INSTALLATION & CUSTOMIZATION

HCC/MVS 3.0

HOST

COMMUNICATION

CONTROL

9th edition

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IMPRINT

9th Edition

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CONTENTS

1 INSTALLATION AND CUSTOMIZATION GUIDE 1-1

1.1 LITERATURE 1-1

2 PLANNING 2-1

2.1 CONVERTING FROM A MANUAL ARCHIVE TO AN AML ARCHIVE 2-1
2.1.1 MANUAL ARCHIVE 2-1
2.1.2 INTEGRATING THE AML SYSTEM 2-4
2.2 DYNAMIC ARCHIVE 2-7
2.3 SCRATCH TAPE PROCESSING 2-9
2.3.1 OVERVIEW OF SCRATCH TAPE PROCESSING 2-9
2.3.2 ALTERNATIVES FOR SCRATCH TAPE SELECTION 2-9
2.3.3 SCRATCH TAPE PROCESSING FLOW 2-10
2.4 SPECIAL DETAILS OF THE MAJOR-MINOR CONCEPT 2-12
2.5 CATALOG INSTALLATION EXIT ZHC026DU 2-16
2.5.1 OVERVIEW INSTALLATION EXIT ZHC026DU 2-16
2.5.2 INFLUENCING MVS ALLOCATION 2-16
2.6 FOREIGN MOUNT AREA 2-17
2.7 PRECONDITIONS FOR AN AMU CONNECTION 2-18
2.7.1 AMU CONNECTION ON 3274 COAX 2-18
2.7.2 AMU CONNECTION ON 3174 COAX 2-18
2.7.3 AMU CONNECTION ON 3172 TR, ETHERNET, WIDEBAND 2-18
2.7.4 AMU CONNECTION ON 3274-TRA 2-19
2.7.5 AMU CONNECTION ON 3174-TRA 2-19
2.7.6 AMU CONNECTION ON 3172-TRA 2-19
2.7.7 AMU CONNECTION (SPECIAL FORMS) 2-19
2.8 SINGLE SEND AND DOUBLE SEND DIFFERENCES 2-20
2.8.1 SENDING SINGLE MESSAGES TO ROBOTS 2-20
2.8.2 SENDING DOUBLE MESSAGES TO ROBOTS 2-20
2.9 HCC/AML INSTALLATION COMBINED WITH DFSMS 2-21
2.9.1 DATASET / UNIT ALLOCATION UNDER DFSMS CONTROL 2-21
2.9.2 INSTALLING AML WITH DFSMSHSM 2-23
2.9.3 INSTALLING HCC/AML WITH DFSMSRMM 2-29

3 INSTALLATION 3-1

3.1 INSTALLATIONSTEPS 3-1
3.2 MIGRATION STEPS 3-2
3.3 INSTALLATION ENVIRONMENT 3-3
3.4 SYS1.PARMLIB 3-4
3.4.1 IEAAPFNN / PROGNN 3-4
3.4.2 LNKLSTNN 3-4
3.4.3 IEFSSNNN 3-5
3.4.4 COMMNDNN 3-5
3.4.5 IKJTSONN 3-6

3.5 INSTALLATION OF THE CATALOG EXIT 3-7
3.5.1 JCL FOR LINK 3-7
3.5.2 IEALPANN FOR CATALOG EXIT (OPTIONAL) 3-8
3.5.3 IEFSSNNN FOR CATALOG EXIT 3-8
3.5.4 COMMNDNN FOR CATALOG EXIT(OPTIONAL) 3-8
3.5.5 HACCISSI PROCEDURE 3-8
3.6 SMP/E INSTALLATION 3-9
3.6.1 INSTALLATION TAPE FORMAT 3-9
3.6.2 COPYING INSTLIB FROM THE INSTALLATION TAPE 3-10
3.6.3 JCL EXAMPLE FOR PTF RECEIVE 3-11
3.6.4 CREATING THE TARGET AND DISTLIBS 3-12
3.7 NON-SMP INSTALLATION 3-13

4 HCC FILES 4-1

4.1 UNIT LOG FOR STATISTICS AND RECOVERY 4-2
4.2 ARCHIVE MIRROR 4-3
4.3 EXCHANGE LOG 4-4
4.4 MESSAGE LOG 4-6
4.4.1 SAVING THE HCC MESSAGE LOG FILES 4-7

5 HACCPARM LIBRARY 5-1

5.1 HACPARM1 DATASET 5-1
5.2 HACPARM2 DATASET 5-2

6 HACCPARM INSTRUCTIONS 6-1

6.1 HACCPARM SYNTAX 6-2
6.1.1 SINGLE STATEMENTS 6-2
6.1.2 MULTIPLE LINE STATEMENTS 6-2
6.1.3 COMMENTS 6-2
6.1.4 DESCRIPTION 6-2
6.1.5 EXAMPLES 6-2

7 HCC ARCHIVE ADMINISTRATION - HAA 7-1

7.1 OVERVIEW - HAA 7-1
7.2 HCC ARCHIVE MIRROR 7-2
7.3 HAA FUNCTIONS 7-3
7.4 CALLING 7-4
7.5 SETTING UP THE ARCHIVE 7-5

8 COMMUNICATION INTERFACE (AMU, AR) 8-1

8.1 ARCHIVE COMPUTER (AR) 8-1
8.1.1 AR CONNECTION TO 3274 USING COAX 8-1
8.1.2 AR CONNECTION TO 3174 USING COAX 8-1

8.2 ARCHIVE MANAGEMENT UNIT (AMU) 8-2
8.2.1 AMU CONNECTION TO 3274 COAX 8-2
8.2.2 AMU CONNECTION TO 3174 COAX 8-2
8.2.3 AMU CONNECTION TO 3172 TR, ETHERNET, WIDEBAND 8-2
8.2.4 AMU CONNECTION TO 3274-TRA 8-3
8.2.5 AMU CONNECTION TO 3174-TRA 8-3
8.2.6 AMU CONNECTION TO 3172-TRA 8-3
8.2.7 AMU CONNECTION (SPECIAL CASES) 8-3
8.3 DEFINITION EXAMPLES - VTAM LU 6.2 AND LU 2 8-5
8.3.1 LOGMODE 3270 SESSION (OS/2) 8-5
8.3.2 LOGMODE LU 6.2 SINGLE SESSION (OS/2) 8-5
8.3.3 LOGMODE LU 6.2 PARALLEL SESSION (OS/2) 8-5
8.3.4 USSTAB 8-6
8.3.5 RESOURCE DEFINITION HOST LU 6.2 (APPL STATEMENT) 8-6
8.3.6 RESOURCE DEFINITION PC TOKEN RING/3745 (SWNET STATEMENT) 8-6
8.3.7 RESOURCE DEFINITION PC TOKEN RING/3174 8-7
8.3.8 HACNET STATEMENTS 8-8
8.4 DEFINITION EXAMPLES VTAM LU 2 8-12
8.4.1 APPL-STATEMENT 8-12
8.4.2 NCP - X.25 AND SDLC 8-12
8.4.3 COMDEFN-STATEMENT 8-12
8.5 NETWORK DEFINITION FILE FOR SINGLE SESSION CM/2 1.1 8-13

9 HCC START PROCEDURES 9-1

9.1 START COMMAND 9-1
9.2 STARTED TASK JCL FOR SINGLE HOST COMPLEX 9-5
9.3 STARTED TASK JCL FOR MULTI HOST COMPLEX (LU 6.2) 9-6
9.4 START AFTER INSTALLATION 9-7

10 CUSTOMER CONFIGURATION 10-1

10.1 CUSTOMIZED INSTALLATION CONFIGURATION 10-1
10.2 CUSTOMIZED AML INSTALLATION 10-3

INDEX I-1

1 INSTALLATION AND CUSTOMIZATION GUIDE

1.1 LITERATURE

Manual	Order number	Reference
General Information Manual	600226-A	G
Installation/Customization Guide	600227-A	G
System Reference Guide	600233-A	G
Operators Guide	600231-A	G
Command Reference	600223-A	G
Conversion Notebook	600224-A	G
Installation/Customization Reference	600228-A	G
Messages and Codes	600230-A	G
ISPF User Guide	600229-A	G
Release Guide	600232-A	G

G This Manual is part of the standard HCC documentation. Further copies of the respective Manual can be obtained from the publisher.

2 PLANNING

This section describes several typical areas which need to be considered when planning an AML system.

2.1 CONVERTING FROM A MANUAL ARCHIVE TO AN AML ARCHIVE

2.1.1 MANUAL ARCHIVE

Computer centers perform tape processing with widely differing strategies;

- with or without tape management system
- with or without tape eject archives
- with one or several tape pools
- with time-critical or non-critical tape loading
- under JES2 or JES3
- etc.

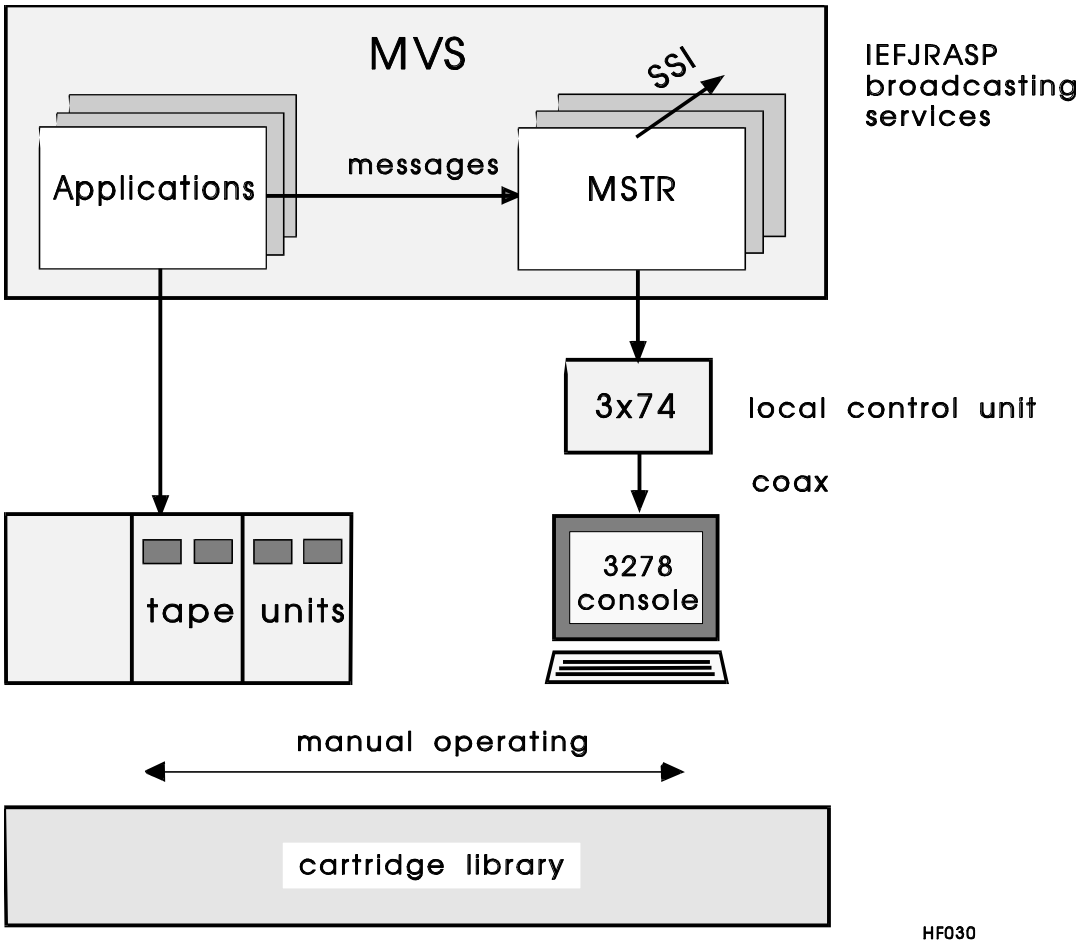


Fig 1. Manual tape management

A range of manual actions are more or less common:

- Repetitive MOUNT/KEEP activities in shift operation
- Cleaning units
- Replying to pending messages (WTOR)
- Daily provision of SCRATCH tapes
- Relocating cartridges to a security archive
- Initializing cartridges
- Eliminating defective tape material
- etc.

The procedural flow in many computer centers has been largely automated with:

- JOB control systems
- Network monitoring procedures
- Automatic POWER-ON and IPL procedures
- etc.

Operator-free devices such as CPUs, control units, and magnetic disks are installed in bunker-type areas, secured and access-controlled.

All of these measures however suffer from an obvious break in integrity as long as the tape processing, as a significant component within the computer center operation, remains a purely manual procedure.

2.1.2 INTEGRATING THE AML SYSTEM

The Automated Media Library (AML) creates the environment to integrate the magnetic cartridge processing in the automated processing within a computer center with the advantages

- Optimization of the computer center operation
- Extended usage of machine capacities
- Considerable improvement in data security

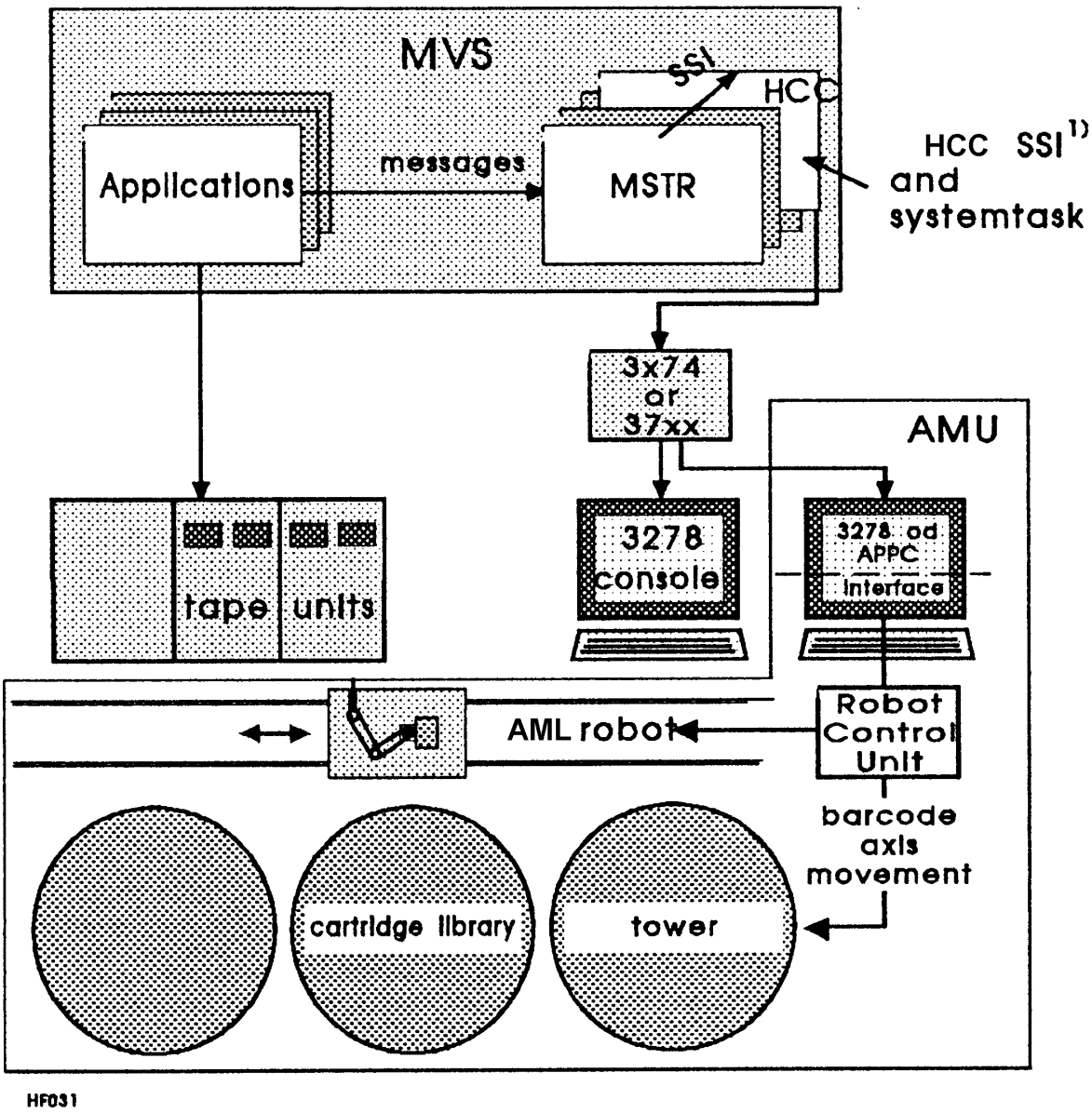


Fig 2. Integrating an AML/2 system

Tape-related MVS messages (Routing codes 3,5) are routed to the HCC system using a MVS standard interface (SSI[1]).

HCC controls these messages in a wait queue from where they are routed

the Archive computer AR[2]	(ABBA/1) or
the AMU[3]	(AML/2, AML/E or AML/J)

[1]SSI = Subsystem Interface
[2]AR = Archive computer
[3]AMU = Archive Management Unit

Various options are available for the communication:

HOST MVS	ABBA/1 AR[1]	AML/2 - AML/E - AML/J AMU[2]
EXCP	X	X
LU 2	X	X
LU 6.2	---	X

Starting at the HOST, logical terms such as VOLSERs are first converted to logical coordinates, then into physical path increments in order to initiate a three-dimensional robot movement.

The most significant feature of the hardware and software used is the fact that all the standards for the MVS environment are satisfied.

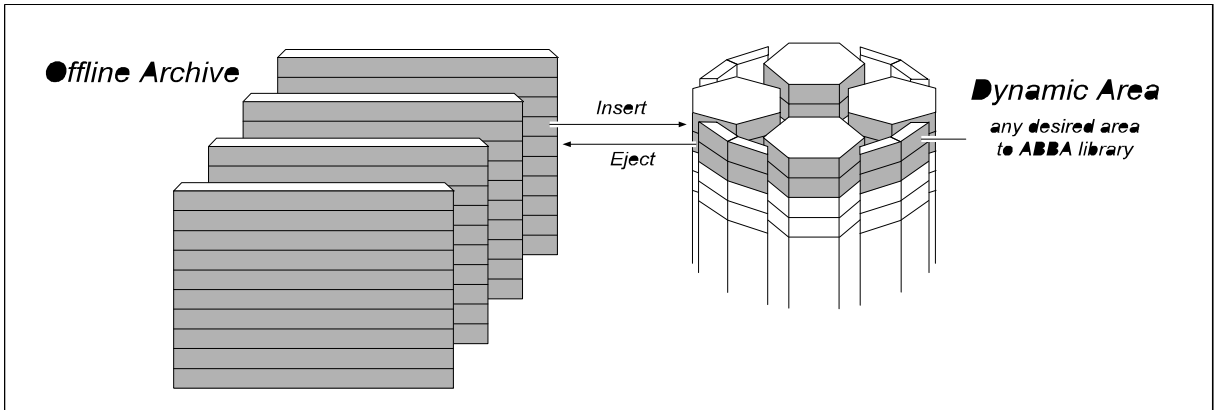
[1]AR = Archive computer
[2]AMU = Archive Management Unit

2.2 DYNAMIC ARCHIVE

The dynamic area is a (freely selectable) defined subset of cartridge slots in a tower or rack. This facility supports the integration of certain data stocks which are not normally in the active AML library in the automated process with a low manual effort.

Computer centers often have data under long-term access protection that is very seldom, and sometimes never used. Cartridges with such inactive data take up space in the AML archive.

The following method can be applied for better storage utilization:



"Virtual"	"Real"
Inactive	Active
Unrestricted	Restricted
Hierarchical	Random

Fig. 3. Illustration of an OFFLINE archive in the dynamic area

A manual archive for inactive data is kept external to the AML library (OFFLINE ARCHIVE). A dedicated number range is useful in this case.

The respective data media are marked as 'VIRTUAL VOLSERs' in the HCC Archive mirror.

After the retention period has elapsed, data media can be moved from the OFFLINE ARCHIVE to the dynamic area with the normal insert procedure (not with direct insert / VI=DIR).

A virtual cartridge is **always** positioned to the next free position in the dynamic area.
This position is permanently assigned to the cartridge as home position.

When data media from the dynamic area are to be used for a scratch request, the selection can be controlled using the pool definitions (DSNGR, VOLGR).

The AML archive slot is marked as **'FREE'** when a cartridge is moved from the dynamic area to the OFFLINE ARCHIVE.

For organizational reasons, it is recommended to specify a dedicated eject slot.

When an unexpected specific request for a cartridge from the OFFLINE ARCHIVE is made, the data medium must be inserted and an appropriate HCC message is output.

When all positions are defined as dynamic area in the AML ARCHIVE, the complete archive is then automatically held in random sequence.

A dynamic area can be spread across several towers/racks, or several dynamic areas can be defined for each tower/rack. HCC regards these as contiguous areas.

A **KEEP** command for a virtual volser moves the cartridge to its dedicated home position instead of the next empty position in the dynamic area (drive proximity).

2.3 SCRATCH TAPE PROCESSING

2.3.1 OVERVIEW OF SCRATCH TAPE PROCESSING

HCC substitutes the volser of a free cartridge for non-specific MOUNT requests (*volser*=SCRTCH or PRIVAT).

Information on free cartridges must be sent to HCC periodically.

2.3.2 ALTERNATIVES FOR SCRATCH TAPE SELECTION

HCC provides two options to gain this information:

1. Standard user exits (to the common tape management systems)
2. Individually modifiable sample user exits

No further installation measures are necessary when the standard exits are used under the TMS statement.

The following standard exits are currently available:

- **CNTT**; Exit for scratch tape selection using CONTROL-T Version 1.2.2
- **EPIC**; Exit for scratch tape selection using EPIC Version 3.1
- **RMM1**; Exit for scratch tape selection using RMM (in planning)
- **SEQF**; Exit for scratch tape selection using a sequential file
- **TLMS**; Exit for scratch tape selection using CA Dynam/TLMS Rel. 5.4 or before
- **UCC1**; Exit for scratch tape selection using CA1 Release 4.9 or before
- **UCV5**; Exit for scratch tape selection using CA1 Release 5.0 or after
- **ZARA**; Exit for scratch tape selection using ZARA Version 1.1 and Version 1.2

An individual exit can be used, an example is supplied, when the standard exits are not usable.

2.3.3 SCRATCH TAPE PROCESSING FLOW

The following Figure illustrates the scratch tape processing flow in HCC.

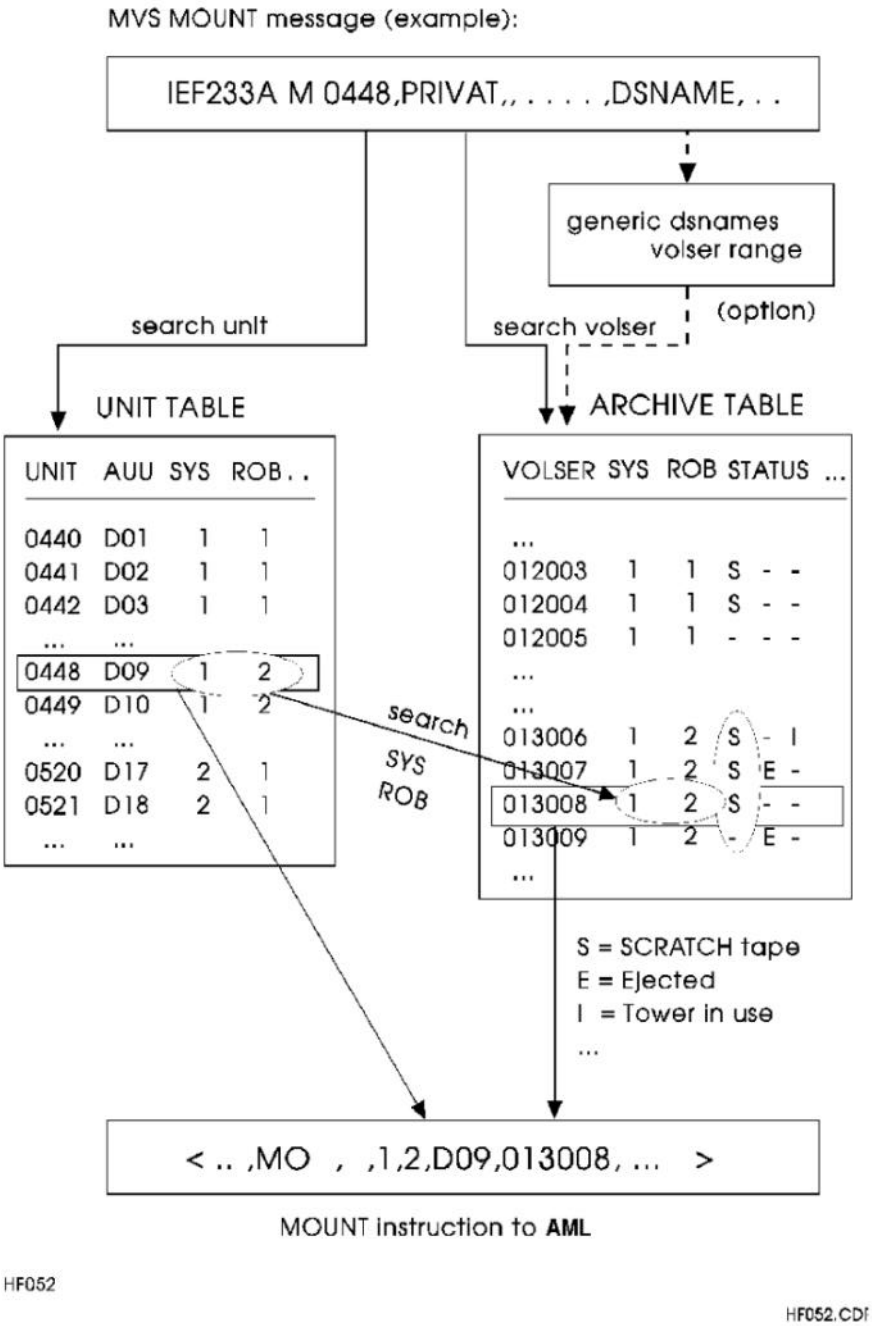


Fig. 4: SCRATCH TAPE substitution scheme

The “SCRATCH” status in the HCC Archive mirror is reset to ‘’NON-SCRATCH’’ after volser substitution. Only the **FREEVOL** command can set the status to ‘’SCRATCH

2.4 SPECIAL DETAILS OF THE MAJOR-MINOR CONCEPT

All Host-complexes (MAJOR-MINOR group) are to be seen as independent primary HCC systems possibly with secondary HCC systems.

The following HCC files must be defined for each system:

- **UNIT LOG**
- **TMS CATALOG**
- **ARCHIVE MIRROR**
- **MESSAGE LOG**

Each HCC host complex may only address its own volser area. These areas must not overlap because each of these complexes must have its own TMS catalog.

In a MAJOR-MINOR group, all volsers not known to the primary HCC of the MAJOR are distributed to the corresponding HCCs of the MINOR and processed accordingly.

The use of the **DSD** commands (between Minor and Major) and the increase of the MO/KE basic priorities (PRTY statement in this manual) should be coordinated to achieve an equal utilization within the group.

Within hierarchical storage, each HCC host complex can address all tower coordinates.

With dynamic storage, an individual area must be defined for each HCC host complex in the LDEV parameter of HACPARM1. This also applies to HWS areas. It is recommended to set up a foreign mount area (LDEV=F0n) for each host complex.

Cartridges are randomly stored when dynamic storage is used, therefore a slot in a common area for various host complexes could be occupied but only noted in the archive mirror of the primary HCC system to which the cartridge is assigned.
All the other host complexes would continue to regard this slot as **'FREE'** in their respective archive mirror and further insert attempts would lead to a crash situation.
To avoid such situations, each HCC host complex should be assigned an individual tower area for random cartridge storage.

Example of an LDEV statement for Major HCC SYSX:

Tower 1 segments 01 to 25 (4500 SLOTS)
The first 5 SLOTS in row 1 are defined for cleaning tapes

```
LDEV=T01,01,01,25,01,18,01,10,10,S=1,R=1
LDEV=T01,01,01,01,01,18,06,10,10,S=1,R=1,DYN,VER
LDEV=T01,01,02,25,01,18,01,10,10,S=1,R=1,DYN,VER
```

The following HAA definitions must be made:

DEFINE VOLSER:	CL0001 - CL0005	
	XXXXXX - XXXXXX	
ASSIGN VOLSER:	CL0001 - CL0005	TO HOMECOOR 01010101-01010105
	XXXXXX - XXXXXX	TO VIRTUAL

Example of an LDEV statement for Minor HCC SYSY:

Tower 1 segments 26 to 32 (1260 SLOTS)
The first 5 SLOTS in row 26 are defined for cleaning tapes

```
LDEV=T01,01,26,32,01,18,01,10,10,S=1,R=1
LDEV=T01,01,26,26,01,18,06,10,10,S=1,R=1,DYN,VER
LDEV=T01,01,27,32,01,18,01,10,10,S=1,R=1,DYN,VER
```

The following HAA definitions must be made:

DEFINE VOLSER:	CL0006 - CL0010	
	yyyyyy - yyyyyy	
ASSIGN VOLSER:	CL0006 - CL0010	TO HOMECOOR 01260101-01260105
	yyyyyy - yyyyyy	TO VIRTUAL

Performance

The following settings can be made to accelerate requests from the Minor complex:

- DOUBLE SEND to the Major complex
  Activation in the Minor complex with operator command '**DSD**'. Two commands are always sent to the Major complex. In addition, DOUBLE SEND to AMU can be set as from AMU Version 2.0F. Activation in the major complex with operator command '**DSD**'.

- MOUNT/KEEP priorities
  The priorities in the Minor complex should be higher than in the Major complex.

Example:	Major complex	MOUNT	35
		KEEP	31
	Minor complex	MOUNT	40
		KEEP	36

- Automatic drive allocation
  To avoid bottlenecks in drive allocation, the drives should not be assigned to specific MVS systems. 'TDAM[1]' from GRAU Software GmbH can be used to solve assignment bottleneck of drives in an MVS multi-computer group.

[1] TDAM = Tape Device Allocation Manager

The following must be considered for inserts and ejects:

The insert areas must overlap. These insert areas must be available to all host complexes.

The **'VI TC=COOR'** command can be used to insert a certain volser in a corresponding slot in the tower when using dynamic storage.

The eject areas should be kept separate for each host complex. The eject areas should not be redefined unless activities are performed at different times.

The eject areas should always be checked for cartridges during each eject. The pointer for the eject can be reset with the **'CC Exx'** command.

The following must be considered for foreign mount activities:

When both host complexes belong to the same AML system, foreign mounts should only be started by the Major HCC and the foreign mount slots should only be defined for this complex. If foreign mounts are also to be performed by the other Minor HCCs, the foreign mount slots must be spread organizationally across the individual complexes and not defined as overlaps. (Also refer to management of dynamic areas). It must be ensured that the respective jobs are also started or executed on the corresponding HCC complex.

The Minor HCC can also send a mount for the respective cartridge when these foreign mount slots are known to the Minor HCC.

This activity may cause various AML errors (Nxxx); the request could remain suspended on the Minor system and must then be corrected manually using an operator command. This also applies when the Major HCC was informed of a foreign mount volser, but the relevant mount-keep-mount activities occur on a Minor HCC. This should be avoided by organizational measures as described above.

It is important to define all MVS device addresses in all HACPARM1 members when using host complexes with differing HACPARM1 members.

This avoids double assignment of AML device addresses which must be in ascending sequence within a HACPARM1 member.

2.5 CATALOG INSTALLATION EXIT ZHC026DU

2.5.1 OVERVIEW INSTALLATION EXIT ZHC026DU

This exit is only required when the general MVS allocation is to be influenced for several independent tape pools.

This exit **cannot** influence allocations for products which also use the SVC26 (for example, DFSMShsm).

2.5.2 INFLUENCING MVS ALLOCATION

Detailed information on using the catalog installation exit ZHC026DU (IGG026DU) can be found in the respective section.

2.6 FOREIGN MOUNT AREA

The foreign mount area serves as a temporary archive for processing external cartridges that are not defined in the AML archive.

An existing barcode label on the cartridge is ignored.

Each position in the foreign mount area is assigned to a pseudo-volser with the following structure:

***sfnnn**

*	= Special character '*' (indicator to suppress barcode reading)
s	= AML system number
f	= Foreign mount slot (1-9)
nnn	= Relative position in slot (001-nnn)

The operator inserts an external cartridge in an empty position in this area, then informs HCC about position, volser and so on, with a foreign mount command.

HCC recognizes this volser during a mount request for an external tape and generates a task with the appropriate pseudo-volser.

The AMU[1] recognizes the position in the foreign mount area from the volser structure and automatically switches off barcode reading.

[1]AMU=Archive Management Unit

2.7 PRECONDITIONS FOR AN AMU CONNECTION

2.7.1 AMU CONNECTION ON 3274 COAX

AMU - 3274	Local non SNA	Local SNA	Remote SNA
Communication	EXCP	VTAM LU 2	VTAM LU 2
Customization	DFT mode	DFT mode	DFT mode
Interface board	3278 EMU	3278 EMU	3278 EMU

The AMU cannot be connected when a 3274 cannot be set to DFT mode.

2.7.2 AMU CONNECTION ON 3174 COAX

AMU - 3174	Local non SNA	Local SNA	Remote SNA
Communication	EXCP	VTAM LU 2	VTAM LU 2
Customization	DFT mode File transfer aid	DFT mode File transfer aid	DFT mode File transfer aid
Interface board	3278 EMU	3278 EMU	3278 EMU

2.7.3 AMU CONNECTION ON 3172 TR, ETHERNET, WIDEBAND

AMU - 3172	Local SNA
Communication	VTAM LU 2/6.2
Customization	---
Interface board	---

2.7.4 AMU CONNECTION ON 3274-TRA

AMU - 3274 - TRA	Local non SNA	Local SNA	Remote SNA
Communication	---	VTAM LU 6.2	VTAM LU 6.2
Customization	---	DFT mode	DFT mode
Interface board	---	TRA	TRA

The AMU cannot be connected when a 3274 cannot be set to DFT mode.

2.7.5 AMU CONNECTION ON 3174-TRA

AMU - 3174 - TRA	Local non SNA	Local SNA	Remote SNA
Communication	---	VTAM LU 6.2	VTAM LU 6.2
Customization	---	DFT mode	DFT mode
Interface board	---	TRA	TRA

2.7.6 AMU CONNECTION ON 3172-TRA

AMU - 3172 - TRA	Local non SNA	Local SNA	Remote SNA
Communication	---	VTAM LU 6.2	VTAM LU 6.2
Customization	---	DFT mode	DFT mode
Interface board	---	TRA	TRA

2.7.7 AMU CONNECTION (SPECIAL FORMS)

The AMU can be connected using SDLC and X.25 in special cases.

2.8 SINGLE SEND AND DOUBLE SEND DIFFERENCES

2.8.1 SENDING SINGLE MESSAGES TO ROBOTS

This command enables the method of sending messages to the robot.
In this case, HCC sends only one message to the robot, for example, MOUNT/KEEP.
The next message is sent after positive robot reply of the previous message.
This is the HCC default communication method.

2.8.2 SENDING DOUBLE MESSAGES TO ROBOTS

This command enables the method of sending messages to the robot.
In this case, HCC tries to send two messages to the robot at the same time, for example MOUNT/KEEP/EJ etc.
This can improve the robot performance because the robot can interpret the next command while performing another command.

2.9 HCC/AML INSTALLATION COMBINED WITH DFSMS

2.9.1 Dataset / Unit Allocation under DFSMS control

Problem:

1.
```
IGD301I DATA SET ALLOCATION REQUEST FAILED -
DATA SET ABBA.ROBTEST:$$DUMMY1.HAC2306n IS NOT ELIGIBLE
FOR ALLOCATION ON SMS-MANAGED VOLUME DUMMY1
HAC018A DYNAMIC ALLOCATION FEHLER, CODE=9700
HAC019A SMS REASON CODE TO HAC018A, CODE=012D
```

2. `IEC145I 413-04,...`
   File AML.ROBTEST.$$... is created as a disk file.

Cause:

1. The name of the DUMMY1 volume is known to DFSMS as a disk label in a POOL or DUMMY group. This impedes the classical allocation for non-SMS managed datasets. The request for demand device allocation is ignored.

2. The storage class ACS routine automatically assigns a storage class and a POOL type storage group to the file. The space request is then realized as a disk file. However, this space request can fail due to a missing SPACE specification when a data class with corresponding specifications is not automatically assigned at the same time.

Clearance:

1. To find the name DUMMY1 in the relative storage group, use the (DASD) volume application in ISMF, specifying the name as DUMMY1, the storage group as '*', and the CDS NAME as 'ACTIVE'. After the name DUMMY1 has been found, it can be deleted by using the storage group application option 4, specifying the SCDS needed for the configuration, then activating the changed configuration.

2. Avoid the automatic allocation of a storage class either by explicitly inquiring the file name ABBA.ROBTEST... , or - in the storage class ACS routine or by checking for valid unit names in the storage class ACS routine and, when invalid, assigning the value " to the &STORCLAS variable. This check should be made using a Filtlist as described in the example for the storage class ACS routine in the starter set. This list must not include any names also used as device numbers for tape lists. Irrespective of the method used: the storage class ACS routine must not allocate a storage class. The changed ACS routine must be translated again and the changed configuration activated.

2.9.2 INSTALLING AML WITH DFSMShsm

Problem

Normally, not all of the cartridge stations are available for automatic servicing when an AML system is put into operation. The automatic processing of mount requests generated by automated systems such as DFSMShsm is normally in the foreground. The cartridge station assignment by DFSMShsm should react to this new situation. How the following should be influenced must be clarified

1. Processing type (migration, backup, dump, etc.).
2. Predefined or new cartridge.
3. Reading or writing.

The basic DFSMShsm setting must be modified when necessary (ARCCMDxx member) and, in some cases, new esoteric names have to be defined in MVS for subsets of cartridge stations.
This is normally necessary when

- at least one manual (that is external to AML) cartridge station to be serviced and/or
- more than one AML (that is at least 2 automate pools) are present.

The following description assumes that the esoteric name **ABBACASS** was generated in this case.

Writing cartridges

The **SETSYS** command must be used to define the appropriate *unittype* in DFSMShsm for all write processes for which mounts are to be made using AML.

The following is a list of the **SETSYS** command subparameters which can influence tape device allocation during writing:

- BACKUP(TAPE(*unittype*))
- CDSVERSIONBACKUP(BACKUPDEVICECATEGORY(TAPE(*unittype*))
- MIGUNITNAME(*unittype*)
- RECYCLEOUTPUT(MIGRATION(*unittype*))
- RECYCLEOUTPUT(BACKUP(*unittype*))
- SPILL(TAPE(*unittype*))
- TAPEMIGRATION(NONE(ROUTETOTAPE(*unittype*)))
- TAPEMIGRATION(DIRECT(TAPE(*unittype*)))
- TAPEMIGRATION(ML2TAPE(TAPE(*unittype*)))
- UNITNAME(*unittype*)

The *unittype* can be either **generic** (for example, 3490) or **esoteric** (for example, ABBACASS). Esoteric has two preconditions:

1. ABBACASS must be a valid UNITNAME in MVS.
2. ABBACASS must be authorized within DFSMShsm using SETSYS USERUNITTABLE(ABBACASS...).

The figure shows the control of BACKUP cartridges as an example:

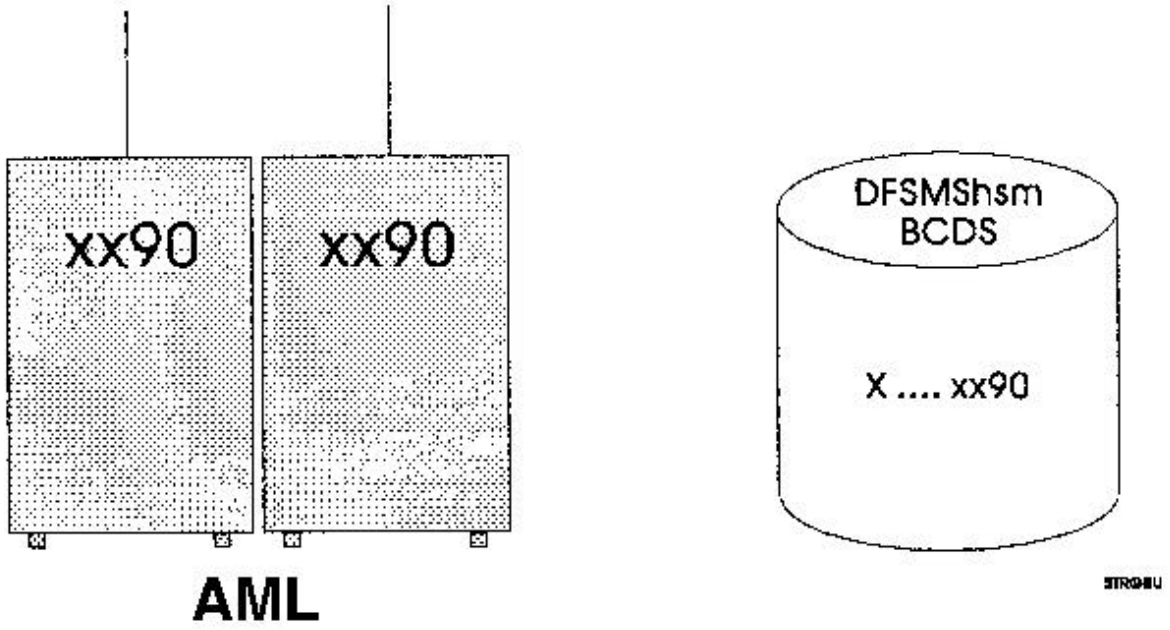


Fig. 5: Control for BACKUP cartridges

The written backup cartridge is recorded in the BCDS[1] of DFSMShsm with a generic *unittype* (for example, 3480 with IDRC[2] feature) as standard even when the tape device allocation was controlled by an esoteric name.

[1]Backup Control Data Set
[2]Improved Data Recording Capability

Reading cartridges

The device allocation depends on the *unittype* entered in the DFSMShsm control file for the respective cartridge.

For **generic entries** (for example, 3480), every device that can process, such a cartridge, can be considered. In this example, **every** cartridge station could process this cartridge. Therefore any one could be selected (with the minor restriction that the system preferences units without the ACL[1] feature in this case). When an ECCST[2] is used a 3490E is always selected for reading because this is the only device type which can read such cartridges at the present time.

For **esoteric entries** (for example, ABBACASS), the device must come from the pool described by ABBACASS and must be able to process the cartridge type.

When the esoteric name should be added to the entry for the cartridge in the control file at the time of writing, DFSMShsm must be instructed to do this with:

```
SETSYS USERUNITTABLE(ABBACASS:ABBACASS)
```

The name to the right of the colon is entered in the control entry for the cartridge when the name to the left of the colon is used for device allocation during writing. The names do not have to be identical. For example, enter the esoteric name of the corresponding cartridge station to the right of the colon when the cartridge will be moved to a different archive after writing and then only used there.

[1]Automatic Cartridge Loader Feature
[2]Enhanced Capacity Cartridge

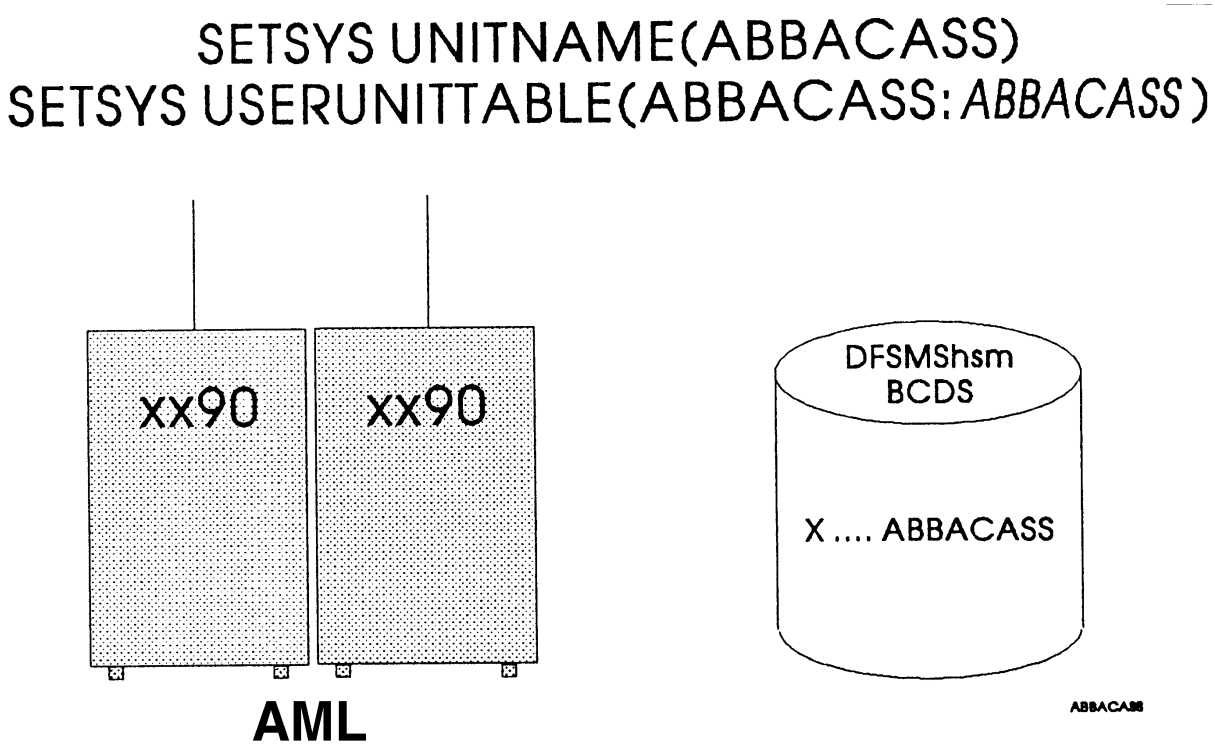


Fig. 6: Group of all units serviceable under AML (here ABBACASS)

Additional manual cartridge stations are normally in use under AML and a reliable tape device allocation must be created for reading DFSMShsm cartridges. In this case, esoteric names are used. A minimal configuration gathers units serviceable under AML together into one group (unit name for example, **ABBACASS**) and the rest into a second group (unit name for example, **MANUTAPE**).

Assuming that all backups and dumps run automatically under AML, the following DFSMShsm commands are required in the ARCCMDxx member:

- `SETSYS RECYCLEOUTPUT(BACKUP(`*`ABBACASS`*`))`
- `SETSYS UNITNAME(`*`ABBACASS`*`)`
- `SETSYS USERUNITTABLE(`*`ABBACASS:ABBACASS`*`)`

Manual insert of written DFSMShsm cartridges in an AML system

Simply inserting these cartridges in AML is normally not sufficient when the DFSMShsm cartridges were written with generic *unittype* specifications (for example, SETSYS UNITNAME(3480)) before the AML was put into operation. Normally, for the reasons described under “Reading cartridges”, it is imperative to modify the cartridge *unittype* specifications stored in the DFSMShsm control files. This can be carried out with the **FIXCDS** command of DFSMShsm which requires a special authorization within DFSMShsm.

The following shows the syntax for the individual cartridge entry types:

Backup	FIXCDS X *volser* PATCH(X’0’ ABBACASS)
Dump	FIXCDS Y *volser* PATCH(X’0’ ABBACASS)
Migration	FIXCDS V *volser* PATCH(X’0’ ABBACASS)

One of the **FIXCDS** commands described above must be issued for every cartridge manually inserted in the AML based on an inventory list of cartridges used under DFSMShsm.

Example job:

```
//FIXCDS  JOB  ...
//BATCHTSO EXEC PGM=IKJEFT01
//SYSTSPRT DD SYSOUT=*
//SYSPRINT DD SYSOUT=*
//SYSTSIN   DD *
HSEND FIXCDS X volser PATCH(X’0’ ABBACASS)
```

2.9.3 INSTALLING HCC/AML WITH DFSMSrmm

Problem

When the IBM tape management system DFSMSrmm is used, only the following information can be provided about this product based on available literature and log information provided by the customers:

HCC/MVS 3.0.0 only supports the MNTMSG command in the Parmlib member EDGRMMxx. Therefore, the specified sample or already existing, predefined MVS/JES(3) messages are not modified.

With PTF ZY00039 (HCC/MVS 2.4.0), the DFSMSrmm specific mount message extension for scratch pool groups, e.g. "IE..... -POOL=GSG*", is also supported.

Having reviewed the DFSMSrmm specific messages, it was concluded that HCC/MVS 3.0.0 must only support the message generated by EDGINERS (replacement for IEHINIT):

```
EDG6627A M drive_number V(volser) R(rack_number)
         TO BE indicated_action, label_type
```

HCC/MVS 3.0.0 also supports the following informal EDGINERS message which results in a keep action:

```
EDG6642I VOLUME volser LABELLED SUCCESSFULLY
```

All other tape mount, validation and processing messages are displayed only in addition to already existing messages.
These may **not** be modified with the **MNTMSG** command as mentioned above. Other operator action messages require physical operator intervention and therefore cannot be supported by HCC.

3 INSTALLATION

3.1 INSTALLATIONSTEPS

The HCC installation has the following steps, whereby the sequence is not necessarily mandatory:

		Details
1.	Satisfy installation preconditions	3-3
2.	Define ALIAS for - HCC installation files (optional) - HCC work files (optional)	-
3.	PARMLIB definitions	3-4
4.	Install MVS allocation influencing (when necessary) Refer to the System Reference Guide	3-7
5.	Load the installation tape (SMP/E, NON-SMP/E)	3-9
6.	Create HCC work files.	4-1
7.	Modify the search algorithm for HACCPARM (optional)	5-1
8.	Create a user interface (optional) Refer to the ISPF User Guide	-
9.	Definitions in HACPARM1 member.	6-1
10.	Generate the HCC archive (HAA) Refer to the ISPF User Guide	-
11.	Create the HCC start procedure	9-1
12.	Adapt scratch tape processing (when necessary)	7-1
13.	Check / adapt the communication interface - generate the control unit - VTAM definitions	8-1
14.	Enable the RACF authorization call (optional) Refer to the System Reference Guide	-
15.	Adapt user exits (optional)	-
16.	Function tests (recommended)	-

3.2 MIGRATION STEPS

1. Migrating from HCC/MVS 2.3.1 to HCC/MVS 2.4.0
   The archive record is different under HCC/MVS 2.4.0 and therefore an existing HCC Archive must be converted. The job MIGARC24 on the HCC SAMPLIB is available for this work. This job unloads the archive, creates a new archive and loads the modified data. HCC 2.3.1 remains functional after the migration.

   The PTF ZY00020 for HCC 2.3.1 must be installed for mixed operation with HCC releases before 2.4.0 and HCC 2.4.0 in a Primary/Secondary or Major/Minor relation.

   The Conversion Notebook for HCC/MVS 3.0.0 contains detailed information for the migration from HCC/MVS 2.4.0 to HCC/MVS 3.0.0.

3.3 INSTALLATION ENVIRONMENT

Minimum criteria for an installation environment:

1. TSO-userid with suitable authorization for:
   - SYS1.PARMLIB (update)
   - SYS1.PROCLIB / chained PROCLIB (update)
   - HCC-files (previous)
   - Authorization to call HAA
   - Region size 4 MB

   The region size must be increased for very large HCC archives (for example, over 70,000 volsers) or further SORTWKnn DD statements added to the logon procedure.

2. Necessary for SMP/E installation:
   - SMP/E-files

3. Necessary to install the user interface:
   - Authorization to change a logon procedure (STEPLIB insert)
   - Authorization to change logon CLISTs
   - Authorization to call ABBASEND

4. HCC must be authorized for
   - HCC files
   - TMS masterfile for READ
   - BLP processing

5. Necessary for function tests in AML proximity:
   - TSO terminal with console function (for example, SDSF) or
   - MVS console with routing codes 1,3,5

3.4 SYS1.PARMLIB

3.4.1 IEAAPFnn / PROGnn

Some HCC modules need AC(1) authorization. The STEPLIB library must be authorized for APF when HCC is called from a STEPLIB.

This can be performed by an entry in member IEAAPFnn or in member PROGnn. The definition can be enabled by the MVS operator command SET PROG=nn when the entry was performed in member PROGnn.

Dynamic APF authorization can be performed with the MVS operator command

```
SETPROG APF,ADD,DSNAME=dateiname,VOLUME=volser
```

The APF authorization must be defined when the call is made from a library list library (LNKLSTnn). (Refer to the description for IEASYSnn, parameter LNKAUTH)

3.4.2 LNKLSTnn

An existing library list library can be used when HCC is installed without a STEPLIB library or a new entry must be made for the HCC load module library in LNKLSTnn.

3.4.3 IEFSSNnn

The subsystem name for HCC must be entered.

Example:

```
HAC0          /* HACC SUBSYSTEM NAME */
```

The dynamic definition of the subsystem name can be made with the MVS operator command

```
SETSSI ADD,S=ssiname
```

Also refer to the SSINAME parameter of HACCPARM.

It is recommended to work with the SSI name HAC0. Only then can the **DAE** command be executed when using the exit ZHC026DU. When exit ZHC026DU is not used, the SSI name is freely selectable.

Refer to OS/390 R1 MVS Initialization and Customization Reference under IEFSSNxx (subsystem definitions) for more information on the definition of subsystem names.

The following entry can be made when the catalog installation exit is used and DFSM is disabled:

```
HAC0,ZHC20200 /* HACC SSI NAME AND ZHC026DU INITIALIZATION */
```

Refer to the Section on installing the catalog exit for further information

3.4.4 COMMNDnn

The following statement can serve to start HCC automatically after IPL:

```
CMD='S HACC.A,HOT=N'
```

3.4.5 IKJTSOnn

The following is necessary to call ABBASEND (alias ABS) under CALL:

```
AUTHPGM NAME(... ABBASEND ABS ...)
```

The following is necessary to call ABBASEND as TSO prompter:

```
AUTHCMD NAME(... ABBASEND ABS ...)
```

The corresponding AMASPZAP is valid for MVS/SP systems:

```
NAME IKJEFT02 IKJEFTE2
VER offset 4040,4040,4040,4040 (free entry)
REP offset C1C2,C2C1,E2C5,D5C4 (ABBASEND)
NAME IKJEFT02 IKJEFTE8
VER offset 4040,4040,4040,4040 (free entry)
REP offset C1C2,C2C1,E2C5,D5C4 (ABBASEND)
```

The following entry is necessary for HCC ISPF:

```
AUTHTSF NAMES(... ZHC41000 ...)
```

3.5 INSTALLATION OF THE CATALOG EXIT

3.5.1 JCL FOR LINK

The following JCL example is included in the hlq.ZHC....SAMP (LKSVC26) library.

```
//HAC026DU JOB (ACCT),NAME,CLASS=...
//*-----------------------------------------------------------*
//*      CATALOG INSTALLATION EXIT (MVS XA 2.2.0 or higher)   *
//*-----------------------------------------------------------*
//ST010     EXEC PGM=IEWL,
//          PARM='RENT,REUS,XREF,MAP,LIST,NCAL'
//SYSPRINT  DD   SYSOUT=
//SYSUT1    DD   UNIT=SYSDA,SPACE=(CYL,(1,1))
//AOSD0     DD   DSN=SYS1.AOSD0,DISP=SHR
//XLIB      DD   DSN=HLQ.ZHC...LOAD,DISP=SHR
//SYSLMOD   DD   DSN=USER.LOAD,DISP=SHR
//SYSLIN    DD
   INCLUDE XLIB(ZHC026DU)             * ZHC026DU
   CHANGE IGC0002F(ZHC026DU)          * CHANGE CALL IN IGG026DU
   INCLUDE AOSD0(IGG026DU)            * INCLUDE FROM DLIB
   NAME IGG026DU(R)
/*
//*-----------------------------------------------------------*
//*        LINK SVC 26                                        *
//*-----------------------------------------------------------*
//ST020    EXEC PGM=IEWL,REGION=1000K,
//         PARM='RENT,REUS,XREF,MAP,LIST,NCAL,SIZE=(800K,200K)'
//SYSPRINT DD   SYSOUT=
//SYSUT1   DD   UNIT=SYSDA,SPACE=(CYL,(1,1))
//XLIB     DD   DSN=USER.LOAD,DISP=SHR
//AOSD0    DD   DSN=SYS1.AOSD0,DISP=SHR
//SYSLMOD  DD   DSN=SYS1.LPALIB,DISP=SHR   (TEST VIA MLPA)
//SYSLIN   DD
   MODE AMODE(31),RMODE(ANY)        * MVS/XA REQUIREMENT
        ENTRY IGG026DU              * SVC 26 ENTRY
        ORDER IGC0002F              * ORDER-LIST
        ORDER IGG026DU
        ALIAS IGG0102F              * ALIAS
   INCLUDE AOSD0(IGC0002F)          * INCLUDE FROM DLIB
   INCLUDE XLIB(IGG026DU)           * INCLUDE MODIFIED IGG026DU
   NAME IGC0002F(R)
/*
```

The job installs the exit module. The test should run using a MLPA library such as SYS1.LINKLIB.

All PTFs for
- IGG026DU
- IGC0002F
- IGG0102F

should be **accepted** before the exit installation, otherwise they are lost (all PTFs for DFSMShsm in certain cases).

Also refer to Section 5.5 (Catalog Installation Exit Module) of the IBM literature MVS/DFP 3.3 Customization (SC-26-4560-03)

This is why the installation is not supported by SMP/E.

3.5.2 IEALPAnn FOR CATALOG EXIT (optional)

A corresponding entry must be made in the SYS1.PARMLIB in order to test the exit from a modified LPA library:

```
IEALPAnn:
SYS1.LINKLIB IGC0002F,IGG0102F
or
SYS1.SVCLIB IGC0002F,IGG0102F
```

3.5.3 IEFSSNnn FOR CATALOG EXIT

The following entry can be added to the SYS1.PARMLIB to activate the exit at IPL time:

```
IEFSSNnn:
HACn,ZHC20200
```

3.5.4 COMMNDnn FOR CATALOG EXIT(optional)

COMMNDnn can be used to initialize the exit at a later point in time when the module ZHC20200 cannot be called under IEFSSNnn (for example, ZHC20200 uses DYNALLOC functions blocked by DFSMS at IPL time). In this case, a start procedure, for example, HACCISSI, must be added to the SYS1.PROCLIB which then initializes HACPARM2 with:

```
COM='S HACCISSI'
```

3.5.5 HACCISSI PROCEDURE

JCL for SYS1.PROCLIB(HACCISSI):

```
//HACCISSI PROC SSI=HAC0
                PGM=ZHC20300
//IEFPROC  EXEC ZHC20300[,PARM=‘ssin’]
//STEPLIB  DD   DSN=hlq.ZHC....LOAD,DISP=SHR
```

The ZHC20300 module simulates the parameter transfer as for initialization by IEFSSNnn and calls using LINK ZHC20200.

3.6 SMP/E INSTALLATION

3.6.1 INSTALLATION TAPE FORMAT

The installation tape has the following format:

- SMP/E Relfile format
- MVS Standard label
- VOLSER as specified on the tape
- FMID as specified on the tape
- 9 or 11 files with the following contents:

DATA SET	DSNAME	Description	RECORD format	SPACE 3380	DIRECT. BLOCKS
01	SMPMCS	SMP/E MCS statements	80/06320/FB	1 Track	-
02	*fmid*.F1	HCC load modules	--/23200/U	03 cyl.	48
03	*fmid*.F2	ISPF load modules	--/23200/U	03 cyl.	48
04	*fmid*.F3	SAMP examples	80/03200/FB	01 cyl.	20
05	*fmid*.F4	ISPF REXX-Clists	80/06160/FB	01 cyl.	20
06	*fmid*.F5	ISPF messages	80/06160/FB	01 cyl.	20
07	*fmid*.F6	ISPF panels	80/06160/FB	01 cyl.	20
08	*fmid*.F7	ISPF tables	80/06160/FB	01 cyl.	20
09	HACINST	Installation jobs	80/00000/FB	01 cyl.	30

The Appendix contains information on the examples. The contents of the installation tape are as follows when source information is included (only received with express permission from EMASS/GRAU Storage Systems GmbH):

DATA SET	DSNAME	Description	RECORD formats	SPACE 3380	DIRECT. BLOCKS
10	HACCSRC	Source	80/00000/FB	10 cyl.	50
11	HACCMAC	Macros	80/00000/FB	10 cyl.	30

When the installation tape is delivered, separate information on possible format changes is also provided. This applies to the PTF tapes as well.

3.6.2 COPYING INSTLIB FROM THE INSTALLATION TAPE

```
//COPYINST JOB      ...
//*------  LOAD   INSTLIB   FROM TABE LABEL 9
//S1       EXEC PGM=IEBCOPY
//SYSPRINT DD SYSOUT=*
//SYSUT3   DD UNIT=3380,SPACE=(CYL,(5,5))
//SYSUT4   DD UNIT=3380,SPACE=(CYL,(5,5))
//TAPE     DD DSN=HACINST,DISP=OLD,VOL=SER=HAC300,
//            LABEL=(9,SL,EXPDT=98000),
//            UNIT=tape                                <--- Change
//DASD     DD DSN=hlq.ZHC....INSTLIB,                  <--- Change
//            DISP=(,CATLG,DELETE),
//            UNIT=unit,VOL=SER=volser                 <--- Change
//            SPACE=(CYL,(1,1,30),RLSE),
//            DCB=(LRECL=80,RECFM=FB,BLKSIZE=0)
//SYSPRINT DD SYSOUT=*
//SYSIN    DD *
  COPY INDD=TAPE,OUTDD=DASD
```

The INSTLIB file includes the §README member which contains current information on the installation jobs delivered.

Any HCC source information on the installation tape can be copied as described in the following.

```
//COPYINST JOB      ...
//S1       EXEC PGM=IEBCOPY
//SYSPRINT DD SYSOUT=*
//SYSUT3   DD UNIT=3380,SPACE=(CYL,(5,5))
//SYSUT4   DD UNIT=3380,SPACE=(CYL,(5,5))
//TAPE0    DD DSN=HACINST,DISP=OLD,VOL=SER=HAC300,
//            LABEL=(9,SL,EXPDT=98000),
//            UNIT=tape                                <--- Change
//DASD0    DD DSN=hlq.ZHC....INSTLIB,                  <--- Change
//            DISP=(,CATLG,DELETE),
//            UNIT=unit,VOL=SER=volser                 <--- Change
//            SPACE=(CYL,(1,1,30),RLSE),
//            DCB=(LRECL=80,RECFM=FB,BLKSIZE=0)
//TAPE1    DD DSN=HACCSRC,DISP=OLD,VOL=SER=HAC300,
//             LABEL=(10,SL,EXPDT=98000),
//            UNIT=tape                                <--- Change
//DASD1    DD DSN=hlq.ZHC....SRC,                      <--- Change
//            DISP=(,CATLG,DELETE),
//            UNIT=unit,VOL=SER=volser                 <--- Change
//            SPACE=(CYL,(10,1,50),RLSE),
//            DCB=(LRECL=80,RECFM=FB,BLKSIZE=0)
//TAPE2    DD DSN=HACCMAC,DISP=OLD,VOL=SER=HAC300,
//             LABEL=(11,SL,EXPDT=98000),
//            UNIT=tape                                <--- Change
//DASD2    DD DSN=hlq.ZHC....MAC,                      <--- Change
//            DISP=(,CATLG,DELETE),
//            UNIT=unit,VOL=SER=volser                 <--- Change
//            SPACE=(CYL,(10,1,30),RLSE),
//            DCB=(LRECL=80,RECFM=FB,BLKSIZE=0)
//SYSPRINT DD SYSOUT=*
//SYSIN    DD *
  COPY INDD=TAPE0,OUTDD=DASD0
  COPY INDD=TAPE1,OUTDD=DASD1
  COPY INDD=TAPE2,OUTDD=DASD2
```

3.6.3 JCL EXAMPLE FOR PTF RECEIVE

```
//jobname  JOB      ...                                        <--- Change
//S1       EXEC PGM=GIMSMP
//         PARM='PROCESS=WAIT'
//         DYNAMNBR=120,REGION=4M
//SMPCSI   DD DISP=SHR,DSN='hlq.global.csi'                    <--- Change
//SMPPTFIN DD DISP=(OLD,KEEP),
//            VOL=(PRIVATE,RETAIN,SER=HACPTF),
//            UNIT=tape,
//            LABEL=(1,NL,EXPDT=98000),                        <--- Change
//DASD        DCB=(RECFM=FB,LRECL=80,BLKSIZE=32720),
//            DSN=OBISD.PTFS
//SMPCNTL  DD *
  SET    BOUNDARY (GLOBAL)

  RECEIVE
         SYSMODS
```

3.6.4 CREATING THE TARGET AND DISTLIBS

ALLOC job: Modify the ALLOC job in the INSTLIB to your environment and run it.

DEFCSI job: CSI can now be selected for installation: modify and run the DEFCSI job.

INICSI job: After successful end of job, run the INICSI job to initialize the CSI.

UCLIN job: The UCLIN job can be run after the modification. Carefully check all DSNAMEN etc. CC=4 can be correct because UCLIN REP is used for processing

RECEIVE job: Start the RECEIVE job.

APPLY job: Start the APPLY job. HCC is installed in the libraries after successful completion of APPLY.

The APPLY step which includes the catalog installation exit ZHC026DU completes with condition code 0004. This module is deliberately not installed under SMP/E control. (Also refer to the Section on installing the ZHC026DU catalog exit)

ACCEPT job: The product in the DISTLIBs can be installed with the ACCEPT job after successful installation tests.

The DEFCSI, INICSI and UCLIN jobs create and initialize a **new** CSI. The settings from the UCLIN job for the existing GLOBAL zone definition must be checked/modified when an existing CSI should be used for HCC/MVS 2.4.0.

3.7 NON-SMP INSTALLATION

The NON-SMP installation is no longer supported as in HCC 2.4.0, because final LINKs are required for diverse modules. The LINK procedures can be supplied upon request when the NON-SMP installation is required.

The installation tape has the same format as the tape for the SMP/E installation.

The ISPF User Guide contains information on installing the ISPF interface.

4 HCC FILES

HCC uses the following work files:

1. Archive
2. Unit log for statistics and recovery
3. CPU-CPU Exchange log (when necessary)
4. Message logs (optional)

hlq.ZHC....SAMP (ASPALLOC) includes an example for allocating the files. Modify the parameters to suit the installation.

4.1 UNIT LOG FOR STATISTICS AND RECOVERY

A primary HCC uses this file to manage tape cleaning operations, MOUNT/KEEP recovery and displaying current AML activities.

The file is BDAM organized. The block count = log. records count corresponds to the number of cartridge units defined in HACPARM1 plus one control record. The block length is approximately 350 bytes which means that one track of a 3380-type disk can accommodate 55 tape units.

The file can be created under TSO or in BATCH:

TSO:
```
ALLOC DA('dsname') SP(n) TR VOL(volser)
```

BATCH:
```
//STEP   EXEC PGM=IEFBR14
//DD1    DD   DSN=dsname,DISP=(,CATLG),
//        UNIT=SYSDA,VOL=SER=volser,
//        SPACE=(TRK,n)
```

The "dsname" used must match the DSNAMEs defined under the PDSNULOG operand in the HACPARM1 member.

After this file has been created, the LOG must be formatted during the first HCC start using the FMTU=Y parameter (refer to the HCC Start command and HCC Start procedure).

The I/O activities on the statistic log relative to the MOUNT/KEEP rate can be regarded as low.

4.2 ARCHIVE MIRROR

The HCC Archive mirror is a KSDS type VSAM file. The record length of the individual record type ranges from 8 to 84 bytes.

An example for disk storage requirements: **1 Cyl 3380 per 5000 cartridges.**

The archive mirror can be created under TSO or in BATCH using the AMS control statement:

```
DEF  CL(NAME(dsname) VOL(volser) SPEED RUS FSPC(0,0)  -
     KEYS(6,0) RECSZ(84,84) SHR(3,3)) -
     INDEX(NAME(i-dsname) CISZ(512))  -
     DATA(NAME(d-dsname) CISZ(4096) TRACKS(n))
```

hlq.ZHC...SAMP (ASPALLOC) includes an example of such a JOB.

"dsname" refers to the PDSNARCH operand in the HACPARM1 member.

HAA commands under TSO or the ISPF user interface are used to initialize and fill the archive file.

I/O activities for the archive file come from MOUNT/KEEP, EJECT, VOLUME-INSERT, FOREIGN-MOUNTs and some display functions. The I/O rate can be regarded as low.

4.3 EXCHANGE LOG

The Exchange log is only required for multi-computer systems. The log file serves to pass MOUNT/KEEP messages or HCC commands from a secondary to a primary CPU and vice versa. It is recommended to define the computer with the most AML activities as primary computer otherwise there are generally no restrictions in selecting the primary or secondary system.

The Exchange log must be stored on a disk which can be accessed as SHARED-DASD by all HCC computers involved. The Exchange log itself does not need RESERVE/DEQ-mechanisms.

The file is BDAM-organized. The default block count is 2*200. This value is generally sufficient because the log runs as a roll file, which means the file wraps around at extent end and starts from the beginning again. A problem can only occur when the primary HCC system is stopped for a longer period of time and, at the same time, a large volume of HCC commands are queued, for example, EJ instructions which cannot be processed when the HACC0 is idle. The secondary HCC task then terminates with the message: HAC012A EXC-LOG OVERFLOW.

For error-free operation, the block count should be set to the maximum number of simultaneous HCC instructions, plus the maximum number of pending MOUNT/KEEP messages.

The block length is approximately 170 bytes, which means one track of a 3380 disk can accommodate 70 blocks of the Exchange log.

The file can be created under TSO or in BATCH:

TSO:
```
ALLOC DA('dsname') SP(n) TR VOL(volser)   [n=2*N/70, N=RECNO]
```

BATCH:
```
//STEP   EXEC PGM=IEFBR14
//DD1    DD   DSN=dsname,DISP=(,CATLG),
//        UNIT=SYSDA,VOL=SER=volser,
//        SPACE=(TRK,n)              n=2*N/70, N=RECNO]
```

hlq.ZHC...SAMP (ASPALLOC) includes an example for such a JOB.

"dsname" refers to the PDSNEXCn or TSDNEXCn operands in the HACPARM1 member. The suffix "n" refers to the nth secondary HCC system. Up to 35 secondary systems are supported (n=1-Z) which means an overall group of 36 loosely coupled host systems (with access to one or two common AML systems).

The crated Exchange log files must be formatted during the first HCC start. This can be done at once by the primary HCC task for all Exchange logs or individually for the single secondary HCC tasks (refer to FEX=(1,2,3-Z) in the HCC Start procedure of the primary HCC).

The I/O activity in the Exchange log is mainly determined by the value specified in the HACPARM1 member in the STIMER=nn operand, where nn = period in seconds. The lowest valid value for nn is 1 second.

4.4 MESSAGE LOG

HCC has a message log. All significant messages are still written to the JES log using routing code 11. The HCC Message log includes all activities such as:

- MVS messages selected by the HCC subsystem module
- HCC commands from console operating as well as from ABBASEND
- HCC messages
- Communication messages between HCC and AML

The HCC Message log is optional. The record format is described in the Appendix..

Up to 4 log files can be created (which is recommended). The log function automatically switches to the oldest log when a log overflows.

The file can be created under TSO or in BATCH:

TSO:

```
ALLOC DA('dsname') SP(n) CY VOL(volser)
```

BATCH:

```
//STEP   EXEC PGM=IEFBR14
//DD1    DD   DSN=dsname,DISP=(,CATLG),
//        UNIT=SYSDA,VOL=SER=volser,
//        SPACE=(CYL,n)
```

hlq.ZHC...SAMP (ASPALLOC) includes an example of such a JOB.

"dsname" refers to the PDSNMLGn or TSDNMLGn operands in the HACPARM1 member

The HCC LOG is BSAM organized. The DCB parameters are:

`LRECL=132`	(print format)
`BLKSIZE=1980`	(blocked under BUFNO=1 with multiple of 15)
`RECFM=FB`	

The HCC Log is enabled after execution of the **LOGSTART** command.

4.4.1 Saving the HCC Message Log files

The HCC Log files can be saved in the following ways:

1.) When HCC is disabled, the current log file is closed and can be saved with the known utilities (IEBCOPY, IEBGENER, etc.). The file name (dsname) can be found in the message:

```
HAC244I MESSAGE LOG ENDED, DSN=dsname
```

on the console.

2.) When the log overflows, the log file is closed and the next, for example, oldest log file is opened and written to. This process is indicated by the messages:

```
HAC316I MESSAGE LOG SWITCHED, OLD DSN=old_dsname
HAC317I MESSAGE LOG SWITCHED, NEW DSN=new_dsname
```

on the console. The full log file is now free and can be saved.

3.) The current log file can be closed with the HCC command **LOGSW** and a new log file opened when saving is to be activated directly, for example, at a certain time. In this case the HAC316I and HAC317I messages are also used to pass the dataset names. The closed log file can then be saved again using utilities.

4.) HCC message log files are saved automatically when the ‘LOGSAVE’ parameter is specified in HACCPARM. The log files can be saved on GDG files or SYSOUT when SMS is enabled. When SMS is not enabled, only saving to SYSOUT is possible.

5 HACCPARM LIBRARY

5.1 HACPARM1 DATASET

HCC normally expects the HACPARM1 member to be in the SYS1.PARMLIB file.

The Start procedure must be extended with the following DD instructions when the HCC parameters are defined in a different library than the SYS1.PARMLIB:

```
//HACCPARM DD DSN=dsname(anyname),DISP=SHR
```
The ANYNAME member is searched for in the "dsname" file

or

```
//HACCPARM DD DSN=seq.file,DISP=SHR
```
Files can be concatenated.

A suitable ALLOC statement must be set for TSO sessions.

The following HCC components are affected:
- PRIMARY HCC
- SECONDARY HCC
- ABBASEND (when HCC is disabled)
- HAA

The following ZAP can also be used as USERMOD to avoid these additional DD instructions:

```
NAME ZHC01300 PARMDSN
VER 00 SYS1.PARMLIB
REP 00 dsname                (for example, HACC.PARMLIB)
VER 2C HACPARM1
REP 2C member                (for example, HACPA230)
```

hlq.ZHC...SAMP (ZAPPRM1) includes an example for the ZAP. An example for the Usermod is found in the same file under the member name UM000001.

5.2 HACPARM2 DATASET

The assignment of VOLSER locations must be defined with the HACPARM2 member when the catalog installation exit activates a MVS allocation modification.

The HACPARM2 definition can be omitted when MVS allocation modification is not required.

This member is read from the SYS1.PARMLIB by the SSI initialization module ZHC20200 at IPL time.

ZHC20200 must be modified when a different library is desired.

File hlq.ZHC...SAMP (ZAPPRM2) includes a ZAP example, an example for the Usermod is included in the same file under the member name UM000002. Examples for the HACPARM2 instructions are found under the member name HACPARM2.

6 HACCPARM INSTRUCTIONS

The HACCPARM statements describe the AML components (hardware, software) and how HCC, the interfaces, exits, etc. function.

The member name is freely selectable. Refer to the HACCPARM Library Section in the Installation/Customization Manual. All parameters in a PDS member are defined with LRECL=80.

6.1 HACCPARM Syntax

6.1.1 Single Statements

- The statements must start in column 1
- Parameters may only extend up to column 71
- The statement sequence is optional

6.1.2 Multiple Line Statements

- The statements must start in column 1
- Parameters must be terminated with "," before column 71
- Column 71 must be "BLANK"
- Column 72 must be "NON-BLANK" (continuation character)
- Continuation lines must start in column 16

6.1.3 Comments

- Marked with "*" in column 1 or
- separated from parameters by at least one blank
- Up to column 71

6.1.4 Description

- The "INSTALLATION AND CUSTOMIZATION REFERENCE" Manual contains a detailed description of the HACCPARM statements.

6.1.5 Examples

- A complete example is in the Appendix of the "SYSTEM REFERENCE GUIDE" as well as various configurations in the hlq.ZHC....SAMP library.

7 HCC ARCHIVE ADMINISTRATION - HAA

7.1 OVERVIEW - HAA

HAA[1] serves to set up and manage the HCC Archive mirror and is normally only required during the initial setup and modification of the hardware configuration.

Single records can be updated in exceptional situations.

Refer to the ISPF User Guide for more detailed information.

[1] HAA = HCC Archive Administration

7.2 HCC ARCHIVE MIRROR

The HCC Archive mirror is a KSDS[1] VSAM file with the VOLSER as key.

The archive mirror has two main record formats:

- COORDINATES AML library description
- VOLSER description with status, coordinate assignment as well as system and accessing robots.

1. Status description - VOLSER

a.) Logical status :

C = Cleaning cartridge
M = Data cartridge
O = Optical Disk (OD)
Ø = Special status (AR/AMU)

b.) Physical status:

B = In archive
E = Ejected
J = OD in jukebox
M= Loaded
L = Initial
(only in combination with log. status = Ø)
O = Other side loaded
(only in combination with log. status = O)

2. Status description - Coordinates

a.) Home coordinate

b.) Temporary coordinate

c.) Recovery coordinate

Refer to the Appendix of the System Reference Guides for an exact description of the HCC Archive mirror.

[1] KSDS = Key Sequenced Data Set

7.3 HAA FUNCTIONS

HAA includes the following functions:

- Generation of COORDINATE records from LDEV and UNIT statements
- Generation of VOLSER records for the AML archive
- Allocation of status and coordinates
- Extension of the archive
- Manipulation of status and coordinates in the case of errors
- Backup, restore and copy
- Display statistics

Refer to the ISPF User Guide for detailed information.

7.4 CALLING

```
HAA  [SHR]
HAAT [SHR]
```

HAA	Productive archive
HAAT	Test archive
SHR	Share

HACPARM statements are the input for HAA and these can be retrieved by adapting the ZAP search sequence for ZHC01300, Section HACCPARM LIBRARY, or by entering an ALLOC statement (for example in a CLIST).

Example:

```
PROC 0
FREE FI(HACCPARM)
ALLOC FI(HACCPARM) -
      DA ('hlq.ZHC....PARMLIB(HACPARM1)') SHR REUS
HAA
```

Recommendation: Use the HCC ISPF-user interface

HCC **must** be stopped before the archive mirror can be modified. HAA executes all changes immediately without notifying an active HCC.

All files created with HAA are **not automatically** deleted.

7.5 SETTING UP THE ARCHIVE

Several HAA functions must be executed in order to create the HCC Archive mirror.

The following statements from the specified HACPARM1 are used as the basis:

```
LDEV / UNIT / PDSN.... / VOLGR
```

Refer to the ISPF User Guide for further information.

8 COMMUNICATION INTERFACE (AMU, AR)

8.1 ARCHIVE COMPUTER (AR)

8.1.1 AR CONNECTION TO 3274 USING COAX

AR - 3274	Local non-SNA	Local SNA	Remote SNA
Communication	EXCP	VTAM LU 2	VTAM LU 2
Customization	Not required	Not required	Not required
Interface board	3278 EMU [1)]	3278 EMU	3278 EMU

8.1.2 AR CONNECTION TO 3174 USING COAX

AR - 3174	Local non-SNA	Local SNA	Remote SNA
Communication	EXCP	VTAM LU 2	VTAM LU 2
Customization	File Transfer Aid	File Transfer Aid	File Transfer Aid
Interface board	3278 EMU [1)]	3278 EMU	3278 EMU

[1)] PC = IRMA 3

8.2 ARCHIVE MANAGEMENT UNIT (AMU)

8.2.1 AMU CONNECTION TO 3274 COAX

AMU - 3274	Local non-SNA	Local SNA	Remote SNA
Communication	EXCP	VTAM LU 2	VTAM LU 2
Customization	DFT-Mode	DFT-Mode	DFT-Mode
Interface board	3278 EMU [1)]	3278 EMU [1)]	3278 EMU [1)]

An AMU cannot be connected when DFT mode cannot be set on a 3274.

8.2.2 AMU CONNECTION TO 3174 COAX

AMU - 3174	Local non-SNA	Local SNA	Remote SNA
Communication	EXCP	VTAM LU 2	VTAM LU 2
Customization	DFT mode File Transfer Aid	DFT mode File Transfer Aid	DFT mode File Transfer Aid
Interface board	3278 EMU [1)]	3278 EMU [1)]	3278 EMU [1)]

8.2.3 AMU CONNECTION TO 3172 TR, ETHERNET, WIDEBAND

AMU - 3172	Local SNA
Communication	VTAM LU 2 /6.2
Customization	----
Interface board	-----

[1)] PS/2 = 3270 Connection

8.2.4 AMU CONNECTION TO 3274-TRA

AMU- 3274-TRA	Local non-SNA	Local SNA	Remote SNA
Communication	-----	VTAM LU 6.2	VTAM LU 6.2
Customization	-----	DFT mode	DFT mode
Interface board	-----	TRA	TRA

An AMU cannot be connected when DFT mode cannot be set on a 3274.

8.2.5 AMU CONNECTION TO 3174-TRA

AMU- 3174-TRA	Local non-SNA	Local SNA	Remote SNA
Communication	----	VTAM LU 6.2	VTAM LU 6.2
Customization	-----	DFT mode	DFT mode
Interface board	----	TRA	TRA

8.2.6 AMU CONNECTION TO 3172-TRA

AMU-3172-TRA	Local non-SNA	Local SNA	Remote SNA
Communication	----	VTAM LU 6.2	VTAM LU 6.2
Customization	-----	DFT mode	DFT mode
Interface board	-----	TRA	TRA

8.2.7 AMU CONNECTION (SPECIAL CASES)

In special cases, the AMU can be connected using SDLC and X.25.

Refer to the following for more information on the File Transfer Aid:

Description:	IBM 3174 Subsystem Control Unit Customization Guide
Sheet No.:	A23-0214-x
Chapter 3:	Planning to Configure/Reconfigure
Panel 125:	Miscellaneous Feature Options
Digit 5:	File Transfer Aid 1- Emulation board support. File transfer support. PC can run in CUT mode.

The control unit **must** run in extended data streaming mode and DFT terminal mode when the local control unit is type 3274.

When the communication is LU 2, a LOGMODE that depends on the type of 3x74 connection and which can be retrieved from the SYS1.VTAMLIB(ISTINCLM) must be used.

1.)	LOCAL SNA	LOGMODE LSX32702
2.)	REMOTE SNA	LOGMODE D4C32XX3

Refer to the Host Connection Reference for OS/2 for further information
(Sheet No.: S04G-1004-00)

8.3 DEFINITION EXAMPLES - VTAM LU 6.2 AND LU 2

Also refer to hlq....SAMP (VTAMDEF)

8.3.1 LOGMODE 3270 SESSION (OS/2)

```
OBIS3270 MODEENT LOGMODE=OBIS3270,                    *
                 FMPROF=X'03',                        *
                 TSPROF=X'03',                        *
                 PRIPROT=X'B1',                       *
                 SECPROT=X'90',                       *
                 COMPROT=X'3080',                     *
                 SSNDPAC=X'00',                       *
                 SRCVPAC=X'00',                       *
                 RUSIZES=X'87C7',                     *
                 PSNDPAC=X'00',                       *
                 PSERVIC=X'028000000000000000000300'
```

8.3.2 LOGMODE LU 6.2 SINGLE SESSION (OS/2)

```
OBISL62S MODEENT LOGMODE=OBISL62S,                    *
                 TYPE=0,                              *
                 FMPROF=X'13',                        *
                 TSPROF=X'07',                        *
                 PRIPROT=X'B0',                       *
                 SECPROT=X'B0',                       *
                 COMPROT=X'50B1',                     *
                 SSNDPAC=X'00',                       *
                 SRCVPAC=X'00',                       *
                 RUSIZES=X'8585',                     *
                 PSNDPAC=X'00',                       *
                 PSERVIC=X'060200000000000000002C00'
```

8.3.3 LOGMODE LU 6.2 PARALLEL SESSION (OS/2)

```
OBISL62P MODEENT LOGMODE=OBISL62P,                    *
                 TYPE=0,                              *
                 FMPROF=X'13',                        *
                 TSPROF=X'07',                        *
                 PRIPROT=X'B0',                       *
                 SECPROT=X'B0',                       *
                 COMPROT=X'50B1',                     *
                 SSNDPAC=X'00',                       *
                 SRCVPAC=X'00',                       *
                 RUSIZES=X'8585',                     *
                 PSNDPAC=X'00',                       *
                 PSERVIC=X'060200000000000000002F00'
```

8.3.4 USSTAB

Use your STANDARD 3270 USSTAB

8.3.5 RESOURCE DEFINITION HOST LU 6.2 (APPL STATEMENT)

```
OBISACB  APPL  ACBNAME=OBISACB,                                  *
               APPC=YES,                                         *
               AUTH=(ACQ,NOCNM,NOPASS,NOPO,NOTSO,VPACE),         *
               AUTOSES=0,                                        *
               DLOGMOD=OBISL62x, 1)                              *
               DMINWNL=3,                                        *
               DMINWNR=3,                                        *
               DSESLIM=xx, 2)                                    *
               MODETAB=XXXXXXXX,                                 *
               PARSESS=YES,                                      *
               PACING=10,                                        *
               VPACING=10
```

8.3.6 RESOURCE DEFINITION PC TOKEN RING/3745 (SWNET STATEMENT)

```
OBISSW   VBUILD TYPE=SWNET,MAXGRP=1,MAXNO=5
*
OBISAMUP PU     ADDR=XX,                                          *
                PUTYPE=2,                                         *
                IDBLK=05D,                                        *
                IDNUM=A0001,                                      *
                SSCPFM=USSSCS,                                    *
                USSTAB=XXXXXXXX,                                  *
                MODETAB=XXXXXXX,                                  *
                DLOGMOD=OBIS3270
*
OBISAMUL LU     LOCADDR=0,                                        *
                DLOGMOD=OBISL62P
*
OBISAMU1 LU     LOCADDR=1
OBISAMU2 LU     LOCADDR=2
```

1)	x =	(S)ingle (P)arallel	Will be overwritten by the HACNET
2)	xx =	No. of partners * 2 No. of partners * 3 + 1	- single session - parallel session

8.3.7 RESOURCE DEFINITION PC TOKEN RING/3174

OS/2 (SINGLE SESSION)

Also refer to the ‘CM2DEF’ member in the hlq.ZHC....SAMP library

```
OBISLOC  VBUILD TYPE=LOCAL
OBISAMUP PU     CUADDR=XXX,                                  *
                MAXBFRU=16,                                  *
                MODETAB=XXXXXXXX,                            *
                DLOGMOD=OBIS3270,                            *
                USSTAB=XXXXXXXX,                             *
                VPACING=0,                                   *
                PACING=0,                                    *
                SECNET=NO, 1)                                *
                XID=NO,                                      *
                ISTATUS=ACTIVE
OBISAMU1 LU     LOCADDR=01
OBISAMU2 LU     LOCADDR=02
OBISAMUS LU     LOCADDR=03,DLOGMOD=OBISL62S
OBISAMUR LU     LOCADDR=04,DLOGMOD=OBISL62S
OBISGWPU PU     CUADDR=YYY,                                  *
                PUTYPE=2,                                    *
                MAXBFRU=16,                                  *
                MODETAB=XXXXXXXX,                            *
                DLOGMOD=OBIS3270,                            *
                USSTAB=XXXXXXXX,                             *
                VPACING=0,                                   *
                PACING=0,                                    *
                SECNET=NO,                                   *
                ISTATUS=ACTIVE
OBISGWLU LU     LOCADDR=02
```

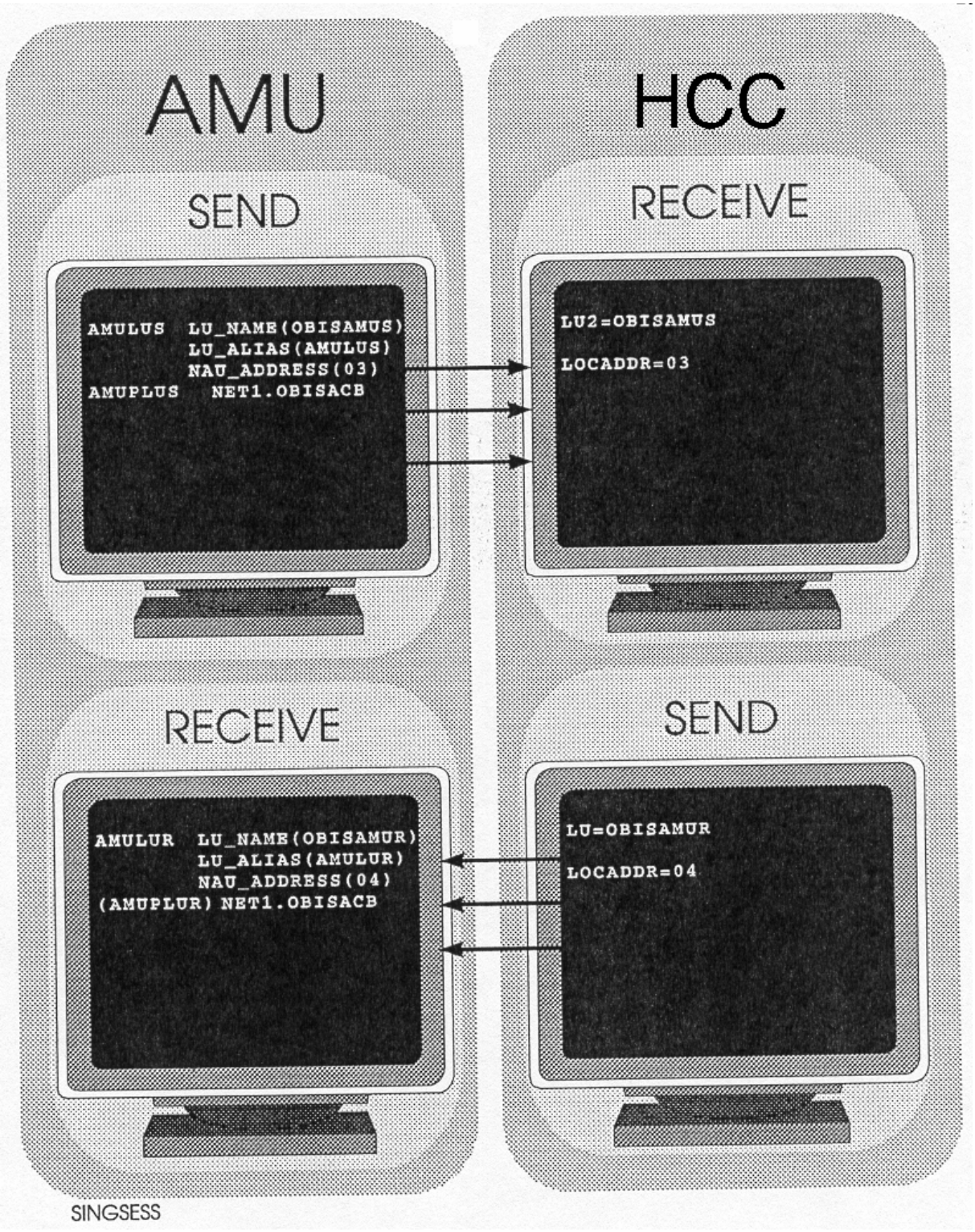
1) SECNET=YES for VTAM before V.3.4.

8.3.8 HACNET STATEMENTS

A) SINGLE SESSION:

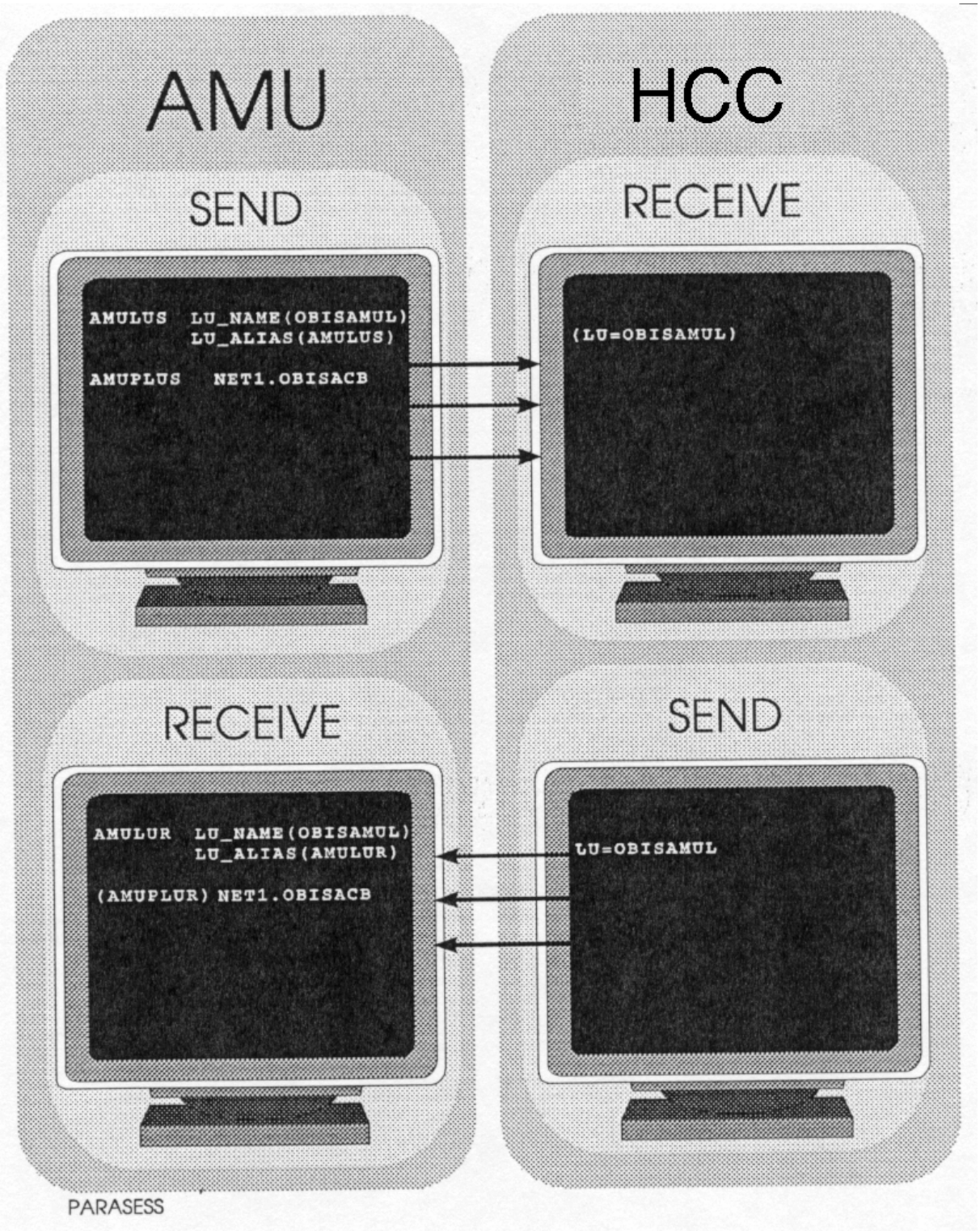
```
HACNET HID=H1,LU=OBISACB,LM=OBISL62S
HACNET HID=A1,LU=OBISAMUR,LU2=OBISAMUS,LM=OBISL62S,TPN=H01RTP
```

OBISAMUS	HACC RECEIVE - AMU SEND (LOCADDR = 03) Direction: from AMU to HACC
OBISAMUR	HACC SEND - AMU RECEIVE (LOCADDR = 04) Direction: from HACC to AMU


AMU
HCC
SEND
RECEIVE
AMULUS LU_NAME(OBISAMUS)
LU_ALIAS(AMULUS)
NAU_ADDRESS(03)
AMUPLUS NET1.OBISACB
LU2=OBISAMUS
LOCADDR=03
RECEIVE
SEND
AMULUR LU_NAME(OBISAMUR)
LU_ALIAS(AMULUR)
NAU_ADDRESS(04)
(AMUPLUR) NET1.OBISACB
LU=OBISAMUR
LOCADDR=04
SINGSESS

B) PARALLEL SESSION:

```
HACNET HID=H1,LU=OBISACB,LM=OBISL62P
HACNET HID=A1,LU=OBISAMUL,LM=OBISL62P,TPN=H01RTP
```



HOST TO HOST

```
HACNET HID=H2,LU=OBISACB2,LM=OBISL62P
```

The LUs of the partner systems must be defined as CDRSC (Cross Domain Resource) or the partner SSCP as ADJSSCP.

8.4 DEFINITION EXAMPLES VTAM LU 2

The following is an example of a X.25 connection between HCC and AML.

8.4.1 APPL-STATEMENT

```
APPLHACC VBUILD TYPE=APPL              APPLICATION MAJOR NODE
HACCACB1 APPL   EAS=9,                 Estimated concurrent sessions     *
                ACBNAME=HACCACB1,      APPLID for ACB                    *
                AUTH=(ACQ,BLOCK,PASS)  can ACQUIRE & PASS TMLS
*                                      can request BLOCKED INPUT
HACCACB2 APPL   EAS=9,                 Estimated concurrent sessions     *
                ACBNAME=HACCACB2,      APPLID for ACB                    *
                AUTH=(ACQ,BLOCK,PASS)  can ACQUIRE & PASS TMLS
OBISAMU1 LU     LOCADDR=01
OBISAMU2 LU     LOCADDR=02
```

8.4.2 NCP - X.25 and SDLC

This connection is possible and is defined according to the usual standards (GROUP, LINE, PU, LU).

8.4.3 COMDEFn-STATEMENT

```
COMDEFn=OBISAMU1,HACCACB1,ALT=OBISAMU2,HACCACB2,VTAM
```

8.5 NETWORK DEFINITION FILE FOR SINGLE SESSION CM/2 1.1

```
DEFINE_LOCAL_CP FQ_CP_NAME(NET1.AMU) 1)
        DESCRIPTION(Created on 20.06.92 at 14.49)
        CP_ALIAS(AMU)
        NAU_ADDRESS(INDEPENDENT_LU)
        NODE_TYPE(EN)
        NODE_ID(X'05DA0001')
        NW_FP_SUPPORT(NONE)
        HOST_FP_SUPPORT(YES)
        HOST_FP_LINK_NAME(LINK0001)
        MAX_COMP_LEVEL(NONE)
        MAX_COMP_TOKEN(0);

DEFINE_LOGICAL_LINK LINK_NAME(LINK0001) 2)
        FQ_ADJACENT_CP_NAME(NET1.PU4381)
        ADJACENT_NODE_TYPE(LEN)
        DLC_NAME(ETHERAND)
        ADAPTER_NUMBER(0)
        /* Address Tokenring Gateway e. g.: 3174 or 3745 */
        DESTINATION_ADDRESS(X'400000002021')
        ETHERNET_FORMAT(NO)
        CP_CP_SESSION_SUPPORT(NO)
        ACTIVATE_AT_STARTUP(YES)
        LIMITED_RESOURCE(USE_ADAPTER_DEFINITION)
        LINK_STATION_ROLE(USE_ADAPTER_DEFINITION)
        SOLICIT_SSCP_SESSION(YES)
        MAX_ACTIVATION_ATTEMPTS(USE_ADAPTER_DEFINITION)
        USE_PUNAME_AS_CPNAME(NO)
        EFFECTIVE_CAPACITY(USE_ADAPTER_DEFINITION)
        COST_PER_CONNECT_TIME(USE_ADAPTER_DEFINITION)
        COST_PER_BYTE(USE_ADAPTER_DEFINITION)
        SECURITY(USE_ADAPTER_DEFINITION)
        PROPAGATION_DELAY(USE_ADAPTER_DEFINITION)
        USER_DEFINED_1(USE_ADAPTER_DEFINITION)
        USER_DEFINED_2(USE_ADAPTER_DEFINITION)
        USER_DEFINED_3(USE_ADAPTER_DEFINITION)

DEFINE_LOCAL_LU_LU_NAME(OBISAMUS)
        DESCRIPTION(AMU-Send-Lu)
        LU_ALIAS(AMULUS)
        NAU_ADDRESS(03);

DEFINE_LOCAL_LU_LU_NAME(OBISAMUR)
        DESCRIPTION(AMU-Receive-Lu)
        LU_ALIAS(AMULUR)
        NAU_ADDRESS(04);

DEFINE_PARTNER_LU FQ_PARTNER_LU_NAME(NET1.OBISACB) 1)
        DESCRIPTION(HACC-LU)
        PARTNER_LU_ALIAS(AMUPLUS)
        PARTNER_LU_UNINTERPRETED_NAME(OBISACB)
        MAX_MC_LL_SEND_SIZE(32767)
        CONV_SECURITY_VERIFICATION(NO)
        PARALLEL_SESSION_SUPPORT(NO);

DEFINE_PARTNER_LU_LOCATION FQ_PARTNER_LU_NAME(NET1.OBISACB)
        DESCRIPTION(HACC-LU)
        WILDCARD_ENTRY(NO) 2)
        FQ_OWING_CP_NAME_(NET1.PU4381)
        LOCAL_NODE_NN_SERVER(NO);
```

1) D NET,VTAMOPTS(NETID=...)

2) D NET,VTAMOPTS(HOSTPU=...)

```
DEFINE_MODE_MODE_NAME(OBISL62S)
       DESCRIPTION(Single session 256 Byte RuSize)
       COS_NAME(#CONNECT)
       DEFAULT_RU_SIZE(NO)
       MAX_RU_SIZE_UPPER_BOUND(256)
       RECEIVE_PACING_WINDOW(4)
       MAX_NEGOTIABLE_SESSION_LIMIT(32767)
       PLU_MODE_SESSION_LIMIT(1)
       MIN_CONWINNERS_SOURCE(0)
       COMPRESSION_NEED(PROHIBITED)
       PLU_SLU_COMPRESSION(NONE)
       SLU_PLU_COMPRESSION(NONE);

DEFINE_DEFAULTS IMPLICIT_INBOUND_PLU_SUPPORT(YES)
       DESCRIPTION(CREATED on 20.06.92 at 14.49)
       DEFAULT_MODE_NAME(BLANK)
       MAX_MC_LL_SEND_SIZE(32767)
       DIRECTORY_FOR_INBOUND_ATTACHES 1)
       DEFAULT_TP_OPERATION(NONQUEUED_AM_STARTED)
       DEFAULT_TP_PROGRAM_TYPE(BACKGROUND)
       DEFAULT_TP_CONV_SECURITY_RQD(NO)
       MAX_HELD_ALERTS(10);

DEFINE_TP_TP_NAME(H01STP)
       DESCRIPTION(AMU-Send-TP)
       PIP_ALLOWED(NO)
       FILESPEC(C:\OS2\CMD.EXE)
       CONVERSATION_TYPE(ETHER)
       CONV_SECURITY_RQD(NO)
       SYNC_LEVEL(EITHER)
       TP_OPERATION(QUEUED_OPERATOR_PRELOADED)
       PROGRAM_TYPE(BACKGROUND)
       INCOMING_ALLOCATE_QUEUE_DEPTH(255)
       INCOMING_ALLOCATE_TIMEOUT(INFINITE)
       RECEIVE_ALLOCATE_TIMEOUT(INFINITE);

DEFINE_TP_TP_NAME(H01RTP)
       DESCRIPTION(AMU-Receive-TP)
       PIP_ALLOWED(NO)
       FILESPEC(C:\OS2\CMD.EXE)
       CONVERSATION_TYPE(EITHER)
       CONV_SECURITY_RQD(NO)
       SYNC_LEVEL(EITHER)
       TP_OPERATION(QUEUED_OPERATOR_PRELOADED)
       PROGRAM_TYPE(BACKGROUND)
       INCOMING_ALLOCATE_QUEUE_DEPTH(255)
       INCOMING_ALLOCATE_TIMEOUT(INFINITE)
       RECEIVE_ALLOCATE_TIMEOUT(INFINITE);

START_ATTACH_MANAGER;


DISPLAY COMMAND ON CONSOLE
```

1) D NET,VTAMOPTS(NETID=...)
2) D NET,VTAMOPTS(HOSTPU=...)

9 HCC START PROCEDURES

9.1 START COMMAND

A Started Task is activated on each HOST system involved.

The Started Task name must not match the subsystem names (IEFSSNxx) otherwise the subsystem will be started under MSTR(Master) instead of the primary subsystem (JES).

Recommended:	Started Task name:	HCC
	SSI name:	HAC0

Parameter SYS=PRI/SECn controls the selection of the primary or secondary systems, and therefore this parameter is already specified in the Start procedure for each system.

HCC can be started automatically after IPL by entering the following command in SYS1.PARMLIB(COMMNDxx):

```
S HACC.A,HOT=N
```

Parameter description for start commands:

SYS	=	PRI	Primary Started Task (HACC0), default value
		SECn	Secondary Started Task with n=1-9/A-Z (HACC1)
FMTU	=	Y	Format the UNIT Statistic and Recovery logs
	=	N	Default value
FEX	=	(n,...,n)	Format the Exchange log(s) n=1-9/A-Z
		(n-n)	FEX=() when no Exchange log to be formatted
HOT	=	Y	Warm start, restart from last HCC start
	=	N	Cold start, ignoring information from the UNIT log and RCA.
SSI	=	Y	Recreate HACCVT, SSI matrix and SSI module
	=	N	Default value
HID	=	Hn	HACC0 identifier (n=1-9)
MID	=	M1	MAJOR name
A1ID	=	An	AML system 1 identifier (n=1)
A2ID	=	Am	AML system 2 identifier (m=2)
M1	=	Hn	Definition of **one** HCC as MAJOR

Defaults:

A1ID	=	A1
A2ID	=	A2

FEX=(n), FMTU=Y only valid for a PRIMARY SYSTEM start.

START command for single host complex:

```
S HACC.A,SYS=PRI|SECn
         ,FMTU=Y|N
         ,FEX=(n,...,n,n-n)
         ,HOT=Y|N
         ,SSI=Y|N
         ,SUP=Y|N
         ,HID=Hn
         ,A1ID=An
         ,A2ID=Am
```

Entering FMTU=Y and/or FEX=(n,...,n,n-n) can lead to data losses in productive operation in certain circumstances.

START command for MULTI-HOST complexes with **LU 6.2** inter-host communication:

```
S HACC.A,SYS=PRI|SECn
         ,FMTU=Y|N
         ,FEX(n,...,n,n-n)
         ,HOT=Y|N
         ,SSI=Y|N
         ,HID=Hn
         ,MID=M1
         ,M1=Hn
         ,A1ID=An
         ,A2ID=Am
```

9.2 STARTED TASK JCL FOR SINGLE HOST COMPLEX

The following JCL statements is as an example of a HCC Start procedure which must be stored in the SYS1.PROCLIB or an installation-specific PROCLIB. This example is stored under HACCSTC1 in the hlq.ZHC....SAMP library.

```
//*-------------------------------------------------------------------*
//*              HACC STARTED TASK HACC REL. 3.0.0                    *
//*              SINGLE HOST COMPLEX                                  *
//*              AR/AMU VIA EXCP/VTAM LU2/VTAM LU6.2                  *
//*-------------------------------------------------------------------*
//HACC     PROC SYS=PRI,
//             FMTU=N,
//*            FEX=(1,2,...,A-Z),      <--- ACTIVATE IF NEEDED
//             HOT=Y,
//             SSI=N,
//             HID=H1,
//             A1ID=A1
//*            A2ID=A2                 <--- ACTIVATE FOR SECOND ABBA SYSTEM
//HACCPROC EXEC PGM=ZHC00100,
//             TIME=1440,
//             DPRTY=(14,7),           <--- HIGHER THAN BATCH 1)
//             REGION=4000K,
//             PARM=('SYS=&SYS',
//             'FMTU=&FMTU',
//*            'FEX=&FEX',             <--- ACTIVATE IF NEEDED
//             'HOT=&HOT',
//             'SSI=&SSI',
//             'HID=&HID',
//             'A1ID=&A1ID')
//*            'A2ID=&A2ID')           <--- ACTIVATE FOR SECOND ABBA SYSTEM
//STEPLIB  DD  DSN=hlq.ZHC300.LOAD,DISP=SHR
//HACCPARM DD  DSN=parmdsn(member),DISP=SHR
```

1) HCC is mainly in WAIT status at the subsystem interface and not using system resources, and therefore it should be given the highest possible priority. This ensures that HCC does not run into a time-out when, for example, a system loop occurs.

9.3 STARTED TASK JCL FOR MULTI HOST COMPLEX (LU 6.2)

The following JCL statements is as an example of a HCC start procedure which must be stored in the SYS1.PROCLIB or an installation-specific PROCLIB This example is stored under HACCSTC2 in the hlq.ZHC....SAMP library.

```
//*-------------------------------------------------------------------*
//*                HACC STARTED TASK HACC RELEASE 3.0.0                *
//*                MULTI HOST COMPLEX LU6.2                            *
//*                AR/AMU VIA EXCP/VTAM LU2/VTAM LU6.2                 *
//*-------------------------------------------------------------------*
//HACC     PROC SYS=PRI,
//              FMTU=N,
//*             FEX=(1,2,...,A-Z),      <--- ACTIVATE IF NEEDED
//              HOT=Y,
//              SSI=N,
//              HID=H1,
//              A1ID=A1,
//*             A2ID=A2,                <--- ACTIVATE FOR SECOND ABBA SYSTEM
//              MID=M1,
//              M1=H1
//HACCPROC EXEC PGM=ZHC00100,
//              TIME=1440,
//              DPRTY=(14,7),           <--- HIGHER THAN BATCH 1)
//              REGION=4000K,
//              PARM=('SYS=&SYS',
//              'FMTU=&FMTU',
//*             'FEX=&FEX',             <--- ACTIVATE IF NEEDED
//              'HOT=&HOT',
//              'SSI=&SSI',
//              'HID=&HID',
//              'A1ID=&A1ID',
//*             'A2ID=&A2ID',           <--- ACTIVATE FOR SECOND ABBA SYSTEM
//              'MID=&MID',
//              'M1=&M1')
//STEPLIB  DD  DSN=hlq.ZHC300.LOAD,DISP=SHR
//HACCPARM DD  DSN=parmdsn(member),DISP=SHR
```

1) HCC is mainly in WAIT status at the subsystem interface and not using system resources, and therefore it should be given the highest possible priority. This ensures that HCC does not run into a time-out when, for example, a system loop occurs.

9.4 START AFTER INSTALLATION

Files such as UNIT-LOG (and EXCHANGE-LOGs when defined) and the subsystem-interface must be formatted during the first primary HCC start. The MESSAGE-LOGs does not need to be formatted.

Start command format:

```
S HACC.A,FMTU=Y,SSI=Y[,FEX=(n,...,n)]
```

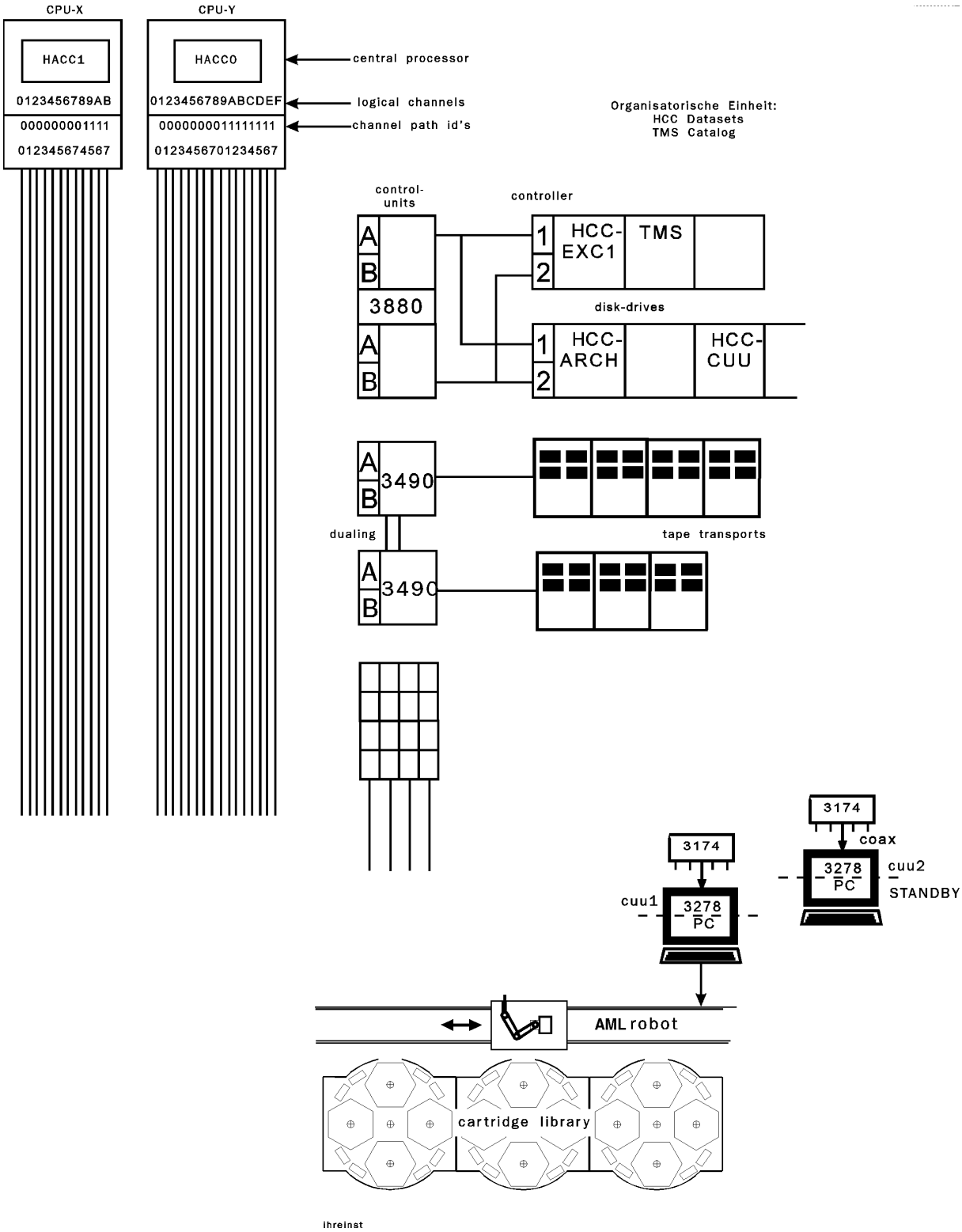
The following operator message appears, together with other information, when HCC is initialized:

```
HAC000I ==================================================
HAC016I ===       HACC READY FOR COMMUNICATION         ===
HAC000I ==================================================
```

10 CUSTOMER CONFIGURATION

10.1 CUSTOMIZED INSTALLATION CONFIGURATION

Enter your installation configuration here by marking the corresponding connections and crossing out components that are not available. Should errors occur, copy this diagram and file it with the error documentation. (Refer to the Messages and Codes Manual.)



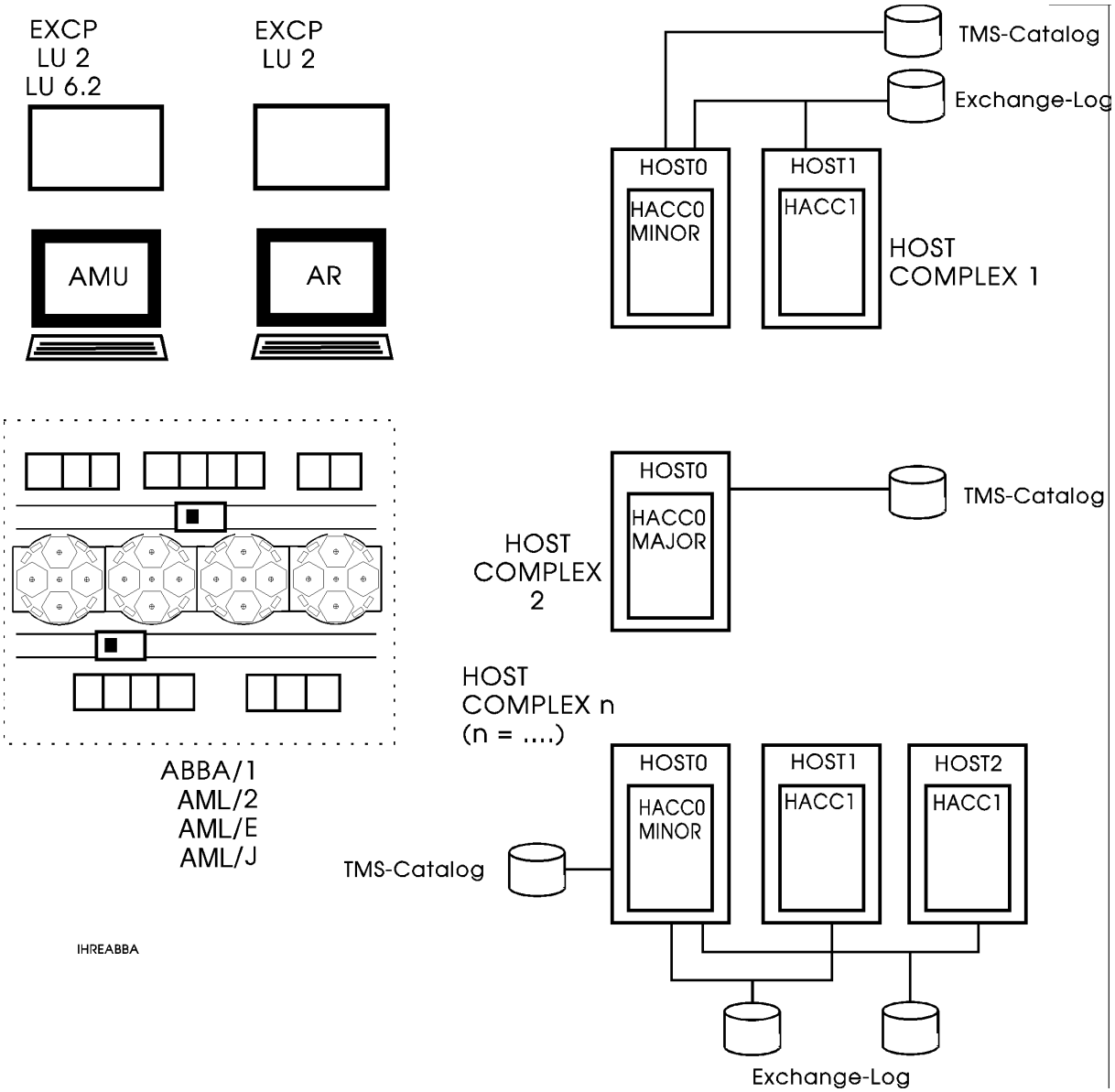
Your installation configuration diagram

Name: .....

Telephone: .....

10.2 CUSTOMIZED AML INSTALLATION

Enter your AML INSTALLATION here by marking the corresponding connections and crossing out components that are not available. Should errors occur, copy this diagram and file it with the error documentation. (Refer to the Messages and Codes Manual).



Your AML installation diagram

Name: .....

Telephone: .....

INDEX

3

3172 8-2
3174 8-2
3274 8-2

A

ALLOCATION
  HAC026DU 3-7
  IGG026DU 3-7
  INSTALLATION EXIT 3-7
  SVC 26 3-7
AMU 2-5, 8-2
AMU CONNECTION 8-2
AMU CONNECTION (SPECIAL CASES) 8-3
AMU CONNECTION TO 3172 ..... 8-2, 8-3
AMU CONNECTION TO 3172-TRA 8-3
AMU CONNECTION TO 3174 ..... 8-2, 8-3
AMU CONNECTION TO 3174-TRA 8-3
AMU CONNECTION TO 3274 ..... 8-2, 8-3
AMU CONNECTION TO 3274-TRA 8-3
AR 2-5, 8-1
AR CONNECTION 8-1
AR CONNECTION 8-1
AR CONNECTION AN 3174 8-1
AR CONNECTION TO 3274 8-1
ARCHIVE
  ALLOCATION 4-3
ARCHIVE
  COORDINATES 7-2
  HOME COORD. 7-2
  SETUP 7-5
  VOLSER STATUS 7-2
ARCHIVE SETUP 7-5

C

CATALOG EXIT 3-7
CM/2 1.1 8-13
COMDEFn
  VTAM 8-12
CONFIGURATION DIAGRAM 10-1
CUSTOMER
  CONFIGURATION 10-1
CUSTOMIZED INSTALLATION 10-3
CUSTOMIZED INSTALLATION
  CONFIGURATION 10-1

D

DATEX-P 8-12
DFSMS
  DYNALLOC restrictions 3-8
DFT-Mode 8-2

E

EXCHANGE LOG 4-4
EXITS 2-9

F

File Transfer Aid 8-4
FILES HCC 4-1

H

HAA 7-1
  GENERATION COORD. 7-3
  GENERATION VOLSER 7-3
HAA FUNCTIONS 7-3
HACCISSI 3-8
HACCPARM INSTRUCTIONS 6-1
HACCPARM SYNTAX 6-2
HACPARM1
  COMDEFn
    VTAM 8-12
HACPARM1 DATASET 5-1
HACPARM2 DATASET 5-2

I

INSTALLATION
  AML START 9-7
  ARCHIVE 4-3
  EXCHANGE LOG 4-4
  HAC026DU 3-7
  HACCISSI 3-8
  HCC FILES 4-1
  IPL 3-5, 5-2
  MESSAGE LOG 4-6
  NON-SMP 3-13
  PROCEDURE 3-1
  SMP-E 3-9
  START COMMAND 9-1
  START PROCEDURE 9-1
  SYS1.PARMLIB 3-4
  UNIT RECOVERY LOG 4-1
ISPF 3-13

L

LDEV 2-14
LOGMODE 3270 8-5
LOGMODE LU 6.2 8-5

M

MESSAGE LOG 4-6
MIGRATION 3-2

S

SCRATCH 2-12
SDLC 8-3
SSI 2-5
START COMMAND 9-1
START PROCEDURE 9-1
Status description 7-2
SYS1.PARMLIB

COMMNDnn 3-4, 3-8
IEAAPFnn 3-4
IEALPAnn 3-8
IEFSSNnn 3-4, 3-8
IKJTSOnn 3-4
LNKLSTnn 3-4
SYS1.PROCLIB
HACCISSI 3-8

T

TARGET- UND DISTLIBS 3-12

U

UNIT LOG
RECOVERY 4-2
STATISTIC 4-2
USSTAB 8-6

V

VTAM LU 2 8-12
VTAM LU2
COMDEFn 8-12

X

X.25 8-3