(...)

   *PARAMETERS(...)
        EXPORT-PROCESSING = *UNCHANGED / *YES / *NO

        ,EXPORT-FOREIGN-TAPES = *UNCHANGED / *YES / *NO

        ,EXPORT-ADDRESS-ACK = *UNCHANGED / *YES / *NO

,ARCHIVES-WORK-TIME = *UNCHANGED / *PARAMETERS(...)

   *PARAMETERS(...)
        OPEN-TIME = <time>

        ,CLOSE-TIME = <time>
```

Continued ➡

(part 3 of 3)

```
,EXPORT-RECEIPT = *UNCHANGED / *CONSOLE / *PRINTER(...) / *FILE / *NO

    *PRINTER(...)
          DEVICE-NAME = *ANY-LOCAL-PRINTER / <name 1..8>

          ,FORM-NAME = *STD / <alphanum-name 1..6>

,LIFE-TIME-LIMITS = *UNCHANGED / *PARAMETERS(...)

    *PARAMETERS(...)
          BATCH-REQUEST-TIME = *UNCHANGED / <integer 0..32767 seconds>

          ,BATCH-EXEC-TIME = *UNCHANGED / <integer 0..32767 seconds>

          ,DIALOG-REQUEST-TIME = *UNCHANGED / <integer 3..32767 seconds>

          ,DIALOG-EXEC-TIME = *UNCHANGED / <integer 3..32767 seconds>

,MAREN-PASSWORD = *UNCHANGED / *NONE / <c-string 1..4> / <x-string 1..8> /
                  <integer -2147483648..2147483647> / *SECRET

,FREE-POOLS = *UNCHANGED / *PARAMETERS(...)

    *PARAMETERS(...)
          FREE-POOL = *NO / *GLOBAL / *TSOS / <filename 1..54 without-gen-vers> /
                      <text 2..32 without-sep>
          ACTION =*ADD / *REMOVE

,SHOW-INFORMATION = *UNCHANGED / *NORMAL / *MAXIMUM / *V8.1-AND-LOWER

,HOST = *OWN / *ALL / <alphanum-name 1..8> / *ALL-FROM-DOMAIN (...)

    *ALL-FROM-DOMAIN (...)
          DOMAIN = *STD-DOMAIN / *OWN / <alphanum-name 1..8>

,ALL-DOMAIN-ADMIN = *UNCHANGED / *ALLOWED(...) / *NOT-ALLOWED(...)

    *ALLOWED(...)
          DEFAULT-ADMIN-SCOPE = *UNCHANGED / *OWN-DOMAIN / *ALL-DOMAIN

    *NOT-ALLOWED(...)
          DEFAULT-ADMIN-SCOPE = *OWN-DOMAIN
```

Operands

LOCATION-ENTRIES =
The MAREN system keeps an internal location table in which all archives and locations
must be entered.

LOCATION-ENTRIES = *UNCHANGED
Specifies that the location table is to remain unchanged.

LOCATION-ENTRIES = *PARAMETERS(...)
Any changes to the location table are entered in the MAREN parameter set of the MAREN catalog.

LOCATION-NAME = <alphanum-name 1..8>
Location name. For a processing location, the host name must be specified.

ACTION = *ADD(...) / *REMOVE
Specifies whether the specified location name is to be added or deleted.

ACTION = *ADD(...)
Specifies that the location name is to be added to the MAREN system. A maximum of 24 location names may be specified.

SYMBOLIC-NAME = *SAME / <alphanum-name 1..8>
Symbolic location name. Each location name can be assigned a symbolic location name to make addressing easier.

SYMBOLIC-NAME = *SAME
Declares that the name specified for the LOCATION-NAME parameter is to be used.

TYPE =
This location identifier refers to the physical distance between the location and the actual computer center.

TYPE = *LOCAL
Specifies that the location is in the machine room area. This means that the volumes from this location can be directly requested for processing purposes.

TYPE = *REMOTE
Specifies that the location is not in the vicinity of the machine room. This means that any request to process volumes located there is rejected by the MAREN system with a message indicating that the volume is not available locally.

OPERATING-MODE =
Operating mode from which MAREN recognizes the location or the archive system to which the jobs are to be sent.

OPERATING-MODE = *MANUAL
Location to be operated manually.

OPERATING-MODE = *ROBAR-1
Operating mode for the archive system AML of the company ADIC which is controlled via ROBAR.

OPERATING-MODE = *ROBAR-2
Operating mode for the archive system ETERNUS CS (CentricStor) which is controlled via ROBAR.

OPERATING-MODE = *TLS-1
Operating mode for the archive system 3594 and optical archive systems which are controlled via TLS.

OPERATING-MODE = *EXTERNAL
Operating mode for the location of a group of tape stations. The group is, for example, in a separate archive in a remote building which is to be operated manually. The volumes in this archive should only be operated on the devices there and not be mixed with volumes from other archives.

VOLUME-ACCESS-CHECKS =
Specifies which volume checks are to be performed.

VOLUME-ACCESS-CHECKS = *UNCHANGED
Specifies that all tape checks are to remain unchanged.

VOLUME-ACCESS-CHECKS = *PARAMETERS(...)
Specifies the tape checks which are to be modified.

INPUT-TAPE-CHECK = *UNCHANGED / *YES / *NO
Specifies whether all possible tape checks of the MAREN system are to be performed for input tapes also (see operand AUDIT on).

INPUT-FILE-CHECK = *UNCHANGED / *YES / *NO
Specifies whether the file name is to be checked in the case of input tapes (see also operand AUDIT on).

TSOS-PRIVILEGED = *UNCHANGED / *YES / *NO
Specifies whether the user ID TSOS is to be excluded from all tape checks of the MAREN system.

PRIVILEGED-USER-ID = *UNCHANGED / *NONE / <name 1..8>
User ID to be excluded from all tape checks of the MAREN system.

RETPD-CHECK = *UNCHANGED / *YES / *NO
Specifies whether the file expiration date (archive entry field EXPIRATION-DATE) is to be checked for output tapes (see also operand AUDIT on).

FOREIGN-TAPE-CHECK = *UNCHANGED / *YES / *NO
Specifies whether all foreign tapes are to be archived in the MAREN catalog before processing.

FOREIGN-TAPE-CHECK = *YES
All tapes must be entered in the MAREN catalog prior to processing. Otherwise, any attempt to access a tape will be rejected with an error message.

FOREIGN-TAPE-CHECK = *NO
When accessing tapes not included in the MAREN catalog, no MAREN checks are performed and no messages are issued.

DEVICE-COMPLETION = *UNCHANGED / *YES / *NO
Automatic completion of the specifications in the IMPORT-FILE command or FILE
macro.

DEVICE-COMPLETION = *YES
For file assignments with the operand VOLUME=vsn but without a DEVICE entry, the
device type (if any) from the MAREN archive entry is included in the parameter list of
the corresponding DMS command or macro.

DEVICE-COMPLETION = *NO
The parameter list is not modified.

AUDIT =
Specifies whether accesses to this volume are to be monitored and, if required, aborted
by the MAREN subsystem.

AUDIT = *YES
Accesses are monitored. The AUDIT flag in the volumes' archive entries is not
evaluated. In the event of an error the basic action is aborted. Individual checks can,
however, be disabled using the FOREIGN-TAPE-CHECK, INPUT-TAPE-CHECK,
INPUT-FILE-CHECK and RETPD-CHECK operands. Specific IDs can also be excluded
from monitoring.

AUDIT = *NO
No monitoring takes place. The AUDIT flag in the volumes' archive entries is not
evaluated. Individual checks which were enabled using the FOREIGN-TAPE-CHECK,
INPUT-TAPE-CHECK, INPUT-FILE-CHECK and RETPD-CHECK operands are
performed, but in the event of an error they do not lead to an abortion.

AUDIT = *OPTIONAL
Monitoring takes place and any errors detected are reported. However, the action
involved is only aborted if the AUDIT flag is set in the archive entry of the volume
concerned or no archive entry exists for it. Individual checks can, however, be disabled
using the FOREIGN-TAPE-CHECK, INPUT-TAPE-CHECK, INPUT-FILE-CHECK and
RETPD-CHECK operands. Specific IDs can also be excluded from monitoring.

TEST-MODE = *UNCHANGED / *YES / *NO
Enables or disables test mode. When test mode is enabled only tasks with the lob name
MARENTST are recorded by the MAREN subsystem and MARENUCP. All tests and
updating of the MAREN catalog are suppressed for all other tasks.

LOGGING = *UNCHANGED / *YES / *NO
Defines whether a record is written into the logging file for each modification of an archive
entry.

CID-UID = <u>*UNCHANGED</u> / *YES / *NO
When tape output files are created, causes not only the job name, date and time, but also
the catalog ID of the pubset and the user ID under which the file is created to be included
in the archive entry. This does not apply for ARCHIVE backup runs with directory because
in these cases the directory name is stored in the archive entry with the catalog and user
IDs.

MOUNT-CHECK-INTERVAL = <u>*UNCHANGED</u> / <integer 9..9999 *seconds*>
Defines the interval, in seconds, at which MARENUCP periodically checks whether a tape
has been mounted. The first interval begins with the request for the operator to mount a free
tape.
If no setting is defined, 60 seconds is taken as the default.

Only when MARENUCP V12.0 first starts is the value from the MARENUCP-ENTER file
accepted (the default value applies if nothing is specified); subsequently the specification
in the ENTER file is ignored.

**RESERVATION-SEQUENCE = <u>*UNCHANGED</u> / *BY-VSN /
*BY-RESERVATION-COUNT / *BY-LAST-ACCESS-DATE / *BY-FREE-DATE**
Defines the criterion according to which MARENUCP selects free tapes.
If no setting is defined, RESERVATION-SEQUENCE=*BY-VSN is taken as the default.

Only when MARENUCP V12.0 first starts is the value from the MARENUCP-ENTER file
accepted (the default value applies if nothing is specified); subsequently the specification
in the ENTER file is ignored.

RESERVATION-SEQUENCE = <u>*UNCHANGED</u>
The existing selection criterion applies.

RESERVATION-SEQUENCE = *BY-VSN
The selection criterion is the sequence of the VSNs, beginning with the lowest alphanu-
meric VSN.

RESERVATION-SEQUENCE = *BY-RESERVATION-COUNT
The selection criterion is the number of reservations, beginning with the lowest number.

RESERVATION-SEQUENCE = *BY-LAST-ACCESS-DATE
The selection criterion is the date of the most recent access, beginning with the earliest
date.

RESERVATION-SEQUENCE = *BY-FREE-DATE
The selection criterion is the date of the most recent release, beginning with the earliest
date.

OPERATOR-ROLE = <u>*UNCHANGED</u> / <name 1..8>
Operator role which is to be used for the execution of MARENUCP and for the INITIALIZE-
VOLUMES statement.
When MARENCP V12.0 is first started, the operator role SYSMAREN is entered.

MAREN-DEFAULTS =
Default values of the MAREN system.

MAREN-DEFAULTS = *UNCHANGED
Specifies that the default values set are to remain unchanged.

MAREN-DEFAULTS = *PARAMETERS(...)
Specifies the default values which are to be modified.

   DEFAULT-FREE-DATE = *UNCHANGED / <integer 0..9999>
   Number of days. Specifies the retention period for volumes if the user has not made an
   appropriate entry during reservation.

   DEFAULT-DENSITY = *UNCHANGED / *T800 / *T1600 / *T6250
   Recording density of magnetic tape devices. Specifies the highest recording density
   used by default in the computer center concerned.

   DEFAULT-HOME-LOC = *UNCHANGED / *HOST / <alphanum-name 1..8>
   Location name. Specifies which name is to be used for the permanent location in state-
   ments with the parameter HOME-LOCATION=*STD.

   DEFAULT-HOME-LOC = *HOST
   The appropriate host name is automatically used at each host computer.

   DEFAULT-DEVICE-TYPE = *UNCHANGED / <alphanum-name 1..8>
   Defines a default device type.
   The default device type declared is used as the default in nearly all MAREN and
   MARENADM statements. If no explicit specification is made for the DEVICE-TYPE
   operand in these statements, only volumes of the type DEFAULT-DEVICE-TYPE are
   selected. An exception to this is the MAREN and MARENADM statement SHOW-
   VOLUME-ATTRIBUTES.

   DEFAULT-USER-ACCESS =
   Specifies whether, in addition to the user's own ID, foreign user IDs may also access the
   volume.

   DEFAULT-USER-ACCESS = *OWNER-ONLY
   Access to the volume is only possible under the user ID entered.

   DEFAULT-USER-ACCESS = *FOREIGN-READ-ONLY
   Only read access to the volume is possible under a foreign user ID.

   DEFAULT-USER-ACCESS = *ALL-USERS
   Unrestricted access to the volume is possible under a foreign user ID.

RESERVE-DEVICE-TYPES =
The MAREN system keeps an internal table which must contain all volume types for which
new reservations are permissible. Up to 20 entries can be defined.

RESERVE-DEVICE-TYPES = *UNCHANGED
Specifies that the volume type table is to remain unchanged.

RESERVE-DEVICE-TYPES = *PARAMETERS(...)
Specifies the volume type which is to be entered in or removed from the table.

DEVICE-TYPE = <structured-name 1..8>
Device type. For a list of possible entries (depending on the BS2000/OSD version), see manual "System Installation" [9].

ACTION = *ADD / *REMOVE
Specifies whether the volume type is to be added or deleted.

EXPORT-RESTRICTIONS = *UNCHANGED / *PARAMETERS(...)
Restrictions with respect to the MAREN statement EXPORT-VOLUME.

EXPORT-RESTRICTIONS = *PARAMETERS(...)
Specifies the restrictions.

EXPORT-PROCESSING = *UNCHANGED / *YES / *NO
Specifies whether the MAREN statement EXPORT-VOLUME for exporting computer center volumes is to be permitted.

EXPORT-FOREIGN-TAPES = *UNCHANGED / *YES / *NO
Specifies whether the export of computer center volumes assigned to a foreign user ID with the attribute USER-ACCESS=ALL-USERS is to be permitted.

EXPORT-ADDRESS-ACK = *UNCHANGED / *YES / *NO
Specifies whether the defined mailing address should be acknowledged by the operator when exporting or returning volumes.

ARCHIVES-WORK-TIME =
Time during which the central archive is open. Tapes can only be exported or returned during the specified time period. Any specifications entered in seconds will be ignored.

ARCHIVES-WORK-TIME = *UNCHANGED
Specifies that the opening time remains unchanged.

ARCHIVES-WORK-TIME = *PARAMETERS(...)
Specifies the opening times.

OPEN-TIME = <time>
Opening time in the format hh[:mm[:ss]], where initial zeros need not be entered for hh, mm and ss.

CLOSE-TIME = <time>
Closing time in the format hh[:mm[:ss]], where initial zeros need not be entered for hh, mm and ss.

EXPORT-RECEIPT = *UNCHANGED / *CONSOLE / *PRINTER(...) / *FILE / *NO
This operand is used to control the creation and printing of export receipts generated using
the EXPORT-VOLUME statement in the MAREN and MARENADM programs. The layout of
the export receipt is described in section "Sending export receipts to a SPOOL printer" on
page 61ff.

EXPORT-RECEIPT = *CONSOLE
No export receipt is generated. The following message appears on the console:

```
MARM162 SEND VOLUME (&00) TO MAILING ADDRESS (&01).
        TEMPORARY LOCATION (&02).
```

EXPORT-RECEIPT = *PRINTER(...)
Specifies that the export receipts are to be generated and printed immediately. For this
purpose, the temporary file MAREN.EXPORT-RECEIPT.vsn is created under the user ID of
the calling task. If this file already exists, it is extended with OPEN=EXTEND. The result is
the same as a printout produced with the PRINT-DOCUMENT document in conjunction with
DOCUMENT-FORMAT=*TEXT(LINE-SPACING=*BY-EBCDIC-CONTROL) and DELETE-
AFTER-PRINT=*DESTROY.
This specification is also evaluated for the MARENADM statements RETURN-VOLUMES
and SECURE-FREE-VOLUMES with the operand MESSAGE-DEST=*PRINTER.

> **DEVICE-NAME =**
> Identifies the printer to be used for output.
>
> **DEVICE-NAME = *ANY-LOCAL-PRINTER**
> Output is to a local high-speed printer.
>
> **DEVICE-NAME = <name 1..8>**
> Identifies an RSO printer to be used for output.
>
> **FORM-NAME =**
> Identifies the paper (form type) to be used for output.
>
> **FORM-NAME = *STD**
> A standard form is used.
>
> **FORM-NAME = <alphanum-name 1..6>**
> Name of the form to be used. This name must be defined in the SPOOL parameter file
> and can be queried by means of the SHOW-SPOOL-FORMS command. The SPOOL
> parameter file also defines whether a cover page is to be printed (see the "Spool & Print
> - Commands (BS2000/OSD)" manual [25]).

EXPORT-RECEIPT = *FILE
Specifies that the export receipt is only to be written to the file MAREN.EXPORT-
RECEIPT.vsn under the user ID of the calling task and is not to be printed.
If the file does not exist or is empty, it is created. If it does exist, it is extended with
OPEN=EXTEND. Depending on the organization of the computer center, the file can be
printed later using the PRINT-DOCUMENT command.

EXPORT-RECEIPT = *NO
Specifies that export receipts are not to be created.

LIFE-TIME-LIMITS = <u>*UNCHANGED</u> / *PARAMETERS
Specifies how long the tasks are to remain in certain wait states.

LIFE-TIME-LIMITS = *PARAMETERS(...)

> **BATCH-REQUEST-TIME = <u>*UNCHANGED</u> / <integer 0..32767** *seconds***>**
> Wait time in seconds specifying the maximum time a batch task is to wait for acceptance of a MAREN transaction (access to the MAREN catalog).

> **BATCH-EXEC-TIME = <u>*UNCHANGED</u> / <integer 0..32767** *seconds***>**
> Wait time in seconds specifying the maximum time a batch task is to wait for execution of a MAREN transaction.

> **DIALOG-REQUEST-TIME = <u>*UNCHANGED</u> / <integer 3..32767** *seconds***>**
> Wait time in seconds specifying the maximum time an interactive task is to wait for acceptance of a MAREN transaction.

> **DIALOG-EXEC-TIME = <u>*UNCHANGED</u> / <integer 3..32767** *seconds***>**
> Wait time in seconds specifying the maximum time an interactive task is to wait for execution of a MAREN transaction.

MAREN-PASSWORD = <u>*UNCHANGED</u> / *NONE / <c-string 1..4> / <x-string 1..8> / <integer -2147483648..2147483647> / *SECRET
Password authorizing the execution of administrator functions within the MAREN system. The operand has the following special features:
– The value entered is not logged.
– In guided dialog, the entry field is automatically blanked out.
– If *SECRET or ^ is specified, in unguided dialog and in foreground procedures SDF provides a non-displaying entry field for concealed entry of the password.

FREE-POOLS = <u>*UNCHANGED</u>
The free tape pool is left unchanged.

FREE-POOLS = *PARAMETERS(...)

> **FREE-POOL =**
> Specifies which free tape pool is to be edited.

> **FREE-POOL = *NO**
> The *NO free tape pool is edited.

> **FREE-POOL = *GLOBAL**
> The *GLOBAL free tape pool is edited.

> **FREE-POOL = *TSOS**
> The *TSOS free tape pool is edited.

FREE-POOL = <filename 1..54 without-gen-vers>
The free tape pool of an ARCHIVE directory is edited. If this directory is located under a remote ID, both the user ID and the catalog ID must be specified. The user's own ID and standard catalog ID can be omitted.

FREE-POOL = <text 2..32 without-sep>
Specifies the name of a free tape pool. The name of the free tape pool must begin with "*" followed by at least one character from A-Z or 0-9. The characters ".", "-" and "_" are permitted, but not at the end and not next to each other. If the relevant free tape pool does not yet exist, it will be created. Otherwise, it is extended to include the specified volumes.

ACTION =
Specifies if the free tape pool specified is to be created or deleted.

ACTION = *ADD
The free tape pool will be created. Volumes can then be subsequently allocated to the free tape pool.

ACTION = *REMOVE
The free tape pool will be deleted. No more tapes may be allocated to the free tape pool.

SHOW-INFORMATION =
Specifies which format output for the statement SHOW-VOLUME-ATTRIBUTES from MAREN or MARENADM is to have when a single VSN is specified. The INFORMATION operand of the statement SHOW-VOLUME-ATTRIBUTES from MAREN or MARENADM renders this setting ineffective.

SHOW-INFORMATION = *UNCHANGED
The current setting is not changed.

SHOW-INFORMATION = *NORMAL
Output will be in the new format and contains all essential information.
Output is not guaranteed and may be changed again in future software versions.

SHOW-INFORMATION = *MAXIMUM
The output contains all information. Output is not guaranteed and may be changed again in future software versions.

SHOW-INFORMATION = *V8.1-AND-LOWER
Output is in the format used up until MAREN V8.1.

HOST =
Defines the host(s) whose parameters are to be modified.

HOST = *OWN
The parameters of the user's own host are to be modified.

HOST = *ALL
When domains are used, the parameters are changed for all hosts in the DA's own domain; for the ADA, the parameters are changed for all hosts.

HOST = <alphanum-name 1..8>
The parameters of the specified host are to be modified.

HOST = *ALL-FROM-DOMAIN (...)
The parameters of all hosts in a domain can be modified.

   DOMAIN = *STD-DOMAIN / *OWN / <alphanum-name 1..8>
   Specifies the domain whose hosts are given a new parameter assignment.

ALL-DOMAIN-ADMIN =
Defines whether the ADA may work on the hosts specified with HOST = ...

ALL-DOMAIN-ADMIN = *UNCHANGED
The current setting is retained.

ALL-DOMAIN-ADMIN = *ALLOWED(...)
The ADA may work on the hosts specified with HOST = ...

   DEFAULT-ADMIN-SCOPE =
   Defines which administration scope is to be set on the specified hosts when MARENADM is started.
   When MARENCP V12.0 is started for the first time, DEFAULT-ADMIN-SCOPE=*OWN-DOMAIN is set.

   DEFAULT-ADMIN-SCOPE = *UNCHANGED
   The existing setting applies.

   DEFAULT-ADMIN-SCOPE = *OWN-DOMAIN
   When MARENADM is started on the specified hosts, the rights of the DA are set.

   DEFAULT-ADMIN-SCOPE = *ALL-DOMAIN
   When MARENADM is started on the specified hosts, the rights of the ADA are set provided the ADA password was specified beforehand. If the ADA password was not specified beforehand, a warning is issued and MARENADM starts with the rights of the DA.

ALL-DOMAIN-ADMIN = *NOT-ALLOWED(...)
The ADA may not work on the hosts specified with HOST = ...

   DEFAULT-ADMIN-SCOPE = = *OWN-DOMAIN
   When MARENADM is started on the specified hosts, the rights of the DA are set.

Notes

–   If the aliases for the values *NO, *GLOBAL or *TSOS of the FREE-POOL operand are specified, then these operand values are expanded to their full length for compatibility reasons (e.g. the entry *GL is expanded to *GLOBAL).

–   Specifications can also be made for ALL-DOMAIN-ADMIN and DEFAULT-ADMIN-SCOPE if no domains are being used. The setting becomes effective as soon as domains are used.

Examples

Example 1

```
//mod-mar-par loc-entries=*par(loc-name=archiv01)
%  MARM170 STATEMENT '//MODIFY-MAREN-PARAMETERS' PROCESSED
```

The location archiv01 is added. It is located in the machine room area (TYPE=*LOCAL) and its symbolic name is likewise archiv01 (SYMBOLIC-NAME=*SAME).

Example 2

```
//mod-mar-par loc-entries=*par(
    loc-name=da1700,action=*add(symb-name=dva17,type=*remote))
%  MARM170 STATEMENT '//MODIFY-MAREN-PARAMETERS' PROCESSED
```

The location da1700 with the symbolic name dva17 is added. No immediate access is possible to the volumes stored there, since this location is not within the machine room area (TYPE=*REMOTE).

Example 3

```
//mod-mar-par loc-entries=*par(loc-name=dva11,action=*rem)
%  MARM170 STATEMENT '//MODIFY-MAREN-PARAMETERS' PROCESSED
```

The location dva11 is deleted.

Example 4

```
//mod-mar-par maren-def=*par(def-free-date=200)
%  MARM170 STATEMENT '//MODIFY-MAREN-PARAMETERS' PROCESSED
```

The default retention period for reserving a volume has been changed to 200 days.

Example 5

```
//mod-mar-par archives-work-time=*par(open-time=7:30,cl-time=20)
```

The opening times for the archive are set from 7:30 to 20:00 hours. Within this time period, tapes can be exported or requested from the central archive.

Example 6

```
//mod-mar-par export-receipt=*printer(dev-name=rsostat1)
%  MARM170 STATEMENT '//MODIFY-MAREN-PARAMETERS' PROCESSED
```

Export receipts for volumes are to be printed on the RSO printer with the name rsostat1.

MODIFY-TAPE-SET-ATTRIBUTES
Modify attributes of all volumes in tape set

Privilege   ADA, DA, administrator without domains

This statement is used to modify the archive entries for volumes in a tape set. A tape set consists of all the tapes which belong to a tape file, or more precisely, all those archive entries which have the same FILE-NAME and FIRST-VOL values.

DAs can only execute the statement in their own domain. The DOMAIN operand is thus meaningless for them.

Format

(part 1 of 2)

MODIFY-**TAPE-SET-ATTR**IBUTES	Alias: **MDTSA**

```
SELECT = *BY-ATTRIBUTES (...)

   *BY-ATTRIBUTES(...)
        FILE-NAME = <filename 1..41 without-cat-user>
        ,VERSION = *LATEST / <integer -9999..0> / *ALL / *NOT-CREATED
        ,USER-IDENTIFICATION = *ALL / <name 1..8>
        ,TYPE-OF-VOLUMES = *VALID(...) / *OBSOLETE / *ANY

           *VALID(...)
                CLOSE-CHECK = *NO / *YES

  ,DOMAIN = *ANY / *OWN / *STD-DOMAIN / <alphanum-name 1..8>
 ,PROTECTION = *UNCHANGED / *PARAMETERS(...)

   *PARAMETERS(...)
        PASSWORD = *UNCHANGED / *NONE / <c-string 1..4> / <x-string 1..8> /
              <integer -2147483648..2147483647> / *SECRET
        ,USER-ACCESS = *UNCHANGED / *OWNER-ONLY / *FOREIGN-READ-ONLY / *ALL-USERS
        ,FREE-DATE = *UNCHANGED / <date> / <integer 0..32767 days>
        ,EXPIRATION-DATE = *UNCHANGED / *NONE / <date> / <integer 0..32767 days>
        ,AUDIT = *UNCHANGED / *YES / *NO
        ,INITIALIZATION = *UNCHANGED / *YES / *NO / *ERASE
```

Continued ➡

```
,LOCATION = *UNCHANGED / *PARAMETERS(...)

  *PARAMETERS(...)
      │  HOME-LOCATION = *UNCHANGED / <alphanum-name 1..8>
      │ ,FREE-LOCATION = *UNCHANGED / <alphanum-name 1..8>
      │ ,TEMPORARY-LOCATION = *UNCHANGED / <alphanum-name 1..8>

,REMARK = *UNCHANGED / *NONE / <c-string 1..24>

,REMARK-2 = *UNCHANGED / *NONE / <c-string 1..10>

,REMARK-3 = *UNCHANGED / *NONE / <c-string 1..12>

,USER-FIELD = *UNCHANGED / *NONE / <c-string 1..54>

,ADMINISTRATOR-FIELD = *UNCHANGED / *NONE / <c-string 1..8>

,ADMINISTR-FIELD-2 = *UNCHANGED / *NONE / <c-string 1..16>

,EXPORT-ADDRESS = *UNCHANGED / *NONE / <c-string 1..50>

,EXPORT-DATE = *UNCHANGED / *NONE / <date>
```

Operands

The default value *UNCHANGED in a given operand signifies that the previous declaration
is applicable.

SELECT = *BY-ATTRIBUTES(...)
Tape set to be selected for modification.

FILE-NAME = <filename 1..41 without-cat-user>
File name for which a tape set is to be selected.

VERSION =
This operand can be used to select a specific version (or status) of the specified file.

VERSION = *LATEST
Selects the latest version of the file (i.e. the last version created).

VERSION = <integer -9999..0>
Specifying 0 is equivalent to specifying *LATEST, specifying -1 denotes the penultimate
file status, etc.

VERSION = *ALL
Selects all versions which exist for the specified file name.

VERSION = *NOT-CREATED
Selects only those volumes which have been reserved with the specified file name but
which have not been used (i.e. the CREATION-DATE and CREATION-TIME fields in the
archive entry have not been set). The TYPE-OF-VOLUMES setting is of no conse-
quence in this case and is therefore not interpreted.

USER-IDENTIFICATION =
User ID to which the tapes are assigned (archive entry field USER-ID).

USER-IDENTIFICATION = *ALL
The IDs are not evaluated during selection.

USER-IDENTIFICATION = <name 1..8>
Only those VSNs assigned to the specified user ID are selected.

TYPE-OF-VOLUMES =
Volume sequences (archive entry field VOLUME-SEQUENCE) within a tape set. These
numbers are usually unique, but some numbers may be duplicated after a restart.
If VERSION=*NOT-CREATED is specified, the TYPE-OF-VOLUMES operand is
ignored.

TYPE-OF-VOLUMES = *VALID(...)
If a volume sequence occurs more than once in a tape set, the one created most
recently is selected.

> **CLOSE-CHECK =**
> This operand allows you to select whether the archive entry field CLOSE-
> INDICATOR should be evaluated.
>
> **CLOSE-CHECK = *NO**
> The CLOSE-INDICATOR field is not evaluated.
>
> **CLOSE-CHECK = *YES**
> If the CLOSE-INDICATOR field is not set to CLOSED for one of the tapes in the tape
> set, the statement is aborted.

TYPE-OF-VOLUMES = *OBSOLETE
If the same volume sequence occurs more than once in a tape set, all of them are
selected except for the one created most recently.

TYPE-OF-VOLUMES = *ANY
The volume sequences for a tape set are not checked to establish whether they occur
more than once.

DOMAIN =
Selects the domain in which the attributes for the volumes of a tape set are modified.

DOMAIN = *ANY
The attributes for the volumes of a tape set are modified in all domains.

DOMAIN = *OWN
The attributes for the volumes of a tape set in the user's own domain are modified.
The user's own domain is the domain of the host on which the ADA is currently working.

DOMAIN = *STD-DOMAIN
The attributes for the volumes of a tape set in the standard domain are modified.

DOMAIN = <alphanum-name 1..8>
The attributes for the volumes of a tape set in the specified domain are modified.

PROTECTION = *UNCHANGED / *PARAMETERS(...)
Volume protection attributes.

**PASSWORD = *UNCHANGED / *NONE / <c-string 1..4> / <x-string 1..8> /
<integer-2147483648..2147483647> / *SECRET**
Password protecting against unauthorized access to the volume. The password is
changed using this password.
The operand has the following special features:
–   The value entered is not logged.
–   In guided dialog, the entry field is automatically blanked out.
–   If *SECRET or ^ is specified, in unguided dialog and in foreground procedures SDF
    provides a non-displaying entry field for concealed entry of the password.

**USER-ACCESS = *UNCHANGED / *OWNER-ONLY / *FOREIGN-READ-ONLY /
*ALL-USERS**
Specifies whether foreign user IDs can access the volumes.

USER-ACCESS = *OWNER-ONLY
Access to the volume is possible only under the specified user ID.

USER-ACCESS = *FOREIGN-READ-ONLY
Read-only access to the volume is possible under a foreign user ID.

USER-ACCESS = *ALL-USERS
Unrestricted access to the volume is possible from a foreign user ID.

FREE-DATE = *UNCHANGED / <date> / <integer 0..32767 *days*>
Expiration date of the volume. Up to this date, the volume remains reserved for the given
user ID.

FREE-DATE = <date>
Date in the format yyyy-mm-dd. Dates earlier than the current date are rejected.

FREE-DATE = <integer 0..32767 *days*>
Time specification in days.
The MAREN system internally adds this number to the current date to generate the
expiration date.

EXPIRATION-DATE = *UNCHANGED / <date> / <integer 0..32767 *days*>
File expiration date.

EXPIRATION-DATE = <date>
Date in the format yyyy-mm-dd. Dates earlier than the current date are rejected.

EXPIRATION-DATE = <integer 0..32767 *days*>
Time specification in days. The MAREN system internally adds this number to the
current date to generate the expiration date.

AUDIT = <u>*UNCHANGED</u> / *YES / *NO
Specifies whether the MAREN subsystem is to monitor and if necessary refuse access
to this volume.
However, the AUDIT flag is evaluated only if the host-specific MAREN parameter AUDIT
is set to OPTIONAL.

AUDIT = *YES
Access to this volume is to be monitored.

AUDIT = *NO
No monitoring is to take place.

INITIALIZATION = <u>*UNCHANGED</u> / *YES / *NO / *ERASE
Specifies whether the volume is to be reinitialized and if necessary also erased once it
reaches its expiration date.

LOCATION = <u>*UNCHANGED</u> / *PARAMETERS(...)
Location characteristics.

HOME-LOCATION = <u>*UNCHANGED</u> / <alphanum-name 1..8>
Location name or symbolic location name specifying the archive or the location where
the volume is normally to be stored.

FREE-LOCATION = <u>*UNCHANGED</u> / <alphanum-name 1..8>
Location name or symbolic location name specifying the archive or location where the
volume is to be relocated when it is transferred to the pool of free volumes after the
expiration date has been reached.

TEMPORARY-LOCATION = <u>*UNCHANGED</u> / <alphanum-name 1..8>
Location name or symbolic location name specifying the archive or location where the
volume is currently located.

REMARK = <u>*UNCHANGED</u> / *NONE / <c-string 1..24>
Comment text. This field is output on the screen when the MAREN statement SHOW-
VOLUME-ATTRIBUTES is issued.

REMARK-2 = <u>*UNCHANGED</u> / *NONE / <c-string 1..10>
Comment text. The contents of this field is displayed with the MAREN statement SHOW-
VOLUME-ATTRIBUTES.

REMARK-3 = <u>*UNCHANGED</u> / *NONE / <c-string 1..12>
Comment text. The contents of this field is displayed with the MAREN statement SHOW-
VOLUME-ATTRIBUTES.

USER-FIELD = <u>*UNCHANGED</u> / *NONE / <c-string 1..54>
Comment text. This field may contain any user-specific data, e.g. name, department, telephone number, etc.

ADMINISTRATOR-FIELD = <u>*UNCHANGED</u> / *NONE / <c-string 1..8>
Comment text. This field may contain any computer-center-specific information. It cannot be read or changed by the user.

ADMINISTR-FIELD-2 = <u>*UNCHANGED</u> / *NONE / <c-string 1..16>
Comment text. Any computer center-specific information may be entered here. The field cannot be read or modified by a user.

EXPORT-ADDRESS = <u>*UNCHANGED</u> / *NONE / <c-string 1..50>
Mailing address. Specifies the destination to which the volume is to be sent if mailed. If the volume is to be picked up personally, any text to this effect can be specified, e.g. "Mailbox G7" or "will be picked up by ...".

EXPORT-DATE = <u>*UNCHANGED</u> / *NONE / <date>
Export date in the format yyyy-mm-dd.

Notes

– If the HOME-LOC, FREE-LOC, TEMP-LOC, EXPORT-ADDRESS or EXPORT-DATE operand is modified in an entry with FSEQ > 1, MARENADM outputs warning message `MARM020`.

– If the FSEQ-1 entry cannot be read or modified, e.g. because the entry is still being processed, warning message `MARM021` is output.

– It is not possible to change the storage location for volumes assigned to a location with the operating mode ROBAR-2. In this case, the statement is rejected.

– When modifying volume attributes, the FSEQ-1 entry is also modified if entries with FSEQ > 1 are also part of the tape set. The following operands are affected:

INITIALIZATION

EXPIRATION-DATE
    This may modify FREE-DATE in the FSEQ-1 entry. The initialization flag would also be set when EXPIRATION-DATE is reduced.

FREE-DATE
    This is reduced only if the EXPIRATION-DATE operand of all archive entries for this volume is less than or equal to the new FREE-DATE.

Examples

Example 1

```
//mod-tape-set-attr f-name=file.x,remark='release progx v1.0a'
```

The string specified for the REMARK operand is to be entered in the remark field for all tapes written to when the file file.x was last created. The remark is intended to describe the tape contents.

Example 2

```
//mod-tape-set-attr f-name=file.x,version=-1,
    type-of-vol=*obsolete,free-date=0
```

The second last time the specified file was created (VERSION=-1), the system crashed during tape output while writing to, say, the fifth tape. While the third tape was being written to, the user program set a restart point at which output can be resumed once the system has been rebooted (using the RESTART-PROGRAM command).
The third tape from the aborted job is used again, while the remaining tapes, which have higher volume sequences (VOLUME-SEQUENCE), are automatically reassigned by the automatic free tape allocation facility. The tapes with volume sequences 4 and 5 which originated from the aborted job cannot be used and should therefore be released (operand FREE-DATE=0).

MODIFY-VOLUME-ATTRIBUTES
Modify volume attributes

Privilege   ADA, DA, administrator without domains

The MODIFY-VOLUME-ATTRIBUTES statement modifies the archive entries of volumes.

The default value *UNCHANGED in a given operand signifies that the previous declaration is applicable.
The value *NONE signifies that the specified fields can be deleted in the archive entry.

DAs can only execute the statement in their own domain. The DOMAIN and NEW-DOMAIN operands are thus meaningless for them.

Format

(part 1 of 4)

MODIFY-VOLUME-ATTRIBUTES	Alias: MD / MDVA

VOLUME = *NONE / <vsn>(...) / *INTERVAL(...) / *BY-INPUT-FILE(...) / *ALL

   <vsn>(...)

       FILE-SEQUENCE = 1 / <integer 1..9999>

       ,FILE-NAME = *UNCHANGED / *NONE / <filename 1..41 without-cat-user>

       ,EXPIRATION-DATE = *UNCHANGED / *NONE / <date> / <integer 0..32767 *days*>

       ,VOLUME-SEQUENCE = *UNCHANGED / <integer 1..255>

       ,FIRST-VOLUME = *UNCHANGED / *NONE / <vsn>

       ,ACCESS-COUNT = *UNCHANGED / <integer 0..99999999>

       ,RESERVATION-COUNT = *UNCHANGED / <integer 0..9999>

       ,RESERVATION-DATE = *UNCHANGED / *NONE / <date>

       ,DEVICE-NAME = *UNCHANGED / *NONE / <alphanum-name 2..4>

       ,OPEN-MODE = *UNCHANGED / *NONE / *INPUT / *OUTPUT / *EXTEND / *INOUT / *OUTIN / *SINOUT / *REVERSE

       ,CLOSE-INDICATOR = *UNCHANGED / *NONE / *OPEN / *CLOSE

       ,LAST-CLOSE-DATE = *UNCHANGED / *NONE / <date>

```
         ,LAST-CLOSE-TIME = *UNCHANGED / *NONE / <time>

         ,CREATION-CATALOG-ID = *UNCHANGED / *NONE / <catid 1..4>

         ,CREATION-USER-ID = *UNCHANGED / *NONE / <name 1..8>

         ,CREATION-JOB-NAME = *UNCHANGED / *NONE / <name 1..8>

         ,CREATION-DATE = *UNCHANGED / *NONE / <date>

         ,CREATION-TIME = *UNCHANGED / *NONE / <time>

         ,LAST-WRITE-BLK-CNT = *UNCHANGED / <integer_0..2147483647>

         ,SAVE-FILE-ID = *UNCHANGED / *NONE / <composed-name_15..15> (...)
            <composed-name 15..15> (...)
                 SUB-SAVE-NUMBER = <integer 0..15>
                 SUB-SEQUENCE-NUMBER = <integer 1..255>

         ,LAST-ACCESS-STATUS = *UNCHANGED / *PARAMETERS(...)

            *PARAMETERS(...)
                 LAST-ACCESS-USER-ID = *UNCHANGED / *NONE / <name 1..8>

                 ,LAST-ACCESS-ACCOUNT = *UNCHANGED / *NONE / <alphanum-name 1..8>

                 ,LAST-ACCESS-JOB-NAME = *UNCHANGED / *NONE / <name 1..8>

                 ,LAST-ACCESS-TSN = *UNCHANGED / *NONE / <alphanum-name 1..4>

                 ,LAST-ACCESS-SNO = *UNCHANGED / *NONE / <integer 1..255>

                 ,LAST-ACCESS-DATE = *UNCHANGED / *NONE / <date>

                 ,LAST-ACCESS-TIME = *UNCHANGED / *NONE / <time>

                 ,LAST-ACCESS-CPU-NAME = *UNCHANGED / *NONE / <alphanum-name 1..8>

   *INTERVAL(...)
         FROM = *FIRST / <vsn>

         ,TO = *LAST / <vsn>

         ,FROM-FSEQ = 1 / <integer 1..9999>

   *BY-INPUT-FILE(...)
         FILE-NAME = <filename 1..54>

,SELECT = *ALL(...) / *RESERVED(...) / *FREE(...)

   *ALL(...)

         DOMAIN = *ANY / *OWN / *STD-DOMAIN / <alphanum-name 1..8>

         ,NEW-DOMAIN = *SAME / *OWN / *STD-DOMAIN / <alphanum-name 1..8>
```

(part 3 of 4)

```
    *RESERVED(...)
          USER-IDENTIFICATION = *ALL / <name 1..8>

          ,DOMAIN = *ANY / *OWN / *STD-DOMAIN / <alphanum-name 1..8>

          ,VOLUME-GROUP = *ANY / *NONE / <text 1..32 without-sep>
          ,DIRECTORY-NAME = *ALL / <filename 1..54 without-gen-vers> (...)
             <filename 1..54 without-gen-vers> (...)
                  SAVE-FILE-ID = *ALL / *LATEST / <integer -32767..0> / <composed-name 15..15>
          ,NEW-USER-ID = *SAME / <name 1..8>

          ,NEW-DOMAIN = *SAME / *OWN / *STD-DOMAIN / <alphanum-name 1..8>

          ,NEW-VOLUME-GROUP = *SAME / *NONE / <text 1..32 without-sep>

          ,NEW-DIRECTORY-NAME = *SAME / *NONE / <filename 1..54 without-gen-vers>

          ,NEW-FREE-POOL = *SAME / *NO / *GLOBAL / *TSOS / <filename 1..54> /
                        <text 2..32 without-sep>

    *FREE(...)
          FREE-POOL = *NO / *GLOBAL / *TSOS / <filename 1..54 without-gen-vers> /
                        text_2..32_without-separators>

          ,DEVICE-TYPE = *STD / <structured-name 1..8>

          ,DOMAIN = *ANY / *OWN / *STD-DOMAIN / <alphanum-name 1..8>

          ,NEW-FREE-POOL = *SAME / *NO / *GLOBAL / *TSOS / <filename 1..54> /
                         <text 2..32 without-sep>

          ,NEW-DOMAIN = *SAME / *OWN / *STD-DOMAIN / <alphanum-name 1..8>

,ACCOUNT = *UNCHANGED / *NONE / <alphanum-name 1..8>

,PROTECTION = *UNCHANGED / *PARAMETERS(...)

   *PARAMETERS(...)
          PASSWORD = *UNCHANGED / *NONE / <c-string 1..4> / <x-string 1..8> /
                <integer -2147483648..2147483647> / *SECRET

          ,USER-ACCESS = *UNCHANGED / *OWNER-ONLY / *FOREIGN-READ-ONLY / *ALL-USERS

          ,FREE-DATE = *UNCHANGED / <date> / <integer 0..32767 days>

          ,EXPIRATION-DATE= *UNCHANGED / *NONE / <date with-compl> / <integer 0..32767 days>

          ,AUDIT = *UNCHANGED / *YES / *NO

          ,INITIALIZATION = *UNCHANGED / *YES / *NO / *ERASE
```

(part 4 of 4)

```
,LOCATION = *UNCHANGED / *PARAMETERS(...)

   *PARAMETERS(...)
        │   HOME-LOCATION = *UNCHANGED / <alphanum-name 1..8>

        │  ,FREE-LOCATION = *UNCHANGED / <alphanum-name 1..8>

        │  ,TEMPORARY-LOCATION = *UNCHANGED / <alphanum-name 1..8>

,REMARK = *UNCHANGED / *NONE / <c-string 1..24>

,REMARK-2 = *UNCHANGED / *NONE / <c-string 1..10>

,REMARK-3= *UNCHANGED / *NONE / <c-string 1..12>

,USER-FIELD = *UNCHANGED / *NONE / <c-string 1..54>

,ADMINISTRATOR-FIELD = *UNCHANGED / *NONE / <c-string 1..8>

,ADMINISTR-FIELD-2 = *UNCHANGED / *NONE / <c-string 1..16>

,EXPORT-ADDRESS = *UNCHANGED / *NONE / <c-string 1..50>

,EXPORT-DATE = *UNCHANGED / *NONE / <date>

,REGISTRATION-DATE = *UNCHANGED / *NONE / <date with-compl>

,OVERFLOW-CONTROL = *BY-PROGRAM / *BY-SYSTEM
```

Operands

VOLUME =
VSNs of volumes whose archive entries in the MAREN catalog are to be modified.

VOLUME = <vsn>(...)
VSN.

FILE-SEQUENCE = 1 / <integer 1..9999>
File sequence number whose archive entry is to be modified.

FILE-NAME = *UNCHANGED / *NONE / <filename 1..41 without-cat-user>
Name of the file with the specified file sequence number located on the volume. If an
ARCHIVE directory name is entered in the archive entry, NEW-DIR-NAME=*NONE or
NEW-FREE-POOL=*NONE must be specified before a file name can be entered.

EXPIRATION-DATE = *UNCHANGED / *NONE / <date> /
<integer 0..32767 *days*>
File expiration date.

EXPIRATION-DATE = <date>
Date in the format yyyy-mm-dd. Dates earlier than the current date are rejected.

EXPIRATION-DATE = <integer 0..32767 *days*>
Time specification in days. The MAREN system internally adds this number to the
current date to generate the expiration date.

VOLUME-SEQUENCE = <u>*UNCHANGED</u> / <integer 1..255>
File section number (volume sequence) within a multivolume file (MV set).

FIRST-VOLUME = <u>*UNCHANGED</u> / *NONE / <vsn>
First VSN of a multivolume file (file set identifier).

ACCESS-COUNT = <u>*UNCHANGED</u> / <integer 0..9999>
Number of (read and write) accesses to the volume.

RESERVATION-COUNT = <u>*UNCHANGED</u> / <integer 0..9999>
Specifies how often this volume has been reserved up to now.

RESERVATION-DATE = <u>*UNCHANGED</u> / *NONE / <date>
Specifies the last time this volume was reserved.

DEVICE-NAME = <u>*UNCHANGED</u> / *NONE / <alphanum-name 2..4>
Name (mnemonic) of the device on which the volume was last processed.

**OPEN-MODE = <u>*UNCHANGED</u> / *NONE / *INPUT / *OUTPUT / *EXTEND / *INOUT /
*OUTIN / *SINOUT / *REVERSE**
Open mode of the last access to the volume.

CLOSE-INDICATOR = <u>*UNCHANGED</u> / *NONE / *OPEN / *CLOSE
Indicates the status of a tape output file.

CLOSE-INDICATOR = *OPEN
Indicates that the output file was opened but has not yet been closed.

CLOSE-INDICATOR = *CLOSE
Indicates that the output file has been properly closed.

LAST-CLOSE-DATE = <u>*UNCHANGED</u> / *NONE / <date>
Date in the format [yy]yy-mm-dd specifying the last day on which a file on this volume
was closed.

LAST-CLOSE-TIME = <u>*UNCHANGED</u> / *NONE / <time>
Time in the format hh[:mm[:ss]], where initial zeros need not be entered for hh, mm and
ss. Specifies the time of day a file on this volume was last closed.

CREATION-CATALOG-ID = <u>*UNCHANGED</u> / *NONE / <cat-id>
Catalog ID of the pubset on which the volume was last written to.
If an ARCHIVE directory name is entered in the archive entry, NEW-DIRECTORY-
NAME=*NONE or NEW-FREE-POOL=*NONE must be specified before a value for
CREATION-CATALOG-ID can be entered.

CREATION-USER-ID = <u>*UNCHANGED</u> / *NONE / <name 1..8>
User ID under which the volume was last written to. If an ARCHIVE directory name is entered in the archive entry, NEW-DIR-NAME=*NONE or NEW-FREE-POOL=*NONE must be specified before a value for CREATION-USER-ID can be entered.

CREATION-JOB-NAME = <u>*UNCHANGED</u> / *NONE / <name 1..8>
Name of the last job which wrote to the volume.

CREATION-DATE = <u>*UNCHANGED</u> / *NONE / <date>
Date in the format yyyy-mm-dd specifying the day on which the volume was last written to.

CREATION-TIME = <u>*UNCHANGED</u> / *NONE / <time>
Time in the format hh[:mm[:ss]], where initial zeros need not be entered for hh, mm and ss. Specifies the time of day at which the volume was last written to.

LAST-WRITE-BLK-CNT = <u>*UNCHANGED</u> / <integer_0..2147483647>
Number of blocks occupying this volume at FSEQ = 0001. At FSEQ = 0001, the counter contains all blocks up to the end of this file.

SAVE-FILE-ID = <u>*UNCHANGED</u> / *NONE / <composed-name 15..15> (...)
SAVE-FILE-ID of a save file from HSMS/ARCHIVE.

SAVE-FILE-ID = <composed-name 15..15> (...)
The SAVE-FILE-ID is specified as follows: S.yymmdd.hhmmss.

> **SUB-SAVE-NUMBER = <integer 0..15>**
> SUB-SAVE-NUMBER of the backup tape (or backup subtask) of the SAVE-FILE-ID named above. If the administrator assigned a SAVE-FILE-ID, a SUB-SAVE-NUMBER must also be specified.

> **SUB-SEQUENCE-NUMBER = <integer 1..255>**
> SUB-SEQUENCE-NUMBER belonging to the above SUB-SAVE-NUMBER and SAVE-FILE-ID. If the administrator assigned a SAVE-FILE-ID, then a SUB-SEQUENCE-NUMBER must also be specified.

LAST-ACCESS-STATUS = <u>*UNCHANGED</u> / *PARAMETERS(...)
Parameters during the last access.

> **LAST-ACCESS-USER-ID = <u>*UNCHANGED</u> / *NONE / <name 1..8>**
> User ID during the last access.

> **LAST-ACCESS-ACCOUNT = <u>*UNCHANGED</u> / *NONE / <alphanum-name 1..8>**
> Account number during the last access.

> **LAST-ACCESS-JOB-NAME = <u>*UNCHANGED</u> / *NONE / <name 1..8>**
> Job name during the last access.

> **LAST-ACCESS-TSN = <u>*UNCHANGED</u> / *NONE**
> Task sequence number during the last access.

LAST-ACCESS-TSN = *NONE
Four blanks are entered, enabling the internal MAREN volume lock to be lifted.

LAST-ACCESS-SNO = *UNCHANGED / *NONE / <integer 1..255>
Session number during the last access.

LAST-ACCESS-DATE = *UNCHANGED / *NONE / <date>
Date of the last access in the format yyyy-mm-dd.

LAST-ACCESS-TIME = *UNCHANGED / *NONE / <time>
Time of the last access in the format hh[:mm[:ss]], where initial zeros need not be entered for hh, mm and ss.

LAST-ACCESS-CPU-NAME = *UNCHANGED / *NONE / <alphanum-name 1..8>
Host name during the last access.

VOLUME = *INTERVAL(...)
All volumes whose VSN is in the range specified below are processed.

FROM = *FIRST / <vsn 1..6>
VSN. All volumes whose VSN is greater than or equal to the specified VSN are processed.

FROM = *FIRST
All volumes are processed, starting with the lowest available VSN.

TO = *LAST / <vsn 1..6>
VSN. All volumes whose VSN is less than or equal to the specified VSN are processed.

TO = *LAST
All volumes are processed up to the highest available VSN.

FROM-FSEQ = 1 / <integer 1..9999>
File sequence number of the FROM operand. Specifies the precise file sequence number at which processing is to begin. This operand is relevant only if the statement is issued via the program interface.

VOLUME = *ALL
All volumes are processed.

VOLUME = *BY-INPUT-FILE(...)
Selects the archive entries to be modified by means of an input file (see notes on ff).

FILE-NAME = <filename 1..54>
Name of a SAM file which contains full archive entries in MAREN format. Files created with file editors (e.g. EDT) can also be assigned.

SELECT =
Specifies whether the archive entries from the VOLUME = ... operand are still selected or whether their assignment should be modified.

SELECT = *ALL(...)
Free and reserved volumes are processed.

DOMAIN =
Selects the domain.

DOMAIN = *ANY
The volumes from all domains are processed.

DOMAIN = *OWN
The volumes from the user's own domain are processed.
The user's own domain is the domain of the host on which the ADA is currently working.

DOMAIN = *STD-DOMAIN
The volumes from the standard domain are processed.

DOMAIN = <alphanum-name 1..8>
The volumes from the specified domain are processed.

NEW-DOMAIN =
Assigns the domain.

NEW-DOMAIN = *SAME
The domain assignment remains unchanged.

NEW-DOMAIN = *OWN
The volumes are assigned to the user's own domain.
The user's own domain is the domain of the host on which the ADA is currently working.

NEW-DOMAIN = *STD-DOMAIN
The volumes are assigned to the standard domain.

NEW-DOMAIN = <alphanum-name 1..8>
The volumes are assigned to the specified domain.

SELECT = *RESERVED(...)
Only archive entries of the computer center's own reserved volumes or foreign volumes are processed.

USER-IDENTIFICATION = *ALL / <name 1..8>
User ID. All archive entries assigned to the specified user ID are processed.

DOMAIN = *ANY / *OWN / *STD-DOMAIN / <alphanum-name 1..8>
Reserved volumes from a selected domain are processed.

VOLUME-GROUP = *ANY / *NONE / <text 1..32 without-sep>
Specifies the volume group to which a volume must belong for it to be processed. When *ANY is specified, the volume group is irrelevant; when *NONE is specified, the volume may not belong to a volume group. "*" can be entered as the last character. In this case all volume groups which begin with the specified string are selected.

DIRECTORY-NAME =
The reserved volumes assigned to the specified ARCHIVE directory are selected. If this directory is located under a remote user ID, both the user ID and the catalog ID must be entered. The user's own ID and standard catalog ID can be omitted.

DIRECTORY-NAME = <u>*ALL</u>
No selection is made from the ARCHIVE directories.

DIRECTORY-NAME = <filename 1..54 without-gen-vers>
Only volumes which are allocated to the pool of the specified ARCHIVE directory are selected. The selection may already have been restricted using the VOLUME operand.

> **SAVE-FILE-ID =**
> The tapes to be processed are selected using the save file of the ARCHIVE directory named above.
>
> **SAVE-FILE-ID = *ALL**
> All tapes from this ARCHIVE directory are to be processed.
>
> **SAVE-FILE-ID = *LATEST**
> All tapes listed in the last, i.e. most recent save file are selected.
>
> **SAVE-FILE-ID = <integer -32767..0>**
> All volumes listed in the nth save file are selected (the older the save file, the larger the number n). 0 equals *LATEST. Example: if -5 is specified, the volumes are selected from the last save file but five.
>
> **SAVE-FILE-ID = <composed-name 15..15>**
> All volumes in a save file with the specified SAVE-FILE-ID are selected. The SAVE-FILE-ID has the following format: S.yymmdd.hhmmss.

NEW-USER-ID = <u>*SAME</u> / <name 1..8>
User ID. This ID will be entered for all selected archive entries.

NEW-USER-ID = <u>*SAME</u>
The user ID remains unchanged.

NEW-DOMAIN = <u>*SAME</u> / *OWN / *STD-DOMAIN / <alphanum-name 1..8>
Domain assignment. The volumes are reassigned to the specified domain.

NEW-VOLUME-GROUP = <u>*SAME</u> / *NONE / <text 1..32 without-sep>
Specifies the new volume group to which a selected volume is assigned. When *SAME is specified, the volume group remains unchanged; when *NONE is specified, the affiliation to a volume group is deleted.

NEW-DIRECTORY-NAME = <u>*SAME</u> / *NONE / <filename 1..54 without-gen-vers>
The new directory name for reserved volumes is specified here.
If this directory is located under a remote user ID, both the user ID and the catalog ID must be entered. The user's own ID and standard catalog ID can be omitted.
If the fields FILE-NAME, CREATION-CATALOG-ID or CREATION-USER-ID are set in the archive entry, these must be deleted with *NONE (e.g. FILE-NAME=*NONE).

NEW-DIRECTORY-NAME = <u>*SAME</u>
The allocation to an ARCHIVE directory is not modified.

NEW-DIRECTORY-NAME = *NONE
Any existing ARCHIVE directory name is deleted.

NEW-FREE-POOL =
Modifies the allocation to particular free tape pool.

NEW-FREE-POOL = <u>*SAME</u>
The allocation to a free tape pool remains unchanged.

NEW-FREE-POOL = *NO
The volumes are assigned to the *NO free tape pool.

NEW-FREE-POOL = *GLOBAL
The volumes are assigned to the free tape pool for general ARCHIVE applications under any user ID.

NEW-FREE-POOL = *TSOS
The volumes are assigned to the free tape pool for ARCHIVE applications under the ID TSOS.

NEW-FREE-POOL = <filename 1..54 without-gen-vers>
The volumes are assigned to the free tape pool for ARCHIVE applications using the specified directory. If this directory is located under a remote user ID, both the user ID and the catalog ID must be entered. The user's own ID and standard catalog ID can be omitted.
The directory name specified here must match that entered under DIRECTORY-NAME or NEW-DIRECTORY-NAME, or DIRECTORY-NAME must not be entered. Prior to modification, the contents of the archive entry fields FILE-NAME, CREATION-CATALOG-ID and CREATION-USER-ID must be deleted with *NONE (e.g. FILE-NAME=*NONE).

NEW-FREE-POOL = <text 2..32 without-sep>
Specifies the name of a free tape pool.
The name of the free tape pool must begin with "*" followed by at least one character from A-Z or 0-9. The characters ".", "-" and "_" are permitted, but not at the end and not next to each other. If the relevant free tape pool does not yet exist, it will be created. Otherwise, it is extended to include the specified volumes.

SELECT = *FREE(...)
Only the archive entries from free volumes are processed.

FREE-POOL =
Selects the archive entries to be modified from free volumes in the free tape pool.

FREE-POOL = *NO
Only volumes assigned to the *NO free tape pool are selected.

FREE-POOL = *GLOBAL
Only free volumes assigned to the free tape pool for general ARCHIVE applications under any user ID are selected.

FREE-POOL = *TSOS
Only free volumes assigned to the free tape pool for ARCHIVE applications under the ID TSOS are selected.

FREE-POOL = <filename 1..54 without-gen-vers>
Only free volumes assigned to the free tape pool of the specified directory are selected. If this directory is located under a remote user ID, both the user ID and the catalog ID must be entered. The user's own ID and standard catalog ID can be omitted.

FREE-POOL = <text 2..32 without-sep>
Specifies the name of a free tape pool.
The name of the free tape pool must begin with "*" followed by at least one character from A-Z or 0-9. The characters ".", "-" and "_" are permitted, but not at the end and not next to each other. If the relevant free tape pool does not yet exist, it will be created. Otherwise, it is extended to include the specified volumes.

DEVICE-TYPE =
Device type. Selects the archive entries to be modified on the basis of the device type.

DEVICE-TYPE = *STD
Only volumes of the default device type (DEFAULT-DEVICE-TYPE) specified in the control program's start procedure are selected.

DEVICE-TYPE = <structured-name 1..8>
Device type. For a list of possible entries (depending on the BS2000/OSD version), see manual "System Installation" [9].

DOMAIN =
Selects the domain.

DOMAIN = *ANY
The free volumes from all domains are processed.

DOMAIN = *OWN
The volumes of the user's own domain are processed.
The user's own domain is the domain of the host on which the ADA is currently working.

DOMAIN = *STD-DOMAIN
The volumes of the standard domain are processed.

DOMAIN = <alphanum-name 1..8>
The volumes of the specified domain are processed.

NEW-FREE-POOL =
Modifies the allocation of free volumes to particular free tape pool.

NEW-FREE-POOL = *SAME
The allocation to an free tape pool remains unchanged.

NEW-FREE-POOL = *NO
The volumes are assigned to the *NO free tape pools.

NEW-FREE-POOL = *GLOBAL
The volumes are assigned to the free tape pool for general ARCHIVE applications under any user ID.

NEW-FREE-POOL = *TSOS
The volumes are assigned to the free tape pool for ARCHIVE applications under the ID TSOS.

NEW-FREE-POOL = <filename 1..54 without-gen-vers>
The volumes are allocated to the free tape pool for ARCHIVE applications using the specified directory. If this directory is located under a remote user ID, both the user ID and the catalog ID must be entered. The user's own ID and standard catalog ID can be omitted.

NEW-FREE-POOL = <text 2..32 without-sep>
Specifies the name of a free tape pool.
The name of the free tape pool must begin with "*" followed by at least one character from A-Z or 0-9. The characters ".", "-" and "_" are permitted, but not at the end and not next to each other. If the relevant free tape pool does not yet exist, it will be created. Otherwise, it is extended to include the specified volumes.

NEW-DOMAIN =
Assigns the domain.

NEW-DOMAIN = *SAME
The domain assignment remains unchanged.

NEW-DOMAIN = *OWN
The volumes are assigned to the user's own domain.
The user's own domain is the domain of the host on which the ADA is currently working.

NEW-DOMAIN = *STD-DOMAIN
The volumes are assigned to the standard domain.

NEW-DOMAIN = <alphanum-name 1..8>
The volumes are assigned to the specified domain.

ACCOUNT = <u>*UNCHANGED</u> / *NONE / <alphanum-name 1..8>
Account number of the user ID entered in the archive entry.

PROTECTION = <u>*UNCHANGED</u>/ *PARAMETERS(...)
Volume protection attributes.

PASSWORD = <u>*UNCHANGED</u> / *NONE / <c-string 1..4> / <x-string 1..8> /
<integer -2147483648..2147483647> / *SECRET
Password protecting against unauthorized access to the volume. The password C'$$$$'
is not permitted. This operand is only required to modify the password.
The operand has the following special features:
– The value entered is not logged.
– In guided dialog, the entry field is automatically blanked out.
– If *SECRET or ^ is specified, in unguided dialog and in foreground procedures SDF
  provides a non-displaying entry field for concealed entry of the password.

USER-ACCESS = <u>*UNCHANGED</u> / *OWNER-ONLY / *FOREIGN-READ-ONLY /
*ALL-USERS
Specifies whether foreign user IDs can access the volumes.

USER-ACCESS = *OWNER-ONLY
Access to the volume is possible only under the specified user ID.

USER-ACCESS = *FOREIGN-READ-ONLY
Read-only access to the volume is possible under a foreign user ID.

USER-ACCESS = *ALL-USERS
Unrestricted access to the volume is possible from a foreign user ID.

FREE-DATE = <u>*UNCHANGED</u> / <date> / <integer 0..32767 *days*>
Expiration date of the volume. Up to this date, the volume remains reserved for the given
user ID.

FREE-DATE = <date>
Date in the format yyyy-mm-dd. Dates earlier than the current date are rejected.

FREE-DATE = <integer 0..32767 *days*>
Time specification in days. The MAREN system internally adds this number to the
current date to generate the expiration date.

EXPIRATION-DATE =
Expiration date for all files on the volume.

EXPIRATION-DATE = <u>*UNCHANGED</u>
The expiration date is not updated.

EXPIRATION-DATE = *NONE
The expiration date is deleted for all selected files.

EXPIRATION-DATE = <date with-compl>
Date in the format yyyy-mm-dd. Dates earlier than the current date are rejected.

EXPIRATION-DATE = <integer 0..32767 *days*>
Time specification in days. The MAREN system internally adds this number to the current date to generate the expiration date.

AUDIT = *UNCHANGED* / *YES / *NO
Specifies whether the MAREN subsystem is to monitor and if necessary refuse access to this volume. However, the AUDIT flag is evaluated only if the host-specific MAREN parameter AUDIT is set to OPTIONAL.

AUDIT = *YES
Access to this volume is to be monitored.

AUDIT = *NO
No monitoring is to take place.

INITIALIZATION = *UNCHANGED* / *YES / *NO / *ERASE
Specifies whether the volume is to be reinitialized and if required also erased once it reaches its expiration date.

LOCATION = *UNCHANGED* / *PARAMETERS(...)
Attributes for location management.

HOME-LOCATION = *UNCHANGED* / <alphanum-name 1..8>
Location name or symbolic location name specifying the archive or the location where the volume is normally to be stored.

FREE-LOCATION = *UNCHANGED* / <alphanum-name 1..8>
Location name or symbolic location name specifying the archive or location where the volume is to be relocated when it is transferred to the pool of free volumes after the expiration date has been reached.

TEMPORARY-LOCATION = *UNCHANGED* / <alphanum-name 1..8>
Location name or symbolic location name specifying the archive or location where the volume is currently located.

The locations of the logical volumes (for details on the operating mode ROBAR-2 for ETERNUS CS (CentricStor) see "MAREN Volume 1" [1]) can be modified. In this case HOME-LOCATION, FREE-LOCATION and TEMPORARY-LOCATION must be identical.

REMARK = *UNCHANGED* / *NONE / <c-string 1..24>
Comment text. This field is output on the screen when the MAREN statement SHOW-VOLUME-ATTRIBUTES is issued.

REMARK-2 = *UNCHANGED / *NONE / <c-string 1..10>
Comment text. The contents of this field is displayed with the MAREN statement SHOW-VOLUME-ATTRIBUTES.

REMARK-3 = *UNCHANGED / *NONE / <c-string 1..12>
Comment text. The contents of this field is displayed with the MAREN statement SHOW-VOLUME-ATTRIBUTES.

USER-FIELD = *UNCHANGED / *NONE / <c-string 1..54>
Comment text. This field may contain any user-specific data, e.g. name, department, telephone number, etc.

ADMINISTRATOR-FIELD = *UNCHANGED / *NONE / <c-string 1..8>
Comment text. This field may contain any computer center-specific information. It cannot be read or changed by the user.

ADMINISTR-FIELD-2 = *UNCHANGED / *NONE / <c-string 1..16>
Comment text. Any computer center-specific information may be entered here. The field cannot be read or modified by a user.

EXPORT-ADDRESS = *UNCHANGED / *NONE / <c-string 1..50>
Mailing address. Specifies the destination to which the volume is to be sent if mailed. If the volume is to be picked up personally, any text to this effect can be specified, e.g. "Mailbox G7" or "will be picked up by ...".

EXPORT-DATE = *UNCHANGED / *NONE / <date>
Export date in the format yyyy-mm-dd.

REGISTRATION-DATE = *UNCHANGED / *NONE / <date with-compl>
Date, in the format yyyy-mm-dd, on which the volume was entered in the MAREN catalog. If *UNCHANGED is specified, the registration date remains unchanged; if *NONE is specified, it is deleted.

OVERFLOW-CONTROL =
Type of screen overflow control in interactive mode.

OVERFLOW-CONTROL = *BY-PROGRAM
Control by the program: After eighteen archive entries have been processed, a message is displayed inquiring whether the current operation is to be continued or aborted.

OVERFLOW-CONTROL = *BY-SYSTEM
Control by the system: Screen overflow control is based entirely on the system parameter TCHOFLO or the value set in the MODIFY-TERMINAL-OPTIONS command.

Notes

– In the MAREN catalog entry, the three fields FILE-NAME, CREATION-CATALOG-ID and CREATION-USER-ID occupy the same area in which the name of an ARCHIVE directory can also be stored.
Consequently, when entering a directory name (NEW-DIRECTORY-NAME or NEW-FREE-POOL=<filename>), these three fields must be empty or explicitly deleted. This is achieved by setting them to *NONE.
Conversely, any existing directory name must likewise be deleted (NEW-DIRECTORY-NAME=*NONE) if, for example, a file name is to be added to the MAREN catalog entry by means of FILE-NAME=<filename>.

– A volume expiration date which precedes the expiration date of the first volume of an MF/MV set must not be set for the subsequent volumes in the set. The expiration date for the first volume (VOLUME-SEQUENCE=1) must be reset if all the volumes in an MF/MV set are to be released.

– The operands DIRECTORY-NAME and NEW-DIRECTORY-NAME can only be used in connection with reserved volumes. The FREE-POOL operand on the other hand can only be used in connection with free volumes. Thus, if a specific DIRECTORY-NAME is employed in a selection criterion in a SELECT operand, only the archive entries for reserved volumes are modified. However, if a special free tape pool is specified (FREE-POOL operand), only the archive entries for free volumes are modified.

– If you increment the file expiration date EXPIRATION-DATE, the volume expiration date FREE-DATE will also be incremented automatically if required.

– If you decrement the file expiration date EXPIRATION-DATE, the INITIALIZATION field is set to YES.

– If the volume expiration date FREE-DATE is modified, this is ignored for foreign volumes.

– If the value of the FREE-DATE operand is less than that of the EXPIRATION-DATE operand in the archive entry, the archive entry is not modified. Instead, the spin-off mechanism is triggered and an appropriate message is output. Decrementing FREE-DATE causes no problems provided EXPIRATION-DATE is decremented at the same time, e.g. `//MOD-VOL-ATTR VOL=TAPE01,FREE-DATE=0,EXPIR-DATE=0`

– It is not possible to change the storage location for volumes assigned to a location with the operating mode ROBAR-2. In this case, the statement is rejected.

– Volumes allocated to the pool of an ARCHIVE directory are not released until they have been taken out of the directory pool via the ARCHIVE statement POOL or PURGE, even if their expiration date has been exceeded. If this is no longer possible, e.g. because the ARCHIVE directory has been deleted, then the allocation can subsequently be cancelled using the operand NEW-DIRECTORY= *NONE in the MODIFY-VOLUME-ATTRIBUTES statement.

– The internal volume lock (MAREN lock) can only be lifted in interactive mode using the statement MODIFY-VOL-ATTR VOLUME=<vsn>,LAST-ACCESS-TSN=*NONE without any further operands. If the lock has actually been set for a TSN which still exists, the following message appears:

```
MARM157   DO YOU REALLY WANT TO CANCEL LOCK ON THIS VOLUME?
          REPLY (Y = YES; N=NO)
```

– If the aliases for the values *NO, *GLOBAL or *TSOS of the FREE-POOL operand are specified, then these operand values are expanded to their full length for compatibility reasons (e.g. the entry *GL is expanded to *GLOBAL).

– Related volumes can be combined to form a volume group. All files which are located on a volume automatically belong to this volume group. When a reserved volume which is assigned to a volume group is released, the assignment to the volume group is canceled for this volume.

*Notes on VOLUME=*BY-INPUT-FILE*

– All archive entries are read sequentially from the assigned input file, but only the VSN (VOLUME) and the file sequence number (FILE-SEQUENCE) of each archive entry are evaluated. The archive entry of the volume is question is read from the MAREN catalog and the fields specified in the MOD-VOL-ATTR statement (e.g. REMARK) are updated.

– If a file is assigned which contains no complete archive entries and which was created using a file editor, the records it contains must have the following format:

Bytes 1-4:   Record length field
Bytes 5-10:   VSN, if necessary padded with trailing blanks, e.g. 'TAPE1␣'
Bytes 11-14:   File sequence number, e.g. '0001'
Bytes 15-510: Not set or any text

– If a volume named in the input file has no corresponding entry in the MAREN catalog, this fact is logged, task switch 31 is set, and processing continues with the next archive entry in the input file.

– If additional selection criteria are specified by means of the SELECT operand and the associated structure operand (e.g. USER-IDENTIFICATION), these criteria are taken into consideration, whereby the decision is ultimately dependent on the archive entry in the MAREN catalog. If, for example, SELECT=*FREE is specified and the volume is marked as reserved in the MAREN catalog but as free in the input file, no modification takes place.

– Only the archive entries in the MAREN catalog are updated. The input file is not modified.

Examples

Example 1

```
//mod-vol-attr vol=*int(mb2240,mb2249),location=*par(home-loc=robabba1)
%  MARM121 MAREN CATALOG ENTRY 'MB2240'/'0001' MODIFIED
%  MARM121 MAREN CATALOG ENTRY 'MB2241'/'0001' MODIFIED
%  MARM121 MAREN CATALOG ENTRY 'MB2242'/'0001' MODIFIED
%  MARM121 MAREN CATALOG ENTRY 'MB2243'/'0001' MODIFIED
%  MARM121 MAREN CATALOG ENTRY 'MB2244'/'0001' MODIFIED
%  MARM121 MAREN CATALOG ENTRY 'MB2246'/'0001' MODIFIED
%  MARM121 MAREN CATALOG ENTRY 'MB2247'/'0001' MODIFIED
%  MARM121 MAREN CATALOG ENTRY 'MB2248'/'0001' MODIFIED
%  MARM121 MAREN CATALOG ENTRY 'MB2249'/'0001' MODIFIED
%  MARM120 TOTAL OF 9 MAREN CATALOG ENTRIES PROCESSED
```

This statement is used to assign the permanent location robabba1 for the volume whose VSNs lie within the range mb2240 to mb2249.

Example 2

```
//mod-vol-attr vol=*all,select=*res(user-id=test1,new-user-id=test2)
%  MARM121 MAREN CATALOG ENTRY 'ID1040'/'0001' MODIFIED
%  MARM121 MAREN CATALOG ENTRY 'ID1043'/'0001' MODIFIED
%  MARM121 MAREN CATALOG ENTRY 'ID2004'/'0001' MODIFIED
%  MARM121 MAREN CATALOG ENTRY 'MB2243'/'0001' MODIFIED
%  MARM121 MAREN CATALOG ENTRY 'XY0005'/'0001' MODIFIED
%  MARM120 TOTAL OF 4 MAREN CATALOG ENTRIES PROCESSED
```

This statement assigns all volumes previously archived under the user ID test1 to a new ID, test2.

Example 3

```
//mod-vol-attr vol=*int(id5000,id6000),sel=*reserved(user-id=user1),
   prot=*par(free-date=0)
%  MARM121 MAREN CATALOG ENTRY 'ID5001'/'0001' MODIFIED
%  MARM121 MAREN CATALOG ENTRY 'ID5002'/'0001' MODIFIED
%  MARM121 MAREN CATALOG ENTRY 'ID5003'/'0001' MODIFIED
%  MARM121 MAREN CATALOG ENTRY 'ID5004'/'0001' MODIFIED
%  MARM121 MAREN CATALOG ENTRY 'ID5005'/'0001' MODIFIED
%  MARM121 MAREN CATALOG ENTRY 'ID5006'/'0001' MODIFIED
%  MARM121 MAREN CATALOG ENTRY 'ID5007'/'0001' MODIFIED
%  MARM121 MAREN CATALOG ENTRY 'ID5801'/'0001' MODIFIED
%  MARM121 MAREN CATALOG ENTRY 'ID5802'/'0001' MODIFIED
%  MARM121 MAREN CATALOG ENTRY 'ID5803'/'0001' MODIFIED
%  MARM120 TOTAL OF 10 MAREN CATALOG ENTRIES PROCESSED
```

The expiration date of all volumes whose VSNs lie within the range id5000 to id6000 and are assigned to the user ID user1 is set to the current date. As a consequence, the volumes in question are released by the archivist in the course of the next release run using the MARENADM statement FREE-VOLUMES.

Volumes whose VSNs lie outside the specified number range or are not cataloged under the ID user1 are not affected.

Example 4

The location da1100 is to be replaced with da1200 in all archive entries. For this purpose, the SELECT operand in the PRINT-VOLUME-ATTRIBUTES statement must indicate that all archive entries containing the value da1100 in their HOME-, FREE- or TEMPORARY-LOCATION field are to be included in the output file list.vol.1. This can be defined using the parameter set loc01:

```
//print-vol-attr voL=*int(id5000,id6000),sel=*y(loc01),
    output=list.vol.1,layout-contr=*no
% JMS0066 JOB 'ULF' ACCEPTED ON 99-06-08 AT 08:59, TSN = 1AV5
% MARM170 STATEMENT '//PRINT-VOLUME-ATTRIBUTES' PROCESSED
```

The output file assigned in PRINT-VOLUME-ATTRIBUTES then serves as the input file for the MODIFY-VOLUME-ATTRIBUTES statement:

```
//mod-vol-attr vol=*by-input-file(f-name=list.vol.1),
    home-loc=da1200,free-loc=da1200,temp-loc=da1200
% MARM121 MAREN CATALOG ENTRY 'ID5001'/'0001' MODIFIED
% MARM121 MAREN CATALOG ENTRY 'ID5002'/'0001' MODIFIED
% MARM121 MAREN CATALOG ENTRY 'ID5003'/'0001' MODIFIED
% MARM121 MAREN CATALOG ENTRY 'ID5004'/'0001' MODIFIED
% MARM121 MAREN CATALOG ENTRY 'ID5005'/'0001' MODIFIED
% MARM121 MAREN CATALOG ENTRY 'ID5006'/'0001' MODIFIED
% MARM121 MAREN CATALOG ENTRY 'ID5007'/'0001' MODIFIED
% MARM121 MAREN CATALOG ENTRY 'ID5801'/'0001' MODIFIED
% MARM121 MAREN CATALOG ENTRY 'ID5802'/'0001' MODIFIED
% MARM121 MAREN CATALOG ENTRY 'ID5803'/'0001' MODIFIED
% MARM120 TOTAL OF 10 MAREN CATALOG ENTRIES PROCESSED
```

OPEN-MAREN-FILES
Open and unlock MAREN catalog

Privilege   ADA, DA, administrator without domains

The OPEN-MAREN-FILES statement reopens the MAREN catalog files and lifts the lock on the catalog. The administrator uses the HOST-NAME operand to specify whether the unlocking of the MAREN catalog is to apply for his/her own host, for a particular host, or for all hosts in a MAREN network.

Format

OPEN-MAREN-**FI**LES   Alias: **OPMF**
HOST-NAME = ***OWN** / ***ALL** / <alphanum-name 1..8> / ***ALL-FROM-DOMAIN**(...)
*ALL-FROM-DOMAIN(...)   │ **DOMAIN** = ***STD-DOMAIN** / ***OWN** / <alphanum-name 1..8>

Operands

HOST-NAME =
Specifies the hosts for which the files of the MAREN catalog are to be opened.

HOST-NAME = *OWN
The files of the MAREN catalog are only opened for the local host.
If the ADA has used the MODIFY-ADMINISTRATION-SCOPE DOMAIN=... statement to become the DA of a domain, HOST=*OWN addresses the host which was determined by the HOST operand in the MODIFY-ADMINISTRATION-SCOPE statement.

HOST-NAME = *ALL
When domains are used, the files of the MAREN catalog are opened for all hosts in a DA's own domain; for the ADA, the files of the MAREN catalog are opened for all hosts.

HOST-NAME = <alphanum-name 1..8>
BCAM name of a host.
When domains are used and the DA enters a host name, this host must belong to the DA's own domain.

HOST-NAME = *ALL-FROM-DOMAIN (...)
The files of the MAREN catalog are opened for hosts of particular domains. This operand may only be used by the ADA.

DOMAIN =
Selects the domain.

DOMAIN = *STD-DOMAIN
The files of the MAREN catalog are opened for the hosts in the standard domain.

DOMAIN = *OWN
The files of the MAREN catalog are opened for the hosts in the local domain.
The own domain is the domain of the host on which the ADA is currently working.

DOMAIN = <alphanum-name 1..8>
The files of the MAREN catalog are opened for the hosts in the specified domain.

Notes

The volume catalog and the logging file (if any) are opened.

PRINT-VOLUME-ATTRIBUTES
Create lists of archive entries for output to file or printer

Privilege   ADA, DA, administrator without domains

The PRINT-VOLUME-ATTRIBUTES statement is used to create lists of information for volumes from the MAREN catalog. The selection and sort criteria and also the specifications for print editing can be defined to suit individual requirements and saved. The required data is output to file (a default name is preset) in MAREN archive record format. The file can also be created in CSV format to permit spreadsheet processing. It can also be specified that an output file should be output on a printer or sent by email after it has been created.

Information on archive entries to SYSOUT or in S variables is provided by the SHOW-VOLUME-ATTRIBUTES statement.

Format

(part 1 of 2)

PRINT-VOLUME**-ATTR**IBUTES   Alias: **PR** / **PRVA**

VOLUME = ***ALL** / ***INT**ERVAL(...)

  *INTERVAL(...)
     FROM = ***FIRST** / <vsn>
     ,**TO** = ***LAST** / <vsn>
     ,**FROM-FSEQ** = **1** / <integer 1..9999>

,**SELECT** = ***NO** / ***Y**ES(...)

  *YES(...)
     PARAMETER**-SET** = ***STD** / <name 1..15>
     ,**PAR**AMETER**-FILE** = ***STD** / <filename 1..54>
     ,**UPD**ATE = ***NO** / ***PERM**ANENT / ***TEMP**ORARY

,**SORT** = ***NO** / ***Y**ES(...)

  *YES(...)
     PARAMETER**-SET** = ***STD** / <name 1..15>
     ,**PAR**AMETER**-FILE** = ***STD** / <filename 1..54>
     ,**UPD**ATE = ***NO** / ***PERM**ANENT / ***TEMP**ORARY

,**LAYOUT-CONTR**OL = ***Y**ES (...) / ***NO**

  *YES(...)
     PARAMETER**-SET** = ***STD** / <name 1..15>
     ,**PAR**AMETER**-FILE** = ***STD** / <filename 1..54>
     ,**UPD**ATE = ***NO** / ***PERM**ANENT(...) / ***TEMP**ORARY(...)
       *PERMANENT(...)
         UPDATE**-HEAD**ER = ***STD** / ***OLD**
       *TEMPORARY(...)
         UPDATE**-HEAD**ER = ***STD** / ***OLD**
     ,**START-PRINT** = ***Y**ES (...) / ***NO**
       *YES(...)
         SPOOLOUT**-NAME** = ***NONE** / <alphanum-name 1..8>
         ,**DELETE-FILE** = ***YES** / ***NO** / ***DESTROY**
         ,**TO-PR**INTER=***STD** / ***PR**INTER**-NAME**(...) / ***PR**INTER**-POOL**(...)
           *PRINTER**-NAME**(...)
             PRINTER**-NAME** = <alphanum-name 1..8>
           *PRINTER**-POOL**(...)
             PRINTER**-POOL** = <alphanum-name 1..8>
         ,**FORM-NAME** = ***STD** / <alphanum-name 1..8>

Continued ➟

(part 2 of 2)

```
,OUTPUT = *STD(...) / <filename 1..54> / <filename 1..54 without-gen-vers>(...)

   *STD(...)
   │     FORMAT = *MAREN-STRUCTURE / *CSV(…)
   │        *CSV(…)
   │     │     SEPARATOR = *SEMICOLON / *COMMA
   │     │     ,HEADER-LINE = *YES / *NO
   │     ,SEND-BY-MAIL = *NO / *YES(...)
   │        *YES(...)
   │     │     TO = *USER(...)
   │     │        *USER(...)
   │     │     │     USER-IDENTIFICATION = *OWN / <name 1...8>
   │     │     ,SUBJECT = *STD /<c-string 1...256>
   │     │     ,DELETE-FILE = *YES / *NO / *DESTROY
   <filename 1..54>(...)
   │     FORMAT = *MAREN-STRUCTURE / *CSV(…)
   │        *CSV(…)
   │     │     SEPARATOR = *SEMICOLON / *COMMA
   │     │     ,HEADER-LINE = *YES / *NO
   │     ,SEND-BY-MAIL = *NO / *YES(...)
   │        *YES(...)
   │     │     TO = *USER(...)
   │     │        *USER(...)
   │     │     │     USER-IDENTIFICATION = *OWN / <name 1...8>
   │     │     ,SUBJECT = *STD /<c-string 1...256>
   │     │     ,DELETE-FILE = *YES / *NO / *DESTROY
,BATCH-PROCESSING = *YES (...) / *NO

   *YES(...)
   │     CPU-LIMIT = 500 / <integer 1..32767 seconds>
   │     ,MAREN-PASSWORD = *NONE / <c-string 1..4> / <x-string 1..8> /
   │                       <integer -2147483648..2147483647> / *SECRET
```

Operands

VOLUME =
VSNs of volumes about which information is required.

VOLUME = *ALL
All VSNs are processed.

VOLUME = *INTERVAL(...)
Restricts the output of information to those VSNs which satisfy the specifications described below.

FROM = *FIRST / <vsn>
VSN. All volumes whose VSN is greater than or equal to the specified VSN are processed.

FROM = *FIRST
All volumes are processed, starting with the lowest available VSN.

TO = *LAST / <vsn>
VSN. All volumes whose VSN is less than or equal to the specified VSN are processed.

TO = *LAST
All volumes are processed up to the highest available VSN.

FROM-FSEQ = 1 / <integer 1..9999>
File sequence number of the FROM operand. Specifies the precise file sequence number at which processing is to begin. This operand is relevant only if the statement is issued via the program interface.

SELECT =
Specifies which archive entries are to be added to the list. Preselection may already have been carried out using the VOLUME operand.

SELECT = *NO
No selection criteria.

SELECT = *YES(...)

PARAMETER-SET =
Specifies the selection criteria to be used.

PARAMETER-SET = *STD
All records are output.

PARAMETER-SET = <name 1..15>
Name of the parameter set containing the selection criteria.

PARAMETER-FILE = *STD / <filename 1..54>
See notes on .

UPDATE =
Specifies whether the parameter set is to be modified before it is used.

UPDATE = *NO
The parameter set is not modified.

UPDATE = *PERMANENT
The parameter set is modified before use. The modified parameter set is written to the parameter file. If the parameter set does not yet exist, it is created.

UPDATE = *TEMPORARY
*Relevant only in connection with BATCH-PROCESSING=*NO.*
The parameter set is modified before use. It is not written to the parameter file.

SORT =
Specifies whether sort criteria are to be used.

SORT = *NO
No sort criteria.

SORT = *YES(...)

    PARAMETER-SET =
    Specifies which sort criteria are to be used.

    PARAMETER-SET = *STD
    The default sort criteria are used.

    PARAMETER-SET = <name 1..15>
    Name of the parameter set containing the sort criteria.

    PARAMETER-FILE = *STD / <filename 1..54>
    See notes on .

    UPDATE =
    Specifies whether the parameter set is to be modified before it is used.

    UPDATE = *NO
    The parameter set is not modified.

    UPDATE = *PERMANENT
    The parameter set is modified before use. The modified parameter set is written to the parameter file. If the parameter set does not yet exist, it is created.

    UPDATE = *TEMPORARY
    *Relevant only in connection with BATCH-PROCESSING=*NO.*
    The parameter set is modified before use. It is not written to the parameter file.

OUTPUT-FILE = *STD / <filename 1..54>
Output file.

OUTPUT-FILE = *STD
Output is written to a file with the name MAREN.PRINT.yyyymmdd.hhmmss, where yyyymmdd = date and hhmmss = time).

LAYOUT-CONTROL =
Specifies whether the file is to be edited for printing, which parameter files are to be used, and in what way.

LAYOUT-CONTROL = *YES(...)
The output file is to be edited for printing with printer control characters, headers, page numbers, etc.

PARAMETER-SET =
Specifies the layout to be used.

PARAMETER-SET = *STD
The default layout is to be used.

PARAMETER-SET = <name 1..15>
Name of the parameter set containing the layout.

PARAMETER-FILE = *STD / <filename 1..54>
See notes on .

UPDATE =
Specifies whether the parameter set is to be modified before it is used.

UPDATE = *NO
The parameter set is not modified.

UPDATE = *PERMANENT(..)
The parameter set is modified before use. The modified parameter set is written to the parameter file. If the parameter set does not yet exist, it is created.

UPDATE-HEADER =
Specifies if the display of headers 2 and 3 is to be recalculated by MAREN or if the existing headers in the mask are to be suggested.

UPDATE-HEADER = *STD
Headers 2 and 3 will be created by MAREN.

UPDATE-HEADER = *OLD
Headers 2 and 3 will be taken from an existing set of parameters. If there are no such parameters, then the program will proceed in the same manner as for UPDATE-HEADER=*STD.

UPDATE = *TEMPORARY(..)
*Relevant only in connection with BATCH-PROCESSING=*NO.*
The parameter set is modified before use. It is not written to the parameter file.

UPDATE-HEADER =
Specifies if the display of headers 2 and 3 is to be recalculated by MAREN or if the existing headers in the "Entering the layout parameters (structure of individual lines):" on page 217 mask is to be suggested.

UPDATE-HEADER = *STD
Headers 2 and 3 will be created by MAREN.

UPDATE-HEADER = *OLD
Headers 2 and 3 will be taken from an existing set of parameters. If there are no such parameters, then the program will proceed in the same manner as for UPDATE-HEADER=*STD.

START-PRINT =
Specifies whether the output file is to be printed immediately.

START-PRINT = *YES(...)
Specifies that the output file is to be automatically printed immediately.

Note
As output files in CSV format cannot be printed out, START-PRINT=*NO is assumed in this case.

SPOOLOUT-NAME = *NONE / <alphanum-name 1..8>
Job name to be assigned to the spoolout task. This name will also appear on the header page.

SPOOLOUT-NAME = *NONE
No special job name. If a job name was assigned to the job that issued the spoolout job, this name is used.

DELETE-FILE = *YES / *NO / *DESTROY
Specifies whether the output file is to be deleted after it has been printed.

Note
If this entry contradicts the DELETE-FILE operand in SEND-BY-MAIL=*YES(...), DELETE-FILE=*NO is assumed implicitly.

TO-PRINTER =
Specifies which printer is to be used for printing.

TO-PRINTER = *STD
The printout is sent to the standard printer of the system.

TO-PRINTER = *PRINTER-NAME(...)
The printout is sent to a specific printer .

PRINTER-NAME = <alphanum-name 1..8>
Name of the printer used for printing.

TO-PRINTER = *PRINTER-POOL(...)
The print job will be sent to a printer pool.

PRINTER-POOL = <alphanum-name 1..8>
Name of the printer pool to which the print job was sent.

FORM-NAME =
Specifies which form is to be used for printing.
Standard forms must be defined for all printer types in the SPOOL parameter file.

FORM-NAME = *STD
The standard form is used for printing.

FORM-NAME = <alphanum-name 1..6>
Name of the form used when printing.

START-PRINT = *NO
Specifies that the output file is not to be printed automatically.

LAYOUT-CONTROL = *NO
Specifies that the output file is not to be edited for printing, i.e. all selected archive entries
are transferred unformatted to the output file.

OUTPUT =
Determines the name of the output file and, if required, other details regarding the output
format and transfer by email.

OUTPUT = *STD(...)
Output is directed to a file with the name MAREN.PRINT.yyyymmdd.hhmmss
(where yyyymmdd = date and hhmmss = time).

FORMAT =
Determines the format of the output file.

FORMAT = *MAREN-STRUCTURE
Output takes place in MAREN archive record format.

FORMAT = *CSV(…)
START-PRINT=*NO is always assumed for files in CSV format.
Output takes place in CSV (comma separated value) format. Files in CSV format can
be read in so that the columns are retained, and they can be processed further with a
spreadsheet program (e.g. EXCEL).

SEPARATOR = *SEMICOLON / *COMMA
Determines the separator which is to be set between the various output values. The
default separator is a semicolon (;). Optionally a comma (,) can be used as the
separator.

HEADER-LINE = *YES / *NO
Specifies whether a header line should be output to name the output columns. The default is *YES, i.e. the header line is output. The header line contains the field names of the attributes (see section "Allocating the statement operands in SDF format to archive entry fields" on page 519).

SEND-BY-MAIL = *NO / *YES(...)
Specifies whether the output file should be sent by email. The default is *NO, i.e. it is not sent by email.

SEND-BY-MAIL = *YES(...)
The output file should be sent as an email attachment. The recipient is addressed by means of his/her user ID, i.e. the email address is taken from the user entry concerned. BS2000/OSD V8.0 and higher supports this function. If transfer by email is not possible (e.g. because of a lower BS2000/OSD version or missing email address in the user entry), the output file is only created (equivalent to SEND-BY-MAIL=*NO).

TO = *USER(...)
Details of transfer by email:

USER-IDENTIFICATION = *OWN / <name 1...8>
Specifies the user ID. The recipient's email address is taken over from this user entry. If the user entry contains more than one email address, all the addresses are taken over as recipients.
The default is *OWN, i.e. the caller's user ID.

SUBJECT = *STD / <c-string 1...256>
Determines the content of the email's "Subject" field.
The default is *STD, i.e. MAREN uses a standard text, such as `MARENADM STATEMENT PRINT-VOLUME-ATTRIBUTES, FILENAME: <filename>`.

DELETE-FILE = *YES / *NO / *DESTROY
Specifies whether the file should be automatically deleted after it has been sent. *YES (default) causes the file to be deleted after it has been sent. *DESTROY also causes it to be deleted, and the memory space is overwritten with binary zeros.

Note

If this entry contradicts the DELETE-FILE operand in START-PRINT=*YES(...), DELETE-FILE=*NO is assumed implicitly.

OUTPUT = <filename 1..54>
Only for specifying a file generation.
Output is directed to the specified file generation in MAREN archive record format.

OUTPUT = <filename 1..54 without-gen-vers>(...)
Output is directed to the specified file.

FORMAT = *MAREN-STRUCTURE / *CSV(…)
Determines the format of the output file. The default is output in MAREN archive record
format.
Output in CSV format is described under the OUTPUT=*STD(...) operand on .

SEND-BY-MAIL = *NO / *YES(...)
Specifies whether the output file should be sent by email. The default is *NO, i.e. it is
not sent by email.
Transfer by email is described under the OUTPUT=*STD(...) operand on .

BATCH-PROCESSING =
This option allows the output file to be created in a separate ENTER job, thus avoiding long
wait times at the terminal. In this case, the MARENADM program must not be protected with
an EXEC-PASSWORD.

BATCH-PROCESSING = *YES(...)
The output file is to be created in a batch job.

CPU-LIMIT = 500 / <integer 1..32767 *seconds*>
Maximum CPU time in seconds allocated for the batch job.

MAREN-PASSWORD = *NONE / <c-string 1..4> / <x-string 1..8 /
<integer -2147483648..2147483647> / *SECRET
Password permitting administrator functions to be performed in the MAREN system. If
the MAREN system is password-protected, the MAREN password for any batch job
running separately must be specified here.
The operand has the following special features:
– The value entered is not logged.
– In guided dialog, the entry field is automatically blanked out.
– If *SECRET or ^ is specified, in unguided dialog and in foreground procedures SDF
provides a non-displaying entry field for concealed entry of the password.

BATCH-PROCESSING = *NO
Specifies that no separate batch job is to be started.

Notes

The layout of a list and the way in which the selected archive entries are sorted are deter-
mined by specifying parameter sets. These parameter sets can be freely defined by the
MAREN administrator and/or the user by means of screen masks, and can be re-used at a
later date.

The layout, selection, and sort parameters are combined to form a parameter set, which is assigned a name of up to 6 characters in length. The parameter sets are stored as S elements in the LMS library specified in the PARAMETER-FILE operand. Querying of the table of contents, deleting or copying parameter sets, etc. can only be performed with the LMS program (see the "LMS (BS2000/OSD)" manual [17]).

In MAREN, the parameter set with the highest version number is used. A parameter set of the current version is always written. Modifications made to a parameter set of an earlier version are not saved, even when it is initially used as a template. A modified parameter set of an earlier version is therefore stored in the current version and the relevant parameter set in the earlier version remains unchanged.

In batch mode, the parameter sets are not modified before use. In interactive mode, the records can be modified temporarily (for the current printout only) or permanently (saved to a separate parameter file). The creation and modification of parameter sets are only possible if a print file is subsequently created (unless creation of the print file is aborted).

If domains are used, the DA is shown free volumes either from the standard domain or from his/her own domain. This is dependent on which value the domain-specific FREE-VOLUMES operand has.
The ADA is shown free volumes of all domains provided that he/she has not defined any restrictions using the Select parameter.

For each parameter set, the user can specify the parameter file to be used for reading or writing. If no file is specified, the file MAREN.PARAMETER-FILE is used under the calling user ID. If this file is not available or does not contain the specified record, the file $SYSMAREN.MAREN.PARAMETER-FILE is used or, if IMON is available, the file linked with the logical ID SYSPAR.PRINT. If neither of these files exists, the default parameters are used.

The file to be transferred is only sent by email if it contains at least one entry.

The following applies to the individual parameters:

–   **Layout parameters**

    One line (of max. 240 characters) can be output for each archive entry.
    The screen mask allows the user to define which fields from the archive entry are to be used in the output line, together with the sequence and length (shorter or longer than the archive entry) in which they are to be output. The separators between columns can be freely defined.

    A follow-on mask suggests a two-line header based on the selected column structure. This header can be changed as required. The line length is determined by the sum of the field lengths together with the separators. A page header (up to 240 characters) can also be freely defined.

The following variables can be used in the header:The following variables can be used in the header:

&DATE   Date of creation of the list

&TIME   Time

&PAGE   Page number

– **Select parameters**

A comparison string and a comparison operator (EQ,NE,LT,GT,LE,GE, =, <, >, <=, >=) can be defined for each field in the archive entry. Only those archive entries for which all comparison criteria are fulfilled are selected. Partially qualified comparison strings are permitted. The end of a partially qualified string is indicated by an asterisk (*). Partial qualification is not permitted for numeric fields. Leading zeros can be ignored.

Two formats are permitted for date fields:

1. Absolute date in the format "yy-mm-dd" (for FREE-DATE and EXPIRATION-DATE, "yyyy-mm-dd" is also permitted). The minimum entry is the year specification and the following hyphen.

2. Relative date of up to four digits with a positive (optional) or negative sign. The absolute date is calculated from the relative date and the current date when the PRINT-VOL statement is executed. The absolute date thus calculated is used for comparison.

The number of archive entries can be further restricted by means of the parameter VOLUME=*INT(...).

Fields which do not appear in the list can also be used for selection purposes.

– **Sort parameters**

The user can specify up to ten fields in the archive entry which are to be used for sorting. The sort hierarchy (if more than one sort field is specified) and sort direction ("A": ascending/"D": descending) can also be specified.

Fields which do not appear in the list can also be used for sorting purposes.

– **Default parameter sets**

A default layout parameter set is stored in the MARENADM program.

This default layout has no effect if a layout parameter set with the name STD is contained in the parameter files under the calling user ID or in the global parameter file (see note on). This allows the computer center or user to define individual default parameters.

Examples

Example 1

```
//print-vol-attr
```

If the PRINT-VOLUME-ATTRIBUTES statement is entered without any further operands, MARENADM first searches for the default parameter set for creating a print file under the calling user ID. If the default parameter set is not available there, it searches the file $SYSMAREN.MAREN.PARAMETER-FILE or, if IMON is used, the file with the logical ID SYSPAR.PRINT.

If a default parameter set specific to the computer center has been defined, this layout is used when generating the list.

If neither the caller nor the MAREN administrator has defined a default parameter set, a list is generated using the default layout defined in MARENADM. This list contains all volumes and is sorted according to VSN.

```
A|MAREN 11.0A                                                              2006-04-29 13:24  PAGE    1|
 |-----------------------------------------------------------------------------------------------------|
 |VOLUME|FSEQ|DEV-TYPE|     REMARK       |U|P|ACC-|VOLUME-  |FILE/DIR-NAME (SHORTENED) |CREATION |LAST-ACC |HOME-    |E |
 |      |    |        |                  |A|W|CNT |FREEDATE |                          |-DATE    |-DATE    |LOCATION|X|
 |-----------------------------------------------------------------------------------------------------|
 |AB09CD|   1|TAPE-C4 |                  |0|   0|2002-11-10|LST.E-TPM.Z9592           |         |2001-11-10|ROBABBA1|  |
 |AB10CD|   1|TAPE-C4 |                  |0|   0|2007-03-26|                          |         |          |ROBABBA1|  |
 |AB11CD|   1|TAPE-C4 |                  |0|   0|          |                          |         |          |ROBABBA1|  |
 |B     |   1|TAPE-C4 |                  |0|   0|2007-03-26|                          |         |2001-03-26|ROBABBA1|  |
 |BLDTSR|   1|TAPE-C4 |                  |0|   0|          |                          |         |          |CENTRAL | |
 |      |    |        |                  | |    |          |                          |         |          |        | |
 |BLD001|   1|TAPE-C1 |                  |0|   0|          |                          |         |2002-12-31|CENTRAL |Y|
 |B14753|   1|TAPE-C1 |                  |0|  15|          |                          |         |2000-11-28|MANUAL  | |
   .
   .
   .
 |-----------------------------------------------------------------------------------------------------|
A|MAREN 11.0A                                                              2006-04-29 13:24  PAGE    5|
 |-----------------------------------------------------------------------------------------------------|
 |VOLUME|FSEQ|DEV-TYPE|     REMARK       |U|P|ACC-|VOLUME-  |FILE/DIR-NAME (SHORTENED) |CREATION |LAST-ACC |HOME-    |E |
 |      |    |        |                  |A|W|CNT |FREEDATE |                          |-DATE    |-DATE    |LOCATION|X|
 |-----------------------------------------------------------------------------------------------------|
 |TST018|   1|TAPE-C4 |                  |0|  2M|2007-03-25|:PI1B:$TSOS.CMA.BNF.DIR    |2006-03-25|2006-03-25|ROBABBA1|  |
 |TST019|   1|TAPE-C4 |                  |0| 321|2007-04-29|                          |2006-04-29|2006-04-29|ROBABBA1|  |
 |TST020|   1|TAPE-C4 |                  |0| 184|2007-05-06|:PI1B:$TSOS.ARF01.DIR     |2006-04-16|2006-04-16|ROBABBA1|  |
 |TST021|   1|TAPE-C4 |                  |0| 39K|2007-04-29|                          |         |2006-04-29|ROBABBA1|  |
 |TST022|   1|TAPE-C4 |                  |0| 215|2007-04-08|:SMP2:$TSOS.CSF03.DIR     |2006-04-08|2006-04-08|ROBABBA1|  |
 |      |    |        |                  | |    |          |                          |         |          |        | |
   .
   .
   .
 |WORK18|   1|TAPE-C2 |                  |0|   0|2007-01-12|                          |         |          |MANUAL  | |
 |WORK77|   1|T6250   |                  |0|   0|          |                          |         |2000-10-07|CENTRAL | |
 |WORK78|   1|T6250   |                  |0|   0|          |                          |         |2000-10-07|CENTRAL | |
 |WORM01|   1|OD-WORM1|                  |0|   0|2000-06-04|                          |         |2000-05-23|JUKEBOX | |
 |ZZ2121|   1|TAPE-C2 |                  |0|   0|          |MRSY0009.TAPESET.2        |         |          |SECURE  | |
 |-----------------------------------------------------------------------------------------------------|
 | TOTAL    215 MAREN CATALOG ENTRIES                                                                  |
 |-----------------------------------------------------------------------------------------------------|
 | THIS LIST WAS CREATED BY MARENADM (900) USING FOLLOWING PARAMETERS:                                 |
 | INTERVAL : FROM=*FIRST TO=*LAST  FROM-FSEQ=0001                                                     |
 | SELECT   : N                                                                                        |
 | SORT     : N                                                                                        |
 | LAYOUT   : PARAMETER-SET =STD    UPDATE=NO                                                          |
 |                        -FILE=*STD                                                                   |
 |-----------------------------------------------------------------------------------------------------|
```

Note

The value of ACCESS-COUNT is output in at most 4 digits. Values greater than 9999 are represented by "nnnK" or "nnM".

Example 2

A list containing all volumes whose expiration dates will fall in the next 10 days is to be generated.

The list is to be sorted in descending order according to the date each volume was last accessed, and then in ascending order according to file names.

It is to contain the following information:

```
FREE-DATE
VOLUME
FILE-NAME (30 characters long)
CREATION-DATE
LAST-ACCESS-DATE
INITIALIZATION
```

In order to ensure that the list can be generated again in the future with a minimum of effort, the information on selection, sorting, and layout is to be stored permanently in the default parameter file. The name of the parameter set should be "free10" for all three types (selection, sorting and layout).

Statement used to create the parameter set and the first list:

```
//print-vol-attr sel=*yes(par-set=free10,update=*permanent),
    sort=*yes(par-set=free10,update=*permanent),
    layout-contr=*yes(par-set=free10,update=*permanent),batch-proc=*no
```

The following screens are displayed in the sequence shown. When the shaded values are entered, the next screen is displayed.

Entering the selection parameters:

```
SELECT-PAR-SET: FREE10           FILE:
FIELD      OP,TEXT
VOLUME     __ _____       FILE-SEQ     __ ____    DEV-TYPE    __ _____
USER-ID    __ _____     HOME-LOCATION __ _____  RESERV-DATE __ _____
ACCOUNT    __ _____     FREE-LOCATION __ _____  FREE-DATE   <= +10_____
USER-ACC   __ _____     TEMP-LOCATION __ _____  EXPIR-DATE  __ _____
PASSWORD   __ _                                       AUDIT       __ _
EXP-AD/DAT __ _____ /__ _____
REMARK     __ _____ 2 __ _____ 3 __ _____
USER-FIELD __ _____
FILE-NAME  __ _____
FREE-POOL  __ _____
SAVE-FILE  __ _____ SUB-SV/SQ__ __/__ ___  JOB/REQ-NAM __ _____
VOL-GROUP  __ _____            L-A-DATE    __ _____
VOL-SEQ    __ ____         CR-DATE      __ _____  L-A-TIME    __ _____
FIRST-VOL  __ _____       CR-TIME      __ _____   L-A-USER-ID __ _____
DEV-NAME   __ ____         LA-CL-DATE   __ _____  L-A-ACCOUNT __ _____
OPEN-MODE  __ __           LA-CL-TIME   __ _____   L-A-JOB-NAM __ _____
CLOSE-IND  __ _            CR-CAT-ID    __ ____       L-A-TSN     __ ____
VOL-STATUS __ _            CR-USER-ID   __ _____   L-A-SNO     __ ___
INIT       __ _            RES-COUNT    __ ____       L-A-CPU-NAM __ _____
REG-DATE   __ _____    ACCES-COUNT  __ ____       L-W-BLK-CNT __ _____
DIR-ON-VOL __ _            CHECK-COUNT  __ __         L-A-FU-NAME __ _____
ADM-FIELD  __ _____     /2 __ _____      L-A-FU-FLAG __ __
```

Entering the sort parameters:

```
SORT-PAR-SET: FREE10            FILE:
FIELD      NR,A/D
VOLUME....... __ _     FILE-SEQ....... __ _    DEV-TYPE.......... __ _
USER-ID...... __ _     HOME-LOCATION.. __ _    RESERV-DATE....... __ _
ACCOUNT...... __ _     FREE-LOCATION.. __ _    FREE-DATE......... __ _
USER-ACC..... __ _     TEMP-LOCATION.. __ _    EXPIRATION-DATE... __ _
PASSWORD..... __ _                             AUDIT............. __ _
EXPORT-AD.... __ _     EXPORT-DATE.... __ _
REMARK....... __ _     REMARK-2....... __ _    REMARK-3.......... __ _
USER-FIELD... __ _
FILE-NAME.... _2 a     FREE-POOL...... __ _    SAVE-FILE......... __ _
SUB-SAVE..... __ _     SUB-SEQUENCE... __ _    CR-JOB-/REQ-NAME... __ _
VOLUME-GROUP. __ _                             LAST-ACC-DATE...... _1 d
VOL-SEQ...... __ _     CR-DATE........ __ _    LAST-ACC-TIME...... __ _
FIRST-VOL.... __ _     CR-TIME........ __ _    LAST-ACC-USER-ID... __ _
DEV-NAME..... __ _     LAST-CL-DATE... __ _    LAST-ACC-ACCOUNT... __ _
OPEN-MODE.... __ _     LAST-CL-TIME... __ _    LAST-ACC-JOB-NAME.. __ _
CLOSE-IND.... __ _     CR-CAT-ID...... __ _    LAST-ACC-TSN....... __ _
VOL-STATUS... __ _     CR-USER-ID..... __ _    LAST-ACC-SNO....... __ _
INIT......... __ _     RESERV-COUNT... __ _    LAST-ACC-CPU-NAME.. __ _
REG-DATE..... __ _     ACCESS-COUNT... __ _    LAST-WRITE-BLK-CNT. __ _
DIR-ON-VOL... __ _     CHECK-COUNT __ __       L-A-FU-NAME __ _____
ADM-FIELD.... __ _     ADM-FIELD-2.... __ _    LAST-ACC-FUNC-FLAG. __ _
```

Entering the layout parameters (structure of individual lines):

```
LAYOUT-PAR-SET: FREE10          FILE:
FIELD          NR,LEN
VOLUME.......  _2 _6    FILE-SEQ.......  __ _4    DEV-TYPE...........  __ _8
USER-ID......  __ _8    HOME-LOCATION..  __ _8    RESERV-DATE........  __ _1
ACCOUNT......  __ _8    FREE-LOCATION..  __ _8    FREE-DATE..........  _1 10
USER-ACC.....  __ _1    TEMP-LOCATION..  __ _8    EXPIRATION-DATE....  __ 10
PASSWORD.....  __ _1                               AUDIT..............  __ _1
EXPORT-AD....  __ 50    EXPORT-DATE....  __ 10
REMARK.......  __ 24    REMARK-2.......  __ 10    REMARK-3...........  __ 12
USER-FIELD...  __ 54
FILE-NAME....  _3 30    FREE-POOL......  __ 54    SAVE-FILE..........  __ 15
SUB-SAVE.....  __ _2    SUB-SEQUENCE...  __ _3    CR-JOB-/REQ-NAME...  __ _8
VOLUME-GROUP.  __ 32                              LAST-ACC-DATE......  11 10
VOL-SEQ......  __ _4    CR-DATE........  _4 10    LAST-ACC-TIME......  __ _8
FIRST-VOL....  __ _6    CR-TIME........  __ _8    LAST-ACC-USER-ID...  __ _8
DEV-NAME.....  __ _2    LAST-CL-DATE...  __ 10    LAST-ACC-ACCOUNT...  __ _8
OPEN-MODE....  __ _2    LAST-CL-TIME...  __ _8    LAST-ACC-JOB-NAME..  __ _8
CLOSE-IND....  __ _1    CR-CAT-ID......  __ _4    LAST-ACC-TSN.......  __ _4
VOL-STATUS...  __ _7    CR-USER-ID.....  __ _8    LAST-ACC-SNO.......  __ _3
INIT.........  _6 _1    RESERV-COUNT...  __ _4    LAST-ACC-CPU-NAME..  __ _8
REG-DATE.....  __ 10    ACCESS-COUNT...  __ _4    LAST-WRITE-BLK-CNT.  __ _4
DIR-ON-VOL...  __ _1    CHECK-COUNT....  __ _2    LAST-ACC-FUNC-NAME.  __ _8
ADM-FIELD....  __ _8    ADM-FIELD-2....  __ 16    LAST-ACC-FUNC-FLAG.  __ _2
SEPARATOR=|
```

Entering the layout parameters (structure of header lines):

```
LAYOUT-PARAMETER-SET: FREE10  FILE:
HEADER-LINES

1ST LINE:
Free within 10 days                     &DATE             &PAGE


2ND LINE:
|FREE-    |VOLUME|FILE-NAME                   |CR-       |L-A-     |I|


3RD LINE:
|DATE    |     |                             |DATE      |DATE     | |


PROPOSAL FOR 2ND LINE:
|FREE-    |VOLUME|FILE-NAME                   |CR-       |L-A-     |I|


LINE LENGTH   74
```

The generated list looks like this:

```
AFree within 10 days                    2006-04-29              1           |
|---------------------------------------------------------------------------|
|FREE-   |VOLUME|FILE-NAME                       |CR-     |L-A-      |I|
|DATE    |      |                                |DATE    |DATE      | |
|---------------------------------------------------------------------------|
|        |      |                                |        |          | |
|        |BLD001|                                |        |2006-12-31|N|
|2006-04-29|TST005|                              |2006-04-29|2006-04-29|Y|
|2006-04-29|TST013|                              |2006-04-29|2006-04-29|Y|
|2006-04-29|TST014|                              |2006-04-29|2006-04-29|Y|
|2006-04-29|TST017|                              |2006-04-29|2006-04-29|Y|
|        |      |                                |        |          | |
|2006-04-29|TST019|                              |2006-04-29|2006-04-29|Y|
|2006-04-29|TST021|                              |        |2006-04-29|Y|
|2006-04-29|TST024|                              |2006-04-29|2006-04-29|Y|
|2006-04-29|TST025|                              |2006-04-29|2006-04-29|Y|
|2006-04-28|TST026|                              |        |2006-04-28|Y|
|        |      |                                |        |          | |


     .
     .
     .


|---------------------------------------------------------------------------|
AFree within 10 days                    2006-04-29              5           |
|---------------------------------------------------------------------------|
|FREE-   |VOLUME|FILE-NAME                       |CR-     |L-A-      |I|
|DATE    |      |                                |DATE    |DATE      | |
|---------------------------------------------------------------------------|
|        |      |                                |        |          | |
|2006-05-06|MOD009|                              |        |          |Y|
|2006-05-06|MOD010|                              |        |          |Y|
|2006-05-05|REGD01|                              |        |          |Y|
|2006-04-30|SPCC08|                              |        |          |Y|
|2006-04-30|TLS029|                              |        |          |Y|


   .
   .
   .


|        |      |                                |        |          | |
|2006-05-05|THC006|ARCHIVE.SAVE.FILE(980909-13554|        |          |Y|
|2006-04-29|WORK12|ARCHIVE.SAVE.FILE(990421-19134|        |          |Y|
|2006-05-03|V01020|LOG.ERNEST.16.15.59           |        |          |Y|
|2006-05-06|TAR001|MAREN.SCRATCH.TAPE            |        |          |N|
|2006-05-06|TAR002|MAREN.SCRATCH.TAPE            |        |          |N|
|        |      |                                |        |          | |
|        |ZZ2121|MRSY0009.TAPESET.2              |        |          |N|
|---------------------------------------------------------------------------|
| TOTAL    211 MAREN CATALOG ENTRIES                                        |
|---------------------------------------------------------------------------|
|                                                                           |
| THIS LIST WAS CREATED BY MARENADM (810) USING FOLLOWING PARAMETERS:       |
|  INTERVAL : FROM=*FIRST TO=*LAST  FROM-FSEQ=0001                          |
|  SELECT   : PARAMETER-SET =FREE10 UPDATE=NO                               |
|                         -FILE=*STD                                        |
|  SORT     : PARAMETER-SET =FREE10 UPDATE=NO                               |
|                         -FILE=*STD                                        |
|  LAYOUT   : PARAMETER-SET =FREE10 UPDATE=NO                               |
|                         -FILE=*STD                                        |
|---------------------------------------------------------------------------|
```

After the statement has been executed, the generated list is output to a printer:

```
%  MARM119 FILE 'MAREN.PRINT.20060429.133701' WITH 00000211 RECORDS CREATED
%  SCP0810 PRINT JOB FOR FILE ':TQA2:$TSOS.MAREN.PRINT.20060429.133701'
ACCEPTED. TSN: '2GVA', SPOOLOUT NAME: 'OSID4444', MONJV: '*NONE'
%  SCP1025 PRINT JOB ACCEPTED BY SERVER '*HOME' WITH TSN '2GVA'
%  MARM170 STATEMENT '//PRINT-VOLUME-ATTRIBUTES' PROCESSED
```

The list can be generated again at a later point in time (without having to fill out the screens again) with the same format, e.g. in a batch task:

```
/print-vol-attr sel=*yes(par-set=free10),sort=*yes(par-set=free10),
    layout-contr=*yes(par-set=free10)
%  JMS0066 JOB 'OSID4444' ACCEPTED ON 2006-04-29 AT 13:53, TSN = 2GVE
%  MARM170 STATEMENT '//PRINT-VOLUME-ATTRIBUTES' PROCESSED
```

REMOVE-FOREIGN-DEVICE-TYPE
Remove a foreign device type from the administration of the MAREN system

Privilege   ADA, administrator without domains

This statement is used to remove a foreign device type from the administration of the MAREN system. Archive entries are not modified or deleted in the process.

Only device types which had been added beforehand with ADD-FOREIGN-DEVICE-TYPE can be removed.

Format

REMOVE-**FOREIGN**-**DEV**ICE-**TYPE**	Alias: **RMFDT**
DEVICE-**TYPE** = <structured-name 1..8>	

Operands

DEVICE-TYPE = <structured-name 1..8>
Specifies the name under which the foreign device type is administered.

REMOVE-FREE-VOLUMES
Remove archive entries of free volumes from MAREN catalog

Privilege   ADA, administrator without domains

The REMOVE-FREE-VOLUMES statement deletes the VSNs of free volumes from the
MAREN catalog.

Format

REM**OVE-FREE-VOL**UMES	Alias: **RMFV**

```
 VOLUME = *ALL / *INTERVAL(...) / <vsn>

   *INTERVAL(...)
           FROM = *FIRST / <vsn>

           ,TO = *LAST / <vsn>

           ,FROM-FSEQ = 1 / <integer 1..9999>
,SELECT = *STD / *BY-ATTRIBUTES(...)

   *BY-ATTRIBUTES(...)
           FREE-LOCATION = *ALL / <alphanum-name 1..8>

           ,DEVICE-TYPE = *STD / <structured-name 1..8>

           ,FREE-POOL = *NO / *GLOBAL / *TSOS / <filename 1..54 without-gen-vers> /
                               <text 2..32 without-sep>
,DOMAIN = *STD-DOMAIN / *OWN / <alphanum-name 1..8>

,OVERFLOW-CONTROL = *BY-PROGRAM / *BY-SYSTEM
```

Operands

VOLUME =
VSNs of the free volumes to be deleted from the MAREN catalog.

VOLUME = *ALL
All volumes are processed.

VOLUME = *INTERVAL(...)
All volumes whose VSNs are in the range specified below are processed.

FROM = *FIRST / <vsn>
VSN. All volumes whose VSN is greater than or equal to the specified VSN are
processed.

FROM = *FIRST
All volumes are processed, starting with the lowest available VSN.

TO = *LAST / <vsn>
VSN. All volumes whose VSN is less than or equal to the specified VSN are processed.

TO = *LAST
All volumes are processed up to the highest available VSN.

FROM-FSEQ = 1 / <integer 1..9999>
File sequence number of the FROM operand. Specifies the precise file sequence
number at which processing is to begin. This operand is relevant only if the statement
is issued via the program interface.

VOLUME = <vsn>
VSN. Up to 10 VSNs may be specified.

SELECT =
Specifies which archive entries are to be processed.

SELECT = *STD
Specifies that only archive entries for tapes are to be processed and that processing is not
restricted to any specific free tape location.

SELECT = *BY-ATTRIBUTES(...)

FREE-LOCATION = *ALL / <alphanum-name 1..8>
Location name or symbolic location name. All archive entries with the specified free
tape location are processed.

FREE-LOCATION = *ALL
Processing is not restricted to any specific free tape location.

DEVICE-TYPE =
All archive entries with the specified device type are processed.

DEVICE-TYPE = *STD
Only volumes of the default device type (DEFAULT-DEVICE-TYPE) are selected whose
value was specified in the MODIFY-MAREN-PARAMETERS statement.

DEVICE-TYPE = <structured-name 1..8>
Device type. Which types can be specified depends on the BS2000/OSD version (see
the manual "System Installation" [9]). In addition, device types can be specified which
have been made known using the ADD-FOREIGN-DEVICE-TYPE.

FREE-POOL =
Selects the archive entries of free volumes to be deleted on the basis of the free tape pool.

FREE-POOL = *NO
Only free volumes assigned to the *NO free tape pool are selected.

FREE-POOL = *GLOBAL
Only free volumes assigned to the *GLOBAL free tape pool are selected.

FREE-POOL = *TSOS
Only free volumes assigned to the *TSOS free tape pool are selected.

FREE-POOL = <filename 1..54 without-gen-vers>
Only free volumes assigned to the free tape pool for ARCHIVE applications using the specified ARCHIVE directory are selected. If this directory is located under a remote user ID, both the user ID and the catalog ID must be entered. The user's own ID and standard catalog ID can be omitted.

FREE-POOL = <text 2..32 without-sep>
Specifies the name of a free tape pool.
The name of the free tape pool must begin with "*" followed by at least one character from A-Z or 0-9. The characters ".", "-" and "_" are permitted, but not at the end and not next to each other.

DOMAIN =
Specifies the domain whose volumes are to be processed.

DOMAIN = *STD-DOMAIN
The volumes of the standard domain are processed.

DOMAIN = *OWN
The volumes of the user's own domain are processed.
The user's own domain is the domain of the host on which the ADA is currently working.

DOMAIN = <alphanum-name 1..8>
The volumes of the specified domain are processed.

OVERFLOW-CONTROL =
Type of screen overflow control in interactive mode.

OVERFLOW-CONTROL = *BY-PROGRAM
Control by the program: After eighteen archive entries have been processed, a message is displayed inquiring whether the current operation is to be continued or aborted.

OVERFLOW-CONTROL = *BY-SYSTEM
Control by the system: Screen overflow control is based entirely on the system parameter TCHOFLO or the value set in the MODIFY-TERMINAL-OPTIONS command.

Notes

– The volumes of an archive system must be swapped out before being removed (see section entitled "3594 Tape Library System" in the manual "MAREN Volume 1" [1]). If this is not done, the following message is output for the affected volume:

```
MARM015 VOLUME NOT AVAILABLE FOR THIS STATEMENT
```

– If the aliases for the values *NO, *GLOBAL or *TSOS of the FREE-POOL operand are specified, then these operand values are expanded to their full length for compatibility reasons (e.g. the entry *GL is expanded to *GLOBAL).

– Device type TAPE-U4E is not permissible for this statement as free volumes are not encrypted.

Examples

Example 1

```
//remove-free-vol vol=(tape05,tape06)
%  MARM106 MAREN CATALOG ENTRY 'TAPE05'/'0001' ERASED
%  MARM106 MAREN CATALOG ENTRY 'TAPE06'/'0001' ERASED
%  MARM104 TOTAL OF 2 MAREN CATALOG ENTRIES ERASED
```

The VSNs of the free volumes tape05 and tape06 are deleted from the MAREN catalog.

Example 2

```
//remove-free-vol vol=*int(id0001,id0100),sel=*by-attr(free-loc=cpu11)
%  MARM106 MAREN CATALOG ENTRY 'ID0003'/'0001' ERASED
%  MARM106 MAREN CATALOG ENTRY 'ID0004'/'0001' ERASED
%  MARM106 MAREN CATALOG ENTRY 'ID0005'/'0001' ERASED
%  MARM106 MAREN CATALOG ENTRY 'ID0006'/'0001' ERASED
%  MARM106 MAREN CATALOG ENTRY 'ID0007'/'0001' ERASED
%  MARM106 MAREN CATALOG ENTRY 'ID0008'/'0001' ERASED
%  MARM106 MAREN CATALOG ENTRY 'ID0009'/'0001' ERASED
%  MARM106 MAREN CATALOG ENTRY 'ID0010'/'0001' ERASED
%  MARM106 MAREN CATALOG ENTRY 'ID0011'/'0001' ERASED
%  MARM106 MAREN CATALOG ENTRY 'ID0012'/'0001' ERASED
%  MARM106 MAREN CATALOG ENTRY 'ID0013'/'0001' ERASED
%  MARM106 MAREN CATALOG ENTRY 'ID0014'/'0001' ERASED
%  MARM103 CONTINUE ACTION? REPLY (Y=YES; N=NO)?y
%  MARM106 MAREN CATALOG ENTRY 'ID0015'/'0001' ERASED
%  MARM106 MAREN CATALOG ENTRY 'ID0016'/'0001' ERASED
%  MARM106 MAREN CATALOG ENTRY 'ID0017'/'0001' ERASED
%  MARM106 MAREN CATALOG ENTRY 'ID0018'/'0001' ERASED
%  MARM106 MAREN CATALOG ENTRY 'ID0019'/'0001' ERASED
%  MARM106 MAREN CATALOG ENTRY 'ID0020'/'0001' ERASED
%  MARM104 TOTAL OF 18 MAREN CATALOG ENTRIES ERASED
```

From the set of all free volumes of the standard device type assigned to the free tape location cpu11, all VSNs in the value range id0001 to id0100 are removed.

REMOVE-HOST
Remove a host from the MAREN catalog

Privilege   ADA, administrator without domains

This statement is used to remove a host and its host-specific parameters completely from the MAREN catalog.

The following applies when domains are used: If volumes are still assigned to the host which is removed, these volumes remain assigned to the host's domain. Thus it can happen that volumes remain assigned to a domain even though no host is now assigned to this domain.

Format

REMOVE-HOST	Alias: **RMHO**
HOST = <alphanum-name 1..8>	

Operands

HOST = <alphanum-name 1..8>
Specifies the name of the host which is to be removed.

Important

> MAREN cannot check whether the specified host exists. You must therefore take special care that the host name is entered correctly.

REMOVE-USER-VOLUMES
Remove user's archive entries from MAREN catalog

Privilege   ADA, administrator without domains

The REMOVE-USER-VOLUMES statement can be used to delete all archive entries under
a specific user ID and (optionally) account number, writing them to a SAM file if required.

Format

REMOVE-**USER-VOL**UMES	Alias: **RMUV**
USER-IDENTIFICATION = <name 1..8>	
,**ACCOUNT** = ***ALL** / <alphanum-name 1..8>	
,**DOMAIN** = ***STD-DOMAIN** / ***OWN** / <alphanum-name 1..8>	
,**OUTP**UT = ***SYSOUT** / <filename 1..54 without-gen-vers>(...)	
<filename 1..54 without-gen-vers>(...) | **NEW-HOME-LOC**ATION = ***UNCH**ANGED / <alphanum-name 1..8>	
,**OV**ERFLOW-**CONTROL** = ***BY-PROG**RAM / ***BY-SYS**TEM	

Operands

USER-IDENTIFICATION = <name 1..8>
User ID whose archive entries are to be deleted from the MAREN catalog.

ACCOUNT = *ALL / <alphanum-name 1..8>
Account number. Under the specified user ID, only those archive entries which are assigned
to the specified account number are deleted.

ACCOUNT = *ALL
All account numbers under the specified user ID are included.

DOMAIN =
Only those archive entries are removed from the specified user ID which are assigned to
the specified domain.

DOMAIN = *STD-DOMAIN
Only the archive entries of the standard domain are deleted.

DOMAIN = *OWN
Only the archive entries of the user's own domain are deleted.
The user's own domain is the domain of the host on which the ADA is currently working.

DOMAIN = <alphanum-name 1..8>
Only the archive entries of the specified domain are deleted.

OUTPUT =
Determines the output medium. Output to SYSOUT is the default.

OUTPUT = *SYSOUT
The deleted archive entries are logged to SYSOUT.

OUTPUT = <filename 1..54 without-gen-vers>(...)
Name of an output file. The deleted archive entries are written to the specified file. The file type is SAM.

> **NEW-HOME-LOCATION = *UNCHANGED / <alphanum-name 1..8>**
> Location name or symbolic location name specifying the archive or location where the volumes are normally to be stored once they have been returned to the MAREN catalog.
>
> **NEW-HOME-LOCATION = *UNCHANGED**
> The previous location names are transferred to the output file unchanged.

OVERFLOW-CONTROL =
Type of screen overflow control in interactive mode.

OVERFLOW-CONTROL = *BY-PROGRAM
Control by the program: after eighteen archive entries have been processed, a message is displayed inquiring whether the current operation is to be continued or aborted.

OVERFLOW-CONTROL = *BY-SYSTEM
Control by the system: screen overflow control is based entirely on the system parameter TCHOFLO or the value set in the MODIFY-TERMINAL-OPTIONS command.

Notes

–   The volumes of an archive system must be swapped out before being removed (see section entitled "Removing archive entries" in the MAREN manual **Volume 1** [1]). If this is not done, the following message is output for the affected volume:
    ```
    MARM015 VOLUME NOT AVAILABLE FOR THIS STATEMENT
    ```

–   Every deleted archive entry which may have been written to a file is logged.

–   If NEW-HOME-LOCATION is specified, this value is set for HOME-LOCATION, FREE-LOCATION, and TEMPORARY-LOCATION in the archive entry.

– If MARENADM is executed under the user ID TSOS, the volume passwords are written to the output file in plain text. Otherwise, any existing passwords are overwritten with C'$$$$'.

– If there is a migrated archive entry for an entry to be deleted, it is likewise deleted if it belongs to the defined user ID and account number.

– The spin-off mechanism is triggered if a selected archive entry cannot be deleted.

Example

```
//rem-user-vol user-id=user1,output=lst.remove.user1
%  MARM106 MAREN CATALOG ENTRY 'ID0001'/'0001' ERASED
%  MARM106 MAREN CATALOG ENTRY 'ID0101'/'0001' ERASED
%  MARM106 MAREN CATALOG ENTRY 'ID1100'/'0001' ERASED
%  MARM106 MAREN CATALOG ENTRY 'ID1101'/'0001' ERASED
%  MARM106 MAREN CATALOG ENTRY 'ID1102'/'0001' ERASED
%  MARM106 MAREN CATALOG ENTRY 'ID1103'/'0001' ERASED
%  MARM106 MAREN CATALOG ENTRY 'ID1104'/'0001' ERASED
%  MARM106 MAREN CATALOG ENTRY 'ID1105'/'0001' ERASED
%  MARM106 MAREN CATALOG ENTRY 'ID1106'/'0001' ERASED
%  MARM106 MAREN CATALOG ENTRY 'ID5001'/'0001' ERASED
%  MARM106 MAREN CATALOG ENTRY 'ID5002'/'0001' ERASED
%  MARM106 MAREN CATALOG ENTRY 'ID5003'/'0001' ERASED
%  MARM103 CONTINUE ACTION? REPLY (Y=YES; N=NO)?y
%  MARM106 MAREN CATALOG ENTRY 'ID5004'/'0001' ERASED
%  MARM106 MAREN CATALOG ENTRY 'ID5005'/'0001' ERASED
%  MARM106 MAREN CATALOG ENTRY 'ID5006'/'0001' ERASED
%  MARM106 MAREN CATALOG ENTRY 'ID5007'/'0001' ERASED
%  MARM106 MAREN CATALOG ENTRY 'ID5008'/'0001' ERASED
%  MARM106 MAREN CATALOG ENTRY 'ID5009'/'0001' ERASED
%  MARM106 MAREN CATALOG ENTRY 'ID5010'/'0001' ERASED
%  MARM104 TOTAL OF 19 MAREN CATALOG ENTRIES ERASED
%  MARM119 FILE 'LST.REMOVE.USER1' WITH 19 RECORDS CREATED
```

All archive entries of the ID user1 are saved unchanged to the file lst.remove.user1 and then removed from the MAREN catalog. Using the output file specified in the INPUT-FILE operand of the ADD-RESERVED-VOLUME statement, the archive entries can be recon-structed or imported into another MAREN system.

RENAME-FOREIGN-DEVICE-TYPE
Rename a foreign device type

Privilege   ADA, administrator without domains

This statement is used to rename a foreign device type. The archive entries which contain this type are not modified or deleted in the process.

Format

RENAME-FOREIGN-**DEV**ICE-**TYPE**	Alias: **RNFDT**

  DEVICE-**TYPE** = <structured-name 1..8>

 ,**NEW-DEV**ICE-**TYPE** = <structured-name 1..8>

Operands

DEVICE-TYPE = <structured-name 1..8>
Specifies the name under which the foreign device has been administered to date.

NEW-DEVICE-TYPE = <structured-name 1..8>
Specifies any name under which the foreign device will be administered in future.

Notes

– Only foreign device types can be renamed. Device types which are known to the operating system are rejected.

– A change of version of the operating system can result in the following situation: The name of a foreign device type is identical to the name of a device type which is supported for the first time in the new operating system version. In this case the name of the previously foreign device type is modified by the statement. The new device type which is now known to the operating system remains unchanged.

RESERVE-FREE-VOLUME
Reserve free volumes for user

Privilege   ADA, DA, administrator without domains

The RESERVE-FREE-VOLUME statement is used to reserve volumes from a pool of free VSNs. The volumes can be assigned certain protection attributes and various fields in the archive entry can be preset.

DAs can only execute the statement in their own domain. The DOMAIN operand is thus meaningless for them.

Format

(part 1 of 2)

RESERVE-**FREE-VOL**UME   Alias: **RSFV**
USER-IDENTIFICATION = <name 1..8>
,**ACCOUNT** = ***NONE** / <alphanum-name 1..8>
,**NUMBER-OF-VOL**UMES = **1** / <integer 1..32767>
,**SELECT** = ***STD** / ***BY-ATTR**IBUTES(...)
*BY-ATTRIBUTES(...)
VOLUME = ***ALL** / ***INT**ERVAL(...)
*INTERVAL(...)
FROM = ***FIRST** / <vsn>
,**TO** = ***LAST** / <vsn>
,**DEV**ICE-**TYPE** = ***STD** / <structured-name 1..8>
,**HOME-LOC**ATION = ***STD** / <alphanum-name 1..8>
,**PROT**ECTION = ***STD** / ***PAR**AMETERS(...)
*PARAMETERS(...)
USER-ACCESS = ***OWNER-ONLY** / ***FOREIGN-READ**-ONLY / ***ALL-USERS**
,**FREE-DATE** = ***STD** / <date> / <integer 0..32767 *days*>
,**FILE-NAME** = ***NONE** / <filename 1..41 without-cat-user>
,**DOMAIN** = ***STD-DOMAIN** / ***OWN** / <alphanum-name 1..8>

Continued ➠

(part 2 of 2)

```
,VOLUME-GROUP = *NONE / <text 1..32 without-sep>

,REMARK = *NONE / <c-string 1..24>

,REMARK-2 = *NONE / <c-string 1..10>

,REMARK-3 = *NONE / <c-string 1..12>

,OUTPUT = *SYSOUT / *NONE / <filename 1..54> / <filename 1..54 without-gen-vers>(...)

   <filename 1..54 without-gen-vers>(...)
        FORMAT = *MAREN-STRUCTURE / *CSV(…)
          *CSV(…)
                SEPARATOR = *SEMICOLON / *COMMA
              │ ,HEADER-LINE = *YES / *NO
        ,SEND-BY-MAIL = *NO / *YES(...)
          *YES(...)
                TO = *USER(...)
                  *USER(...)
                   │ USER-IDENTIFICATION = *OWN / <name 1...8>
                ,SUBJECT = *STD /<c-string 1...256>
              │ ,DELETE-FILE = *NO / *YES / *DESTROY
,STRUCTURE-OUTPUT = *NONE / <composed-name 1..255> (...)

   <composed-name 1..255> (...)
     │ WRITE-MODE = *REPLACE / *EXTEND
```

Operands

USER-IDENTIFICATION = <name 1..8>
User ID to which the volume is to be assigned.

ACCOUNT = *NONE / <alphanum-name 1..8>
Account number of the specified user ID.

NUMBER-OF-VOLUMES = 1 / <integer 1..32767>
Number of volumes. Specifies how many free volumes are to be reserved.

SELECT = *STD / *BY-ATTRIBUTES
Specifies the criteria to be used to select free volumes.

SELECT = *STD
The standard criteria listed below are used.

SELECT = *BY-ATTRIBUTES (...)

VOLUME =
Specifies a number range from which free volumes are to be selected.

VOLUME = *ALL
All volumes are processed.

VOLUME = *INTERVAL(...)
All volumes whose VSN lies within the specified range are processed.

FROM = *FIRST / <vsn>
VSN. All volumes whose VSN is greater than or equal to the specified VSN are processed.

FROM = *FIRST
All volumes are processed, starting with the lowest available VSN.

TO = *LAST / <vsn>
VSN. All volumes whose VSN is less than or equal to the specified VSN are processed.

TO = *LAST
All volumes are processed up to the highest available VSN.

DEVICE-TYPE =
Device type of the volumes to be selected.

DEVICE-TYPE = *STD
The volumes are of the default device type (DEFAULT-DEVICE-TYPE) whose value was specified with the MODIFY-MAREN-PARAMETERS statement.

DEVICE-TYPE = <structured-name 1..8>
Device type. For a list of possible entries (depending on the BS2000/OSD version), see manual "System Installation" [9].

HOME-LOCATION = *STD / <alphanum-name 1..8>
Location name or symbolic location name specifying the archive from which the free volumes are to be selected.

HOME-LOCATION = *STD
The selection is made from the default permanent location defined by the MAREN administrator.

PROTECTION =
Volume protection attributes.

PROTECTION = *STD
The default values described below are used.

PROTECTION = *PARAMETERS(...)

USER-ACCESS =
Specifies whether foreign user IDs can access the volumes.

USER-ACCESS = *OWNER-ONLY
Access to the volume is possible only under the specified user ID.

USER-ACCESS = *FOREIGN-READ-ONLY
Read-only access to the volume is possible under a foreign user ID.

USER-ACCESS = *ALL-USERS
Unrestricted access to the volume is possible under a foreign user ID.

FREE-DATE =
Expiration date of the volume. Up to this date, the volume remains reserved for the given user ID.

FREE-DATE = *STD
The expiration date defined by the MAREN administrator applies.

FREE-DATE = <date>
Date in the format yyyy-mm-dd.

FREE-DATE = <integer 0..32767 *days*>
Time specification in days. The MAREN system internally adds this number to the current date to generate the expiration date.

FILE-NAME = *NONE / <filename 1..41 without-cat-user>
Name of the file which is subsequently to be written to the volume.

DOMAIN =
Defines the domain for which the free volumes are reserved.

DOMAIN = *STD-DOMAIN
Free volumes are reserved for the standard domain.

DOMAIN = *OWN
Free volumes are reserved for the user's own domain.
The user's own domain is the domain of the host on which the ADA is currently working.

DOMAIN = <alphanum-name 1..8>
Free volumes are reserved for the specified domain.

VOLUME-GROUP = *NONE / <text 1..32 without-sep>
Specifies the volume group to which the newly reserve volume is assigned. When *NONE is specified, it is not assigned to a volume group.

REMARK = *NONE / <c-string 1..24>
Comment text. This field is output on the screen when the MAREN statement SHOW-VOLUME-ATTRIBUTES is issued.

REMARK-2 = *NONE / <c-string 1..10>
Comment text. The contents of this field is displayed with the MAREN statement SHOW-VOLUME-ATTRIBUTES.

REMARK-3 = *NONE / <c-string 1..12>
Comment text. The contents of this field is displayed with the MAREN statement SHOW-VOLUME-ATTRIBUTES.

OUTPUT =
Determines the output medium. Output to SYSOUT is the default.

OUTPUT = *SYSOUT
Output is directed to SYSOUT.

OUTPUT = *NONE
No output takes place. This specification only makes sense for structured output in an S variable (see the STRUCTURE-OUTPUT operand).

OUTPUT = <filename 1..54>
Only for specifying a file generation..
Output is directed to the specified file generation in MAREN archive record format.
Passwords are overwritten with C'$$$$'. Only the number of records written is displayed on SYSOUT.

OUTPUT = <filename 1..54 without-gen-vers>(...)
Name of the SAM output file to which all selected archive entries are to be written.
Passwords are overwritten with C'$$$$'. Only the number of records written is displayed on SYSOUT. The output format and transfer by email can also be specified.

> **FORMAT =**
> Determines the format of the output file.
>
> **FORMAT = *MAREN-STRUCTURE**
> Output takes place in MAREN archive record format.
>
> **FORMAT = *CSV(…)**
> Output takes place in CSV (comma separated value) format. Files in CSV format can be read in so that the columns are retained, and they can be processed further with a spreadsheet program (e.g. EXCEL).
>
> > **SEPARATOR = *SEMICOLON / *COMMA**
> > Determines the separator which is to be set between the various output values. The default separator is a semicolon (;). Optionally a comma (,) can be used as the separator.

HEADER-LINE = *YES / *NO
Specifies whether a header line should be output to name the output columns. The default is *YES, i.e. the header line is output. The header line contains the field names of the attributes (see section "Allocating the statement operands in SDF format to archive entry fields" on page 519).

SEND-BY-MAIL = *NO / *YES(...)
Specifies whether the output file should be sent by email. The default is *NO, i.e. it is not sent by email.

SEND-BY-MAIL = *YES(...)
The output file should be sent as an email attachment. The recipient is addressed by means of his/her user ID, i.e. the email address is taken from the user entry concerned. BS2000/OSD V8.0 and higher supports this function. If transfer by email is not possible (e.g. because of a lower BS2000/OSD version or missing email address in the user entry), the output file is only created (equivalent to SEND-BY-MAIL=*NO).

TO = *USER(...)
Details of transfer by email:

USER-IDENTIFICATION = *OWN / <name 1...8>
Specifies the user ID. The recipient's email address is taken over from this user entry. If the user entry contains more than one email address, all the addresses are taken over as recipients.
The default is *OWN, i.e. the caller's user ID.

SUBJECT = *STD /<c-string 1...256>
Determines the content of the email's "Subject" field.
The default is *STD, i.e. MAREN uses a standard text, such as `MARENADM STATEMENT RESERVE-FREE-VOLUME, FILENAME: <filename>`.

DELETE-FILE = *NO / *YES / *DESTROY
Specifies whether the file should be automatically deleted after it has been sent. The default is *NO, i.e. the file is not deleted.
*YES causes the file to be deleted after it has been sent. *DESTROY also causes it to be deleted, and the memory space is overwritten with binary zeros.

STRUCTURE-OUTPUT =
Controls the structured output in S variables.

STRUCTURE-OUTPUT = *NONE
No structured output takes place.

STRUCTURE-OUTPUT = <composed-name 1..255> (...)
Name of the S variable which is to be used for the structured output.

WRITE-MODE =
Determines whether the output should replace or extend the current content of the S variables.

WRITE-MODE = *REPLACE
The current content of the S variable is replaced by the new output.

WRITE-MODE = *EXTEND
The new output extends the current content of the S variable.

Notes

– The statement is aborted and the spin-off mechanism triggered if a specified device type is not permitted or the expiration date is before the current date. The spin-off mechanism is likewise triggered if NUMBER-OF-VOLUMES has not been reached.

– Volumes that have not yet been "cleared up" (HOME-LOCATION is not the same as TEMP-LOCATION) can only be reserved on the local computer on which they are located.

– The archive entry fields ADMINISTRATOR-FIELD, AUDIT, INITIALIZATION and ACCESS-COUNT remain unchanged. The value of RESERVATION-COUNT is incremented by 1.

– With the operand DEVICE-TYPE, no distinction is made between TAPE-C1 and TAPE-C2 or between TAPE-C3 and TAPE-C4. Consequently, a type TAPE-C2 tape may be reserved when a type TAPE-C1 tape is requested.

– When a volume with the DEVICE-TYPE=TAPE-U4E is reserved, MAREN searches for a free volume of the type TAPE-U4 and changes its type to TAPE-U4E. In the case of volumes of the type TAPE-U4E the tape contents are encrypted when they are written. All read and write accesses must take place with DEVICE=TAPE-U4E. When the volume is released using //FREE-VOLUMES, the volume type is reset to TAPE-U4 as the type TAPE-U4E only exists in the MAREN catalog for reserved volumes.

– Transfer by email takes place only if the file to be sent contains at least one entry.

Example

```
//res-free-vol user=USER2,acc=acc1,dev-type=tape-c4
% MARM127 VOLUME 'TE6450' RESERVED FOR USER ID 'USER2'
% MAR0084 WAITING TIME RUNOUT FOR MAREN TRANSACTION PROCESSING
```

A tape of type tape-c4 is reserved for the user ID USER2 under the account number acc1. The reservation period corresponds to the DEFAULT-FREE-DATE operand. The volume is not shareable and the comment field of the archive record contains no entry.

Output in S variables

This statement supports the structured output in S variables (controlled by the
STRUCTURE-OUTPUT operand).

Further information on S variables is provided in the "Commands" manual [5].

Output information	Name of the S variable	T	Contents
Access counter (8-digit) It is incremented each time the volume is accessed .	var(*LIST). ACCESS-COUNT	S	<integer 0..99999999>
CC's own administration field	var(*LIST). ADM-FIELD	S	<c-string 1..8>
Creation date	var(*LIST). CRE-DATE	S	yyyy-mm-dd
Creation job name For HSMS request name	var(*LIST). CRE-JOB-NAME	S	" <name 1..8>
Creation time	var(*LIST). CRE-TIME	S	hh:mm:ss
Device type of the volume	var(*LIST). DEV-TYPE	S	<structured-name 1..8>
Name of an ARCHIVE directory (with catid and userid) which contains the volume	var(*LIST). DIR-NAME	S	<filename 1..54 >
Displays whether the tape contains the ARCHIVE directory which was also saved	var(*LIST).DIR-ON-VOL	S	*NO *YES
Status (sent = exported or not)	var(*LIST). EXPORTED	S	*NO *YES
First VSN of the MF/MV set	var(*LIST). FIRST-VOL	S	<vsn>
File name of a tape file Without catid and userid	var(*LIST). F-NAME	S	<filename 1..41>
Expiration date of the volume Specifies when the reservation of the volume for a user ID can be terminated.	var(*LIST). FREE-DATE	S	yyyy-mm-dd
Release location A volume is moved to this location during the clear-up run.	var(*LIST). FREE-LOCATION	S	<alphanum-name 1..8>
Name of the free tape pool in which this volume is located or is to be located when it is released.	var(*LIST). FREE-POOL	S	<filename 1..54> *NO *GLOBAL *TSOS
File sequence number (4-digit)	var(*LIST). F-SEQ	S	<integer 1..9999>

(part 1 of 3)

Output information	Name of the S variable	T	Contents
Standard location	var(*LIST). HOME-LOCATION	S	<alphanum-name 1..8>
Host name for the last access	var(*LIST). LAST-ACCESS-CPU-NAM	S	<alphanum-name 1..8>
Date of the last access	var(*LIST). LAST-ACCESS-DATE	S	yyyy-mm-dd
User name for the last access	var(*LIST). LAST-ACCESS-USER-ID	S	<name 1..8>
Password for volume access	var(*LIST). PASS	S	*NONE *YES
Comment field which should be filled with a meaningful text.	var(*LIST). REMARK	S	<c-string 1..24>
Reservation counter (4-digit) This counter is incremented with each new reservation of the volume.	var(*LIST). RESERV-COUNT	S	<integer 0..9999>
Reservation date Date on which a volume is reserved.	var(*LIST). RESERV-DATE	S	yyyy-mm-dd
SAVE-FILE-ID (HSMS) or SAVE-VERSION (ARCHIVE)	var(*LIST). SFID	S	<c-string 1..15>
Number of the subtask for the parallel save run in HSMS	var(*LIST). SUBSAVE	S	<integer 0..15>
Number of the continuation tape in a parallel save run in HSMS	var(*LIST). SUBSEQ	S	<integer 0..999>
Shareability of the volume	var(*LIST). USER-ACCESS	S	OWNER-ONLY FOREIGN-READ ALL-USERS
Account number	var(*LIST). USER-ACCOUNT	S	<alphanum-name 1..8>
User field. Data such as name and department or data relevant for operations scheduling can be entered here.	var(*LIST). USER-FIELD	S	<c-string 1..54>
User ID of the volume owner	var(*LIST). USER-ID	S	<name 1..8>
Tape VSN	var(*LIST). VOL	S	<vsn>
Volume group	var(*LIST). VOL-GROUP	S	<text 1..32>
Volume sequence number (4-digit)	var(*LIST). VOL-SEQ	S	<integer 1..255>

(part 2 of 3)

Output information	Name of the S variable	T	Contents
Volume status F = FREE P = PRIVATE R = RESERVED D = DEFECT	var(*LIST). VOL-STA-1	S	F/P/R/D

(part 3 of 3)

RETURN-TO-PROGRAM
Return from MARENADM to loaded main program

Privilege   ADA, DA, administrator without domains

The RETURN-TO-PROGRAM statement terminates a MARENADM subroutine and returns you to the calling user program. It can be executed only if MARENADM was called as an interactive subroutine (see section "Interactive subroutine" on page 336).

Format

RETURN-**TO-PROG**RAM

The RETURN-TO-PROGRAM statement has no operands.

RETURN-VOLUMES
Return volumes to their permanent location

Privilege   ADA, DA, administrator without domains

The RETURN-VOLUMES statement can be used by the MAREN administrator to carry out so-called "clear-up" work. It generates transport messages (relocation requests) in the form:

```
MAR4164 PLEASE TRANSPORT VOLUME ... FROM ... TO ...
```

Volumes which are currently to be found at a TEMPORARY-LOCATION which differs from their permanent location (HOME-LOCATION) are cleared up.

DAs can only execute the statement in their own domain. The DOMAIN operand is thus meaningless for them.

Format

(part 1 of 2)

RETURN-**VOL**UMES   Alias: **RTV**

VOLUME = ***ALL** / ***INT**ERVAL(...) / ***BY-FILE**(...) / <vsn> /
            *BY-DIRECTORY(...) / list-poss(10): <vsn> / ***BY-VOL**UME-**GR**OUP(...)

  *INTERVAL(...)
  │   **FROM** = ***FIRST** / <vsn>
  │
  │   ,**TO** = ***LAST** / <vsn>
  │
  │   ,**FROM-FSEQ** = **1** / <integer 1..9999>

  *BY-FILE(...)
  │   **FILE**-**NAME** = <filename 1..41 without-cat-user>
  │
  │   ,**VERSION** = ***LATEST** / <integer -9999..0> / ***ALL**
  │
  │   ,**USER-ID**ENTIFICATION = ***ALL** / <name 1..8>
  │
  │   ,**TYPE-OF-VOL**UMES = ***VALID** / ***OBSOLETE** / ***ANY**

  *BY-DIRECTORY(...)
  │   **DIR**ECTORY-**NAME** = <filename 1..54 without-gen-vers>
  │
  │   ,**SAVE-FILE-ID** = ***LATEST** / <integer -32767..0> / <composed-name 15..15>

  *BY-VOLUME-**GR**OUP(...)
  │   **VOL**UME-**GR**OUP = <text 1..32 without-sep>

(part 2 of 2)

```
,DOMAIN = *ANY / *OWN / *STD-DOMAIN / <alphanum-name 1..8>

,EXCEPTIONS = *NO / *MARENUCP-USAGE

,FROM-LOCATION = *ALL / <alphanum-name 1..8>

,TO-LOCATION = CENTRAL / *ALL / <alphanum-name 1..8>

,MESSAGE-DESTINATION = *SYSOUT / list-poss(5): *SYSOUT / *SYSLST / *CONSOLE / *PRINTER / *FILE

,OVERFLOW-CONTROL = *BY-PROGRAM / *BY-SYSTEM
```

Operands

VOLUME =
VSNs of volumes to be relocated to their permanent location.

VOLUME = *ALL
All volumes are processed.

VOLUME = *INTERVAL(...)
All volumes are processed subject to the following restrictions.

   FROM = *FIRST / <vsn>
   VSN. All volumes whose VSN is greater than or equal to the specified VSN are
   processed.

   FROM = *FIRST
   All volumes are processed, starting with the lowest available VSN.

   TO = *LAST / <vsn>
   VSN. All volumes whose VSN is less than or equal to the specified VSN are processed.

   TO = *LAST
   All volumes are processed up to the highest available VSN.

   FROM-FSEQ = 1 / <integer 1..9999>
   File sequence number of the FROM operand. Specifies the precise file sequence
   number at which processing is to begin. This operand is relevant only if the statement
   is issued via the program interface.

VOLUME = *BY-FILE(...)
All volumes of a file or tape set are to be relocated.

   FILE-NAME = <filename 1..41 without-cat-user>
   Specifies the file name for which a tape set is to be cleared up.

   VERSION =
   This operand can be used to select a specific version (or status) of the specified file.

VERSION = *LATEST
Selects the latest version of the file (i.e. the last version created).

VERSION = <integer -9999..0>
Specifying 0 is equivalent to specifying *LATEST, specifying -1 denotes the penultimate file status, etc.

VERSION = *ALL
Selects all versions which exist for the specified file name.

USER-IDENTIFICATION =
This operand selects the user ID to which the tapes are assigned (archive entry field USER-ID).

USER-IDENTIFICATION = *ALL
The IDs are not evaluated during selection.

USER-IDENTIFICATION = <name 1..8>
Only those VSNs assigned to the specified user ID are selected.

TYPE-OF-VOLUMES =
This operand selects the volume sequences (archive entry field VOLUME-SEQUENCE) within a tape set. These numbers are usually unique, but some numbers may be duplicated after a restart.

TYPE-OF-VOLUMES = *VALID
If a volume sequence occurs more than once in a tape set, the one created most recently is selected.

TYPE-OF-VOLUMES = *OBSOLETE
If the same volume sequence occurs more than once in a tape set, all of them are selected except for the one created most recently.

TYPE-OF-VOLUMES = *ANY
The volume sequences for a tape set are not checked to establish whether they occur more than once.

VOLUME = *BY-DIRECTORY(...)
All volumes listed (as saved files) in the specified ARCHIVE directory are to be swapped back in again.

DIRECTORY-NAME = <filename 1..54 without-gen-vers>
Name of the ARCHIVE directory. Only reserved volumes assigned to the POOL of the specified ARCHIVE directory are selected.
If this directory is located under a remote user ID, both the user ID and the catalog ID must be entered. The user's own ID and standard catalog ID can be omitted.

SAVE-FILE-ID =
The volumes that are to be moved are selected via the save file of the ARCHIVE directory specified above.

SAVE-FILE-ID = *LATEST
All volumes listed in the latest, i.e. in the most recent save file are selected.

SAVE-FILE-ID = <integer -32767..0>
All volumes listed in the nth save file are selected (the older the save file, the larger the number n). 0 equals *LATEST. Example: if -5 is specified, the volumes are selected from the last save file but five.

SAVE-FILE-ID = <composed-name 15..15>
All volumes in a save file with the specified SAVE-FILE-ID are selected. The SAVE-FILE-ID has the following format: S.yymmdd.hhmmss.

VOLUME = <vsn>
VSN. Up to 10 VSNs may be specified.

VOLUME = *BY-VOLUME-GROUP(...)
All volumes of the specified volume group are returned.

VOLUME-GROUP = <text 1..32 without-sep>
Name of the volume group. "*" can be entered as the last character. In this case all volume groups which begin with the specified string are selected.

DOMAIN =
The volumes of the selected domain are relocated.

DOMAIN = *ANY
The volumes of the all domains are relocated.

DOMAIN = *OWN
The volumes of the user's own domain are relocated.
The user's own domain is the domain of the host on which the ADA is currently working or the domain in which he/she has taken over the DA role.

DOMAIN = *STD-DOMAIN
The volumes of the standard domain are relocated.

DOMAIN = <alphanum-name 1..8>
The volumes of the specified domain are relocated.

EXCEPTIONS =
This operand can be used to exclude specific tapes from the clear-up run.

EXCEPTIONS = *NO
There are no exceptions.

EXCEPTIONS = *MARENUCP-USAGE
Tapes provided for MARENUCP by means of the SECURE-FREE-VOLUMES statement are not cleared up.

FROM-LOCATION = *ALL / <alphanum-name 1..8>
Location name or symbolic location name specifying the location from which the volumes are to be relocated.

TO-LOCATION = CENTRAL / *ALL / <alphanum-name 1..8>
Location name or symbolic location name specifying the location to which volumes are to be relocated.

TO-LOCATION = CENTRAL
The volumes are relocated to the central archive only.

TO-LOCATION = *ALL
The volumes are relocated to all locations.

TO-LOCATION = <alphanum-name 1..8>
The location of an archive system can also be specified. Volumes that are relocated to an archive system are initially assigned the temporary location "CENTRAL". The TEMPORARY-LOCATION operand is not set to the location name of the archive system until the volume is actually inserted in the archive system (in the input chute of the 3594 Tape Library System or by means of the ROBAR statement IMPORT-ROBAR-VOLUME for AML archive systems). The value from the archive entry field TEMPORARY-LOCATION is also used as an insert for FROM-LOCATION in transport message MAR4164, while the value for HOME-LOCATION is also used for TO-LOCATION.

Thus, a volume which is currently at the location "CENTRAL" is not interpreted as "cleared up". Instead, the transport message MAR4164 (from "CENTRAL" to "archive system location") is output.

MESSAGE-DESTINATION = *SYSOUT / list-poss(5): *SYSOUT / *SYSLST / *CONSOLE / *PRINTER / *FILE
Specifies the medium on which transport message MAR4164 is to be output. See notes below. It is possible to specify several output media in a list.

OVERFLOW-CONTROL =
Type of screen overflow control in interactive mode.

OVERFLOW-CONTROL = *BY-PROGRAM
Control by the program: After eighteen archive entries have been processed, a message is displayed inquiring whether the current operation is to be continued or aborted.

OVERFLOW-CONTROL = *BY-SYSTEM
Control by the system: Screen overflow control is based entirely on the system parameter TCHOFLO or the value set in the MODIFY-TERMINAL-OPTIONS command.

Notes

– If the FILE-NAME operand is specified and one of the selected archive entries has the attribute FILE-SEQ > 1, processing aborts and an appropriate error message is displayed.

– Volumes which have been exported or are currently reserved are not cleared up.

– Volumes which are located at an archive system location defined as REMOTE on the local computer are not cleared up.

– If there are no volumes to be cleared up, task switch 30 is set.

– Volumes relocated to an archive system location are initially assigned the temporary location "CENTRAL".

– If HOME-LOCATION contains an archive system, TEMPORARY-LOCATION is set to "CENTRAL".

– If MESSAGE-DESTINATION=*PRINTER or =*FILE is specified, all transport messages are written to the file MAREN.RETURN-VOLUMES. If this file already exists, it is extended. Otherwise, it is created.

– If MESSAGE-DESTINATION=*PRINTER is specified, the file MAREN.RETURN-VOLUMES is printed and deleted after the last VSN has been processed. Output is directed to the printer specified in the MAREN parameter EXPORT-RECEIPT= *PRINTER(DEVICE-NAME=...). If the statement is terminated abnormally, the file is not printed. The statement can then be issued again and the file is extended accordingly. If the statement is terminated normally, the file containing all the transport messages is printed.

– If MESSAGE-DESTINATION=*PRINTER is specified and the MAREN parameter EXPORT-RECEIPT contains a value other than PRINTER, the statement is rejected with the message:

```
MARM175 INVALID VALUE ENTERED FOR OPERAND 'MESSAGE-DESTINATION'.
        STATEMENT REJECTED
```

– The TEMPORARY-LOCATION field is set to the value of HOME-LOCATION in the archive entry.

– Any release run should take place before "clear up" work so that volumes which have been released can be immediately relocated to their appropriate free tape location (FREE-LOC).

– If an individual VSN, a list of VSNs, or a number range is not specified, the entire catalog is searched.

– If an individual VSN or a list of VSNs is specified, the spin-off mechanism is triggered in the following cases:

  – if the volume has been exported or reserved, if it does not exist, or if it is already at its permanent location

  – if the value specified in TO-LOCATION is different to that specified in HOME-LOCATION of the addressed volume

– If VOLUME=*ALL or VOLUME=*INTERVAL (...) is specified for a clear-up run, only magnetic tapes are included. Other volume types (e.g. disks) can only be cleared up if their are specified individually or in lists.

– If the volumes are selected using a save file from HSMS and at least one tape is displaced, the statement is not executed.

Example

```
//return-vol vol=*int(id0001,id1200),mess-dest=(*sysout,*syslst)
% MAR4164 PLEASE TRANSPORT VOLUME 'ID0001' FROM 'MANUAL' TO 'CENTRAL'
% MAR4164 PLEASE TRANSPORT VOLUME 'ID0002' FROM 'MANUAL' TO 'CENTRAL'
% MAR4164 PLEASE TRANSPORT VOLUME 'ID0003' FROM 'MANUAL' TO 'CENTRAL'
% MAR4164 PLEASE TRANSPORT VOLUME 'ID0004' FROM 'MANUAL' TO 'CENTRAL'
% MAR4164 PLEASE TRANSPORT VOLUME 'ID0005' FROM 'MANUAL' TO 'CENTRAL'
% MAR4164 PLEASE TRANSPORT VOLUME 'ID0006' FROM 'MANUAL' TO 'CENTRAL'
% MAR4164 PLEASE TRANSPORT VOLUME 'ID0007' FROM 'MANUAL' TO 'CENTRAL'
% MAR4164 PLEASE TRANSPORT VOLUME 'ID0008' FROM 'MANUAL' TO 'CENTRAL'
% MAR4164 PLEASE TRANSPORT VOLUME 'ID0009' FROM 'MANUAL' TO 'CENTRAL'
% MAR4164 PLEASE TRANSPORT VOLUME 'ID0010' FROM 'MANUAL' TO 'CENTRAL'
% MAR4164 PLEASE TRANSPORT VOLUME 'ID0011' FROM 'MANUAL' TO 'CENTRAL'
% MAR4164 PLEASE TRANSPORT VOLUME 'ID0012' FROM 'MANUAL' TO 'CENTRAL'
% MARM103 CONTINUE ACTION? REPLY (Y=YES; N=NO)?y
% MAR4164 PLEASE TRANSPORT VOLUME 'ID0013' FROM 'MANUAL' TO 'CENTRAL'
% MAR4164 PLEASE TRANSPORT VOLUME 'ID0014' FROM 'MANUAL' TO 'CENTRAL'
% MAR4164 PLEASE TRANSPORT VOLUME 'ID0015' FROM 'MANUAL' TO 'CENTRAL'
% MAR4164 PLEASE TRANSPORT VOLUME 'ID1100' FROM 'MANUAL' TO 'CENTRAL'
% MAR4164 PLEASE TRANSPORT VOLUME 'ID1102' FROM 'MANUAL' TO 'CENTRAL'
% MAR4164 PLEASE TRANSPORT VOLUME 'ID1103' FROM 'MANUAL' TO 'CENTRAL'
% MAR4164 PLEASE TRANSPORT VOLUME 'ID1104' FROM 'MANUAL' TO 'CENTRAL'
% MAR4164 PLEASE TRANSPORT VOLUME 'ID1105' FROM 'MANUAL' TO 'CENTRAL'
% MAR4164 PLEASE TRANSPORT VOLUME 'ID1106' FROM 'MANUAL' TO 'CENTRAL'
% MARM120 TOTAL OF 21 MAREN CATALOG ENTRIES PROCESSED
```

All volumes from the set of VSNs id0001 to id1200 which are assigned to the permanent location CENTRAL (TO-LOCATION=CENTRAL is the default) but which are currently at another location (FROM-LOCATION=*ALL is the default) are relocated to their permanent location CENTRAL. The transport messages are output to SYSOUT and SYSLST.

SECURE-FREE-VOLUMES
Flag and relocate free volumes

Privilege   ADA, DA, administrator without domains

The SECURE-FREE-VOLUMES statement has two functions:

– Identification of free volumes with respect to the type of reservation.

– Output of the following transport messages (relocation requests):

  MAR4164 PLEASE TRANSPORT VOLUME ... FROM ... TO ...

DAs can only execute the statement in their own domain. The DOMAIN operand is thus meaningless for them.

Format

SEC**URE-FREE-VOL**UMES   Alias: **SCFV**
NUMBER-OF-VOLUMES = \<integer 1..9999>
,**TO-LOC**ATION = \<alphanum-name 1..8>
,**FROM-LOC**ATION = **CENTRAL** / \<alphanum-name 1..8>
,**VOL**UME = ***ALL** / ***INT**ERVAL(...)
*INTERVAL(...)
FROM = ***FIRST** / \<vsn>
,**TO** = ***LAST** / \<vsn>
,**FROM-FSEQ** = **1** / \<integer 1..9999>
,**DEV**ICE-**TYPE** = ***STD** / \<structured-name 1..8>
,**USAGE** = ***ANY** / ***BY-MARENUCP**
,**FREE-POOL** = ***NO** / ***GLOBAL** / ***TSOS** / \<filename 1..54 without-gen-vers> / \<text 2..32 without-sep>
,**DOMAIN** = ***STD-DOMAIN** / ***OWN** / \<alphanum-name 1..8>
,**MESS**AGE-**DEST**INATION = ***SYSOUT** / list-poss(5): ***SYSOUT** / ***SYSLST** / ***CONSOLE** / ***PRINTER** / ***FILE**
,**O**VER**FLOW-CONTROL** = ***BY-PROG**RAM / ***BY-SYS**TEM

Operands

NUMBER-OF-VOLUMES = <integer 1..9999>
Number of free tapes to be processed.

TO-LOCATION = <alphanum-name 1..8>
Target location (also symbolic) where free tapes are to be relocated. This may be identical to FROM-LOCATION, in which case the volumes are merely flagged.

FROM-LOCATION = <u>CENTRAL</u> / <alphanum-name 1..8>
Location from which free tapes are to be selected.

VOLUME =
Range of VSNs from which free volumes are to be processed.

VOLUME = <u>*ALL</u>
All free volumes are processed.

VOLUME = *INTERVAL(...)
All free volumes whose VSN is within the specified range are processed.

> **FROM = <u>*FIRST</u> / <vsn>**
> VSN. All volumes whose VSN is greater than or equal to the specified VSN are processed.
>
> **FROM = <u>*FIRST</u>**
> All volumes are processed, starting with the lowest available VSN..
>
> **TO = <u>*LAST</u> / <vsn>**
> VSN. All volumes whose VSN is less than or equal to the specified VSN are processed.
>
> **TO = <u>*LAST</u>**
> All free volumes are processed up to the highest available VSN.
>
> **FROM-FSEQ = <u>1</u> / <integer 1..9999>**
> File sequence number of the FROM operand. Specifies the precise file sequence number at which processing is to begin. This operand is relevant only if the statement is issued via the program interface.

DEVICE-TYPE =
Device type of the volumes to be processed.

DEVICE-TYPE = <u>*STD</u>
The volumes are of the default device type (DEFAULT-DEVICE-TYPE) whose value was specified with the MODIFY-MAREN-PARAMETERS statement.

DEVICE-TYPE = <structured-name 1..8>
Device type. For a list of possible entries (depending on the BS2000/OSD version), see manual "System Installation" [9].

USAGE =
Specifies the type of reservation to be used to select volumes. Reservation is effected either explicitly via the RESERVE-FREE-VOLUME statement or implicitly via the automatic free tape allocation facility MARENUCP.

USAGE = *ANY
Both types of reservation are permitted for the free volumes selected.

USAGE = *BY-MARENUCP
The volumes are to be reserved via MARENUCP only.

FREE-POOL =
Selects the archive entries to be made available on the basis of the free tape pool.

FREE-POOL = *NO
Only free volumes assigned to the *NO free tape pool are selected.

FREE-POOL = *GLOBAL
Only free volumes assigned to the *GLOBAL free tape pool are selected.

FREE-POOL = *TSOS
Only free volumes assigned to the *TSOS free tape pool are selected.

FREE-POOL = <filename 1..54 without-gen-vers>
Only free volumes assigned to the free tape pool for ARCHIVE applications using the specified ARCHIVE directory are selected. If this directory is located under a remote user ID, both the user ID and the catalog ID must be entered. The user's own ID and standard catalog ID can be omitted.

FREE-POOL = <text 2..32 without-sep>
Specifies the name of a free tape pool.
The name of the free tape pool must begin with "*" followed by at least one character from A-Z or 0-9. The characters ".", "-" and "_" are permitted, but not at the end and not next to each other. If the relevant free tape pool does not yet exist, it will be created. Otherwise, it is extended to include the specified volumes.

DOMAIN =
Only those domains are processed which are assigned to the specified domain.

DOMAIN = *STD-DOMAIN
Only volumes of the standard domain are processed.

DOMAIN = *OWN
Only volumes of the user's own domain are processed.
The user's own domain is the domain of the host on which the ADA is currently working or the domain in which he/she has taken over the DA role.

DOMAIN = <alphanum-name 1..8>
Only volumes of the selected domain are processed.

If domains are used, the DA is shown free volumes either from the standard domain or from his/her own domain. This is dependent on which value the domain-specific FREE-VOLUMES operand has.
The ADA is shown free volumes of the domain which is specified with the DOMAIN operand.

MESSAGE-DESTINATION = <u>*SYSOUT</u> / list-poss(5): *SYSOUT / *SYSLST / *CONSOLE / *PRINTER / *FILE
Specifies the medium on which the transport messages MAR4164 are to be output. See notes on .

OVERFLOW-CONTROL =
Type of screen overflow control in interactive mode.

OVERFLOW-CONTROL = <u>*BY-PROGRAM</u>
Control by the program: after eighteen archive entries have been processed, a message is displayed inquiring whether the current operation is to be continued or aborted.

OVERFLOW-CONTROL = *BY-SYSTEM
Control by the system: screen overflow control is based entirely on the system parameter TCHOFLO or the value set in the MODIFY-TERMINAL-OPTIONS command.

Notes

– Only free tapes (VOLUME-STATUS=*FREE) whose TEMPORARY-LOCATION is the same as the specified FROM-LOCATION are relocated.

– If MESSAGE-DESTINATION=*PRINTER/*FILE is specified, all transport messages are written to the file $user-id.MAREN.SECURE-FREE-VOLUMES, where "user-id" is the user ID of the calling task. If the file already exists, it is extended. Otherwise, it is created.

– If MESSAGE-DESTINATION=*PRINTER is specified, the file MAREN.SECURE-FREE-VOLUMES is printed and deleted after the last VSN has been processed using the SPOOL macro PRNT. Output is directed to the printer specified in the MAREN parameter EXPORT-RECEIPT= *PRINTER(DEVICE-NAME=...). If the statement is terminated abnormally, the file is not printed.
The statement can then be issued again and the file is extended. If the statement is terminated normally, the file containing all the transport messages is printed.

– If MESSAGE-DESTINATION=*PRINTER is specified and the MAREN parameter EXPORT-RECEIPT contains a value other than PRINTER, the statement is rejected with the message:

```
MARM175 INVALID VALUE ENTERED FOR OPERAND 'MESSAGE-DESTINATION'.
        STATEMENT REJECTED
```

– The selected free volumes are always flagged in accordance with the USAGE operand, independent of any previously existing flags.

– The operand USAGE=*BY-MARENUCP is also recommended for the SECURE-FREE-VOLUMES statement with a directory specification. Although volumes pre-reserved for ARCHIVE cannot be reserved using the MAREN statement RESERVE-FREE-VOLUME, they can be reserved by means of the ARCHIVE statement POOL ...,ADD=vsn.

– Archive system locations must not be used for the FROM-LOCATION and TO-LOCATION operands. The only exception here is if the same archive system location is specified for both operands, in which case no tapes are relocated.

– If the aliases for the values *NO, *GLOBAL or *TSOS of the FREE-POOL operand are specified, then these operand values are expanded to their full length for compatibility reasons (e.g. the entry *GL is expanded to *GLOBAL).

– Device type TAPE-U4E is not permissible for this statement as free volumes are not encrypted.

Examples

Example 1

```
//secure-free-volumes num-of-vol=5,to-loc=system3,vol=*int(fr0000)
%  MARM169 VOLUME 'FR0000' AVAILABLE FOR RESERVATIONS AT LOCATION 'SYSTEM3'
%  MAR4164 PLEASE TRANSPORT VOLUME 'FR0000' FROM 'CENTRAL' TO 'SYSTEM3'
%  MARM169 VOLUME 'FR0001' AVAILABLE FOR RESERVATIONS AT LOCATION 'SYSTEM3'
%  MAR4164 PLEASE TRANSPORT VOLUME 'FR0001' FROM 'CENTRAL' TO 'SYSTEM3'
%  MARM169 VOLUME 'FR0008' AVAILABLE FOR RESERVATIONS AT LOCATION 'SYSTEM3'
%  MAR4164 PLEASE TRANSPORT VOLUME 'FR0008' FROM 'CENTRAL' TO 'SYSTEM3'
%  MARM169 VOLUME 'FR0013' AVAILABLE FOR RESERVATIONS AT LOCATION 'SYSTEM3'
%  MAR4164 PLEASE TRANSPORT VOLUME 'FR0013' FROM 'CENTRAL' TO 'SYSTEM3'
%  MARM169 VOLUME 'FR0019' AVAILABLE FOR RESERVATIONS AT LOCATION 'SYSTEM3'
%  MAR4164 PLEASE TRANSPORT VOLUME 'FR0019' FROM 'CENTRAL' TO 'SYSTEM3'
%  MARM120 TOTAL OF 5 MAREN CATALOG ENTRIES PROCESSED



//show-volume-attributes volume=FR0000
VOLUME   = FR0000      FILE-SEQ   = 0001        DEV-TYPE   = TAPE-C4

USER-ID   =              HOME-LOCATION = CENTRAL      RESERV-DATE =
ACCOUNT   =              FREE-LOCATION = CENTRAL      FREE-DATE   =
USER-ACC  = OWNER-ONLY   TEMP-LOCATION = ANLAGE3      EXPIR-DATE  =
PASSWORD  = NONE
EXPORT    = C'                                       ' /
REMARK /1 = C'                    ' /2 = C'        ' /3 = C'          '
USER-FIELD= C'                                       '
FILE-NAME =
SAVE-FILE =               SUBSAVE/SEQ =    /   CR-JOB/REQUEST-NA  =
FREE-POOL = *NO                            CR-CAT-ID          =
VOL-GROUP =                                CR-USER-ID         =
VOL-SEQ  = 0001     CR-DATE    =           LAST-ACC-DATE      =
FIRST-VOL =         CR-TIME    =           LAST-ACC-TIME      =
CLOSE-IND =         LAST-CL-DATE =         LAST-ACC-USER-ID   =
VOL-STATUS= FREE    LAST-CL-TIME =         LAST-ACC-ACCOUNT   =
INIT     = NO       REG-DATE   =           LAST-ACC-JOB-NAME  =
ADM-FIELD = C'       ' /2 = C'              ' LAST-ACC-TSN     =
                                            LAST-ACC-CPU-NAME  =
                                            LAST-WRITE-BLK-CNT =
```

Five free volumes starting with VSN fr0000 are relocated from CENTRAL to SYSTEM3.
The transport messages appear only on SYSOUT.

Example 2

```
//sec-free-vol num-of-vol=10,to-loc=system4,from-loc=system1,
   mess-dest=*console
%  MARM169 VOLUME 'FR1000' AVAILABLE FOR RESERVATIONS AT LOCATION 'SYSTEM4'
(MSG) %  %  MAR4164 PLEASE TRANSPORT VOLUME 'FR1000' FROM 'SYSTEM1' TO
'SYSTEM4'
%  MARM169 VOLUME 'FR1001' AVAILABLE FOR RESERVATIONS AT LOCATION 'SYSTEM4'
(MSG) %  %  MAR4164 PLEASE TRANSPORT VOLUME 'FR1001' FROM 'SYSTEM1' TO
'SYSTEM4'
:
%  MARM169 VOLUME 'FR1009' AVAILABLE FOR RESERVATIONS AT LOCATION 'SYSTEM4'
(MSG) %  %  MAR4164 PLEASE TRANSPORT VOLUME 'FR1009' FROM 'SYSTEM1' TO
'SYSTEM4'
%  MARM120 TOTAL OF 10 MAREN CATALOG ENTRIES PROCESSED
```

Ten free volumes on system1 are relocated to system4. The transport messages are output on the console (messages begin with "(MSG) %").

Example 3

```
//sec-free-vol num-of-vol=4,to=system4,from=system4,usage=*by-marenucp
%  MARM168 VOLUME 'FR1000' SECURED FOR MARENUCP AT LOCATION 'SYSTEM4'
%  MARM168 VOLUME 'FR1001' SECURED FOR MARENUCP AT LOCATION 'SYSTEM4'
%  MARM168 VOLUME 'FR1002' SECURED FOR MARENUCP AT LOCATION 'SYSTEM4'
%  MARM168 VOLUME 'FR1003' SECURED FOR MARENUCP AT LOCATION 'SYSTEM4'
%  MARM120 TOTAL OF 4 MAREN CATALOG ENTRIES PROCESSED
```

Four free volumes already located on system4 are flagged for automatic free tape allocation using MARENUCP, i.e. these four tapes cannot be reserved using RESERVE-FREE-VOL.

SHOW-ADMINISTRATION-SCOPE
Display which domains are currently being administered

Privilege   ADA, DA

The SHOW-ADMINISTRATION-SCOPE statement displays whether all or just one (and if required which) domain(s) is/are currently being administered. The host whose host-specified parameters are valid for the subsequent MAREN statements is also shown.

Format

SHOW-ADMINISTRATION-SCOPE	Alias: **SHAS**

The SHOW-ADMINISTRATION-SCOPE statement has no operands.

SHOW-DOMAIN-PARAMETERS
Display the parameters of a domain

Privilege   ADA, DA

The SHOW-DOMAIN-PARAMETERS statement is used to display the parameters of a domain and all hosts which belong to this domain.

DAs can only execute the statement in their own domain. The DOMAIN operand is thus meaningless for them.

Format

SHOW-DOMAIN-PARAMETERS	Alias: **SHDP**
DOMAIN = ***STD-DOMAIN** /***OWN** / <alphanum-name 1..8>	

Operands

DOMAIN =
The parameters of the specified domain are shown.

DOMAIN = *STD-DOMAIN
The parameters of the standard domain are shown.

DOMAIN = *OWN
The parameters of the user's own domain are shown.
The user's own domain is the domain of the host on which the ADA is currently working or the domain in which he/she has taken over the DA role.

DOMAIN = <alphanum-name1..8>
The parameters of the selected domain are shown.

SHOW-FOREIGN-DEVICE-TYPES
Display all foreign device types

Privilege   ADA, administrator without domains

This statement is used to show all foreign device types.

Format

SHOW-FOREIGN-DEVICE-TYPES	Alias: **SHFDT**

The SHOW-FOREIGN-DEVICE-TYPES statement has no operands.

Example

```
//SHOW-FOREIGN-DEVICE-TYPES
-------------------------------------------------------------------------------
FOREIGN-DEVICE-TYPE          INTERNAL-DEVICE-TYPE
-------------------------------------------------------------------------------
        FLOPPY                   X'0001'
        DVD                      X'0002'
        DVD-RW                   X'0003'
        CD-ROM                   X'0004'
        CD-RW-UX                 X'0005'
        UNIX-DEV                 X'0006'
        PC-DEV                   X'0007'
        WORK-DEV                 X'0008'
        SOLARIS                  X'0009'
        STREAMER                 X'000A'
```

FOREIGN-DEVICE-TYPE   Shows the name of the foreign device type.

INTERNAL-DEVICE-TYPE   Outputs the encoding of the device type as stored in the archive record of MARENCAT.

SHOW-FREE-VOLUMES
Output information on free volumes

Privilege   ADA, DA, administrator without domains

The SHOW-FREE-VOLUMES statement is used to output information on free volumes to
SYSOUT. The archive entries of the free volumes can be written to an output file
(OUTPUT operand). The file can also be created in CSV format to permit spreadsheet
processing. It can also be specified that an output file should be sent by email after it has
been created.

DAs can only execute the statement in their own domain. The DOMAIN operand is thus
meaningless for them.

Format

SHOW-FREE-VOLUMES	Alias: **SHFV**

VOLUME = ***ALL** / ***INT**ERVAL(...)
 	
    *INTERVAL(...)
       | **FROM** = ***FIRST** / \<vsn\>
       | ,**TO** = ***LAST** / \<vsn\>
       | ,**FROM-FSEQ** = **1** / \<integer 1..9999\>
 ,**FREE-LOC**ATION = ***ALL** / \<alphanum-name 1..8\>
 ,**DEVI**CE-**TYPE** = ***STD** / ***ALL-TAPES** / \<structured-name 1..8\>
 ,**USAGE** = ***ANY** / ***BY-MARENUCP**
 ,**FREE-POOL** = ***NO** / ***GLOBAL** / ***TSOS** / \<filename 1..54 without-gen-vers\> / \<text 2..32 without-sep\>
 ,**DOMAIN** = ***ANY** / ***OWN** / ***STD-DOMAIN** / \<alphanum-name 1..8\>
 ,**SORT-MODE** = ***VOL**UME / ***RES**ERVATION-**COUNT** / ***LAST-ACCESS-DATE** / ***FREE-DATE**	

```
,OUTPUT = *SYSOUT / *NONE / <filename 1..54> / <filename 1..54 without-gen-vers>(...)

   <filename 1..54 without-gen-vers>(...)
         FORMAT = *MAREN-STRUCTURE / *CSV(…)
            *CSV(…)
                  SEPARATOR = *SEMICOLON / *COMMA
                 ,HEADER-LINE = *YES / *NO
         ,SEND-BY-MAIL = *NO / *YES(...)
            *YES(...)
                  TO = *USER(...)
                    *USER(...)
                        USER-IDENTIFICATION = *OWN / <name 1...8>
                 ,SUBJECT = *STD /<c-string 1...256>
                 ,DELETE-FILE = *NO / *YES / *DESTROY
,STRUCTURE-OUTPUT = *NONE / <composed-name 1..255> (...)

   <composed-name 1..255> (...)
         WRITE-MODE = *REPLACE / *EXTEND
,OVERFLOW-CONTROL = *BY-PROGRAM / *BY-SYSTEM
```

Operands

VOLUME =
VSNs of volumes about which information is required.

VOLUME = *ALL
All VSNs are processed.

VOLUME = *INTERVAL(...)
Restricts the output of information to those VSNs which satisfy the specifications listed below.

FROM = *FIRST / <vsn>
VSN. All volumes whose VSN is greater than or equal to the specified VSN are processed.

FROM = *FIRST
All volumes are processed, starting with the lowest available VSN..

TO = *LAST / <vsn>
VSN. All volumes whose VSN is less than or equal to the specified VSN are processed.

TO = *LAST
All volumes are processed up to the highest available VSN.

FROM-FSEQ = 1 / <integer 1..9999>
File sequence number of the FROM operand. Specifies the precise file sequence number at which processing is to begin. This operand is relevant only if the statement is issued via the program interface.

FREE-LOCATION = *ALL / <alphanum-name 1..8>
Location name or symbolic location name. All archive entries with the specified free tape location are processed.

FREE-LOCATION = *ALL
All free tape locations are processed.

DEVICE-TYPE =
Device type of the volumes to be selected.

DEVICE-TYPE = *STD
All volumes of the default device type (DEFAULT-DEVICE-TYPE) whose value was specified in the MODIFY-MAREN-PARAMETERS statement are listed.

DEVICE-TYPE = *ALL-TAPES
All 9-track tapes and magnetic tape cartridges are listed (see Notes on page 265).

DEVICE-TYPE = <structured-name 1..8>
Device type. For a list of possible entries (depending on the BS2000/OSD version), see manual "System Installation" [9].

USAGE =
Specifies whether, on output of the archive entries, a selection is to be made on the basis of the reservation type of the volumes. Reservation is effected either explicitly via the RESERVE-FREE-VOLUME statement or implicitly via the automatic free tape allocation facility MARENUCP.

USAGE = *ANY
The archive entries of all free volumes are to be output, regardless of their reservation type.

USAGE = *BY-MARENUCP
The archive entries of free volumes which can only be reserved via the automatic free tape allocation facility (MARENUCP) are to be output.

FREE-POOL =
Selects the archive entries to be made available on the basis of the free tape pool.

FREE-POOL = *NO
Only free volumes assigned to the *NO free tape pool are selected.

FREE-POOL = *GLOBAL
Only free volumes assigned to the *GLOBAL free tape pool are selected.

FREE-POOL = *TSOS
Only free volumes assigned to the *TSOS free tape pool are selected.

FREE-POOL = <filename 1..54 without-gen-vers>
Only free volumes assigned to the free tape pool for ARCHIVE applications using the specified ARCHIVE directory are selected. If this directory is located under a remote user ID, both the user ID and the catalog ID must be entered. The user's own ID and standard catalog ID can be omitted.

FREE-POOL = <text 2..32 without-sep>
Specifies the name of a free tape pool.
The name of the free tape pool must begin with "*" followed by at least one character from A-Z or 0-9. The characters ".", "-" and "_" are permitted, but not at the end and not next to each other. It is possible to enter "*" in the last position, in which case all archive entries in all free tape pools will be listed, which begin with the specified character string. The sort criteria will apply only within the individual free tape pools.

DOMAIN =
Specifies the domain whose free volumes are shown.

DOMAIN = *ANY
Free volumes of all domains are shown.

DOMAIN = *OWN
Free volumes of the user's own domain are shown.
The user's own domain is the domain of the host on which the ADA is currently working.

DOMAIN = *STD-DOMAIN
Free volumes of the standard domain are shown.

DOMAIN = <alphanum-name 1..8>
Specifies the domain whose free volumes are shown.

If domains are used, the DA is shown free volumes either from the standard domain or from his/her own domain. This is dependent on which value the domain-specific FREE-VOLUMES operand has.
The ADA is shown free volumes of the domain which is specified with the DOMAIN operand.

SORT-MODE =
Specifies the archive entry field by which output should be sorted.

SORT-MODE = *VOLUME
The archive entries are sorted according to VSN.

SORT-MODE = *RESERVATION-COUNT
The archive entries are sorted according to the reservation counter.

SORT-MODE = *LAST-ACCESS-DATE
The archive entries are sorted according to the date of the last volume access.

SORT-MODE = *FREE-DATE
The archive entries are sorted according to the date of the last release.

OUTPUT =
Determines the output medium. Output to SYSOUT is the default.

OUTPUT = <u>*SYSOUT</u>
Output is directed to SYSOUT.

OUTPUT = *NONE
No output takes place. This specification only makes sense for structured output in an S variable (see the STRUCTURE-OUTPUT operand).

OUTPUT = <filename 1..54>
Only for specifying a file generation..
Output is directed to the specified file generation in MAREN archive record format.
Passwords are overwritten with C'$$$$'. Only the number of records written is displayed on SYSOUT.

OUTPUT = <filename 1..54 without-gen-vers>(...)
Name of the SAM output file to which all selected archive entries are to be written.
Passwords are overwritten with C'$$$$'. Only the number of records written is displayed on SYSOUT. The output format and transfer by email can also be specified.

  FORMAT =
  Determines the format of the output file.

  FORMAT = <u>*MAREN-STRUCTURE</u>
  Output takes place in MAREN archive record format.

FORMAT = *CSV(…)
Output takes place in CSV (comma separated value) format. Files in CSV format can
be read in so that the columns are retained, and they can be processed further with a
spreadsheet program (e.g. EXCEL).

SEPARATOR = *SEMICOLON / *COMMA
Determines the separator which is to be set between the various output values. The
default separator is a semicolon (;). Optionally a comma (,) can be used as the
separator.

HEADER-LINE = *YES / *NO
Specifies whether a header line should be output to name the output columns. The
default is *YES, i.e. the header line is output. The header line contains the field
names of the attributes (see section "Allocating the statement operands in SDF
format to archive entry fields" on page 519).

SEND-BY-MAIL = *NO / *YES(...)
Specifies whether the output file should be sent by email. The default is *NO, i.e. it is
not sent by email.

SEND-BY-MAIL = *YES(...)
The output file should be sent as an email attachment. The recipient is addressed by
means of his/her user ID, i.e. the email address is taken from the user entry concerned.
BS2000/OSD V8.0 and higher supports this function. If transfer by email is not possible
(e.g. because of a lower BS2000/OSD version or missing email address in the user
entry), the output file is only created (equivalent to SEND-BY-MAIL=*NO).

TO = *USER(...)
Details of transfer by email:

USER-IDENTIFICATION = *OWN / <name 1...8>
Specifies the user ID. The recipient's email address is taken over from this user
entry. If the user entry contains more than one email address, all the addresses
are taken over as recipients.
The default is *OWN, i.e. the caller's user ID.

SUBJECT = *STD /<c-string 1...256>
Determines the content of the email's "Subject" field.
The default is *STD, i.e. MAREN uses a standard text, such as MARENADM
STATEMENT SHOW-FREE-VOLUMES, FILENAME: <filename>.

DELETE-FILE = *NO / *YES / *DESTROY
Specifies whether the file should be automatically deleted after it has been sent.
The default is *NO, i.e. the file is not deleted.
*YES causes the file to be deleted after it has been sent. *DESTROY also causes
it to be deleted, and the memory space is overwritten with binary zeros.

STRUCTURE-OUTPUT =
Controls the structured output in S variables.

STRUCTURE-OUTPUT = <u>*NONE</u>
No structured output takes place.

STRUCTURE-OUTPUT = <composed-name 1..255> (...)
Name of the S variable to be used for the structured output.

> **WRITE-MODE =**
> Determines whether the output should replace or extend the current content of the S variables.
>
> **WRITE-MODE = <u>*REPLACE</u>**
> The current content of the S variable is replaced by the new output.
>
> **WRITE-MODE = *EXTEND**
> The new output extends the current content of the S variable.

OVERFLOW-CONTROL =
Type of screen overflow control in interactive mode.

OVERFLOW-CONTROL = <u>*BY-PROGRAM</u>
Control by the program: After eighteen archive entries have been processed, a message is displayed inquiring whether the current operation is to be continued or aborted.

OVERFLOW-CONTROL = *BY-SYSTEM
Control by the system: Screen overflow control is based entirely on the system parameter TCHOFLO or the value set in the MODIFY-TERMINAL-OPTIONS command.

Notes

– If a sort criterion other than *VOLUME is chosen (e.g. SORT-MODE=*FREE-DATE), the value *STD is used instead of *ALL-TAPES for the DEVICE-TYPE operand for further processing. As a result, not all tapes with the selected ARCHIVE prereservation are listed, but more appropriately only volumes of the default device type or with the default recording density.

– Depending on how many volumes there are in the specified number range, the output of archive entries may be very time-consuming. This is particularly true if a sort criterion other than *VOLUME is selected. It is therefore advisable to use a batch process for output or to access the MAREN catalog directly (run the program under the catalog ID or TSOS).

– The spin-off mechanism is triggered if the specified free tape location is incorrect or if no free volume has been found in the specified range.

–   If the aliases for the values *NO, *GLOBAL or *TSOS of the FREE-POOL operand are
    specified, then these operand values are expanded to their full length for compatibility
    reasons (e.g. the entry *GL is expanded to *GLOBAL).

–   Transfer by email takes place only if the file to be sent contains at least one entry.

–   Device type TAPE-U4E is not permissible for this statement as free volumes are not
    encrypted.

Examples

Example 1

```
//show-free-vol
```

The archive entries of all free volumes with the specified default device type are output.
After every eighteen entries, the user is asked whether listing should be terminated or
continued.

Example 2

```
//show-free-vol vol=*int(id0,id9),output=list.freevol.2
%  MARM119 FILE 'LIST.FREEVOL.2' WITH 30 RECORDS CREATED
```

All free volumes with the default device type whose VSNs lie within the range id0 to id9 are
listed. Output is directed to the file list.freevol.2.

Example 3

```
--------------------------------------------------------------------------------
VOLUME DEV-T FREE-LOC U RESC L-A-CPU  L-A-DATE   FREE-DATE  L-A-USER ADM-FIELD
--------------------------------------------------------------------------------
THC006 T-C4  ROBTLS     0016                      2007-09-09
TST005 T-C4  ROBABBA1   0055 D241ZE15 2006-04-29 2007-04-29 TSOS
TST013 T-C4  ROBABBA1   0056 D241ZE15 2006-04-29 2007-04-29 TSOS
TST017 T-C4  ROBABBA1   0054 D241ZE15 2006-04-29 2007-04-29 USER1
TST019 T-C4  ROBABBA1   0222 D241ZE14 2006-04-29 2007-04-29 TSOS     352235
TST021 T-C4  ROBABBA1   0047 D241ZE15 2006-04-29 2007-04-29 TEST08
TST024 T-C4  ROBABBA1   0187 D241ZE14 2006-04-29 2007-04-29 SYSMAREN
TST026 T-C4  ROBABBA1   0061 D241ZE15 2006-04-28 2007-04-28 TSOS
% MARM120 TOTAL OF 8 MAREN CATALOG ENTRIES PROCESSED
```

The archive entries of all free volumes (default device type) assigned to a free tape pool for ARCHIVE applications under any user ID are output. The meaning of the individual fields is described below.

Meaning of the fields:

VOLUME	VSN
DEV-TYPE	Device type
FREE-LOC	Free tape location
U	Reservation identifier USAGE U indicates that reservation is possible only via MARENUCP.
RESC	Reservation counter
L-A-CPU	Processor name at last access
L-A-DATE	Date of last access
FREE-DATE	Volume expiration date
L-A-USER	User ID at last access
ADM-FIELD	Computer center administration field

Example 4

```
//show-free-vol vol=*int(id0,id1)
--------------------------------------------------------------------------------
VOLUME DEV-T FREE-LOC U RESC L-A-CPU  L-A-DATE   FREE-DATE  L-A-USER ADM-FIELD
--------------------------------------------------------------------------------
ID0002 T-C4  CENTRAL    0001                     2007-05-06
ID0005 T-C4  CENTRAL    0000                     2007-05-06
ID0006 T-C4  CENTRAL    0000                     2007-05-06
ID0007 T-C4  CENTRAL    0000                     2007-05-06
ID0008 T-C4  CENTRAL    0000                     2007-05-06
ID0010 T-C4  CENTRAL    0000                     2007-05-06
ID0011 T-C4  CENTRAL    0000                     2007-05-06
ID0013 T-C4  CENTRAL    0000                     2007-05-06
%  MARM120 TOTAL OF 8 MAREN CATALOG ENTRIES PROCESSED
```

All free volumes of the default device type whose VSNs lie within the range id0 to id1 are listed.

Output in S variables

This statement supports the structured output in S variables (controlled by the STRUCTURE-OUTPUT operand).

Further information on S variables is provided in the "Commands" manual [5].

Output information	Name of the S variable	T	Contents
Access counter (8-digit) Incremented each time the volume is accessed.	var(*LIST). ACCESS-COUNT	S	<integer 0..99999999>
CC's own administration field	var(*LIST). ADM-FIELD	S	<c-string 1..8>
Creation date	var(*LIST). CRE-DATE	S	yyyy-mm-dd
Creation job name For HSMS request name	var(*LIST). CRE-JOB-NAME	S	" <name 1..8>
Creation time	var(*LIST). CRE-TIME	S	hh:mm:ss
Device type of the volume	var(*LIST). DEV-TYPE	S	<structured-name 1..8>
Name of an ARCHIVE directory (with catid and userid) which contains the volume	var(*LIST). DIR-NAME	S	<filename 1..54 >
Displays whether the tape contains the ARCHIVE directory which was also saved.	var(*LIST).DIR-ON-VOL	S	*NO *YES

(part 1 of 3)

Output information	Name of the S variable	T	Contents
Status (sent = exported or not)	var(*LIST). EXPORTED	S	*NO *YES
First VSN of the MF/MV set	var(*LIST). FIRST-VOL	S	<vsn>
File name of a tape file Without catid and userid	var(*LIST). F-NAME	S	<filename 1..41>
Expiration date of the volume Specifies when the reservation of the volume for a user ID can be terminated.	var(*LIST). FREE-DATE	S	yyyy-mm-dd
Release location A volume is moved to this location during the clear-up run.	var(*LIST). FREE-LOCATION	S	<alphanum-name 1..8>
Name of the free tape pool in which this volume is located or is to be located when it is released	var(*LIST). FREE-POOL	S	<filename 1..54> ´ *NO *GLOBAL *TSOS
File sequence number (4-digit)	var(*LIST). F-SEQ	S	<integer 1..9999>
Standard location	var(*LIST). HOME-LOCATION	S	<alphanum-name 1..8>
Host name for the last access	var(*LIST). LAST-ACCESS-CPU-NAM	S	<alphanum-name 1..8>
Date of the last access	var(*LIST). LAST-ACCESS-DATE	S	yyyy-mm-dd
User name for the last access	var(*LIST). LAST-ACCESS-USER-ID	S	<name 1..8>
Password for volume access	var(*LIST). PASS	S	*NONE *YES
Comment field which should be filled with a meaningful text.	var(*LIST). REMARK	S	<c-string 1..24>
Reservation counter This counter is incremented with each new reservation of the volume.	var(*LIST). RESERV-COUNT	S	<integer 0..9999>
Reservation date Date on which a volume is reserved.	var(*LIST). RESERV-DATE	S	yyyy-mm-dd
SAVE-FILE-ID (HSMS) or SAVE-VERSION (ARCHIVE)	var(*LIST). SFID	S	<c-string 1..15>
Number of the subtask for the parallel save run in HSMS	var(*LIST). SUBSAVE	S	<integer 0..15>

(part 2 of 3)

Output information	Name of the S variable	T	Contents
Number of the continuation tape in a parallel save run in HSMS	var(*LIST). SUBSEQ	S	\<integer 0..999\>
Shareability of the volume	var(*LIST). USER-ACCESS	S	OWNER-ONLY FOREIGN-READ ALL-USERS
Account number	var(*LIST). USER-ACCOUNT	S	\<alphanum-name 1..8\>
User field. Data such as name and department or data relevant for operations scheduling can be entered here.	var(*LIST). USER-FIELD	S	\<c-string 1..54\>
User ID of the volume owner	var(*LIST). USER-ID	S	\<name 1..8\>
Tape VSN	var(*LIST). VOL	S	\<vsn\>
Volume group Only has a valid value with reserved volumes, otherwise it is undefined.	var(*LIST). VOL-GROUP	S	\<text 1..32\>
Volume sequence number (4-digit)	var(*LIST). VOL-SEQ	S	\<integer 1..255\>
Volume status F = FREE P = PRIVATE R = RESERVED D = DEFECT	var(*LIST). VOL-STA-1	S	F/P/R/D

(part 3 of 3)

SHOW-GLOBAL-PARAMETERS
Display the global parameters of a MAREN network

Privilege   ADA, administrator without domains

This statement displays the global parameters of a MAREN network.

Format

SHOW-GLOBAL-PARAMETERS	Alias: **SHGP**

The SHOW-GLOBAL-PARAMETERS statement has no operands.

SHOW-MAREN-FILE
Display information from MAREN catalog file

Privilege   ADA, DA, administrator without domains

The SHOW-MAREN-FILE statement allows for the retrieval and display of information from MAREN catalog files without the aid of other components in the MAREN system.

Format

SHOW-MAREN**-FILE**   Alias: **SHMF**
FILE**-NAME** = ***MARENCAT** / ***MARENLOG** / <filename 1..54>

Operands

FILE-NAME =

FILE-NAME = *MARENCAT
Entries from the current MAREN catalog will be displayed.

FILE-NAME = *MARENLOG
Entries from the current MAREN log file will be displayed.

FILE-NAME = <filename 1..54>
Name of the file from which the MAREN catalog entries are to be displayed.

The following files can be read:

– Volume catalog
The current volume catalog of a MAREN system and any number of copies of it can be assigned.

– MAREN logging files
Here, too, the current open logging file or an older logging file (perhaps compiled from a number of individual files) can be used.

– MAREN output files
These are files which contain full archive entries in MAREN format, and which can be created using various MAREN and MARENADM statements.

```
//SHOW-VOLUME-ATTRIBUTES OUTPUT=<filename>
```

Possible applications

Here are a selection of possible applications for SHOW-MAREN-FILE:

– Information can be retrieved from the MAREN catalog even if the MARENCP control
program crashes.

– The output files generated by various MAREN and MARENADM statements (e.g.
RESERVE-FREE-VOLUME) can be evaluated.

– The logging files make it easy to check all accesses to a volume.

SHOW-MAREN-FILE recognizes which file type has been assigned from various file
attributes (e.g. ACCESS-METHOD, KEY-LENGTH).

The archive entries and MAREN parameters are output in the same format as in the
MARENADM statements SHOW-VOLUME-ATTRIBUTES VOL=<vsn> and SHOW-
MAREN-PARAMETERS.

Once the statement has been issued, various input alternatives are offered depending on
the specified file type (volume catalog, MAREN logging file, or MAREN output file).

Notes

Once a file name is entered, the associated file is checked. Various file attributes are
checked to determine whether the file is a MAREN catalog file, and if so, what type it is. In
the case of a volume catalog or a logging file, the file is opened in SHARED-UPDATE=YES
mode to make it possible to access current MAREN catalog files.

If the file is a volume catalog, the MAREN parameters are listed (these are always in the
first record in the volume catalog) and the following prompt is displayed:

```
MARM1E2 ENTER: VSN / POS(VSN) / +N / -N / ++ / -- / 'ETX' / END
```

If a MAREN logging file has been assigned, the following prompt is displayed without prior
output:

```
MARM1E3 ENTER: FROM=VSN / LIST=VSN / VSN / +N / -N / ++ /-- / 'ETX' / END
```

If the file is a MAREN output file, the first archive entry it contains is displayed. The following
prompt is then output:

```
MARM1E1 ENTER: +N / -N / ++ / -- / 'ETX' / END; RECORD COUNTER = 'xxxxxx'
```

In the case of MAREN output files in SAM format, the RECORD COUNTER field indicates
how many records were read from the file by the last action carried out. The number of
archive entries in the output file can thus be determined easily by entering "++" (position to
end of file).

The following parameters can be used with all types of input files:

Parameter	Action / notes
+n	Starting at the current position and working towards the end of the file, read the next "n" records and display the current record (n = max. 6-digit number).
-n	Starting at the current position and working towards the top of the file, read the next "n" records and display the current record (n = max. 6-digit number).
++	Display the last record in the file.
--	Display the first record in the file.
'ETX'	(Same as $\boxed{\text{DUE}}$) Working towards the end of the file, display the next record (corresponds to entering "+1").
END	End the display. Other MARENADM statements can then be entered.

The following parameters can also be specified if the input file is a volume catalog:

Parameter	Action / note
vsn	Display the first record in the input file with the specified VSN (e.g. TAPE01).
POS(vsn)	Position to the VSN in question in the volume catalog and read the next record. The archive entry may refer to the VSN specified or, if this does not exist, to the next highest VSN.

The following parameters can also be specified for logging files in addition to those supported by all file types:

Parameter	Action / note
vsn	Display the first logging entry for the specified VSN.
FROM=vsn	Display a brief summary of all logging entries beginning with the VSN in question. The logging entries are sorted chronologically within the individual VSN and file sequence number.
LIST=vsn	Display a brief summary of all logging entries for the VSN in question. The entries are listed in the order in which they were created.

If the display is longer than the screen length for the FROM=vsn and LIST=vsn parameters, it can be interrupted by pressing the $\boxed{\text{K2}}$ key.
The following query is then output in the dialog:

```
MARM103 CONTINUE ACTION? REPLY (Y=YES;N=NO)
```

If a FREE-POOL record is found while paging, the message is output instead of the output mask:

```
MARM214 FREE-POOL-NAME '(&OO)', LAST ACCESS FUNCTION '(&O1)', FUNCTION NUMBER
'(&O2)'
```

Setting task switch 5 causes archive entries and MAREN parameters to be listed line by line in interactive mode rather than in a single display screen. This improves the readability of entries in SYSOUT logs. In batch mode, output is generally on a line-by-line basis.

Outputting logging records

In the case of logging records, the archive entry they contain is output first, followed by the logging information. The latter shows when the logging record was written and on which pubset, e.g.:

```
** LOGGING RECORD WRITTEN AT DATE: 2004-05-03 AT TIME: 16:20:40 ON PVS: PI1B **
```

If all records relating to a particular VSN or to a number of VSNs starting with a specific VSN are to be listed (parameter LIST=vsn or FROM=vsn), archive entries are not shown in full. Instead, the list is limited to a number of fields.

The following information is provided (where each line begins with the abbreviation which appears in the header):

VOLUME	–	VSN (VOLUME)
FSEQ	–	File sequence number (FILE-SEQUENCE)
C#	–	Check sum (CHECK-COUNT)
FUNCNAME	–	Name of the function used in the last access (LAST-ACCESS-FUNCTION-NAME)
FF	–	Function flag for the last access (LAST-ACCESS-FUNCTION-FLAG)
LOG-DATE	–	Date on which the logging entry was created
LOG-TIME	–	Time at which the logging entry was created
C-ID	–	Catalog ID of the pubset on which the logging entry was written
CPU-NAME	–	Name of the computer on which the volume was last processed (LAST-ACCESS-CPU-NAME)
STA	–	Status of the volume (VOLUME-STATUS)
DV	–	Device type of the volume (DEVICE-TYPE) in internal format
MN	–	Mnemonic name of the device on which the volume was last processed (DEVICE-NAME)
TSN	–	TSN of the task that last processed the volume (LAST-ACCESS-TSN)
RES#	–	Reservation counter of the volume (RESERVATION-COUNT)

Example

In this example, the following information from the file $SYSMAREN.MARENLOG.14 is displayed:

– after pressing $\boxed{\text{DUE}}$, the first logging record for the volume with the VSN "A00001"

– after entering LIST=TST001, all logging entries for the volume "TST001" in abbreviated form

```
//show-maren-file :data:$sysmaren.marenlog.14
%  MARM1E3 EINGABE: FROM=VSN / LIST=VSN / VSN / +N / −N / ++ / −− / 'ETX' / END
*
VOLUME    = A00001       FILE-SEQ      = 0001          DEV-TYPE    =  TAPE-C2

USER-ID   = MAREN001     HOME-LOCATION = LOCATIO1      RESERV-DATE =  2006−05−03
ACCOUNT   =              FREE-LOCATION = LOCATIO1      FREE-DATE   =  2006−05−03
USER-ACC  = OWNER-ONLY   TEMP-LOCATION = CENTRAL       EXPORT-DATE =
PASSWORD  = NONE
REMARK    = C'                        '
EXPORT-AD = C'                                      '
USER-FIELD= C'                            '
FILE-NAME =
FREE-POOL = *NO
OPEN-MODE =              CR-DATE     =              LAST-ACC-DATE   =
DEV-NAME  =              CR-TIME     =              LAST-ACC-TIME   =
VOL-SEQ   = 0001         CR-CAT-ID   =              LAST-ACC-USER-ID =
FIRST-VOL = A00001       CR-USER-ID  =              LAST-ACC-ACCOUNT =
CLOSE-IND =              CR-JOB-NAME =              LAST-ACC-JOB-NAME=
EXPIR-DATE=              LAST-CL-DATE =             LAST-ACC-TSN    =
AUDIT     = NO           LAST-CL-TIME =             LAST-ACC-SNO    =
VOL-STATUS= RESERVED     RESERV-COUNT = 0001        LAST-ACC-CPU-NAME=
INIT      = YES          ACCESS-COUNT = 00000000    LAST-ACC-FUN-NAME= ADD
ADM-FIELD = C'           'CHECK-COUNT  = 01          LAST-ACC-FUN-FLAG= 11
** LOGGING RECORD WRITTEN AT DATE: 2006−05−03 AT TIME: 18:22:12 ON PVS: PI1B **
%  MARM1E3 EINGABE: FROM=VSN / LIST=VSN / VSN / +N / −N / ++ / −− / 'ETX' / END
*list=tst001
−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−
VOLUME FSEQ C# FUNCNAME FF LOG-DATE   LOG-TIME  C-ID CPU-NAME STA DV MN TSN   R#
−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−
TST001 0001 34 MODIFY1  23 2006−02−15 13:08:51 PI1B          R  BC        0013
TST001 0001 35 FREE     23 2006−02−15 13:08:52 PI1B          F  BC        0013
TST001 0001 36 MARENUCP 17 2006−02−15 13:09:04 PI1B          R  BC        0014
TST001 0001 37 MARENONS 23 2006−02−15 13:09:05 PI1B D241ZE14 R  BC    2004 0014
TST001 0001 38 MARENOO2 23 2006−02−15 13:10:05 PI1B D241ZE14 R  BC HH 2004 0014
TST001 0001 39 MARENONR 23 2006−02−15 13:19:45 PI1B D241ZE14 R  BC HH      0014
TST001 0001 40 MARENOC1 23 2006−02−15 13:19:46 PI1B D241ZE14 R  BC HH      0014
TST001 0001 41 MODIFY1  23 2006−02−15 13:36:45 PI1B D241ZE14 R  BC HH      0014
TST001 0001 42 FREE     23 2006−02−15 13:36:46 PI1B D241ZE14 F  BC HH      0014
TST001 0001 43 MARENUCP 17 2006−02−15 14:00:26 PI1B          R  BC        0015
TST001 0001 44 MARENONS 23 2006−02−15 14:00:28 PI1B D241ZE14 R  BC    2065 0015
TST001 0001 45 MARENOO2 23 2006−02−15 14:01:27 PI1B D241ZE14 R  BC HG 2065 0015
TST001 0001 46 MARENONR 23 2006−02−15 14:31:39 PI1B D241ZE14 R  BC HG      0015
TST001 0001 47 MARENOC1 23 2006−02−15 14:31:40 PI1B D241ZE14 R  BC HG      0015
TST001 0001 48 MODIFY1  23 2006−02−16 16:31:48 PI1B D241ZE14 R  BC HG      0015
TST001 0001 49 FREE     23 2006−02−16 16:31:49 PI1B D241ZE14 F  BC HG      0015
TST001 0001 50 MARENUCP 17 2006−02−16 17:44:21 PI1B          R  BC        0016
TST001 0001 51 MARENONS 23 2006−02−16 17:44:23 PI1B D241ZE14 R  BC    2259 0016
TST001 0001 52 MARENOO2 23 2006−02−16 17:45:27 PI1B D241ZE14 R  BC HG 2259 0016
*end
%  MARM170 ANWEISUNG '//SHOW−MAREN−FILE' AUSGEFUEHRT
```

The display is terminated with END.

SHOW-MAREN-PARAMETERS
Display host-specific parameters

Privilege   ADA, DA, administrator without domains

This statement is used to display the current values of a host's host-specific parameters on the screen.

When you use domains a list of the hosts which belong to the currently administered domain is also output. If the ADA enters this statement, this list is the list of all hosts with their associated domains.

It also logs the computer center exit routines used by MARENCP and MARENUCP. The existing free tape pools are output after the host-specific parameters are output.

Format

SHOW-MAREN-**PAR**AMETERS   Alias: **SHMP**
HOST-NAME = ***OWN** / <alphanum-name 1..8> ,**O**VERFLOW-**CONTROL** = ***BY-PROG**RAM / ***BY-SYS**TEM

Operands

HOST-NAME = *OWN / <alphanum-name 1..8>
Name of the host whose host-specific parameters are displayed. Only the name of a host can be selected which belongs to a domain that is currently being administered.

OVERFLOW-CONTROL =
Type of screen overflow control in interactive mode .

OVERFLOW-CONTROL = *BY-PROGRAM
Control by the program: After eighteen archive entries have been processed, a message is displayed inquiring whether the current operation is to be continued or aborted.

OVERFLOW-CONTROL = *BY-SYSTEM
Control by the system: Screen overflow control is based entirely on the system parameter TCHOFLO or the value set in the MODIFY-TERMINAL-OPTIONS command.

Notes

–   The contents of the MAREN-PASSWORD parameter are displayed in plain text under
    the user ID TSOS, provided the system was not generated with encryption. Otherwise,
    only YES or NONE is output.

–   Setting task switch 5 causes MAREN parameters to be listed line by line in interactive
    mode rather than in a single display screen. This improves the readability of entries in
    SYSOUT logs. In batch mode, output is generally on a line-by-line basis.

Example

Statement entered by ADAs:

```
//show-maren-par

HOST-NAME = DO17ZE15  SNO         = 041      DOMAIN = *STD-DOM    ADA-ALLOW = N

EXP-PROC     = Y      INPUT-F-CH = N       FOREIGN-T-CH = N     TSOS-PRIV = N
EXP-FOREIGN  = N      INPUT-T-CH = Y       RETPD-CHECK  = Y     DEV-COMPL = Y
EXP-ADDR-ACK = N      AUDIT      = YES     TEST-MODE    = N     LOGGING   = N
EXP-RECEIPT  = NO

BATCH-REQ-TIME=01800  DEF-FREE-DATE = 0007    ARCH-WORK-TIME = (00:00,24:00)
BATCH-EX-TIME =00100  DEF-HOME-LOC  = BABLOC1 PRIV-USER-ID   =
DIAL-REQ-TIME =00180  DEF-DENSITY   = T6250   EXITS          = NONE
DIAL-EX-TIME  =00050  DEF-DEV-TYPE  = TAPE-C4  LAYOUT-FOR-SHOW= MAXIMUM
CID-UID       = Y     DEF-USER-ACC  = FOREIGN-READ-ONLY
MOUNT-CH-INT  = 0060  DEF-ADM-SCOPE = *OWN     RESERVATION-SEQ= VSN
                                               OPERATOR-ROLE  = SYSMAREN

MAREN-PASSWORD=NONE

RES-DEV-TYPES =(TAPE-C4 /TAPE-U2 /TAPE-U3 /TAPE-C5 /TAPE-C6/TAPE-U4/TAPE-U4E)


%  MARM103 CONTINUE ACTION? REPLY (Y=YES; N=NO)?Y
```

```
LOCATION-ENTRIES:(LOCATION-NAME,SYMBOLIC-NAME,TYPE,OPERATING-MODE)
  (ROBOTER1,ROBOTER1,LOCAL ,ROBAR-1 )    (CSTOR1  ,CSTOR1  ,LOCAL ,ROBAR-2 )
  (CSTOR2  ,CSTORF  ,LOCAL ,ROBAR-2 )    (CENTRAL ,CENTRAL ,LOCAL ,MANUAL  )
  (        ,        ,      ,        )    (        ,        ,      ,        )
  (        ,        ,      ,        )    (        ,        ,      ,        )
  (        ,        ,      ,        )    (        ,        ,      ,        )
  (        ,        ,      ,        )    (        ,        ,      ,        )
  (        ,        ,      ,        )    (        ,        ,      ,        )
  (        ,        ,      ,        )    (        ,        ,      ,        )
  (        ,        ,      ,        )    (        ,        ,      ,        )
  (        ,        ,      ,        )    (        ,        ,      ,        )
% MARM103 CONTINUE ACTION? REPLY (Y=YES; N=NO)?Y


HOSTS: (HOST-NAME,SESSION-NR,DOMAIN,ADA-ALLOWED,DEF-ADMIN-SCOPE)

D017B016 , 055 , *STD-DOM , N , OWN
D017ZE15 , 041 , *STD-DOM , N , OWN
D017ZE16 , 061 , *STD-DOM , N , OWN
D017ZE39 , 036 , *STD-DOM , N , OWN
JUANA1   , 127 , *STD-DOM , N , OWN
LEIBNIZ2 , 086 , *STD-DOM , N , OWN
LEIBNIZ9 , 003 , *STD-DOM , N , OWN


% MARM103 CONTINUE ACTION? REPLY (Y=YES; N=NO)?Y
LIST OF FREE-POOL NAMES:

*FP.NOV14.001
*NO
*TSOS
:4V09:$TSOS.CLMDIR
% MARM222 4 FREE-POOL NAMES DISPLAYED
```

SHOW-MAREN-STATUS
Display current status of MAREN system

Privilege   ADA, DA, administrator without domains

The SHOW-MAREN-STATUS statement provides the MAREN administrator with an overview of the current status of the MAREN system. It displays information on the MAREN subsystem, the control task MARENCP, and the automatic free tape allocation facility MARENUCP. This information can also be accessed by all computers in the MAREN network which are linked via HIPLEX MSCF (see the "HIPLEX MSCF (BS2000/OSD)" manual [13]).

DAs can only execute the statement in their own domain. The *ALL-FROM-DOMAIN specification is thus meaningless for them.

Format

SHOW-MAREN-STATUS	Alias: **SHMS**
HOST-NAME = ***OWN** / ***ALL** / \<alphanum-name 1..8\> / ***ALL-FROM-DOMAIN** (...)	
*ALL-FROM-DOMAIN	
│ **DOMAIN** = ***STD-DOMAIN** / ***OWN** / \<alphanum-name 1..8\>	
,**OVERFLOW**-**CONTROL** = ***BY-PROG**RAM / ***BY-SYS**TEM	

Operands

HOST-NAME =
Host for which MAREN system status information is to be displayed.

HOST-NAME = *OWN
Information is only output by the local host.
When the ADA uses the MODIFY-ADMINISTRATION-SCOPE DOMAIN=... statement to become the DA of a domain, HOST=*OWN addresses the host which was determined by the HOST operand in MODIFY-ADMINISTRATION-SCOPE.

HOST-NAME = *ALL
When domains are used the information on all hosts of the user's own domain is output for the DA, and information on all hosts for the ADA.

HOST-NAME = <alphanum-name 1..8>
BCAM name of a host.
If the DA enters a host name when domains are being used, this host must belong to the
DA's own domain.

HOST-NAME = *ALL-FROM-DOMAIN (...)
Host information on hosts from specific domains is shown. This operand may only be used
by the ADA.

> **DOMAIN =**
> Selects the domain.
>
> **DOMAIN = *STD-DOMAIN**
> Information on the hosts of the standard domain is shown.
>
> **DOMAIN = *OWN**
> Information on the hosts of the user's own domain is shown.
> The user's own domain is the domain of the host on which the ADA is currently working.
>
> **DOMAIN = <alphanum-name 1..8>**
> Information on the hosts of the specified domain is shown.

OVERFLOW-CONTROL =
Type of screen overflow control in interactive mode .

OVERFLOW-CONTROL = *BY-PROGRAM
Control by the program: After an information block has been output, a message is displayed
inquiring whether the current operation is to be continued or aborted.

OVERFLOW-CONTROL = *BY-SYSTEM
Control by the system: Screen overflow control is based entirely on the system parameter
TCHOFLO or the value set in the MODIFY-TERMINAL-OPTIONS command.

Notes

–   The values *ANY and *ALL are not offered for DOMAIN because the result would be the
    same as that achieved with HOST-NAME = *ALL.

–   The following information is displayed for each host:

    1. Name of the host
    2. TSN of the control task MARENCP
    3. TSN of the automatic free tape allocation facility MARENUCP
    4. Status of the MAREN catalog (FREE/LOCKED/UNLOCKED)
    5. Transaction status of the subsystem (INACTIVE/ANNOUNCE/ACTIVE/FETCH)
    6. TSN of the last transaction
    7. VSN of the last transaction
    8. Name of the logging file

9. Location Manager File (name of the reservation file) for MARENCP
10. Location Manager File (name of the reservation file) for MARENUCP
11. Name of the exit module library for MARENCP
12. Name of the exit module library for MARENUCP

– Active connections must exist between the catalog host and the remaining hosts in the MAREN network to permit successful information interchange involving a number of hosts. For this purpose, the HIPLEX MSCF subsystem must be loaded.

The statement with the parameter HOST-NAME=*OWN works even if the above requirements are not fulfilled.

Examples

Example 1: Status inquiry from the local host

//**show-maren-status**
```
================================================================================
HOSTNAME MARENCP MARENUCP CATALOG   ===  TRANSACTION   ===  DOMAIN    SUB-SYS
         TSN     TSN      STATUS    STATUS   LA-TSN LA-VSN            VERSION
================================================================================
LEIBNIZ4  5TAM    5TAX    UNLOCKED  INACTIVE 5TAX              HSMSTEST 11.0A00
--------------------------------------------------------------------------------

MAREN-CATALOG : :FSAU:$SYSMAREN.MARENCAT

%  MARM103 CONTINUE ACTION? REPLY (Y=YES; N=NO)?
Y
================================================================================
HOST-NAME
LINK-NAME   EXIT#        FILE-NAME
================================================================================
LEIBNIZ4
 MARENLOG                 :BUR7:$SYSMAREN.MAREN.LOGGING
 MARENLMF/CP              :FSAU:$SYSMAREN.MARENLMF
 MARENLMF/UCP             :FSAU:$SYSMAREN.MARENLMF
 MARENLIB/CP (1,3,5)      :BUR7:$SYSMAREN.MARENLIB
 MARENLIB/UCP(1,6)        :BUR7:$SYSMAREN.MARENLIB
%  MARM170 STATEMENT '//SHOW-MAREN-STATUS' PROCESSED
```

After an information block has been output, the message `MARM103` is issued to inquire whether the operation is to be continued.

Example 2: Status inquiry from all hosts in the MAREN network

//**show-maren-status host=*all**

```
================================================================================
HOSTNAME MARENCP MARENUCP CATALOG    === TRANSACTION  ===   DOMAIN    SUB-SYS
         TSN     TSN      STATUS     STATUS   LA-TSN LA-VSN           VERSION
================================================================================
LEIBNIZ4  5TAM    5TAX    UNLOCKED   INACTIVE 5TDQ          HSMSTEST  11.0A00
D017ZE15  400J    400K    UNLOCKED   INACTIVE 41HT   QE3009 HSMSTEST  11.0A00
%  MARM197 ACCESS TO HOST 'D017ZE19' NOT POSSIBLE
D017ZE39  2B9I    2B91    UNLOCKED   INACTIVE 2RDX   QE0574 HSMSTEST  11.0A00
--------------------------------------------------------------------------------


MAREN-CATALOG : :FSAU:$SYSMAREN.MARENCAT.OS


================================================================================
HOST-NAME
 LINK-NAME   EXIT#       FILE-NAME
================================================================================
LEIBNIZ4
 MARENLOG                 :BUR7:$SYSMAREN.MAREN.LOGGING
 MARENLMF/CP              :FSAU:$SYSMAREN.MARENLMF.OS
 MARENLMF/UCP             :FSAU:$SYSMAREN.MARENLMF.OS
 MARENLIB/CP  (1,3,5)     :BUR7:$SYSMAREN.MARENLIB
 MARENLIB/UCP (1,6)       :BUR7:$SYSMAREN.MARENLIB

D017ZE15
 MARENLOG                 :SBZ7:$SYSMAREN.MAREN.LOGGING
 MARENLMF/CP              :FSAU:$SYSMAREN.MARENLMF.OS
 MARENLMF/UCP             :FSAU:$SYSMAREN.MARENLMF.OS
 MARENLIB/CP  (1,3,5)     :SBZ7:$SYSMAREN.MARENLIB
 MARENLIB/UCP (1,6)       :SBZ7:$SYSMAREN.MARENLIB

D017ZE39
 MARENLOG                 :BU7B:$SYSMAREN.MAREN.LOGGING
 MARENLMF/CP              :FSAU:$SYSMAREN.MARENLMF.OS
 MARENLMF/UCP             :FSAU:$SYSMAREN.MARENLMF.OS
 MARENLIB/CP  (1,3,5)     :BU7B:$SYSMAREN.MARENLIB
 MARENLIB/UCP (1,6)       :BU7B:$SYSMAREN.MARENLIB
%  MARM170 STATEMENT '//SHOW-MAREN-STATUS' PROCESSED
```

If the message MARM197 is output for a host, no further information is output for this host.
If the MARENCP-TSN or MARENUCP-TSN field contains blanks, this means the program
is not loaded on the host concerned.
"CLOSED" is output after the file name of the MAREN-CATALOG if the latter has been
closed (at least) on the first host in the list using the //CLOSE-MAREN-FILES statement.
If MARENCP has been unloaded, the file name of the MAREN-CATALOG is still output. It
is possibly being accessed by other MAREN entities or other hosts.

SHOW-VOLUME-ATTRIBUTES
Output information from MAREN catalog

Privilege   ADA, DA, administrator without domains

The SHOW-VOLUME-ATTRIBUTES statement is used to output information from the
MAREN catalog to SYSOUT. If an individual VSN is entered, its complete archive entry is
shown. If a number range or *ALL is entered, selected important archive entry fields only
are listed. Output can thus be restricted to archive entries with specific attributes. If an
output file is specified, the complete archive entries of the specified volumes are written to
the file. The file can also be created in CSV format to permit spreadsheet processing. It can
also be specified that the file is sent by email after it has been created.

DAs can only execute the statement in their own domain. The DOMAIN operand is thus
meaningless for them.

Format

(part 1 of 2)

SHOW-VOLUME-**ATTR**IBUTES   Alias: **SH** / **SHVA**

VOLUME = ***ALL** / ***INT**ERVAL(...) / <vsn>(...)

  *INTERVAL(...)
      FROM = ***FIRST** / <vsn>
      ,**TO** = ***LAST** / <vsn>
      ,**FROM-FSEQ** = **1** / <integer 1..9999>

  <vsn>(...)
      FILE-**SEQ**UENCE = **1** / <integer 1..9999>

,**USER-ID**ENTIFICATION = ***ALL** / <filename 1..8 with-wild>

,**DOMAIN** = ***ANY** / ***OWN** / ***STD-DOMAIN** / <alphanum-name 1..8>

,**FI**LE-**NAME** = ***ALL** / ***NONE** / <filename 1..41 without-cat-user-gen-vers with-wild>(...) /
                <filename 1..41 without-cat-user-gen-vers>(...)

  <filename 1..41 without-cat-user-gen-vers with-wild>(...)
      VOLUME = ***ANY** / ***NEXT**(...)
        *NEXT(...)
          FROM = ***FIRST** / <vsn>
          ,**FROM-FSEQ** = <integer 1..9999>

(part 2 of 2)

```
        <filename 1..41 without-cat-user-gen-vers>(...)
               VERSION = *ALL / *LATEST / <integer -9999..0> / *NOT-CREATED

               ,TYPE-OF-VOLUMES = *ANY / *VALID(...) / *OBSOLETE

                  *VALID(...)
                        CLOSE-CHECK = *NO / *YES
,DIRECTORY-NAME = *ALL(...) / *NONE / <filename 1..54 without-gen-vers> (...)

   *ALL(...)
        DIRECTORY-ON-VOLUME = *ANY / *YES

   <filename 1..54 without-gen-vers> (...)
             SAVE-FILE-ID = *ALL / *LATEST / <integer -32767..0> / <composed-name 15..15>
             ,DIRECTORY-ON-VOLUME = *ANY / *YES

,VOLUME-GROUP = *ANY / *NONE / <text 1..32 without-sep>

,FREE-POOL = *NO / *GLOBAL / *TSOS / <filename 1..54 without-gen-vers> / <text 2..32 without-sep>

,HOME-LOCATION = *ALL / <alphanum-name 1..8>

,DEVICE-TYPE = *ALL / *ALL-TAPES / *STD / <structured-name 1..8>

,OUTPUT = *SYSOUT / *NONE / <filename 1..54> / <filename 1..54 without-gen-vers>(...)

   <filename 1..54 without-gen-vers>(...)
             FORMAT = *MAREN-STRUCTURE / *CSV(…)
                *CSV(…)
                       SEPARATOR = *SEMICOLON / *COMMA
                       ,HEADER-LINE = *YES / *NO
             ,SEND-BY-MAIL = *NO / *YES(...)
                *YES(...)
                       TO = *USER(...)
                          *USER(...)
                                USER-IDENTIFICATION = *OWN / <name 1...8>
                       ,SUBJECT = *STD /<c-string 1...256>
                       ,DELETE-FILE = *NO / *YES / *DESTROY

,STRUCTURE-OUTPUT = *NONE / <composed-name 1..255> (...)

   <composed-name 1..255> (...)
        WRITE-MODE = *REPLACE / *EXTEND

,OVERFLOW-CONTROL = *BY-PROGRAM / *BY-SYSTEM

,INFORMATION = *STD / *NORMAL / *MAXIMUM / *V8.1-AND-LOWER
```

Operands

VOLUME =
VSNs of volumes about which information is required.

VOLUME = *ALL
All VSNs are processed.

VOLUME = *INTERVAL(...)
Restricts the output of information to those VSNs which satisfy the specifications described below.

FROM = *FIRST / <vsn>
VSN. All volumes whose VSN is greater than or equal to the specified VSN are processed.

FROM = *FIRST
All volumes are processed, starting with the lowest available VSN.

TO = *LAST / <vsn>
VSN. All volumes whose VSN is less than or equal to the specified VSN are processed.

TO = *LAST
All volumes are processed up to the highest available VSN.

FROM-FSEQ = 1 / <integer 1..9999>
File sequence number of the FROM operand. Specifies the precise file sequence number at which processing is to begin. This operand is relevant only if the statement is issued via the program interface.

VOLUME = <vsn>(...)
VSN. Specifies the volume whose archive entry is to be output.

FILE-SEQUENCE = 1 / <integer 1..9999>
Specifies which file sequence number of the VSNs in question is to be processed.

USER-IDENTIFICATION = *ALL / <filename 1..8 with-wild>
User ID. All archive entries assigned to this user ID are processed. An asterisk can also be specified as the last character of the user ID (e.g. TEST*). In this case, all VSNs from all user IDs which begin with the character string specified (TEST) are selected. Wildcards other than "*" are not permitted.

USER-IDENTIFICATION = *ALL
The IDs are not evaluated during selection.

DOMAIN =
Defines the domain on whose volumes information is to be output.

DOMAIN = *ANY
Selects all domains.

DOMAIN = *OWN
The user's own domain is selected.
The user's own domain is the domain of the host on which the ADA is currently working or the domain in which he/she has taken over the DA role.

DOMAIN = *STD-DOMAIN
The standard domain is selected.

DOMAIN = <alphanum-name 1..8>
The specified domain is selected.

If domains are used, the DA is shown free volumes either from the standard domain or from his/her own domain. This is dependent on which value the domain-specific FREE-VOLUMES operand has.
The ADA is shown free volumes of the domain which is specified with the DOMAIN operand.

FILE-NAME =
This allows you to limit output to archive entries with a specific file name.

FILE-NAME = *ALL
All archive entries which contain a file name are output.
The default value *ALL is taken into account only if *ALL or *NONE is specified in the DIRECTORY-NAME operand.

FILE-NAME = *NONE
Archive entries which contain a file name are not output.

FILE-NAME = <filename 1..41 without-cat-user-gen-vers with-wild>(...)
An asterisk can be specified as the last character of the file name (e.g. PROG*). In this case, all archive entries for all file names which begin with the character string specified (PROG) are selected. The VOLUME operand can be used to define the VSN with which output is to begin.

    VOLUME = *ANY / *NEXT(...)
    VSN with which output is to begin.
    This operand must be specified for the program interface. It ensures that all entries can be read. In interactive mode, it is possible to specify the VSN with which output is to begin.
    The default value is *ANY, i.e. all entries relating to files that match the specified string are output.

VOLUME = *NEXT(...)
All entries after the specified entry whose file names match the specified string are output.
Thus all entries can be listed for the program interface.
The last entry read must be specified in the FROM and FROM-FSEQ operands.

FROM = <vsn>
VSN of the volume with which output is to begin.

FROM-FSEQ = <integer 1..9999>
File sequence number which must match the VSN.

FILE-NAME = <filename 1..41 without-cat-user-gen-vers>(...)
Only archive entries with this file name are output.

VERSION =
This operand can be used to select a specific version (or status) of the specified file for which the associated tapes are to be output.
It is not evaluated if a single VSN is specified in VOLUME or the wildcard "*" is specified in the USER-ID operand.

VERSION = *ALL
Selects all versions which exist for the specified file name.

VERSION = *LATEST
Selects the latest version of the file (i.e. the last version created).

VERSION = <integer -9999..0>
Specifying 0 is equivalent to specifying *LATEST, specifying -1 denotes the penultimate file status, etc.

VERSION = *NOT-CREATED
Selects only those volumes which have been reserved with the specified file name but which have not been used (i.e. the CREATION-DATE and CREATION-TIME fields in the archive entry have not been set). The TYPE-OF-VOLUMES setting is of no consequence in this case and is therefore not interpreted.

TYPE-OF-VOLUMES =
This operand selects the volume sequences (archive entry field VOLUME-SEQUENCE) within a tape set. These numbers are usually unique, but some numbers may be duplicated after a restart.
If the following are specified, the TYPE-OF-VOLUMES operand is ignored:
– VERSION=*NOT-CREATED
– VOLUME=<vsn>
– user ID in USER-IDENTIFICATION with wildcard "*"

TYPE-OF-VOLUMES = *ANY
The volume sequences for a tape set are not checked to establish if they occur more than once.

TYPE-OF-VOLUMES = *VALID(...)
If a volume sequence occurs more than once in a tape set, the one created most
recently is selected.

CLOSE-CHECK =
This operand allows you to select whether the archive entry field CLOSE-
INDICATOR should be evaluated.
If the following are specified, the CLOSE-CHECK operand is ignored:
– VERSION=*NOT-CREATED
– VOLUME=<vsn>
– user ID in USER-IDENTIFICATION with wildcard "*".

CLOSE-CHECK = *NO
The CLOSE-INDICATOR field is not evaluated.

CLOSE-CHECK = *YES
If the CLOSE-INDICATOR field is not set to CLOSED for one of the tapes in the tape
set, the statement is aborted.

TYPE-OF-VOLUMES = *OBSOLETE
If a volume sequence occurs more than once in a tape set, all VSNs are selected except
the one most recently created.

DIRECTORY-NAME =
Only reserved volumes which are assigned to the pool of the specified ARCHIVE directory
are selected.
If this directory is located under a remote user ID, both the user ID and the catalog ID must
be entered. The user's own ID and standard catalog ID can be omitted.

DIRECTORY-NAME = *ALL
All archive entries which contain the name of an ARCHIVE directory are output.
The default value *ALL is taken into account only if *ALL or *NONE is specified in the FILE-
NAME operand.

DIRECTORY-ON-VOLUME = *ANY / *YES
Specifies whether the output should be restricted to volumes which contain an
ARCHIVE directory at the end of the tape. The default *ANY causes volumes to be
displayed irrespective of whether they contain a directory.

DIRECTORY-NAME = *NONE
Archive entries containing the name of an ARCHIVE directory are not output.

DIRECTORY-NAME = <filename 1..54 without-gen-vers> (...)
Only volumes that are allocated to the pool of the specified ARCHIVE directory are
selected. The selection may already have been limited using the VOLUME operand. The
volumes are output in ascending order of their SUB-SAVE-NUMBER and SUB-
SEQUENCE-NUMBER (not their VSNs).

SAVE-FILE-ID =
The tapes that are to be exported are selected using the save file of the ARCHIVE directory specified above.

SAVE-FILE-ID = *ALL
All tapes contained in the specified ARCHIVE directory are exported.

SAVE-FILE-ID = *LATEST
All volumes listed in the latest, i.e. in the most recent save file are selected.

SAVE-FILE-ID = <integer -32767..0>
All volumes listed in the nth save file are selected (the older the save file, the larger the number n). 0 equals *LATEST. Example: if -5 is specified, the volumes are selected from the last save file but five.

SAVE-FILE-ID = <composed-name 15..15>
All volumes in the save file with the specified SAVE-FILE-ID are selected. The SAVE-FILE-ID has the following format: S.yymmdd.hhmmss.

DIRECTORY-ON-VOLUME = *ANY / *YES
Specifies whether the output should be restricted to volumes which contain an ARCHIVE directory at the end of the tape. The default *ANY causes volumes to be displayed irrespective of whether they contain a directory.

VOLUME-GROUP = *ANY / *NONE / <text 1..32 without-sep>
Only those volumes are displayed which are assigned to the specified volume group. When *ANY is specified, the volume group to which the volume belongs is of no importance. When *NONE is specified, the volume may not be assigned to a volume group. "*" can be entered as the last character. In this case the archive entries for all volume groups which begin with the specified string are listed.

FREE-POOL =
Selects the archive entries to be made available on the basis of the free tape pool.

USER-IDENTIFICATION = *ALL
The free tape pools are not evaluated during selection.

FREE-POOL = *NO
Only free volumes assigned to the *NO free tape pool are selected.

FREE-POOL = *GLOBAL
Only free volumes assigned to the *GLOBAL free tape pool are selected.

FREE-POOL = *TSOS
Only free volumes assigned to the *TSOS free tape pool are selected.

FREE-POOL = *ALL
No selection is made regarding a specific free tape pool.

FREE-POOL = <filename 1..54 without-gen-vers>
Only free volumes assigned to the free tape pool for ARCHIVE applications using the
specified ARCHIVE directory are selected. If this directory is located under a remote user
ID, both the user ID and the catalog ID must be entered. The user's own ID and standard
catalog ID can be omitted.

FREE-POOL = <text 2..32 without-sep>
Specifies the name of the free tape pool.
The name of the free tape pool must begin with "*" followed by at least one character from
A-Z or 0-9. The characters ".", "-" and "_" are permitted, but not at the end and not next to
each other. It is possible to enter "*" in the last position, in which case all archive entries in
all free tape pools will be listed, which begin with the specified character string. The sort
criteria will apply only within the individual free tape pools.

HOME-LOCATION = *ALL / <alphanum-name 1..8>
Location name or symbolic location name. All archive entries with the specified permanent
location are processed.

HOME-LOCATION = *ALL
All permanent locations are processed.

DEVICE-TYPE =
Device type. All archive entries with the specified device type are processed.

DEVICE-TYPE = *ALL
The archive entries of all device types are output.

DEVICE-TYPE = *ALL-TAPES
The archive entries of all 9-track magnetic tapes and casettes are output.

DEVICE-TYPE = *STD
All volumes of the default device type (DEFAULT-DEVICE-TYPE) whose value was
specified in the MODIFY-MAREN-PARAMETERS statement are listed.

DEVICE-TYPE = <structured-name 1..8>
Device type. For a list of possible entries (depending on the BS2000/OSD version), see
manual "System Installation" [9].

OUTPUT =
Determines the output medium. Output to SYSOUT is the default.

OUTPUT = *SYSOUT
Output is directed to SYSOUT.

OUTPUT = *NONE
No output takes place. This specification only makes sense for structured output in an S
variable (see the STRUCTURE-OUTPUT operand).

OUTPUT = <filename 1..54>
Only for specifying a file generation..
Output is directed to the specified file generation in MAREN archive record format.
Passwords are overwritten with C'$$$$'. Only the number of records written is displayed on
SYSOUT.

OUTPUT = <filename 1..54 without-gen-vers>(...)
Name of the SAM output file to which all selected archive entries are to be written.
Passwords are overwritten with C'$$$$'. Only the number of records written is displayed on
SYSOUT. The output format and transfer by email can also be specified.

FORMAT =
Determines the format of the output file.

FORMAT = *MAREN-STRUCTURE
Output takes place in MAREN archive record format.

FORMAT = *CSV(…)
Output takes place in CSV (comma separated value) format. Files in CSV format can
be read in so that the columns are retained, and they can be processed further with a
spreadsheet program (e.g. EXCEL).

SEPARATOR = *SEMICOLON / *COMMA
Determines the separator which is to be set between the various output values. The
default separator is a semicolon (;). Optionally a comma (,) can be used as the
separator.

HEADER-LINE = *YES / *NO
Specifies whether a header line should be output to name the output columns. The
default is *YES, i.e. the header line is output. The header line contains the field
names of the attributes (see section "Allocating the statement operands in SDF
format to archive entry fields" on page 519).

SEND-BY-MAIL = *NO / *YES(...)
Specifies whether the output file should be sent by email. The default is *NO, i.e. it is
not sent by email.

SEND-BY-MAIL = *YES(...)
The output file should be sent as an email attachment. The recipient is addressed by
means of his/her user ID, i.e. the email address is taken from the user entry concerned.
BS2000/OSD V8.0 and higher supports this function.

If dispatch by email is not possible (e.g. because of a user entry without an email
address or BS2000/OSD < V8.0), the output file is only created (equivalent to SEND-
BY-MAIL=*NO).

TO = *USER(...)
Details of transfer by email:

      USER-IDENTIFICATION = <u>*OWN</u> / <name 1...8>
      Specifies the user ID. The recipient's email address is taken over from this user
      entry. If the user entry contains more than one email address, all the addresses
      are taken over as recipients.
      The default is *OWN, i.e. the caller's user ID.

    SUBJECT = <u>*STD</u> /<c-string 1...256>
    Determines the content of the email's "Subject" field.
    The default is *STD, i.e. MAREN uses a standard text, such as `MARENADM`
    `STATEMENT SHOW-VOLUME-ATTRIBUTES, FILENAME: <filename>`.

    DELETE-FILE = <u>*NO</u> / *YES / *DESTROY
    Specifies whether the file should be automatically deleted after it has been sent.
    The default is *NO, i.e. the file is not deleted.
    *YES causes the file to be deleted after it has been sent. *DESTROY also causes
    it to be deleted, and the memory space is overwritten with binary zeros.

STRUCTURE-OUTPUT =
Controls the structured output in S variables.

STRUCTURE-OUTPUT = <u>*NONE</u>
No structured output takes place.

STRUCTURE-OUTPUT = <composed-name 1..255> (...)
Name of the S variable to be used for the structured output.

    WRITE-MODE =
    Determines whether the output should replace or extend the current content of the S
    variables.

    WRITE-MODE = <u>*REPLACE</u>
    The current content of the S variable is replaced by the new output.

    WRITE-MODE = *EXTEND
    The new output extends the current content of the S variable.

OVERFLOW-CONTROL =
Type of screen overflow control in interactive mode.

OVERFLOW-CONTROL = <u>*BY-PROGRAM</u>
Control by the program: after eighteen archive entries have been processed, a message is
displayed inquiring whether the current operation is to be continued or aborted.

OVERFLOW-CONTROL = *BY-SYSTEM
Control by the system: screen overflow control is based entirely on the system parameter
TCHOFLO or the value set in the MODIFY-TERMINAL-OPTIONS command.

INFORMATION = <u>*STD</u> / *NORMAL / *MAXIMUM / *V8.1-AND-LOWER
If a single volume is specified, this operand determines the output format for output to
SYSOUT.

INFORMATION = *STD
The output format is determined on the basis of the MAREN parameters if no previous entry
(SHOW-INFORMATION=NORMAL, MAXIMUM or *V8.1-AND-LOWER) modified the
standard format for this particular program run.

INFORMATION = *NORMAL
Output will contain all essential information. Output is not guaranteed and may be changed
again in future software versions. If *NORMAL is specified, this will remain the new standard
until the program is loaded the next time.

INFORMATION = *MAXIMUM
Output will contain all information. Output is not guaranteed and may be changed again in
future software versions. If *MAXIMUM is specified, this will remain the new standard until
the program is loaded the next time.

INFORMATION = *V8.1-AND-LOWER
Output is in the format used up until MAREN V8.1. If *V8.1-AND-LOWER is specified, this
will remain the new standard until the program is loaded the next time.

Notes

–   Only one of the operands FILE-NAME and DIRECTORY-NAME may ever have an
    operand value other than the default *ALL.

–   If a number range is specified with the operand FILE-NAME=*ALL (default value), only
    the archive entry with the first FSEQ is displayed. If a value other than *ALL is specified
    for FILE-NAME, all relevant FSEQs are output. Specifying FILE-NAME=* and USER-
    ID=*ALL in turn causes merely the output of the first FSEQ of a volume.

–   If no archive entry is found in the MAREN catalog when an individual VSN or a number
    range is specified, the spin-off mechanism is triggered.

–   The contents of the archive entry field PASSWORD appear in plain text only under the
    user ID TSOS. Otherwise, only YES or NONE is displayed.

–   Users should bear in mind that the use of wildcards may result in long wait times,
    especially if only a few archive entries fulfill the specified selection criteria.

–   If an individual VSN is specified, all archive entry fields are displayed. The information
    is displayed either as a single screen display in interactive mode or line by line in batch
    mode. Setting task switch 5 causes the output to appear line by line in interactive mode.
    This improves the readability of archive entries in the SYSOUT logs.

–   Specification of a single VSN will be rejected if made together with the parameter
    FILE-NAME=<filename>(...) and if non-default values are used for its VERSION and
    TYPE-OF-VOLUMES operands.

– When a list of volumes is displayed, the VOLUME GROUP column appears only when the VOLUME-GROUP operand contains a wildcard specification. If another selection operand is also specified, another display layout may be preferred internally in MAREN.

– Transfer by email takes place only if the file to be sent contains at least one entry.

Examples

Example 1: Output of a single MAREN catalog entry

```
//show-volume-attributes vol=hlsQ13,inf=*V8.1
VOLUME    = HLSQ13     FILE-SEQ     = 0001         DEV-TYPE    = TAPE-C4

USER-ID   = TSOS       HOME-LOCATION = VTLSLOC      RESERV-DATE = 2006-02-16
ACCOUNT   = ADMINSTR   FREE-LOCATION = VTLSLOC      FREE-DATE   = 2006-02-16
USER-ACC  = OWNER-ONLY TEMP-LOCATION = VTLSLOC      EXPORT-DATE =
PASSWORD  = NONE
REMARK    = C'                        '
EXPORT-AD = C'                                        '
USER-FIELD= C'                                       '
DIR-NAME  = :3V06:$TSOS.ARC.DIR.2
FREE-POOL = *NO
OPEN-MODE =             CR-DATE     =           LAST-ACC-DATE   =
DEV-NAME  =             CR-TIME     =           LAST-ACC-TIME   =
VOL-SEQ   = 0001        CR-CAT-ID   =           LAST-ACC-USER-ID =
FIRST-VOL =             CR-USER-ID  =           LAST-ACC-ACCOUNT =   ADMINSTR
CLOSE-IND =             CR-JOB-NAME = BS15FROE   LAST-ACC-JOB-NAME=
EXPIR-DATE=             LAST-CL-DATE =          LAST-ACC-TSN    =
AUDIT     = NO          LAST-CL-TIME =          LAST-ACC-SNO    =
VOL-STATUS= RESERVED    RESERV-COUNT = 0058     LAST-ACC-CPU-NAME=
INIT      = NO          ACCESS-COUNT = 00000054 LAST-ACC-FUN-NAME= MODIFY
ADM-FIELD = C'       'CHECK-COUNT = 56          LAST-ACC-FUN-FLAG= 23

//show-volume-attributes volume=hlsQ13,inf=*normal
VOLUME    = HLSQ13     FILE-SEQ     = 0001         DEV-TYPE    = TAPE-C4

USER-ID   = TSOS       HOME-LOCATION = VTLSLOC      RESERV-DATE = 2006-02-16
ACCOUNT   = ADMINSTR   FREE-LOCATION = VTLSLOC      FREE-DATE   = 2006-02-16
USER-ACC  = OWNER-ONLY TEMP-LOCATION = VTLSLOC      EXPIR-DATE  =
PASSWORD  = NONE
EXPORT    = C'                                   ' /
REMARK /1 = C'                     ' /2 = C'       ' /3 = C'            '
USER-FIELD= C'                                    '
DIR-NAME  = :3V06:$TSOS.ARC.DIR.2
SAVE-FILE =             SUBSAVE/SEQ =   /   CR-JOB/REQUEST-NA = BS15FROE
FREE-POOL = *NO                         CR-CAT-ID         = SXV7
VOL-GROUP =                             CR-USER-ID        = TSOS
VOL-SEQ   = 0001       CR-DATE     =           LAST-ACC-DATE   =
```

```
FIRST-VOL =              CR-TIME    =           LAST-ACC-TIME    =
CLOSE-IND =              LAST-CL-DATE =         LAST-ACC-USER-ID =
VOL-STATUS= RESERVED   LAST-CL-TIME =          LAST-ACC-ACCOUNT  = ADMINSTR
INIT      = NO         REG-DATE    =           LAST-ACC-JOB-NAME =
ADM-FIELD = C'         ' /2 = C'               ' LAST-ACC-TSN     =
                                                 LAST-ACC-CPU-NAME =
                                                 LAST-WRITE-BLK-CNT =


//show-volume-attributes volume=hlsQ13,inf=*MAX
VOLUME    = HLSQ13       FILE-SEQ    = 0001        DEV-TYPE   = TAPE-C5

USER-ID   = TSOS        HOME-LOCATION = VTLSLOC     RESERV-DATE = 2006-02-16
ACCOUNT   = ADMINSTR    FREE-LOCATION = VTLSLOC     FREE-DATE   = 2006-02-16
USER-ACC  = OWNER-ONLY  TEMP-LOCATION = VTLSLOC     EXPIR-DATE  =
PASSWORD  = NONE
EXPORT    = C'                                          ' /
REMARK /1 = C'                      ' /2 = C'       ' /3 = C'           '
USER-FIELD= C'                                         '
DIR-NAME  = :3V06:$TSOS.ARC.DIR.2
SAVE-FILE =               SUBSAVE/SEQ =   /   REQUEST-NAME      = BS15FROE
FREE-POOL = *NO
VOL-GROUP =
VOL-SEQ   = 0001       CR-DATE     =           LAST-ACC-DATE    =
FIRST-VOL =            CR-TIME     =           LAST-ACC-TIME    =
CLOSE-IND =            LAST-CL-DATE =          LAST-ACC-USER-ID =
VOL-STATUS= RESERVED   LAST-CL-TIME =          LAST-ACC-ACCOUNT = MINSTR
INIT      = NO         REG-DATE    =           LAST-ACC-JOB-NAME =
ADM-FIELD = C'         ' /2 = C'               ' LAST-ACC-TSN     =
                                                 LAST-ACC-CPU-NAME =
                                                 LAST-WRITE-BLK-CNT =
OPEN-MODE =            ACCESS-COUNT = 00000054  LAST-ACC-SNO     =
DEV-NAME  =            RESERV-COUNT = 0058      LAST-ACC-FUN-NAME = MODIFY
AUDIT     = NO         CHECK-COUNT = 56        LAST-ACC-FUN-FLAG = 23
DOMAIN    = *STD-DOM   DIR-ON-VOL  =
```

This example shows the information for catalog entry hlsq13 in the MAREN 8.1 format, in
the current format with all essential information and in the current format with all information
by way of comparison.

Example 2: Output of a volume number range

```
//show-volume-attributes vol=*int(id5000,id6000)
--------------------------------------------------------------------------------
VOLUME FSEQ DEV-TYPE USER-ID  ACCOUNT  RES-DATE    FREE-DATE   HOME-LOC ACC# E FL
--------------------------------------------------------------------------------
ID5001 0001 TAPE-C4  USER1    ACC2     2006-05-05 2006-12-01 CENTRAL  0001    R
ID5002 0001 TAPE-C4  USER1    ACC2     2006-05-05 2006-12-01 CENTRAL  0000    R
ID5003 0001 TAPE-C4  USER1    ACC2     2006-05-05 2006-12-01 CENTRAL  0015    R
ID5004 0001 TAPE-C4  USER1    ACC2     2006-05-05 2006-12-01 CENTRAL  0004    R
ID5005 0001 TAPE-C4  USER1    ACC2     2006-05-05 2006-12-01 CENTRAL  0000    R
ID5006 0001 TAPE-C4  USER1    ACC2     2006-05-05 2006-12-01 CENTRAL  0008 E R
ID5007 0001 TAPE-C4  USER1    ACC2     2006-05-05 2006-12-01 CENTRAL  0000    R
ID5008 0001 TAPE-C4  USER1    ACC2     2006-05-05 2006-12-01 CENTRAL  0021K   R
ID5009 0001 TAPE-C4  USER1    ACC2     2006-05-05 2006-12-01 CENTRAL  0014    R
ID5010 0001 TAPE-C4  USER1    ACC2     2006-05-05 2006-12-01 CENTRAL  0000    R
ID5011 0001 TAPE-C4  USER2    ACC081   2006-05-05 2007-12-01 CENTRAL  0000    R
ID5012 0001 TAPE-C4  USER2    ACC081   2006-05-05 2007-12-01 CENTRAL  0000    R
ID5013 0001 TAPE-C4  USER2    ACC081   2006-05-05 2007-12-01 CENTRAL  0000    R
ID5014 0001 TAPE-C4  USER2    ACC081   2006-05-05 2007-12-01 CENTRAL  0045    R
ID5015 0001 TAPE-C4  USER2    ACC081   2006-05-05 2007-12-01 CENTRAL  0002M   R
%  MARM120 TOTAL OF 15 MAREN CATALOG ENTRIES PROCESSED
```

Meaning of the fields:

VOLUME	VSN
FSEQ	File sequence number Migrated volumes are output with FSEQ='*001'.
DEV-TYPE	Device type
USER-ID	User ID
ACCOUNT	Account number
RES-DATE	Reservation date
FREE-DATE	Expiration date
HOME-LOC	Permanent location
ACC#	Access counter Values from 10,000 through 999,999 are represented as 10K through 999K, greater values as 1M through 99M
E	Flag for exported volumes (E = EXPORTED)
F	Volume status, the following values may be displayed: R, F, P Reserved, free, foreign FU USAGE = BY-MARENUCP

Example 3: Output of all volumes whose file name begins with a specific character string

```
//show-volume-attributes f-name=sample*
---------------------------------------------------------------------------
VOLUME FSEQ CR-DATE    CR-TIME  CR-JOB   1STVSN VSEQ USER-ID  FILE-NAME(SHORT.)
---------------------------------------------------------------------------
GRA001 0001 2006-01-25 14:36:11 MAREN001 GRA001 0001 MAREN001 SAMPLE.TAPESET.1
GRA002 0001 2006-03-05 14:38:30 MAREN001 GRA002 0001 MAREN001 SAMPLE.TAPESET.1
GRA003 0001 2006-04-07 14:38:03 MAREN001 GRA003 0001 MAREN001 SAMPLE.TAPESET.1
GRA004 0001 2006-04-08 14:41:27 MAREN001 GRA003 0002 MAREN001 SAMPLE.TAPESET.1
GRA005 0001 2006-04-08 14:46:30 MAREN001 GRA003 0003 MAREN001 SAMPLE.TAPESET.1
GRA006 0001 2006-06-23 14:37:25 MAREN001 GRA006 0001 MAREN001 SAMPLE.TAPESET.1
GRA007 0001 2006-06-23 14:40:50 MAREN001 GRA006 0002 MAREN001 SAMPLE.TAPESET.1
GRA008 0001 2006-06-24 14:45:53 MAREN001 GRA006 0003 MAREN001 SAMPLE.TAPESET.1
GRA009 0001 2006-07-14 14:37:01 MAREN001 GRA009 0001 MAREN001 SAMPLE.TAPESET.1
GRA010 0001 2006-04-08 10:15:45 MAREN001 GRA003 0001 MAREN001 SAMPLE.TAPESET.1
GRA001 0002 2006-01-25 14:39:35 MAREN001 GRA001 0001 MAREN001 SAMPLE.TAPESET.2
GRA002 0002 2006-03-05 14:41:54 MAREN001 GRA002 0001 MAREN001 SAMPLE.TAPESET.2
GRA001 0003 2006-01-25 14:44:39 MAREN001 GRA001 0001 MAREN001 SAMPLE.TAPESET.3
GRA002 0003 2006-03-05 14:46:57 MAREN001 GRA002 0001 MAREN001 SAMPLE.TAPESET.3
%  MARM120 TOTAL OF 14 MAREN CATALOG ENTRIES PROCESSED
```

Meaning of fields:

VOLUME	VSN
FSEQ	File sequence number Migrated volumes are output with FSEQ='*001'.
CR-DATE	Creation date
CR-TIME	Creation time
CR-JOB	Creation job name
1STVSN	First VSN of the MF/MV set
VSEQ	File section number
USER-ID	User ID
FILE-NAME	File name (abbreviated if necessary)

Example 4: Output of all MAREN catalog entries to a tape file

All volumes in the MAREN catalog to which the file sample.tapeset.1 has been written or at least whose MAREN catalog entry contains this file name are to be output:

```
//show-volume-attributes volume=*all,user-id=*all,
   file-name=sample.tapeset.1(version=*all,type-of-vol=*any)
--------------------------------------------------------------------------------
VOLUME FSEQ CR-DATE    CR-TIME  CR-JOB   1STVSN VSEQ USER-ID  FILE-NAME(SHORT.)
--------------------------------------------------------------------------------
GRA001 0001 2006-01-25 14:36:11 MAREN001 GRA001 0001 MAREN001 SAMPLE.TAPESET.1
GRA002 0001 2006-03-05 14:38:30 MAREN001 GRA002 0001 MAREN001 SAMPLE.TAPESET.1
GRA003 0001 2006-04-07 14:38:03 MAREN001 GRA003 0001 MAREN001 SAMPLE.TAPESET.1
GRA004 0001 2006-04-08 14:41:27 MAREN001 GRA003 0002 MAREN001 SAMPLE.TAPESET.1
GRA005 0001 2006-04-08 14:46:30 MAREN001 GRA003 0003 MAREN001 SAMPLE.TAPESET.1
GRA006 0001 2006-06-23 14:37:25 MAREN001 GRA006 0001 MAREN001 SAMPLE.TAPESET.1
GRA007 0001 2006-06-23 14:40:50 MAREN001 GRA006 0002 MAREN001 SAMPLE.TAPESET.1
GRA008 0001 2006-06-24 14:45:53 MAREN001 GRA006 0003 MAREN001 SAMPLE.TAPESET.1
GRA009 0001 2006-07-14 14:37:01 MAREN001 GRA009 0001 MAREN001 SAMPLE.TAPESET.1
GRA010 0001 2006-04-08 10:15:45 MAREN001 GRA003 0001 MAREN001 SAMPLE.TAPESET.1
%  MARM120 TOTAL OF 10 MAREN CATALOG ENTRIES PROCESSED
```

There are five versions of the file sample.tapeset.1 on the following volumes:

– Version 0 (*LATEST) on GRA009
– Version -1 on GRA006, GRA007, and GRA008 (multivolume file)
– Version -2 on GRA003, GRA010, GRA004, and GRA005 (multivolume file); GRA003 is obsolete since it was replaced by the MTC GRA010 created subsequently (see volume sequence: VSEQ=1 for both MTCs)
– Version -3 on GRA002
– Version -4 on GRA001

Example 5: Output of all MAREN catalog entries for a file version

From the volumes listed in example 4, only those used to create file version -1 are to be selected:

```
//show-volume-attributes volume=*all,user-id=*all,
   file-name=sample.tape.set.1(version=-1,type-of-vol=*any)
--------------------------------------------------------------------------------
VOLUME FSEQ CR-DATE    CR-TIME  CR-JOB   1STVSN VSEQ USER-ID  FILE-NAME(SHORT.)
--------------------------------------------------------------------------------
GRA006 0001 2006-06-23 14:37:25 MAREN001 GRA006 0001 MAREN001 SAMPLE.TAPESET.1
GRA007 0001 2006-06-23 14:40:50 MAREN001 GRA006 0002 MAREN001 SAMPLE.TAPESET.1
GRA008 0001 2006-06-24 14:45:53 MAREN001 GRA006 0003 MAREN001 SAMPLE.TAPESET.1
%  MARM120 TOTAL OF 3 MAREN CATALOG ENTRIES PROCESSED
```

Example 6: Output of all MAREN catalog entries for obsolete volumes

From the volumes listed in example 4, only those which have been replaced by new volumes are to be selected and then released:

```
//show-volume-attributes volume=*all,user-id=*all,
   file-name=sample.tape.set.1(version=-1,type-of-vol=*obs)
--------------------------------------------------------------------------------
VOLUME FSEQ CR-DATE    CR-TIME  CR-JOB   1STVSN VSEQ USER-ID  FILE-NAME(SHORT.)
--------------------------------------------------------------------------------
GRA003 0001 2006-04-07 14:38:03 MAREN001 GRA003 0001 MAREN001 SAMPLE.TAPESET.1
%  MARM120 TOTAL OF 1 MAREN CATALOG ENTRIES PROCESSED

//mod-tape-set-attr select=*by-attr(
   file-name=sample.tapeset.1,version=*all,type-of-vol=*obs),
   prot=*par(free-date=0,expir-date=0)
%  MARM121 MAREN CATALOG ENTRY 'GRA003'/'0001' MODIFIED
%  MARM120 TOTAL OF 1 MAREN CATALOG ENTRIES PROCESSED
```

Example 7: Output of all MAREN catalog entries for a directory with a specific
*   SAVE-FILE-ID*

```
//show-volume-attributes directory-name=maren.v90b.dir(save-file-id=-0)

%  MARM195 NO DIRECT ACCESS TO MAREN CATALOG POSSIBLE
 -------------------------------------------------------------------------------
 VOLUME USER-ID  REQ-NAME DIRECTORY-NAME    (SHORTENED)  SAVE-FILE-ID SUB-SV/SEQ
 -------------------------------------------------------------------------------
 QE0020 TSOS     SFID#001 :POPP:$TSOS.MAREN.V90B.DIR     S.020716.135432 00 001
 QE0021 TSOS     SFID#001 :POPP:$TSOS.MAREN.V90B.DIR     S.020716.135432 01 001
 QE0023 TSOS     SFID#001 :POPP:$TSOS.MAREN.V90B.DIR     S.020716.135432 02 001
 QE0022 TSOS     SFID#001 :POPP:$TSOS.MAREN.V90B.DIR     S.020716.135432 03 001
 QE0024 TSOS     SFID#001 :POPP:$TSOS.MAREN.V90B.DIR     S.020716.135432 03 002
%  MARM120 TOTAL OF 5 MAREN CATALOG ENTRIES PROCESSED
```

The information concerning all of the volumes contained in the last, i.e. in the most recent save file is output.

Example 8: Output of all volumes which belong to a volume group.

```
//show-volume-attributes vol=*int(sh,sh9),vol-group=EPSWOS3*
 -------------------------------------------------------------------------------
 VOLUME-GROUP NAME        VSN    FSEQ  USER-ID   FILE-/DIR-NAME(SHORTENED)
 ---- *STD-DOM ------------------------------------------------------------------
 EPSWOS3-GER              ANCA01 0001  TSOS      FILE1
 EPSWOS3-CLM              CLM020 0001  SYSMAREN  :20S6:$SYSHSMS.DIR.123456
```

The name of the volume group is output because the volume group was selected by speci-fying a wildcard. The volume ANCA01 belongs to the volume group EPSWOS3-GER and the volume CLM020 to the volume group EPSWOS3-CLM.

Output in S variables

This statement supports the structured output in S variables (controlled by the STRUCTURE-OUTPUT operand). Further information on S variables is provided in the "Commands" manual [5].

The following S variables are created depending on whether one or more volumes are specified in the VOLUME operand:

1. //SHOW-VOLUME-ATTRIBUTES for one volume (VOLUME=<vsn>)

Output information	Name of the S variable	T	Contents
Access counter (8-digit) It is incremented each time the volume is accessed.	var(*LIST). ACCESS-COUNT	S	<integer 0..99999999>
CC's own administration field	var(*LIST). ADM-FIELD	S	<c-string 1..8>
CC's own administration field	var(*LIST). ADM-FIELD-2	S	<c-string 1..16>
Audit indicator	var(*LIST). AUDIT	S	*YES *NO
Check digit	var(*LIST). CHECK-COUNT	S	<integer 00..99>
CLOSE indicator Provides information on whether creation of a tape file has been terminated correctly.	var(*LIST). CLOSE-INDICATOR	S	OPENED CLOSED
Catalog ID from the file name at the time the file was created. It is only supplied if F-NAME exists.	var(*LIST). CRE-CAT-ID	S	<cat-id>
Creation date	var(*LIST). CRE-DATE	S	yyyy-mm-dd
Creation job name	var(*LIST). CRE-JOB-NAME	S	" <name 1..8>
Creation time	var(*LIST). CRE-TIME	S	hh:mm:ss
User ID from the file name at the time the file was created. It is only supplied if F-NAME exists.	var(*LIST). CRE-USER-ID	S	" <name 1..8>
Device name	var(*LIST). DEV-NAME	S	<c-string 1..4>
Device type of the volume	var(*LIST). DEV-TYPE	S	<structured-name 1..8>
Name of an ARCHIVE directory (with catid and userid) which contains the volume.	var(*LIST). DIR-NAME	S	<filename 1..54>

(part 1 of 4)

Output information	Name of the S variable	T	Contents
Displays whether the tape contains the ARCHIVE directory which was also saved.	var(*LIST).DIR-ON-VOL	S	*NO *YES
Administration area	var(*LIST). DOMAIN	S	<c-string 1..8>
File expiration date	var(*LIST). EXPIR-DATE	S	yyyy-mm-dd
Export address. Depending on the CC organization, the EXPORT-VOLUME statement can be used here to enter an export address , a short message, a mailbox no., etc.	var(*LIST). EXPORT-ADDR	S	<c-string 1..50>
Export date For volumes which are not exported this field contains a blank.	var(*LIST). EXPORT-DATE	S	yyyy-mm-dd
Status (sent = exported or not)	var(*LIST). EXPORTED	S	*NO *YES
First VSN of the MF/MV set	var(*LIST). FIRST-VOL	S	<vsn>
File name of a tape file Without catid and userid Provided the file is not contained in an ARCHIVE directory.	var(*LIST). F-NAME	S	<filename 1..41>
Expiration date of the volume Specifies when the reservation of the volume for a user ID can be termi-nated.	var(*LIST). FREE-DATE	S	yyyy-mm-dd
Release location A volume is moved to this location during the clear-up run.	var(*LIST). FREE-LOCATION	S	<alphanum-name 1..8>
Name of the free tape pool in which this volume is located or is to be located when it is released.	var(*LIST). FREE-POOL	S	<filename 1..54> *NO *GLOBAL *TSOS
File sequence number (4-digit)	var(*LIST). F-SEQ	S	<integer 1..9999>
Standard location	var(*LIST). HOME-LOCATION	S	<alphanum-name 1..8>
Initialization flag	var(*LIST). INIT	S	YES NO ERASE
Account number for the last access	var(*LIST). LAST-ACCESS-ACCOUNT	S	<alphanum-name 1..8>

(part 2 of 4)

Output information	Name of the S variable	T	Contents
Host name for the last access	var(*LIST). LAST-ACCESS-CPU-NAM	S	<alphanum-name 1..8>
Date of the last access	var(*LIST). LAST-ACCESS-DATE	S	yyyy-mm-dd
Job name for the last access	var(*LIST). LAST-ACCESS-JOB-NAM	S	<name 1..8>
Number of the last MAREN function which accessed the volume.	var(*LIST). LAST-ACC-FUNC-FLAG	S	<integer 1..99>
Name of the last MAREN function which accessed the volume.	var(*LIST). LAST-ACC-FUNC-NAME	S	<alphanum-name 1..8>
Time of the last access	var(*LIST). LAST-ACCESS-TIME	S	hh:mm:ss
TSN for the last access Only as long as the volume is occupied	var(*LIST). LAST-ACCESS-TSN	S	<alphanum-name 1..4>
User name for the last access	var(*LIST). LAST-ACCESS-USER-ID	S	<name 1..8>
Session number for the last access	var(*LIST). LAST-ACC-SESSION-NR	S	<integer 001..255>
CLOSE date	var(*LIST). LAST-CLOSE-DATE	S	yyyy-mm-dd
CLOSE time	var(*LIST). LAST-CLOSE-TIME	S	hh:mm:ss
Block counter for MTC	var(*LIST). LAST-WRT-BLOCK-CNT	S	<integer 0..9999999999>
OPEN type for the last access	var(*LIST). OPEN-MODE	S	INPUT OUTPUT EXTEND INOUT OUTIN SINOUT REVERSE
Password for volume access	var(*LIST). PASS	S	*NONE *YES
Registration date of the volume	var(*LIST). REG-DATE	S	yyyy-mm-dd
Comment field which should be filled with a meaningful text.	var(*LIST). REMARK	S	<c-string 1..24>
Freely definable user field	var(*LIST). REMARK-2	S	<c-string 1..10>
Freely definable user field	var(*LIST). REMARK-3	S	<c-string 1..12>
Reservation counter (4-digit)	var(*LIST). RESERV-COUNT	S	<integer 0..9999)>

(part 3 of 4)

Output information	Name of the S variable	T	Contents
Reservation date Date on which a volume is reserved	var(*LIST). RESERV-DATE	S	yyyy-mm-dd
SAVE-FILE-ID (HSMS) or SAVE-VERSION (ARCHIVE)	var(*LIST). SFID	S	<c-string 1..15>
Number of the subtask for the parallel save run in HSMS	var(*LIST). SUBSAVE	S	<integer 0..15>
Number of the continuation tape in a parallel save run in HSMS	var(*LIST). SUBSEQ	S	<integer 0..999>
Current location	var(*LIST). TEMP-LOCATION	S	” <name 1..8>
Shareability of the volume	var(*LIST). USER-ACCESS	S	OWNER-ONLY FOREIGN-READ ALL-USERS
Account number of the volume owner	var(*LIST). USER-ACCOUNT	S	<alphanum-name 1..8>
User field. Data such as name and department or data relevant for operations scheduling can be entered here.	var(*LIST). USER-FIELD	S	<c-string 1..54>
User ID of the volume owner	var(*LIST). USER-ID	S	<name 1..8>
Tape VSN	var(*LIST). VOL	S	<vsn>
Volume group Only has a valid value with reserved volumes, otherwise it is undefined.	var(*LIST). VOL-GROUP	S	<text 1..32>
Volume sequence number (4-digit)	var(*LIST). VOL-SEQ	S	<integer 1..255>
Volume status	var(*LIST). VOL-STA	S	FREE PRIVATE RESERVED DEFECT

(part 4 of 4)

2. //SHOW-VOLUME-ATTRIBUTES for multiple volumes (VOLUME=*ALL/*INTERVAL)

Output information	Name of the S variable	T	Contents
Access counter (8-digit) It is incremented each time the volume is accessed.	var(*LIST). ACCESS-COUNT	S	<integer 0..99999999>
CC's own administration field	var(*LIST). ADM-FIELD	S	<c-string 1..8>
Creation date	var(*LIST). CRE-DATE	S	yyyy-mm-dd
Creation job name For HSMS request name	var(*LIST). CRE-JOB-NAME	S	" <name 1..8>
Creation time	var(*LIST). CRE-TIME	S	hh:mm:ss
Device type of the volume	var(*LIST). DEV-TYPE	S	<structured-name 1..8>
Name of an ARCHIVE directory (with catid and userid) which contains the volume.	var(*LIST). DIR-NAME	S	<filename 1..54 >
Displays whether the tape contains the ARCHIVE directory which was also saved.	var(*LIST).DIR-ON-VOL	S	*NO *YES
Status (sent = exported or not)	var(*LIST). EXPORTED	S	*NO *YES
First VSN of the MF/MV set	var(*LIST). FIRST-VOL	S	<vsn>
Expiration date of the volume Specifies when the reservation of the volume is terminated for a user ID.	var(*LIST). FREE-DATE	S	yyyy-mm-dd
Release location A volume is moved to this location during the clear-up run.	var(*LIST). FREE-LOCATION	S	<alphanum-name 1..8>
Name of the free tape pool in which this volume is located or is to be located when it is released.	var(*LIST). FREE-POOL	S	<filename 1..54> *NO *GLOBAL *TSOS
File name of a tape file Without catid and userid Provided the file is not contained in an ARCHIVE directory.	var(*LIST). F-NAME	S	<filename 1..41>
File sequence number (4-digit)	var(*LIST). F-SEQ	S	<integer 1..9999>
Standard location	var(*LIST). HOME-LOCATION	S	<alphanum-name 1..8>

(part 1 of 3)

Output information	Name of the S variable	T	Contents
Host name for the last access	var(*LIST). LAST-ACCESS-CPU-NAM	S	<alphanum-name 1..8>
Date of the last access	var(*LIST). LAST-ACCESS-DATE	S	yyyy-mm-dd
User name for the last access	var(*LIST). LAST-ACCESS-USER-ID	S	<name 1..8>
Password for volume access	var(*LIST). PASS	S	*NONE *YES
Comment field which should be filled with a meaningful text.	var(*LIST). REMARK	S	<c-string 1..24>
Reservation counter (4-digit) This counter is incremented with each new reservation of the volume.	var(*LIST). RESERV-COUNT	S	<integer 0..9999>
Reservation date Date on which a volume is reserved.	var(*LIST). RESERV-DATE	S	yyyy-mm-dd
SAVE-FILE-ID (HSMS) or SAVE-VERSION (ARCHIVE)	var(*LIST). SFID	S	<c-string 1..15>
Number of the subtask for the parallel save run in HSMS	var(*LIST). SUBSAVE	S	<integer 0..15>
Number of the continuation tape in a parallel save run in HSMS	var(*LIST). SUBSEQ	S	<integer 0..999>
Shareability of the volume	var(*LIST). USER-ACCESS	S	OWNER-ONLY FOREIGN-READ ALL-USERS
Account number	var(*LIST). USER-ACCOUNT	S	<alphanum-name 1..8>
User field. Data such as name and department or data relevant for operations scheduling can be entered here.	var(*LIST). USER-FIELD	S	<c-string 1..54>
User ID of the volume owner	var(*LIST). USER-ID	S	<name 1..8>
Tape VSN	var(*LIST). VOL	S	<vsn>
Volume group Only has a valid value with reserved volumes, otherwise it is undefined.	var(*LIST). VOL-GROUP	S	<text 1..32>
Volume sequence number (4-digit)	var(*LIST). VOL-SEQ	S	<integer 1..255>

(part 2 of 3)

Output information	Name of the S variable	T	Contents
Volume status F = FREE P = PRIVATE R = RESERVED D = DEFECT	var(*LIST). VOL-STA-1	S	F/P/R/D

(part 3 of 3)

SHOW-VSNS
Display VSNs of volumes

Privilege   ADA, DA, administrator without domains

The SHOW-VSNS statement enables the MAREN administrator to display the VSNs of reserved or free volumes. Information on reserved volumes can be output on the basis of user IDs, volume groups or ARCHIVE directories. Information on free volumes can be selected on the basis of a particular device type or its allocation to free tape pools. In addition, the selection of the volumes can be made via their assignment to a domain.

DAs can only execute the statement in their own domain. The DOMAIN operand is thus meaningless for them.

Format

SHOW-VSNS

SELECT = ***USER-ID**ENTIFICATION (...) / ***FI**LE**-NAME**(...) / ***DIR**ECTORY**-NAME**(...) /
        *FREE-VOLUMES(...) / ***VOL**UME**-GR**OUP(...)

  *USER-IDENTIFICATION(...)
    │ **USER-ID**ENTIFICATION = ***ALL** / <filename 1..8 with-wild>

  *FILE**-NAME**(...)
    │ **FI**LE**-NAME** = ***ALL** / <filename 1..41 without-cat-user with-wild>

  *DIRECTORY**-NAME**(...)
    │ **DIR**ECTORY**-NAME** = ***ALL** / <filename 1..54 without-gen-vers>

  *FREE-VOLUMES(...)
    │ **DEV**ICE**-TYPE** = ***STD** / <structured-name 1..8>

    │ ,**FREE-POOL** = ***NO** / ***GLOBAL** / ***TSOS** / <filename 1..54> /
                   <text 2..32 without-sep>

  *VOLUME**-GR**OUP(...)
    │ **VOL**UME**-GR**OUP = ***ALL** / <text 1..32 without-sep>

,**OUTP**UT = ***SYSOUT** / ***NONE**

,**STRUCTURE-OUTPUT** = ***NONE** / <composed-name 1..255> (...)

  <composed-name 1..255> (...)
    │ **WRITE-MODE** = ***REPLACE** / ***EXTEND**

,**DOMAIN** = ***ANY** / ***OWN** / ***STD-DOMAIN** / <alphanum-name 1..8>

,**INF**ORMATION = ***VOL**UMES / ***SUMM**ARY

Operands

SELECT =
Selection and sort criteria for the VSNs to be output.

SELECT = *USER-IDENTIFICATION(...)
The output is to be sorted according to user IDs. The output can be limited to certain user IDs.

  USER-IDENTIFICATION = *ALL / <filename 1..8 with-wild>
  Only the VSNs of all volumes reserved for this user ID are output. An asterisk can also be specified as the last character of the user ID (e.g. TEST*). In this case, all VSNs from all user IDs which begin with the character string specified (TEST) are selected. Wildcards other than "*" are not permitted.

USER-IDENTIFICATION = *ALL
The IDs are not evaluated during selection.

SELECT = *FILE-NAME(...)
The output is to be sorted according to file names. The output can be limited to certain file names

FILE-NAME = *ALL / <filename 1..41 without-cat-user with-wild>
The VSNs of all reserved volumes whose archive entry contains the specified file name are listed. An asterisk can be specified as the last character of the file name (e.g. PROG*). In this case, all VSNs for all file names which begin with the character string specified (PROG) are selected. Wildcards other than "*" are not permitted.

FILE-NAME = *ALL
VSNs are not selected on the basis of specific file names. Volumes whose archive entry contains no file name or an ARCHIVE directory name constitute an exception.

SELECT = *DIRECTORY-NAME(...)
The output is to be sorted according to the names of ARCHIVE directories. The output can be limited to a certain ARCHIVE DIRECTORY.

DIRECTORY-NAME = *ALL / <filename 1..54 without-gen-vers>
Only reserved volumes which are assigned to the pool of the specified ARCHIVE directory are selected.
If this directory is located under a remote user ID, both the user ID and the catalog ID must be entered. The user's own ID and standard catalog ID can be omitted.

DIRECTORY-NAME = *ALL
The VSNs of all reserved volumes assigned to the pools of ARCHIVE directories are listed.

SELECT = *FREE-VOLUMES(...)
Specifies that only the VSNs of free volumes are to be listed.

DEVICE-TYPE =
Device type of the volumes to be selected. If a directory name is specified for FREE-POOL, the DEVICE-TYPE entry is ignored.

DEVICE-TYPE = *STD
All volumes of the default device type (DEFAULT-DEVICE-TYPE) whose value was specified in the MODIFY-MAREN-PARAMETERS statement are listed.

DEVICE-TYPE = <structured-name 1..8>
Device type. For a list of possible entries (depending on the BS2000/OSD version), see manual "System Installation" [9].

FREE-POOL =
Selects the archive entries to be made available on the basis of the free tape pool.

FREE-POOL = <u>*NO</u>
Only free volumes assigned to the *NO free tape pool are selected.

FREE-POOL = *GLOBAL
Only free volumes assigned to the *GLOBAL free tape pool are selected.

FREE-POOL = *TSOS
Only free volumes assigned to the *TSOS free tape pool are selected.

FREE-POOL = <filename 1..54 without-gen-vers>
Only free volumes assigned to the free tape pool for ARCHIVE applications using the specified ARCHIVE directory are selected. If this directory is located under a remote user ID, both the user ID and the catalog ID must be entered. The user's own ID and standard catalog ID can be omitted.

FREE-POOL = <text 2..32 without-sep>
Specifies the name of a free tape pool.
The name of the free tape pool must begin with "*" followed by at least one character from A-Z or 0-9. The characters ".", "-" and "_" are permitted, but not at the end and not next to each other. If the relevant free tape pool does not yet exist, it will be created. Otherwise, it is extended to include the specified volumes.

SELECT = *VOLUME-GROUP(...)
The output is to be sorted according to the names of volume groups.

VOLUME-GROUP = <u>*ALL</u> / <text 1..32 without-sep>
The VSNs of all reserved volumes are listed which contain the specified volume groups in the archive entry. When *ALL is specified, all reserved volumes are output which are explicitly assigned to a volume group. "*" can be entered as the last character. In this case all volume groups which begin with the specified string are selected.

OUTPUT =
Determines the output medium. Output to SYSOUT is the default.

OUTPUT = <u>*SYSOUT</u>
Output is directed to SYSOUT.

OUTPUT = *NONE
No output takes place. This specification only makes sense for structured output in an S variable (see the STRUCTURE-OUTPUT operand).

STRUCTURE-OUTPUT =
Controls the structured output S variables.

STRUCTURE-OUTPUT = <u>*NONE</u>
No structured output takes place.

STRUCTURE-OUTPUT = <composed-name 1..255>(...)
Name of the S variable to be used for the structured output.

WRITE-MODE =
Determines whether the output should replace or extend the current content of the S variables.

WRITE-MODE = *REPLACE
The current content of the S variable is replaced by the new output.

WRITE-MODE = *EXTEND
The new output extends the current content of the S variable.

DOMAIN =
Only the VSNs of volumes from the specified domain are to be output.

DOMAIN = *ANY
The VSNs of volumes from all domains are output.

DOMAIN = *OWN
The VSNs of volumes from the user's own domain are output.
The user's own domain is the domain of the host on which the ADA is currently working.

DOMAIN = *STD-DOMAIN
The VSNs of volumes from the standard domain are output.

DOMAIN = <alphanum-name 1..8>
The VSNs of volumes from the selected domain are output.

If domains are used, the DA is shown free volumes either from the standard domain or from his/her own domain. This is dependent on which value the domain-specific FREE-VOLUMES operand has.
The ADA is shown free volumes of the domain which is specified with the DOMAIN operand.

INFORMATION =
Defines the scope of the information to be displayed.

INFORMATION = *VOLUMES
Specifies that both VSNs and the corresponding total number of VSNs per user ID, file name, etc. are to be listed.

INFORMATION = *SUMMARY
Only the total number of VSNs per user ID, file name, etc. are to be listed.

Notes

–   If there are two or more archive entries with different file sequence numbers for a given VSN, this VSN is only specified once in connection with the corresponding user ID.

–   If selection is based on file names, the VSN is also listed in the case of an archive entry with a file sequence number > 1.

–   If the aliases for the values *NO, *GLOBAL or *TSOS of the FREE-POOL operand are specified, then these operand values are expanded to their full length for compatibility reasons (e.g. the entry *GL is expanded to *GLOBAL).

Examples

Example 1: SYSOUT output for volumes of user IDs beginning with "SYS":

SYSOUT output for volumes of user IDs beginning with "SYS":

```
//show-vsns user-id=sys*
%  MARM1D1 VOLUMES FOR USER ID 'SYSDUMP' :
 MB2251
%  MARM1D6     1 VOLUMES FOR USER ID 'SYSDUMP'
%  MARM1D1 VOLUMES FOR USER ID 'SYSHSMS' :
 DRL1D6  TAR012  THS013
%  MARM1D6     3 VOLUMES FOR USER ID 'SYSHSMS'
%  MARM1D1 VOLUMES FOR USER ID 'SYSMAREN' :
 RHS002  THS014  TLS031  TLS032  TLS033  TLS034  TLS035  TLS036  TLS037
 TLS038  TLS039  TLS040  TLS041  TLS042  TLS043  TLS044  TLS045
%  MARM1D6    17 VOLUMES FOR USER ID 'SYSMAREN'
%  MARM1D1 VOLUMES FOR USER ID 'SYSROBAR' :
 TO7825
%  MARM1D6     1 VOLUMES FOR USER ID 'SYSROBAR'
%  MARM1D9 TOTAL OF 22 VOLUMES IN MAREN CATALOG MATCH SPECIFIED SELECTION
CRITERIA
%  MARM170 STATEMENT '//SHOW-VSNS' PROCESSED
```

Example 2: SYSOUT output for volumes sorted according to volume groups (by specifying
*SELECT=*VOLUME-GROUP(...)):*

```
//show-vsns select=*volume-group(volume-group=epswos3*),information=*volumes
%  MARM290 VOLUMES FOR VOLUME-GROUP 'EPSWOS3-CLM':
 CLM020  CLM021  CLM023  CLM027  CLM028  CLM205
%  MARM291     6 VOLUMES FOUND FOR VOLUME-GROUP 'EPSWOS3-CLM'
%  MARM290 VOLUMES FOR VOLUME-GROUP 'EPSWOS3-GER':
 ANCA01 ANCA02 ANCA03 ANCA04 ANCA05 ANCA06 ANCA07
%  MARM291     7 VOLUMES FOUND FOR VOLUME-GROUP 'EPSWOS3-GER'
%  MARM1D9 TOTAL OF  13 VOLUMES IN MAREN CATALOG MATCH SPECIFIED SELECTION
CRITERIA
%  MARM170 STATEMENT '//SHOW-VSNS' PROCESSED
```

The INFORMATION=*VOLUMES operand enables the VSNs of all reserved volumes to be
output which contain a volume group name beginning with EPSWOS in the archive entry.
In addition, the total number of volumes which satisfy the specified selection criterion is
output .

```
//SHOW-VSNS SELECT=*VOLUME-GROUP(VOLUME-GROUP=EPSWOS3*),INFORMATION=*SUMMARY
%  MARM291     6 VOLUMES FOUND FOR VOLUME-GROUP 'EPSWOS3-CLM'
%  MARM291     7 VOLUMES FOUND FOR VOLUME-GROUP 'EPSWOS3-GER'
%  MARM1D9 TOTAL OF 13 VOLUMES IN MAREN CATALOG MATCH SPECIFIED SELECTION
CRITERIA
%  MARM170 STATEMENT '//SHOW-VSNS' PROCESSED
```

INFORMATION=*SUMMARY outputs only the total number of volumes which contain the
volume group EPSWOS3* in the archive entry.

Output in S variables

This statement supports the structured output in S variables (controlled by the STRUCTURE-OUTPUT operand).

Further information on S variables is provided in the "Commands" manual [5].

Output information	Name of the S variable	T	Contents
Access counter (8-digit) It is incremented each time the volume is accessed.	var(*LIST). ACCESS-COUNT	S	<integer 0..99999999>
Creation date	var(*LIST). CRE-DATE	S	yyyy-mm-dd
Creation job name For HSMS request name	var(*LIST). CRE-JOB-NAME	S	" <name 1..8>
Creation time	var(*LIST). CRE-TIME	S	hh:mm:ss
Device type of the volume	var(*LIST). DEV-TYPE	S	<structured-name 1..8>
Name of an ARCHIVE directory (with catid and userid) which contains the volume.	var(*LIST). DIR-NAME	S	<filename 1..54 >
Displays whether the tape contains the ARCHIVE directory which was also saved.	var(*LIST).DIR-ON-VOL	S	*NO *YES
Status (sent = exported or not)	var(*LIST). EXPORTED	S	*NO *YES
First VSN of the MF/MV set	var(*LIST). FIRST-VOL	S	<vsn>
File name of a tape file Without catid and userid	var(*LIST). F-NAME	S	<filename 1..41>
Expiration date of the volume Specifies when the reservation of the volume is terminated for a user ID.	var(*LIST). FREE-DATE	S	yyyy-mm-dd
Release location A volume is moved to this location during the clear-up run.	var(*LIST). FREE-LOCATION	S	<alphanum-name 1..8>
Name of the free tape pool in which this volume is located or is to be located when it is released.	var(*LIST). FREE-POOL	S	<filename 1..54> *NO *GLOBAL *TSOS
File sequence number (4-digit)	var(*LIST). F-SEQ	S	<integer 1..9999>
Standard location	var(*LIST). HOME-LOCATION	S	<alphanum-name 1..8>

(part 1 of 3)

Output information	Name of the S variable	T	Contents
Host name for the last access	var(*LIST). LAST-ACCESS-CPU-NAM	S	<alphanum-name 1..8>
Date of the last access	var(*LIST). LAST-ACCESS-DATE	S	yyyy-mm-dd
User name for the last access	var(*LIST). LAST-ACCESS-USER-ID	S	<name 1..8>
Password for volume access	var(*LIST). PASS	S	*NONE *YES
Comment field which should be filled with a meaningful text.	var(*LIST). REMARK	S	<c-string 1..24>
Reservation counter This counter is incremented with each new reservation of the volume.	var(*LIST). RESERV-COUNT	S	<integer 0..9999>
Reservation date Date on which a volume is reserved	var(*LIST). RESERV-DATE	S	yyyy-mm-dd
SAVE-FILE-ID (HSMS) or SAVE-VERSION (ARCHIVE)	var(*LIST). SFID	S	<c-string 1..15>
Number of the subtask for the parallel save run in HSMS	var(*LIST). SUBSAVE	S	<integer 0..15>
Number of the continuation tape in a parallel save run in HSMS	var(*LIST). SUBSEQ	S	<integer 0..999>
Shareability of the volume	var(*LIST). USER-ACCESS	S	OWNER-ONLY FOREIGN-READ ALL-USERS
Account number	var(*LIST). USER-ACCOUNT	S	<alphanum-name 1..8>
User field. Data such as name and department or data relevant for operations scheduling can be entered here.	var(*LIST). USER-FIELD	S	<c-string 1..54>
User ID of the volume owner	var(*LIST). USER-ID	S	<name 1..8>
Tape VSN	var(*LIST). VOL	S	<vsn>
Volume group Only has a valid value with reserved volumes, otherwise it is undefined..	var(*LIST). VOL-GROUP	S	<text 1..32>
Volume sequence number (4-digit)	var(*LIST). VOL-SEQ	S	<integer 1..255>

(part 2 of 3)

Output information	Name of the S variable	T	Contents
Volume status F = FREE P = PRIVATE R = RESERVED D = DEFECT	var(*LIST). VOL-STA-1	S	F/P/R/D

(part 3 of 3)

STOP-CONTROL-PROGRAM
Terminate MAREN control tasks

Privilege   ADA, DA, administrator without domains

The STOP-CONTROL-PROGRAM statement terminates the MAREN programs
MARENCP and MARENUCP normally. The administrator uses the HOST-NAME operand
to specify whether MARENCP should be terminated for his/her own host, for a particular
host, or for all hosts in a MAREN network.

Note

If MARENCP is terminated, the MAREN catalog is closed implicitly on the computer in
question.
However, it need not be opened explicitly (OPEN-MAREN-FILES) when MARENCP
has been loaded again.

Format

STOP-**CONTR**OL-**PROG**RAM   Alias: **STCP**
PROGRAM-**NAME** = ***MARENCP** / list-poss(2): ***MARENCP** / ***MARENUCP**
,**HOST**-**NAME** = ***OWN** / ***ALL** / <alphanum-name 1..8> / ***ALL-FROM-DOMAIN**
*ALL-FROM-DOMAIN(...)   **DOMAIN** = ***STD-DOMAIN** / ***OWN** / <alphanum-name 1..8>

Operands

PROGRAM-NAME =
Specifies which programs are to be terminated.

PROGRAM-NAME = *MARENCP
The MAREN control program is terminated.

PROGRAM-NAME = *MARENUCP
The automatic free tape facility of the MAREN system is terminated.

HOST-NAME =
Specifies the hosts for which a MAREN program is to be terminated.

HOST-NAME = *OWN
A MAREN program is only terminated for the local host.
If the ADA has used the MODIFY-ADMINISTRATION-SCOPE DOMAIN=... statement to become the DA of a domain, HOST=*OWN addresses the host which was determined by the HOST operand in the MODIFY-ADMINISTRATION-SCOPE statement.

HOST-NAME = *ALL
When domains are used, a MAREN program is terminated for all hosts in a DA's own domain; for the ADA, the MAREN program is terminated for all hosts.

HOST-NAME = <alphanum-name 1..8>
BCAM name of a host.
When domains are used and the DA enters a host name, this host must belong to the DA's own domain.

HOST-NAME = *ALL-FROM-DOMAIN (...)
A MAREN program is terminated for the hosts of a particular domain. This operand may only be used by the ADA.

DOMAIN =
Selects the domain.

DOMAIN = *STD-DOMAIN
A MAREN program is terminated for the hosts in the standard domain.

DOMAIN = *OWN
A MAREN program is terminated for the hosts in the local domain.
The own domain is the domain of the host on which the ADA is currently working.

DOMAIN = <alphanum-name 1..8>
A MAREN program is terminated for the hosts in the specified domain.

SYSTEM
Switch to BS2000 system mode

Privilege   ADA, DA, administrator without domains

The SYSTEM statement enables the user to revert to system mode and then issue system commands. The MARENADM program remains loaded and can be resumed again using the RESUME-PROGRAM command.
The START-, LOAD-EXECUTABLE-PROGRAM (or START-/LOAD-PROGAM) and EXIT-JOB (or LOGOFF) commands, however, always terminate the MARENADM program run.

Note

As the SDF standard statement HOLD-PROGRAM provides the same functionality, the SYSTEM statement should no longer be used in new procedures or ENTER jobs. In existing jobs it should gradually be replaced by the HOLD-PROGRAM statement.

Format

SYSTEM

The SYSTEM statement does not have any operands.

UPDATE-MAREN-CATALOG
Update MAREN catalog

Privilege   ADA, administrator without domains

The UPDATE-MAREN-CATALOG statement updates the MAREN catalog in the event of inconsistencies such as a defective or lost catalog or offline logging.

With the help of this statement and complete information from the logging files, the MAREN catalog can be updated to the current status.

If the MAREN catalog is defective or lost, a backup version must first be read in (this may have been created the previous day by means of the COPY-VOLUME-CATALOG statement). The existing MAREN catalog can be processed after offline logging.

The UPDATE-MAREN-CATALOG statement also enables information from an HSMS archive or an ARCHIVE directory to be added to the MAREN catalog. Entries for volumes which do not yet exist can be created, and entries for existing volumes can be updated. This statement replaces the MARENADM.ARCHIVE utility routine.

Format

UPDATE-**MAR**EN-**CAT**ALOG	Alias: **UPMC**

INPUT = ***BY-LOG**GING(...) / ***BY-HSMS**(...) / ***BY-ARCHIVE**(...)
 	
   *BY-LOGGING(...)
       | **LOG**GING-**FILE** = list-poss(99): <filename 1..54>
       | ,**START-DATE** = **0000-01-01** / <date>
       | ,**START-TIME** = **00:00:00** / <time>	

```
*BY-HSMS(...)
     ARCHIVE-NAME = <filename 1..22 without-gen-vers>
     ,ENVIRONMENT = *STD / *NODE-STD / *SINGLE-FEATURE / *SYSTEM-MANAGED(...)
        *SYSTEM-MANAGED(...)
           │  CATALOG-IDENTIFIER = <cat-id 1..4>
     ,ACTION = *ADD(...) / *MODIFY(...)
        *ADD(...)
              USER-IDENTIFICATION = <name 1..8>
              ,FREE-POOL = *NO / *GLOBAL / *TSOS / <filename 1..54 without-gen-vers> /
                           <text 2..32 without-sep>
              ,ACCOUNT = *NONE / <alphanum-name 1..8>
              ,FREE-DATE = *STD / <date with-compl> / <integer 0..32767>
              ,HOME-LOCATION = CENTRAL / <alphanum-name 1..8>
              ,FREE-LOCATION = CENTRAL / <alphanum-name 1..8>
              ,TEMPORARY-LOCATION = CENTRAL / <alphanum-name 1..8>
              ,INITIALIZATION = *YES / *NO / *ERASE
              ,USER-ACCESS = *OWNER-ONLY / *FOREIGN-READ-ONLY / *ALL-USERS
        *MODIFY(...)
              USER-IDENTIFICATION = *UNCHANGED / <name 1..8>
              ,FREE-POOL = *UNCHANGED / *NO / *GLOBAL / *TSOS /
                           <filename 1..54 without-gen-vers> / <text 2..32 without-sep>
              ,ACCOUNT = *UNCHANGED / *NONE / <alphanum-name 1..8>
              ,FREE-DATE = *UNCHANGED / <date with-compl> / <integer 0..32767>
              ,EXPIRATION-DATE = *FROM-HSMS / *UNCHANGED
              ,HOME-LOCATION = *UNCHANGED / CENTRAL / <alphanum-name 1..8>
              ,FREE-LOCATION = *UNCHANGED / CENTRAL / <alphanum-name 1..8>
              ,TEMPORARY-LOCATION = *UNCHANGED / CENTRAL / <alphanum-name 1..8>
              ,INITIALIZATION = *UNCHANGED / *YES / *NO / *ERASE
              ,USER-ACCESS = *UNCHANGED / *OWNER-ONLY / *FOREIGN-READ-ONLY /
                           *ALL-USERS
```

```
*BY-ARCHIVE(...)
     INQUIRE-LIST = <filename 1..54>
     ,ACTION = *ADD(...) / *MODIFY(...)
        *ADD(...)
              USER-IDENTIFICATION = <name 1..8>
              ,FREE-POOL = *NO / *GLOBAL / *TSOS / <filename 1..54 without-gen-vers> /
                               <text 2..32 without-sep>
              ,ACCOUNT = *NONE / <alphanum-name 1..8>
              ,FREE-DATE = *STD / <date with-compl> / <integer 0..32767>
              ,HOME-LOCATION = CENTRAL / <alphanum-name 1..8>
              ,FREE-LOCATION = CENTRAL / <alphanum-name 1..8>
              ,TEMPORARY-LOCATION = CENTRAL / <alphanum-name 1..8>
              ,INITIALIZATION = *YES / *NO / *ERASE
              ,USER-ACCESS = *OWNER-ONLY / *FOREIGN-READ-ONLY / *ALL-USERS
        *MODIFY(...)
              USER-IDENTIFICATION = *UNCHANGED / <name 1..8>
              ,FREE-POOL = *UNCHANGED / *NO / *GLOBAL / *TSOS /
                               <filename 1..54 without-gen-vers> / <text 2..32 without-sep>
              ,ACCOUNT = *UNCHANGED / *NONE / <alphanum-name 1..8>
              ,FREE-DATE = *UNCHANGED / <date with-compl> / <integer 0..32767>
              ,EXPIRATION-DATE = *FROM-ARCHIVE / *UNCHANGED
              ,HOME-LOCATION = *UNCHANGED / CENTRAL / <alphanum-name 1..8>
              ,FREE-LOCATION = *UNCHANGED / CENTRAL / <alphanum-name 1..8>
              ,TEMPORARY-LOCATION = *UNCHANGED / CENTRAL / <alphanum-name 1..8>
              ,INITIALIZATION = *UNCHANGED / *YES / *NO / *ERASE
              ,USER-ACCESS = *UNCHANGED / *OWNER-ONLY / *FOREIGN-READ-ONLY /
                               *ALL-USERS
```

Operands

INPUT = *BY-LOGGING(...) / *BY-HSMS(...) / *BY-ARCHIVE(...)
Specifies what information is to be added to the MAREN catalog.

INPUT = *BY-LOGGING(...)
The MAREN catalog is updated from one or more logging files. When the logging files are called, the logging files of **all** hosts in the MAREN cluster must be specified simultaneously. Only in this way can it be guaranteed that archive entries which were processed on different hosts are updated consistently. This applies in particular when offline logging entries are revised.

The two operands START-DATE and START-TIME are used to specify the tome the MAREN catalog is saved or copied and also the time when offline logging is enabled. Then only logging records which were created from this time on are taken into account.
By default all logging records of the specified logging file(s) are evaluated.

LOGGING-FILE = list-poss(99): <filename 1..54>
Name of one or more ISAM files containing MAREN logging records. Up to 99 logging files can be specified. When multiple files are specified, the logging records are sorted automatically while processing is in progress.

START-DATE = <u>0000-01-01</u> / <date>
Start date in the format yyyy-mm-dd.

START-TIME = <u>00:00:00</u> / <time>
Start time in the format hh[:mm[:ss]], where initial zeros need not be entered for hh, mm and ss.

INPUT = *BY-HSMS(...)
The MAREN catalog is to be updated with the data from an HSMS archive.

ARCHIVE-NAME = <filename 1..22 without-gen-vers>
Name of the HSMS archive.

ENVIRONMENT =
Specifies the HSMS environment in which the archive was defined.

ENVIRONMENT = <u>*STD</u>
The HSMS archive was defined in the standard environment for DMS archives.

ENVIRONMENT = *NODE-STD
The HSMS archive was defined in the standard environment for node archives.

ENVIRONMENT = *SINGLE-FEATURE
The HSMS archive was defined in the SF pubset environment.

ENVIRONMENT = *SYSTEM-MANAGED(...)
The HSMS archive was defined in the specified SM pubset environment.

CATALOG-IDENTIFIER = <cat-id 1..4>
Catalog ID of the SM pubset.

ACTION =
Specifies how the information is to be added to the MAREN catalog.

ACTION = *ADD(...)
The VSNs which are contained in the HSMS archive are to be added to the MAREN catalog.

   USER-IDENTIFICATION = <name 1..8>
   User ID to which the volumes are assigned.

   FREE-POOL =
   Specifies the free tape pool to which the volumes are assigned.

   FREE-POOL = *NO
   The volumes are assigned to the free tape pool *NO.

   FREE-POOL = *GLOBAL
   The volumes are assigned to the free tape pool *GLOBAL.

   FREE-POOL = *TSOS
   The volumes are assigned to the free tape pool *TSOS.

   FREE-POOL = <filename 1..54 without-gen-vers>
   The volumes are assigned to the free tape pool for HSMS and ARCHIVE applications using the ARCHIVE directory which must be specified here. If the directory is not located under the home ID, both the user ID and the catalog ID must also be specified.

   FREE-POOL = <text 2..32 without-sep>
   Name of an existing free tape pool to which the volumes are assigned.

   ACCOUNT = *NONE / <alphanum-name 1..8>
   Account number of the ID specified in USER-IDENTIFICATION.
   The default is *NONE, i.e. no account number is included in the archive entry.

   FREE-DATE = *STD / <date with-compl> / <integer 0..32767>
   Release date. Up to this date, the volume remains reserved for the given user ID. The default *STD causes the default release date entered with MODIFY-MAREN-PARAMETERS to be entered.
   If an integer is entered instead of a date, the release date is calculated by adding this number to the date. If the EXPIRATION-DATE entered in the input file for the VSN concerned is greater than the calculated release date, the archive entry FREE-DATE is assigned the value of EXPIRATION-DATE.

   HOME-LOCATION = CENTRAL / <alphanum-name 1..8>
   Location at which the volume is stored by default.
   The default is CENTRAL, i.e. the volume is located in the central archive, provided it is not currently being processed.

FREE-LOCATION = <u>CENTRAL</u> / <alphanum-name 1..8>
Location at which the volume is stored after it has been released.
The default is CENTRAL, i.e. the volume is located in the central archive, provided
it is not reserved.

TEMPORARY-LOCATION = <u>CENTRAL</u> / <alphanum-name 1..8>
Volume's current location.
The default is CENTRAL, i.e. the volume is currently located in the central archive.

INITIALIZATION = <u>*YES</u> / *NO / *ERASE
Specifies whether the volume should be initialized after it is released.
The default is *YES, i.e. the volume must be initialized before it is reserved again.
*ERASE initializes the volume and erases the tape contents up to the end of the
tape.

USER-ACCESS = <u>*OWNER-ONLY</u> / *FOREIGN-READ-ONLY / *ALL-USERS
Specifies whether only read (FOREIGN-READ-ONLY) or also write (ALL-USER)
access is possible to volumes of foreign IDs.
The default is OWNER-ONLY, i.e. no access can take place from foreign user IDs.

ACTION = *MODIFY(...)
The VSNs which are contained in the HSMS archive are to be updated in the MAREN
catalog if an entry already exists there.

The specifications for the USER-IDENTIFICATION, FREE-POOL, ACCOUNT, FREE-
DATE, HOME-LOCATION, FREE-LOCATION, TEMPORARY-LOCATION,
INITIALIZATION and USER-ACCESS operands are added to the catalog if a value
other than the default *UNCHANGED is entered. For a description of this operand, see
ACTION=*ADD(...).

EXPIRATION-DATE = <u>*FROM-HSMS</u> / *UNCHANGED
Specifies whether the expiration date of a volume from the HSMS archive should be
included in the MAREN catalog entry concerned. The expiration date is included
only if it is earlier than the expiration date entered in the catalog. If that is the case,
a note is also made in the catalog entry that the volume should be initialized before
it is reserved again.

INPUT = *BY-ARCHIVE(...)
The MAREN catalog is to be updated with the data from an ARCHIVE directory

INQUIRE-LIST = <filename 1..54 without-gen-vers>
Name of an ARCHIVE input file with all archive entries of the ARCHIVE directory. This
input file must be created using the ARCHIVE statement INQUIRE.

ACTION =
Specifies how the information is to be added to the MAREN catalog.

ACTION = <u>*ADD</u>(...)
The VSNs contained in the ARCHIVE directory are to be added to the MAREN catalog.

USER-IDENTIFICATION = <name 1..8>
User ID to which the volumes are assigned.

FREE-POOL =
Specifies the free tape pool to which the volumes are assigned.

FREE-POOL = *NO
The volumes are assigned to the free tape pool *NO.

FREE-POOL = *GLOBAL
The volumes are assigned to the free tape pool *GLOBAL.

FREE-POOL = *TSOS
The volumes are assigned to the free tape pool *TSOS.

FREE-POOL = <filename 1..54 without-gen-vers>
The volumes are assigned to the free tape pool for HSMS and ARCHIVE applications using the ARCHIVE directory which must be specified here. If the directory is not located under the home ID, both the user ID and the catalog ID must also be specified.

FREE-POOL = <text 2..32 without-sep>
Name of an existing free tape pool to which the volumes are assigned.

ACCOUNT = *NONE / <alphanum-name 1..8>
Account number of the ID specified in USER-IDENTIFICATION.
The default is *NONE, i.e. no account number is included in the archive entry.

FREE-DATE = *STD / <date with-compl> / <integer 0..32767>
Release date. Up to this date, the volume remains reserved for the given user ID.
The default *STD causes the default release date entered with MODIFY-MAREN-PARAMETERS to be entered.
If an integer is entered instead of a date, the release date is calculated by adding this number to the date. If the EXPIRATION-DATE entered in the input file for the VSN concerned is greater than the calculated release date, the archive entry FREE-DATE is assigned the value of EXPIRATION-DATE.

HOME-LOCATION = CENTRAL / <alphanum-name 1..8>
Location at which the volume is stored by default.
The default is CENTRAL, i.e. the volume is located in the central archive, provided it is not currently being processed.

FREE-LOCATION = CENTRAL / <alphanum-name 1..8>
Location at which the volume is stored after it has been released.
The default is CENTRAL, i.e. the volume is located in the central archive, provided it is not reserved.

TEMPORARY-LOCATION = <u>CENTRAL</u> / <alphanum-name 1..8>
Volume's current location.
The default is CENTRAL, i.e. the volume is currently located in the central archive.

INITIALIZATION = <u>*YES</u> / *NO / *ERASE
Specifies whether the volume should be initialized after it is released.
The default is *YES, i.e. the volume must be initialized before it is reserved again.
*ERASE initializes the volume and erases the tape contents up to the end of the tape.

USER-ACCESS = <u>*OWNER-ONLY</u> / *FOREIGN-READ-ONLY / *ALL-USERS
Specifies whether only read (FOREIGN-READ-ONLY) or also write (ALL-USER) access is possible to volumes of foreign IDs.
The default is OWNER-ONLY, i.e. no access can take place from foreign user IDs.

ACTION = *MODIFY(...)
The VSNs which are contained in the ARCHIVE directory are updated in the MAREN catalog if an entry already exists there.

The specifications for the USER-IDENTIFICATION, FREE-POOL, ACCOUNT, FREE-DATE, HOME-LOCATION, FREE-LOCATION, TEMPORARY-LOCATION, INITIALIZATION and USER-ACCESS operands are added to the catalog if a value other than the default *UNCHANGED is entered. For a description of this operand, see ACTION=*ADD(...).

EXPIRATION-DATE = <u>*FROM-ARCHIVE</u> / *UNCHANGED
Specifies whether the expiration date of a volume from the ARCHIVE directory should be included in the MAREN catalog entry concerned. The expiration date is included only if it is earlier than the expiration date entered in the catalog. If that is the case, a note is also made in the catalog entry that the volume should be initialized before it is reserved again.

Notes on updating the catalog with logging files

–   As the UPDATE-MAREN-CATALOG statement accesses the catalog directly, it can be executed under a user ID which has direct access to the catalog.

–   The update is applied to the file currently assigned to the MARENCP task via the link name MARENCAT.

–   The files specified in the LOGGING-FILE operand must have the file and record format defined for the logging files (see the section entitled "Logging files" in the manual "MAREN Volume 1" [1]).

–   As a basic rule, there is no harm done if outdated logging files are included in the update of the MAREN catalog. To ensure that the MAREN catalog is updated properly, however, all processed logging files must be consistent. No file may be forgotten. It is recommended that you specify the exact time the backup copy of the MAREN catalog

was produced or offline logging was switched on in order to prevent superfluous or old logging records from being included in processing. The advantage of this is enhanced performance.

– When this function is first called, the MARENADM statement CLOSE-MAREN-FILES is issued implicitly in order to temporarily prevent all user access to the MAREN catalog. Since the CLOSE-MAREN-FILES statement only affects the local host, it must also be entered for all other hosts.
Additionally, all other MARENADM program runs must be terminated if they keep the MAREN catalog open in direct access mode.
Once the update is complete, the catalog lock set for the user's own host and for all hosts on which CLOSE-MAREN-FILES was entered must now be lifted by means of the OPEN-MAREN-FILES statement. This can also be done by specifying the HOST-NAME=*ALL operand.

– If multiple logging records exist for an archive entry, only the most recent one is used to update the MAREN catalog. In the case of multi-system operation, it is therefore necessary to synchronize the individual system clocks as accurately as possible.

– The logging records generated during offline logging are likewise evaluated.

– Finally, a message is issued indicating the number of archive entries updated.

– When operating in RFA mode, the UPDATE-MAREN-CATALOG statement should only be executed on the RFA central processor for performance reasons.

– If the UPDATE-MAREN-CATALOG statement is to be executed by an RFA central processor, a connection to the system containing the MAREN catalog must be set up beforehand using the SET-RFA-CONNECTION command.

– During the update procedure, no new logging records are created.

Updating the catalog from the HSMS archive or ARCHIVE directory

Volumes from an HSMS archive or an ARCHIVE directory can be entered as new entries in the MAREN catalog or update entries which already exist there. In the case of an HSMS archive, MAREN takes over the entries directly (entry in the ARCHIVE-NAME operand). In the case of an ARCHIVE directory, the entries must be available as a file, in the form of an INQUIRE list which must be created in advance using ARCHIVE (entry in the INQUIRE-LIST operand).

*New entry (ACTION=*ADD)*

All volumes contained in the specified HSMS archive or in the ARCHIVE directory are added to the MAREN catalog (ACTION=ADD is the default setting). Information for the individual archive entry fields is taken from the following sources:

a) HSMS archive or ARCHIVE-INQUIRE list

The following archive entry fields are supplied with values from this list:

Field	Meaning
VOLUME	VSN of the volume
DEVICE-TYPE	volume type of the volume
CREATION-DATE	file creation date (from SVID if available)
CREATION-TIME	file creation time (from SVID if available)
EXPIRATION-DATE	retention period of the volume if SVID contains RETPD, otherwise the same value as CREATION-DATE.

b) Operand values entered by the user (or their default values)

For the "new entry" function, the USER-IDENTIFICATION operand must be specified together with the name of the HSMS archive or ARCHIVE-INQUIRE list.

If the retention period specified in the HSMS archive or ARCHIVE-INQUIRE list is greater than the date specified in the FREE-DATE operand, FREE-DATE is supplied with the value from EXPIRATION-DATE.

c) Standard presettings from the MAREN system

The VOLUME-STATUS is set to RESERVED, for instance, and the RESERVATION-DATE field is supplied with the current date.

When domains are used, all volumes are added to the user's own domain.

If an archive entry already exists for a VSN, MAREN checks the archive entry fields assigned to individual operands (e.g. USER-ACCESS) to see whether they match the values specified by the user (or the default values):

–   If all archive entry fields match the specified operands (or their default values), processing continues with the next VSN. This ensures that new entry jobs can be restarted if they are aborted (RESTART capability).

–   If, however, any of the archive entry fields differs from the specified operands (or their default values), execution of the function is terminated.

As soon as the archive entry field which was complained about has been corrected with MODIFY-VOLUME-ATTRIBUTES, this new entry can be continued with UPDATE-MAREN-CATALOG.

MAREN logs each archive entry which is added and then outputs a totals line.

"Modify" function (ACTION=*MODIFY)

The archive entries in the MAREN catalog are to be updated for all volumes contained in the specified HSMS archive or in the ARCHIVE-INQUIRE list.

In the case of operands with the value *UNCHANGED, the corresponding archive entry field remains unchanged.

Execution of the function is aborted in the following cases:

– No archive entry exists in the MAREN catalog for a given VSN.
– The volume has a VOLUME-STATUS other thanRESERVED.
– The volume is not a magnetic tape or MTC.
– An ARCHIVE directory was specified in the FREE-POOL operand and one of the archive entries contains a different directory name.

MAREN logs each archive entry which is modified and then outputs a totals line.

Examples

Example 1

The MAREN catalog is updated with the aid of information from the logging file maren.logging:

```
//upd-mar-cat log-file=maren.logging
%  MARM118 ALL FILES OF MAREN CATALOG CLOSED
%  MARM123 03268 RECORDS READ FROM FILE 'MAREN-LOGGING'
%  MARM120 TOTAL OF 00372 MAREN CATALOG ENTRIES PROCESSED
%  MARM170 STATEMENT '//UPDATE-MAREN-CATALOG' PROCESSED

//open-maren-files´
%  MARM139 MAREN CATALOG OPENED, CATALOG LOCK RESET
```

Example 2

In a computer center, all three systems are connected to form an integrated RFA network. During the open session, the MAREN catalog was destroyed irreparably due to a disk error. Since the logging files have been set up on other disks, they still exist. Using the backup of the MAREN catalog from the previous day together with the logging files, an updated MAREN catalog is to be created.

After the MARENCP task is started using the MAREN catalog from the day before, the update is initiated by means of the statement:

```
//upd-mar-cat input=*by-log(log-file=maren.logging.anlage1,
                    maren.logging.anlage2,maren.logging.anlage3)
```

Example 3

An input file for updating the catalog using UPDATE-MAREN-CATALOG is to be created
from the ARCHIVE directory ARCHIVE.DIR:

```
/assign-syslst to=lst.inquire.archive.dir
/start-archive
%  ARCLOAD Programm 'ARCHIVE', Version '09.0A' of '2008-09-18' loaded from
file ':2OSH:$TSOS.SYSLNK.ARCHIVE.090'
%  ARCCOPY Copyright (C) FUJITSU TECHNOLOGY SOLUTIONS 2009. All rights
reserved
%  ARC0001 ARCHIVE READY
*inquire dir=archive.dir,list=syslst,pool
%  ARC0002 STATEMENT ACCEPTED. ARCHIVE SEQUENCE NUMBER 'A.090206.172346',
VERSION '09.0A03'
%  ARC0003 ARCHIVE STATEMENT COMPLETED
*end
%  ARC0009 ARCHIVE TERMINATED
/assign-syslst to=*primary
```

The name of the file created in this way (here LST.INQUIRE.ARCHIVE.DIR) is specified in
the INQUIRE-LIST operand of the UPDATE-MAREN-CATALOG statement:

```
/start-marenadm
%  MARM100 MARENADM VERSION '12.0A00' STARTED
%//upd-maren-cat input=*by-archive(inquire-list=syslst.pool,
   action=*add(user-id=sysmaren),free-pool=*tsos,free-date=2010-12-31)
%  MARM108 MAREN CATALOG ENTRY 'ID5001'/'0001' ADDED
%  MARM108 MAREN CATALOG ENTRY 'ID5002'/'0001' ADDED
%  MARM108 MAREN CATALOG ENTRY 'ID5003'/'0001' ADDED
%  MARM108 MAREN CATALOG ENTRY 'ID5004'/'0001' ADDED
%  MARM108 MAREN CATALOG ENTRY 'ID5005'/'0001' ADDED
%  MARM108 MAREN CATALOG ENTRY 'ID5006'/'0001' ADDED
%  MARM108 MAREN CATALOG ENTRY 'ID5007'/'0001' ADDED
%  MARM108 MAREN CATALOG ENTRY 'ID5008'/'0001' ADDED
%  MARM108 MAREN CATALOG ENTRY 'ID5009'/'0001' ADDED
%  MARM108 MAREN CATALOG ENTRY 'ID5010'/'0001' ADDED
%  MARM105 TOTAL OF 0010 MAREN CATALOG ENTRIES ADDED
%  MARM170 STATEMENT '//UPDATE-MAREN-CATALOG' PROCESSED
%//end
%  MARM198 MARENADM TERMINATED NORMALLY
```

VERIFY-MAREN-CATALOG
Eliminate inconsistencies in MAREN catalog

Privilege   ADA, DA, administrator without domains

The VERIFY-MAREN-CATALOG statement eliminates inconsistencies in the MAREN catalog (e.g. caused by system errors). All records in the catalog are read and then written to do this.

Format

VERIFY-MAREN-**CAT**ALOG	Alias: **VRMC**

The VERIFY-MAREN-CATALOG statement has no operands.

Notes

– If operands are specified (from earlier versions of VERIFY-MAREN-CATALOG in existing procedures, for example), then MAREN outputs message `MARM182`.

– As the VERIFY-MAREN-CATALOG statement accesses the catalog directly, it can generally be executed without errors only under the privileged user IDs TSOS and SYSMAREN.

– If the statement is executed on a computer that does not have direct access to the MAREN catalog, a connection to the system that imported the pubset with the MAREN catalog must be set up beforehand using the SET-RFA-CONNECTION command.

– The MAREN catalog can be updated at any time from any computer. It need not be closed explicitly.
For performance reasons, however, it should only be updated on a computer that has direct access to the MAREN catalog.

WRITE-ACCOUNTING-RECORDS
Create accounting records in RAV format

Privilege   ADA, DA, administrator without domains

The WRITE-ACCOUNTING-RECORDS statement creates accounting records in RAV
format.
These accounting records can then be used to charge for archiving services.

Format

WRITE-ACCOUNTING-**REC**ORDS	Alias: **WRAR**
OUTPUT-**FILE** = <filename 1..54>	
,**FROM-DATE** = <date>	
,**TO-DATE** = <date>	
,**LOG**GING-**FILE** = ***NONE** / <filename 1..54>	
,ACCOUNT-REC-FORMAT = ***V5** / ***V4**	

Operands

OUTPUT-FILE = <filename 1..54>
Name of the SAM output file to which the accounting records are to be written in RAV
format.

FROM-DATE = <date>
Date in the format yyyy-mm-dd. Start date of the accounting period.

TO-DATE = <date>
Date in the format yyyy-mm-dd. End date of the accounting period. This must not be earlier
than the date specified in FROM-DATE.

LOGGING-FILE = *NONE / <filename 1..54>
Name of the MAREN logging file.

LOGGING-FILE = *NONE
Specifies that no logging file is to be evaluated.

ACCOUNT-REC-FORMAT = *V5 / *V4

RAV version for which the accounting record is to be created.

By default, this is RAV V5.0. This format supports four-digit year specifications.

Dates later than 31.12.1999 are supported only in RAV V5.0 or later.

ACCOUNT-REC-FORMAT = *V4

To support RAV versions earlier than V5.0, it is also possible to request accounting records in the "old" format (two-digit year specifications).

Example

```
//write-acc-record output=maren.acc.0404,from=2004-04-01,to=2004-04-30,
   log-file=$archiv1.maren.log
% MARM191 PROCESSING OF MAREN CATALOG STARTED
% MARM193 00026 ACCOUNTING RECORDS CREATED FOR RESOURCE TYPE '430'
% MARM193 00000 ACCOUNTING RECORDS CREATED FOR RESOURCE TYPE '431'
% MARM193 00000 ACCOUNTING RECORDS CREATED FOR RESOURCE TYPE '432'
% MARM170 STATEMENT '//WRITE-ACCOUNTING-RECORDS' PROCESSED
```

RAV accounting records are created for the April 2004 accounting period and written to the output file MAREN.ACC.0404. The logging file $archiv1.maren.log is also evaluated so that released volumes can be charged for accordingly.

Contents of the output file:

```
H441AR    TSOS     ADMINSTR       01042004000000300420042400004300000030          LCM001/04.2004
H441AR    SYSDUMP SYSACC          01042004000000300420042400004300000030          MB2251/07.2002
H441AR    TSOS     ADMINSTR       26042004000000300420042400004300000005          TST001/05.2004
H441AR    TSOS     ADMINSTR       23042004000000230420042400004300000001          TST003/04.2004
H441AR    TSOS     ADMINSTR       16042004000000300420042400004300000015          TST004/05.2004
H441AR    TSOS     ADMINSTR       29042004000000290420042400004300000001          TST005/04.2004
H441AR    TSOS     ADMINSTR       16042004000000300420042400004300000015          TST006/05.2004
H441AR    TSOS     ADMINSTR       26042004000000300420042400004300000005          TST007/05.2004
H441AR    TSOS     ADMINSTR       16042004000000300420042400004300000015          TST008/05.2004
H441AR    TSOS     ADMINSTR       16042004000000300420042400004300000015          TST010/05.2004
H441AR    TSOS     ADMINSTR       26042004000000300420042400004300000005          TST011/05.2004
H441AR    TSOS     ADMINSTR       29042004000000290420042400004300000001          TST013/04.2004
H441AR    TSOS     ADMINSTR       29042004000000290420042400004300000001          TST014/04.2004
H441AR    TSOS     ADMINSTR       01042004000000300420042400004300000030          TST015/04.2004
H441AR    TSOS     ADMINSTR       16042004000000300420042400004300000015          TST016/05.2004
H441AR    TSOS     ADMINSTR       29042004000000290420042400004300000001          TST017/04.2004
H441AR    TSOS     ADMINSTR       29042004000000290420042400004300000001          TST019/04.2004
H441AR    TSOS     ADMINSTR       16042004000000300420042400004300000015          TST020/05.2004
H441AR    TSOS     ADMINSTR       29042004000000290420042400004300000001          TST021/04.2004
H441AR    TSOS     ADMINSTR       08042004000000080420042400004300000001          TST022/04.2004
H441AR    TSOS     ADMINSTR       28042004000000280420042400004300000001          TST023/04.2004
H441AR    TSOS     ADMINSTR       29042004000000290420042400004300000001          TST024/04.2004
H441AR    TSOS     ADMINSTR       29042004000000290420042400004300000001          TST025/04.2004
H441AR    TSOS     ADMINSTR       28042004000000280420042400004300000001          TST026/04.2004
H441AR    TSOS     ADMINSTR       08042004000000080420042400004300000001          TST027/04.2004
H441AR    TSOS     ADMINSTR       01042004000000010420042400004300000001          TST028/04.2004
```

3.4 MARENADM as a subroutine

The MARENADM program can be called from a user program as a subroutine. For this purpose, the module MAREN1U from the library SYSLIB.MAREN.vvv (vvv = version number) must be linked into the user program. There are two types of MAREN subroutine:

– interactive subroutine

– program interface

3.4.1 Interactive subroutine

The entry point MAREN1DU is used for the interactive subroutine. This mode enables you to work with MARENADM in interactive mode after branching from a user program in the same way as if you issued a START-MARENADM command.
MAREN1DU is accessed by means of the statement:

```
@PASS EXTNAME=MAREN1DU
```

With the exception of the operand BATCH-PROCESSING=YES of the PRINT-VOLUME-ATTRIBUTES statement, the full range of MARENADM functions is available. The user program remains loaded. Control is returned to the user program after the MARENADM statement RETURN-TO-PROGRAM or END is issued or after abnormal termination of MARENADM.

No data transfer takes place between the calling user program and the MARENADM inter-active subroutine. Only indirect data transfer is possible, e.g. using the MARENADM statement

```
//SHOW-VOLUME-ATTRIBUTES OUTPUT= &filename,...
```

you can create an output file which then serves as an input file in the user program.

When calling the subroutine, the usual register conventions must be observed:

Register 13: This register contains the address of a save area which consists of 18 words and which must be made available by the calling user program. This area is used by MAREN1U to save the registers of the calling program.

Register 14: This register contains the address of the re-entry point to the calling program.

Register 15: This register contains the entry point address of MAREN1DU.

Return information is not required, as all results are displayed directly in the dialog.

3.4.2 Program interface

The entry point MAREN1PS is used for the program interface. In this mode, the statements to be issued to MARENADM and all accruing data and results are exchanged between the user program and MARENADM via storage areas. There is no data communication with the system files SYSDTA and SYSOUT.

The program interface does not provide access to the full range of MARENADM functions. The following MARENADM statements cannot be used (those marked "(*)" are standard SDF statements, see also :

```
//CHECK-TSOSCAT
//COPY-VOLUME-CATALOG
//DELETE-VOLUME-ENTRY
//EDIT
//EXECUTE-SYSTEM-COMMAND (*)
//HOLD-PROGRAM (*)
//MODIFY-ADMINISTRATION-SCOPE
//MODIFY-SDF-OPTIONS (*)
//MODIFY-TAPE-SET-ATTRIBUTES
//REMARK          (*)
//RESET-INPUT-DEFAULTS (*)
//RESTORE-SDF-INPUT  (*)
//SHOW-INPUT-DEFAULTS (*)
//SHOW-INPUT-HISTORY (*)
//SHOW-MAREN-FILE
//SHOW-MAREN-STATUS
//SHOW-SDF-OPTIONS   (*)
//SHOW-VSNS
//STEP              (*)
//UPDATE-MAREN-CATALOG
//VERIFY-MAREN-CATALOG
//WRITE-TEXT        (*)
```

The following operand values are strictly prohibited:

```
MAREN-PASSWORD=*SECRET
```

```
PASSWORD=*SECRET
```

```
VOLUME=<list-of-vsns>
```
    Instead, the corresponding statement must be issued individually for each VSN.

The following operand values must not be used with certain statements. If these operand values introduce a structure, no operand in that structure may be used:

`OUTPUT=<filename>`
> in the statements
> REMOVE-USER-VOLUMES
> RESERVE-FREE-VOLUME
> SHOW-FREE-VOLUMES
> SHOW-VOLUME-ATTRIBUTES
> Any output files required can be created by the calling main program from the archive entries provided by MAREN1PS.

`SORT-MODE = *RESERVATION-COUNT / *LAST-ACCESS-DATE / *FREE-DATE`
> in the statement SHOW-FREE-VOLUMES

`VOLUME=*BY-TSOSCAT`
> in the statement ADD-RESERVED-VOLUME

`VOLUME=*ALL(INPUT-FILE=<filename>)`
> in the statement ADD-RESERVED-VOLUME
> The archive entries must be read from the input file by the main program and the VSNs must be added individually with ADD-RES-VOL VOLUME= <vsn>. Attributes which have no operands in ADD-RES-VOL (e.g. CREATION-DATE) can then be assigned using the MODIFY-VOLUME-ATTR statement.

`INIT-FILE=<filename>`
> in the statement FREE-VOLUMES
> If an output file is to be created, INIT-FILE=*DUMMY must be specified. The MAREN catalog entries passed to the archive area by MAREN1PS must be output to a SAM file by the main program.

`INIT-FILE=<filename>`
> in the statement INITIALIZE-VOLUMES

`VOLUME=*BY-FILE`
> in the statements
> EXPORT-VOLUME
> FREE-VOLUMES
> RETURN-VOLUMES

`VOLUME=*BY-INPUT-FILE`
> in the statement MODIFY-VOLUME-ATTRIBUTES
> The main program must read the archive entries from the input file, extract the VSN and the file sequence number, and supply these as values for the VOLUME and FILE-SEQ operands of the MODIFY-VOLUME-ATTRIBUTES statement.

`VERSION=*LATEST / <integer -9999..0> / *NOT-CREATED`
> in the statement SHOW-VOLUME-ATTRIBUTES

TYPE—OF—VOLUMES=*VALID / *OBSOLETE
> in the statement SHOW-VOLUME-ATTRIBUTES

BATCH—PROCESSING=*YES
> in the statement PRINT-VOLUME-ATTRIBUTES

UPDATE=*TEMPORARY / *PERMANENT
> in the statement PRINT-VOLUME-ATTRIBUTES
> This applies to the UPDATE operand in each of the structures SELECT, SORT and
> LAYOUT-CONTROL.

MESSAGE—DESTINATION=*PRINTER / *FILE
> in the statements
> RETURN-VOLUMES
> SECURE-FREE-VOLUMES

NUMBER—OF—VOLUMES > 1
> in the statements
> RESERVE-FREE-VOLUME
> SECURE-FREE-VOLUMES
> This operand is not evaluated. As a rule, only a single volume is processed and the
> statement should be issued more than once where necessary.

SAVE—FILE—ID <> *ALL
> in the statements

3.4.3 Data transfer areas

The user program must have three storage areas for data transfer when the MARENADM
program interface is called:

- Statement area (maximum of 1014 bytes)

  Here the user program must provide a MARENADM statement in the form of a variable-
  length record (record length field of 4 bytes) using the usual BS2000 format. The
  statement can be written with or without the two slashes. The statement area must be
  aligned on a halfword boundary.

- Archive record area (1014 bytes)

  In this area, the MAREN system transfers either a complete archive entry or merely the
  archive entry fields RETFLAG and ERRORKEY to the user program, depending on the
  statement. The individual fields can be symbolically addressed via the DSECT
  MARENA or the copy element MARENAC.

The archive entry is returned either in V8 format (1014 bytes). (The secondary index area of a catalog in V8.1 format is not supported at the program interface; see record structures in the section entitled "Volume catalog" in the manual "Volume 1: Basics of MTC Management" [1].).

● Parameter set area (672 bytes)

In this area, the user program receives the complete parameter set output by the SHOW-MAREN-PARAMETERS statement. The individual fields may be addressed symbolically via the DSECT MARENP or the copy element MARENPL. This area must also be provided for every other statement, since MAREN1PS requires it as an internal work area.

When calling the program interface, the contents of the archive record area and the parameter set area are of no significance.

Both DSECTs (MARENA and MARENP) are contained in the library SYSLIB.MAREN.vvv (vvv is the version number, e.g. 110). If the operand MF=L is specified in the macro call, a data area is created with the same length as the archive entry or the parameter set with field designations identical to the names in the relevant DSECT.

The two copy elements (MARENAC and MARENPL) are also contained in the library SYSLIB.MAREN.vvv.

Once a statement has been executed, MAREN1PS automatically reverts to the user program. The RETURN-TO-PROGRAM statement is therefore superfluous in this case. The END statement closes the MAREN files if they were opened in direct access mode.

Specification of a number range, which is possible for some statements using the operand VOLUME=*INTERVAL(FROM=..., TO=...,FSEQ=...), is also supported by the program interface. However, only the first applicable archive entry is processed, after which control is immediately passed back to the caller. If necessary, the user program must repeat the statement in a loop, each time setting the start of the number range (FROM operand and FROM-FSEQ operand) to the last VSN obtained and incrementing FSEQ by 1. Please note the following when incrementing FSEQ: if only one archive entry per VSN is to be processed, FSEQ must be set at 9999. If, however, all available FSEQ entries are to be processed for each VSN, FSEQ must be incremented by 1 except if FSEQ=*001 (see example on page 343).

Return information

After each return from the MARENADM program interface, the user program must inspect the return information in the archive entry field RETFLAG.
Only when RETFLAG=A applies has the statement been executed normally.
RETFLAG=E means that no hits were made in the specified number range.
For all other RETFLAGs, additional return information in the archive entry field ERRORKEY must be evaluated. This field contains the seven-digit message code of the message otherwise output to SYSOUT by the MARENADM program.

RETFLAG may be set to the following values:

RETFLAG	Meaning
A	The statement was executed without errors.
D	A DMS error occurred while accessing a file. The name of the file in question is contained in the archive entry field FILENAME. The DMS error code is given in the archive entry field ERRORKEY.
E	No hit was found within the specified number range.
I	Invalid entry.
L	Logical error, e.g. an attempt was made to export a tape which has already been exported.
M	Internal error in the MAREN system; the exact cause of the error is shown in the archive entry field ERRORKEY.
N	The specified VSN does not exist in the MAREN catalog.
O	The MAREN administrator has activated offline logging; as a result, access to the MAREN catalog is not possible.
P	The archive entry was simultaneously modified by another task; the statement must therefore be repeated.
S	Access to another host via MSCF was not successful.
T	The volume is still reserved by another task in the same system.
V	The volume has not yet been released by another task in another system, i.e. the internal MAREN access lock on this volume still exists.
X	The request was rejected by the MAREN administrator via a computer center exit routine.
0	The console message `MAR0085` was acknowledged by the operator with tsn.0.
2	The console message `MAR0085` or `MAR0086` was acknowledged by the operator with tsn.2.

The following registers must be loaded to enter the subroutine:

Register 1:   This register contains the address of an operand list with a length of three words:
                First word: Address of the statement area
                Second word: Address of the archive record area
                Third word: Address of the parameter set area

Register 13:   This register contains the address of a save area which consists of 18 words and which must be made available by the calling user program. This area is used by MARENADM to save the registers of the calling program.

Register 14:   This register contains the address of the re-entry point to the calling program.

Register 15:   This register contains the entry point address of MAREN1PS.

3.4.4   Integrating MARENADM as a subroutine

If MARENADM is to be used as a subroutine, a linkage module which loads a module from the SYSLNK file has to be included in the main program.

This MAREN linkage module is stored in the SYSLIB file as an object module (OM) with the name MAREN1U, and is assigned the entry MAREN1PS when MARENADM is used as a program interface or MAREN1DU when it is used as an interactive subroutine.

The linkage module performs the following activities:

–   It determines the MAREN version to be loaded dynamically.
    If the user did not specify a particular MAREN version with SELECT-PRODUCT-VERSION before calling his/her main program, the most recent version installed in the system is selected.

–   The names of the SYSLNK and SYSREP flies are determined, taking due account of the version.

–   These names are used to complete the BIND parameter list for loading the relevant prelinked MAREN module dynamically.

Error situation

If an error occurs while the file names are being ascertained, the default names of the MAREN version for which the linkage module was supplied are used for dynamic loading.

3.4.5   Examples of using the MARENADM program interface

Example 1: Modifying archive entries

The following example of how to use the MARENADM program interface shows the structure of an Assembler main program. The macro calls for structured programming with ASSEMBH (e.g. @IF) are not supported by ASSEMBH-BC (see the "ASSEMBH (BS2000/OSD)" manual [3]).

All reserved volumes with a VSN in the range ABC001 to ABC099 are to be made shareable without restrictions (USER-ACCESS=ALL-USERS).

Structure of the Assembler main program

```
          :
          @CYCLE
MODIFY    DS    0H
          :
          @PASS EXTNAME=MAREN1PS,PAR=PAR1PS MARENADM CALL
          @CAS2 RETFLAG,COMP=CLI        CHECK RETURN FLAG
          @OF   RETFLAGA                RETURN FLAG 'A' = OK
          MVC   ANWVSN,ARCHIVNR         SET VSN IN STATEMENT
          @IF   EQ                      SET NEXT FSEQ IN STATEMENT
          CLC   FSEQ,=C'*001'           SUPPRESSED VOLUME?
          @THEN
          MVC   ANWFSEQ,=C'0001'        IF YES - NEXT FSEQ = '0001'
          @ELSE
          PACK  DOWO,FSEQ               OTHERWISE ADD 1 TO FSEQ
          AP    DOWO,=PL1'1'
          UNPK  ANWFSEQ,DOWO+5(3)
          OI    ANWFSEQ+3,X'F0'
          @BEND
          @OF   RETFLAGE                RETFLAG 'E' = NO MORE ENTRIES
          :
          @OFRE                         ERROR EXIT
          :
          @BEND
          @BEND
          :
DOWO      DS    D                       WORKAREA
STMT      DC    Y(STMTEND-STMT)     AREA FOR MARENADM STATEMENT
          DC    CL2' '
          DC    C'//MOD-VOL-ATTR VOL=*INT(FROM='
ANWVSN    DC    CL6'ABC001'
          DC    C',FROM-FSEQ='
ANWFSEQ   DC    CL4'0001'
          DC    C',TO=ABC099),'
          DC    C'SELECT=*RES,PROT=PAR(USER-ACCESS='
          DC    C'*ALL-USERS)'
STMTEND   EQU   *
          :
          DS    0F
PAR1PS    DS    0F
          DC    A(STMT)
          DC    A(MARENA)
          DC    A(MARENP)
          :
          MARENA MF=L,LAYOUT=V8          AREA FOR MAREN CATALOG ENTRY
          MARENP MF=L                    AREA FOR MAREN PARAMETER SET
          :
```

Example 2: Cyclical relocation of volumes

This example illustrates a more complex application of the MARENADM program interface.

Objective

Certain volumes in a computer center are to be moved to a different location at specific intervals. For example, volumes from a computer center backup are to remain on the system for a few days after they have been created (so that users can draw on them in order to restore files) and then transported to a fireproof cellar.
As MAREN is not equipped with a special statement to deal with this delayed volume transfer contingency, this problem must be solved with the aid of the MARENADM program interface.

Possible approaches

The information on the relocation cycle should be stored in an archive entry field where it can subsequently be queried.

This can be achieved by means of a MAREN computer center exit (see the section entitled "Computer center exits in the MAREN system" in the manual "Volume 1: Basics of MTC Management" [1]). It makes sense to use a computer center exit that is called at a time when the volume has already been written to, i.e. not a reserve-request exit for example, as it is not certain in this case whether the volume is really available for use again when the exit is called.

In this context, the modify-request exit seems suitable. If this is called in the course of DMS close processing (LAFUNKNM=MAREN0C1) or in the case of volume swapping (LAFUNKNM=MAREN0E1), writing to the volume is completed. It is then possible to consult the archive entry and check, using your own criteria, whether the volume that has just been created is a magnetic tape that is to be stored at a series of different locations until it is released.

Possible criteria here (accompanied by the corresponding archive entry fields in brackets) are:

– user ID under which the tape was created (CRUSERID if host-specific parameter CIDUID is set, otherwise also LAUSERID)

– name of the creation job (CRJOB)

– file name (FILENM41)

– name of the ARCHIVE directory with which the backup was performed (DIRNAME)

The steps involved in volume relocation may take up a great deal of space. For this reason, the archive entry field selected to accommodate this information should be as large as possible. Furthermore, it must not be a field that is updated by the MAREN subsystem in the course of DMS access, as the information required for relocation would be lost.

The most suitable field in this context is the USERFELD field, which is really intended for entering user-specific data. This field can be modified by means of the USER-FIELD operand even in several MAREN or MARENADM statements, although MAREN users can only make changes to archive entries of their own user ID (even in the case of volumes which are shareable without restrictions).
Since the value range for the USER-FIELD operand corresponds to the data type "c-string", it may only contain printable characters. Otherwise, smudge characters will be displayed for SHOW-VOL-ATTR VOL=<vsn> in the screen mask.

Suggested solution

The 54-byte field USERFELD in the archive entry is divided up as follows:

6 bytes: C'CYCLE' indicating that the volume must be relocated cyclically.

48 bytes: 4 relocation statements of 12 bytes each.
             These are in turn broken down as follows:

        4 bytes: Number of days after the creation date (CRDATE) when the next relocation is to be performed.

        8 bytes: Location to which the volume is to be moved during the next relocation.

Example

```
USERFELD=CL54'CYCLE 0028CENTRAL  0090SAFE 0365DVBUNKER'
```

Starting from the creation date in each case, the volume is to be

– stored in the central archive after 28 days
– stored in a special safe after 90 days
– stored in a specially secure underground room after 365 days

No provision is made for a fourth storage location. On release, the volume is returned to the location specified for FREE-LOCATION.

d) Program implementation

With the aid of a main program which calls the MARENADM program interface, all MAREN catalog entries are read and the USERFELD field is evaluated. If this field contains the previously written relocation entries, a check is carried out as to whether the time that has elapsed since file creation warrants a relocation. If so, the MARENADM statement MODIFY-VOLUME-ATTRIBUTES is used to modify the archive entry field HOME-LOCATION to the location specified in the first relocation entry. This means that a relocation request for this volume will be issued the next time the MAREN administrator starts a clear-up run (MARENADM statement RETURN-VOLUMES).

Whenever a modification is made, the relocation entry that has just been processed is deleted (in order to keep the program simple) by shifting the remaining relocation entries forward.

If this program is run daily or at least before every clear-up run carried out by the MAREN administrator, it is ensured that the desired volume transfers are actually taking place (provided the relocation requests are dealt with by the appropriate personnel).

e) Structure of the Assembler main program

```
PSCYCLE CSECT
           :
        @CYCLE
READCAT DS    OH    Read volume catalog sequentially
*
        MVC   STMTAREA,BLANKS
        MVC   STMTAREA,SHOWSTMT          Set statement area
        @PASS EXTNAME=MAREN1PS,PAR=STMTAREA  Call MARENADM
        @WHEN NE                         Query return code
        CLI   RETFLAG,RETFLAGA            Everything OK?
        @BREA                            Error occurred or
*                                        end-of-file reached
*
*
CHECKUF DS    OH    Check USERFELD (CYCLE)
*
*             Do the first 6 bytes of USERFELD contain the
*                  character string C'CYCLE '?
*             No: Position to the next archive entry ( -> POSIT)
*             Position to the first relocation entry
*
*
CHECKUF2 DS   OH    Check USERFELD (relocation entries)
*
*             Do the first 4 bytes contain a numeric value?
*             No: Position to next archive entry (->POSIT)
*             Do the next 8 bytes contain a possible location,
*                  i.e. are we dealing with a character string
*                  of type <alphanumeric>, possibly filled
*                  to the right with blanks?
*             No: Position to the next archive entry (->POSIT)
*             Does USERFELD contain another entry, i.e.
*                  neither end of USERFELD reached nor the
*                  next 12 bytes all blanks?
*             Yes : Position to the next relocation entry;
*                  repeat CHECKUF2
*
*
```

```
          CHECKDAT DS    0H    Check the relocation date
          *
          *             Add number from relocation entry to  CRDATE
          *             Calculated number >= current date?
          *             No: Position to next archive entry (->POSIT)
          *
          *
          MODIFY   DS    0H    Modify the archive entry
          *
                   MVC   MODVSN,ARCHIVNR               VSN from archive entry
                   MVC   MODFSEQ,FSEQ                  FSEQ from archive entry
                   MVC   MODHOMEL,USERFELD+10          Location from USERFELD
                   MVC   STMTAREA,BLANKS
                   MVC   STMTAREA,MODSTMT              Set statement area
                   @PASS EXTNAME=MAREN1PS,PAR=STMTAREA  Call MARENADM
                   @WHEN NE                           Query return code
                   CLI   RETFLAG,RETFLAGA              Everything OK?
                   @BREA                              Error exit
          *
          *
          SHIFT    DS    0H    Update USERFELD
          *
                   MVC   SAVELOC,USERFELD+6           Save relocation statements
                   MVC   USERFELD+6(48),BLANKS        Delete old contents
                   MVC   USERFELD+6(36),SAVELOC+12    Undo last relocation statement
          *                                           executed
          *
          *
          POSIT    DS    0H    Position to next archive entry
          *
                   MVC   SHOWFROM,ARCHIVNR            VSN from archive entry
                   IF    EQ
                   CLC   FSEQ,=CL4'*001'             Migrated volume?
                   @THEN
                   MVC   SHOWFRFS,=CL4'0001'
                   @ELSE
                   PACK  DOWO,FSEQ
                   AP    DOWO,=PL1'1'                Increment FSEQ by 1
                   UNPK  SHOWFRFS,DOWO+5(3)
                   OI    SHOWFRFS+3,X'F0'
                   @BEND
                   @BEND                             Run through loop again
                    .
                    .
                    .
```

```
*               Constant area
          .
          .
          .
          MARENA MF=L,LAYOUT=V8              Area for archive entry
          MARENP MF=L                        Area for MAREN parameters
           .
           .
           .
STMTAREA DS    CL80                          Area for MARENADM statement
*
SHOWSTMT DC    Y(SHOWENDE-SHOWSTMT)          Statement for reading
         DC    CL2' '
         DC    C'//SHOW-VOL-ATTR VOL=*INT(FROM='
SHOWFROM DC    CL6'*FIRST'
         DC    C',FROM-FSEQ='
SHOWFRFS DC    CL4'0001'
         DC    C')'
SHOWENDE EQU   *
*
MODSTMT  DC    Y(MODENDE-MODSTMT)            Statement for modifying
         DC    CL2' '
         DC    C'//MOD-VOL-ATTR VOL='
MODVSN   DS    CL6
         DC    C',F-SEQ='
MODFSEQ  DS    CL4
         DC    C',LOCATION=*PAR(HOME-LOC='
MODHOMEL DS    CL8
         DC    C')'
MODENDE  EQU   *
*
DOWO     DS    D
SAVELOC  DS    4*CL12                        Save area for relocation entry
BLANKS   DC    CL80' '
          :
         END
```

3.5 Enhancing performance by direct access

A special access routine has been incorporated in the MARENADM administration program with the sole purpose of enhancing performance. Normally, the MAREN catalog is not accessed directly, but indirectly via the MARENCP control program. This access routine, however, attempts to open the catalog in shared update mode.
If successful, all file accesses are performed directly. If, for whatever reason, the attempt is not successful, the message

```
%  MARM195 NO DIRECT ACCESS TO MAREN CATALOG POSSIBLE
```

is issued and all catalog accesses are directed as usual via the control task. In the former case, there are two advantages:

– The response times for the MARENADM program are shortened.

– The control task is offloaded, thus improving the performance of the entire MAREN system.

The access routine can only be activated if the following prerequisites are satisfied:

– The MAREN catalog files must be opened with SHARED-UPDATE= YES by the control task; see section "Basic structure of the MARENCP start files" on page 37. This also applies to the logging file if logging is activated.

– The BS2000 DMS file protection attributes must permit opening of the MAREN catalog. This requirement is always fulfilled as standard on an RFA central processor if the MARENADM program is called under the user ID TSOS or under the ID of the MAREN catalog and any file passwords have been specified. If the access routine is also to be effective under other IDs, special control measures are required (e.g. the catalog should be assigned the attribute USER-ACCESS=ALL-USERS and a password).

– Any module library containing computer center exit routines which was assigned in the control program start procedure must be accessible if a read exit (module name MARENEX5) or one of the two modify exits (MARENEX2 or MARENEX4) is stored there.

The access routine can also be used from an RFA subprocessor if an appropriate SET-RFA-CONNECTION command has been issued before calling MARENADM.

4 Examples of frequent MARENADM applications

4.1 Adding new volumes to the MAREN catalog

The computer center has received a delivery of 100 magnetic tape cartridges of the type TAPE-C4 and 50 magnetic tape cartridges of the type TAPE-C5. The magnetic tape cartridges of the type TAPE-C5 are for an AML archive system assigned to the location AML001.
The magnetic tape cartridges of the type TAPE-C4 are for manual operation. The new magnetic tape cartridges are labeled with the consecutive archive numbers TC4001 through TC4100 and TC5001 through TC5050 and then added to the MAREN catalog by means of the following two statements:

```
//add-free-volume *int(tc4001,tc4100),device-type=tape-c4
%  MARM108 CATALOG ENTRY TC4001/0001 ADDED TO MAREN CATALOG
...
%  MARM108 CATALOG ENTRY TC4100/0001 ADDED TO MAREN CATALOG

//add-free-volume *int(tc5001,tc45050),device-type=tape-c5,
    free-location=aml001
%  MARM108 CATALOG ENTRY TC5001/0001 ADDED TO MAREN CATALOG
...
%  MARM108 CATALOG ENTRY TC5050/0001 ADDED TO MAREN CATALOG
```

The magnetic tape cartridges have been added to the MAREN catalog. For HOME-LOCATION and FREE-LOCATION, MAREN takes the value specified in the ADD-FREE-VOLUMES statement. CENTRAL is entered initially for TEMPORARY-LOCATION for all magnetic tape cartridges. Once 50 magnetic cartridges of the type TAPE-C5 have been added to the AML archive system, ROBAR causes the storage location of the archive system (AML001) to be entered for TEMPORY-LOCATION.

4.2   Adding existing volumes to the MAREN catalog

An AML archive system contains 100 magnetic tape cartridges of the type TYPE-C5 that are used by TSOS applications on a host without a MAREN connection. The magnetic tape cartridges are labeled with the consecutive archive numbers ROB001 through ROB100. The location of the archive system is AML001. Once MAREN is available on the computer, these magnetic tape cartridges are to be entered in the MAREN catalog. They are to remain reserved for the TSOS user ID until December 31, 2007. The following ADD-RESERVED-VOLUME-statement is required for this:

```
//add-reserved-volume vol=rob001(user-id=tsos,
   prot=*par(free-date=2007-12-31),
   loc=*par(home-loc=aml001,free-loc=aml001,temp-loc=aml001),
   device-type=tape-c5)'
//add-reserved-volume vol=rob002(user-id=tsos,...
:
:
```

4.3   Working with volumes from another computer center

Three magnetic tape cartridges of the type TAPE-C5 arrive from another computer center and are to be loaded into the AML archive system with the location AML001. The contents of the magnetic tape cartridges are to be read in as DMS files under the TSOS user ID. They are entered in the MAREN catalog by means of the following statement:

```
//add-private-volume (swn050,swn051,swn052),user-id=tsos,device-type=tape-c5
```

```
//modify-volume-attributes *int(swn050,swn051,swn052),
    loc=*par(home-loc=aml001)
```

As soon as the magnetic tape cartridges are loaded into the archive system, the location AML001 is entered as TEMPORARY-LOCATION.

Once the contents of the magnetic tape cartridges have been copied to the computer center's own magnetic tape cartridges, the magnetic tape cartridges are to be sent back to the other computer center:

```
//export-volume vol=*int(swn050,swn051,swn052),exp-addr='swn-rz'
```

This statement causes the archive system to unload the magnetic tape cartridges and delete the archive entries from the MAREN catalog. The magnetic tape cartridges can be taken from the output chute and sent back.

4.4 Exchanging volumes with another computer center

Ten magnetic tape cartridges (archive numbers SWN050 through SWN059) are to be written in the SWN computer center and sent to the Mch-P computer center. The magnetic tape cartridges are at a manually operated location. As long as the magnetic tape cartridges are in the Mch-P computer center, they are to be marked as unavailable in the local MAREN catalog:

```
//export-volume vol=*int(swn050,swn059),exp-addr='rz mch-p'
```

As soon as the magnetic tape cartridges are back from the Mch-P computer center, they are to be made available again in the local MAREN catalog:

```
//import-volume vol=*int(swn050,swn059)
```

If the magnetic tape cartridges are assigned to an AML archive system, the IMPORT-VOLUME statement is executed implicitly when the magnetic tape cartridges are added to the archive system.

4.5 Setting up a location

A location is set up in two steps. The following example shows how the location AML001 is set up for an AML archive system:

```
//modify-maren-parameters location-entries=
*par(loc-name=aml001,action=*add(operating-mode=ROBAR-2))
```

In order to be able to use the magnetic tape cartridge drives of the archive system, their assignment to the location AML001 must be defined in the BS2000 device management system (NDM):

```
/add-device-depot unit=(a0,a1,a2),location=aml001
```
 (OPERATOR command)

4.6 Moving volumes to a different location

The magnetic tape cartridges ARC100 through ARC120 are in an AML archive system (the location AML001). They have been used by HSMS for long-term archiving and are to be kept in a fire-resistant archive (FIREBALL location). They are moved to the fire-resistant archive by means of the following statements:

```
//modify-volume-attributes vol=*int(arc100,arc120),
    location=*par(home-loc=fireball)
```

```
//return-volumes vol=*int(arc100,arc120),to-location=fireball
```

Once the RETURN-VOLUMES statement is executed, the magnetic tape cartridges can be taken from the input/output station of the archive system. At the operator terminal, a message that must be acknowledged is output for each magnetic tape cartridge.This message is acknowledged by ROBAR-CL after the volume has been exported. In addition, MARENADM issues the message MAR4164 to the output medium specified in the MESSAGE-DESTINATION operand

4.7 Releasing volumes and adding them to the free tape pool

If the number of free magnetic tape cartridges goes below the planned minimum number, the MAREN administrator must either obtain new magnetic tape cartridges for the computer center or release reserved magnetic tape cartridges again that have reached the release date (free date). The following example indicates the procedure for magnetic tape cartridges of the type TAPE-C5 of an AML archive system (the location AM001).

The MAREN administrator regularly checks the number of free magnetic tape cartridges:

```
//show-free-volumes vol=*all,free-loc=aml001,dev-type=tape-c5
```

If the number of free magnetic tape cartridges goes below the planned minimum number, the MAREN administrator tries to release magnetic tape cartridges:

```
//free-volumes vol=*all,init-file=aml001.init-file(init-location=aml001,user-
  id=sysoper1), home-location=aml001
```

This statement selects all magnetic tape cartridges with the attribute INIT=*YES. Because a file is specified in the INIT-FILE operand, the affected magnetic tape cartridges are assigned to a special user ID (SYSOPER1 in the example; the default is SYSMAREN) rather than being released. The magnetic tape cartridges are released in the initialization run:

```
//initialize-volumes init-file=aml001.init-file(init-location=aml001,
  user-id=sysoper1), dev-type=tape-c5
```

4.8 Concept of a data backup

The magnetic tape cartridges ROB001 to ROB100 are to be used for the data backup. The magnetic tape cartridges belong to an AML archive system (the location AML001 in the operating mode ROBAR-1). For each day of the week, a separate ARCHIVE directory named BACKUP.<day_of_the_week> is to be used, to which the magnetic tape cartridges are assigned for the day's backup. The ARCHIVE directories used must already exist in the MAREN catalog before the MAREN task starts. The magnetic tape cartridges ROB001 to ROB100 were originally assigned to the directory BACKUP.<day_of_the_week> when they were added to the MAREN catalog.
Before the daily backup is carried out with HSMS, the free magnetic tape cartridges are assigned to the ARCHIVE directory of the current day of the week (e.g. Monday) by means of the following statement:

```
//modify-volume-attributes vol=*int(rob001,rob100),select=*free(
    archive-usage=backup.sunday,new-archive-usage=backup.monday)
```

On Monday evening a differential backup is carried out using the ARCHIVE directory BACKUP.MONDAY. A full backup is carried out at the end of the week (Saturday), so HSMS sets a protection period of six days for the volumes used.

On completion of the backup, the remaining free magnetic tape cartridges are assigned to the ARCHIVE directory of the next day of the week (Tuesday):

```
//modify-volume-attributes vol=*int(rob001,rob100),select=*free(
    archive-usage=backup.monday,new-archive-usage=backup.tuesday)
```

On the next day the magnetic tape cartridges to be used for the backup are to be moved to a fire-resistant archive (the location FIREBALL):

```
//modify-volume-attributes vol=*int(rob001,rob100),select=*reserved(
    archive-usage=backup.monday),location=*par(home-loc=fireball)

//return-volumes vol=*int(rob001,rob100),
    from-location=aml001,to-location=fireball
```

When the RETURN-VOLUMES statement is entered, the magnetic tape cartridges are unloaded from the archive system and a message that must be acknowledged is output at the operator terminal for each magnetic tape cartridge. This message requests the operator to transport the magnetic tape cartridge to the fire-resistant archive FIREBALL. The operator must acknowledge receipt of the message and carry out the transport manually.

On Monday of the following week the magnetic tape cartridges are returned to the archive system again and released:

```
//modify-volume-attributes vol=*int(rob001,rob100),select=*reserved(
    archive-usage=backup.monday),location=*par(home-loc=aml001)
```

```
//return-volumes vol=*int(rob001,rob100),
    from-location=fireball,to-location=aml001
```

Corresponding transport requests are output at the operator terminal again. After the magnetic tapes are brought back from the fire-resistant archive, they are fed into the archive system again via the input/output unit. When the archive system reports the receipt of the magnetic tape cartridges, ROBAR-CL automatically updates the current location (TEMPORARY-LOCATION).

When all the magnetic tape cartridges are fed to the archive system, the MAREN administrator must first remove them from the ARCHIVE pool by means of the HSMS statement MODIFY-ARCHIVE. This HSMS statement also causes changes to be made in the MAREN catalog: the directory name is deleted from the archive entries of the affected magnetic tape cartridges (see the MODIFY-VOLUME-ATTRIBUTES statement, operand NEW-DIRECTORY-NAME=*NONE). The FREE-POOL attribute is not changed by this, and the magnetic cartridges remain reserved.
The MAREN administrator can then release the magnetic tape cartridges and, if necessary, initialize them:

```
//free-volume vol=*int(rob001,rob100),init-file=backup.monday.init
```

```
//initialize-volumes init-file=backup.monday.init
```

The magnetic tape cartridges are then assigned to the current HSMS archive:

```
//modify-volume-attributes vol=*int(rob001,rob100),select=*free(
    archive-usage=backup.sunday,new-archive-usage=backup.monday)
```

This statement adds the remaining free magnetic tape cartridges of the Sunday backup to the free tape pool of the current day. The magnetic tape cartridges of the last Monday backup that were released by means of the FREE-VOLUMES statement are still assigned to this free tape pool (since the FREE-POOL attribute has not been changed).

5 MARENEKM: managing encryption keys

The encryption key administrator uses the MARENEKM (MAREN Encryption Key Manager) administrator program as a central utility routine for managing the encryption keys which enable the hardware feature "tape encryption" of LTO-4 drives to be used in BS2000/OSD (V8.0 and higher). Encryption and decryption on the drive provides data protection at volume level and protects tape contents from being read by unauthorized persons, above all when not protected during CC and MAREN operation. Encrypted volumes which are stolen or lost while being transported, stored externally in fire protection facilities or exported are thus protected against their contents being misused.

A user with the system privilege TAPE-KEY-ADMINISTRATION is the encryption key administrator, who uses MARENEKM to manage only encryptions keys which are in his/her own domain. To manage another domain, the encryption key administrator must log in on a host which belongs to the domain in question.

MARENEKM statements which refer to encryption keys or key boxes can be issued simultaneously within the domain for one, more than one or all hosts in the domain. Ideally the key boxes can consequently have identical contents. A prerequisite for this is that all hosts in a domain belong to an MSCF cluster. If this is not the case, MARENEKM reacts as follows:

– The statement is not executed for a host which (temporarily) does not belong to the same MSCF cluster as the host on which the statement was entered. The user receives a message to this effect and must repeat the action for the host concerned.

– Hosts which do not belong to the home domain are not served.

Key boxes are permanently linked to the associated domain. It is not possible to use a key box which has been obtained without authorization in a foreign domain.

> **i** MARENEKM statements are executed only on systems with BS2000/OSD V8.0 or higher because from this version BS2000/OSD supports LTO-4 drives which offer tape encryption.
>
> Key boxes can be configured only on systems with BS2000/OSD V8.0 or higher and MAREN V12.0 or higher because volume encryption is possible only with these system configurations.

5.1 Starting and terminating

The MARENEKM program is started using the START-MARENEKM command. It can also be started using the alias MARENEKM.
The START-MARENEKM command can be issued under any ID which has been configured with the system privilege TAPE-KEY-ADMINISTRATION. The SYSMAREN system ID has this privilege. If the product SECOS is being used, any ID can be assigned the TAPE-ADMINISTRATION privilege.

START-MARENEKM   Alias: **MARENEKM**

VERSION = ***STD** / <product-version mandatory-man-corr> / <product-version mandatory-man-without-corr> /
              <product-version without-man-corr>

,**MONJV** = ***NONE** / <filename 1..54 without-gen-vers>

,**CPU-LIM**IT = ***JOB-REST** / <integer 1..32767 *seconds*>

VERSION =
The MARENEKM version selected is used.

VERSION = *STD
Before MARENADM is called, the version is set using the SELECT-PRODUCT-VERSION command (in system mode). This set version is used as the default version.

VERSION = <product-version mandatory-man-corr>
Full version identifier.

VERSION = <product-version mandatory-man-without-corr>
Version identifier excluding the correction status.

VERSION = <product-version without-man-corr>
Version identifier excluding the release status and correction status.

MONJV =
Specification of a job variable for monitoring the MARENEKM run.

MONJV = *NONE
No monitoring job variable is used.

MONJV = <filename 1..54 without-gen-vers>
Explicit specification of the job variable for monitoring the MARENEKM run.

CPU-LIMIT =
Maximum CPU time in seconds allocated for the program.

CPU-LIMIT = <u>*JOB-REST</u>
The remaining CPU time is to be used for the job.

CPU-LIMIT = <integer 1..32767 *seconds***>**
Only the specified time is to be used.

Terminating MARENEKM

MARENEKM is terminated by issuing the statement

    //END

5.2 Operating modes and error handling

MARENEKM can be run in either interactive or batch mode.

It expects to receive all statements from the system file SYSDTA. SYSDTA is assigned to the terminal during interactive operation, and to the ENTER file during batch operation.

If MARENEKM is to be invoked in a procedure, the system file SYSDTA must be assigned as follows:

```
//ASSIGN-SYSDTA TO=*SYSCMD
```

Error handling

Task switches set by MARENEKM during or at the end of procedures and batch jobs provide information on the progress of a MARENEKM process.

Task switch 30 is set when MARENEKM successfully executes a statement but also issues a warning.
A warning is issued if, for example, an attempt is made to enter an encryption key in the key box which already exists.
If a job is distributed to multiple hosts, a warning is issued if the job is executed without error on at least one of the hosts.

Task switch 31 is set if MARENEKM aborts or fails to execute a statement because of an error.
This happens, for example, if the specified key box does not exist.
If a job is distributed to multiple hosts, an error is issued if all hosts report an error.

If MARENEKM rejects a statement because of a syntax error, or if the statement is aborted or not executed due to a processing error, all subsequent statements through to the next STEP statement are skipped. If the sequence of statements contains no further STEP statement, MARENEKM triggers the following spin-off mechanism when the program is ended (END): all commands through to the next SET-JOB-STEP, EXIT-JOB, LOGOFF, CANCEL-PROCEDURE, END-PROCEDURE or EXIT-PROCEDURE statement, or to the end of the procedure or the ENTER file, are skipped.

5.3 MARENEKM statements

Overview

MARENEKM statements	Meaning
ADD-ENCRYPTION-KEY	Enters an encryption key in the key box
COPY-ENCRYPTION-KEYS	Copies encryption keys to another key box
CREATE-ENCRYPTION-KEY	Generates an encryption key and enters it in the key box
DELETE-KEY-BOX	Deletes a key box
EXPORT-KEY-BOX	Generates a transfer key box for another domain
IMPORT-KEY-BOX	Imports a transfer key box into a domain
MODIFY-VOLUME-ENCRYPTION-ATTR	Updates the encryption attributes of an encrypted volume
REMOVE-ENCRYPTION-KEYS	Removes encryption keys from the key box
REPAIR-KEY-BOX	Repairs a key box
SET-WRITE-ENCRYPTION-KEY	Defines an encryption key for encryption
SHOW-ENCRYPTION-KEYS	Displays the encryption keys of a key box
SHOW-VOLUME-ENCRYPTION-ATTR	Displays the encryption attributes of volumes

The standard SDF statements which are always available are not described (see).

ADD-ENCRYPTION-KEY
Enter an encryption key in the key box

Privilege   Encryption key administrator

The ADD-ENCRYPTION-KEY statement enters an existing encryption key which was created using CREATE-ENCRYPTION-KEY in the key boxes of the specified hosts. If the key box does not yet exist on one of the specified hosts, it is created there.

An encryption key can, for example, be entered later for the following reasons:

– The key box is to be reconstructed.
– The encryption key is missing in the key box of a host which was not accessible via MSCF at the time the key was created.

The encryption key to be entered must be specified together with the key value and key ID.

Note

Encryption keys of foreign volumes cannot be entered in the key box using ADD-ENCRYPTION-KEY. The encryption key of a foreign volume can be entered only by calling the S procedure which was created specifically for this volume when it was exported and transferred to the exporter.

Format

ADD-ENCRYPTION-**KEY**   Alias: **ADEK**

 KEY-VALUE = ***SECRET** / <c-string 32..256 with-low> / <x-string 31..256>

,**CONFIRM-KEY-VAL**UE = ***SECRET** / <c-string 32..256 with-low> / <x-string 31..256>

,**KEY-ID** = <structured-name 18..18>

,**KEY-BOX** = <u>***SYS**TEM**-KEY-BOX**</u> / <filename 1..54 without-gen-vers>

,**HOST** = ***OWN** / ***ALL** / list-poss(10): <alphanum-name 1..8>

Operands

KEY-VALUE = *SECRET / <c-string 32..256 with-low> / <x-string 31..256>
Key value which is used to encrypt/decrypt the volume.
The operand has the following special features:
– The value entered is not logged.
– In guided dialog, the entry field is automatically blanked out.
– If *SECRET or ^ is specified, in unguided dialog and in foreground procedures SDF
  provides a non-displaying entry field for concealed entry of the password.

CONFIRM-KEY-VALUE = *SECRET / <c-string 32..256 with-low> / <x-string 31..256>
The key value must be entered a second time to prevent incorrect entry (see the KEY-
VALUE operand).

KEY-ID = <structured-name 18..18>
Key ID which was assigned to the key value in CREATE-ENCRYPTION-KEY. When
required, the key ID can also be determined by specifying the key value in the SHOW-
ENCRYPTION-KEYS statement.

KEY-BOX = *SYSTEM-KEY-BOX / <filename 1..54 without-gen-vers>
Specifies the key box in which the encryption key is to be entered. If the key box does not
yet exist on any of the specified hosts, it is created there. If the key box already exists,
MAREN checks whether it belongs to the domain of the local host.

KEY-BOX = *SYSTEM-KEY-BOX
The entry is made in the key box $SYSMAREN.MAREN.KEY-BOX on the home pubset of
the specified host.

KEY-BOX = <filename 1..54 without-gen-vers>
Name of the key box. The entry is made in this key box on the specified hosts.

HOST = *OWN / *ALL / list-poss(10): <alphanum-name 1..8>
Specifies the hosts in whose key boxes the entry is to be made.

HOST = *OWN
An entry is made only in the key box of the local host.

HOST = *ALL
The entry is made in the key boxes of all hosts in the home domain which can be accessed
via MSCF.

HOST = list-poss(10): <alphanum-name 1..8>
The entry is made in the key boxes of the specified hosts. Only hosts which belong to the
home domain and can be accessed via MSCF are taken into account.

Note

MAREN creates the key ID using //CREATE-ENCRYPTION-KEY and returns it to the user.
In principal a key ID could also be created manually in accordance with the format
constraints and entered in the key box together with a key value using the ADD-
ENCRYPTION-KEY statement.
However, as the key ID must be unique across cluster boundaries, encryption keys should
be created exclusively with //CREATE-ENCRYPTION-KEY.

COPY-ENCRYPTION-KEYS
Copy encryption keys to another key box

Privilege   Encryption key administrator

The COPY-ENCRYPTION-KEYS statement copies encryption keys from the (input) key box to the (output) key box of the specified hosts. If a key box does not exist, it is created.

Either all entries in the input key box or the entries with the key IDs specified explicitly are copied. Encryption keys for foreign volumes are not copied. The "write encryption key" attribute is not transferred when copying takes place.

COPY-ENCRYPTION-KEYS enables encryption keys to be copied only within a domain. Encryption keys can be transferred to another domain using a transfer key box (see EXPORT-KEY-BOX).

Format

COPY-ENCRYPTION**-KEYS**	Alias: **CPEK**

 KEY-ID = ***ALL** / list-poss(10): <text 1..18 without-sep>

,**FROM-KEY-BOX** = <u>***SYS**TEM**-KEY-BOX**</u> / <filename 1..54 without-gen-vers>

,**FROM-HOST** = <u>***OWN**</u> / <alphanum-name 1..8>

,**TO-KEY-BOX** = ***SYS**TEM**-KEY-BO**X / <filename 1..54 without-gen-vers>

,**TO-HOST** = ***OWN** / ***ALL** / list-poss(10): <alphanum-name 1..8>

Operands

KEY-ID = *ALL / list-poss(10): <text 1..18 without-sep>
Specifies which encryption keys are to be copied from the input key box.

KEY-ID = *ALL
All entries in the input key box are copied.
As the entire key box is copied, this operand also enables a backup copy of the key box to be created. However, the following actions are required to restore the original key box from the backup copy:

– Key IDs for foreign volumes must be re-entered by means of an S procedure.
– The write encryption key must be redefined.

KEY-ID = list-poss(10): <text 1..18 without-sep>
The entries with the specified key IDs are copied from the input key box. It is permissible to use the "*" wildcard as the last character in the key ID. This permits, for example, all entries which begin with a particular key ID prefix to be selected.

FROM-KEY-BOX = <u>*SYSTEM-KEY-BOX</u> / <filename 1..54 without-gen-vers>
Specifies the input key box whose entries are to be copied. MAREN checks whether the key box specified belongs to the domain of the local host.

FROM-KEY-BOX = <u>*SYSTEM-KEY-BOX</u>
The entries are copied from the key box $SYSMAREN.MAREN.KEY-BOX on the home pubset of the host specified in FROM-HOST.

FROM-KEY-BOX = <filename 1..54 without-gen-vers>
Name of the key box. The entries are copied from the key box of the host specified in FROM-HOST

FROM-HOST = <u>*OWN</u> / <alphanum-name 1..8>
Specifies the host in the home domain from whose key box the entries are to be copied.

FROM-HOST = <u>*OWN</u>
The entries are copied from the key box of the local host.

FROM-HOST = <alphanum-name 1..8>
The entries are copied from the key box of the specified host. It must be a host from the home domain, and an MSCF connection must exist to the local host.

TO-KEY-BOX = *SYSTEM-KEY-BOX / <filename 1..54 without-gen-vers>
Specifies the key box to which the encryption keys are to be copied. If the key box does not yet exist on one of the specified hosts, it is created there. If the key box already exists, MAREN checks whether it belongs to the domain of the local host.

TO-KEY-BOX = *SYSTEM-KEY-BOX
The entries are copied to the key box $SYSMAREN.MAREN.KEY-BOX on the home pubset of the hosts specified in TO-HOST.

TO-KEY-BOX = <filename 1..54 without-gen-vers>
Name of the key box. The entries are copied to this key box on the hosts specified in TO-HOST.

TO-HOST = *OWN / *ALL / list-poss(10): <alphanum-name 1..8>
Specifies the hosts to whose key box the entries are to be copied. These must be hosts in the home domain, and an MSCF connection must exist to the local host.

TO-HOST = *OWN
The entries are copied only to the key boxes of the local host.

TO-HOST = *ALL
The entries are copied to the key boxes of all hosts in the home domain which can be accessed via MSCF.

TO-HOST = list-poss(10): <alphanum-name 1..8>
The entries are copied to the key boxes of the specified hosts. Only hosts which belong to the home domain and can be accessed via MSCF are taken into account.

CREATE-ENCRYPTION-KEY
Create an encryption key and enter it in the key box

Privilege   Encryption key administrator

The CREATE-ENCRYPTION-KEY statement creates a new encryption key and enters it in the key boxes of the specified hosts. If the key box does not yet exist on one of the specified hosts, it is created there.

When an encryption key is created, MAREN conducts a dialog with the administrator, in the course of which it displays the encryption key again and the administrator must confirm that it is stored in a safe place (see "Dialog to create the encryption key" on page 370).
This statement is consequently only permissible in interactive mode or in foreground procedures.

The newly created encryption key can be entered only in the key boxes of the hosts which belong to the home domain and which have an active MSCF connection to the local host. For each of the specified hosts MAREN logs whether or not this entry has been made. It may be necessary to specify the entry later on hosts on which the entry could not be made (using ADD-ENCRYPTION-KEY or COPY-ENCRYPTION-KEYS).

The encryption key consists of the key ID and the key value. The key value is defined by the administrator, and the key ID is generated by MAREN. The key ID, which is also stored on the volume, is used to find the appropriate key value in the key box which is required to decrypt the volume.

A key ID consists of a total of 18 characters and has the following format:

```
<prefix>-<date>-<time>
```

where:

<prefix>	4-character long prefix which is specified by the user in the PREFIX-OF-KEY-ID operand
<date>	Creation date in the format yymmdd (set by MAREN)
<time>	Creation time in the format hhmmss (set by MAREN)

Example: EKID-080912-115731

⚠ **CAUTION!**
An additional copy of the encryption key must always be stored:

● The encryption key administrator **must** make a note of the encryption key, which consists of the key ID **and** key value, and store this in a safe place (e.g. a safe).

● The encryption key must be stored for as long as volumes which are encrypted with it are used.

It is essential to store an additional copy of encryption keys in case the key box is destroyed and can also not be reconstructed from a backup. Without the encryption key, the contents of the tapes which it was used to encrypt can no longer be decrypted.

If an encryption key is also to be used as a write encryption key, this must be defined explicitly with SET-WRITE-ENCRYPTION-KEY.

Format

CRE ATE-ENC RYPTION-KEY	Alias: CREK
KEY-VAL UE = *SECRET / <c-string 32..256 with-low> / <x-string 31..256>	
,CONFIRM-KEY-VAL UE = *SECRET / <c-string 32..256 with-low> / <x-string 31..256>	
,PREFIX-OF-KEY-ID = <name 4..4>	
,KEY-BOX = *SYS TEM-KEY-BOX / <filename 1..54 without-gen-vers>	
,HOST = *OWN / *ALL / list-poss(10): <alphanum-name 1..8>	

Operands

KEY-VALUE = *SECRET / <c-string 32..256 with-low> / <x-string 31..256>
Key value which is used to encrypt/decrypt the volume. To guarantee a high level of security during encryption, the key value should be at least 32 characters long.
The operand has the following special features:
– The value entered is not logged.
– In guided dialog, the entry field is automatically blanked out.
– If *SECRET or ^ is specified, in unguided dialog and in foreground procedures SDF provides a non-displaying entry field for concealed entry of the password.

CONFIRM-KEY-VALUE = *SECRET / <c-string 32..256 with-low> / <x-string 31..256>
The key value must be entered a second time to prevent incorrect entry (see the KEY-VALUE operand).

PREFIX-OF-KEY-ID = <name 4..4>
Specifies the prefix of the key ID. The user specifies these first 4 characters of the key ID to identify the encryption keys he/she assigns. This enables the user to select his/her encryption keys in the SHOW statements, for example.
The remaining characters of the key ID are generated by MAREN.

KEY-BOX = <u>*SYSTEM-KEY-BOX</u> / <filename 1..54 without-gen-vers>
Specifies the key box in which the encryption key is to be entered. If the key box does not yet exist on one of the specified hosts, it is created there. If the key box already exists, MAREN checks whether it belongs to the domain of the local host.

KEY-BOX = <u>*SYSTEM-KEY-BOX</u>
The entry is made in the key box $SYSMAREN.MAREN.KEY-BOX on the home pubset of the specified hosts.

KEY-BOX = <filename 1..54 without-gen-vers>
Name of the key box. The entry is made in this key box on the specified hosts.

HOST = *OWN / *ALL / list-poss(10): <alphanum-name 1..8>
Specifies the hosts in whose key boxes the encryption key is to be entered.

HOST = *OWN
The encryption key is entered in the key box of the local host.

HOST = *ALL
The encryption key is entered in the key box of all hosts in the local domain which can be accessed via MSCF.

HOST = list-poss(10): <alphanum-name 1..8>
The encryption key is entered in the key boxes of the specified hosts.
Only hosts which belong to the home domain and can be accessed via MSCF are taken into account.

Dialog to create the encryption key

The greatest care must be taken when defining encryption keys. The administrator may not make any errors when typing in the key value and must store the key value and the key ID in a safe place (e.g. a safe). MAREN consequently conducts a dialog while the statement is being executed:

–   After the statement has been entered, the administrator is notified that confidential data will be output on the screen (and printer) while the statement executes. The administrator must confirm that execution should continue or abort the function.

–   MAREN logs the specified key value and the returned key ID on the screen and points out that the encryption data must be stored in a safe place. The administrator can now check the data again and, if there is an error, abort the function.

–   When the administrator has noted down the encryption data and stored it safely, he/she acknowledges the message. Only now is the encryption data saved in the key box.

> **i** The administrator must ensure that the encryption data displayed on the screen and which he/she has noted down or printed out is not accessible to unauthorized persons.

–   Finally, MAREN notifies the administrator that the newly generated encryption key can only be used for encryption purposes when it has been activated as a write encryption key by means of SET-WRITE-ENCRYPTION-KEY.

DELETE-KEY-BOX
Delete a key box

Privilege   Encryption key administrator

The DELETE-KEY-BOX statements deletes a key box on the specified hosts. The entry in the file catalog is deleted and the released memory space is overwritten with binary zeros (cf. the OPTION=*DESTROY-ALL operand of the DELETE-FILE command).

A system key box can be deleted only if the MAREN catalog contains no volumes which are encrypted with one of the key box entries. MAREN always rejects the delete request if the MAREN catalog cannot be accessed to check the key IDs. If such volumes still exist and are no longer required, they must be released in the MAREN catalog before the key box is deleted. The SHOW-ENCRYPTION-KEYS statement initially enables the encryption keys to be determined for which encrypted volumes still exist in the MAREN catalog. The volumes which were encrypted with a particular encryption key can then be displayed using the SHOW-VOLUME-ENCRYPTION-ATTR statement.

This statement can also be used to delete private key boxes and transfer key boxes (see EXPORT-KEY-BOX). However, no check is made with the MAREN catalog in this case.

Format

DELETE-**KEY-BOX**   Alias: **DLKB**
KEY-BOX = *SYSTEM-KEY-BOX / <filename 1..54 without-gen-vers> ,HOST = *OWN / *ALL / list-poss(10): <alphanum-name 1..8>

Operands

KEY-BOX = *SYSTEM-KEY-BOX / <filename 1..54 without-gen-vers>
Specifies which key box is to be deleted. MAREN checks whether the key box specified belongs to the domain of the local host.

KEY-BOX = *SYSTEM-KEY-BOX
The key box $SYSMAREN.MAREN.KEY-BOX on the home pubset of the specified hosts is deleted. Deletion is possible only if the MAREN catalog contains no volumes which were encrypted using the entries in this key box.

KEY-BOX = <filename 1..54 without-gen-vers>
Name of the key box. This key box is deleted on the specified hosts.

HOST = *OWN / *ALL / list-poss(10): <alphanum-name 1..8>
Specifies the hosts on which the key box is to be deleted.

HOST = *OWN
The key box of the local host is deleted.

HOST = *ALL
The key box is deleted on all hosts of the home domain which can be accessed via MSCF.

HOST = list-poss(10): <alphanum-name 1..8>
The key box is deleted on the specified hosts. It is deleted only on hosts which belong to the home domain and can be accessed via MSCF.

Note

A distinction must be made between the following cases if the key box's memory space cannot be overwritten:

– In interactive mode MARENEKM issues a warning and, depending on the user's reply, the delete request is rejected or the key box is only deleted logically.

– In batch mode the delete request is rejected.

EXPORT-KEY-BOX
Create a transfer key box (for another domain)

Privilege   Encryption key administrator

The EXPORT-KEY-BOX statement creates a transfer key box which is specially prepared for use in another MAREN domain. All entries in the input key box are copied to the transfer key box with the exception of the encryption keys for foreign volumes. The "write encryption key" attribute is not transferred when copying takes place. If the file name specified for the transfer key box already exists, the job is rejected.

Before the transfer key box is created, the encryption key administrators of the two domains must agree on the following details:

– Name of the host on which the key box will be imported (i.e. on which the IMPORT-KEY-BOX statement will be entered)
– Password which must be specified for the import
– Location for the transfer key box generated

As the name of the import host and the import password are stored in the transfer key box, the transfer key box can be imported only on this host and by specifying the password.

The transfer key box is a special form of key box. It is only permitted in the EXPORT- (as output file) and IMPORT-KEY-BOX (as input file) statements, and in DELETE- and REPAIR-KEY-BOX. It cannot be accessed in any other statement.

Format

EXPORT-**KEY-BOX**	Alias: **EXKB**
FROM-KEY-BOX = ***SYS**TEM-**KEY-BOX** / <filename 1..54 without-gen-vers>	
,**FROM-HOST** = ***OWN** / <alphanum-name 1..8>	
,**TRANSFER-KEY-BO**X = <filename 1..54 without-gen-vers>	
,**DEPOT-HOST** = ***OWN** / ***IMP**ORT-**PROC**ESS-**HOST**	
,**IMP**ORT-**PROC**ESS-**HOST** = <alphanum-name 1..8>	
,**IMP**ORT-**PASS**WORD = ***SECRET** / <c-string 8..16> / <x-string 15..32>	
,**CONFIRM-PASS**WORD = ***SECRET** / <c-string 8..16> / <x-string 15..32>	

Operands

FROM-KEY-BOX = *SYSTEM-KEY-BOX / <filename 1..54 without-gen-vers>
Specifies the input key box whose entries are to be exported. MAREN checks whether the key box specified belongs to the domain of the local host.

FROM-KEY-BOX = *SYSTEM-KEY-BOX
The key box $SYSMAREN.MAREN.KEY-BOX on the home pubset of the host specified in FROM-HOST is exported.

FROM-KEY-BOX = <filename 1..54 without-gen-vers>
Name of the key box. This may not already be a transfer key box. The key box is exported from the host specified in FROM-HOST.

FROM-HOST = *OWN / <alphanum-name 1..8>
Specifies the host of the home domain whose key box is to be exported.

FROM-HOST = *OWN
The key box of the local host is exported.

FROM-HOST = <alphanum-name 1..8>
The key box of the host specified is exported. It must be a host from the home domain, and an MSCF connection must exist to the local host.

TRANSFER-KEY-BOX = <filename 1..54 without-gen-vers>
File name of the transfer key box. The name of the system key box may not be specified. If the file already exists, the statement is aborted.

DEPOT-HOST = *OWN / *IMPORT-PROCESS-HOST
Host on which the transfer key box is stored. It can be stored either on the local host or on the host of the other domain on which it is to be imported.

DEPOT-HOST = *OWN
The transfer key box is stored on the local host.

DEPOT-HOST = *IMPORT-PROCESS-HOST
The transfer key box is stored on the host on which it is to be imported. The host must have an active MSCF connection to the local host.

IMPORT-PROCESS-HOST = <alphanum-name 1..8>
BCAM name of the host on which the transfer key box is to be imported. The import may only take place on this host.

IMPORT-PASSWORD = *SECRET / <c-string 8..16> / <x-string 15..32>
Password which the encryption key administrator of the other domain must specify when
importing.
The operand has the following special features:
– The value entered is not logged.
– In guided dialog, the entry field is automatically blanked out.
– If *SECRET or ^ is specified, in unguided dialog and in foreground procedures SDF
  provides a non-displaying entry field for concealed entry of the password.

CONFIRM-PASSWORD = *SECRET / <c-string 8..16> / <x-string 15..32>
The import password must be entered a second time to prevent incorrect entry (see the
IMPORT-PASSWORD operand).

Notes

A key box is always permanently assigned to the domain in the MAREN catalog for which
it was created. This assignment is implemented using a uniform domain-specific flag in the
catalog and in the key box. This assignment is checked each time the key box is accessed.

If domains are reassigned when MAREN clusters are reorganized, the domain assignment
of the key box must also be adjusted. A different domain is assigned if the a key box is
created on the host of the other domain by means of an import from the transfer key box
created boferehand (export).

The following steps are required to move a key box to another domain:

1. The tape key administrator of the original domain uses COPY-ENCRYPTION-KEY to
   create a key box containing all the encryption keys which are to be transferred to the
   target domain.

   ```
   //COPY-ENCRYPTION-KEY KEY-ID=<list_of_key-ids>,
                         TO-KEY-BOX=key-box.for-user-b
   ```

2. The tape key administrators of the original and target domains define the import host of
   the target domain and the import password.

3. The encryption key administrator of the original domain uses EXPORT-KEY-BOX to
   create the transfer key box:

   ```
   //EXPORT-KEY-BOX FROM-KEY-BOX=key-box.for-user-b, FROM-HOST=*OWN,
                    TRANSFER-KEY-BOX=transfer.key-box,
                    DEPOT-HOST=*IMPORT-PROCESS-HOST,
                    IMPORT-PASSWORD=*SECRET,CONFIRM-PASSWORD=*SECRET,
                    IMPORT-PROCESS-HOST=host2
   ```

4. The encryption key administrator of the target domain imports the transfer key box
    `TRANSFER.KEY-BOX` to his/her own domain on the specified host `HOST2`:

    ```
    //IMPORT-KEY-BOX TRANSFER-KEY-BOX=transfer.key-box,DEPOT-HOST=*OWN,
                     TO-KEY-BOX=*SYSTEM-KEY-BOX,TO-HOST=*OWN,
                     PASSWORD=*SECRET
    ```

    If the transfer data (name of the import host and the import password) matches, an
    existing key box (in this case the system key box) is extended by the entries in the
    transfer key box or a new key box with the identifier of the target domain is created. If
    the transfer data does not match, the import statement is aborted.

    After its entries have been successfully imported, the transfer key box is implicitly
    deleted.

IMPORT-KEY-BOX
Import a transfer key box into a domain

Privilege   Encryption key administrator

The IMPORT-KEY-BOX statement imports a transfer key box into a MAREN domain. The transfer key box must have been generated in the owner domain using EXPORT-KEY-BOX. The transfer key box may only be imported, i.e. the IMPORT-KEY-BOX statement is only permissible on the host which was defined as the IMPORT-PROCESS-HOST in EXPORT-KEY-BOX. The same password must also be specified in IMPORT-KEY-BOX.

Depending on which location was specified when the export took place, the transfer key box is located either on the host which executed EXPORT-KEY-BOX or on the host which may execute IMPORT-KEY-BOX.

After its entries have been successfully imported, the transfer key box is implicitly deleted.

Format

IMPORT-**KEY-BOX**	Alias: **IMKB**
TRANSFER-KEY-BOX = <filename 1..54 without-gen-vers>	
,**DEPOT-HOST** = ***OWN** / <alphanum-name 1..8>	
,**TO-KEY-BOX** = ***SYS**TEM-**KEY-BOX** / <filename 1..54 without-gen-vers>	
,**TO-HOST** = ***OWN** / <alphanum-name 1..8>	
,**PASS**WORD = ***SECRET** / <c-string 8..16> / <x-string 15..32>	

Operands

TRANSFER-KEY-BOX = <filename 1..54 without-gen-vers>
File name of the transfer key box. If the key box specified is not a transfer key box, the statement is rejected.

DEPOT-HOST = *OWN / <alphanum-name 1..8>
Host on which the transfer key box was stored during the export procedure. The transfer key box is stored either on the host which executed EXPORT-KEY-BOX or on the host which may execute IMPORT-KEY-BOX.

DEPOT-HOST = *OWN
During the export procedure, the transfer key box had already been stored on the host which may execute IMPORT-KEY-BOX, i.e. MARENEKM expects it on the local host.

DEPOT-HOST = <alphanum-name 1..8>
BCAM name of the host. If the transfer key box is not located on the local host, it can only be located on the host on which it was created. No other hosts can be specified. If the local host is not specified, the host which is specified must have an active MSCF connection to the local host.

TO-KEY-BOX = *SYSTEM-KEY-BOX / <filename 1..54 without-gen-vers>
Specifies the target key box. If the key box does not yet exist, it is created. An existing key box must belong to the domain of the local host. Only in this case is it extended by all the entries in the transfer key box.

TO-KEY-BOX = *SYSTEM-KEY-BOX
The key box $SYSMAREN.MAREN.KEY-BOX is created or extended on the home pubset of the host specified in TO-HOST.

TO-KEY-BOX = <filename 1..54 without-gen-vers>
Name of the key box. The specified key box is created or extended on the specified host.

TO-HOST = *OWN / <alphanum-name 1..8>
Specifies the host on which the target key box is created or extended.

TO-HOST = *OWN
The target key box is created or extended on the local host.

TO-HOST = <alphanum-name 1..8>
The target key box is created or extended on the specified host in the home domain. The host must have an active MSCF connection to the local host.

PASSWORD = *SECRET / <c-string 8..16> / <x-string 15..32>
Password which was defined during the export procedure.
The operand has the following special features:
– The value entered is not logged.
– In guided dialog, the entry field is automatically blanked out.
– If *SECRET or ^ is specified, in unguided dialog and in foreground procedures SDF provides a non-displaying entry field for concealed entry of the password.

MODIFY-VOLUME-ENCRYPTION-ATTR
Update the encryption attributes of an encrypted volume

Privilege   Encryption key administrator

The MODIFY-VOLUME-ENCRYPTION-ATTR statement repairs the encryption data of the encrypted volume (volume type TAPE-U4E) in the MAREN catalog.

The archive record of an encrypted volume contains the key ID of the encryption key which was used to encrypt the volume. MAREN can use the key ID to check whether any volume encrypted with a particular encryption key still exists and can then, if required, reject a request to remove the encryption key (with REMOVE-ENCRYPTION-KEYS) or to delete the key box (with DELETE-KEY-BOX). This information is also used to determine the associated volumes for a specific key ID using SHOW-VOLUME-ENCRYPTION-ATTR. In the case of SHOW-ENCRYPTION-KEYS the encryption keys for which there are still encrypted volumes are flagged.

If the key IDs in the MAREN catalog have been destroyed, the encryption key administrator can use the MODIFY-VOLUME-ENCRYPTION-ATTR statement to restore them. If a key ID is not known (e.g. from an old SHOW-VOLUME-ENCRYPTION-ATTR list), it cannot be deduced reliably (from the creation dates for write encryption keys which are also output when the SHOW-ENCRYPTION-KEYS is executed). This repair method should therefore only be used in exceptional circumstances.

Instead, encryption data should be repaired by means of a read access to the volume since MAREN updates the key ID in the catalog with the volume's original data each time an encrypted volume is accessed. This permits reliable repair without the key ID being known.

Format

MODIFY**-VOL**UME**-ENC**RYPTION**-ATTR**	Alias: **MDVEA**
VOLUME = <vsn 1..6> ,**KEY-ID** = ***UNCH**ANGED / <structured-name 18..18>	

Operands

VOLUME = <vsn 1..6>
VSN of the volume. FSEQ=1 is assumed implicitly.

KEY-ID = <u>*UNCHANGED</u> / <structured-name 18..18>
Key ID which is to be entered in the MAREN catalog for the specified volume. When the default *UNCHANGED is specified, the existing value is retained unchanged.

REMOVE-ENCRYPTION-KEYS
Remove encryption keys from the key box

Privilege   Encryption key administrator

The REMOVE-ENCRYPTION-KEYS statement removes encryption keys from the key boxes of the specified hosts. An encryption key which is used as a write encryption key cannot be removed, however. It can only be removed when a specification is changed using SET-WRITE-ENCRYPTION-KEY.

An encryption key can be removed from the system key box only when the MAREN catalog contains no volumes which were encrypted with this encryption key. MAREN always rejects the delete request if the MAREN catalog cannot be accessed to check the key ID. If such volumes still exist and are no longer required, they must be released in the MAREN catalog before the encryption key is released. The volumes which were encrypted with a particular encryption key can be displayed using the SHOW-VOLUME-ENCRYPTION-ATTR statement.

Format

REMOVE-ENCRYPTION-KEYS   Alias: RMEK
KEY-ID = <text 1..18 without-sep>
,**KEY-BOX** = <u>***SYS**TEM**-KEY-BOX**</u> / <filename 1..54 without-gen-vers>
,**HOST** = ***OWN** / ***ALL** / list-poss(10): <alphanum-name 1..8>

Operands

KEY-ID = <text 1..18 without-sep>
Key ID of the encryption key to be removed. It is permissible to use the wildcard "*" (asterisk) as the last character in the string. In this way all key IDs which begin with the specified string are flagged.
The key ID was assigned to a key value when the encryption key was created. The key ID for a key value can also be determined using the SHOW-ENCRYPTION-KEYS statement (however, multiple key IDs can exist for one key value).

KEY-BOX = <u>*SYSTEM-KEY-BOX</u> / <filename 1..54 without-gen-vers>
Determines the key box from which the encryption key is to be removed. MAREN checks whether the key box specified belongs to the domain of the local host.

KEY-BOX = <u>*SYSTEM-KEY-BOX</u>
The entry is removed from the key box $SYSMAREN.MAREN.KEY-BOX on the home pubset of the specified host. Deletion is possible only if the MAREN catalog contains no volumes which were encrypted using this encryption key.

KEY-BOX = <filename 1..54 without-gen-vers>
Name of the key box. The entry is removed from this key box on each of the hosts specified.

HOST = *OWN / *ALL / list-poss(10): <alphanum-name 1..8>
Specifies the hosts from whose key boxes the entry is to be removed.

HOST = *OWN
The entry is removed only from the key box of the local host.

HOST = *ALL
The entry is removed from the key boxes of all hosts in the home domain which can be accessed via MSCF.

HOST = list-poss(10): <alphanum-name 1..8>
The entry is removed from the key boxes of the specified hosts. Only hosts which belong to the home domain and can be accessed via MSCF are taken into account.

REPAIR-KEY-BOX
Repair a key box

Privilege   Encryption key administrator

The REPAIR-KEY-BOX statement reconstructs a key box which was not closed properly on account of a system crash or an aborted job. As with the REPAIR-DISK-FILE command, the catalog entry is updated, any lock which exists is implicitly lifted, and the file is closed.

The statement can also be used to repair transfer key boxes.

Format

REPAIR-KEY-BOX   Alias: **RPKB**
KEY-BOX = ***SYS**TEM-**KEY-BOX** / <filename 1..54 without-gen-vers>   ,**HOST** = ***OWN** / ***ALL** / list-poss(10): <alphanum-name 1..8>

Operands

KEY-BOX = *SYSTEM-KEY-BOX / <filename 1..54 without-gen-vers>
Specifies the key box which is to be repaired. MAREN checks whether the key box specified belongs to the domain of the local host.

KEY-BOX = *SYSTEM-KEY-BOX
The key box $SYSMAREN.MAREN.KEY-BOX on the home pubsets of the specified hosts is reconstructed.

KEY-BOX = <filename 1..54 without-gen-vers>
Name of the key box. This key box is reconstructed on the specified hosts.

HOST = *OWN / *ALL / list-poss(10): <alphanum-name 1..8>
Specifies the hosts whose key box is to be reconstructed.

HOST = *OWN
Only the key box of the local host is reconstructed.

HOST = *ALL
The key boxes of all hosts in the home domain which can be accessed via MSCF are reconstructed.

HOST = list-poss(10): <alphanum-name 1..8>
The key boxes of the specified hosts are reconstructed. Only key boxes on hosts which belong to the home domain and can be accessed via MSCF are reconstructed.

SET-WRITE-ENCRYPTION-KEY
Define a write encryption key

Privilege   Encryption key administrator

The SET-WRITE-ENCRYPTION-KEY statement defines which encryption key is to be used for volume encryption. This "write encryption key" is used with immediate effect on the specified hosts for encrypting the tape contents when writing. The specified encryption key must already exist, i.e. it must already have been entered (using CREATE-ENCRYPTION-KEY or ADD-ENCRYPTION-KEY) in the key boxes of the hosts which are to use it as a write encryption key.

Only one write encryption key can ever exist in a key box. When the encryption key is defined as the valid write encryption key, it is flagged as such. A previously defined write encryption key is then once more flagged as a normal entry. If no write encryption key is defined in a key box, volumes can only be decrypted on this host, not encrypted. A write encryption key can only be defined explicitly using this statement. The "write encryption key" attribute is not transferred when encryption keys are copied, exported or imported.

Specifying KEY-ID=*NONE removes the write encryption key completely from the key box without replacing it. Only when a new write encryption key is defined for the hosts concerned can volumes be encrypted on them again. Until this is the case, the key box can only be used for decryption.

Notes

The encryption key which is currently flagged as the "write encryption key" cannot be removed from the key box using REMOVE-ENCRYPTION-KEYS. This prevents the write encryption key from being deleted inadvertently.

When an encrypted volume is to be updated, PTAM supplies the encryption data from the start of the tape to MARENEKM, and MARENEKM searches for the associated encryption key in the key box. This must be contained in the key box, but it need not still be the current write encryption key.

Format

SET-WRITE-**ENC**RYPTION-**KEY**	Alias: **STWEK**
KEY-ID = ***NONE** / <structured-name 18..18>	
,**KEY-BO**X = <u>***SYS**TEM-**KEY-BOX**</u>	
,**HOST** = ***OWN** / ***ALL** / list-poss(10): <alphanum-name 1..8>	

Operands

KEY-ID = *NONE / <structured-name 18..18>
Specifies which encryption key is to be used as the write encryption key.

KEY-ID = *NONE
No encryption key is to be used as the write encryption key. The key box can only be used for decrypting until a new write encryption key has been defined.

KEY-ID = <structured-name 18..18>
Key ID of the encryption key which is to be used as the write encryption key.
The key ID was assigned to a key value when the encryption key was created. The key ID for a key value can also be determined using the SHOW-ENCRYPTION-KEYS statement (however, multiple key IDs can exist for one key value).

KEY-BOX = <u>*SYSTEM-KEY-BOX</u>
The specification is made in the key box $SYSMAREN.MAREN.KEY-BOX on the home pubset of the specified hosts. MAREN checks whether the key box specified belongs to the domain of the local host.

HOST = *OWN / *ALL / list-poss(10): <alphanum-name 1..8>
Determines the hosts in whose key boxes the specification is to be entered.

HOST = *OWN
The specification is entered only in the key box of the local host.

HOST = *ALL
The specification is entered in the key boxes of all hosts in the home domain which can be accessed via MSCF.

HOST = list-poss(10): <alphanum-name 1..8>
The specification is entered in the key boxes of the specified hosts. Only hosts which belong to the home domain and can be accessed via MSCF are taken into account.

SHOW-ENCRYPTION-KEYS
Display encryption keys of a key box

Privilege   Encryption key administrator

The SHOW-ENCRYPTION-KEYS statement displays the encryption keys from the key boxes of the specified hosts.

The following entries are available for information output:

– the entry with the write encryption key currently defined (default)
– all entries of the key box
– particular entries, specified either by means of the key value or the key ID

Each entry which is selected is output to SYSOUT together with its key ID and the associated metadata. The key values are not output. Special flags are provided for the entry for the write encryption key and entries for foreign volumes. Special flags are also provided for entries for which volumes exist in the MAREN catalog which were encrypted using the associated encryption keys.
The volumes which were encrypted using a particular encryption key can be displayed using the SHOW-VOLUME-ENCRYPTION-ATTR statement.

Format

SHOW-ENCRYPTION**-KEYS**   Alias: **SHEK**

ENCRYPTION**-KEY** = ***WR**ITE**-ENC**RYPTION**-KEY** / ***ALL** / ***BY-KEY-VAL**UE(...) / ***BY-KEY-ID**(...)
 	
    *BY-KEY-VALUE(...)
    | **KEY-VAL**UE = ***SECRET** / <c-string 32..256 with-low> / <x-string 31..256>
 	
    *BY-KEY-ID(...)
    | **KEY-ID** = <text 1..18 without-sep>
,**KEY-BOX** = ***SYS**TEM**-KEY-BOX** / <filename 1..54 without-gen-vers>
,**HOST** = ***OWN** / ***ALL** / list-poss(10): <alphanum-name 1..8>

Operands

ENCRYPTION-KEY = <u>*WRITE-ENCRYPTION-KEY</u> / *ALL / *BY-KEY-VALUE(...) / *BY-KEY-ID(...)
Specifies the encryption keys for which the entries in the key box are to be displayed.

ENCRYPTION-KEY = <u>*WRITE-ENCRYPTION-KEY</u>
Only the entry for the current write encryption key is displayed. If the key box does not contain a write encryption key, this is reported.

ENCRYPTION-KEY = *ALL
All entries in the key box are displayed.

ENCRYPTION-KEY = *BY-KEY-VALUE(...)
Only the entries for the encryption keys with the specified key value are displayed (multiple key IDs can exist for one key value).

KEY-VALUE = *SECRET / <c-string 32..256 with-low> / <x-string 31..256>
Key value which is used for encrypting/decrypting volumes.
The operand has the following special features:
– The value entered is not logged.
– In guided dialog, the entry field is automatically blanked out.
– If *SECRET or ^ is specified, in unguided dialog and in foreground procedures SDF provides a non-displaying entry field for concealed entry of the password.

ENCRYPTION-KEY = *BY-KEY-ID(...)
Only the entries for the encryption keys with the specified key ID are displayed.

KEY-ID = <text 1..18 without-sep>
Key ID which was assigned to the encryption key when it was created. It is permissible to use the wildcard "*" (asterisk) as the last character in the string. In this way all key IDs which begin with the specified string are flagged.

KEY-BOX = *SYSTEM-KEY-BOX / <filename 1..54 without-gen-vers>
Specifies the key box from which the information is to be displayed. MAREN checks whether the key box specified belongs to the domain of the local host.

KEY-BOX = *SYSTEM-KEY-BOX
The information from the key box $SYSMAREN.MAREN.KEY-BOX on the home pubsets of the specified hosts is displayed.

KEY-BOX = <filename 1..54 without-gen-vers>
Name of the key box. The information from this key box on the specified hosts is displayed.

HOST = *OWN / *ALL / list-poss(10): <alphanum-name 1..8>
Specifies the hosts from whose key boxes the information is to be displayed.

HOST = *OWN
Only the information from the key box of the local host is displayed.

HOST = *ALL
The information from the key boxes of all hosts in the home domain which can be accessed via MSCF is displayed.

HOST = list-poss(10): <alphanum-name 1..8>
The information from the key boxes of the specified hosts is displayed. Only hosts which belong to the home domain and can be accessed via MSCF are taken into account.

Output information

The following information is displayed for each selected entry in the key box:

– Key ID
– Creation date of the entry
– Date when last used for encryption
– Date when last used for decryption
– Displays whether the entry is currently used as the write encryption key (SPECIAL USAGE: WRITE)
– Displays whether the entry was created for a foreign volume (SPECIAL USAGE: PRIV)
– Displays whether volumes which were encrypted with the encryption key are entered in the catalog (USED-BY-MAREN: YES)

Detailed information on volumes which were encrypted with a specific encryption key can be requested using the SHOW-VOLUME-ENCRYTION-ATTR statement.

SHOW-VOLUME-ENCRYPTION-ATTR
Display encryption attributes of encrypted volumes

Privilege   Encryption key administrator

The SHOW-VOLUME-ENCRYPTION-ATTR statement outputs encryption data for reserved encrypted volumes (volume type TAPE-U4E) from the MAREN catalog to SYSOUT. The default value outputs the data of all encrypted volumes. Information on an individual VSN or a range of VSNs can also be requested. The set of volumes can also be restricted to a particular user ID and/or to volumes which were encrypted using a particular encryption key.

Format

SHOW-VOLUME-**ENC**RYPTION-**ATTR**   Alias: **SHVEA**
VOLUME = <u>***ALL**</u> / ***INT**ERVAL(...) / <vsn 1..6>
*INTERVAL(...)
| **FROM-VSN** = <vsn 1..6>
| ,**TO-VSN** = <vsn 1..6>
,**USER-ID**ENTIFICATION = <u>***ALL**</u> / <name 1..8>
,**KEY-ID** = <u>***ALL**</u> / <text 1..18 without-sep>

Operands

VOLUME = <u>*ALL</u> / *INTERVAL(...) / <vsn 1..6>
Volume serial numbers of volumes about which information is required. Only encrypted volumes, i.e. volumes of the volume type TAPE-U4E, are taken into account.

VOLUME = <u>*ALL</u>
Information is displayed for all encrypted volumes.

VOLUME = *INTERVAL(...)
Information is displayed for the encrypted volumes whose VSNs are contained in the range specified below. FROM-VSN must be ≤ TO-VSN here.

   FROM-VSN = <vsn 1..6>
   Lowest volume serial number in the range of the volumes to be displayed.

   TO-VSN = <vsn 1..6>
   Highest volume serial number in the range of the volumes to be displayed.

VOLUME = <vsn 1..6>
Volume serial number of the volume to be displayed.

USER-IDENTIFICATION = *ALL / <name 1..8>
Specifies whether the display is to be restricted to volumes of a particular user ID.

USER-IDENTIFICATION = *ALL
Volumes of all user IDs are displayed.

USER-IDENTIFICATION = <name 1..8>
Only volumes of the specified user ID are displayed.

KEY-ID = *ALL / <text 1..18 without-sep>
Specifies whether the display is to be restricted to volumes which were encrypted using a particular encryption key.

KEY-ID = *ALL
Volumes are displayed irrespective of the encryption key.

KEY-ID = <text 1..18 without-sep>
Key ID of the encryption key. It is permissible to use the wildcard "*" (asterisk) as the last character in the string. In this way all key IDs which begin with the specified string are flagged.
Only volumes which were encrypted using an encryption key are displayed.

Output information

The following information is displayed for each volume:

– VSN
– Key ID
– User ID for which the volume is reserved
– Release date (FREE-DATE)
– Expiration data (EXPIRATION-DATE)
– Displays whether the entry was created for a foreign volume (STATUS: PRIV)

6 Error handling

During the MAREN session, various kinds of errors may occur. The actions which the administrator and, if applicable, the ADA perform that are required for handling the most common error situations are described below.

6.1 Catalog inconsistency

Inconsistency between the MAREN catalog and the two secondary index files can occur as the result of hardware errors, a system crash, etc. The statement VERIFY-MAREN-CATALOG in the administration program MARENADM is available for restoring catalog consistency.

6.2 Computer failure in SPD mode

The breakdown of one processor only interferes with MAREN operation on other processors if the failed computer is maintaining a lock on the SPD disk. The following console message then appears at the other processors:

```
SHARABLE DISK ... PERMANENTLY LOCKED BY ANOTHER SYSTEM
```

With the following operator command, this lock can be forcibly canceled:

```
/UNLOCK-DISK VOLUME=<vsn>,...
```

6.3 Computer failure in RFA mode

For error situations in RFA mode, the consequences of a system breakdown depend on which computer has crashed:

● Remote computer failure

The crash of a processor using remote access via RFA to access the MAREN catalog is not critical for MAREN operation on the other processors, since no locks are maintained on the MAREN catalog during cross-computer data transfer.

● Catalog computer failure

The crash of a processor directly accessing the MAREN catalog requires a number of organizational measures to continue MAREN operation at the remaining systems:

– MAREN must be shut down on all systems. Currently active jobs attempting to access the MAREN catalog are all in the MAREN queue, with the exception of one. Handling of these jobs is described below.

– The MAREN catalog must be imported to a processor which is still intact. Care must be taken at system generation time to ensure that the disk device has hardware connections to more than one processor.

– Restart the MAREN system on all processors using the updated catalog ID in the ENTER files, if necessary.

6.4 Network failure in RFA mode

In the event of lengthy network failures within the network interconnecting the individual processors, e.g. when a communications processor is defective, it may become necessary to set up a separate MAREN system on each processor. This situation is made evident by a console message generated via the batch jobs in question after the defined wait time has expired. For simultaneous operation of more than one local MAREN system, the following steps must be taken:

– A copy of the MAREN catalog must to transported to each system.

– Separate pools of free tapes must be created on all systems, in order to continue to make use of automatic free tape allocation. This can also be accomplished by means of appropriate MAREN exit routines, which must, of course, have been set up in advance as a precautionary measure.

– By means of organizational measures, e.g. information via the MAREN bulletin, it must be ensured that each volume is being requested and processed by one and only one system.

– After local MAREN operations are terminated, the MARENADM statement UPDATE-MAREN-CATALOG can be used to create a fully up-to-date MAREN catalog from all logging files.

6.5 Short-term computer or network failure

If it is obvious that the failure will only last for a brief period, the actions described above should, if avoidable, not be taken since they are quite extensive; instead, wait for the end of the interruption. All tasks involving tape processing are then put in defined queues; these are described in section "Expiration of the wait time" on page 394.

6.6 Offline logging

If, for whatever reason, the MAREN catalog is not available, so-called offline logging may be activated. This means that processing does continue without the MAREN catalog, but logging records are still written. A prerequisite for this is that the control task MARENCP continues to run. Once the error has been recovered, a current MAREN catalog can be recreated using the UPDATE-MAREN-CATALOG statement. This emergency mode has the serious drawback that data security is no longer guaranteed since the MAREN subsystem can perform no checks.
Furthermore, devices assigned to a storage location by means of the ADD-DEVICE-DEPOT command can no longer be used.

Offline logging is activated by starting a MARENCP ENTER file without the link name MARENCAT (see section "Control program execution" on page 36). The administration program MARENADM can only be used in interactive mode with severe restrictions (only the statement STOP-CONTROL-PROGRAM). In batch mode, the program cannot be used at all.

6.7 Expiration of the wait time

In all of the previously mentioned error situations, all jobs in question end up in the MAREN queue, waiting for recovery of the error. A lifetime monitor is provided to avoid endless wait times, in particular in interactive mode. The consequences of this are as follows:

– Interactive tasks receive an appropriate message after the set interactive wait time, for example 3 minutes, has expired:

  – In procedure mode the request is rejected for reasons of compatibility.

  – In interactive mode the user receives a query message to which he/she can respond.

– In the case of batch tasks, console message MAR0085 appears after the set wait time, for example 30 minutes, has expired; there are three possible ways of responding to this message:

  tsn.0   EXIT (error exit)
            The current program branches via the EXLST output or the current job branches to the next STEP command.

  tsn.1   RETRY (repeated attempt)

  tsn.2   CONTINUE (continue processing without MAREN)

If the error affects a MAREN processing situation which does not permit abortion, console message MAR0086 appears, which only permits the two responses tsn.1 (RETRY) and tsn.2 (CONTINUE).
The only way to ensure that processing is not continued is to abort the batch job using the CANCEL-JOB command.
When the cause of the problem (e.g. CP was not loaded) has been corrected, the query is withdrawn within 1 minute, the request is repeated and the batch process continues to operate normally.

6.8 Crash of a user job

If a user task is terminated with an error while an output tape is being created, e.g. due to an abnormal task termination or system dump and, therefore, not via the normal CLOSE macro, this condition is made evident by the fact that the CLOSE-INDICATOR field in the archive entry is not set to "CLOSED". In this case, it is up to the user to decide what to do with the tapes affected.

6.9 Critical messages

The output of MAREN messages that are output on the console in error situations should be monitored by the system administrator (using PROP-XT procedures, for example) so that important error situations can be quickly identified and prevented and, if appropriate, specific recovery measures can be started.

Only the messages for the most important error situations are listed in the following. If the occurrence of another message that is output in a specific application case is to be monitored, the complete description of all MAREN messages can be found in chapter "Messages output by the MAREN system" on page 515ff.

You can find complete descriptions of the following messages, together with explanations and descriptions of what to do when they occur, in chapter "Messages output by the MAREN system" on page 515ff.

Messages of the MARENCP task (control program for catalog access):

MARCP06 to MARCP10   MARCP22
MARCP13   MARCP27
MARCP15   MARCP33 to MARCP39
MARCP17 to MARCP18   MARFA18

Messages of the MARENUCP task (control program for free tape assignment):

MARUP05	MARUP89
MARUP81 to MARUP84	MARUP97 to MARUP99
MARUP86	

Messages of the MAREN subsystem:

MAR0051	MAR4102
MAR0061	MAR4181
MAR0082 through MAR0087	

Part 2: MAREN for Nonprivileged Users

7 The MAREN user program

The MAREN user program assists the nonprivileged BS2000 user in the management of volumes entered in the MAREN catalog under his/her user ID. It offers the following basic functions:

– information on archive entries

– modification of archive entries

– readying of volumes for processing

– reservation of free tapes

– export or return of tapes

– generation of lists

7.1 Overview of procedures

MAREN is designed to enable nonprivileged users to manage the volumes they reserve for
their own use.
A volume can be reserved either explicitly or implicitly using the free tape allocation facility
(MARENUCP).

Users can change the attributes of their volumes in the catalog:

–   They can modify the volume expiration date to suit their requirements.

–   They can export volumes to an external system or move them to another storage
    location.

–   They can make a volume accessible to other users or protect it with a password.

The user remains the owner of the reserved volume until the defined expiration date has
been reached and systems support performs a release run for reserved volumes. Following
a release run, all volumes whose expiration date has elapsed are no longer available to the
user.

When an exported volume is returned, this is recorded by the MAREN administrator by
means of the IMPORT-VOLUME statement.

Volumes can be requested via the command or statement interface or via a user program.

The diagram on the next page shows the entire procedure from the reservation of a volume
to its release:

```
┌──────────────────────────────────────────────────────────────────────┐
│                      ┌─────────────────────────┐                       │
│         ┌ ─ ─ ─ ─ ─ ─▶     Reserve a volume     │                      │
│         ╎            └─────────────────────────┘                       │
│         ╎                 │                  │                         │
│         ╎                 ▼                  ▼                         │
│   ┌─────────────────────┐      ┌────────────────────────────────┐     │
│   │ Explicit reservation│      │ Implicit reservation via MARENUCP│    │
│   └─────────────────────┘      └────────────────────────────────┘     │
└──────────────────────────────────────────────────────────────────────┘
```

Explicit reservation	Implicit reservation via MARENUCP

Command/statement
/start-maren
//reserve-free-vol vol=v12345

Command/statement
/create-file b, support=*tape(vol=*no)
/copy-file from=a,to=b

Program interface
'reserve-free-vol vol=v12345'

Program interface (CMD):
'create-file b, support=*tape(vol=*no)'
'copy-file from=a,to=b'

Volume v12345 reserved

//show-vol-attr ...
//mod-vol-attr ...
//export-volume ...

read/write volume:
/create-file x,support=tape(v12345)

Exported to an external computer
//export-volume
   vol=v12345

Imported by the administrator
//import-volume
   vol=v12345

Expiration date elapsed?
FREE-DATE <= current date

Yes

Released by the administrator
//free-volumes ...

Free tape pool
(before reservation, reinitialized if
necessary using //init-volumes ...)

Figure 3: Procedure from reservation to release of a volume

7.2 Starting and terminating

The MAREN user program is normally started using the START-MAREN command, but it can also be called with the MAREN command.

START-MAREN   Alias: **MAREN**

VERSION = ***STD** / <product-version mandatory-man-corr> / <product-version mandatory-man-without-corr> /
            <product-version without-man-corr>

,**MONJV** = ***NONE** / <filename 1..54 without-gen-vers>

,**CPU-LIM**IT = ***JOB-REST** / <integer 1..32767 *seconds*>

VERSION =
The selected MAREN version is used.

VERSION = *STD
Before MARENADM is called, the version is set using the SELECT-PRODUCT-VERSION command (in system mode). This set version is used as the default version.

VERSION = <product-version mandatory-man-corr>
Full version identifier.

VERSION = <product-version mandatory-man-without-corr>
Version identifier excluding the correction status.

VERSION = <product-version without-man-corr>
Version identifier excluding the release status and correction status.

MONJV =
Specification of a job variable for monitoring the MAREN run.

MONJV = *NONE
A monitor job variable is not used.

MONJV = <filename 1..54 without-gen-vers>
Explicit specification of the job variable for monitoring the MAREN run.

CPU-LIMIT =
Maximum CPU time in seconds allocated for the program.

CPU-LIMIT = *JOB-REST
The remaining CPU time is to be used for the job.

CPU-LIMIT = <integer 1..32767 *seconds*>
Only the specified time is to be used.

Terminating MAREN

MAREN is terminated by issuing the statement

```
//END
```

7.3   Operating modes and error handling

MAREN can be run in either interactive or batch mode.

It expects to receive all statements via the system file SYSDTA. SYSDTA is assigned to the terminal during interactive operation, and to the ENTER file during batch operation.

If MAREN is to be invoked in a procedure, the system file SYSDTA must be assigned as follows:

```
//ASSIGN-SYSDTA TO=*SYSCMD
```

Task switches set by MAREN during or at the end of procedures and batch jobs provide information on the progress of a MAREN process.

Task switch 30 is set when MAREN successfully executes a statement but also issues a warning.
Warnings are issued, for example, if an attempt is made to delete an archive entry which does not exist in the MAREN catalog.

Task switch 31 is set if MARENADM aborts or fails to execute a statement because of an error.
This happens, for example, when an attempt is made to output an archive entry which does not exist in the MAREN catalog, or when no suitable free volume is available for reservation.

If MARENADM rejects a statement because of a syntax error, or if the statement is aborted or not executed due to a processing error, all subsequent statements through to the next STEP statement are skipped. If the sequence of statements contains no further STEP statement, MARENADM triggers the following spin-off mechanism when the program is ended (END): all commands through to the next SET-JOB-STEP, EXIT-JOB, LOGOFF, CANCEL-PROCEDURE, END-PROCEDURE or EXIT-PROCEDURE statement, or to the end of the procedure or the ENTER file are skipped.

7.4 MAREN statements

Overview

MAREN statements	Meaning
CHECK-TSOSCAT	This statement indicates discrepancies between the MAREN catalog and TSOSCAT and releases tapes reserved by older file generations.
DELETE-VOLUME-ENTRY	This statement deletes MF archive entries from the MAREN catalog.
EDIT	This statement allows an archive entry to be edited.
EXPORT-VOLUME	This statement defines volumes as having been exported from the MAREN catalog.
MODIFY-TAPE-SET-ATTRIBUTES	This statement changes the attributes of all volumes in a tape set.
MODIFY-VOLUME-ATTRIBUTES	This statement modifies the volume attributes.
MOUNT-VOLUME	This statement causes volumes to be mounted.
PRINT-VOLUME-ATTRIBUTES	This statement creates lists of archive entries for output to file or printer.
RESERVE-FREE-VOLUME	This statement reserves free volumes for a user.
RETURN-TO-PROGRAM	This statement returns you from MAREN to the loaded program.
SHOW-VOLUME-ATTRIBUTES	This statement outputs information from the MAREN catalog.
SYSTEM	This statement causes a switch to BS2000 system mode.

The standard SDF statements which are always available are not described (see section "SDF standard statements" on page 545).

CHECK-TSOSCAT
Indicate discrepancies between MAREN catalog and TSOSCAT

The CHECK-TSOSCAT statement allows any discrepancies between the file catalog (TSOSCAT) and the MAREN catalog regarding tape files to be identified and removed in the case of file generation groups.

It also releases tapes reserved by older file generations.

Format

CHECK-TSOSCAT	Alias: **CHTS**

TYPE-OF-FILES = ***ANY** (...) / ***FGG**-ONLY(...)

   *ANY(...)
       | **ATTR**IBUTES = ***FI**LE**-NAME** / list-poss(6): ***FI**LE**-NAME** / ***USER-ACCESS** / ***CRE**ATION**-DATE** /
                      *EXPIRATION**-DATE** / ***LAST-ACCESS-DATE** / ***FIRST-VOL**UME
   *FGG-ONLY(...)
       | **FREE-DATE** = ***UNCH**ANGED / ***TODAY** / ***DIALOG**

Operands

TYPE-OF-FILES =
Types of tape files to be checked.

TYPE-OF-FILES = *ANY(...)
Specifies that the catalog entries for all tape files are to be checked (see notes on page 404).

   ATTRIBUTES = *FILE-NAME / list-poss(6): *FILE-NAME / *USER-ACCESS /
   *CREATION-DATE / *EXPIRATION-DATE / *LAST-ACCESS-DATE /
   *FIRST-VOLUME
   File or volume attributes which are to be checked for discrepancies.

TYPE-OF-FILES = *FGG-ONLY(...)
Specifies that all file generation groups cataloged in TSOSCAT are to be checked to establish whether the MAREN catalog still contains entries for older generations which are no longer contained in TSOSCATE (see notes on page 405).

FREE-DATE =
Specifies whether older file generations are only to be logged or whether the relevant volumes are also to be released in the MAREN catalog.

FREE-DATE = *UNCHANGED
Older file generations are only logged.

FREE-DATE = *TODAY
Older file generations are logged and the relevant volumes are released.

FREE-DATE = *DIALOG
If an older file generation is found, the complete archive entry for the relevant volume is output. The user can then decide whether or not the volume is to be released. If required, execution of the statement can be terminated at this point. The specification *DIALOG is not permitted in batch mode.

Notes

*TYPE-OF-FILES = *ANY*

– This function merely logs any discrepancies between the entries for tape files in TSOSCAT and in the archive. It does not make any changes to the MAREN catalog. Only those attributes specified explicitly in the ATTRIBUTES operand are compared. These attributes refer to the following catalog entry fields:

Attribute	Archive entry	TSOSCAT entry
FILE-NAME	FILENM41	IDCEFNM
USER-ACCESS	SHARE	DCEDMS Bit IDCESF
CREATION-DATE	CRDATE	IDCECDT
EXPIRATION-DATE	EXDATE	IDCEEDT
LAST-ACCESS-DATE	LADATE	IDCEADT
FIRST-VOLUME	ERSTVSN	IDVTVSN

– The relevant archive entry is read for each volume contained in the TSOSCAT entries for tape files if that volume has actually been written to. If the volume does not exist in the MAREN catalog or if it is entered as a free volume, a line is output which contains the file name from TSOSCAT followed by the tape VSN and the note "NOT EXISTING" or "NOT RESERVED". In this event, the individual attributes are not compared.

    – If the volume contains the attribute USER-ACCESS = *FOREIGN-READ-ONLY in the archive entry (the volume can be accessed in read mode only from a foreign user ID), comparison of the user access attribute is suppressed since there is no corresponding value in the TSOSCAT entry.

    – No comparisons are carried out for temporary tape files.

*TYPE-OF-FILES = *FGG-ONLY*

    – If entries for file generations which no longer exist in a TSOSCAT cataloged file generation group are found in the MAREN catalog, and FREE-DATE = *UNCHANGED or *TODAY is specified, these entries are logged with the following attributes:

```
VOLUME
USER-IDENTIFICATION
FILE-NAME
CREATION-DATE
FREE-DATE
```

    If FREE-DATE = *TODAY is specified, the expiration date for the volume is replaced by the current date in the MAREN catalog. This reserves the volume for the user's own ID until the next release run.

    – If FREE-DATE = *TODAY or *DIALOG is specified, those volumes whose expiration date has already elapsed are neither output nor modified since they will be released anyway the next time the MAREN administrator carries out a release run.

    – Archive entries are not generated for temporary tape files or for volumes which are not assigned the user's own ID in the MAREN catalog.

Examples

Example 1

```
//check-tsoscat
```

```
THE FOLLOWING DIFFERENCES EXIST BETWEEN MAREN CATALOG AND TSOSCAT:
FILENAME IN TSOSCAT                                    VSN /FSEQ  IN MARENCAT
--------------------------------------------------------------------------------
:2OSG:$USER1.TAPE.FILE.2                               M5637K/0001
FILENAME IN TSOSCAT :   TAPE.FILE.2
FILENAME IN MAREN   :   TAPE.FILE.2(1)
--------------------------------------------------------------------------------
:2OSG:$USER1.TAPE.FILE.2(3)                            M5637K/0003
FILENAME IN TSOSCAT :   TAPE.FILE.2(3)
FILENAME IN MAREN   :   TAPE.FILE.2(4)
%  MARM170 STATEMENT '//CHECK-TSOSCAT' PROCESSED
```

All discrepancies between the file catalog and the MAREN catalog are output to SYSOUT.

Example 2

```
//check-tsoscat type=*fgg-only(free-date=*unch)
```

SYSOUT output:

```
//check-tsoscat type-of-files=*fgg(free-date=*unch)
```

```
THE FOLLOWING MAREN CATALOG ENTRIES HAVE NO CORRESPONDING ENTRIES IN TSOSCAT:
--------------------------------------------------------------------------------
VOLUME   USER-ID   FILE-NAME                           CR-DATE   FREE-DATE
--------------------------------------------------------------------------------
M3005K USER1    MAREN.SAMPLE(*0001)                    2006-07-30 2007-07-29
MARM170 STATEMENT '//CHECK-TSOSCAT' PROCESSED
```

A check is carried out to establish whether the MAREN catalog contains older file generations than the file generation groups in the file catalog. The names of the older file generation groups are output only to SYSOUT (FREE-DATE=*UNCHANGED).

DELETE-VOLUME-ENTRY
Delete MF archive entries from MAREN catalog

The DELETE-VOLUME-ENTRY statement is used to delete multifile archive entries from the MAREN catalog.

Format

DELETE-**VOL**UME-**ENTRY**	Alias: **DLVE**

VOLUME = <vsn>

,**FI**LE-**SEQ**UENCE = <integer 2..9999>

Operands

VOLUME = <vsn>
VSN of the volume whose multifile archive entry is to be deleted from the MAREN catalog.

FILE-SEQUENCE = <integer 2..9999>
Specifies which file sequence number of the VSN in question is to be deleted.
All archive entries with a file sequence number higher than the one specified here are deleted.

Notes

A multifile archive entry is one with a file sequence number greater than 1. Multifile archive entries are generated automatically when a multifile tape is created. However, they are not deleted automatically. To put it more clearly:

If new data is written to the third file of a multifile tape with four files, the fourth file is no longer available. The multifile archive entry with FSEQ=4 is thus invalidated, but cannot be automatically deleted. Instead, it must be removed by means of the DELETE-VOLUME-ENTRY statement.

With the release of a tape, at the very latest, all associated multifile entries are deleted.

Example

```
//del-vol-entry asr101,f-seq=2
%  MARM106 MAREN CATALOG ENTRY 'ASR101'/'0002' ERASED
%  MARM170 STATEMENT '//DELETE-VOLUME-ENTRY' PROCESSED
```

The archive entry of volume asr101 with file sequence number 2 is deleted from the MAREN catalog. Any archive entries with higher file sequence numbers are likewise deleted.

EDIT
Edit archive entry

The EDIT statement activates the guided dialog for the MODIFY-VOLUME-ATTRIBUTES statement and sets the operands to the current values from an archive entry.

After the EDIT statement has been entered in guided dialog, the system branches to the menu for the MODIFY-VOLUME-ATTRIBUTES statements. The default values for the individual statement operands in this menu are taken from the current values in the archive entry for the specified volume, and replace the default value UNCHANGED which would normally be used in this statement. This allows the user to modify the archive entry taking into consideration the current values. If the user does not wish the next statement executed to be MODIFY-VOLUME-ATTRIBUTES, he/she should press the K1 key or enter *CANCEL in the NEXT field and select any other program statement.

Since the value NO cannot be specified explicitly for the INITIALIZATION operand of the MODIFY-VOLUME-ATTRIBUTES statement, this operand has no default value. In other words, if INITIALIZATION=NO is specified, the value UNCHANGED appears in the menu.

The EDIT statement is only permitted in interactive mode. It must not be used in command files (procedure or ENTER files) in either interactive or batch mode.

If the EDIT statement is used in unguided dialog, the user is prompted for the next statement by "//" or "%STMT". Only if the user switches temporarily to guided dialog by entering "?" is the menu for the MODIFY-VOLUME-ATTRIBUTES statement output containing the current values from the archive entry for the volume.

Format

EDIT
VOLUME = <vsn> ,**FI**LE-**SEQ**UENCE = <u>1</u> / <integer 1..9999>

Operands

VOLUME = <vsn>
VSN of the volume whose archive entry is to be modified.

FILE-SEQUENCE = <u>1</u> / <integer 1..9999>
Specifies which file sequence number of the VSN in question is to be modified.

Example

```
//edit TC0022
//?
```

```
PROGRAM  : MAREN                          STATEMENT: MODIFY-VOLUME-ATTRIBUTES


────────────────────────────────────────────────────────────────────────────────
VOLUME               = TC0022(
SELECT               = *ALL
PASSWORD             =
PROTECTION           = *PARAMETERS(
DIRECTORY-NAME       = :4V09:$TSOS.HUGO
HOME-LOCATION        = CENTRAL
REMARK               = *NONE
REMARK-2             = *NONE
REMARK-3             = *NONE
USER-FIELD           = *NONE
OVERFLOW-CONTROL     = *BY-PROGRAM




────────────────────────────────────────────────────────────────────────────────
NEXT = *CONTINUE
KEYS : F1=?   F3=*EXIT   F5=*REFRESH   F6=*EXIT-ALL   F8=+   F9=REST-SDF-IN
       F11=*EXECUTE   F12=*CANCEL

MESSAGE:  CMD0175 OTHER OPERATIONS DESIRED? PRESS *EXIT KEY
```

The archive entry for the volume TC0022 is read and the current values for this entry are used as the default values for the operands of a subsequent MODIFY-VOLUME-ATTRIBUTES statement.

EXPORT-VOLUME
Define volumes as exported from MAREN catalog

The EXPORT-VOLUME statement defines computer center volumes as exported and foreign volumes as returned to the owner.

For an encrypted volume, a file is also created which contains the volume's encryption data. This file must be transferred to the foreign CC in addition to the volume (separately from the volume if possible). For details, see the notes on .

In the case of foreign volumes the entry is removed from the MAREN catalog, and in the case of encrypted volumes the associated encryption data in the key box is also deleted.

Format

EXPORT-**VOL**UME   Alias: **EXV**

VOLUME = ***BY-FILE**(...) / ***BY-DIR**ECTORY(...) / ***INT**ERVAL(...) /
               list-poss(10): <vsn> / ***BY-VOL**UME-**GR**OUP(...)

  *BY-FILE(...)
    │ **FI**LE-**NAME** = <filename 1..41 without-cat-user>

    │ ,**VERSION** = ***LATEST** / <integer -9999..0> / ***ALL**

    │ ,**USER-ID**ENTIFICATION = ***OWN** / ***ALL** / <name 1..8>

    │ ,**TYPE-OF-VOL**UMES = ***VALID** (...) / ***OBSOLETE** / ***ANY**

    │   ***VALID**(...)
    │   │ **CLOSE-CHECK** = ***Y**ES / ***NO**

  *BY-DIRECTORY(...)
    │ **DIR**ECTORY-**NAME** = <filename 1..54 without-gen-vers>

    │ ,**SAVE-FILE-ID** = ***LATEST** / <integer -32767..0> / <composed-name 15..15>

  *INTERVAL(...)
    │ **FROM** = <vsn>

    │ ,**TO** = <vsn>

    │ ,**FROM-FSEQ** = **1** / <integer 1..9999>

  *BY-**VOL**UME-**GR**OUP(...)
    │ **VOL**UME-**GR**OUP = <text 1..32 without-sep>

,**EXPORT-ADDR**ESS = <c-string 1..50> / ***BY-CAT**ALOG

,**PASS**WORD = ***NONE** / <c-string 1..4> / <x-string 1..8> / <integer -2147483648..2147483647> / ***SECRET**

,**LAYOUT** = ***STD / <file-name 1..54 without-gen-vers>**

Operands

VOLUME =
VSNs of the volumes to be exported.

VOLUME = *BY-FILE(...)
All volumes belonging to a file or a tape set are to be exported.

> **FILE-NAME = <filename 1..41 without-cat-user>**
> File name to which a tape set is to be exported.

> **VERSION =**
> This operand can be used to select a specific version (or status) of the file specified.

> **VERSION = *LATEST**
> Selects the latest version of the file (i.e. the last version created).

> **VERSION = <integer -9999..0>**
> Specifying 0 is equivalent to specifying *LATEST, specifying -1 indicates the penultimate file status, etc.

> **VERSION = *ALL**
> Selects all the volumes which exist for the specified file name.

> **USER-IDENTIFICATION =**
> This operand selects the user ID to which tapes are assigned (archive entry field USER-ID).

> **USER-IDENTIFICATION = *OWN**
> Only those volumes with the file name specified in the archive entry and which are assigned to your own ID are selected.

> **USER-IDENTIFICATION = *ALL**
> The IDs are not evaluated during selection.

> **USER-IDENTIFICATION = <name 1..8>**
> Only those VSNs which are assigned to the specified ID are selected.

> **TYPE-OF-VOLUMES =**
> This operand selects the volume sequence (archive entry field VOLUME-SEQUENCE) within a tape set. These numbers are usually unique, but some numbers may be duplicated following a restart.

TYPE-OF-VOLUMES = *<u>VALID</u>(...)
If a volume sequence occurs more than once in a tape set, the one created most
recently is selected.

> **CLOSE-CHECK =**
> This operand allows you to select whether the archive entry field CLOSE-
> INDICATOR should be evaluated.
>
> **CLOSE-CHECK = *<u>YES</u>**
> If the CLOSE-INDICATOR field is not set to CLOSED for one of the tapes in the
> selected tape set, the statement is rejected.
>
> **CLOSE-CHECK = *NO**
> The CLOSE-INDICATOR field is not evaluated.

TYPE-OF-VOLUMES = *OBSOLETE
If the same volume sequence occurs more than once in a tape set, all of them are
selected except for the one created most recently.

TYPE-OF-VOLUMES = *ANY
The VSNs of a tape set are not checked to establish if they occur more than once.

VOLUME = *BY-DIRECTORY(...)
All volumes listed in the specified ARCHIVE directory (as saved files) are exported.

> **DIRECTORY-NAME = <filename 1..54 without-gen-vers>**
> Name of the ARCHIVE directory. Only reserved volumes that are allocated to the POOL
> of the specified ARCHIVE directory are selected.
> If this directory is located under a remote user ID, both the user ID and the catalog ID
> must be entered. The user's own ID and standard catalog ID can be omitted.
>
> **SAVE-FILE-ID =**
> The tapes that are to be exported are selected using the save file of the ARCHIVE
> directory specified above.
>
> **SAVE-FILE-ID = *LATEST**
> All volumes listed in the latest, i.e. in the most recent save file are selected.
>
> **SAVE-FILE-ID = <integer -32767..0>**
> All volumes listed in the nth save file are selected (the older the save file, the larger the
> number n). 0 equals *LATEST. Example: if -5 is specified, the volumes are selected from
> the last save file but five.
>
> **SAVE-FILE-ID = <composed-name 15..15>**
> All volumes in a save file with the specified SAVE-FILE-ID are selected. The SAVE-
> FILE-ID has the following format: S.yymmdd.hhmmss.

VOLUME = *INTERVAL (...)
All volumes whose VSN falls within the specified range are exported.

FROM = <vsn>
VSN. All volumes whose VSN is greater than or equal to the specified VSN are
exported.

TO = <vsn>
VSN. All volumes whose VSN is less than or equal to the specified VSN are exported.

FROM-FSEQ = 1 / <integer 1..9999>
File sequence number of the FROM operand. Specifies the precise file sequence
number at which processing is to begin. This operand is relevant only if the statement
is issued via the program interface.

VOLUME = list-poss(10): <vsn>
VSNs of the volumes to be exported.

VOLUME = *BY-VOLUME-GROUP(...)
All volumes of the specified volume group are exported.

VOLUME-GROUP = <text 1..32 without-sep>
Specifies the volume group to which a volume must belong for it to be exported. "*" can
be entered as the last character. In this case all volume groups which begin with the
specified string are selected.

EXPORT-ADDRESS = <c-string 1..50> / *BY-CATALOG
Mailing address. Specifies the destination to which the volume is to be sent if mailed. If the
volume is to be picked up personally, any text to this effect can be specified, e.g.
"Mailbox G7" or "will be picked up by UPS".

EXPORT-ADDRESS = *BY-CATALOG
The mailing address defined in the volume's archive entry is to be used in the export
operation.

**PASSWORD = *NONE / <c-string 1..4> / <x-string 1..8> /
<integer -2147483648..2147483647> / *SECRET**
Password. The previously valid password must be specified here if the specified volume is
protected by a volume password.

PASSWORD = *NONE
No password is specified.

PASSWORD = *SECRET
Requests a blanked-out input field for the password. Entries in this field are not visible on
the screen.
This operand value can only be specified in unguided dialog. In guided dialog, the field
provided for entering passwords is always blanked out.

LAYOUT =
Specifies the layout of the export receipt.

LAYOUT = *STD
The export receipt is generated using the standard layout, provided the MAREN administrator did not set the EXPORT-RECEIPT operand to *NO in the statement MODIFY-MAREN-PARAMETERS (see page 169).

LAYOUT = <filename 1..54 without-gen-vers>
Layout file. The export receipt is created according to the definitions contained in the layout file. The file has to be created as described in section "Customized layout" on page 63. This, too, is only possible if the MAREN administrator did not set the EXPORT-RECEIPT operand to *NO in the statement MODIFY-MAREN-PARAMETERS.

Notes

–   The MAREN administrator can define whether an export receipt is to be created for every export operation (see description of the MODIFY-MAREN-PARAMETERS statement on page 159). This receipt is first written to a file and then printed (if desired). The file is saved as $userid.MAREN.EXPORT-RECEIPT.vsn, where "userid" is the user ID of the calling task. If the file already exists, it is extended. Otherwise, it is created. If immediate printing is specified in the MAREN system, the file is automatically deleted after it has been printed. If a list containing several VSNs is specified, the file is not printed until the last VSN has been processed. If a volume in a list cannot be exported, the EXPORT statement is aborted.

–   If the MAREN administrator has specified that export receipts are to be generated but not printed automatically, the computer center must decide what users are to do with the MAREN.EXPORT-RECEIPT.vsn file under their IDs.

–   Since individual computer centers can customize the layout of the export receipt according to their requirements, no example of such a receipt is given here.

–   When exporting a computer center volume, the archive entry field EXPORT-DATE is internally supplied with the current date.

–   When exporting a foreign volume, the archive entry is deleted from the MAREN catalog. Any multifile archive entries with FSEQ > 1 are likewise deleted. In the case of an encrypted volume the associated encryption data in the key box is also deleted.

–   If the MAREN catalog contains a displaced volume with the same VSN as the volume to be returned, the export process can only be carried out by the MAREN administrator.

–   Only magnetic tapes or MTCs can be exported. If you wish to export other volume types, you must contact the MAREN administrator.

– When this statement is called to export an encrypted home volume, a compiled S procedure with the volume's encryption data is created implicitly. At the same time the procedure is assigned the following standard file name: S.PRC.MAREN.ENCRYPTION.DATA.vsn.

> **i** The chargeable subsystem SDF-P is required to create the compiled S procedure.

The MAREN administrator of the foreign CC must call this procedure after the //ADD-PRIVATE-VOLUME statement has been executed and before the encrypted tape contents are read in order to enter the volume's encryption data into the key box of his/her system.

– With regard to data privacy and data protection, the following must be observed for encrypted volumes when a volume and encryption data are transferred:

As separate encryption data is generated for each volume, the tape contents can only be decrypted using the associated procedure file. To prevent the volume plus the encryption data from falling into the wrong hands, the two should be sent separately. The following procedure is recommended:

► Send the volume to the partner.

► Wait for confirmation of receipt.

► Send the encryption data (procedure file) to the partner (e.g. by means of File Transfer or by email).

– In the following cases, the statement aborts with an error message and the spin-off mechanism is triggered:

– The volume is not contained in the MAREN catalog.

– The volume is currently being processed.

– The volume in the MAREN catalog is assigned to a foreign user ID and USER-ACCESS is not set to ALL-USERS.

– The volume has already been exported.
Exception: The volume is already at the specified address.
In this case, a message to this effect is displayed and processing continues as normal.

– The operand EXPORT-ADDRESS=*BY-CATALOG has been specified, but the archive entry contains no mailing address.

– All the volumes in a tape set are to be exported and one of the selected archive entries contains the attribute FILE-SEQUENCE > 1 (i.e. the file specified is not the first on the tape in question).

– One of the volumes belonging to a tape set has been exported.

- – The volume is assigned to a storage location with the operating mode ROBAR-2, in which case it cannot be moved or exported.

- – The volumes are selected using a save file from HSMS, and at least one tape has been displaced, is being processed or has been locked by the operating system.

- – The file specified in the LAYOUT operand does not exist.

Examples

Example 1

```
//export-vol vol=id0101,exp-addr='zn hamburg, attn. mr. meier'
%  MARM134 GET VOLUME 'ID0101' FROM CENTRAL ARCHIVE
%  MARM170 STATEMENT '//EXPORT-VOLUME' PROCESSED
```

The volume id0101 is exported.

Example 2

```
//export-vol vol=*by-file(f-name=tape.out),exp-addr=*by-cat
%  MARM134 GET VOLUME 'ID0106' FROM CENTRAL ARCHIVE
%  MARM170 STATEMENT '//EXPORT-VOLUME' PROCESSED
```

All tapes used when the tape file tape.out was last created are exported. The mailing address contained in the archive entries of these volumes is to be used.

MODIFY-TAPE-SET-ATTRIBUTES
Modify attributes of all volumes in tape set

The MODIFY-TAPE-SET-ATTRIBUTES statement is used to modify the archive entries for volumes in a MAREN tape set. A tape set consists of all the tapes which belong to a tape file, or more precisely, all those archive entries which have the same FILE-NAME and FIRST-VOL values.

The default value <u>*UNCHANGED</u> in a given operand signifies that the previous declaration is applicable.

Format

MODIFY**-TAPE-SET-ATTR**IBUTES	Alias: **MDTSA**

SELECT = <u>***BY-ATTR**IBUTES</u> (...)

   *BY-ATTRIBUTES(...)

        FILE**-NAME** = \<filename 1..41 without-cat-user>

        ,**VERSION** = <u>***LATEST**</u> / \<integer -9999..0> / ***ALL** / ***NOT-CREATED**

        ,**TYPE-OF-VOL**UMES = <u>***VALID**</u>(...) / ***OBSOLETE** / ***ANY**

          *VALID(...)

            CLOSE-CHECK = <u>***NO**</u> / ***Y**ES

,**PASS**WORD = <u>***NONE**</u> / \<c-string 1..4> / \<x-string 1..8> / \<integer -2147483648..2147483647> / ***SECRET**

,**PROT**ECTION = <u>***UNCH**ANGED</u> / ***PAR**AMETERS(...)

   *PARAMETERS(...)

        NEW-PASSWORD = <u>***UNCH**ANGED</u> / ***NONE** / \<c-string 1..4> / \<x-string 1..8> /
           \<integer -2147483648..2147483647> / ***SECRET**

        ,**USER-ACCESS** = <u>***UNCH**ANGED</u> / ***OWNER-ONLY** / ***FOREIGN-READ**-ONLY / ***ALL-USERS**

        ,**FREE-DATE** = <u>***UNCH**ANGED</u> / \<date> / \<integer 0..32767 *days*>

        ,**EXPIR**ATION**-DATE** = <u>***UNCH**ANGED</u> / ***NONE** / \<date> / \<integer 0..32767 *days*>

        ,**INIT**IALIZATION = <u>***UNCH**ANGED</u> / ***Y**ES / ***ERASE**

,**HOME-LOC**ATION = <u>***UNCH**ANGED</u> / \<alphanum-name 1..8>

,**REMARK** = <u>***UNCH**ANGED</u> / ***NONE** / \<c-string 1..24>

,**REMARK-2** = <u>***UNCH**ANGED</u> / ***NONE** / \<c-string 1..10>

,**REMARK-3** = <u>***UNCH**ANGED</u> / ***NONE** / \<c-string 1..12>

,**USER-FIELD** = <u>***UNCH**ANGED</u> / ***NONE** / \<c-string 1..54>

Operands

SELECT = <u>*BY-ATTRIBUTES</u>(...)
Tape set to be selected for modification.

FILE-NAME = <filename 1..41 without-cat-user>
File name for which a tape set is to be selected.

VERSION =
This operand can be used to select a specific version (or status) of the specified file.

VERSION = <u>*LATEST</u>
Selects the latest version of the file (i.e. the last version created).

VERSION = <integer -9999..0>
Specifying 0 is equivalent to specifying *LATEST, specifying -1 denotes the penultimate file status, etc.

VERSION = *ALL
Selects all versions which exist for the specified file name.

VERSION = *NOT-CREATED
Selects only those volumes which have been reserved with the specified file name but which have not been used (i.e. the CREATION-DATE and CREATION-TIME fields in the archive entry have not been set). The TYPE-OF-VOLUMES setting is of no consequence in this case and is therefore not interpreted.

TYPE-OF-VOLUMES =
Volume sequence (archive entry field VOLUME-SEQUENCE) within a tape set. These numbers are usually unique, but some numbers may be duplicated after a restart.

If VERSION=*NOT-CREATED is specified, the TYPE-OF-VOLUMES operand is ignored.

TYPE-OF-VOLUMES = <u>*VALID</u>(...)
If a volume sequence occurs more than once in a tape set, the one created most recently is selected.

CLOSE-CHECK =
This operand allows you to select whether the archive entry field CLOSE-INDICATOR should be evaluated.

CLOSE-CHECK = <u>*NO</u>
The CLOSE-INDICATOR field is not evaluated.

CLOSE-CHECK = *YES
If the CLOSE-INDICATOR field is not set to CLOSED for one of the tapes in the tape set, the statement is aborted.

TYPE-OF-VOLUMES = *OBSOLETE
If the same volume sequence occurs more than once in a tape set, all of them are
selected except for the one created most recently.

TYPE-OF-VOLUMES = *ANY
The volume sequences for a tape set are not checked to establish whether they occur
more than once.

PASSWORD = *NONE / <c-string 1..4> / <x-string 1..8> /
<integer -2147483648..2147483647> / *SECRET
Password protecting volumes against unauthorized access. The previously valid password
is specified here. However, the password cannot be changed using this operand.

PROTECTION = *UNCHANGED / *PARAMETERS(...)
Volume protection attributes.

NEW-PASSWORD = *UNCHANGED / *NONE / <c-string 1..4> / <x-string 1..8> /
<integer -2147483648..2147483647> / *SECRET
Password protecting against unauthorized access to the volume. The password C'$$$$'
is not permitted. The password is changed using this operand.

NEW-PASSWORD = *SECRET
Requests a blanked-out input field for the password. Entries in this field are not visible
on the screen.
This operand value can only be specified in unguided dialog. In guided dialog, the field
provided for entering passwords is always blanked out.

USER-ACCESS = *UNCHANGED / *OWNER-ONLY / *FOREIGN-READ-ONLY /
***ALL-USERS**
Specifies whether foreign user IDs can access the volumes.

USER-ACCESS = *OWNER-ONLY
Access to the volume is possible only under the specified user ID.

USER-ACCESS = *FOREIGN-READ-ONLY
Read-only access to the volume is possible under a foreign user ID.

USER-ACCESS = *ALL-USERS
Unrestricted access to the volume is possible from a foreign user ID.

FREE-DATE = *UNCHANGED / <date> / <integer 0..32767 *days*>
Expiration date of the volume. Up to this date, the volume remains reserved for the given
user ID.

FREE-DATE = <date>
Date in the format yyyy-mm-dd. Dates earlier than the current date are rejected.

FREE-DATE = <integer 0..32767 *days*>
Time specification in days. The MAREN system internally adds this number to the
current date to generate the expiration date.

EXPIRATION-DATE = <u>*UNCHANGED</u> / <date> / <integer 0..32767 *days*>
File expiration date.

EXPIRATION-DATE = <date>
Date in the format yyyy-mm-dd. Dates earlier than the current date are rejected.

EXPIRATION-DATE = <integer 0..32767 *days*>
Time specification in days. The MAREN system internally adds this number to the
current date to generate the expiration date.

INITIALIZATION = <u>*UNCHANGED</u> / *YES / *ERASE
Specifies whether the volume is to be reinitialized once it reaches its expiration date.
The value NO must not be specified explicitly as this may mean that it will no longer be
possible to write to the volume after it has been released by the next user.

INITIALIZATION = *YES
The volume is to be initialized after being released. However, if data is written to this
volume before it is released, the value for INITIALIZATION will revert to NO provided the
tape was created without protection criteria.

INITIALIZATION = *ERASE
The volume should be initialized after it has been released. The tape contents should
also be erased in the process.

HOME-LOCATION = <u>*UNCHANGED</u> / <alphanum-name 1..8>
Location name or symbolic location name specifying the archive or the location where the
volume is normally to be stored.

REMARK = <u>*UNCHANGED</u> / *NONE / <c-string 1..24>
Comment text. This field is output on the screen when the MAREN statement SHOW-
VOLUME-ATTRIBUTES is issued.

REMARK-2 = <u>*UNCHANGED</u> / *NONE / <c-string 1..10>
Comment text. The contents of this field is displayed with the MAREN statement SHOW-
VOLUME-ATTRIBUTES.

REMARK-3 = <u>*UNCHANGED</u> / *NONE / <c-string 1..12>
Comment text. The contents of this field is displayed with the MAREN statement SHOW-
VOLUME-ATTRIBUTES.

USER-FIELD = <u>*UNCHANGED</u> / *NONE / <c-string 1..54>
Comment text. This field may contain any user-specific data, e.g. name, department,
telephone number, etc.

Notes

– If errors occur when determining the MAREN tape set, e.g. because only the tapes with the volume sequences 1 and 3 have been entered in the MAREN catalog for a given file version but not VSN 2, the statement is aborted. The MAREN catalog entries are not modified in any way.

– It is not possible to change the storage location for volumes of a tape set assigned to a location with the operating mode ROBAR-2. In this case, the statement is rejected.

– For information on the fields in the MAREN catalog entries which are relevant when determining a file version and thus a tape set, see the section entitled "File version in the MAREN catalog" in the MAREN manual "Volume 1: Basics of MTC Management" [1].

– When modifying volume attributes, the FSEQ-1 entry is also modified if entries with FSEQ > 1 are also part of the tape set.
The following operands are affected:

INITIALIZATION

EXPIRATION-DATE
This may modify FREE-DATE in the FSEQ-1 entry. The initialization flag would also be set when EXPIRATION-DATE is reduced.

FREE-DATE
This is reduced only if the EXPIRATION-DATE operand of all archive entries for this volume is less than or equal to the new FREE-DATE.

If the HOME-LOC, FREE-LOC, TEMP-LOC, EXPORT-ADDRESS, or EXPORT-DATE operands are modified in an entry with FSEQ > 1, MARENADM outputs warning `MARM020`.

If the FSEQ-1 entry cannot be read or modified, e.g. because the entry is still being processed, warning `MARM021` is output.

Example

```
//mod-tape-set-attr select=*by-attr(
    file-name=tape.file,version=*all,type-of-volumes=*valid),
    protection=*par(user-access=*foreign-read)
```

Read access from foreign user IDs is to be permitted for all volumes under the user's own ID to which the file tape.file has been written. All versions and thereby all tape sets of this file in the MAREN catalog are selected (VERSION=*ALL). If there are individual versions of this file with tapes to which data has been written but which were replaced by other tapes in a subsequent restart run, these tapes are not modified as TYPE-OF-VOLUMES=*VALID was specified.

MODIFY-VOLUME-ATTRIBUTES
Modify volume attributes

The MODIFY-VOLUME-ATTRIBUTES statement modifies individual fields in the archive entries of volumes.

The default value *UNCHANGED in a given operand signifies that the previous declaration is applicable.

The value *NONE signifies that the specified fields can be deleted in the archive entry.

Format

MODIFY-**VOL**UME-**ATTR**IBUTES   Alias: **MD** / **MDVA**

VOLUME = ***NONE** / <vsn>(...) / ***INT**ERVAL(...) / ***BY-INP**UT-**FILE**(...) / ***ALL**

   <vsn>(...)

          FILE-**SEQ**UENCE = **1** / <integer 1..9999>

          ,**FI**LE-**NAME** = ***UNCH**ANGED / ***NONE** / <filename 1..41 without-cat-user>

          ,**EXPIR**ATION-**DATE** = ***UNCH**ANGED / ***NONE** / <date> / <integer 0..32767 *days*>

          ,**VOL**UME-**SEQ**UENCE = ***UNCH**ANGED / <integer 1..255>

          ,**FIRST-V**OLUME = ***UNCH**ANGED / ***NONE** / <vsn>

          ,**LAST-CL**OSE-**DATE** = ***UNCH**ANGED / ***NONE** / <date>

          ,**LAST-CL**OSE-**TIME** = ***UNCH**ANGED / ***NONE** / <time>

          ,**CRE**ATION-**CATALOG-ID** = ***UNCH**ANGED / ***NONE** / <catid 1..4>

          ,**CRE**ATION-**USER-ID** = ***UNCH**ANGED / ***NONE** / <name 1..8>

          ,**CRE**ATION-**JOB-NAME** = ***UNCH**ANGED / ***NONE** / <name 1..8>

          ,**CRE**ATION-**DATE** = ***UNCH**ANGED / ***NONE** / <date>

          ,**CRE**ATION-**TIME** = ***UNCH**ANGED / ***NONE** / <time>

   *INTERVAL(...)

          FROM = ***FIRST** / <vsn>

          ,**TO** = ***LAST** / <vsn>

          ,**FROM-FSEQ** = **1** / <integer 1..9999>

   *BY-INPUT-**FILE**(...)

          FILE-**NAME** = <filename 1..54>

(part 2 of 2)

```
,SELECT = *ALL / *BY-DIRECTORY(...) / *BY-VOLUME-GROUP(...)

   *BY-DIRECTORY(...)
        │  DIRECTORY-NAME = <filename 1..54 without-gen-vers>

        │  ,SAVE-FILE-ID = *LATEST / <integer -32767..0> / <composed-name 15..15>

   *BY-VOLUME-GROUP(...)
        │  VOLUME-GROUP = *ANY / *NONE / <text 1..32 without-sep>

,PASSWORD = *NONE / *YES / <c-string 1..4> / <x-string 1..8> / <integer -2147483648..2147483647> /
 *SECRET

,PROTECTION = *UNCHANGED / *PARAMETERS(...)

   *PARAMETERS(...)
        │  NEW-PASSWORD = *UNCHANGED / *NONE / <c-string 1..4> / <x-string 1..8> /
        │       <integer -2147483648..2147483647> / *SECRET

        │  ,USER-ACCESS = *UNCHANGED / *OWNER-ONLY / *FOREIGN-READ-ONLY / *ALL-USERS

        │  ,FREE-DATE = *UNCHANGED / <date> / <integer 0..32767 days>

        │  ,EXPIRATION-DATE = *UNCHANGED / *NONE / <date> / <integer 0..32767 days>

        │  ,INITIALIZATION = *UNCHANGED / *YES / *ERASE

,DIRECTORY-NAME = *UNCHANGED / *NONE / <filename 1..54 without-gen-vers>

,VOLUME-GROUP = *UNCHANGED / *NONE / <text 1..32 without-sep>

,HOME-LOCATION = *UNCHANGED / <alphanum-name 1..8>

,REMARK = *UNCHANGED / *NONE / <c-string 1..24>

,REMARK-2 = *UNCHANGED / *NONE / <c-string 1..10>

,REMARK-3 = *UNCHANGED / *NONE / <c-string 1..12>

,USER-FIELD = *UNCHANGED / *NONE / <c-string 1..54>

,OVERFLOW-CONTROL = *BY-PROGRAM / *BY-SYSTEM
```

Operands

VOLUME =
VSNs of volumes whose archive entries in the MAREN catalog are to be modified.

VOLUME = <vsn>(...)
VSN.

FILE-SEQUENCE = 1 / <integer 1..9999>
File sequence number whose archive entry is to be modified.

FILE-NAME = <u>*UNCHANGED</u> / *NONE / <filename 1..41 without-cat-user>
Name of the file located on the volume. If a directory name is entered in the archive
entry, the specification DIR-NAME=*NONE is absolutely mandatory before a file name
can be entered.

EXPIRATION-DATE = <u>*UNCHANGED</u> / *NONE / <date> /
<integer 0..32767 *days*>
File expiration date. This is modified by the MAREN administrator using the
MARENADM statement MODIFY-VOLUME-ATTRIBUTES. Nonprivileged users can
only change the file expiration date using the RETPD operand in the ARCHIVE
statement.

EXPIRATION-DATE = <date>
Date in the format yyyy-mm-dd. Dates earlier than the current date are rejected.

EXPIRATION-DATE = <integer 0..32767 *days*>
Time specification in days. The MAREN system internally adds this number to the
current date to generate the expiration date.

VOLUME-SEQUENCE = <u>*UNCHANGED</u> / <integer 1..255>
File section number within a multivolume file (MV set).

FIRST-VOLUME = <u>*UNCHANGED</u> / *NONE / <vsn>
First VSN of a multivolume file (file set ID).

LAST-CLOSE-DATE = <u>*UNCHANGED</u> / *NONE / <date>
Date in the format yyyy-mm-dd specifying the last day on which a file on this volume
was closed.

LAST-CLOSE-TIME = <u>*UNCHANGED</u> / *NONE / <time>
Time in the format hh[:mm[:ss]], where initial zeros need not be entered for hh, mm and
ss. Specifies the time of day a file on this volume was last closed.

CREATION-CATALOG-ID = *<u>UNCHANGED</u> / *NONE / <cat-id>
Catalog ID of the pubset on which the volume was last written to.
If a directory name is entered in the archive entry, the specification DIR-NAME=
*NONE is absolutely mandatory before a catalog ID can be entered.

CREATION-USER-ID = *<u>UNCHANGED</u> / *NONE / <name 1..8>
User ID under which the volume was last written to. If a directory name is entered in the
archive entry, the specification DIR-NAME=*NONE is absolutely mandatory before a
user ID can be entered.

CREATION-JOB-NAME = <u>*UNCHANGED</u> / *NONE / <name 1..8>
Name of the last job which wrote to this volume.

CREATION-DATE = <u>*UNCHANGED</u> / *NONE / <date>
Date in the format yyyy-mm-dd specifying the day on which the volume was last written
to.

CREATION-TIME = <u>*UNCHANGED</u> / *NONE / <time>
Time in the format hh[:mm[:ss]], where initial zeros need not be entered for hh, mm and ss. Specifies the time of day at which the volume was last written to.

VOLUME = *INTERVAL(...)
All volumes whose VSN is in the range specified below are processed.

FROM = <u>*FIRST</u> / <vsn>
VSN. All volumes whose VSN is greater than or equal to the specified VSN are processed.

FROM = <u>*FIRST</u>
All volumes are processed, starting with the lowest available VSN.

TO = <u>*LAST</u> / <vsn>
VSN. All volumes whose VSN is less than or equal to the specified VSN are processed.

TO = <u>*LAST</u>
All volumes are processed up to the highest available VSN.

FROM-FSEQ = <u>1</u> / <integer 1..9999>
File sequence number of the FROM operand. Specifies the precise file sequence number at which processing is to begin. This operand is relevant only if the statement is issued via the program interface.

VOLUME = *ALL
All volumes are processed.

VOLUME = *BY-INPUT-FILE(...)
Selects the archive entries to be modified by means of an input file

FILE-NAME = <filename 1..54>
Name of a SAM file which contains full archive entries in MAREN format. Files created with file editors (e.g. EDT) can also be assigned.

Although all archive entries are read sequentially from the assigned input file, only the VSN (VOLUME) and file sequence number (FILE-SEQUENCE) of each entry are evaluated. The archive entry for the volume in question is read from the MAREN catalog and the fields specified in the MODIFY-VOLUME-ATTRIBUTES statement (e.g. REMARK) are updated.

If there is no archive entry in the MAREN for a volume contained in the input file, this fact is logged, task switch 31 is set, and processing continues with the next archive entry from the input file.

If a file which does not contain complete archive entries but was created with the aid of file editors is assigned, the records stored in this file must have the following format:

Byte	Contents
1-4	Record length field
5-10	VSN, if necessary padded with trailing blanks, e.g. 'TAPE1 '
11-14	File sequence number, e.g. '0001'
15-510	Not set or any text

Only the archive entries in the MAREN catalog are updated. The input file remains unchanged.

SELECT =
Specifies which archive entries are to be selected.

SELECT = *ALL
All archive entries identified by the VOLUME operand are processed.

SELECT = *BY-DIRECTORY (...)
All volumes of a backup run belonging to a specific ARCHIVE directory are processed. The selection may already have been limited using the VOLUME operand.

DIRECTORY-NAME = <filename 1..54 without-gen-vers>
Name of the ARCHIVE directory. Only reserved volumes that are allocated to the POOL of the specified ARCHIVE directory are selected.
If this directory is located under a remote user ID, both the user ID and the catalog ID must be entered. The user's own ID and standard catalog ID can be omitted.

SAVE-FILE-ID =
The tapes that are to be exported are selected using the save file of the ARCHIVE directory specified above.

SAVE-FILE-ID = *LATEST
All volumes listed in the latest, i.e. in the most recent save file are selected.

SAVE-FILE-ID = <integer -32767..0>
All volumes listed in the nth save file are selected (the older the save file, the larger the number n). 0 equals *LATEST. Example: if -5 is specified, the volumes are selected from the last save file but five.

SAVE-FILE-ID = <composed-name 15..15>
All volumes in a save file with the specified SAVE-FILE-ID are selected. The SAVE-FILE-ID has the following format: S.yymmdd.hhmmss.

SELECT = *BY-VOLUME-GROUP (...)
The volumes which are to be processed are also selected by specifying the volume group.

VOLUME-GROUP = *ANY / *NONE / <text 1..32 without-sep>
Defines the volume group to which a volume must belong for it to be processed. When *ANY is specified, the volume group is irrelevant; when *NONE is specified, the volume may not belong to a volume group. "*" can be entered as the last character. In this case all volume groups which begin with the specified string are selected.

PASSWORD = *NONE / <c-string 1..4> / <x-string 1..8> /
<integer -2147483648..2147483647> / *SECRET
Password protecting against unauthorized access to the volume. The previously valid password is specified here. However, the password cannot be changed using this operand.

PASSWORD = *SECRET
Requests a blanked-out input field for the password. Entries in this field are not visible on the screen.
This operand value can only be specified in unguided dialog. In guided dialog, the field provided for entering passwords is always blanked out.

PROTECTION = *UNCHANGED / *PARAMETERS(...)
Volume protection attributes.

NEW-PASSWORD = *UNCHANGED / *NONE / <c-string 1..4> / <x-string 1..8> /
<integer -2147483648..2147483647> / *SECRET
Password protecting against unauthorized access to the volume. The password C'$$$$' is not permitted. The password is changed using this operand.

NEW-PASSWORD = *UNCHANGED
Specifies that the existing volume password is not to be changed.

NEW-PASSWORD = *NONE
Specifies that the previous password is to be deleted.

NEW-PASSWORD = *SECRET
Requests a blanked-out input field for the password. Entries in this field are not visible on the screen.
This operand value can only be specified in unguided dialog. In guided dialog, the field provided for entering passwords is always blanked out.

USER-ACCESS = *UNCHANGED / *OWNER-ONLY / *FOREIGN-READ-ONLY /
***ALL-USERS**
Specifies whether foreign user IDs can access the volumes.

USER-ACCESS = *OWNER-ONLY
Access to the volume is possible only under the specified user ID.

USER-ACCESS = *FOREIGN-READ-ONLY
Read-only access to the volume is possible under a foreign user ID.

USER-ACCESS = *ALL-USERS
Unrestricted access to the volume is possible from a foreign user ID.

FREE-DATE = *UNCHANGED / <date> / <integer 0..32767 *days*>
Expiration date of the volume. Up to this date, the volume remains reserved for the given user ID.

FREE-DATE = <date>
Date in the format yyyy-mm-dd. Dates earlier than the current date are rejected.

FREE-DATE = <integer 0..32767 *days*>
Time specification in days. The MAREN system internally adds this number to the current date to generate the expiration date.

EXPIRATION-DATE =
Expiration date for all files on the volume.

EXPIRATION-DATE = *UNCHANGED
The expiration date is not updated.

EXPIRATION-DATE = *NONE
The expiration date is deleted for all selected files.

EXPIRATION-DATE = <date>
Date in the format yyyy-mm-dd. Dates earlier than the current date are rejected.

EXPIRATION-DATE = <integer 0..32767 *days*>
Time specification in days. The MAREN system internally adds this number to the current date to generate the expiration date.

INITIALIZATION = *UNCHANGED / *YES / *ERASE
Specifies whether the volume is to be reinitialized once it reaches its expiration date. The value NO must not be specified explicitly as this may mean that it will no longer be possible to write to the volume after it has been released by the next user.

INITIALIZATION = *YES
The volume is to be initialized after being released. However, if data is written to this volume before it is released, the value for INITIALIZATION will revert to NO provided the tape was created without protection criteria.

INITIALIZATION = *ERASE
Specifies whether the volume should be erased after the release date has been reached.

DIRECTORY-NAME = *UNCHANGED / *NONE / <filename 1..54 without-gen-vers>
Name of an ARCHIVE directory to which the volume is assigned. If this directory is located under a remote ID, both the user ID and the catalog ID must be specified. The user's own ID and standard catalog ID can be omitted. If the fields FILE-NAME, CRE-CATALOG-ID, and CRE-USER-ID are set in the archive entry, these must be deleted with *NONE (e.g. FILE-NAME=*NONE).

DIRECTORY-NAME = *NONE
Any directory name present is deleted.

VOLUME-GROUP = <u>*UNCHANGED</u> / *NONE / <text 1..32 without-sep>
Defines the (new) volume group to which a selected volume is assigned. When
*UNCHANGED is specified, the assignment is retained; when *NONE is specified, the affil-
iation to a volume group may be deleted.

HOME-LOCATION = <u>*UNCHANGED</u> / <alphanum-name 1..8>
Location name or symbolic location name specifying the archive or the location where the
volume is normally to be stored.

REMARK = <u>*UNCHANGED</u> / *NONE / <c-string 1..24>
Comment text. This field is output on the screen when the MAREN statement SHOW-
VOLUME-ATTRIBUTES is issued.

REMARK-2 = <u>*UNCHANGED</u> / *NONE / <c-string 1..10>
Comment text. The contents of this field is displayed with the MAREN statement SHOW-
VOLUME-ATTRIBUTES.

REMARK-3 = <u>*UNCHANGED</u> / *NONE / <c-string 1..12>
Comment text. The contents of this field is displayed with the MAREN statement SHOW-
VOLUME-ATTRIBUTES.

USER-FIELD = <u>*UNCHANGED</u> / *NONE / <c-string 1..54>
Comment text. This field may contain any user-specific data, e.g. name, department,
telephone number, etc.

OVERFLOW-CONTROL =
Type of screen overflow control in interactive mode.

OVERFLOW-CONTROL = <u>*BY-PROGRAM</u>
Control by the program: after every eighteen archive entries have been processed, a
message is displayed inquiring whether the current operation is to be continued or aborted.

OVERFLOW-CONTROL = *BY-SYSTEM
Control by the system: screen overflow control is based entirely on the system parameter
TCHOFLO or the value set in the MODIFY-TERMINAL-OPTIONS command.

Notes

–   If a number range (*INT/*ALL) is entered for the MODIFY function and several archive
    entries in the specified range cannot be modified, e.g. because the password is
    incorrect or an archive entry is currently reserved, these archive entries are logged with
    an appropriate message and the statement is continued until the end of the number
    range has been reached.

- A volume expiration date which predates the expiration date of the first volume must not be set for the subsequent volumes in an MF/MV set. The expiration date for the first volume (VOLUME-SEQUENCE = 1) must be reset if all the volumes in an MF/MV set are to be released.

- If you increment the file expiration date EXPIRATION-DATE, the volume expiration date FREE-DATE will also be incremented.

- If you decrement the file expiration date EXPIRATION-DATE, the INITIALIZATION field is set to YES.

- It is not possible to change the storage location for volumes assigned to a location with the operating mode ROBAR-2. In this case, the statement is rejected.

- The user cannot modify the directory names of computer center volumes assigned by the MAREN administrator to a directory free tape pool (FREE-POOL=<filename>). Any such attempt will be rejected with an error message.

- It is advisable to modify or delete the directory name when the directory whose pool the volume was assigned to is renamed or deleted.

- Tapes in the ARCHIVE directories are not automatically released when their expiration date is reached. They must first be removed from the directory by means of the ARCHIVE statement POOL or PURGE. If this is not possible because the directory has been deleted in the meantime, the internal MAREN allocation to a directory can subsequently be cancelled using the parameter DIRECTORY-NAME=*NONE.

- If the volumes are selected using a save file from HSMS (operand SELECT=*BY-DIRECTORY(...)), displaced archive entries will also be processed.

- Related volumes can be combined to form a volume group. All files which are located on a volume automatically belong to this volume group. When a reserved volume which is assigned to a volume group is released, the assignment to the volume group is canceled for this volume.

Examples

Example 1

```
//mod-vol-attr vol=idx005,free-date=2007-08-01,user-acc=*all
%  MARM121 MAREN CATALOG ENTRY 'TAPE01'/'0001' MODIFIED
```

The expiration date for volume idx005 is set to 1.8.2007. At the same time, the volume is declared shareable with no restrictions, i.e. foreign IDs enjoy both read and write access to the volume.

Example 2

```
//mod-vol-attr vol=tape01,pass='x2w3',new-pass=*none
%  MARM121 MAREN CATALOG ENTRY 'TAPE01'/'0001' MODIFIED
```

This statement deletes an existing password C'X2W3' for the volume tape01.

Example 3

```
//mod-vol-attr vol=(IDX006,IDX008,IY0001),remark='project1'
%  MARM121 MAREN CATALOG ENTRY 'IDX006'/'0001' MODIFIED
%  MARM121 MAREN CATALOG ENTRY 'IDX008'/'0001' MODIFIED
%  MARM121 MAREN CATALOG ENTRY 'IY0001'/'0001' MODIFIED
%  MARM120 TOTAL OF 3 MAREN CATALOG ENTRIES PROCESSED
```

This statement enters the string project1 in the remark field of the archived volumes idx006, idx008 and iy0001 belonging to the relevant user.

Example 4

All volumes whose archive entries contain the text "SAVEPROG" in the REMARK field are to be released. For this purpose, the SELECT parameter of the PRINT-VOLUME-ATTR statement (see) must be set such that the character string in the REMARK field must match "SAVEPROG". This selection criterion is already defined in the parameter set save01. Output is to be written to the file list.vol.2:

```
//print-vol-attr voL=*all,sel=*y(save01),output=list.vol.2,layout-contr=*no

%  JMS0066 JOB 'ULF' ACCEPTED ON 2006-08-08 AT 09:59, TSN = 1AV9
%  MARM170 STATEMENT '//PRINT-VOLUME-ATTRIBUTES' PROCESSED
```

The output file assigned in PRINT-VOL-ATTRIBUTES then serves as the input field for the MODIFY-VOLUME-ATTRIBUTES statement:

```
//mod-vol-attr vol=*by-input-file(f-name=list.vol.2),
    home-loc=da1200,free-loc=da1200,temp-loc=da1200

%  MARM121 MAREN CATALOG ENTRY 'IDX501'/'0001' MODIFIED
%  MARM121 MAREN CATALOG ENTRY 'IDX502'/'0001' MODIFIED
%  MARM121 MAREN CATALOG ENTRY 'IDX503'/'0001' MODIFIED
%  MARM121 MAREN CATALOG ENTRY 'IDX504'/'0001' MODIFIED
%  MARM121 MAREN CATALOG ENTRY 'IDX505'/'0001' MODIFIED
%  MARM120 TOTAL OF 5 MAREN CATALOG ENTRIES PROCESSED
```

MOUNT-VOLUME
Mount volumes

The MOUNT-VOLUME statement can be used to mount a volume which is already archived. If the volume is not yet in the user's own system, an appropriate relocation process is initiated.

Format

MOUNT-VOL·UME	Alias: **MTV**
VOLUME = list-poss(10):<vsn>	
,**PASSW**ORD = ***NONE** / <c-string 1..4> / <x-string 1..8> / <integer -2147483648..2147483647> / ***SECRET**	
,**ACCESS** = ***READ** / ***WRITE**	

Operands

VOLUME = list-poss(10): <vsn>
VSN of the volumes to be mounted.

PASSWORD = *NONE / <c-string 1..4> / <x-string 1..8> /
<integer -2147483648..2147483647> / *SECRET
Password. The previously valid password must be entered here if the specified volume is protected by a volume password.

PASSWORD = *NONE
No password is specified.

PASSWORD = *SECRET
The PASSWORD operand is defined as "secret":
– The value entered is not logged.
– In guided dialog, the entry field is automatically blanked out.
– The specification *SECRET or ^ blanks out input of the desired value in unguided dialog and in foreground procedures. SDF prompts the user to enter the "secret" value and provides a blanked-out entry field for this purpose.

ACCESS = *READ / *WRITE
Specifies whether volumes are to be mounted with or without a write-enable ring.

Notes

– In order to process a volume, an advance request via MAREN is not absolutely essential. However, advance requests can often be useful, e.g. in the following cases:

    – For volumes which are located in the central archive or in another system; these can be fetched before processing actually commences and mounted as required.

    – In cases where the operator is not certain, he/she can be told whether to mount magnetic tapes with or without a write-enable ring.

    – If the volume is within the computer center, albeit not in the local system, the operator is told where he/she can fetch it.

– Volumes located outside the computer center, e.g. in the fire-proof archive, cannot be requested. In this case, procedure is governed by the organizational regulations of the particular computer center.

– Depending on the ACCESS parameter, one of the following messages appears on the console:

```
MARM016 MAREN INFORMATION: MOUNT vsn WITH WRITERING
MARM017 MAREN INFORMATION: MOUNT vsn WITHOUT WRITERING
```

– Mount requests and error messages are not displayed for MTCs which are located in archive systems.

Examples

Example 1

```
//mount-vol vol=tapexy
```

This statement mounts the volume with the VSN tapexy.

Example 2

```
//mount-vol vol=tape01,pass=c'anna',access=*write
```

The magnetic tape tape01 is to be mounted with a write-enable ring. The volume is protected with the password C'anna, which must be specified before the request can be honored.

PRINT-VOLUME-ATTRIBUTES
Create lists of archive entries for output to file or printer

The PRINT-VOLUME-ATTRIBUTES statement is used to create lists of information for volumes from the MAREN catalog. The selection and sort criteria and also the specifications for print editing can be defined to suit individual requirements and saved. The required information is output to file (a default name is preset) in MAREN archive record format. The file can also be created in CSV format to permit spreadsheet processing. It can also be specified that an output file should be output on a printer or sent by email after it has been created.

Information on archive entries sent to SYSOUT or in S variables is provided by the SHOW-VOLUME-ATTRIBUTES statement.

Format

(part 1 of 2)

PRINT-VOLUME-**ATTR**IBUTES	Alias: **PR** / **PRVA**

VOLUME = ***ALL** / ***INT**ERVAL(...)

  *INTERVAL(...)
       FROM = ***FIRST** / <vsn>
       ,**TO** = ***LAST** / <vsn>
       ,**FROM-FSEQ** = **1** / <integer 1..9999>

,**SELECT** = ***NO** / ***Y**ES(...)

  *YES(...)
       PARAMETER-**SET** = ***STD** / <name 1..15>
       ,**PAR**AMETER-**FILE** = ***STD** / <filename 1..54>
       ,**UPD**ATE = ***NO** / ***PERM**ANENT / ***TEMP**ORARY

,**SORT** = ***NO** / ***Y**ES(...)

  *YES(...)
       PARAMETER-**SET** = ***STD** / <name 1..15>
       ,**PAR**AMETER-**FILE** = ***STD** / <filename 1..54>
       ,**UPD**ATE = ***NO** / ***PERM**ANENT / ***TEMP**ORARY

,**LAYOUT-CONTR**OL = ***Y**ES (...) / ***NO**

  *YES(...)
       PARAMETER-**SET** = ***STD** / <name 1..15>
       ,**PAR**AMETER-**FILE** = ***STD** / <filename 1..54>
       ,**UPD**ATE = ***NO** / ***PERM**ANENT(...) / ***TEMP**ORARY(...)
         *PERMANENT(...)
           UPDATE-**HEAD**ER = ***STD** / ***OLD**
         *TEMPORARY(...)
           UPDATE-**HEAD**ER = ***STD** / ***OLD**
       ,**START-PRINT** = ***Y**ES (...) / ***NO**
         *YES(...)
           SPOOLOUT-**NAME** = ***NONE** / <alphanum-name 1..8>
           ,**DELETE-FILE** = ***YES** / ***NO** / ***DESTROY**
           ,**TO-PR**INTER =***STD** / ***PR**INTER-**NAME**(...) / ***PR**INTER-**POOL**(...)
             *PRINTER-**NAME**(...)
               PRINTER-**NAME** = <alphanum-name 1..8>
             *PRINTER-**POOL**(...)
               PRINTER-**POOL** = <alphanum-name 1..8>
           ,**FORM-NAME** = ***STD**/<alphanum-name 1..8>

Continued ➟

(part 2 of 2)

```
,OUTPUT = *STD(...) / <filename 1..54> / <filename 1..54 without-gen-vers>(...)

   *STD(...)
   │       FORMAT = *MAREN-STRUCTURE / *CSV(…)
   │          *CSV(…)
   │             │      SEPARATOR = *SEMICOLON / *COMMA
   │             │     ,HEADER-LINE = *YES / *NO
   │       ,SEND-BY-MAIL = *NO / *YES(...)
   │          *YES(...)
   │             │      TO = *USER(...)
   │             │         *USER(...)
   │             │            │  USER-IDENTIFICATION = *OWN / <name 1...8>
   │             │     ,SUBJECT = *STD /<c-string 1...256>
   │             │     ,DELETE-FILE = *YES / *NO / *DESTROY
   <filename 1..54>(...)
   │       FORMAT = *MAREN-STRUCTURE / *CSV(…)
   │          *CSV(…)
   │             │      SEPARATOR = *SEMICOLON / *COMMA
   │             │     ,HEADER-LINE = *YES / *NO
   │       ,SEND-BY-MAIL = *NO / *YES(...)
   │          *YES(...)
   │             │      TO = *USER(...)
   │             │         *USER(...)
   │             │            │  USER-IDENTIFICATION = *OWN / <name 1...8>
   │             │     ,SUBJECT = *STD /<c-string 1...256>
   │             │     ,DELETE-FILE = *YES / *NO / *DESTROY
,BATCH-PROCESSING = *YES (...) / *NO

   *YES(...)
   │  CPU-LIMIT = 500 / <integer 1..32767 seconds>
```

Operands

VOLUME =
VSNs of volumes about which information is required.

VOLUME = *ALL
All VSNs are processed.

VOLUME = *INTERVAL(...)
Restricts the output of information to those VSNs which satisfy the specifications described
below.

FROM = <u>*FIRST</u> / <vsn>
VSN. All volumes whose VSN is greater than or equal to the specified VSN are
processed.

FROM = <u>*FIRST</u>
All volumes are processed, starting with the lowest available VSN.

TO = <u>*LAST</u> / <vsn>
VSN. All volumes whose VSN is less than or equal to the specified VSN are processed.

TO = <u>*LAST</u>
All volumes are processed up to the highest available VSN.

FROM-FSEQ = <u>1</u> / <integer 1..9999>
File sequence number of the FROM operand. Specifies the precise file sequence
number at which processing is to begin. This operand is relevant only if the statement
is issued via the program interface.

SELECT =
Specifies which archive entries are to be added to the list. Preselection may already have
been carried out using the VOLUME parameter.

SELECT = <u>*NO</u>
No selection criteria.

SELECT = *YES (...)

PARAMETER-SET =
Specifies the selection criteria to be used.

PARAMETER-SET = <u>*STD</u>
All records are output.

PARAMETER-SET = <name 1..15>
Name of the parameter set containing the selection criteria.

PARAMETER-FILE = <u>*STD</u> / <filename 1..54>
See Notes on page 448.

UPDATE =
Specifies whether the parameter set is to be modified before it is used.

UPDATE = <u>*NO</u>
The parameter set is not modified.

UPDATE = *PERMANENT
The parameter set is modified before use. The modified parameter set is written to the
parameter file. If the parameter set does not yet exist, it is created.

UPDATE = *TEMPORARY
*Relevant only in connection with BATCH-PROCESSING=*NO.*
The parameter set is modified before use. It is not written to the parameter file.

SORT =
Specifies whether sort criteria are to be used.

SORT = *NO
No sort criteria.

SORT = *YES(...)

PARAMETER-SET =
Specifies which sort criteria are to be used.

PARAMETER-SET = *STD
The default sort criteria are used.

PARAMETER-SET = <name 1..15>
Name of the parameter set containing the sort criteria.

PARAMETER-FILE = *STD / <filename 1..54>
See notes on .

UPDATE =
Specifies whether the parameter set is to be modified before it is used.

UPDATE = *NO
The parameter set is not modified.

UPDATE = *PERMANENT
The parameter set is modified before use. The modified parameter set is written to the parameter file. If the parameter set does not yet exist, it is created.

UPDATE = *TEMPORARY
*Relevant only in connection with BATCH-PROCESSING=*NO.*
The parameter set is modified before use. It is not written to the parameter file.

OUTPUT-FILE =
Output file.

OUTPUT-FILE = *STD
Output is written to a file with the name MAREN.PRINT.yymmdd.hhmmss, where
yyyymmdd = date and hhmmss = time.

OUTPUT-FILE = <filename 1..54>
Output is written to the specified file.

LAYOUT-CONTROL =
Specifies whether the file is to be edited for printing, which parameter files are to be used, and in what way.

LAYOUT-CONTROL = *YES(...)
The output file is to be edited for printing with printer control characters, headers, page numbers, etc.

PARAMETER-SET =
Specifies the layout to be used.

PARAMETER-SET = *STD
The default layout is to be used.

PARAMETER-SET = <name 1..15>
Name of the parameter set containing the layout.

PARAMETER-FILE = *STD / <filename 1..54>
See notes on page 448.

UPDATE =
Specifies whether the parameter set is to be modified before it is used.

UPDATE = *NO
The parameter set is not modified.

UPDATE = *PERMANENT(..)
The parameter set is modified before use. The modified parameter set is written to the parameter file. If the parameter set does not yet exist, it is created.

UPDATE-HEADER =
Specifies if the display of headers 2 and 3 is to be recalculated by MAREN or if the existing headers in the mask "Entering the layout parameters (structure of individual lines):" on page 453 are to be suggested.

UPDATE-HEADER = *STD
Headers 2 and 3 are created by MAREN.

UPDATE-HEADER = *OLD
Headers 2 and 3 are taken from an existing parameter record. If there is no parameter record, then the response is the same as when UPDATE-HEADER=*STD is used.

UPDATE = *TEMPORARY(..)
*Relevant only in connection with BATCH-PROCESSING=*NO.*
The parameter set is modified before use. It is not written to the parameter file.

UPDATE-HEADER =
Specifies if the display of headers 2 and 3 is to be recalculated by MAREN or if the existing headers in the mask "Entering the layout parameters (structure of individual lines):" on page 453 are to be suggested.

UPDATE-HEADER = *STD
Headers 2 and 3 are created by MAREN.

UPDATE-HEADER = *OLD
Headers 2 and 3 are taken from an existing parameter record. If there is no parameter record, then the response is the same as when UPDATE-HEADER=*STD is used.

START-PRINT =
Specifies whether the output file is to be printed immediately.

START-PRINT = *YES(...)
Specifies that the output file is to be automatically printed immediately.

Note

As output files in CSV format cannot be printed out, START-PRINT=*NO is assumed in this case.

SPOOLOUT-NAME = *NONE / <alphanum-name 1..8>
Job name to be assigned to the spoolout task. This name will also appear on the header page.

SPOOLOUT-NAME = *NONE
No special job name. If a job name was assigned to the job that issued the spoolout job, this name is used.

DELETE-FILE = *YES / *NO / *DESTROY
Specifies whether the output file is to be deleted after it has been printed.

Note

If this entry contradicts the DELETE-FILE operand in SEND-BY-MAIL=*YES(...), DELETE-FILE=*NO is assumed implicitly.

TO-PRINTER =
Specifies the printer used for printing.

TO-PRINTER = *STD
The printout will be output on the standard system printer.

TO-PRINTER = *PRINTER-NAME(...)
The printout will be output on a specific printer.

PRINTER-NAME = <alphanum-name 1..8>
Name of the printer used for printing.

TO-PRINTER = *PRINTER-POOL(...)
The print job is sent to a printer pool.

PRINTER-POOL = <alphanum-name 1..8>
Name of the printer pool to which the print job is sent.

FORM-NAME =
Specifies which form will be used for printing.
Standard forms must be defined for all printer types in the SPOOL parameter file.

FORM-NAME = *STD
The standard form is used for printing

FORM-NAME = <alphanum-name 1..6>
Name of the form used when printing.

START-PRINT = *NO
Specifies that the output file is not to be printed automatically.

LAYOUT-CONTROL = *NO
Specifies that the output file is not to be edited for printing, i.e. all selected archive entries
are transferred unformatted to the output file.

OUTPUT =
Determines the name of the output file and, if required, other details regarding the output
format and transfer by email.

OUTPUT = *STD(...)
Output is directed to a file with the name MAREN.PRINT.yyyymmdd.hhmmss
(where yyyymmdd = date and hhmmss = time).

FORMAT =
Determines the format of the output file.

FORMAT = *MAREN-STRUCTURE
Output takes place in MAREN archive record format.

FORMAT = *CSV(…)
*START-PRINT=*NO is always assumed for files in CSV format.*
Output takes place in CSV (comma separated value) format. Files in CSV format can
be read in so that the columns are retained, and they can be processed further with a
spreadsheet program (e.g. EXCEL).

SEPARATOR = *SEMICOLON / *COMMA
Determines the separator which is to be set between the various output values. The
default separator is a semicolon (;). Optionally a comma (,) can be used as the
separator.

HEADER-LINE = *YES / *NO
Specifies whether a header line should be output to name the output columns. The
default is *YES, i.e. the header line is output. The header line contains the field
names of the attributes (see section "Allocating the statement operands in SDF
format to archive entry fields" on page 519).

SEND-BY-MAIL = *NO / *YES(...)
Specifies whether the output file should be sent by email. The default is *NO, i.e. it is
not sent by email.

SEND-BY-MAIL = *YES(...)
The output file should be sent as an email attachment. The recipient is addressed by
means of his/her user ID, i.e. the email address is taken from the user entry concerned.
BS2000/OSD V8.0 and higher supports this function. If transfer by email is not possible
(e.g. because of a lower BS2000/OSD version or missing email address in the user
entry), the output file is only created (equivalent to SEND-BY-MAIL=*NO).

TO = *USER(...)
Details of transfer by email:

USER-IDENTIFICATION = *OWN / <name 1...8>
Specifies the user ID. The recipient's email address is taken over from this user
entry. If the user entry contains more than one email address, all the addresses
are taken over as recipients.
The default is *OWN, i.e. the caller's user ID.

SUBJECT = *STD / <c-string 1...256>
Determines the content of the email's "Subject" field.
The default is *STD, i.e. MAREN uses a standard text, such as `MAREN STATEMENT
PRINT-VOLUME-ATTRIBUTES, FILENAME: <filename>`.

DELETE-FILE = *YES / *NO / *DESTROY
Specifies whether the file should be automatically deleted after it has been sent.
*YES (default) causes the file to be deleted after it has been sent. *DESTROY also
causes it to be deleted, and the memory space is overwritten with binary zeros.

Note
If this entry contradicts the DELETE-FILE operand in START-PRINT=*YES(...),
DELETE-FILE=*NO is assumed implicitly.

OUTPUT = <filename 1..54>
Only for specifying a file generation..
Output is directed to the specified file generation in MAREN archive record format.

OUTPUT = <filename 1..54 without-gen-vers>(...)
Output is directed to the specified file.

FORMAT = *MAREN-STRUCTURE / *CSV(…)
Determines the format of the output file. The default is output in MAREN archive record
format.
Output in CSV format is described under the OUTPUT=*STD(...) operand on .

SEND-BY-MAIL = *NO / *YES(...)
Specifies whether the output file should be sent by email. The default is *NO, i.e. it is not sent by email.
Transfer by email is described under the OUTPUT=*STD(...) operand on .

BATCH-PROCESSING =
This option allows the output file to be created in a separate batch job, thus avoiding long wait times at the terminal .

BATCH-PROCESSING = *YES(...)
The output file is to be created in a batch job.

CPU-LIMIT = 500 / <integer 1..32767 *seconds*>
Maximum CPU time in seconds allocated for the batch job.

BATCH-PROCESSING = *NO
Specifies that no separate batch job is to be started.

Notes

The layout of a list and the way in which the selected archive entries are sorted are determined by specifying parameter sets. These parameter sets can be freely defined by the MAREN administrator and/or the user by means of screen masks, and can be re-used at a later date.

The layout, selection, and sort parameters are combined to form a parameter set, which is assigned a name of 6 characters in length. The parameter sets are stored as S elements in the LMS library specified in the PARAMETER-FILE operand. Querying of the table of contents, deleting or copying parameter sets, etc. can only be performed with the LMS program (see the "LMS (BS2000/OSD)" manual [17]).

In MAREN, the parameter set with the highest version number is used. A parameter set of the current version is always written. Modifications made to a parameter set of an earlier version are not saved, even when it is initially used as a template. A modified parameter set of an earlier version is therefore stored in the current version and the relevant parameter set in the earlier version remains unchanged.

In batch mode, the parameter sets are not modified before use. In interactive mode, the records can be modified temporarily (for the current printout only) or permanently (saved to a separate parameter file). The creation and modification of parameter sets are only possible if a print file is subsequently created.

For each parameter set, the user can specify the parameter file to be used for reading or writing. If no file is specified, the file MAREN.PARAMETER-FILE is used under the calling user ID. If this file is not available or does not contain the specified record, the file

$SYSMAREN.MAREN.PARAMETER-FILE is used or, if IMON is available, the file linked with the logical ID SYSPAR.PRINT. If neither of these files exist, the default parameters are used.

The file to be sent is transferred by email only if it contains at least one entry.

The following applies to the individual parameters:

– **Layout parameters**

One line (of max. 240 characters) can be output for each archive entry.
The screen mask allows the user to define which fields from the archive entry are to be used in the output line, together with the sequence and length (shorter or longer than the archive entry) in which they are to be output. The separators between columns can be freely defined.

A follow-on mask suggests a two-line header based on the selected column structure. This header can be changed as required. The line length is determined by the sum of the field lengths together with the separators. A page header can also be freely defined.

The following variables can be used in the header:

&DATE   Date of creation of the list

&TIME   Time

&PAGE   Page number

– **Select parameters**

A comparison string and a comparison operator (EQ,NE,LT,GT,LE,GE, =, <, >,<=, >=) can be defined for each field in the archive entry. Only those archive entries for which all comparison criteria are fulfilled are selected. Partially qualified comparison strings are permitted. The end of a partially qualified string is indicated by an asterisk (*). Partial qualification is not permitted for numeric fields. Leading zeros can be ignored.

Two formats are permitted for date fields:

1. Absolute date in the format "yyyy-mm-dd"
   The minimum entry is the year specification and the following hyphen.

2. Relative date of up to four digits with a positive (optional) or negative sign.
   The absolute date is calculated from the relative date and the current date when the PRINT-VOLUME-ATTRIBUTES statement is executed. The absolute date thus calculated is used for comparison.

The number of archive entries can be further restricted by means of the parameter VOLUME=*INT(...).
Fields which do not appear in the list can also be used for selection purposes.

– **Sort parameters**

The user can specify up to ten fields in the archive entry which are to be used for sorting. The sort hierarchy (if more than one sort field is specified) and sort direction ("A": ascending / "D": descending) can also be specified.
Fields which do not appear in the list can also be used for sorting purposes.

– **Default parameter sets**

A default layout parameter set is stored in the MAREN user program.

This default layout has no effect if a layout parameter set with the name STD is contained in the parameter files under the calling user ID or in the global parameter file (see notes on). This allows the computer center or user to define individual default parameters.

Examples

Example 1

```
//print-vol
%  JMS0066 JOB 'ULF2' ACCEPTED ON 2006-09-17 AT 18:08, TSN = 09N5
%  MARM170 STATEMENT '//PRINT-VOLUME-ATTRIBUTES' PROCESSED
```

If the PRINT-VOLUME-ATTRIBUTES statement is entered without any further operands,
MAREN first searches for the default parameter set for creating a print file under the calling
user ID. If the default parameter set is not available there, it searches under the ID
SYSMAREN or, if IMON is used, the file with the logical ID SYSPAR.PRINT.

If a default parameter set specific to the computer center has been defined, this layout is
used when generating the list.

If neither the caller nor the MAREN administrator has defined a default parameter set, a list
is generated using the default layout defined in MAREN. This list contains all volumes and
is sorted according to VSN.

```
A|MAREN 11.0A                                                              2006-06-17 18:08  PAGE    1|
|-----------------------------------------------------------------------------------------------------|
| VOLUME|FSEQ|DEV-TYPE|         REMARK          |U|P|ACC-|VOLUME-   |FILE/DIR-NAME (SHORTENED)    |CREATION |LAST-ACC |HOME-    |E|
|       |    |        |                         |A|W|CNT |FREEDATE  |                             |-DATE    |-DATE    |LOCATION|X|
|-----------------------------------------------------------------------------------------------------|
|       |    |        |                         | | |    |          |                             |         |         |         | |
|C0725K |   1|TAPE-C2 |SF-AUSWERTUNG V11        |A|Y|  24|2025-11-20|SYSIMPL.SDF.SYSTEM.SYNTAX.M10 |2000-04-15|2000-05-06|HALLE46  | |
|G5110K |   1|TAPE-C4 |IMON BLZ ENGL. DO17ZE17  |A|Y|  45|2025-11-20|                             |         |2001-05-12|HALLE46  | |
|G6013K |   1|TAPE-C4 |IMON BLZ DO17ZE17        |A|Y|  10|2025-11-20|                             |         |2000-12-12|HALLE46  | |
|M4696K |   1|TAPE-C4 |                         |F| |  17|2006-06-24|ARCHIVE.SAVE.FILE(990222-133704|2006-02-22|2006-05-04|ROBOTER2| |
|M5632K |   1|TAPE-C4 |                         |A| |   0|2006-06-24|:2OSG:$USER1.ULF.ARCHIVE.DIR |         |         |ROBOTER2| |
|       |    |        |                         | | |    |          |                             |         |         |         | |
|M5633K |   1|TAPE-C4 |                         |A| |   0|2006-06-24|:2OSG:$USER1.ULF.ARCHIVE.DIR |         |         |ROBOTER2| |
|M5634K |   1|TAPE-C4 |                         |A| |   0|2006-06-24|TAPE.FILE.1                  |         |         |ROBOTER2| |
|M5635K |   1|TAPE-C4 |                         |A| |   3|2006-06-24|TAPE.FILE.1                  |2006-05-04|2006-05-04|ROBOTER2| |
|M5636K |   1|TAPE-C4 |                         |A| |   0|2006-06-24|:2OSG:$USER1.ULF.ARCHIVE.DIR |         |         |ROBOTER2| |
|M5637K |   1|TAPE-C4 |                         |A| |   8|2006-06-24|TAPE.FILE.2(1)               |2006-05-04|2006-05-04|ROBOTER2| |
|       |    |        |                         | | |    |          |                             |         |         |         | |
|M5637K |   2|TAPE-C4 |                         |A| |   1|2006-06-24|TAPE.FILE.2(2)               |2006-05-04|2006-05-04|ROBOTER2| |
|M5637K |   3|TAPE-C4 |                         |A| |   3|2006-06-24|TAPE.FILE.2(4)               |2006-05-04|2006-05-04|ROBOTER2| |
|M5638K |   1|TAPE-C4 |                         |A| |   3|2006-06-24|TAPE.FILE.X(*0002)           |2006-06-17|2006-06-17|ROBOTER2| |
|M5639K |   1|TAPE-C4 |                         |A| |   1|2006-06-24|TAPE.FILE.X(*0002)           |2006-06-17|2006-06-17|ROBOTER2| |
|M5640K |   1|TAPE-C4 |                         |A| |   0|2006-06-24|TAPE.FILE.2                  |         |         |ROBOTER2| |
|       |    |        |                         | | |    |          |                             |         |         |         | |
|M5655K |   1|TAPE-C4 |                         |O| |   0|2006-06-24|TAPE.FILE.3                  |         |         |ROBOTER2| |
|-----------------------------------------------------------------------------------------------------|
| TOTAL     16 MAREN CATALOG ENTRIES FOR USERID USER1                                                 |
|-----------------------------------------------------------------------------------------------------|
|                                                                                                     |
| THIS LIST WAS CREATED BY MAREN (1100) USING FOLLOWING PARAMETERS:                                   |
|  INTERVAL : FROM=*FIRST TO=*LAST  FROM-FSEQ=0001                                                    |
|  SELECT   : N                                                                                       |
|  SORT     : N                                                                                       |
|  LAYOUT   : PARAMETER-SET =STD    UPDATE=NO                                                         |
|                  -FILE=*STD                                                                          |
|-----------------------------------------------------------------------------------------------------|
```

Example 2

A list containing all volumes whose expiration dates will fall in the next 10 days is to be generated.

The list is to be sorted in descending order according to the date each volume was last accessed, and then in ascending order according to file names.

It is to contain the following information:

```
FREE-DATE
VOLUME
FILE-NAME (30 characters long)
CREATION-DATE
LAST-ACCESS-DATE
INITIALIZATION
```

In order to ensure that the list can be generated again in the future with a minimum of effort, the information on selection, sorting, and layout is to be stored permanently in the default parameter file. The name of the parameter set should be "free10" for all three types (selection, sorting, and layout).

Statement used to create the parameter set and the first list:

```
/print-vol-attr sel=*yes(par-set=free10,update=*permanent),
    sort=*yes(par-set=free10,update=*permanent),
    layout-contr=*yes(par-set=free10,update=*permanent),batch-proc=*no
```

The following screens are displayed in the sequence shown. When the shaded values are entered, the next screen is displayed.

Entering the selection parameters:

```
SELECT-PAR-SET: FREE10           FILE:
FIELD      OP,TEXT
VOLUME      __ _____      FILE-SEQ      __ ____    DEV-TYPE    __ _____
USER-ID     __ _____    HOME-LOCATION __ _____ RESERV-DATE __ _____
ACCOUNT     __ _____    FREE-LOCATION __ _____ FREE-DATE   <= +10_____
USER-ACC    __ _____    TEMP-LOCATION __ _____ EXPIR-DATE  __ _____
PASSWORD    __ _                                     AUDIT       __ _
EXP-AD/DAT __ _____ /__ _____
REMARK      __ _____ 2 __ _____ 3 __ _____
USER-FIELD  __ _____
FILE-NAME   __ _____
FREE-POOL   __ _____
SAVE-FILE   __ _____ SUB-SV/SQ__ __/__ ___  JOB/REQ-NAM __ _____
VOL-GROUP   __ _____            L-A-DATE    __ _____
VOL-SEQ     __ ____      CR-DATE      __ _____   L-A-TIME    __ _____
FIRST-VOL   __ _____    CR-TIME      __ _____     L-A-USER-ID __ _____
DEV-NAME    __ ____      LA-CL-DATE   __ _____   L-A-ACCOUNT __ _____
OPEN-MODE   __ __        LA-CL-TIME   __ _____     L-A-JOB-NAM __ _____
CLOSE-IND   __ _         CR-CAT-ID    __ ____         L-A-TSN     __ ____
VOL-STATUS  __ _         CR-USER-ID   __ _____     L-A-SNO     __ ___
INIT        __ _         RES-COUNT    __ ____         L-A-CPU-NAM __ _____
REG-DATE    __ _____ ACCES-COUNT  __ ____         L-W-BLK-CNT __ _____
DIR-ON-VOL  __ _         CHECK-COUNT  __ __           L-A-FU-NAME __ _____
ADM-FIELD   __ _____      /2 __ _____   L-A-FU-FLAG __ __
```

Entering the sort parameters:

```
SORT-PAR-SET: FREE10          FILE:
FIELD      NR,A/D
VOLUME....... __ _    FILE-SEQ....... __ _   DEV-TYPE........... __ _
USER-ID...... __ _    HOME-LOCATION.. __ _   RESERV-DATE....... __ _
ACCOUNT...... __ _    FREE-LOCATION.. __ _   FREE-DATE.......... __ _
USER-ACC..... __ _    TEMP-LOCATION.. __ _   EXPIRATION-DATE.... __ _
PASSWORD..... __ _                           AUDIT.............. __ _
EXPORT-AD.... __ _    EXPORT-DATE.... __ _
REMARK....... __ _    REMARK-2....... __ _   REMARK-3........... __ _
USER-FIELD... __ _
FILE-NAME.... _2 a    FREE-POOL...... __ _   SAVE-FILE.......... __ _
SUB-SAVE..... __ _    SUB-SEQUENCE... __ _   CR-JOB-/REQ-NAME... __ _
VOLUME-GROUP. __ _                           LAST-ACC-DATE...... _1 d
VOL-SEQ...... __ _    CR-DATE........ __ _   LAST-ACC-TIME...... __ _
FIRST-VOL.... __ _    CR-TIME........ __ _   LAST-ACC-USER-ID... __ _
DEV-NAME..... __ _    LAST-CL-DATE... __ _   LAST-ACC-ACCOUNT... __ _
OPEN-MODE.... __ _    LAST-CL-TIME... __ _   LAST-ACC-JOB-NAME.. __ _
CLOSE-IND.... __ _    CR-CAT-ID...... __ _   LAST-ACC-TSN....... __ _
VOL-STATUS... __ _    CR-USER-ID..... __ _   LAST-ACC-SNO....... __ _
INIT......... __ _    RESERV-COUNT... __ _   LAST-ACC-CPU-NAME.. __ _
REG-DATE..... __ _    ACCESS-COUNT... __ _   LAST-WRITE-BLK-CNT. __ _
DIR-ON-VOL... __ _    CHECK-COUNT __ __      L-A-FU-NAME __ _____
ADM-FIELD.... __ _    ADM-FIELD-2.... __ _   LAST-ACC-FUNC-FLAG. __ _
```

Entering the layout parameters (structure of individual lines):

```
LAYOUT-PAR-SET: FREE10          FILE:
FIELD        NR,LEN
VOLUME.......  _2 _6    FILE-SEQ.......  __ _4    DEV-TYPE...........  __ _8
USER-ID......  __ _8    HOME-LOCATION..  __ _8    RESERV-DATE........  __ _1
ACCOUNT......  __ _8    FREE-LOCATION..  __ _8    FREE-DATE..........  _1 10
USER-ACC.....  __ _1    TEMP-LOCATION..  __ _8    EXPIRATION-DATE....  __ 10
PASSWORD.....  __ _1                               AUDIT..............  __ _1
EXPORT-AD....  __ 50    EXPORT-DATE....  __ 10
REMARK.......  __ 24    REMARK-2.......  __ 10    REMARK-3...........  __ 12
USER-FIELD...  __ 54
FILE-NAME....  _3 30    FREE-POOL......  __ 54    SAVE-FILE..........  __ 15
SUB-SAVE.....  __ _2    SUB-SEQUENCE...  __ _3    CR-JOB-/REQ-NAME...  __ _8
VOLUME-GROUP.  __ 32                               LAST-ACC-DATE......  11 10
VOL-SEQ......  __ _4    CR-DATE........  _4 10    LAST-ACC-TIME......  __ _8
FIRST-VOL....  __ _6    CR-TIME........  __ _8    LAST-ACC-USER-ID...  __ _8
DEV-NAME.....  __ _2    LAST-CL-DATE...  __ 10    LAST-ACC-ACCOUNT...  __ _8
OPEN-MODE....  __ _2    LAST-CL-TIME...  __ _8    LAST-ACC-JOB-NAME..  __ _8
CLOSE-IND....  __ _1    CR-CAT-ID......  __ _4    LAST-ACC-TSN.......  __ _4
VOL-STATUS...  __ _7    CR-USER-ID.....  __ _8    LAST-ACC-SNO.......  __ _3
INIT.........  _6 _1    RESERV-COUNT...  __ _4    LAST-ACC-CPU-NAME..  __ _8
REG-DATE.....  __ 10    ACCESS-COUNT...  __ _4    LAST-WRITE-BLK-CNT.  __ _4
DIR-ON-VOL...  __ _1    CHECK-COUNT....  __ _2    LAST-ACC-FUNC-NAME.  __ _8
ADM-FIELD....  __ _8    ADM-FIELD-2....  __ 16    LAST-ACC-FUNC-FLAG.  __ _2
SEPARATOR= |
```

Entering the layout parameters (structure of header lines):

```
LAYOUT-PARAMETER-SET: FREE10  FILE:
HEADER-LINES

1ST LINE:
 Freigabe in 10 Tagen bzw. weniger        &DATE           &PAGE



2ND LINE:
|FREE-    |VOLUME|FILE-NAME                    |CR-      |L-A-     |I|


3RD LINE:
|DATE     |      |                            |DATE     |DATE     | |



PROPOSAL FOR 2ND LINE:
|FREE-    |VOLUME|FILE-NAME                    |CR-      |L-A-     |I|



LINE LENGTH   74
```

The generated list looks like this:

```
A|Freigabe in 10 Tagen bzw. weniger       2006-06-17          1       |
 |-------------------------------------------------------------------|
 |FREE-   |VOLUME|FILE-NAME                |CR-      |L-A-     |I|
 |DATE    |      |                         |DATE     |DATE     | |
 |-------------------------------------------------------------------|
 |        |      |                         |         |         | |
 |2006-06-24|M5638K|TAPE.FILE.X(*0002)       |2006-06-17|2006-06-17|N|
 |2006-06-24|M5639K|TAPE.FILE.X(*0002)       |2006-06-17|2006-06-17|N|
 |2006-06-24|M4696K|ARCHIVE.SAVE.FILE(990222-13370|2006-02-22|2006-05-04|N|
 |2006-06-24|M5635K|TAPE.FILE.1              |2006-05-04|2006-05-04|N|
 |2006-06-24|M5637K|TAPE.FILE.2(1)           |2006-05-04|2006-05-04|Y|
 |        |      |                         |         |         | |
 |2006-06-24|M5637K|TAPE.FILE.2(2)           |2006-05-04|2006-05-04|N|
 |2006-06-24|M5637K|TAPE.FILE.2(4)           |2006-05-04|2006-05-04|N|
 |2006-06-24|M5632K|:2OSG:$USER1.ARCHIVE.DIR |         |         |N|
 |2006-06-24|M5633K|:2OSG:$USER1.ARCHIVE.DIR |         |         |N|
 |2006-06-24|M5636K|:2OSG:$USER1.ARCHIVE.DIR |         |         |N|
 |        |      |                         |         |         | |
 |2006-06-24|M5634K|TAPE.FILE.1              |         |         |N|
 |2006-06-24|M5640K|TAPE.FILE.2              |         |         |N|
 |2006-06-24|M5655K|TAPE.FILE.3              |         |         |N|
 |-------------------------------------------------------------------|
 | TOTAL    13 MAREN CATALOG ENTRIES FOR USERID USER1                |
 |-------------------------------------------------------------------|
 |                                                                   |
 | THIS LIST WAS CREATED BY MAREN (110) USING FOLLOWING PARAMETERS:  |
 |  INTERVAL : FROM=*FIRST TO=*LAST  FROM-FSEQ=0001                  |
 |  SELECT   : PARAMETER-SET =FREE10 UPDATE=NO                       |
 |                     -FILE=*STD                                    |
 |  SORT     : PARAMETER-SET =FREE10 UPDATE=NO                       |
 |                     -FILE=*STD                                    |
 |  LAYOUT   : PARAMETER-SET =FREE10 UPDATE=NO                       |
 |                     -FILE=*STD                                    |
 |-------------------------------------------------------------------|
```

After the statement is executed, the generated list is output to a printer:

```
%  MARM119 FILE 'MAREN.PRINT.20060617.181050' WITH 00000013 RECORDS CREATED
%  SCP0810 PRINT JOB FOR FILE ':2OSG:$USER1.MAREN.PRINT.20060617.181050'
ACCEPTED. TSN: '09PE', SPOOLOUT NAME: 'ULF2', MONJV: '*NONE'
%  SCP1025 PRINT JOB ACCEPTED BY SERVER 'D020H027' WITH TSN '36Z7'
%  MARM170 STATEMENT '//PRINT-VOLUME-ATTRIBUTES' PROCESSED
```

The list can be generated again at a later point in time (without having to fill out the screens again) with the same format, e.g. in a batch task:

```
/print-vol-attr sel=*yes(par-set=free10),sort=*yes(par-set=free10),
   layout-contr=*yes(par-set=free10)
%  JMS0066 JOB 'ULF2' ACCEPTED ON 2006-06-17 AT 18:15, TSN = 09PI
%  MARM170 STATEMENT '//PRINT-VOLUME-ATTRIBUTES' PROCESSED
```

RESERVE-FREE-VOLUME
Reserve free volumes for your own user ID

The RESERVE-FREE-VOLUME statement is used to reserve volumes from a pool of free VSNs. The volumes can be assigned certain protection attributes and various fields in the archive entry can be preset.

Format

(part 1 of 2)

RESERVE**-FREE-VOL**UME   Alias: **RSFV**

 NUMBER-OF-VOLUMES = **1** / <integer 1..32767>

,**SELECT** = ***STD** / ***BY-ATTR**IBUTES(...)

   *BY-ATTRIBUTES(...)
       VOLUME = ***ALL** / ***INT**ERVAL(...)

         *INTERVAL(...)
            FROM = ***FIRST** / <vsn>
           ,**TO** = ***LAST** / <vsn>

       ,**DEV**ICE**-TYPE** = ***STD** / <structured-name 1..8>

       ,**HOME-LOC**ATION = ***STD** / <alphanum-name 1..8>

,**PROT**ECTION = ***STD** / ***PAR**AMETERS(...)

   *PARAMETERS(...)
       PASSWORD = ***NONE** / <c-string 1..4> / <x-string 1..8> /
            <integer -2147483648..2147483647> / ***SECRET**
       ,**USER-ACCESS** = ***OWNER-ONLY** / ***FOREIGN-READ**-ONLY / ***ALL-USERS**

       ,**FREE-DATE** = ***STD** / <date> / <integer 0..32767 *days*>

,**FI**LE**-NAME** = ***NONE** / <filename 1..41 without-cat-user>

,**VOL**UME**-GR**OUP = ***NONE** / <text 1..32 without-sep>

,**REMARK** = ***NONE** / <c-string 1..24>

,**REMARK-2** = ***NONE** / <c-string 1..10>

,**REMARK-3** = ***NONE** / <c-string 1..12>

,**USER-FIELD** = ***NONE** / <c-string 1..54>

Continued ➠

```
,OUTPUT = *SYSOUT / *NONE / <filename 1..54> / <filename 1..54 without-gen-vers>(...)

   <filename 1..54 without-gen-vers>(...)
         FORMAT = *MAREN-STRUCTURE / *CSV(…)
           *CSV(…)
                  SEPARATOR = *SEMICOLON / *COMMA
                  ,HEADER-LINE = *YES / *NO
         ,SEND-BY-MAIL = *NO / *YES(...)
           *YES(...)
                  TO = *USER(...)
                    *USER(...)
                         USER-IDENTIFICATION = *OWN / <name 1...8>
                  ,SUBJECT = *STD /<c-string 1...256>
                  ,DELETE-FILE = *NO / *YES / *DESTROY
,STRUCTURE-OUTPUT = *NONE / <composed-name 1..255> (...)

   <composed-name 1..255> (...)
         WRITE-MODE = *REPLACE / *EXTEND
```

Operands

NUMBER-OF-VOLUMES = 1 / <integer 1..32767>
Number of volumes. Specifies how many free volumes are to be reserved.

SELECT =
Specifies the criteria to be used to select free volumes.

SELECT = *STD
The standard criteria listed below are used.

SELECT = *BY-ATTRIBUTES(...)

   VOLUME =
   Specifies a number range from which free volumes are to be selected.

   VOLUME = *ALL
   All volumes are processed.

   VOLUME = *INTERVAL(...)
   All volumes whose VSN lies within the specified range are processed.

      FROM = *FIRST / <vsn>
      VSN. All volumes whose VSN is greater than or equal to the specified VSN are
      processed.

FROM = *FIRST
All volumes are processed, starting with the lowest available VSN.

TO = *LAST / <vsn>
VSN. All volumes whose VSN is less than or equal to the specified VSN are
processed.

TO = *LAST
All volumes are processed up to the highest available VSN.

DEVICE-TYPE =
Device type of the volumes to be selected.

DEVICE-TYPE = *STD
The volumes are of the default device type defined by the MAREN administrator.

DEVICE-TYPE = <structured-name 1..8>
Device type. For a list of possible entries (depending on the BS2000/OSD version) , see
manual "System Installation" [9].

HOME-LOCATION = *STD / <alphanum-name 1..8>
Location name or symbolic location name specifying the archive from which the free
volumes are to be selected.

HOME-LOCATION = *STD
The selection is made from the default permanent location defined by the MAREN
administrator.

PROTECTION =
Volume protection attributes.

PROTECTION = *STD
The default values described below are used.

PROTECTION = *PARAMETERS(...)

**PASSWORD = *NONE / <c-string 1..4> / <x-string 1..8> /
<integer -2147483648..2147483647> / *SECRET**
Password. The previously valid password must be defined and specified here if the
specified volume is protected by a volume password. The password C'$$$$' is not
permitted.

PASSWORD = *NONE
No password is specified.

PASSWORD = *SECRET
Requests a blanked-out input field for the password. Entries in this field are not visible
on the screen.
This operand value can only be specified in unguided dialog. In guided dialog, the field
provided for entering passwords is always blanked out.

USER-ACCESS =
Specifies whether foreign user IDs can access the volumes.

USER-ACCESS = *OWNER-ONLY
Access to the volume is possible only under the specified user ID.

USER-ACCESS = *FOREIGN-READ-ONLY
Read-only access to the volume is possible under a foreign user ID.

USER-ACCESS = *ALL-USERS
Unrestricted access to the volume is possible under a foreign user ID.

FREE-DATE =
Expiration date of the volume. Up to this date, the volume remains reserved for the given user ID.

FREE-DATE = *STD
The expiration date defined by the MAREN administrator applies.

FREE-DATE = <date>
Date in the format yyyy-mm-dd.

FREE-DATE = <integer 0..32767 *days*>
Time specification in days. The MAREN system internally adds this number to the current date to generate the expiration date.

FILE-NAME = *NONE / <filename 1..41 without-cat-user>
Name of the file which is subsequently to be written to the volume.

VOLUME-GROUP = *NONE / <text 1..32 without-sep>
Defines the volume group to which the newly reserved volume is assigned. When *NONE is specified, it is not assigned to a volume group.

REMARK = *NONE / <c-string 1..24>
Comment text. This field is output on the screen when the MAREN statement SHOW-VOLUME-ATTRIBUTES is issued.

REMARK-2 = *NONE / <c-string 1..10>
Comment text. The contents of this field is displayed with the MAREN statement SHOW-VOLUME-ATTRIBUTES.

REMARK-3 = *NONE / <c-string 1..12>
Comment text. The contents of this field is displayed with the MAREN statement SHOW-VOLUME-ATTRIBUTES.

USER-FIELD = *NONE / <c-string 1..54>
Comment text. This field may contain any user-specific data, e.g. name, department, telephone number, etc.

OUTPUT =
Determines the output medium. Output to SYSOUT is the default.

OUTPUT = *SYSOUT
Output is directed to SYSOUT.

OUTPUT = *NONE
No output takes place. This specification only makes sense for structured output in an S variable (see the STRUCTURE-OUTPUT operand).

OUTPUT = <filename 1..54>
Only for specifying a file generation..
Output is directed to the specified file generation in MAREN archive record format. Passwords are overwritten with C'$$$$'. Auf SYSOUT wird nur die Anzahl der geschrie-benen Sätze angezeigt.

OUTPUT = <filename 1..54 without-gen-vers>(...)
Name of the SAM output file to which all selected archive entries are to be written. Passwords are overwritten with C'$$$$'. Auf SYSOUT wird nur die Anzahl der geschrie-benen Sätze angezeigt. The output format and transfer by email can also be specified.

> **FORMAT =**
> Determines the format of the output file.
>
> **FORMAT = *MAREN-STRUCTURE**
> Output takes place in MAREN archive record format.
>
> **FORMAT = *CSV(…)**
> Output takes place in CSV (comma separated value) format. Files in CSV format can be read in so that the columns are retained, and they can be processed further with a spreadsheet program (e.g. EXCEL).
>
> > **SEPARATOR = *SEMICOLON / *COMMA**
> > Determines the separator which is to be set between the various output values. The default separator is a semicolon (;). Optionally a comma (,) can be used as the separator.
> >
> > **HEADER-LINE = *YES / *NO**
> > Specifies whether a header line should be output to name the output columns. The default is *YES, i.e. the header line is output. The header line contains the field names of the attributes (see section "Allocating the statement operands in SDF format to archive entry fields" on page 519).
>
> **SEND-BY-MAIL = *NO / *YES(...)**
> Specifies whether the output file should be sent by email. The default is *NO, i.e. it is not sent by email.

SEND-BY-MAIL = *YES(...)
The output file should be sent as an email attachment. The recipient is addressed by means of his/her user ID, i.e. the email address is taken from the user entry concerned. BS2000/OSD V8.0 and higher supports this function. If transfer by email is not possible (e.g. because of a lower BS2000/OSD version or missing email address in the user entry), the output file is only created (equivalent to SEND-BY-MAIL=*NO).

TO = *USER(...)
Details of transfer by email:

USER-IDENTIFICATION = *OWN / <name 1...8>
Specifies the user ID. The recipient's email address is taken over from this user entry. If the user entry contains more than one email address, all the addresses are taken over as recipients.
The default is *OWN, i.e. the caller's user ID.

SUBJECT = *STD /<c-string 1...256>
Determines the content of the email's "Subject" field.
The default is *STD, i.e. MAREN uses a standard text, such as `MAREN STATEMENT RESERVE-FREE-VOLUME, FILENAME: <filename>`.

DELETE-FILE = *NO / *YES / *DESTROY
Specifies whether the file should be automatically deleted after it has been sent.
The default is *NO, i.e. the file is not deleted.
*YES causes the file to be deleted after it has been sent. *DESTROY also causes it to be deleted, and the memory space is overwritten with binary zeros.

STRUCTURE-OUTPUT =
Controls the structured output in S variables.

STRUCTURE-OUTPUT = *NONE
No structured output takes place.

STRUCTURE-OUTPUT = <composed-name 1..255> (...)
Name of the S variable to be used for the structured output.

WRITE-MODE =
Determines whether the output should replace or extend the current content of the S variables.

WRITE-MODE = *REPLACE
The current content of the S variable is replaced by the new output.

WRITE-MODE = *EXTEND
The new output extends the current content of the S variable.

Note

The RESERVE-FREE-VOLUME statement is not absolutely essential to reserve a free volume for the user's own ID, since reservation from the pool of free volumes takes place automatically when scratch volumes are requested at FILE or EOV processing time. Nevertheless, this statement is useful in the following instances:

– At an early point in time, it can be ensured that any free volumes will be readily available.

– If no RETENTION-PERIOD is specified in the FILE command/macro, an expiration date deviating from the default value can be entered for this function.

– The user-specific fields in the archive entry, such as the password or remarks field, can be filled out.

– The DEVICE-TYPE operand does not distinguish between tape types TAPE-C1 and TAPE-C2 or between types TAPE-C3 and TAPE-C4. Consequently, when a TAPE-C1 magnetic tape cartridge is requested, a TAPE-C2 cartridge may well be reserved.

– When a volume with the DEVICE-TYPE=TAPE-U4E is reserved, MAREN searches for a free volume of the type TAPE-U4 and changes its type to TAPE-U4E. In the case of volumes of the type TAPE-U4E the tape contents are encrypted when they are written. All read and write accesses must take place with DEVICE=TAPE-U4E. When the volume is released using //FREE-VOLUMES, the volume type is reset to TAPE-U4 as the type TAPE-U4E only exists in the MAREN catalog for reserved volumes.

– Transfer by email takes place only if the file to be sent contains at least one entry.

Examples

Example 1

```
//res-free-vol prot=*par(free-date=2010-12-31)
%  MARM127 VOLUME 'IDY015' RESERVED FOR USER ID 'USER1'
```

This statement enables the user to reserve a volume with the default device type set by the MAREN administrator and defines an expiration date of 2010-12-31.

Example 2

```
//res-free-vol num-of-vol=2,select=*by-attr(dev-type=tape-c4),
    prot=*par(free-date=200,user-acc=*all)
%  MARM127 VOLUME 'IDY020' RESERVED FOR USER ID 'USER1'
%  MARM127 VOLUME 'IDY031' RESERVED FOR USER ID 'USER1'
%  MARM120 TOTAL OF 2 MAREN CATALOG ENTRIES PROCESSED
```

A magnetic tape cartridge of type tape-c4 is to be reserved. It is flagged in the archive entry as being shareable without restrictions and retained for a period of 200 days.

Output in S variables

This statement supports the structured output in S variables (controlled by the STRUCTURE-OUTPUT operand).

Further information on S variables is provided in the "Commands" manual [5].

Output information	Name of the S variable	T	Contents
Access counter (8-digit) It is incremented each time the volume is accessed.	var(*LIST). ACCESS-COUNT	S	<integer 0..99999999>
Creation date	var(*LIST). CRE-DATE	S	yyyy-mm-dd
Creation job name For HSMS request name	var(*LIST). CRE-JOB-NAME	S	" <name 1..8>
Creation time	var(*LIST). CRE-TIME	S	hh:mm:ss
Device type of the volume	var(*LIST). DEV-TYPE	S	<structured-name 1..8>
Name of an ARCHIVE directory (with catid and userid) which contains the volume	var(*LIST). DIR-NAME	S	<filename 1..54 >
Displays whether the tape contains the ARCHIVE directory which was also saved.	var(*LIST).DIR-ON-VOL	S	*NO *YES
Status (sent = exported or not)	var(*LIST). EXPORTED	S	*NO *YES
First VSN of the MF/MV set	var(*LIST). FIRST-VOL	S	<vsn>
File name of a tape file Without catid and userid	var(*LIST). F-NAME	S	<filename 1..41>
Expiration date of the volume Specifies when the reservation of the volume for a user ID can be termi-nated.	var(*LIST). FREE-DATE	S	yyyy-mm-dd
Release location A volume is moved to this location during the clear-up run.	var(*LIST). FREE-LOCATION	S	<alphanum-name 1..8>
Name of the free tape pool in which this volume is located or is to be located when it is released	var(*LIST). FREE-POOL	S	<filename 1..54> *NO *GLOBAL *TSOS
File sequence number (4-digit)	var(*LIST). F-SEQ	S	<integer 1..9999>

(part 1 of 3)

Output information	Name of the S variable	T	Contents
Standard location	var(*LIST). HOME-LOCATION	S	<alphanum-name 1..8>
Host name for the last access	var(*LIST). LAST-ACCESS-CPU-NAM	S	<alphanum-name 1..8>
Date of the last access	var(*LIST). LAST-ACCESS-DATE	S	yyyy-mm-dd
User name for the last access	var(*LIST). LAST-ACCESS-USER-ID	S	<name 1..8>
Password for volume access	var(*LIST). PASS	S	*NONE *YES
Comment field which should be filled with a meaningful text.	var(*LIST). REMARK	S	<c-string 1..24>
Reservation counter (4-digit) This counter is incremented with each new reservation of the volume.	var(*LIST). RESERV-COUNT	S	<integer0..9999>
Reservation date Date on which a volume is reserved.	var(*LIST). RESERV-DATE	S	yyyy-mm-dd
SAVE-FILE-ID (HSMS) or SAVE-VERSION (ARCHIVE)	var(*LIST). SFID	S	<c-string 1..15>
Number of the subtask for the parallel save run in HSMS	var(*LIST). SUBSAVE	S	<integer 0..15>
Number of the continuation tape in a parallel save run in HSMS	var(*LIST). SUBSEQ	S	<integer 0..999>
Shareability of the volume	var(*LIST). USER-ACCESS	S	OWNER-ONLY FOREIGN-READ ALL-USERS
Account number	var(*LIST). USER-ACCOUNT	S	<alphanum-name 1..8>
User field. Data such as name and department or data relevant for operations scheduling can be entered here.	var(*LIST). USER-FIELD	S	<c-string 1..54>
User ID of the volume owner	var(*LIST). USER-ID	S	<name 1..8>
Tape VSN	var(*LIST). VOL	S	<vsn>
Volume group	var(*LIST). VOL-GROUP	S	<text 1..32>
Volume sequence number	var(*LIST). VOL-SEQ	S	<integer 1..255>

(part 2 of 3)

Output information	Name of the S variable	T	Contents
Volume status F = FREE P = PRIVATE R = RESERVED D = DEFECT	var(*LIST). VOL-STA-1	S	F/P/R/D

(part 3 of 3)

RETURN-TO-PROGRAM
Return from MAREN to loaded main program

The RETURN-TO-PROGRAM statement terminates a MAREN subroutine and returns you to the calling user program. It can be executed only if MAREN was called as an interactive subroutine (see section "Interactive subroutine" on page 490).

Format

RETURN-**TO-PROG**RAM

The RETURN-TO-PROGRAM statement has no operands.

SHOW-VOLUME-ATTRIBUTES
Output information from MAREN catalog

The SHOW-VOLUME-ATTRIBUTES statement is used to output information from the
MAREN catalog to SYSOUT. If an individual VSN is entered, its complete archive entry is
shown. If a number range is entered or *ALL is specified, selected important archive entry
fields only are listed.
If an output file is specified, the complete archive entries of the specified volumes are
written to the file. The file can also be created in CSV format to permit spreadsheet
processing. It can also be specified that the file is sent by email after it has been created.

Format

(part 1 of 2)

SHOW-**VOL**UME-**ATTR**IBUTES	Alias: **SH** / **SHVA**

```
 VOLUME = *ALL / *INTERVAL(...) / <vsn>(...)

    *INTERVAL(...)
        │    FROM = *FIRST / <vsn>
        │    ,TO = *LAST / <vsn>
        │    ,FROM-FSEQ = 1 / <integer 1..9999>

    <vsn>(...)
        │    FILE-SEQUENCE = 1 / <integer 1..9999>

,USER-IDENTIFICATION = *OWN / <name 1..8>

,FILE-NAME = *ALL / *NONE / <filename 1..41 without-cat-user-gen-vers with-wild>(...) /
               <filename 1..41 without-cat-user-gen-vers>(...)

    <filename 1..41 without-cat-user-gen-vers with-wild>(...)
        │    VOLUME = *ANY / *NEXT(...)
        │
        │        *NEXT(...)
        │            │    FROM = *FIRST / <vsn>
        │            │    ,FROM-FSEQ = <integer 1..9999>

    <filename 1..41 without-cat-user-gen-vers>(...)
        │    VERSION = *ALL / *LATEST / <integer -9999..0> / *NOT-CREATED
        │
        │    ,TYPE-OF-VOLUMES = *ANY / *VALID(...) / *OBSOLETE
        │
        │        *VALID(...)
        │            │    CLOSE-CHECK = *NO / *YES
```

Continued ➟

(part 2 of 2)

```
,DIRECTORY-NAME = *ALL(...) / *NONE / <filename 1..54 without-gen-vers>(...)

   *ALL(...)
      │      DIRECTORY-ON-VOLUME = *ANY / *YES

   <filename 1..54 without-gen-vers>(...)
      │      VOLUME-STATUS = *RESERVED(...) / *FREE

      │         *RESERVED(...)
      │            │      SAVE-FILE-ID = *ALL / *LATEST / <integer -32767..0> / <composed-name_15..15>
      │            │      ,DIRECTORY-ON-VOLUME = *ANY / *YES

,VOLUME-GROUP = *ANY / *NONE / <text 1..32 without-sep>

,HOME-LOCATION = *ALL / <alphanum-name 1..8>

,DEVICE-TYPE = *ALL / *ALL-TAPES / *STD / <structured-name 1..8>

,OUTPUT = *SYSOUT / *NONE / <filename 1..54> / <filename 1..54 without-gen-vers>(...)

   <filename 1..54 without-gen-vers>(...)
      │      FORMAT = *MAREN-STRUCTURE / *CSV(…)
      │         *CSV(…)
      │            │      SEPARATOR = *SEMICOLON / *COMMA
      │            │      ,HEADER-LINE = *YES / *NO
      │      ,SEND-BY-MAIL = *NO / *YES(...)
      │         *YES(...)
      │            │      TO = *USER(...)
      │            │         *USER(...)
      │            │            │      USER-IDENTIFICATION = *OWN / <name 1...8>
      │            │      ,SUBJECT = *STD /<c-string 1...256>
      │            │      ,DELETE-FILE = *NO / *YES / *DESTROY

,STRUCTURE-OUTPUT = *NONE / <composed-name 1..255> (...)
            │      <composed-name 1..255> (...)
            │         │      WRITE-MODE = *REPLACE / *EXTEND

,OVERFLOW-CONTROL = *BY-PROGRAM / *BY-SYSTEM

,INFORMATION = *STD / *NORMAL / *MAXIMUM / *V8.1-AND-LOWER
```

Operands

VOLUME =
VSNs of volumes about which information is required.

VOLUME = *ALL
All VSNs are processed.

VOLUME = *INTERVAL (...)
Restricts the output of information to those VSNs which satisfy the specifications described below.

FROM = *FIRST / <vsn>
VSN. All volumes whose VSN is greater than or equal to the specified VSN are processed.

FROM = *FIRST
All volumes are processed, starting with the lowest available VSN.

TO = *LAST / <vsn>
VSN. All volumes whose VSN is less than or equal to the specified VSN are processed.

TO = *LAST
All volumes are processed up to the highest available VSN.

FROM-FSEQ = 1 / <integer 1..9999>
File sequence number of the FROM operand. Specifies the precise file sequence number at which processing is to begin. This operand is relevant only if the statement is issued via the program interface.

VOLUME = <vsn>(...)
VSN of the desired volume

FILE-SEQUENCE = 1 / <integer 1..9999>
Specifies which file sequence number of the VSNs in question is to be processed.

USER-IDENTIFICATION = *OWN / <name 1..8>
All catalog entries assigned to the user ID are processed, but only shareable entries in the case of a foreign ID.

USER-IDENTIFICATION = *OWN
Only volumes of the user's own ID are selected.

FILE-NAME =
This allows you to limit output to archive entries with a specific file name.

FILE-NAME = *ALL
All archive entries which contain a file name are output.
The default value *ALL is taken into account only if *ALL or *NONE is specified in the DIRECTORY-NAME operand.

FILE-NAME = *NONE
Archive entries which contain a file name are not output.

FILE-NAME = <filename 1..41 without-cat-user-gen-vers with-wild>(...)
An asterisk (*) can be specified as the last character of the file name (e.g. PROG*). In this
case, all archive entries for all file names which begin with the character string specified
("PROG") are selected. The VOLUME operand can be used to define the VSN with which
output is to begin.

VOLUME = *ANY / *NEXT(...)
VSN with which output is to begin.
This operand must be specified for the program interface. It ensures that all entries can
be read. In interactive mode, it is possible to specify the VSN with which output is to
begin.
The default value is *ANY, i.e. all entries relating to files that match the specified string
are output.

VOLUME = *NEXT(...)
All entries after the specified entry whose file names match the specified string are
output.
Thus all entries can be listed for the program interface.
The last entry read must be specified in the FROM and FROM-FSEQ operands.

FROM = <vsn>
VSN of the volume with which output is to begin.

FROM-FSEQ = <integer 1..9999>
File sequence number which must match the VSN.

FILE-NAME = <filename 1..41 without-cat-user-gen-vers>(...)
Only archive entries with this file name are output.

VERSION =
This operand is evaluated only if VOLUME=*ALL or *INTERVAL.
It can be used to select a specific version (or status) of the specified file for which the
associated tapes are to be output.

VERSION = *ALL
Selects all versions which exist for the specified file name.

VERSION = *LATEST
Selects the latest version of the file (i.e. the last version created).

VERSION = <integer -9999..0>
Specifying 0 is equivalent to specifying *LATEST, specifying -1 denotes the penultimate
file status, etc.

VERSION = *NOT-CREATED
Selects only those volumes which have been reserved with the specified file name but
which have not been used (i.e. the CREATION-DATE and CREATION-TIME fields in the
archive entry have not been set). The TYPE-OF-VOLUMES setting is of no conse-
quence in this case and is therefore not interpreted.

TYPE-OF-VOLUMES =
This operand selects the volume sequences (archive entry field VOLUME-SEQUENCE) within a tape set. These numbers are usually unique, but some numbers may be duplicated after a restart.

If the following are specified, the TYPE-OF-VOLUMES operand is ignored:
– VERSION = *NOT-CREATED
– VOLUME = <vsn>

TYPE-OF-VOLUMES = *ANY
The volume sequences for a tape set are not checked to establish if they occur more than once.

TYPE-OF-VOLUMES = *VALID(...)
If a volume sequence occurs more than once in a tape set, the one created most recently is selected.

CLOSE-CHECK =
This operand allows you to select whether the archive entry field CLOSE-INDICATOR should be evaluated.

If the following are specified, the CLOSE-CHECK operand is ignored:
– VERSION = *NOT-CREATED
– VOLUME = <vsn>

CLOSE-CHECK = *NO
The CLOSE-INDICATOR field is not evaluated.

CLOSE-CHECK = *YES
If the CLOSE-INDICATOR field is not set to CLOSED for one of the tapes in the tape set, the statement is aborted.

TYPE-OF-VOLUMES = *OBSOLETE
If the same volume sequence occurs more than once in a tape set, all of them are selected except for the one created most recently.

DIRECTORY-NAME =
Only volumes which are assigned to the specified ARCHIVE directory are selected. If this directory is located under a remote user ID, both the user ID and the catalog ID must be entered. The user's own ID and standard catalog ID can be omitted.

DIRECTORY-NAME = *ALL(...)
All archive entries which contain the name of an ARCHIVE directory are output.
The default value *ALL is taken into account only if *ALL or *NONE is specified in the FILE-NAME operand.

DIRECTORY-ON-VOLUME = *ANY / *YES
Specifies whether the output should be restricted to volumes which contain an
ARCHIVE directory at the end of the tape. The default *ANY causes volumes to be
displayed irrespective of whether they contain a directory.

DIRECTORY-NAME = *NONE
Archive entries containing the name of an ARCHIVE directory are not output.

DIRECTORY-NAME = <filename 1..54 without-gen-vers>(...)
Name of the ARCHIVE directory.

VOLUME-STATUS =
Selects volumes in the specified directory on the basis of their status.

VOLUME-STATUS = *RESERVED(...)
Only reserved volumes are to be output. If these are assigned to a foreign ID, only those
which are shareable are displayed.

SAVE-FILE-ID =
The tapes that are to be exported are selected using the save file of the ARCHIVE
directory specified above.

SAVE-FILE-ID = *ALL
All tapes from the specified ARCHIVE directory are exported.

SAVE-FILE-ID = *LATEST
All volumes listed in the latest, i.e. in the most recent save file are selected.

SAVE-FILE-ID = <integer -32767..0>
All volumes listed in the nth save file are selected (the older the save file, the larger
the number n). 0 equals *LATEST. Example: if -5 is specified, the volumes are
selected from the last save file but five.

SAVE-FILE-ID = <composed-name 15..15>
All volumes in a save file with the specified SAVE-FILE-ID are selected. The SAVE-
FILE-ID has the following format: S.yymmdd.hhmmss.

DIRECTORY-ON-VOLUME = *ANY / *YES
Specifies whether the output should be restricted to volumes which contain an
ARCHIVE directory at the end of the tape. The default *ANY causes volumes to be
displayed irrespective of whether they contain a directory.

VOLUME-STATUS = *FREE
Only volumes which are still in the MAREN system's ARCHIVE free tape pool for the
directory in question are to be output, i.e. those volumes which are available for future
ARCHIVE backups using this directory.
The USER-IDENTIFICATION operand is not evaluated.

VOLUME-GROUP = *ANY / *NONE / <text 1..32 without-sep>
Only those volumes are output which are assigned to the specified volume group. When *ANY is specified, the volume group to which the volume belongs is irrelevant; when *NONE is specified, the volume may not belong to a volume group. "*" can be entered as the last character. In this case all volume groups which begin with the specified string are selected.

HOME-LOCATION =
Location name or symbolic location name.

HOME-LOCATION = *ALL
All permanent locations are processed.

HOME-LOCATION = <alphanum-name 1..8>
All archive entries with the specified permanent location are processed.

DEVICE-TYPE =
Device type. All archive entries with the specified device type are displayed.

DEVICE-TYPE = *ALL
The archive entries of all device types are output.

DEVICE-TYPE = *ALL-TAPES
The archive entries of all 9-track magnetic tapes and MTCs are listed.

DEVICE-TYPE = *STD
All volumes of the default device type defined by the MAREN administrator are listed.

DEVICE-TYPE = <structured-name 1..8>
Device type. For a list of possible entries (depending on the BS2000/OSD version), see manual "System Installation" [9].

OUTPUT =
Determines the output medium. Output to SYSOUT is the default.

OUTPUT = *SYSOUT
Output is directed to SYSOUT.

OUTPUT = *NONE
No output takes place. This specification only makes sense for structured output in an S variable (see the STRUCTURE-OUTPUT operand).

OUTPUT = <filename 1..54>
Only for specifying a file generation..
Output is directed to the specified file generation in MAREN archive record format. Passwords are overwritten with C'$$$$'. Auf SYSOUT wird nur die Anzahl der geschriebenen Sätze angezeigt.

OUTPUT = <filename 1..54 without-gen-vers>(...)
Name of the SAM output file to which all selected archive entries are to be written.
Passwords are overwritten with C'$$$$'. Auf SYSOUT wird nur die Anzahl der geschrie-
benen Sätze angezeigt. The output format and transfer by email can also be specified.

FORMAT =
Determines the format of the output file.

FORMAT = *MAREN-STRUCTURE
Output takes place in MAREN archive record format.

FORMAT = *CSV(…)
Output takes place in CSV (comma separated value) format. Files in CSV format can
be read in so that the columns are retained, and they can be processed further with a
spreadsheet program (e.g. EXCEL).

SEPARATOR = *SEMICOLON / *COMMA
Determines the separator which is to be set between the various output values. The
default separator is a semicolon (;). Optionally a comma (,) can be used as the
separator.

HEADER-LINE = *YES / *NO
Specifies whether a header line should be output to name the output columns. The
default is *YES, i.e. the header line is output. The header line contains the field
names of the attributes (see section "Allocating the statement operands in SDF
format to archive entry fields" on page 519).

SEND-BY-MAIL = *NO / *YES(...)
Specifies whether the output file should be sent by email. The default is *NO, i.e. it is
not sent by email.

SEND-BY-MAIL = *YES(...)
The output file should be sent as an email attachment. The recipient is addressed by means of his/her user ID, i.e. the email address is taken from the user entry concerned. BS2000/OSD V8.0 and higher supports this function. If transfer by email is not possible (e.g. because of a lower BS2000/OSD version or missing email address in the user entry), the output file is only created (equivalent to SEND-BY-MAIL=*NO).

TO = *USER(...)
Details of transfer by email:

USER-IDENTIFICATION = *OWN / <name 1...8>
Specifies the user ID. The recipient's email address is taken over from this user entry. If the user entry contains more than one email address, all the addresses are taken over as recipients.
The default is *OWN, i.e. the caller's user ID.

SUBJECT = *STD /<c-string 1...256>
Determines the content of the email's "Subject" field.
The default is *STD, i.e. MAREN uses a standard text, such as `MAREN STATEMENT SHOW-VOLUME-ATTRIBUTES, FILENAME: <filename>`.

DELETE-FILE = *NO / *YES / *DESTROY
Specifies whether the file should be automatically deleted after it has been sent.
The default is *NO, i.e. the file is not deleted.
*YES causes the file to be deleted after it has been sent. *DESTROY also causes it to be deleted, and the memory space is overwritten with binary zeros.

STRUCTURE-OUTPUT =
Controls the structured output in S variables.

STRUCTURE-OUTPUT = *NONE
No structured output takes place.

STRUCTURE-OUTPUT = <composed-name 1..255>(...)
Name of the S variable to be used for the structured output.

WRITE-MODE =
Determines whether the output should replace or extend the current content of the S variables.

WRITE-MODE = *REPLACE
The current content of the S variable is replaced by the new output.

WRITE-MODE = *EXTEND
The new output extends the current content of the S variable.

OVERFLOW-CONTROL =
Type of screen overflow control in interactive mode.

OVERFLOW-CONTROL = <u>*BY-PROGRAM</u>
Control by the program: After every eighteen archive entries have been processed, a
message is displayed inquiring whether the current operation is to be continued or aborted.

OVERFLOW-CONTROL = *BY-SYSTEM
Control by the system: Screen overflow control is based entirely on the system parameter
TCHOFLO or the value set in the MODIFY-TERMINAL-OPTIONS command.

INFORMATION = <u>*STD</u> / *NORMAL / *MAXIMUM / *V8.1-AND-LOWER
If a single volume is specified, this operand determines the output format for output to
SYSOUT.

INFORMATION = <u>*STD</u>
The output format is determined on the basis of the MAREN parameters if no previous entry
(SHOW-INFORMATION=NORMAL, MAXIMUM or *V8.1-AND-LOWER) modified the
standard format for this particular program run.

INFORMATION = *NORMAL
Output will contain all essential information and fits on a single screen. Output is not
guaranteed and may be changed again in future software versions. If *NORMAL is
specified, this will remain the new standard until the program is loaded the next time.
*NORMAL and *MAXIMUM cover the same information scope provided it fits onto a single
screen.

INFORMATION = *MAXIMUM
Output will contain all information. Output is not guaranteed and may be changed again in
future software versions. If *MAXIMUM is specified, this will remain the new standard until
the program is loaded the next time.

INFORMATION = *V8.1-AND-LOWER
Output is in the format used up until MAREN V8.1. If *V8.1-AND-LOWER is specified, this
will remain the new standard until the program is loaded the next time.

Notes

–   Only one of the operands FILE-NAME and DIRECTORY-NAME may ever have an
    operand value other than the default *ALL.

–   Using the operand VOLUME-STATUS = *FREE, it is possible to check prior to the start
    of an ARCHIVE backup run whether there are still enough volumes for backup runs
    using this directory. This operand should only be used if the MAREN administrator has
    actually set up an ARCHIVE free tape pool for this directory, a step normally under-
    taken in response to an explicit user request.

–   If an individual VSN is specified and this is not found in the MAREN catalog, or a
    number range is specified an no archive entry is found within this range, the spin-off
    mechanism is triggered.

– If an individual VSN is specified, only YES or NONE is output for PASSWORD, and foreign user IDs and their account numbers are replaced by "$".
By default, information is entered in a single screen in interactive mode, whereas in batch mode it is entered line by line. Setting task switch 5 selects line-by-line input in interactive mode too. This improves the readability of archive entries in SYSOUT logs.

– If the FSEQ number *001 appears in a specification based on number ranges, the volume involved has been exported.
The export process was performed when the MAREN administrator added a volume with the same VSN to the MAREN catalog.
It remains valid until this volume, usually a foreign volume, is deleted from the MAREN catalog. The exported volume cannot be processed again until it has been made available again in this way.

– Specification of a single VSN will be rejected if made together with the parameter FILE-NAME=<filename>(...) and if non-default values are used for its VERSION and TYPE-OF-VOLUMES operands.

– When a list of volumes is displayed, the VOLUME GROUP column appears only when the VOLUME-GROUP operand contains a wildcard specification. If another selection operand was also specified, another display layout may be preferred internally in MAREN.
If the name of the volume group is longer than 28 characters, it is truncated by an asterisk at the 28th position.

– The file to be sent is transferred by email only if it contains at least one entry.

Examples

Example 1: Output of a single MAREN catalog entry

```
//show-volume-attributes volume=qe0044, information=*V8.1-AND-LOWER
VOLUME    = QE0044       FILE-SEQ    = 0001          DEV-TYPE   = TAPE-C4

USER-ID  = TSOS        HOME-LOCATION = HSMSLOC       RESERV-DATE = 2006-07-16
ACCOUNT  = ADMINSTR    FREE-LOCATION = HSMSLOC       FREE-DATE   = 2006-07-23
USER-ACC = OWNER-ONLY  TEMP-LOCATION = CENTRAL       EXPORT-DATE =
PASSWORD = NONE
REMARK   = C'                            '
EXPORT-AD = C'XCXXX                                          '
USER-FIELD= C'                                              '
DIR-NAME  = :POPP:$TSOS.MAREN.V90B.DIR
FREE-POOL = *TSOS


OPEN-MODE = OUTIN      CR-DATE     = 2006-07-16 LAST-ACC-DATE   = 2006-09-25
VOL-SEQ   = 0001       CR-TIME     = 14:27:23   LAST-ACC-TIME   = 16:32:39
FIRST-VOL = QE0044     CR-CAT-ID   =            LAST-ACC-USER-ID = TSOS
INIT      = YES        CR-USER-ID  =            LAST-ACC-ACCOUNT = ADMINSTR
CLOSE-IND = CLOSED     CR-JOB-NAME = SFID#003   LAST-ACC-JOB-NAME= SFID#003
EXPIR-DATE= 2007-07-21 LAST-CL-DATE = 2006-07-16 LAST-ACC-TSN    =
                       LAST-CL-TIME = 14:28:01   LAST-ACC-SNO    = 089
VOL-STATUS= RESERVED   ACCESS-COUNT = 00000030   LAST-ACC-CPU-NAME= POPPEA2

//show-volume-attributes volume=qe0044, information=*maximum
VOLUME    = QE0044       FILE-SEQ    = 0001          DEV-TYPE   = TAPE-C4

USER-ID  = TSOS        HOME-LOCATION = HSMSLOC       RESERV-DATE = 2006-07-16
ACCOUNT  = ADMINSTR    FREE-LOCATION = HSMSLOC       FREE-DATE   = 2007-07-23
USER-ACC = OWNER-ONLY  TEMP-LOCATION = CENTRAL       EXPIR-DATE  = 2007-07-21
PASSWORD = NONE
EXPORT-AD = C'XCXXX                                          ' /
REMARK /1 = C'                    ' /2 = C'        ' /3 = C'           '
USER-FIELD= C'                                              '
DIR-NAME  = :POPP:$TSOS.MAREN.V90B.DIR
SAVE-FILE = S.020716.142715 SUBSAVE/SEQ = 00/001 CR-JOB/REQUEST-NA = SFID#003
FREE-POOL = *TSOS                             CR-CAT-ID       = SXV7
VOL-GROUP =                                   CR-USER-ID      = TSOS
VOL-SEQ   = 0001       CR-DATE     = 2006-07-16 LAST-ACC-DATE   = 2006-09-25
FIRST-VOL = QE0044     CR-TIME     = 14:27:23   LAST-ACC-TIME   = 16:32:39
CLOSE-IND = CLOSED     LAST-CL-DATE = 2006-07-16 LAST-ACC-USER-ID = TSOS
VOL-STATUS= RESERVED   LAST-CL-TIME = 14:28:01   LAST-ACC-ACCOUNT = ADMINSTR
INIT      = YES        DIR-ON-VOL  =            LAST-ACC-JOB-NAME = SFID#003
                                               LAST-ACC-TSN    =
                                               LAST-ACC-CPU-NAME = POPPEA2
                                               LAST-WRITE-BLK-CNT =      7423
OPEN-MODE = OUTIN      ACCESS-COUNT = 00000030   LAST-ACC-SNO    = 089
```

Example 2: Output of all volumes under the user's own ID

```
//show-vol-attr
VOLUME FSEQ DEV-TYPE CR-DATE   L-A-DATE   FREE-DATE  UA E REMARK (SHORTENED)
-------------------------------------------------------------------------------
C0725K 0001 TAPE-C2  1997-04-15 1997-05-06 2025-11-20 AL   SF-AUSWERTUNG V11
G5110K 0001 TAPE-C4             2001-05-12 2025-11-20 AL
G6013K 0001 TAPE-C4             2000-12-12 2025-11-20 AL
M4696K 0001 TAPE-C4  2006-02-22 2006-05-04 2025-11-20 FR
M5632K 0001 TAPE-C4                        2026-09-18 AL
M5633K 0001 TAPE-C4                        2026-09-18 AL
M5634K 0001 TAPE-C4                        2026-09-18 AL
M5635K 0001 TAPE-C4 2006-05-04 2006-05-04 2026-09-18 AL   PROGRAMM 1
M5636K 0001 TAPE-C4                        2026-09-18 AL
M5637K 0001 TAPE-C4 2006-05-04 2006-05-04 2026-09-18 AL   SAVE PROJEKT1
M5637K 0002 TAPE-C4 2006-05-04 2006-05-04 2026-09-18 AL
M5637K 0003 TAPE-C4 2006-05-04 2006-05-04 2026-09-18 AL
%  MARM103 AKTION FORTSETZEN? ANTWORT (Y=JA; N=NEIN)?y
-------------------------------------------------------------------------------
VOLUME FSEQ DEV-TYPE CR-DATE   L-A-DATE   FREE-DATE  UA E REMARK (SHORTENED)
-------------------------------------------------------------------------------
M5638K 0001 TAPE-C4             2006-06-17 2026-09-18 AL
M5639K 0001 TAPE-C4                        2026-09-18 AL
M5640K 0001 TAPE-C4                        2026-09-18 AL
M5655K 0001 TAPE-C4                        2026-09-20 OW
%  MARM120 TOTAL OF 16 MAREN CATALOG ENTRIES PROCESSED
```

Meaning of the fields:

VOLUME	VSN
FSEQ	File sequence number
DEV-TYPE	Device type
CR-DATE	Creation date
L-A-DATE	Last access
FREE-DATE	Volume expiration date. If no date is entered, the volume is a foreign volume.
UA	USER-ACCESS - the following values may be displayed: – AL for ALL-USERS – FR for FOREIGN-READ-ONLY – OW for OWNER-ONLY
E	Export flag An exported volume is flagged with "E" (EXPORTED).
REMARK	Remark field (first 20 characters only)

Example 3: Output of all volumes for a specific file name

//`show-vol-attr f-name=tape`

```
-------------------------------------------------------------------------------
VOLUME FSEQ CR-DATE    CR-TIME  CR-JOB   1STVSN VSEQ FILE/DIR-NAME  (SHORTENED)
-------------------------------------------------------------------------------
M5634K 0001                     ULF            0001 TAPE.FILE.1
M5635K 0001 2006-05-04 10:45:20 ULF    M5635K  0001 TAPE.FILE.1
M5638K 0001                     ULF2           0001 TAPE.FILE.2
M5639K 0001                     ULF2           0001 TAPE.FILE.2
M5640K 0001                     ULF2           0001 TAPE.FILE.2
M5637K 0001 2006-05-04 12:58:46 ULF2   M5637K  0001 TAPE.FILE.2(1)
M5637K 0002 2006-05-04 13:13:43 ULF2   M5637K  0001 TAPE.FILE.2(2)
M5637K 0003 2006-05-04 13:31:23 ULF2   M5637K  0001 TAPE.FILE.2(4)
M5655K 0001                            0001 TAPE.FILE.3
% MARM120 TOTAL OF 9 MAREN CATALOG ENTRIES PROCESSED
```

Meaning of the fields:

VOLUME	VSN
FSEQ	File sequence number
CR-DATE	Creation date
CR-TIME	Creation time
CR-JOB	Creation job name
1STVSN	First VSN of the MF/MV set
VSEQ	File section number
FILE/DIR-NAME	File or directory name (first 26 characters only)

Example 4: Output of all MAREN catalog entries in a directory with a specific
*   SAVE-FILE-ID*

//`show-vol-attr directory-name=maren.v90b.dir(save-file-id=-0)`

```
% MARM195 NO DIRECT ACCESS TO MAREN CATALOG POSSIBLE
 -------------------------------------------------------------------------------
 VOLUME USER-ID  REQ-NAME DIRECTORY-NAME    (SHORTENED)  SAVE-FILE-ID SUB-SV/SEQ
 -------------------------------------------------------------------------------
 QE0020 TSOS     SFID#001 :POPP:$TSOS.MAREN.V90B.DIR     S.020716.135432 00 001
 QE0021 TSOS     SFID#001 :POPP:$TSOS.MAREN.V90B.DIR     S.020716.135432 01 001
 QE0023 TSOS     SFID#001 :POPP:$TSOS.MAREN.V90B.DIR     S.020716.135432 02 001
 QE0022 TSOS     SFID#001 :POPP:$TSOS.MAREN.V90B.DIR     S.020716.135432 03 001
 QE0024 TSOS     SFID#001 :POPP:$TSOS.MAREN.V90B.DIR     S.020716.135432 03 002
% MARM120 TOTAL OF 5 MAREN CATALOG ENTRIES PROCESSED
```

Information concerning all volumes contained in the last, i.e. most recent save file is output.

Example 5: Output of all volumes for a specific volume group

```
//show−vol−attr *int(sh,sh9),vol−group=EPSWOS3*
−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−
VOLUME FSEQ VOLUME−GROUP                  1STVSN VSEQ FILE/DIR−NAME(SHORTENED)
−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−
SH0024 0001 EPSWOS3−GER                   SH0024 0001 TAPE.FILE
SG0025 0001 EPSWOS3−CLM−AAAAAAAAAAAAAAAA* SH0025 0001 :2OS6:$SYSHSMS.DIR.1234567
```

The volumes which belong to the volume groups EPSWOS3* are output for a range of VSNs. If the name of the volume group is longer than 28 characters, it is truncated by an asterisk at the 28th position.

Output in S variables

This statement supports the structured output in S variables (controlled by the STRUCTURE-OUTPUT operand). Further information on S variables is provided in the "Commands" manual [5].

The following S variables are created depending on whether one or more volumes are specified in the VOLUME operand:

1. **//SHOW-VOLUME-ATTRIBUTES for one volume** (VOLUME=<vsn>)

Output information	Name of the S variable	T	Contents
Access counter (8-digit) It is incremented each time the volume is accessed.	var(*LIST). ACCESS-COUNT	S	<integer 0..99999999>
CLOSE indicator Provides information on whether creation of a tape file has been terminated correctly.	var(*LIST). CLOSE-INDICATOR	S	OPENED CLOSED
Catalog ID from the file name at the time the file was created. It is only supplied if F-NAME exists.	var(*LIST). CRE-CAT-ID	S	<cat-id>
Creation date	var(*LIST). CRE-DATE	S	yyyy-mm-dd
Creation job name	var(*LIST). CRE-JOB-NAME	S	” <name 1..8>
Creation time	var(*LIST). CRE-TIME	S	hh:mm:ss
User ID from the file name at the time the file was created. It is only supplied if F-NAME exists.	var(*LIST). CRE-USER-ID	S	” <name 1..8>
Device name	var(*LIST). DEV-NAME	S	<c-string 1..4>

(part 1 of 4)

Output information	Name of the S variable	T	Contents
Device type of the volume	var(*LIST). DEV-TYPE	S	<structured-name 1..8>
Name of an ARCHIVE directory (with catid and userid) which contains the volume.	var(*LIST). DIR-NAME	S	<filename 1..54>
Displays whether the tape contains the ARCHIVE directory which was also saved.	var(*LIST).DIR-ON-VOL	S	*NO *YES
File expiration date	var(*LIST). EXPIR-DATE	S	yyyy-mm-dd
Export address. Depending on the CC organization, the EXPORT-VOLUME statement can be used here to enter an export address , a short message, a mailbox no., etc.	var(*LIST). EXPORT-ADDR	S	<c-string 1..50>
Export date For volumes which are not exported this field contains a blank.	var(*LIST). EXPORT-DATE	S	yyyy-mm-dd
Status (sent = exported or not)	var(*LIST). EXPORTED	S	*NO *YES
First VSN of the MF/MV set	var(*LIST). FIRST-VOL	S	<vsn>
Expiration date of the volume Specifies when the reservation of the volume for a user ID can be termi-nated.	var(*LIST). FREE-DATE	S	yyyy-mm-dd
Release location A volume is moved to this location during the clear-up run.	var(*LIST). FREE-LOCATION	S	<alphanum-name 1..8>
Name of the free tape pool in which this volume is located or is to be located when it is released	var(*LIST). FREE-POOL	S	<filename 1..54> *NO *GLOBAL *TSOS
File name of a tape file Without catid and userid provided the file is not contained in an ARCHIVE directory	var(*LIST). F-NAME	S	<filename 1..41>
File sequence number (4-digit)	var(*LIST). F-SEQ	S	<integer 1..9999>
Standard location	var(*LIST). HOME-LOCATION	S	<alphanum-name 1..8>

(part 2 of 4)

Output information	Name of the S variable	T	Contents
Initialization flag	var(*LIST). INIT	S	YES NO ERASE
Account number for the last access	var(*LIST). LAST-ACCESS-ACCOUNT	S	<alphanum-name 1..8>
Host name for the last access	var(*LIST). LAST-ACCESS-CPU-NAM	S	<alphanum-name 1..8>
Date of the last access	var(*LIST). LAST-ACCESS-DATE	S	yyyy-mm-dd
Job name for the last access	var(*LIST). LAST-ACCESS-JOB-NAM	S	<name 1..8>
Time of the last access	var(*LIST). LAST-ACCESS-TIME	S	hh:mm:ss
TSN for the last access Only as long as the volume is occupied	var(*LIST). LAST-ACCESS-TSN	S	<alphanum-name 1..4>
User name for the last access	var(*LIST). LAST-ACCESS-USER-ID	S	<name 1..8>
Session number for the last access	var(*LIST). LAST-ACC-SESSION-NR	S	<integer 1..255>
CLOSE date	var(*LIST). LAST-CLOSE-DATE	S	yyyy-mm-dd
CLOSE time	var(*LIST). LAST-CLOSE-TIME	S	hh:mm:ss
Block counter for MTC	var(*LIST). LAST-WRT-BLOCK-CNT	S	<integer 0..9999999999>
OPEN type for the last access	var(*LIST). OPEN-MODE	S	INPUT OUTPUT EXTEND INOUT OUTIN SINOUT REVERSE
Password for the last access	var(*LIST). PASS	S	*NONE *YES
Comment field	var(*LIST). REMARK	S	<c-string 1..24>
Freely definable comment field	var(*LIST). REMARK -2	S	<c-string 1..10>
Freely definable comment field	var(*LIST). REMARK -3	S	<c-string 1..12>
Reservation date Date on which a volume is reserved	var(*LIST). RESERV-DATE	S	yyyy-mm-dd

(part 3 of 4)

Output information	Name of the S variable	T	Contents
SAVE-FILE-ID (HSMS) or SAVE-VERSION (ARCHIVE)	var(*LIST). SFID	S	<c-string 1..15>
Number of the subtask for the parallel save run in HSMS	var(*LIST). SUBSAVE	S	<integer 0..15>
Number of the continuation tape in a parallel save run in HSMS	var(*LIST). SUBSEQ	S	<integer 0..999>
Current location	var(*LIST). TEMP-LOCATION	S	” <name 1..8>
Shareability of the volume	var(*LIST). USER-ACCESS	S	*OWNER-ONLY *FOREIGN-READ-ONLY *ALL-USERS
Account number of the volume owner	var(*LIST). USER-ACCOUNT	S	<alphanum-name 1..8>
User field. Data such as name and department or data relevant for operations scheduling can be entered here.	var(*LIST). USER-FIELD	S	<c-string 1..54>
User ID of the volume owner	var(*LIST). USER-ID	S	<name 1..8>
Tape VSN	var(*LIST). VOL	S	<vsn>
Volume group Only has a valid value with reserved volumes, otherwise it is undefined.	var(*LIST). VOL-GROUP	S	<text 1..32>
Volume sequence number	var(*LIST). VOL-SEQ	S	<integer 1..255>
Volume status	var(*LIST). VOL-STA	S	FREE PRIVATE RESERVED DEFECT

(part 4 of 4)

2.   //SHOW-VOLUME-ATTRIBUTES for multiple volumes (VOLUME=*ALL/*INTERVAL)

Output information	Name of the S variable	T	Contents
Access counter (8-digit) It is incremented each time the volume is accessed.	var(*LIST). ACCESS-COUNT	S	<integer 0..99999999>
Creation date	var(*LIST). CRE-DATE	S	yyyy-mm-dd
Creation job name For HSMS request name	var(*LIST). CRE-JOB-NAME	S	” <name 1..8>
Creation time	var(*LIST). CRE-TIME	S	hh:mm:ss
Device type of the volume	var(*LIST). DEV-TYPE	S	<structured-name 1..8>
Name of an ARCHIVE directory (with catid and userid) which contains the volume.	var(*LIST). DIR-NAME	S	<filename 1..54 >
Displays whether the tape contains the ARCHIVE directory which was also saved.	var(*LIST).DIR-ON-VOL	S	*NO *YES
Status (sent = exported or not)	var(*LIST). EXPORTED	S	*NO *YES
First VSN of the MF/MV set	var(*LIST). FIRST-VOL	S	<vsn>
Expiration date of the volume Specifies when the reservation of the volume can be terminated for a user ID.	var(*LIST). FREE-DATE	S	yyyy-mm-dd
Release location A volume is moved to this location during the clear-up run.	var(*LIST). FREE-LOCATION	S	<alphanum-name 1..8>
Name of the free tape pool in which this volume is located or is to be located when it is released.	var(*LIST). FREE-POOL	S	<filename 1..54> *NO *GLOBAL *TSOS
File name of a tape file Without catid and userid provided the file is not contained in an ARCHIVE directory	var(*LIST). F-NAME	S	<filename 1..41>
File sequence number (4-digit)	var(*LIST). F-SEQ	S	<integer 1..9999>
Standard location	var(*LIST). HOME-LOCATION	S	<alphanum-name 1..8>

(part 1 of 3)

Output information	Name of the S variable	T	Contents
Host name for the last access	var(*LIST). LAST-ACCESS-CPU-NAM	S	<alphanum-name 1..8>
Date of the last access	var(*LIST). LAST-ACCESS-DATE	S	yyyy-mm-dd
User name for the last access	var(*LIST). LAST-ACCESS-USER-ID	S	<name 1..8>
User name for the last access	var(*LIST). PASS	S	*NONE *YES
Comment field which should be filled with a meaningful text.	var(*LIST). REMARK	S	<c-string 1..24>
Reservation counter (4-digit) This counter is incremented with each new reservation of the volume.	var(*LIST). RESERV-COUNT	S	<integer 0..9999>
Reservation date Date on which a volume is reserved.	var(*LIST). RESERV-DATE	S	yyyy-mm-dd
SAVE-FILE-ID (HSMS) or SAVE-VERSION (ARCHIVE)	var(*LIST). SFID	S	<c-string 1..15>
Number of the subtask for the parallel save run in HSMS	var(*LIST). SUBSAVE	S	<integer 0..15>
Number of the continuation tape in a parallel save run in HSMS	var(*LIST). SUBSEQ	S	<integer 0..999>
Shareability of the volume	var(*LIST). USER-ACCESS	S	OWNER-ONLY FOREIGN-READ ALL-USERS
Account number	var(*LIST). USER-ACCOUNT	S	<alphanum-name 1..8>>
User field. Data such as name and department or data relevant for operations scheduling can be entered here.	var(*LIST). USER-FIELD	S	<c-string 1..54>
User ID of the volume owner	var(*LIST). USER-ID	S	<name 1..8>
Tape VSN	var(*LIST). VOL	S	<vsn>
Volume group Only has a valid value with reserved volumes, otherwise it is undefined.	var(*LIST). VOL-GROUP	S	<text 1..32>
Volume sequence number (4-digit)	var(*LIST). VOL-SEQ	S	<integer 1..255>

(part 2 of 3)

Output information	Name of the S variable	T	Contents
Volume status F = FREE P = PRIVATE R = RESERVED D = DEFECT	var(*LIST). VOL-STA-1	S	F/P/R/D

(part 3 of 3)

SYSTEM
Switch to BS2000 system mode

The SYSTEM statement enables the user to revert to system mode and then issue system commands. The MAREN program remains loaded and can be resumed again using the RESUME-PROGRAM command. The START-, LOAD-EXECUTABLE-PROGRAM (or START-/LOAD-PROGAM) and EXIT-JOB (or LOGOFF) commands, however, always terminate the MARENADM program run.

Note

As the SDF standard statement HOLD-PROGRAM provides the same functionality, the SYSTEM statement should no longer be used in new procedures or ENTER jobs. In existing jobs it should gradually be replaced by the HOLD-PROGRAM statement.

Format

SYSTEM

The SYSTEM statement does not have any operands.

7.5   MAREN as a subroutine

The MAREN program can be called from a user program as a subroutine. For this purpose, the module MARENU from the library SYSLIB.MAREN.vvv (vvv = version number, e.g. 120) must be linked into the user program. There are two types of MAREN subroutine:

–   interactive subroutine

–   program interface

In MAREN V9.0 it is impossible to issue jobs with a MAREN version <V8.0 (as a subroutine in a user program). MARENU V8.0 or higher must be linked to user programs that have integrated MARENU V6.5A or lower.

7.5.1   Interactive subroutine

The entry point MARENDU is used for the interactive subroutine. This mode enables you to work with MAREN in interactive mode after branching from a user program in the same way as if you issued a START-MAREN command.
MARENDU is accessed by means of the statement:

```
@PASS EXTNAME=MARENDU
```

With the exception of the operand BATCH-PROCESSING=YES of the PRINT-VOLUME-ATTRIBUTES statement, the full range of MAREN functions is available. The user program remains loaded.
Control is returned to the user program after the MAREN statement RETURN-TO-PROGRAM or END is issued or after abnormal termination of MAREN.

No data transfer takes place between the calling user program and the MAREN interactive subroutine. Only indirect data transfer is possible, e.g. using the MAREN statement

```
//SHOW-VOLUME-ATTRIBUTES OUTPUT= &filename,...
```

you can create an output file which then serves as an input file in the user program.

When calling the subroutine, the usual register conventions must be observed:

Register 13:   This register contains the address of a save area which consists of 18 words and which must be made available by the calling user program. This area is used by MARENU to save the registers of the calling program.

Register 14:   This register contains the address of the re-entry point to the calling program.

Register 15:   This register contains the entry point address of MARENDU.

Return information is not required unless MAREN is terminated abnormally, as all results are displayed directly in the dialog.

7.5.2 Program interface

The entry point MARENPS is used for the program interface. In this mode, the statements to be issued to MAREN and all accruing data and results are exchanged between the user program and MAREN via storage areas. There is no data communication with the system files SYSDTA and SYSOUT.

The program interface does not provide access to the full range of MAREN functions. The following MAREN statements cannot be used (those marked "(*)" are standard SDF statements, see also):

```
//CHECK-TSOSCAT
//EDIT
//EXECUTE-SYSTEM-COMMAND (*)
//HOLD-PROGRAM (*)
//MODIFY-SDF-OPTIONS (*)
//MODIFY-TAPE-SET-ATTRIBUTES
//REMARK           (*)
//RESET-INPUT-DEFAULTS (*)
//RESTORE-SDF-INPUT  (*)
//SHOW-INPUT-DEFAULTS (*)
//SHOW-INPUT-HISTORY (*)
//SHOW-SDF-OPTIONS   (*)
//STEP              (*)
//WRITE-TEXT        (*)
```

The following operand values are strictly prohibited:

```
PASSWORD = SECRET
```

```
NEW-PASSWORD = SECRET
```

```
VOLUME = <list-of-vsns>
```
Instead, the corresponding statement must be issued individually for each VSN.

The following operand values must not be used with certain statements. If these operand values introduce a structure, no operand in that structure may be used:

OUTPUT = <filename>
>   in the statements
>   RESERVE-FREE-VOLUME
>   SHOW-VOLUME-ATTRIBUTES
>   Any output files required can be created by the calling main program from the archive entries provided by MARENPS.

VOLUME = *BY—FILE
>   in the statement EXPORT-VOLUME

VOLUME = *BY—INPUT—FILE
>   in the statement MODIFY-VOLUME-ATTRIBUTES

VERSION = *LATEST / <integer -9999..0> / *NOT—CREATED
>   in the statement SHOW-VOLUME-ATTRIBUTES

TYPE—OF—VOLUMES = *VALID / *OBSOLETE
>   in the statement SHOW-VOLUME-ATTRIBUTES

BATCH—PROCESSING = *YES
>   in the statement PRINT-VOLUME-ATTRIBUTES

UPDATE = *TEMPORARY / *PERMANENT
>   in the statement PRINT-VOLUME-ATTRIBUTES
>   This applies to the UPDATE operand in each of the structures SELECT, SORT, and LAYOUT-CONTROL.

NUMBER—OF—VOLUMES = <integer 2..10>
>   in the statement RESERVE-FREE-VOLUME
>   This operand is not evaluated. As a rule, only a single volume is processed and the statement should be issued more than once where necessary.

SAVE—FILE—ID <> *ALL
>   in the statements

7.5.3   Data transfer areas

The user program must have two storage areas for data transfer when the MAREN program interface MARENPS is called:

● Statement area (maximum of 1014 bytes)

Here the user program must provide a MARENADM statement in the form of a variable-length record (record length field of 4 bytes) using the usual BS2000 format. The statement can be written with or without the two slashes. The statement area must be aligned on a halfword boundary.

● Archive record area (1014 bytes)

In this area, the MAREN system transfers either a complete archive entry or merely the archive entry fields RETFLAG and ERRORKEY to the user program, depending on the statement. The individual fields can be symbolically addressed via the Dsect MARENA or the copy element MARENAC.

The archive entry is returned either in V8 format (1014 bytes). The secondary index area of a catalog in V8.1 format is not supported at the program interface (see record structures in the section entitled "Volume catalog" in the MAREN manual "Volume 1: Basics of MTC Management" [1]).

When calling the program interface, the contents of the archive record area are of no significance.

The DSECT of the MARENA macro is contained in the library SYSLIB.MAREN.vvv. If the operand MF=L is specified in the macro call, a data area is created with the same length as the archive entry with field designations identical to the names in the relevant DSECT.

The copy element MARENAC is also contained in the library SYSLIB.MAREN.vvv.

Once a statement has been executed, MARENPS automatically reverts to the user program. The RETURN-TO-PROGRAM statement is therefore superfluous in this case. The END statement closes the MAREN files if they were opened in direct access mode.

Specification of a number range, which is possible for some statements using the operand VOLUME=*INTERVAL(FROM=..., TO=...,FSEQ=...), is also supported by the program interface. However, only the first applicable archive entry is processed, after which control is immediately passed back to the caller. If necessary, the user program must repeat the statement in a loop, each time setting the start of the number range (FROM operand and FROM-FSEQ operand) to the last VSN obtained and incrementing FSEQ by 1. Please note the following when incrementing FSEQ: if only one archive entry per VSN is to be processed, FSEQ must be set at 9999. If, however, all available FSEQ entries are to be processed for each VSN, FSEQ must be incremented by 1 except if FSEQ=*001 (exported volume).

Return information

After each return from the MAREN program interface, the user program must inspect the
return information in the archive entry field RETFLAG.
Only when RETFLAG=A applies has the statement been executed normally.
RETFLAG=E means that no hits were made in the specified number range.
For all other RETFLAGs, additional return information in the archive entry field ERRORKEY
must be evaluated. This field contains the seven-digit message code of the message
otherwise output to SYSOUT by the MAREN program.

RETFLAG may be set to the following values:

RETFLAG	Meaning
A	The statement was executed without errors.
D	A DMS error occurred while accessing a file. The name of the file in question is contained in the archive entry field FILENAME. The DMS error code is given in the archive entry field ERRORKEY.
E	No hit was found within the specified number range.
I	Invalid entry.
L	Logical error, e.g. an attempt was made to export a tape which has already been exported.
M	Internal error in the MAREN system; the exact cause of the error is shown in the archive entry field ERRORKEY.
N	The specified VSN does not exist in the MAREN catalog.
O	The MAREN administrator has activated offline logging; as a result, access to the MAREN catalog is not possible.
P	The archive entry was simultaneously modified by another task; the statement must therefore be repeated.
S	Access to another host via MSCF was not successful.
T	The volume is still reserved by another task in the same system.
V	The volume has not yet been released by another task in another system, i.e. the internal MAREN access lock on this volume still exists.
X	The request was rejected by the MAREN administrator via a computer center exit routine.
0	The console message `MAR0085` was acknowledged by the operator with tsn.0.
2	The console message `MAR0085` or `MAR0086` was acknowledged by the operator with tsn.2.

The following registers must be loaded to enter the subroutine:

Register 1:   This register contains the address of an operand list with a length of two words:
First word: Address of the statement area
Second word: Address of the archive record area

Register 13:   This register contains the address of a save area which consists of 18 words and which must be made available by the calling user program. This area is used by MAREN to save the registers of the calling program.

Register 14:   This register contains the address of the re-entry point to the calling program.

Register 15:   This register contains the entry point address of MARENPS.

7.5.4 Notes on integrating MAREN as a subroutine

In order to use MAREN as a subroutine, a linkage module which loads a module from the SYSLNK file has to be included in the main program.

This MAREN linkage module is stored in the SYSLIB file as an object module (OM) with the name MARENU, and is assigned the entry MARENPS when MAREN is used as a program interface or MARENDU when it is used as an interactive subroutine.

The linkage module performs the following activities:

– It determines the MAREN version to be loaded dynamically.
  If the user did not specify a particular MAREN version with SELECT-PRODUCT-VERSION before calling his/her main program, the most recent version installed in the system is selected.

– The names of the SYSLNK and SYSREP flies are determined, taking due account of the version.

– These names are used to complete the BIND parameter list for loading the relevant prelinked MAREN module dynamically.

Error situation

If an error occurs while the file names are being ascertained, the default names of the MAREN version for which the linkage module was supplied are used for dynamic loading.

7.5.5 Example

The following example shows the structure of an Assembler main program. The macro calls
for structured programming with ASSEMBH (e.g. @IF) are not supported by ASSEMBH-BC
(see the "ASSEMBH (BS2000/OSD)" manual [3]).
The sample program has the goal that access to all volumes with a VSN in the range
ABC001 to ABC099 is to be restricted to the user's own ID (USER-ACCESS = *OWNER-
ONLY).

```
        :
        @CYCLE
MODIFY  DS    0H
        :
        @PASS EXTNAME=MARENPS,PAR=STMT  CALL MAREN PROGRAM INTERFACE
        @CAS2 RETFLAG,COMP=CLI          CHECK RETURN FLAG
        @OF   RETFLAGA                  RETURN FLAG 'A' = OK
        MVC   ANWVSN,ARCHIVNR           SET VSN IN STATEMENT
        @IF   EQ                        SET NEXT FSEQ IN STATEMENT
        CLC   FSEQ,=C'*001'             SUPPRESSED VOLUME?
        @THEN
        MVC   ANWFSEQ,=C'0001'          IF YES - NEXT FSEQ = '0001'
        @ELSE
        PACK  DOWO,FSEQ                 OTHERWISE ADD 1 TO FSEQ
        AP    DOWO,=PL1'1'
        UNPK  ANWFSEQ,DOWO+5(3)
        OI    ANWFSEQ+3,X'F0'
        @BEND
        @OF   RETFLAGE                  RETFLAG 'E' = NO MORE ENTRIES
        :
        @OFRE                           ERROR EXIT
        :
        @BEND
        @BEND
        :
DOWO    DS    D                         WORKAREA
STMT    DS    Y(STMTEND)                AREA FOR MAREN STATEMENT
        DC    CL2' '
        DC    C'//MOD-VOL-ATTR VOL=*INT(FROM='
ANWVSN  DC    CL6'ABC001'
        DC    C',FROM-FSEQ='
ANWFSEQ DC    CL4'0001'
        DC    C',TO=ABC099),'
        DC    C'PROT=*PAR(USER-ACCESS='
        DC    C'*OWNER-ONLY)'
STMTEND EQU   *-STMT
        :
        MARENA MF=L,LAYOUT=V8           AREA FOR MAREN CATALOG ENTRY
        :
```

8 Commands for working with the MAREN TFT

In connection with file name-oriented tape management, BS2000 commands are offered for working with the MAREN TFT (Task File Table). The commands are offered in the SDF menu under the application domain STORAGE-MANAGEMENT.

Overview

Command	Meaning
ADD-MAREN-FILE-ENTRY	Adds an entry to the MAREN TFT
REMOVE-MAREN-FILE-ENTRY	Removes an entry from the MAREN TFT
SHOW-MAREN-FILE-ENTRY	Outputs information from the MAREN TFT

Function of the commands

When accessing a tape file that is not contained in the TSOSCAT file catalog, the volumes belonging to this file can be determined from the MAREN catalog (see the section "Determining the VSNs of a tape file" in the MAREN manual "Volume 1: Basics of MTC Management" [1]).

This is only possible if the processor on which the tape file was created and the processor on which it is to be further processed both use the same MAREN catalog. If this condition is satisfied, the information required for file assignment concerning the volumes to be used and their device type is located in the MAREN catalog and can be called from there. Manual specification of the VSNs and their device type is no longer necessary, with the result that the assignment of a tape file with the name TAPE.FILE now looks simply like this:

```
/IMPORT-FILE SUPPORT=TAPE(VOLUME=*ANY,DEVICE-TYPE=*ANY,FILE-NAME=TAPE.FILE)
```

plus any other parameters required. DMS no longer rejects such a command, but instead passes the file name on to MAREN. If the MAREN catalog contains entries with this name, MAREN returns the VSNs and device type of the volumes marked in these MAREN catalog entries to DMS ("volume substitution"). Using the information received from MAREN, DMS can complete the file assignment and request the required volumes.

One problem that can arise in connection with volume substitution is that the same file name, e.g. TAPE.FILE, may occur more than once in the MAREN catalog. This is the case if the same tape file was created at different times and using different volumes, and if the relevant tapes or tape cartridges in the MAREN catalog have not yet been released. These individual versions of a file are not distinguished by the file name, as are, for example, file generations. By default MAREN can select the newest (youngest) file version, but it must also be possible to select a specific older file version.

Another potential problem has its source in the ambiguous allocation of tape files to user IDs. This means that in the BS2000 Data Management System (DMS) the same tape file may have several entries in the file catalog (TSOSCAT); for example, the two file names $USERA.TAPE.FILE and $USERB.TAPE.FILE could refer to the same file on the same tape reel. For this reason, BS2000 tape management only stores the max. 41-character file name without the user ID in the tape labels (HDR3 label) and, for the same reasons, the tape file names are not given user IDs in the MAREN catalog.

Volume substitution causes problems at the latest when a given file name has more than one entry in the MAREN catalog and the associated tape files were created under different user IDs. Selection by way of the file version does not always help here, as the different tape files with the same name may well refer to files with completely different contents (e.g. the file $A.XY contains warehouse inventory data, while the file $B.XY contains personnel data).

Selection of a specific file version and specification of which user IDs have to be taken into account are handled by means of the command ADD-MAREN-FILE-ENTRY.

In the context of volume substitution the VERSION operand determines which file version in the MAREN catalog is accessed in a subsequent IMPORT-FILE command (with VOLUME=*ANY) and thereby which VSNs are required for processing.

The USER-IDENTIFICATION operand is used when determining these VSNs to specify whether only MAREN catalog entries of the user's own ID (*OWN) or of a foreign user ID (<name 1..8>) are to be evaluated or if selection is not to be based on user IDs (*ANY). It should be borne in mind in this context that only the MAREN catalog entries of shareable volumes (with USER-ACCESS=*ALL-USERS or *FOREIGN-READ-ONLY) of foreign user IDs can be evaluated.

The decision made by way of ADD-MAREN-FILE-ENTRY is stored in a task-specific table, where it is chained to any entries created in earlier ADD-MAREN-FILE-ENTRY commands and subsequently evaluated in the course of volume substitution. This MAREN-specific file table, referred to hereafter as the MAREN TFT (Task File Table), is created when the ADD-MAREN-FILE-ENTRY command is first entered and deleted at the latest when the task is terminated (EXIT-JOB command). This table contains only one entry for a given file name, i.e. if a file name already entered in the MAREN TFT is used in an ADD-MAREN-FILE-ENTRY command, the values stored there for the VERSION and USER-IDENTIFICATION operands are replaced by the current values.

Entries in the MAREN TFT can also be explicitly deleted from this table; this is done using the REMOVE-MAREN-FILE-ENTRY command.

Information on the entries in the MAREN TFT can be requested using the SHOW-MAREN-FILE-ENTRY command.The information displayed can refer to all entries in the MAREN TFT or to one specific file name.

ADD-MAREN-FILE-ENTRY
Add entry to MAREN TFT

Domain: STORAGE-MANAGEMENT

Privileges: all except OPERATING, HARDWARE-MAINTENANCE and
SECURITY-ADMINISTRATION

The ADD-MAREN-FILE-ENTRY allows an entry to be added to the MAREN TFT for a tape
file. The USAGE operand defines the effect of the MAREN TFT entry:

– *SELECT: A specific file version is to be processed for the specified tape file. By default,
at volume substitution MAREN selects the latest file version entered under the user ID
of the caller in the MAREN catalog.

– *SCRATCH: For the specified tape file, the location and free pool must be specified from
which scratch tapes are requested if a VSN is not specified when the file is created. In
addition, scratch tapes can be assigned to a volume group.

If there is already an entry for the specified file name in the MAREN TFT, this entry is
deleted and a new one created.
The SHOW-MAREN-FILE-ENTRY command outputs information on an existing MAREN
TFT entry. The entry can be explicitly deleted by means of the REMOVE-MAREN-FILE-
ENTRY command.

Format

ADD-MAREN-FILE-ENTRY	Alias: ADMFE

FILE-NAME = \<filename 1..54\> / ***ALL-SCRATCH-FILES**
 	
,**USAGE** = ***SELECT**(...) / ***SCRATCH**(...)
 	
  *SELECT(...)
  | **VERSION** = ***LATEST** / \<integer -9999..0\>
  | ,**USER-IDENTIFICATION** = ***OWN** / ***ANY** / \<name 1..8\>
 	
  *SCRATCH(...)
  | **LOCATION** = ***STD** / \<alphanum-name 1..8\>
  | ,**FREE-POOL** = ***STD** / ***NO** / ***GLOBAL** / ***TSOS** / \<text 2..32 without-sep\>
  | ,**VOLUME-GROUP** = ***NONE** / \<text 1..32 without-sep\>	

Operands

FILE-NAME = <filename 1..54>
This operand specifies the file name for which an entry is to be added to the MAREN task file table.

FILE-NAME = *ALL-SCRATCH-FILES
The entry in MAREN-TFT applies for all scratch tapes requested in the future.
This operand value may only be specified in conjunction with USAGE=*SCRATCH(...).

USAGE =
Specifies the effect of the MAREN TFT entry.

USAGE = *SELECT(...)
A specific file version of the specified file is to be used.

> **VERSION =**
> This operand allows you to select a specific version (or file status) of the specified file.
>
> **VERSION = *LATEST**
> Selects the latest version of the file (i.e. the last version created).
>
> **VERSION = <integer -9999..0>**
> Specifying 0 here is equivalent to specifying LATEST; the entry -1 specifies the previous file status, etc.
>
> **USER-IDENTIFICATION =**
> This operand selects the user ID to which the tapes are assigned (archive entry field USER-ID).
>
> **USER-IDENTIFICATION = *OWN**
> Only those VSNs are selected which are assigned to your own ID, i.e. the ID of the current task.
>
> **USER-IDENTIFICATION = *ANY**
> Selection is not based on user IDs. For foreign user IDs only shareable VSNs (USER-ACCESS=*ALL-USERS or *FOREIGN-READ-ONLY) are selected.
>
> **USER-IDENTIFICATION = <name 1..8>**
> Only VSNs of the specified user ID are selected. In the case of a foreign user ID, only shareable VSNs (USER-ACCESS=*ALL-USERS or *FOREIGN-READ-ONLY) are selected.

USAGE = *SCRATCH(...)
Specifies which location and which volume group is to be used for free tape assignment if a VSN (scratch tape) is not specified when the file is created.

LOCATION =
Specifies the location to be used for the assignment of a scratch tape.

LOCATION = *STD
The location is not specified. MAREN's current defaults apply.

LOCATION = <alphanum-name 1..8>
If the file is created without specifying a VSN, MAREN selects a free VSN from this location.

FREE-POOL =
Specifies the free tape pool.

FREE-POOL = *STD
No free tape pool was specified.

FREE-POOL = *NO
A free tape is to be picked from the *NO free tape pool.

FREE-POOL = *GLOBAL
A free tape is to be picked from the *GLOBAL free tape pool.

FREE-POOL = *TSOS
A free tape is to be picked from the *TSOS free tape pool

FREE-POOL = <text 2..32 without-sep>
Specifies the name of a free tape pool.
The name of the free tape pool must begin with a "*" followed by at least one character from A..Z or 0..9. THe characters ".", "-" and "_" are permitted, but they may not be combined at the end of the name.

VOLUME-GROUP = *NONE / <text 1..32 without-sep>
Specifies the volume group. When *NONE is specified, the volume is not assigned to a volume group.

Notes

Notes on USAGE=*SCRATCH(...)

– The definition of a location in the MAREN TFT invalidates any other definition of the location (explicitly by means of a command or exit routine). Nevertheless, the request for this location can still be rejected by a MAREN exit. In this case, processing is aborted regardless of the location specified.

– The definition of a location does not apply to other tasks or subtasks. If the file is opened in a subtask and a free tape is requested, the location defined for the file is not used.

– The definition of a location can also be used for other system components as well as for file processing (e.g. for FDDRL).

Notes on FREE-POOL

– If aliases are specified for the *NO, *GLOBAL or *TSOS values of the FREE-POOL operand, then these operand values will be expanded to their full length for compatibility reasons (e.g. *GL is expanded to *GLOBAL).

– The free tape pool specified must exist, otherwise the command is rejected.

Note on VOLUME-GROUP

Related volumes can be combined to form a volume group. The volume group is a volume-specific attribute. i.e. all files which are located on a volume belong to the same volume group.

Command return codes

(SC2)	SC1	Maincode	Meaning
	0	CMD0001	Command executed without errors
	1	MARM189	Syntax error in command
1	32	MARM184	Error (&00) when executing macro (&01)
2	64	MARC201	Error when completing the file name

REMOVE-MAREN-FILE-ENTRY
Delete entry from MAREN TFT

Domain: STORAGE-MANAGEMENT

Privileges: all except OPERATING, HARDWARE-MAINTENANCE and
                           SECURITY-ADMINISTRATION

This command deletes an entry from the MAREN TFT.

Format

REMOVE-MAREN-FILE-ENTRY	Alias: **RMMFE**
FILE-NAME = <filename 1..54> / ***ALL-SCRATCH-FI**LES	

Operands

FILE-NAME = <filename 1..54>
This specifies the file name for which the entry in the MAREN TFT is to be deleted.

FILE-NAME = *ALL-SCRATCH-FILES
The entry for all scratch tapes should be removed from the MAREN TFT.

Command return codes

(SC2)	SC1	Maincode	Meaning
	0	CMD0001	Command executed without errors
	1	CMD0001	Specified file name not in the MAREN TFT
	1	MARM189	Syntax error in command
1	32	MARM184	Error (&00) when executing macro (&01)
2	64	MARC201	Error when completing the file name

SHOW-MAREN-FILE-ENTRY
Output information contained in MAREN TFT

Domain:	STORAGE-MANAGEMENT
Privileges:	all except OPERATING, HARDWARE-MAINTENANCE and SECURITY-ADMINISTRATION

This command outputs information contained in the MAREN TFT.

Format

SHOW-MAREN**-FILE-ENTRY**	Alias: **SHMFE**

FILE**-NAME** = ***ALL** / ***ALL-SCRATCH-FI**LES / <filename 1..54>

Operands

FILE-NAME = *ALL
Information on all entries in the MAREN TFT is output.

FILE-NAME = *ALL-SCRATCH-FILES
Information on all scratch tapes is output.

FILE-NAME = <filename 1..54>
Specifies the file names for which the MAREN TFT entry is to be output.

FILE-NAME = *ALL / <filename 1..54>
This specifies the file name for which the MAREN TFT entry is to be output.

FILE-NAME = *ALL
Information is output on all entries in the MAREN TFT.

Note

The values for the operands FILE-NAME, VERSION and USER-ID used with the ADD-MAREN-FILE-ENTRY command are output for each entry in the MAREN TFT. The following special features are worth noting:

– The file name is always output in full (including the catalog ID and user ID).

– VERSION=*LATEST is equivalent to VERSION=0 in the output.

– If USER-ID=*OWN has been specified, the current user's user ID is substituted for *OWN in the output.

Command return codes

(SC2)	SC1	Maincode	Meaning
	0	CMD0001	Command executed without errors
	1	MARM189	Syntax error in command
1	32	MARM184	Error (&00) when executing macro (&01)
1	64	MARC100	No MAREN TFT exists or the existing MAREN TFT does not contain the specified entry
2	64	MARC201	Error when completing the file name

Example

All the entries in the MAREN TFT are to be output.

Possible output:

```
/show-mar-file-entry
%FILE-NAME                                   VERSION  USER-ID  LOCATION
      FREE-POOL-NAME
%:2OSG:$USER1.XX.Y                            -0002   USER1

%:2OSX:$USER1.TAPEFILE.1                                        ROBOTER1
      *BACKUP1
%:1OSN:$USER1.TAPEFILE.2                       0000   USER1
```

9 Examples of frequent MAREN applications

9.1 Reserving a volume

You can reserve a new volume in the MAREN system using one of two methods:

– implicit reservation

– explicit reservation

Implicit reservation of a volume

New output tapes need not necessarily be explicitly reserved in the MAREN user program before being processed. A reservation can also be made implicitly during processing by omitting the VOLUME operand in a CREATE-FILE command or FILE macro. In this way, the user can, for example, use the following command to create a catalog entry for the WORK.1 file to be created and at the same time reserve a magnetic tape cartridge of the type TAPE-C4:

```
/create-file file-name=work.1,support=*tape(device-type=tape-c4)
```

In the OPEN processing of the specified file the task requests a free tape when MARENUCP is being used.

The user can also use implicit reservation with individual system utilities (e.g. ARCHIVE).

If the ARCHIVE statement SAVE or EXPORT includes

– the parameter TAPES=OPERATOR or

– the parameter TAPES=POOL, and the directory in question has no free tapes,

the MAREN subsystem implicitly reserves a volume of the appropriate device type in both cases.

Explicit reservation of a volume

By means of the user program MAREN, the MAREN system gives the user the opportunity of explicitly reserving a tape before tape processing is initiated.

```
//res-free-vol free-date=2007-12-31
```

This statement is used to reserve a free volume of the default device type. The volume is assigned to the user's ID until December 31, 2007. This reservation limit can be modified at any time.

9.2 Requesting a reserved volume

A reserved volume need not be requested via MAREN before processing. Using the information in the archive entry, the MAREN system automatically checks during processing whether the user has access authorization. If so, access is permitted, if not, it is rejected. An allocated volume ID can be input via the BS2000 command ADD-PASSWORD.

9.3 Outputting archive entries

Outputting a single archive entry

The user can output a single archive entry (e.g. for the VSN M5003K) with the attributes
which are preset in the MAREN catalog as follows:

```
//show-vol-attr vol=m5003k
```

Outputting all archive entries under the user's ID

The user can output all the catalog entries under his own ID with a selection of the attributes
stored in the MAREN catalog.

```
//show-vol-attr
```

Outputting archive entries under a foreign ID

In addition to the archive entries under his own ID, the user can output those under a foreign
ID. In this case, however, only the shareable catalog entries will be output.
All shareable volumes under the user ID USERX001 are to be output:

```
//show-vol-attr user-id = userx001
```

Outputting all archive entries to the printer

The user can print all archive entries under his own ID with a selection of important fields
from the volume entries as follows:

```
//print-vol-attr
```

9.4 Modifying archive entries

Single fields of the archive entry can be modified by the user with the aid of the statements MODIFY-VOLUME-ATTRIBUTES and MODIFY-TAPE-SET-ATTRIBUTES.

Making volumes shareable

If a foreign ID is to have read and write access to the volumes stored under the user's own ID, the following statements must be used:

```
//mod-vol-attr vol=tape01,user-access=*all-users
```

Allocating a volume password

The volume A11000 is to be protected against unauthorized access by the password C'XYZ'.

```
//mod-vol-attr vol=a11000,new-pass=c'xyz'
```

Modifying the release (free) date for all volumes of a MAREN tape set

All volumes containing the most recently created version of the file TAPE.SAVE are to remain reserved for the user's own ID until December 31, 2007.

```
//mod-tape-set-attr f-name=tape.save,version=*latest,free-date=2007-12-31
```

Modifying remarks

The text "TOOL V5.0A" is entered in order to identify the backup files of all volumes under the user's ID in the volume entry field REMARK:

```
//mod-vol-attr vol=*all,remark=c'tool v5.0a'
```

9.5 **Exporting a volume**

If a computer center volume is to be exported, and the MAREN administrator has permitted it, the EXPORT-VOLUME statement must be used.

```
//exp-vol vol=vsn001,exp-addr=c'hr. mr. smith london branch'
```

The volume VSN001 is to be sent to the address "MR. SMITH LONDON BRANCH".

9.6 **Returning a foreign volume**

With the aid of the EXPORT-VOLUME statement the user can return a foreign volume (i.e. a volume belonging to another computer center) of which he is the owner.

The user requested the MAREN administrator to add the volume to the MAREN catalog for processing using the MARENADM statement ADD-PRIVATE-VOLUME. When the user returns this volume, the entry in the MAREN catalog is deleted.

```
//exp-vol vol=priv01,exp-addr=c'mailbox a5'
```

The volume PRIV01 is to be returned. The pick-up address for the volume is "MAILBOX A5"

9.7 **Premature volume release**

Reserved volumes are released when they reach the release date entered in the FREE-DATE field; they are then available for new reservations. Users wishing to release a volume prematurely must do so using the MODIFY-VOLUME-ATTRIBUTES statement to set the release date to the current date. The volume will be released in the next release run, which is usually carried out daily by the MAREN administrator.

The volume Y1001, with the password C'XYZ', is to be prematurely released.

```
//mod-vol-attr vol=y10001,pass=c'xyz',free-date=0
```

The current date in the format yy-mm-dd can also be used for FREE-DATE instead of the value "0".

9.8 Processing file versions in the MAREN catalog

Output of all MAREN catalog entries for a tape file

From the MAREN catalog all volumes under the user's own ID (USER-ID=*OWN is the default value) to which the file SAMPLE.TAPESET.1 has been written or for which at least this file name is contained in the MAREN catalog entry are to be output:

```
//show-vol-attr vol=*all,user-id=*all,
    file-name=sample.tapeset.1(version=*all,type-of-vol=*any)
--------------------------------------------------------------------------------
VOLUME FSEQ CR-DATE    CR-TIME  CR-JOB   1STVSN VSEQ USER-ID  FILE-NAME(SHORT.)
--------------------------------------------------------------------------------
SAV001 0001 2007-01-25 14:36:11 BACKUP01 SAV001 0001 USERXY01 SAMPLE.TAPESET.1
SAV002 0001 2007-03-05 14:38:30 BACKUP02 SAV002 0001 USERXY01 SAMPLE.TAPESET.1
SAV003 0001 2007-04-08 14:38:03 BACKUP03 SAV003 0001 USERXY01 SAMPLE.TAPESET.1
SAV004 0001 2007-04-08 14:41:27 BACKUP03 SAV003 0002 USERXY01 SAMPLE.TAPESET.1
SAV005 0001 2007-04-08 14:46:30 BACKUP03 SAV003 0003 USERXY01 SAMPLE.TAPESET.1
SAV006 0001 2007-06-23 14:27:25 BACKUP04 SAV006 0001 USERXY01 SAMPLE.TAPESET.1
SAV007 0001 2007-06-23 14:40:50 BACKUP04 SAV006 0002 USERXY01 SAMPLE.TAPESET.1
SAV008 0001 2007-06-23 14:45:53 BACKUP04 SAV006 0003 USERXY01 SAMPLE.TAPESET.1
SAV009 0001 2007-07-14 14:37:01 BACKUP05 SAV009 0001 USERXY01 SAMPLE.TAPESET.1
SAV010 0001 2007-06-23 14:37:25 BACKUP04 SAV006 0001 USERXY01 SAMPLE.TAPESET.1
%  MARM120 TOTAL OF 10 MAREN CATALOG ENTRIES PROCESSED
```

Five versions of the SAMPLE.TAPESET.1 tape file exist on the following volumes:

–   version 0 (*LATEST) on SAV009
–   version -1 on SAV006, SAV010, SAV007 and SAV008 (multivolume file)
–   version -2 on SAV003, SAV004 and SAV005 (multivolume file)
–   version -3 on SAV002
–   version -4 on SAV001

Output of all MAREN catalog entries for a file version

All the volumes (TYPE-OF-VOL=*ANY) under the user's own user ID are to be output for
the last version but one (VERSION=-1) of the SAMPLE.TAPESET.1 file:

```
//show-vol-attr vol=*all,user-id=*all,
    file-name=sample.tape.set.1(version=-1,type-of-vol=*any)
--------------------------------------------------------------------------------
VOLUME FSEQ CR-DATE    CR-TIME  CR-JOB   1STVSN VSEQ USER-ID  FILE-NAME(SHORT.)
--------------------------------------------------------------------------------
SAV006 0001 2007-06-23 14:27:25 BACKUP04 SAV006 0001 USERXY01 SAMPLE.TAPESET.1
SAV007 0001 2007-06-23 14:40:50 BACKUP04 SAV006 0002 USERXY01 SAMPLE.TAPESET.1
SAV008 0001 2007-06-23 14:45:53 BACKUP04 SAV006 0003 USERXY01 SAMPLE.TAPESET.1
SAV010 0001 2007-06-23 14:37:25 BACKUP04 SAV006 0001 USERXY01 SAMPLE.TAPESET.1
%  MARM120 TOTAL OF 4 MAREN CATALOG ENTRIES PROCESSED
```

In the case of this file version, the first volume, for which VOLUME-SEQUENCE=1 (column
VSEQ), is duplicated (VSN SAV006 and SAV010). On the basis of the creation date
(CREATION-DATE and CREATION-TIME) it is possible to establish that the magnetic tape
cartridge with the VSN SAV006 comes from an aborted job, whereas the tape with the VSN
SAV010 with the later creation date was written in a restart run.

Export of all current tapes for a file version

The volumes (TYPE-OF-VOLUMES=*VALID) required for the further processing of the last
version but one (VERSION=-1) of the SAMPLE.TAPESET.1 file are to be exported and
made available to be picked up at a location described as "MAILBOX 4411":

```
//export-vol vol=*by-file(f-name=tape.file,vers=-1,type-of-vol=*valid),
    export-addr='mailbox 4411'

% MARM134 GET VOLUME 'SAV007' FROM CENTRAL ARCHIVE
% MARM134 GET VOLUME 'SAV008' FROM CENTRAL ARCHIVE
% MARM134 GET VOLUME 'SAV010' FROM CENTRAL ARCHIVE
% MARM120 TOTAL OF 3 MAREN CATALOG ENTRIES PROCESSED
% MARM170 '//EXPORT-VOLUME' STATEMENT PROCESSED
```

Output of volumes that are no longer required for a file version

Volumes that are no longer required are to be output for the last version but one
(VERSION=-1) of the SAMPLE.TAPESET.1 file. These were written when the file was
created but are no longer required in further processing (TYPE-OF-VOLUMES=
*OBSOLETE) because they have been replaced by other volumes in a restart run (see
previous example).

```
//show-volume-attr vol=*all,user-id=*all,
    file-name=sample.tape.set.1(version=-1,type-of-vol=*any)
----------------------------------------------------------------------------
VOLUME FSEQ CR-DATE    CR-TIME  CR-JOB   1STVSN VSEQ USER-ID  FILE-NAME(SHORT.)
----------------------------------------------------------------------------
SAV006 0001 2007-06-23 14:27:25 BACKUP04 SAV006 0001 USERXY01 SAMPLE.TAPESET.1
%  MARM120 TOTAL OF 1 MAREN CATALOG ENTRIES PROCESSED
```

Release of volumes that are no longer required for a file version

Since the volumes written for the last version but one (VERSION=-1) of the
SAMPLE.TAPESET.1 file but replaced in a restart run are no longer required, they are to be
released prematurely. For this purpose, the volume release date (FREE-DATE) and, where
applicable, the file expiration date (EXPIRATION-DATE) are set to the current date:

```
//modify-tape-set-attr select=*by-attr(
    f-name=sample.tapeset.1,version=*all,type-of-vol=*obs),
    prot=*par(free-date=0,expir-date=0)

% MARM121 MAREN CATALOG ENTRY 'SAV006'/'0001' MODIFIED
% MARM120 TOTAL OF 1 MAREN CATALOG ENTRIES PROCESSED
```

Part 3: Overviews

10 Messages output by the MAREN system

Messages output by the MAREN system, including both those from the MAREN subsystem and those from the individual MAREN programs, are sent via the BS2000 MSG7 interface.

Similar to BS2000 system messages the MAREN messages consist of:

– a message code (7-character)

– a message text

– an attribute line

– additional explanatory texts ("Meaning" and "Response")

The message codes generated by the MAREN system all have the following basic structure:

`MARnnnn` or `MAKnnnn`

where

MAR   Prefix (message class, 3 characters) for all MAREN messages (except for the MARENEKM component)

MAK   Prefix (message class, 3 characters) for all MARENEKM messages

nnnn   Sequential message number (4 characters)

Guaranteed messages have the message attribute "Warranty: YES". Further details on message attributes and message output in general is contained in the manual "Introductory Guide to Systems Support" [7].

The "Message" and "Response" texts for a particular message can be requested using BS2000 command /HELP-MSG-INFORMATION together with the message key. At program level this can be done using the standard statement of the same name.

All the messages or a subset of the messages in the MAREN message file can be listed using the MSGMAKER utility routine [18].

11 Assembler and COBOL interfaces

DSECT of the MARENA macro

The MARENA macro generates a DSECT for symbolic address of the individual archive entry fields.
If the operand MF=L is specified in the macro call, a data area of the length of the archive entry is created with field names identical to those in the DSECT.

Date fields with a length of 8 bytes are no longer supported.

DSECT of the MARENP macro

The MARENP macro generates a DSECT for symbolic addressing of the individual fields of the MAREN parameter set. If the operand MF=L is specified in the macro call, a data area of the length of the MAREN parameter record is created with field names identical to those in the DSECT.

MARENAC copy element

The COPY statement can be used to copy the source element MARENAC into a COBOL source program. MARENAC defines the MAREN archive record.

MARENPC copy element

The COPY statement can be used to copy the source element MARENPC into a COBOL source program. MARENPC defines the MAREN parameter set.

12 Appendix

12.1 Allocating the statement operands in SDF format to archive entry fields

The following table gives an overview of the archive entry fields to which the operands of the individual MAREN statement refer, as well as the terms used when an archive entry is output.

Archive entry field	Field name in the DSECT of the MARENA macro	Field name for the output with SHOW-VOLUME-ATTRIBUTES	Variable name for the output in an S variable with SHOW-VOLUME-ATTRIBUTES
ACCESS-COUNT	ACCOUNT8	ACCESS-COUNT	ACCESS-COUNT
ACCOUNT	OWNERACC	ACCOUNT	USER-ACCOUNT
ADMINISTRATOR-FIELD	RZFELD	ADM-FIELD	ADM-FIELD
ADMINISTRATOR-FIELD 2	RZFELD2	ADM-FIELD /2	ADM-FIELD-2
ARCHIVE-USAGE	FSTATUS	FREE-POOL	FREE-POOL
CHECK-COUNT	PRUEFZ	CHECK-COUNT	CHECK-COUNT
CLOSE-INDICATOR	CLOSEIND	CLOSE-IND	CLOSE-INDICATOR
CREATION-CAT-ID	CRCATID	CR-CAT-ID	CRE-CAT-ID
CREATION-DATE	XCRDATE	CR-DATE	CRE-DATE
CREATION-JOB-NAME (other cases) REQUEST-NAME (HSMS)	CRJOB	CR-JOB (other cases) / REQUEST-NA (HSMS)	CRE-JOB-NAME
CREATION-TIME	CRTIME	CR-TIME	CRE-TIME
CREATION-USER-ID	CRUSERID	CR-USER-ID	CRE-USER-ID
DEC# OF SAVED PAM-PAGES	PAMPAG#	LAST-WRITE-BLK-CNT	LAST-WRT-BLOCK-CNT
DEVICE-NAME	MNEMONI4	DEV-NAME	DEV-NAME
DEVICE-TYPE	DEVICE	DEV-TYPE	DEV-TYPE

(part 1 of 3)

Archive entry field	Field name in the DSECT of the MARENA macro	Field name for the output with SHOW-VOLUME-ATTRIBUTES	Variable name for the output in an S variable with SHOW-VOLUME-ATTRIBUTES
DIRECTORY-NAME	DIRNAME	DIRECTORY-NAME	DIR-NAME
DIRECTORY-ON-VOLUME	DIRONVOL	DIR-ON-VOL	DIR-ON-VOL
DOMAIN-NAME	XYDOMAIN	DOMAIN	DOMAIN
EXPIRATION-DATE	XEXDATE	EXPIR-DATE	EXPIR-DATE
Only for S variable	Only for S variable	Only for S variable	EXPORTED
EXPORT-ADDRESS	LEIHADR	EXPORT	EXPORT-ADDR
EXPORT-DATE	XLEIHDAT	EXPORT-DATE	EXPORT-DATE
FILENAME	FILENM41	FILE-NAME	F-NAME
FILE-SEQUENCE#	FSEQ	FILE-SEQ	F-SEQ
FIRST-VOLUME	ERSTVSN	FIRST-VOL	FIRST-VOL
FREE-DATE	XFREIDATE	FREE-DATE	FREE-DATE
FREE-LOCATION	FREELOC	FREE-LOCATION	FREE-LOCATION
FREE-POOL	FREEPOOL	FREE-POOL	FREE-POOL
FROM (INTERVAL)	NUMMANFV	Only internal	Only internal
FROM-FSEQ (INTERVAL)	NUMMANFF	Only internal	Only internal
HOME-LOCATION	HOMELOC	HOME-LOCATION	HOME-LOCATION
INDICATOR 1 (AUDIT)	ARCHIND1	AUDIT	AUDIT
INITIALIZATION	INITFLAG	INIT	INIT
LAST-ACCESS-ACCOUNT	LAACC	LAST-ACC-ACCOUNT	LAST-ACCESS-AC-COUNT
LAST-ACCESS-CPU-NAME	LACPU	LAST-ACC-CPU-NAME	LAST-ACCESS-CPU-NAM
LAST-ACCESS-DATE	XLADATE	LAST-ACC-DATE	LAST-ACCESS-DATE
LAST-ACCESS-FUNCTION-FLAG	LAFUNKFL	LAST-ACC-FUN-FLAG	LAST-ACC-FUNC-FLAG
LAST-ACCESS-FUNKTION-NAME	LAFUNKNM	LAST-ACC-FUN-NAME	LAST-ACC-FUNC-NAME
LAST-ACCESS-JOB-NAME	LAJOB	LAST-ACC-JOB-NAME	LAST-ACCESS-JOB-NAM
LAST-ACCESS-SNO	LASNO	LAST-ACC-SNO	LAST-ACC-SESSION-NR
LAST-ACCESS-TIME	LATIME	LAST-ACC-TIME	LAST-ACCESS-TIME

(part 2 of 3)

Archive entry field	Field name in the DSECT of the MARENA macro	Field name for the output with SHOW-VOLUME-ATTRIBUTES	Variable name for the output in an S variable with SHOW-VOLUME-ATTRIBUTES
LAST-ACCESS-TSN	LATSN	LAST-ACC-TSN	LAST-ACCESS-TSN
LAST-ACCESS-USER-ID	LAUSERID	LAST-ACC-USER-ID	LAST-ACCESS-USER-ID
LAST-CLOSE-DATE	XCLDATE	LAST-CL-DATE	LAST-CLOSE-DATE
LAST-CLOSE-TIME	CLTIME	LAST-CL-TIME	LAST-CLOSE-TIME
MESSAGE-KEY	ERRORKEY	Only internal	Only internal
OPEN-TYPE	OPENTYP	OPEN-MODE	OPEN-MODE
PASSWORD	PASSWORD	PASSWORD	PASS
RECORD VERSION	ARCHMAVE	Only internal	Only internal
REGISTRATION-DATE	VOLRGDAT	REG-DATE	REG-DATE
REMARK	BEMERKG	REMARK /1	REMARK
REMARK 2	BEMERKG2	REMARK /2	REMARK-2
REMARK 3	BEMERKG3	REMARK /3	REMARK-3
RESERVATION-COUNT	RESCOUNT	RESERV-COUNT	RESERV-COUNT
RESERVATION-DATE	XARCHDATE	RESERV-DATE	RESERV-DATE
RETURN-INFORMATION	RETURNFLAG	Only internal	Only internal
SUB-SAVE-NUMBER	SUBSAV#	SUBSAVE	SUBSAVE
SUBSEQUENCE-NUMBER	SUBSEQ#	SEQ	SUBSEQ
SVID/SFID FROM ARCHIVE/HSMS	SAVEVER	SAVE-FILE	SFID
TEMPORARY-LOCATION	TEMPLOC	TEMP-LOCATION	TEMP-LOCATION
TO (INTERVAL)	NUMMEND	Only internal	Only internal
USER ACCESS	SHARE	USER-ACC	USER-ACCESS
USER-FIELD	USERFELD	USER-FIELD	USER-FIELD
USER-IDENTIFICATION	OWNERID	USER-ID	USER-ID
VOLUME	ARCHIVNR	VOLUME	VOL
VOLUME-GROUP	VOLGROUP	VOL-GROUP	VOL-GROUP
VOLUME-SEQUENCE	VSEQ	VOL-SEQ	VOL-SEQ
VOLUME-STATUS	STATUS	VOL-STATUS	VOL-STA (for a volume) VOL-STA-1 (for a volume list)

(part 3 of 3)

12.2 Function names in the MAREN system

The following table provides an overview of the function names employed by the individual components in the MAREN system. A number of these function names are also appended to individual archive entries (e.g. LAST-ACCESS-FUNCTION-NAME field). The function name in the archive or logging entry can thus be used to identify the operation which last modified the archive entries.

FUNCTION NAME	READ	WRITE	RESERVE	other	Meaning
ADD	x			x	MARENADM statement ADD-RESERVED-VOLUME
ADDBYCAT	x			x	MARENADM statement ADD-RES-VOL VOL=*BY-TSOSCAT
ADDFDT				x	MARENADM statement ADD-FOREIGN-DEVICE-TYPE
ADDFREE	x			x	MARENADM statement ADD-FREE-VOLUMES
ADDHOST				x	MARENADM statement ADD-HOST
ADDPRIV	x			x	MARENADM statement ADD-PRIVATE-VOLUME
CATANPA	x			x	MAREN catalog adaption in MARENCP
CHANGLOG				x	MARENADM statement CHANGE-LOGGING-FILE
CHECK	x	x		x	MAREN statement CHECK-TSOSCAT
CHECK1	x	x		x	MARENADM statement CHECK-TSOSCAT
CLOSE				x	MARENADM statement CLOSE-MAREN-FILES
COPYCAT				x	MARENADM statement COPY-VOLUME-CATALOG
DELETE	x			x	MAREN statement DELETE-VOLUME-ENTRY
EDIT	x				MAREN statement EDIT
EDIT1	x				MARENADM statement EDIT
FREE	x	x		x	MARENADM statement FREE-VOLUMES
GET	x	x		x	MAREN statement EXPORT-VOLUME
GET1	x	x		x	MARENADM statement EXPORT-VOLUME
INFO	x			x	MAREN statement SHOW-VOLUME-ATTRIBUTES
INFO1	x			x	MARENADM statement SHOW-VOLUME-ATTRIBUTES
INIT	x	x		x	MARENADM statement INITIALIZE-VOLUMES
MARARCHU	x	x		x	MARENADM.ARCHIVE program
MARENADM				x	Initialization of MARENADM
MARENCM				x	MAREN-FILE-ENTRY commands

(part 1 of 3)

FUNCTION NAME	READ	WRITE	RESERVE	other	Meaning
MARENEV	x	x			Manual export from the 3594 Tape Library System (detected by TLS during an inventory run)
MARENEVD	x	x			Export from the 3594 Tape Library System during a mount process (tape is damaged)
MARENFA1			x		Free tape from ARCHIVE
MARENFA2	x	x	x		ARCHIVE statements SAVE, EXPORT, POOL, PURGE
MARENIV	x	x		x	Import into 3594 Tape Library System
MARENSV	x	x		x	SVC 43 handling
MARENUCP	x	x	x	x	Automatic free tape allocation facility MARENUCP
MAREN0C1	x	x			DMS CLOSE
MAREN0D					DMS calls from MAREN subsystem
MAREN0E1	x	x			DMS reel swap
MAREN0E2	x	x		x	DMS reel swap
MAREN0F0	x				DMS device completion
MAREN0F1			x		File request
MAREN0FF	x			x	FILE get foreign VSN
MAREN0N	x				Nucleus Device Management (NDM)
MAREN0NR		x			Nucleus Device Management (NDM)
MAREN0NS		x			Nucleus Device Management (NDM)
MAREN0O1	x				DMS OPEN
MAREN0O2	x	x		x	DMS OPEN
MODASCOP				x	MARENADM statement MODIFY-ADMINISTRATION-SCOPE
MODDOMAS				x	MARENADM statement MODIFY-DOMAIN-ASSIGNMENT
MODDOMPA				x	MARENADM statement MODIFY-DOMAIN-PARAMETERS
MODGLOBP				x	MARENADM statement MODIFY-GLOBAL-PARAMETERS
MODIFY	x	x		x	MAREN statement MODIFY-VOLUME-ATTRIBUTES
MODIFY1	x	x		x	MARENADM statement MODIFY-VOLUME-ATTRIBUTES
MODPAR				x	MARENADM statement MODIFY-MAREN-PARAMETERS
MODTSET		x		x	MAREN statement MODIFY-TAPE-SET-ATTRIBUTES
MODTSET1		x		x	MARENADM statement MODIFY-TAPE-SET-ATTRIBUTES
MOUNT	x	x		x	MAREN statement MOUNT-VOLUME

(part 2 of 3)

FUNCTION NAME	READ	WRITE	RESERVE	other	Meaning
OFFLINE	x	x		x	OFFLINE
OPEN				x	MARENADM statement OPEN-MAREN-FILES
PRVOL				x	MAREN/MARENADM statement PRINT-VOLUME-ATTR
PRVOL1				x	MARENADM statement PRINT-VOLUME-ATTR
RECEIVE	x	x		x	MARENADM statement IMPORT-VOLUME
REMFDT				x	MARENADM statement REMOVE-FOREIGN-DEVICE-TYPE
REMFREE	x			x	MARENADM statement REMOVE-FREE-VOLUMES
REMHOST				x	MARENADM statement REMOVE-HOST
REMOVE	x			x	MARENADM statement DELETE-VOLUME-ENTRY
REMUSER	x			x	MARENADM statement REMOVE-USER-VOLUMES
RENFDT				x	MARENADM statement RENAME-FOREIGN-DEVICE-TYPE
RESERVE			x	x	MAREN statement RESERVE-FREE-VOLUME
RESERVE1			x	x	MARENADM statement RESERVE-FREE-VOLUME
RETOPROG				x	MAREN/MARENADM statement RETURN-TO-PROGRAM
RETURN	x	x		x	MARENADM statement RETURN-VOLUMES
SECFREE	x	x		x	MARENADM statement SECURE-FREE-VOLUMES
SHOWADMS				x	MARENADM statement SHOW-ADMINISTRATION-SCOPE
SHODOMPR				x	MARENADM statement SHOW-DOMAIN-PARAMETERS
SHOGLOPR				x	MARENADM statement SHOW-GLOBAL-PARAMETERS
SHOWFILE	x				MARENADM statement SHOW-MAREN-FILE
SHOWFREE	x			x	MARENADM statement SHOW-FREE-VOLUMES
SHOWPAR				x	MARENADM statement SHOW-MAREN-PARAMETERS
SHOWSTAT				x	MARENADM statement SHOW-MAREN-STATUS
SHOWVSNS				x	MARENADM statement SHOW-VSNS
SHWFDT		x		x	MARENADM statement SHOW-FOREIGN-DEVICE-TYPES
STOPCP				x	MARENADM statement STOP-CONTROL-PROGRAM
TAPESET1	x			x	Find all tapes in a tape set
UPDATE				x	MARENADM statement UPDATE-MAREN-CATALOG
VERIFY				x	MARENADM statement VERIFY-MAREN-CATALOG
WRITERAV				x	MARENADM statement WRITE-ACCOUNTING-RECORDS

(part 3 of 3)

12.3 MAREN service accounting

The MAREN system provides a means of charging for certain volume archiving services. It can produce accounting records for:

–   reserved computer center tapes (service type 430)

–   archived foreign tapes (service type 430)

–   reserved computer center disks (service type 431)

–   exporting volumes (service type 432)

By specifying an accounting period in the MARENADM statement WRITE-ACCOUNTING-RECORDS (using the FROM-DATE and TO-DATE operands), it is possible to evaluate the current MAREN catalog and if necessary an additional logging file (specified in the LOGGING-FILE operand). The resulting accounting records are written to a SAM file (OUTPUT-FILE) in a format suitable for processing by the RAV utility (see the "RAV (BS2000/OSD)" manual [19]).
With the help of the ACCOUNT-REC-FORMAT operand, you can choose whether records are to be generated in RAV V4.0 or V5.0 format (the default is V5.0). Please note however that RAV only supports year specifications > 2000 as of V5.0.

MAREN generates accounting records as follows:

–   The current MAREN catalog is first evaluated and accounting records are generated for service types 430 and 431. In addition to the user ID and account number, these records include information on the reservation period (beginning, end, and number of days). If the reservation period lies outside the accounting period, the start and end date are specified.

–   If a logging file is specified, accounting records are then generated for magnetic tapes and disks which were reserved during the accounting period but which have since been released or reallocated.
    The information in the logging file is also used to produce accounting records for service type 432 if a computer center volume has been exported using the EXPORT-VOLUME statement or a private volume has been returned. The start and end date are taken from the EXPORT-DATE, and the number of days is set to "1".

Format of accounting records for RAV V5.0

Field	Offset		Length	Format	Meaning
no.	hex.	dec.	(bytes)		
1	00	0	4	B	Record length field (X'00734040')
2	04	4	2	A	Record type (C'H4')
3	06	6	8	A	Processor (C'41AR␣␣␣␣')
4	0E	14	8	A	User ID from the archive entry
5	16	22	8	A	Account number from the archive entry
6	1E	30	8	A	User configuration (blanks)
7	26	38	8	A	Reserved (blanks)
8	2E	46	8	A	Job name (blanks)
9	36	54	1	A	Accounting type (blanks)
10	37	55	8	A	Start date in the format ddmmyyyy
11	3F	63	4	A	Start time in the format hhmmss
12	43	67	8	A	End date in the format ddmmyyyy
13	48	75	4	A	End time in the format hhmmss
14	4F	79	3	A	Service type (C'430', C'431', or C'432')
15	52	82	8	A	Number of days in the accounting period in the format C'␣␣␣␣␣␣nn'
16	5A	90	4	A	TSN (blanks)
17	5E	94	7	A	Fill characters (blanks)
18	65	101	14	A	Comment in the format C'aaaaaa/mm.yyyy' aaaaaa: Archive number (VSN) mm.yyyy: Month and year of expiration date

Corresponding fields in the COBOL structure of RAV V5.0

Field no.	Meaning	Field name in the COBOL structure
1	Record length field (X'00734040')	
2	Record type (C'H4')	HA-KA
3	Processor (C'41AR␣␣␣␣')	HA-CPUID/ HA-KF-KEY
4	User ID from the archive entry	HA-USERID
5	Account number from the archive entry	HA-ACCNR
6	User configuration (blanks)	HA-BRKF
7	Reserved (blanks)	HA-ACCID
8	Job name (blanks)	HA-JOB-NAME
9	Accounting type (blanks)	HA-VERR-ART
10	Start date in the format ddmmyyyy	HA-VON-DATUM/HA-START-DATUM
11	Start time in the format hhmmss	HA-VON-ZEIT/HA-START-ZEIT
12	End date in the format ddmmyyyy	HA-BIS-DATUM/HA-ENDE-DATUM
13	End time in the format hhmmss	HA-BIS-ZEIT/HA-ENDE-ZEIT
14	Service type (C'430', C'431', or C'432')	HA-LEIST-ART
15	Number of days in the accounting period in the format C'␣␣␣␣␣␣nn'	HA-MENGE
16	TSN (blanks)	HA-FILLER
17	Fill characters (blanks)	HA-TSN
18	Comment in the format C'aaaaaa/mm.yyyy' aaaaaa: Archive number (VSN) mm.yyyy: Month and year of the expiration date	HA-BEMERKUNG

12.4 SDF syntax representation

The following example shows the representation of the syntax of a command in a manual.
The command format consists of a field with the command name. All operands with their
legal values are then listed. Operand values which introduce structures and the operands
dependent on these operands are listed separately.

HELP-SDF   Alias: **HPSD**

 GUIDANCE-**MODE** = **<u>*NO</u>** / ***Y**ES

,**SDF-COM**MANDS = **<u>*NO</u>** / ***Y**ES

,**ABBR**EVIATION-**RULES** = **<u>*NO</u>** / ***Y**ES

,**GUID**ED-**DIA**LOG = **<u>*Y</u>**ES (...)

   <u>*Y</u>ES(...)

        SCREEN-STEPS = **<u>*NO</u>** / ***Y**ES

        ,**SPEC**IAL-**FUNC**TIONS = **<u>*NO</u>** / ***Y**ES

        ,**FUNC**TION-**KEYS** = **<u>*NO</u>** / ***Y**ES

        ,**NEXT-FIELD** = **<u>*NO</u>** / ***Y**ES

,**UNGUID**ED-**DIA**LOG = **<u>*Y</u>**ES (...) / ***NO**

   <u>*Y</u>ES(...)

        SPECIAL-**FUNC**TIONS = **<u>*NO</u>** / ***Y**ES

        ,**FUNC**TION-**KEYS** = **<u>*NO</u>** / ***Y**ES

This syntax description is valid for SDF V4.5A.The syntax of the SDF command/statement
language is explained in the following three tables.

table 1: Notational conventions

The meanings of the special characters and the notation used to describe command and
statement formats are explained in Table 1.

table 2: Data types

Variable operand values are represented in SDF by data types. Each data type represents
a specific set of values. The number of data types is limited to those described in Table 2.

The description of the data types is valid for the entire set of commands/statements.
Therefore only deviations (if any) from the attributes described here are explained in the
relevant operand descriptions.

table 3: Suffixes for data types

Data type suffixes define additional rules for data type input. They contain a length or interval specification and can be used to limit the set of values (suffix begins with *without*), extend it (suffix begins with *with*), or declare a particular task mandatory (suffix begins with *mandatory*). The following short forms are used in this manual for data type suffixes:

cat-id	cat
completion	compl
correction-state	corr
generation	gen
lower-case	low
manual-release	man
odd-possible	odd
path-completion	path-compl
separators	sep
temporary-file	temp-file
underscore	under
user-id	user
version	vers
wildcard-constr	wild-constr
wildcards	wild

The description of the 'integer' data type in Table 3 contains a number of items in italics; the italics are not part of the syntax and are only used to make the table easier to read.
For special data types that are checked by the implementation, Table 3 contains suffixes printed in italics (see the *special* suffix) which are not part of the syntax.

The description of the data type suffixes is valid for the entire set of commands/statements. Therefore only deviations (if any) from the attributes described here are explained in the relevant operand descriptions.

Metasyntax

Representation	Meaning	Examples
UPPERCASE LETTERS	Uppercase letters denote keywords (command, statement or operand names, keyword values) and constant operand values. Keyword values begin with *.	**HELP-SDF** **SCREEN-STEPS** = **<u>*NO</u>**
UPPERCASE LETTERS in boldface	Uppercase letters printed in boldface denote guaranteed or suggested abbreviations of keywords.	**GUID**ANCE-**MODE** = ***Y**ES
=	The equals sign connects an operand name with the associated operand values.	**GUID**ANCE-**MODE** = **<u>*NO</u>**
< >	Angle brackets denote variables whose range of values is described by data types and suffixes (see Tables 2 and 3).	**SYNTAX-F**ILE = <filename 1..54>
<u>Underscoring</u>	Underscoring denotes the default value of an operand.	**GUID**ANCE-**MODE** = **<u>*NO</u>**
/	A slash serves to separate alternative operand values.	**NEXT-FIELD** = **<u>*NO</u>** / ***Y**ES
(...)	Parentheses denote operand values that initiate a structure.	,**UNGUID**ED-**DIA**LOG = **<u>*Y</u>ES** (...) / ***NO**
[ ]	Square brackets denote operand values which introduce a structure and are optional. The subsequent structure can be specified without the initiating operand value.	**SELECT** = [***BY-ATTR**IBUTES](...)

Indentation	Indentation indicates that the operand is dependent on a higher-ranking operand.	,**GUID**ED-**DIA**LOG = **<u>*Y</u>ES** (...)
		
		  <u>*Y</u>ES(...)
		
		    SCREEN-STEPS = **<u>*NO</u>** /
		            *YES

Table 1: Metasyntax (part 1 of 2)

Representation	Meaning	Examples

│	A vertical bar identifies related operands within a structure. Its length marks the beginning and end of a structure. A structure may contain further structures. The number of vertical bars preceding an operand corresponds to the depth of the structure.	**SUP**PORT = ***TAPE**(...)
		
		    *TAPE(...)
		
		       VOLUME = <u>***ANY**</u>(...)
		
		          <u>***ANY**</u>(...)
		
		             ...

,	A comma precedes further operands at the same structure level.	**GUID**ANCE-**MODE** = <u>***NO**</u> / ***Y**ES ,**SDF-COM**MANDS = <u>***NO**</u> / ***Y**ES
list-poss(n):	The entry "list-poss" signifies that a list of operand values can be given at this point. If (n) is present, it means that the list must not have more than n elements. A list of more than one element must be enclosed in parentheses.	list-poss: ***SAM** / *ISAM list-poss(40): <structured-name 1..30> list-poss(256): ***OMF** / ***SYSLST**(...) / <filename 1..54>
Alias:	The name that follows represents a guaranteed alias (abbreviation) for the command or statement name.	**HELP-SDF** Alias: **HPSDF**

Table 1: Metasyntax (part 2 of 2)

Data types

Data type	Character set	Special rules
alphanum-name	A…Z 0…9 $, #, @	
cat-id	A…Z 0…9	Not more than 4 characters; must not begin with the string PUB
command-rest	freely selectable	
composed-name	A…Z 0…9 $, #, @ hyphen period catalog ID	Alphanumeric string that can be split into multiple substrings by means of a period or hyphen. If a file name can also be specified, the string may begin with a catalog ID in the form :cat: (see data type filename).
c-string	EBCDIC character	Must be enclosed within single quotes; the letter C may be prefixed; any single quotes occurring within the string must be entered twice.
date	0…9 Structure identifier: hyphen	Input format: yyyy-mm-dd jjjj: year; optionally 2 or 4 digits mm: month tt: day
device	A…Z 0…9 hyphen	Character string, max. 8 characters in length, corresponding to a device available in the system. In guided dialog, SDF displays the valid operand values. For notes on possible devices, see the relevant operand description.
fixed	+, - 0…9 period	Input format: [sign][digits].[digits] [sign]: + oder - [digits]: 0...9 must contain at least one digit, but may contain up to 10 characters (0...9, period) apart from the sign.

Table 2: Data types (part 1 of 6)

Data type	Character set	Special rules
filename	A…Z 0…9 $, #, @ hyphen period	Input format: [:cat:][$user.] $\left\{\begin{array}{l} \text{file} \\ \text{file(no)} \\ \text{group} \\ \\ \text{group}\left\{\begin{array}{l} \text{(*abs)} \\ \text{(+rel)} \\ \text{(-rel)} \end{array}\right\} \end{array}\right\}$:cat: optional entry of the catalog identifier; character set limited to A...Z and 0...9; maximum of 4 characters; must be enclosed in colons; default value is the catalog identifier assigned to the user ID, as specified in the user catalog. $user. optional entry of the user ID; character set is A…Z, 0…9, $, #, @; maximum of 8 characters; first character cannot be a digit; $ and period are mandatory; default value is the user's own ID. $. (special case) system default ID file file or job variable name; may be split into a number of partial names using a period as a delimiter: $name_1[.name_2[...]]$ $name_i$ does not contain a period and must not begin or end with a hyphen; file can have a maximum length of 41 characters; it must not begin with a $ and must include at least one character from the range A...Z.

Table 2: Data types (part 2 of 6)

Data type	Character set	Special rules
filename (contd.)		#file (special case) @file (special case) # or @ used as the first character indicates temporary files or job variables, depending on system generation. file(no) tape file name no: version number; character set is A...Z, 0...9, \$, #, @. Parentheses must be specified. group name of a file generation group (character set: as for "file") group $\left\{ \begin{array}{l} \text{(*abs)} \\ \text{(+rel)} \\ \text{(-rel)} \end{array} \right\}$ (*abs) absolute generation number (1-9999); * and parentheses must be specified. (+rel) (-rel) relative generation number (0-99); sign and parentheses must be specified.
integer	0…9, +, -	+ or -, if specified, must be the first character.
name	A…Z 0…9 \$, #, @	Must not begin with 0...9.

Table 2: Data types (part 3 of 6)

Data type	Character set	Special rules
partial-filename	A…Z 0…9 $, #, @ hyphen period	Input format: [:cat:][$user.][partname.] :cat: see filename $user. see filename partname 　　optional entry of the initial part of a name 　　common to a number of files or file 　　generation groups in the form: 　　$name_1.[name_2.[...]]$ 　　$name_i$ (see filename). 　　The final character of "partname" must be a 　　period. 　　At least one of the parts :cat:, $user. or 　　partname must be specified.
posix-filename	A...Z 0...9 special characters	String with a length of up to 255 characters; consists of either one or two periods or of alpha- numeric characters and special characters. The special characters must be escaped with a preceding \ (backslash); the / is not allowed. Must be enclosed within single quotes if alter- native data types are permitted, separators are used, or the first character is a ?, ! or ^. A distinction is made between uppercase and lowercase.
posix-pathname	A...Z 0...9 special characters structure identifier: slash	Input format: [/]part_1/.../part_n where $part_i$ is a posix-filename; max. 1023 characters; must be enclosed within single quotes if alter- native data types are permitted, separators are used, or the first character is a ?, ! or ^.

Table 2: Data types (part 4 of 6)

Data type	Character set	Special rules
product-version	A…Z 0…9 period single quote	Input format: [[C]'][V][m]m.naso['] correction status release status where m, n, s and o are all digits and a is a letter. Whether the release and/or correction status may/must be specified depends on the suffixes to the data type (see suffixes without-corr, without-man, mandatory-man and mandatory-corr in Table 3). product-version may be enclosed within single quotes (possibly with a preceding C). The specification of the version may begin with the letter V.
structured-name	A…Z 0…9 $, #, @ hyphen	Alphanumeric string which may comprise a number of substrings separated by a hyphen. First character: A...Z or $, #, @
text	freely selectable	For the input format, see the relevant operand descriptions.
time	0…9 structure identifier: colon	Time-of-day entry: Input format: { hh:mm:ss / hh:mm / hh } hh: hours mm: minutes } Leading zeros may be omitted ss: seconds
vsn	a) A…Z 0…9 b) A…Z 0…9 $, #, @	a) Input format: pvsid.sequence-no max. 6 characters pvsid: 2-4 characters; PUB must not be entered sequence-no: 1-3 characters b) Max. 6 characters; PUB may be prefixed, but must not be followed by $, #, @.

Table 2: Data types (part 5 of 6)

Data type	Character set	Special rules
x-string	Hexadecimal: 00…FF	Must be enclosed in single quotes; must be prefixed by the letter X. There may be an odd number of characters.
x-text	Hexadecimal: 00…FF	Must not be enclosed in single quotes; the letter X must not be prefixed. There may be an odd number of characters.

Table 2: Data types (part 6 of 6)

Suffixes for data types

Suffix	Meaning
x..y *unit*	With data type "integer": interval specification
	x minimum value permitted for "integer". x is an (optionally signed) integer.
	y maximum value permitted for "integer". y is an (optionally signed) integer.
	unit with "integer" only: additional units. The following units may be specified: *days* *byte* *hours* *2Kbyte* *minutes* *4Kbyte* *seconds* *Mbyte* *milliseconds*
x..y *special*	With the other data types: length specification For data types catid, date, device, product-version, time and vsn the length specification is not displayed.
	x minimum length for the operand value; x is an integer.
	y maximum length for the operand value; y is an integer.
	x=y the length of the operand value must be precisely x.
	special Specification of a suffix for describing a special data type that is checked by the implementation. "special" can be preceded by other suffixes. The following specifications are used: *arithm-expr* arithmetic expression (SDF-P) *bool-expr* logical expression (SDF-P) *string-expr* string expression (SDF-P) *expr* freely selectable expression (SDF-P) *cond-expr* conditional expression (JV) *symbol* CSECT or entry name (BLS)
with	Extends the specification options for a data type.

-compl	When specifying the data type "date", SDF expands two-digit year specifications in the form yy-mm-dd to:
	     20jj-mm-tt if jj < 60
	     19jj-mm-tt if jj $\geq$ 60

-low	Uppercase and lowercase letters are differentiated.
-path-compl	For specifications for the data type "filename", SDF adds the catalog and/or user ID if these have not been specified.

Table 3: Data type suffixes (part 1 of 7)

Suffix	Meaning
with (contd.)	
-under	Permits underscores (_) for the data types "name" and "composed-name".
-wild(n)	Parts of names may be replaced by the following wildcards. n denotes the maximum input length when using wildcards. Due to the introduction of the data types posix-filename and posix-pathname, SDF now accepts wildcards from the UNIX world (referred to below as POSIX wildcards) in addition to the usual BS2000 wildcards. However, as not all commands support POSIX wildcards, their use for data types other than posix-filename and posix-pathname can lead to semantic errors. Only POSIX wildcards or only BS2000 wildcards should be used within a search pattern. Only POSIX wildcards are allowed for the data types posix-filename and posix-pathname. If a pattern can be matched more than once in a string, the first match is used.

	BS2000 wildcards	Meaning
	*	Replaces an arbitrary (even empty) character string. If the string concerned starts with *, then the * must be entered twice in succession if it is followed by other characters and if the character string entered does not contain at least one other wildcard.
	Terminating period	Partially-qualified entry of a name. Corresponds implicitly to the string "./*", i.e. at least one other character follows the period.
	/	Replaces any single character.
	$<s_x:s_y>$	Replaces a string that meets the following conditions: – It is at least as long as the shortest string (s_x or s_y) – It is not longer than the longest string (s_x or s_y) – It lies between s_x and s_y in the alphabetic collating sequence; numbers are sorted after letters (A...Z, 0...9) – s_x can also be an empty string (which is in the first position in the alphabetic collating sequence) – s_y can also be an empty string, which in this position stands for the string with the highest possible code (contains only the characters X'FF')
	$<s_1,...>$	Replaces all strings that match any of the character combinations specified by s. s may also be an empty string. Any such string may also be a range specification "$s_x:s_y$" (see above).

Table 3: Data type suffixes (part 2 of 7)

Suffix	Meaning	
with-wild(n) (contd.)	-s	Replaces all strings that do not match the specified string s. The minus sign may only appear at the beginning of string s. Within the data types filename or partial-filename the negated string -s can be used exactly once, i.e. -s can replace one of the three name components: cat, user or file.
	Wildcards are not permitted in generation and version specifications for file names. Only system administration may use wildcards in user IDs. Wildcards cannot be used to replace the delimiters in name components cat (colon) and user ($ and period).	
	POSIX wildcards	Meaning
	*	Replaces any single string (including an empty string). An * appearing at the first position must be duplicated if it is followed by other characters and if the entered string does not include at least one further wildcard.
	?	Replaces any single character; not permitted as the first character outside single quotes.
	$[c_x\text{-}c_y]$	Replaces any single character from the range defined by c_x and c_y, including the limits of the range. c_x and c_y must be normal characters.
	[s]	Replaces exactly one character from string s. The expressions $[c_x\text{-}c_y]$ and [s] can be combined into $[s_1c_x\text{-}c_ys_2]$.
	$[!c_x\text{-}c_y]$	Replaces exactly one character not in the range defined by c_x and c_y, including the limits of the range. c_x and c_y must be normal characters. The expressions $[!c_x\text{-}c_y]$ and [!s] can be combined into $[!s_1c_x\text{-}c_ys_2]$.
	[!s]	Replaces exactly one character not contained in string s. The expressions [!s] and $[!c_x\text{-}c_y]$ can be combined into $[!s_1c_x\text{-}c_ys_2]$.

Table 3: Data type suffixes (part 3 of 7)

Suffix	Meaning
with (contd.)	
wild-constr(n)	Specification of a constructor (string) that defines how new names are to be constructed from a previously specified selector (i.e. a selection string with wildcards). See also with-wild. n denotes the maximum input length when using wildcards. The constructor may consist of constant strings and patterns. A pattern (character) is replaced by the string that was selected by the corresponding pattern in the selector. The following wildcards may be used in constructors:

Wildcard	Meaning
*	Corresponds to the string selected by the wildcard * in the selector.
Termina-ting period	Corresponds to the partially-qualified specification of a name in the selector; corresponds to the string selected by the terminating period in the selector.
/ or ?	Corresponds to the character selected by the / or ? wildcard in the selector.
<n>	Corresponds to the string selected by the n-th wildcard in the selector, where n is an integer.

Allocation of wildcards to corresponding wildcards in the selector:
All wildcards in the selector are numbered from left to right in ascending order (global index).
Identical wildcards in the selector are additionally numbered from left to right in ascending order (wildcard-specific index).
Wildcards can be specified in the constructor by one of two mutually exclusive methods:

1. Wildcards can be specified via the global index: <n>

2. The same wildcard may be specified as in the selector; substitution occurs on the basis of the wildcard-specific index. For example: the second "/" corresponds to the string selected by the second "/" in the selector

Table 3: Data type suffixes (part 4 of 7)

Suffix	Meaning
with-wild-constr(n) (contd.)	The following rules must be observed when specifying a constructor: – The constructor can only contain wildcards of the selector. – If the string selected by the wildcard <...> or [...] is to be used in the constructor, the index notation must be selected. – The index notation must be selected if the string identified by a wildcard in the selector is to be used more than once in the constructor. For example: if the selector "A/" is specified, the constructor "A\<n>\<n>" must be specified instead of "A//". – The wildcard * can also be an empty string. Note that if multiple asterisks appear in sequence (even with further wildcards), only the last asterisk can be a non-empty string, e.g. for "****" or "*//*". – Valid names must be produced by the constructor. This must be taken into account when specifying both the constructor and the selector. – Depending on the constructor, identical names may be constructed from different names selected by the selector. For example: "A/*" selects the names "A1" and "A2"; the constructor "B*" generates the same new name "B" in both cases. To prevent this from occurring, all wildcards of the selector should be used at least once in the constructor. – If the constructor ends with a period, the selector must also end with a period. The string selected by the period at the end of the selector cannot be specified by the global index in the constructor specification.

Table 3: Data type suffixes (part 5 of 7)

Suffix	Meaning
with-wild-constr(n) (contd.)	Examples:

Selector	Selection	Constructor	New name
A//*	AB1 AB2 A.B.C	D<3><2>	D1 D2 D.CB
C.<A:C>/<D,F>	C.AAD C.ABD C.BAF C.BBF	G.<1>.<3>.XY<2>	G.A.D.XYA G.A.D.XYB G.B.F.XYA G.B.F.XYB
C.<A:C>/<D,F>	C.AAD C.ABD C.BAF C.BBF	G.<1>.<2>.XY<2>	G.A.A.XYA G.A.B.XYB G.B.A.XYA G.B.B.XYB
A//B	ACDB ACEB AC.B A.CB	G/XY/	GCXYD GCXYE GCXY. [1] G.XYC

[1] The period at the end of the name may violate naming conventions (e.g. for fully-qualified file names).

Suffix	Meaning
without	Restricts the specification options for a data type.
-cat	Specification of a catalog ID is not permitted.
-corr	Input format: [[C]'][V][m]m.na['] Specifications for the data type product-version must not include the correction status.
-gen	Specification of a file generation or file generation group is not permitted.
-man	Input format: [[C]'][V][m]m.n['] Specifications for the data type product-version must not include either release or correction status.
-odd	The data type x-text permits only an even number of characters.
-sep	With the data type "text", specification of the following separators is not permitted: ; = ( ) < > ␣ (i.e. semicolon, equals sign, left and right parentheses, greater than, less than, and blank).
-temp-file	Specification of a temporary file is not permitted (see #file or @file under filename).

Table 3: Data type suffixes (part 6 of 7)

Suffix	Meaning
without (contd.)	
-user	Specification of a user ID is not permitted.
-vers	Specification of the version (see "file(no)") is not permitted for tape files.
-wild	The file types posix-filename and posix-pathname must not contain a pattern (character).
mandatory	Certain specifications are necessary for a data type.
-corr	Input format: [[C]'][V][m]m.naso['] Specifications for the data type product-version must include the correction status and therefore also the release status.
-man	Input format: [[C]'][V][m]m.na[so]['] Specifications for the data type product-version must include the release status. Specification of the correction status is optional if this is not prohibited by the use of the suffix without-corr.
-quotes	Specifications for the data types posix-filename and posix-pathname must be enclosed in single quotes.

Table 3: Data type suffixes (part 7 of 7)

12.5 SDF standard statements

The following SDF standard statements can be used during a MAREN, MARENADM or MARENEKM run.

Statement	Function
END	Terminates the MAREN/MARENADM program
EXECUTE-SYSTEM-COMMAND	Executes the command during the program run
HOLD-PROGRAMM	Switches to BS2000 system mode
MODIFY-SDF-OPTIONS	Modifies the SDF settings
REMARK	Adds comments to programs
RESET-INPUT-DEFAULTS	Deletes task-specific default values
RESTORE-SDF-INPUT	Redisplays the last entry
SHOW-INPUT-DEFAULTS	Outputs task-specific default values
SHOW-INPUT-HISTORY	Outputs the input buffer to SYSOUT
SHOW-SDF-OPTIONS	Displays the SDF settings
STEP	Defines a restart point
WRITE-TEXT	Writes text to SYSOUT

The SDF standard statements are not described in this manual. A description is provided in the manual "Introductory Guide to the SDF Dialog Interface" [22].

12.6 Aliases for statements and commands

The most commonly used statements for MARENADM, MARENEKM and MAREN as well
as the MAREN commands also have an alias that is documented in the syntax format next
to the name of the command as its "alias" (see also section "SDF syntax representation" on
page 528).
The alias consists of a maximum of 5 characters (A...Z). The alias is derived from the name
of the statement or command. Parts of names are always abbreviated in the same manner
(e.g. SH for SHOW).
In some cases there may be two aliases (e.g. CL and CLMF for CLOSE-MAREN-FILES).
The alias is guaranteed to be valid in the long term. It is not possible to abbreviate the alias.

The following tables contain all aliases for MARENADM/MARENEKM statements together
with the administrator roles involved and also those for MAREN statements and MAREN
commands.

Aliases for MARENADM statements

Statement	Alias	Privilege
ADD-FOREIGN-DEVICE-TYPE	ADFDT	ADA, administrator without domains
ADD-FREE-VOLUMES	ADFV	ADA, administrator without domains
ADD-HOST	ADHO	ADA, administrator without domains
ADD-PRIVATE-VOLUME	ADPV	ADA, DA, administrator without domains
ADD-RESERVED-VOLUME	ADRV	ADA, administrator without domains
CHANGE-LOGGING-FILE	CHLF	ADA, DA, administrator without domains
CHECK-TSOSCAT	CHTS	ADA, DA, administrator without domains (only TSOS)
CLOSE-MAREN-FILES	CLMF	ADA, DA, administrator without domains
COPY-VOLUME-CATALOG	CPVC	ADA, DA, administrator without domains
DELETE-VOLUME-ENTRY	DLVE	ADA, DA, administrator without domains
ENTER-MAREN-PROCEDURE	ENMP	ADA, DA, administrator without domains
EXPORT-VOLUME	EXV	ADA, DA, administrator without domains
FREE-VOLUMES	FRV	ADA, DA, administrator without domains
IMPORT-VOLUME	IMV	ADA, DA, administrator without domains
INITIALIZE-VOLUMES	INV	ADA, DA, administrator without domains
MODIFY-ADMINISTRATION-SCOPE	MDAS	ADA, DA
MODIFY-DOMAIN-ASSIGNMENT	MDDA	ADA
MODIFY-DOMAIN-PARAMETERS	MDDP	ADA

(part 1 of 2)

Statement	Alias	Privilege
MODIFY-GLOBAL-PARAMETERS	MDGP	ADA, administrator without domains
MODIFY-MAREN-PARAMETERS	MDMP	ADA, DA, administrator without domains
MODIFY-TAPE-SET-ATTRIBUTES	MDTSA	ADA, DA, administrator without domains
MODIFY-VOLUME-ATTRIBUTES	MD / MDVA	ADA, DA, administrator without domains
OPEN-MAREN-FILES	OPMF	ADA, DA, administrator without domains
PRINT-VOLUME-ATTRIBUTES	PR / PRVA	ADA, DA, administrator without domains
REMOVE-FOREIGN-DEVICE-TYPE	RMFDT	ADA, administrator without domains
REMOVE-FREE-VOLUMES	RMFV	ADA, DA, administrator without domains
REMOVE-HOST	RMHO	ADA, administrator without domains
REMOVE-USER-VOLUMES	RMUV	ADA, administrator without domains
RENAME-FOREIGN-DEVICE-TYPE	RNFDT	ADA, administrator without domains
RESERVE-FREE-VOLUME	RSFV	ADA, DA, administrator without domains
RETURN-VOLUMES	RTV	ADA, DA, administrator without domains
SECURE-FREE-VOLUMES	SCFV	ADA, DA, administrator without domains
SHOW-ADMINISTRATION-SCOPE	SHAS	ADA, DA
SHOW-DOMAIN-PARAMIETERS	SHDP	ADA, DA
SHOW-FOREIGN-DEVICE-TAPE	SHFDT	ADA, administrator without domains
SHOW-FREE-VOLUMES	SHFV	ADA, DA, administrator without domains
SHOW-GLOBAL-PARAMIETERS	SHGP	ADA, administrator without domains
SHOW-MAREN-FILE	SHMF	ADA, DA, administrator without domains
SHOW-MAREN-PARAMETERS	SHMP	ADA, DA, administrator without domains
SHOW-MAREN-STATUS	SHMS	ADA, DA, administrator without domains
SHOW-VOLUME-ATTRIBUTES	SH / SHVA	ADA, DA, administrator without domains
STOP-CONTROL-PROGRAM	STCP	ADA, DA, administrator without domains
UPDATE-MAREN-CATALOG	UPMC	ADA, DA, administrator without domains
VERIFY-MAREN-CATALOG	VRMC	ADA, DA, administrator without domains
WRITE-ACCOUNTING-RECORDS	WRAR	ADA, DA, administrator without domains

(part 2 of 2)

Aliases for MARENEKM statements

Statement	Alias	Privilege
ADD-ENCRYPTION-KEY	ADEK	Encryption key administrator
COPY-ENCRYPTION-KEYS	CPEK	Encryption key administrator
CREATE-ENCRYPTION-KEY	CREK	Encryption key administrator
DELETE-KEY-BOX	DLKB	Encryption key administrator
EXPORT-KEY-BOX	EXKB	Encryption key administrator
IMPORT-KEY-BOX	IMKB	Encryption key administrator
MODIFY-VOLUME-ENCRYPTION-ATTR	MDVEA	Encryption key administrator
REMOVE-ENCRYPTION-KEYS	RMEK	Encryption key administrator
REPAIR-KEY-BOX	RPKB	Encryption key administrator
SET-WRITE-ENCRYPTION-KEY	STWEK	Encryption key administrator
SHOW-ENCRYPTION-KEYS	SHEK	Encryption key administrator
SHOW-VOLUME-ENCRYPTION-ATTR	SHVEA	Encryption key administrator

The encryption key administrator uses MARENEKM to manage encryption keys within the home domain.

To manage the encryption keys of another domain, he/she would first have to become the DA of this domain.

Aliases for MAREN statements

Statement	Alias
CHECK-TSOSCAT	CHTS
DELETE-VOLUME-ENTRY	DLVE
EXPORT-VOLUME	EXV
MODIFY-TAPE-SET-ATTRIBUTES	MDTSA
MODIFY-VOLUME-ATTRIBUTES	MD / MDVA
MOUNT-VOLUME	MTV
PRINT-VOLUME-ATTRIBUTES	PR / PRVA
RESERVE-FREE-VOLUME	RSFV
SHOW-VOLUME-ATTRIBUTES	SH / SHVA

Aliases for MAREN commands

Statement	Alias
ADD-MAREN-FILE-ENTRY	ADMFE
REMOVE-MAREN-FILE-ENTRY	RMMFE
SHOW-MAREN-FILE-ENTRY	SHMFE

Related publications

The manuals are available as online manuals, see *http://manuals.ts.fujitsu.com*, or in printed form which must be paid and ordered separately at *http://manualshop.ts.fujitsu.com*

[1]   **MAREN** (BS2000/OSD)
Volume 1: Basics of MTC Management
User Guide

[2]   **ARCHIVE** (BS2000/OSD)
User Guide

[3]   **ASSEMBH** (BS2000/OSD)
Reference Manual

[4]   **AVAS** (BS2000/OSD)
Functions

[5]   **BS2000/OSD-BC**
Commands
User Guide

[6]   **BS2000/OSD-BC**
Introductory Guide to DMS
User Guide

[7]   **BS2000/OSD-BC**
Introductory Guide to Systems Support
User Guide

[8]   **BS2000/OSD-BC**
System Exits
User Guide

[9]   **BS2000/OSD-BC**
      System Installation
      User Guide

[10] **CentricStor**
      Operating Manual

[11] **FDDRL** (BS2000/OSD)
      User Guide

[12] **FHS** (TRANSDATA)
      User Guide

[13] **HIPLEX MSCF** (BS2000/OSD)
      Multiprocessor System
      User Guide

[14] **HSMS / HSMS-SV** (BS2000/OSD)
      Hierarchical Storage Management System
      Volume 1: Functions, Management and Installation
      Volume 2: Statements
      User Guide

[15] **IMON** (BS2000/OSD)
      Installation Monitor
      User Guide

[16] **JV** (BS2000/OSD)
      Job Variables
      User Guide

[17] **LMS** (BS2000/OSD)
      User Guide

[18] **MSGMAKER** (BS2000/OSD)
      User Guide

[19] **RAV** (BS2000/OSD)
      Computer Center Accounting Procedure
      User Guide

[20] **RFA** (BS2000/OSD)
      Remote File Access
      User Guide

[21]   **ROBAR** (BS2000/OSD, Reliant UNIX, Solaris)
         Tape Cartridge Archiving System
         User Guide

[22]   **SDF** (BS2000/OSD)
         Introductory Guide to the SDF Dialog Interface
         User Guide

[23]   **SECOS** (BS2000/OSD)
         Security Control System
         User Guide

[24]   **SORT** (BS2000/OSD)
         User Guide

[25]   **Spool & Print - Commands** (BS2000/OSD)
         User Guide

[26]   **TLS** (BS2000/OSD)
         Tape Library System
         User Guide

Glossary

This glossary explains some of the terms used frequently in this manual. The terms are listed in alphabetical order. Cross-references are indicated by *italics*.

3594 Tape Library System
> An automatic archive system for small to medium capacities, which is connected to a BS2000 system via a type 2 channel. It receives its tape processing jobs from BS2000 via *TLS*.

Administrator without domains
> An administrator who works in the MAREN network without domains (see also MAREN administrator).

All-Domain Administrator (ADA)
> See MAREN administrator

AML Automatic Media Library
> The AML (Automatic Media Library) system from ADIC consists of an archive computer, robots and storage systems for MTCs. It is linked to a BS2000 system and receives jobs from BS2000 via ROBAR.

archive entry fields
> An archive entry consists of several fields containing the various attributes (e.g. the FREE-DATE field contains the volume expiration date).

archive table
> The archive table is a file belonging to the archive computer or a database if an archive system is being used. The archive table allocates the VSNs (volume sequence numbers) of a cartridge to its location.

archive system
> An archive consists of a cartridge storage area (shelves or locations containing the MTCs), an archive computer which controls access to the volumes, a series of MTC devices and a mechanical device (e.g. gripping arm or robot) with which the MTCs are automatically transported and mounted within the archive.

computer center volume

This volume is the property of the computer center; it is made available to a user for a limited period of time.

data key

A key (256-bit long bit string) which an LTO-4 drive uses for encryption/ decryption. The data key is generated by MAREN and supplied to the drive by means of PTAM.
The data key is stored in the metadata of the encrypted tape and can therefore only be lost together with the tape.
To protect the tape contents from being read by unauthorized persons, MAREN encrypts the data key using the *encryption key*.

Domain

A domain is a group of hosts within a MAREN network. A domain consists not only of the hosts, but also of the volumes which are processed on these hosts. The information on the domains is stored in the MAREN catalog.
Domains represent a protection mechanism: Access to volumes is only possible within the domain involved. This applies on the one hand for accesses to data stored on the volumes, and on the other hand also for accesses to the MAREN catalog, in other words to the data about the volumes.

Domain Administrator (DA)

See MAREN administrator

encryption key

MAREN requires the encryption key to encrypt/decrypt the *data key*.
The encryption key consists of the *key value* and *key ID*.
Only with the encryption key can the data key of a tape be decrypted and the tape contents be read again.
MAREN stores the encryption keys in a *key box* and fetches the required encryption key from the key box when a volume is read.

ETERNUS CS (CentricStor) - Virtual Tape Library

The ETERNUS CS (CentricStor) archive system is an archive of virtual volumes which are created on a RAID disk system. They are swapped out asynchronously to real magnet tape cartridges or retrieved from there, as the necessity occurs. Virtual volumes in the disk system can be accessed quickly. The real volumes and devices are transparent to the operating system, and MAREN, on the other hand, only manages the virtual volumes.

file expiration date

This is the expiration date for a file on a *volume*. It corresponds to field 10 (expiration date) in the HDR1 label on the tape when a tape file has been generated. This date is defined when the file is created using the RETENTION-PERIOD parameter in the ADD-FILE-LINK command. The MAREN system internally ensures that the *volume expiration date* will always be at least as high as the value for the file expiration date.

foreign volume

This volume is not the property of the computer center. It is imported to the *MAREN catalog* by a user via the administrator with the purpose of being processed in the computer center for a limited period of time.

free volume

This is a volume which belongs to the computer center (*computer center volume*) and which can be reserved by a user as required.

free volume pool (Free-Pool)

This is the set of free volumes available for new reservations.

key box

This is a special ISAM file in which MAREN stores the *encryption keys*. The system key box $SYSMAREN.MAREN.KEY-BOX on the host's home pubset must contain the encryption keys of all tapes which may be decrypted on this host. A maximum of one encryption key of the system key box is defined as the write encryption key for writing encrypted tape contents.
"Private" key boxes are used for storing copied keys or as backup copies. MAREN uses a transfer key box specifically for exporting/importing encrypted volumes .

key ID

The key ID (18 characters) is used for finding the *encryption key* which is required for decryption. It is assigned by MAREN and is globally unique, the encryption key administrator being able to specify the first 4 characters on a user-specific basis.

key value

The key value can be up to 256 bytes in length and is used to encrypt the *data key*. The encryption key administrator specifies the key value when the *encryption key* is generated.

locally available

A volume is locally available if the catalog entry field TEMP-LOCATION in the *volume catalog* indicates a location in the vicinity of the machine room. Locations of this kind are defined in the MAREN parameter set with "L".

location

Archive with volumes and devices. A location is identified by its name, type and *operating mode*.

MAREN administrator

The MAREN administrator monitors and manages the complete MAREN system. MAREN administrators identify themselves by entering the MAREN password. When the software product SECOS is used, the user ID (SYSMAREN) of the MAREN administrator should have the TAPE-ADMINIS-TRATION system privilege.

When domains are used two different administrator roles exist:
– The Domain Administrator (DA)
  DAs are permitted to execute statements of the MARENADM administration program within their own domain. They may not work in other domains.
– The All-Domain Administrator (ADA)
  ADAs administer the domains using special statements of the MARENADM administration program. Furthermore they are permitted to perform DA tasks in all domains. To do this they can explicitly adopt the role of the DA. The default domain- or host-specific parameters then apply for the ADA. The ADA must be permittted to execute statements on at least on host in the MAREN network.

MAREN catalog

Central database of the MAREN system containing all information on the volumes. The MAREN catalog comprises the *volume catalog* with the archive entry fields, secondary index files and possibly logging files (if any).

MAREN encryption key administrator

When volume encryption is used, the encryption key administrator manages the *encryption keys* of his/her own domain. The user ID with the system privilege TAPE-KEY-ADMINISTRATION has the authorization for this task.

The encryption key administrator's task comprise:
– creating *encryption keys*
– defining the *encryption key* for encryption
– managing the *key boxes* for the *encryption keys*
– importing the *encryption keys* of foreign volumes
– additional storage of the encryption data at a safe location to permit re-construction in the event of a disaster

MAREN network

A MAREN network consists of all the hosts which access the same *MAREN catalog*.

MAREN parameters

The MAREN parameters control execution of MAREN and the control programs MARENCP and MARENUCP. The following types of MAREN parameter exist:
– Host-specific parameters which are defined with the MARENADM statement MODIFIY-MAREN-PARAMETERS.
– Domain-specific parameters which are defined with the MARENADM statement MODIFIY-DOMAIN-PARAMETERS.
– Global parameters which are defined with the MARENADM statement MODIFIY-GLOBAL-PARAMETERS.

MAREN transaction

Access to the *MAREN catalog* via the control program MARENCP.

MAREN user

Generic term which refers to both the privileged *MAREN administrator* and the nonprivileged *MAREN user*. The latter has no special privileges and employs the MAREN user program to manage the volumes which are reserved for his/her user ID in the MAREN catalog.

MTC

Magnetic tape cartridge.
A synonym used for MTCs is volume.

offline logging

If the *MAREN catalog* is not available for any reason, offline logging can be activated. This means that processing continues without the MAREN catalog but that logging records continue to be written. This is only possible if the control task MARENCP continues to run. Once the error has been recovered, a current MAREN catalog can be generated using the UPDATE-MAREN-CATALOG statement. Offline logging is activated if a MARENCP ENTER file without the link name MARENCAT is started.

operating mode

MAREN determines the archive system to which it is to send its jobs not only from the locations and the archive systems, but also from the operating mode of the *location*. Operating mode "TLS-1", for example, is defined for the *3594 Tape Library System.*
Other operating modes are "EXTERNAL", "ROBAR-1" and "ROBAR-2".

Parameters

>See MAREN parameters

reserved volume

>This is a volume which belongs to the computer center and which is assigned to a certain user (and therefore a user ID) for a limited period of time. The reservation can be made explicitly using the RESERVE-FREE-VOLUME statement or implicitly, e.g. via the scratch request. Reservation is terminated when the *volume expiration date* is reached.

ROBAR

>**Rob**ot **ar**chive. ROBAR is a software product running close to the system under BS2000 through which the BS2000 system(s) and the archive systems (AML and ETERNUS CS (CentricStor)) communicate.

scratch request

>Mount job for a volume without specification of an volume serial number (VSN).

secondary indexes

>The MAREN catalog contains secondary indexes for the user ID and the file name in addition to the volume-related ISAM index. ISAM access to an archive entry is therefore now also possible via the secondary indexes for the user ID and the file name.

spin-off

>If MARENADM rejects a statement because of a syntax error, or if the statement is aborted or not executed due to a processing error, all subsequent statements through to the next //STEP statement are skipped. If the sequence of statements contains no further //STEP statement, MARENADM triggers the spin-off mechanism when the program is ended (END). All commands through to the next /SET-JOB-STEP or the end of the procedure or ENTER file are skipped.

Standard domain (STD-DOM)

>A standard domain contains the volumes which can be processed on all hosts. Hosts do not generally belong to the standard domain.

tape encryption

>A hardware feature of LTO-4 drives with which data is written to the volume in encrypted form or the data is decrypted again when the volume is read.

tape set

>The volumes belonging to a file version form a MAREN tape set in the MAREN catalog. However, the term has very little in common with the term as it is used in various BS2000 commands (e.g. CREATE-TAPE-SET).

TLS

Tape Library System. TLS is a subsystem which, in conjunction with MAREN, manages and controls the *3594 Tape Library System*.

User's own domain (Own Domain)

The user's own domain is the domain on the host in which the ADA or DA is currently working.

virtual volume

A virtual *volume* is not a real storage medium, rather, a storage area is reserved for it on a real storage medium. The storage area is processed in the same way as a real volume. From the viewpoint of the user, only the virtual volume exists, the real one is transparent.

The ETERNUS CS (CentricStor) archive system, for instance, uses virtual volumes.

volume

Floppy disks, magnetic tapes, magnetic tape cartridges, optical disks, CDs etc. Each volume must have its own unique VSN.

In the context of archive systems in particular, the terms "volume" and "cartridge" are used synonymously.

volume catalog

File of the *MAREN catalog*. The volume catalog comprises the global parameter set, the host-specific parameters sets and the archive records containing information on every volume managed in the MAREN system.

volume expiration date

Until this date is reached, a *reserved volume* is available for the user (to be more precise: the user ID) which has been entered. Afterwards it is transferred to the pool of *free volumes*.

volume group

Logically related volumes are combined by the *MAREN user* to form a volume group. Via a name the user has selected, he/she addresses the volumes of a volume group in particular MAREN and MARENADM statements. The volume group is an additional archive entry field in the volume catalog, not a separate administrative unit. All files on a volume belong to the same volume group.

volume status

A volume's availability which is stored in the *MAREN catalog* as an attribute. A volume can be freely available (FREE) or reserved for a particular user (RESERVED). Foreign volumes are assigned the volume status PRIVATE.

write encryption key

An *encryption key* with which the relevant data key is encrypted when encrypted data is written. The encryption key administrator defines which encryption key from the system *key box* is used as the write encryption key.

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