Installing a VM/SP 5 using a starter system under hercules V1.1

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1) Summary of changes

Between V1.0 and V 1.1

Amended notice to user

Added instruction to revert from CMS staging to actual CMS system residence

2) Notice to users

VM/SP 5 Is an IBM Licensed Program Product and therefore it is the responsibility of the user to ensure it is properly licensed.

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3) Prerequisite

3.1) Environment

To perform this install, an environment which can run hercules or another environment which can run S/370 architecture software is required. For hercules, known working environments are MS Windows and Linux. Building hercules or how to run S/370 is outside of the scope of this document.

3.2) Files

You will need the following files to install VM/SP 5 :

3380.AWS : The VM/SP5 3380 Starter system tape file
VMSUP.AWS : The VM/SP 5 Product files binaries
VMSUPSRC.AWS : The VM/SP 5 Product source files

3.3) S/370 configuration

Within this document, it is assumed the running environment is an hercules instance running under Linux. If the S/370 environment is not hercules, the configuration will need to be adapted.

3.3.1) Hercules configuration

The following configuration can be used as a sample and is the one used for this document

```
ARCHMODE   S/370
CPUSERIAL  000611
CPUMODEL   4381
MAINSIZE   16
NUMCPU     1
ECPSVM     NO
MAXCPU     1
ENGINES    CP
SYSEPOCH   1900
YROFFSET   -28
TZOFFSET   -0500

0010      3270
02D0      3380 VMSRES.3380.CCKD
02D1      3380 VMPK01.3380.CCKD
02D2      3380 VMPK04.3380.CCKD
0460.32   3270
0580.8    3480    *
```

Notes :

ECPSVM is set to NO because the ECPS:VM support has issues and is not reliable at this point.

Setting MAINSIZE to anything greater than 16 MB will have no effect since this is the maximum size supported by VM/SP 5

NUMCPU can be increased to 2, but it will then be required to generate a AP or MP nucleus of CP instead of the default UP nucleus to use the second processor.

3.3.2) Creating the DASD files

In order to install VM/SP 5, 3 volumes are required :

VMSRES : The system residence volume

VMPK01 and VMPK04 : Binaries and source files

To create those file, the hercules “dasdinit” utility is used.

Note that this document assumes that hercules was built with zlib support.

Issue the following command for each volume :

```
$ dasdinit -z VMSRES.3380.CCKD 3380 VMSRES

HHC01413I Hercules utility dasdinit - DASD image file creation
program; version 4.0.0.8616-g5d0eebe-modified (4.0.0.8616)

HHC01414I (C) Copyright 1999-2016 by Roger Bowler, Jan Jaeger, and
others

HHC01415I Build date: Aug 24 2016 at 21:29:24

HHC00462I 0:0000 CKD file VMSRES.3380.CCKD: creating 3380 volume
VMSRES: 885 cyls, 15 trks/cyl, 47616 bytes/track

HHC00460I 0:0000 CKD file VMSRES.3380.CCKD: 885 cylinders
successfully written

HHC02423I DASD operation completed
```

3.4) Starting the installation

Start up hercules

```
HHC01024I Waiting for console connections on port 3270
HHC00414I 0:02D1 CKD file VMPK01.3380.CCKD: cyls 885 heads 15 tracks 13275 trklen 47616
HHC00414I 0:02D2 CKD file VMPK04.3380.CCKD: cyls 885 heads 15 tracks 13275 trklen 47616
HHC00224I 0:0580 Tape file *, type aws: display "        "
HHC00224I 0:0581 Tape file *, type aws: display "        "
HHC00224I 0:0582 Tape file *, type aws: display "        "
HHC00224I 0:0583 Tape file *, type aws: display "        "
HHC00224I 0:0584 Tape file *, type aws: display "        "
HHC00224I 0:0585 Tape file *, type aws: display "        "
HHC00224I 0:0586 Tape file *, type aws: display "        "
HHC00224I 0:0587 Tape file *, type aws: display "        "
HHC00100I Thread id 00007fddccc3e700, prio 2147483647, name Control panel started
herc =====>
CP00 PSW=0000000000000000 24M.......
```

Connect a 3270 Terminal to hercules

```
_Hercules Version  : 4.0.0.8616-g5d0eebe-modified
 Host name         : deb001
 Host OS           : Linux-3.16.0-4-amd64
 Host Architecture : x86_64
 Processors        : MP=8
 LPAR Name         : HERCULES
 Device number     : 0:0010
 Subchannel        : 0000

            HHH           HHH    The S/370, ESA/390 and z/Architecture
            HHH           HHH                    Emulator
            HHH           HHH
            HHH           HHH   EEEE RRR   CCC U  U L    EEEE  SSS
            HHHHHHHHHHHHHHHHH   E    R  R C    U  U L    E    S
            HHHHHHHHHHHHHHHHH   EEE  RRR  C    U  U L    EEE   SS
            HHHHHHHHHHHHHHHHH   E    R R  C    U  U L    E       S
            HHH           HHH   EEEE R  R  CCC  UU  LLLL EEEE SSS
            HHH           HHH
            HHH           HHH
            HHH           HHH      My PC thinks it's a MAINFRAME

            Copyright (C) 1999-2016 Roger Bowler, Jan Jaeger, and others
```

Then attach the 3380.AWS file to a tape drive using the “devinit” command

```
HHC02915I client 0 COMM: Connection received
HHC02914I 0:0010 COMM: client 0 negotiations complete; ttype = 'IBM-3278-5-E'
HHC01018I 0:0010 COMM: client 192.168.77.1 devtype 3270: connected
HHC01603I devinit 580 3380.aws
HHC00221I 0:0580 Tape file 3380.aws, type aws: format type AWS Format tape file
HHC00224I 0:0580 Tape file 3380.aws, type aws: display " NT RDY "
HHC02245I 0:0580 device initialized
herc =====>
CP00 PSW=0000000000000000 24M.......
```

3.4.1) ICKDSF

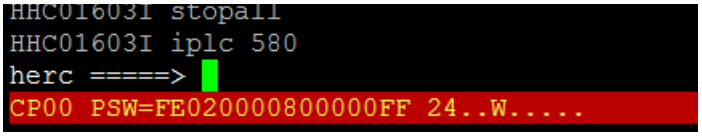
At this point, the 3380.AWS starter system can be IPLed. Once activity subsides (shouldn't take more than a second), press clear twice and this will show on the 3270 terminal :

```
ICK005E DEFINE INPUT DEVICE, REPLY 'DDDD,CUU' OR 'CONSOLE'
ENTER INPUT/COMMAND:
```

This is ICKDSF. It is not required to use ICKDSF in this ennvironment (ICKDSF is used to perform low level format of DASDs)

3.4.2) Formatting the volumes

IPL the next tape file (CPFMT) :



Press clear again on the 3270 terminal :

```
VM/370 FORMAT/ALLOCATE PROGRAM - VM/SP
ENTER FORMAT OR ALLOCATE:
```

The volumes should be formatted :

```
FORMAT
FORMAT FUNCTION SELECTED
ENTER DEVICE ADDRESS (CCUU):
2D0
ENTER DEVICE TYPE:
3380
ENTER START CYLINDER (XXX OR XXXX) OR "LABEL":
000
ENTER END CYLINDER (XXX OR XXXX):
884
ENTER DEVICE LABEL:
VMSRES
WRITE VERIFICATION NOT PERFORMED UNLESS REQUESTED.
ENTER "YES" FOR WRITE VERIFICATION:
NO
FORMAT STARTED
FORMAT DONE
WRITE VERIFICATION WAS NOT PERFORMED
ENTER FORMAT OR ALLOCATE:
```

Do the same for all 3 volumes (2D1, 2D2 with labels VMPK01 and VMPK04)

3.4.3) Restoring the starter system

Next we need to IPL DDR :

Back on the terminal hit “clear”

```
VM/370 DASD DUMP/RESTORE PROGRAM - VM/SP HPO
ENTER CARD READER ADDRESS OR CONTROL STATEMENTS
ENTER:
```

The next file on the tape is the actual DDR dasd image to restore

```
 SYSPRINT CONS
ENTER:
INPUT 580 3480
ENTER:
OUTPUT 2D0 3380
ENTER:
RESTORE ALL
DMKDDR717R DATA DUMPED FROM VMSRES TO BE RESTORED TO
DO YOU WISH TO CONTINUE?  RESPOND YES, NO OR REREAD:

DO YOU WISH TO CONTINUE?  RESPOND YES, NO OR REREAD:
YES
DMKDDR711R VOLID READ IS VMSRES
DO YOU WISH TO CONTINUE?  RESPOND YES, NO OR REREAD:
YES
RESTORING VMSRES
DATA DUMPED   09/23/87 AT 19.13.39  GMT FROM VMSRES RESTORED TO VMSRES
INPUT CYLINDER EXTENTS      OUTPUT CYLINDER EXTENTS
        START     STOP      START     STOP
        0000      0005      0000      0005
        0117      0153      0117      0153
        0211      0224      0211      0224

_                                                              HOLDING
```

```
        0500      0538      0500      0538
END OF RESTORE
 BYTES RESTORED 0049198116


ENTER:
```

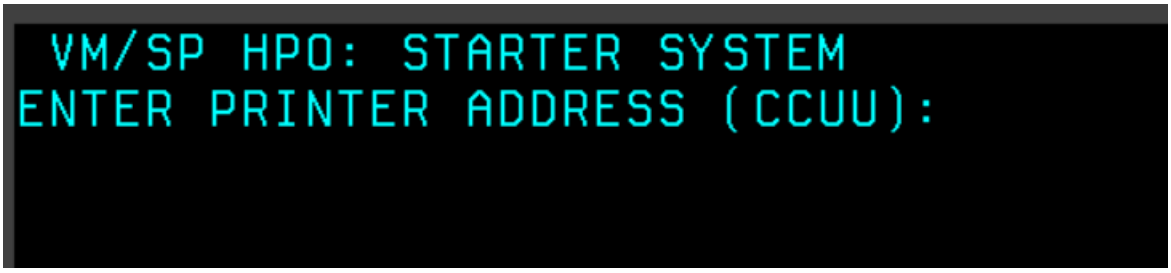
Note : Some version of hercules have a bug which entails that you type EVERY command of DDR with 3 leading spaces. This is being investigated. (The issue is a read modified which isn’t presenting the the SBA properly).

4) Starting the restored starter system

Once the starter system has been restored, it can now be IPLed

```
HHC01603I stopall
HHC01603I iplc 2D0
HHC01315I 0:0010 CHAN: ccw 07000000 60000001=>00                                .
HHC01312I 0:0010 CHAN: stat 0E00, count 0000
HHC01313I 0:0010 CHAN: sense 80000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
HHC01314I 0:0010 CHAN: sense CMDREJ
herc =====>
CP00 PSW=FE06000080000000 24..W.....
```

Press clear on the 3270 terminal



4.1) Initializing the VM/SP starter system

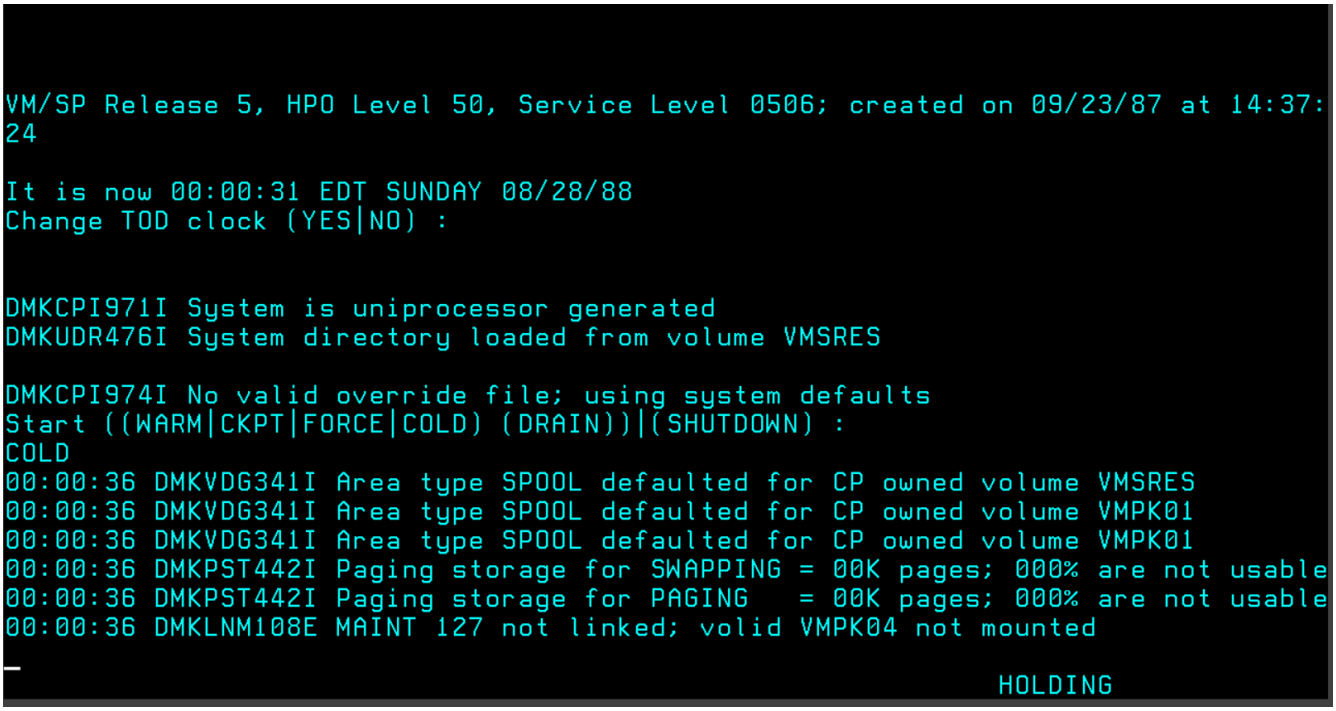
Now the basic description of the system should be entered (matching the system configuration)

NOTE : enter bogus definitions for printer/punch/reader, 581 for second tape and 2D1 for the work pack. In some version of hercules, 3 spaces may need to be entered first (the same as for DDR).

```
 VM/SP HPO: STARTER SYSTEM
***DO YOU WISH TO RE-DEFINE YOUR SYSTEM***(YES,NO):

***DO YOU WISH TO RE-DEFINE YOUR SYSTEM***(YES,NO):
YES
ENTER PRINTER ADDRESS (CCUU):
00E
ENTER DEVICE TYPE (1403,1443,3203,3211,3262,3289E,4245,4248):
1403
ENTER PUNCH ADDRESS (CCUU):
00D
ENTER DEVICE TYPE (2540P,3525):
3525
ENTER READER ADDRESS (CCUU):
00C
ENTER DEVICE TYPE (2540R,2501,3505):
2501
ENTER ADDRESS WHERE FIRST TAPE IS MOUNTED (CCUU):
581
ENTER DEVICE TYPE (3420,3422,3430,3480,8809):
3480
ENTER ADDRESS OF A SECOND TAPE DRIVE  (CCUU):
_                                                          HOLDING
```

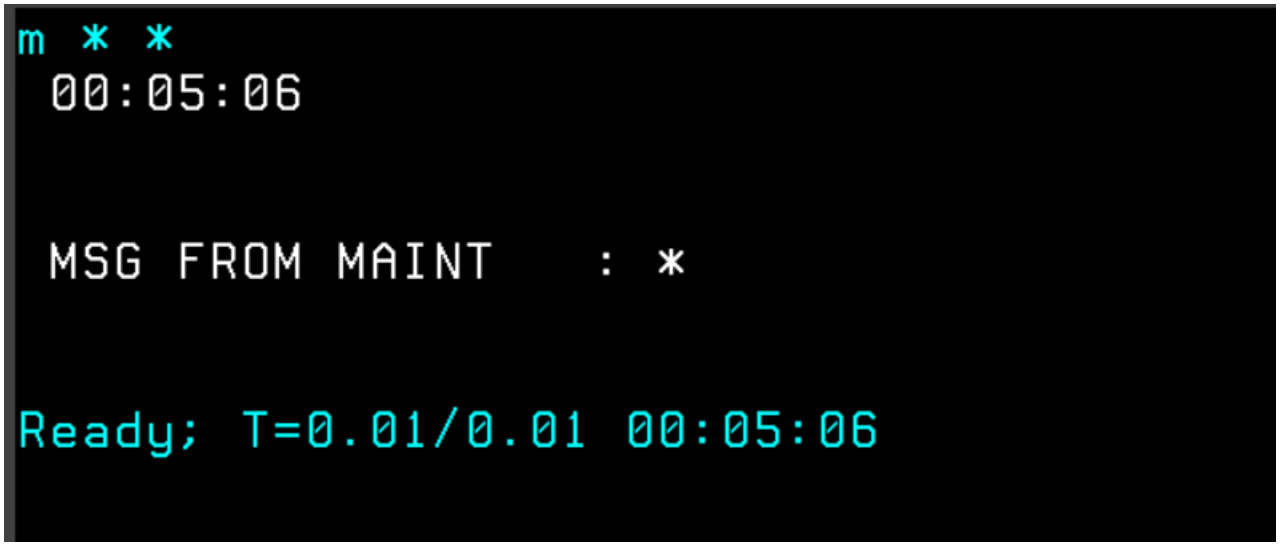
```
582
ENTER DEVICE TYPE (3420,3422,3430,3480,8809):
3480
ENTER DEVICE ADDRESS OF WORK PACK (CCUU):
2D1
ENTER DEVICE TYPE (3380,3330,3350,3375):
3380
ENTER ADDRESS OF A GRAPHIC DEVICE (CCUU):
460
ENTER DEVICE TYPE (3277,3278,3066):
3278

***SYSTEM DEFINITION COMPLETED***

000E PRINTER
000D PUNCH
000C READER
0581 FIRST TAPE
0582 SECOND  TAPE
02D1 WORK PACK
0460 GRAPHIC DEVICE
ARE THE ABOVE ENTRIES CORRECT (YES,NO):
_                                                          HOLDING
```

Enter YES at this point.



Press clear until you get a “Ready;” prompt

You are now logged on as “MAINT” on the starter system :



5) Installing the system product

5.1) Loading the product files

Mount the VMSUP Tape (the VM/SP Product primary tape) on drive 581 :

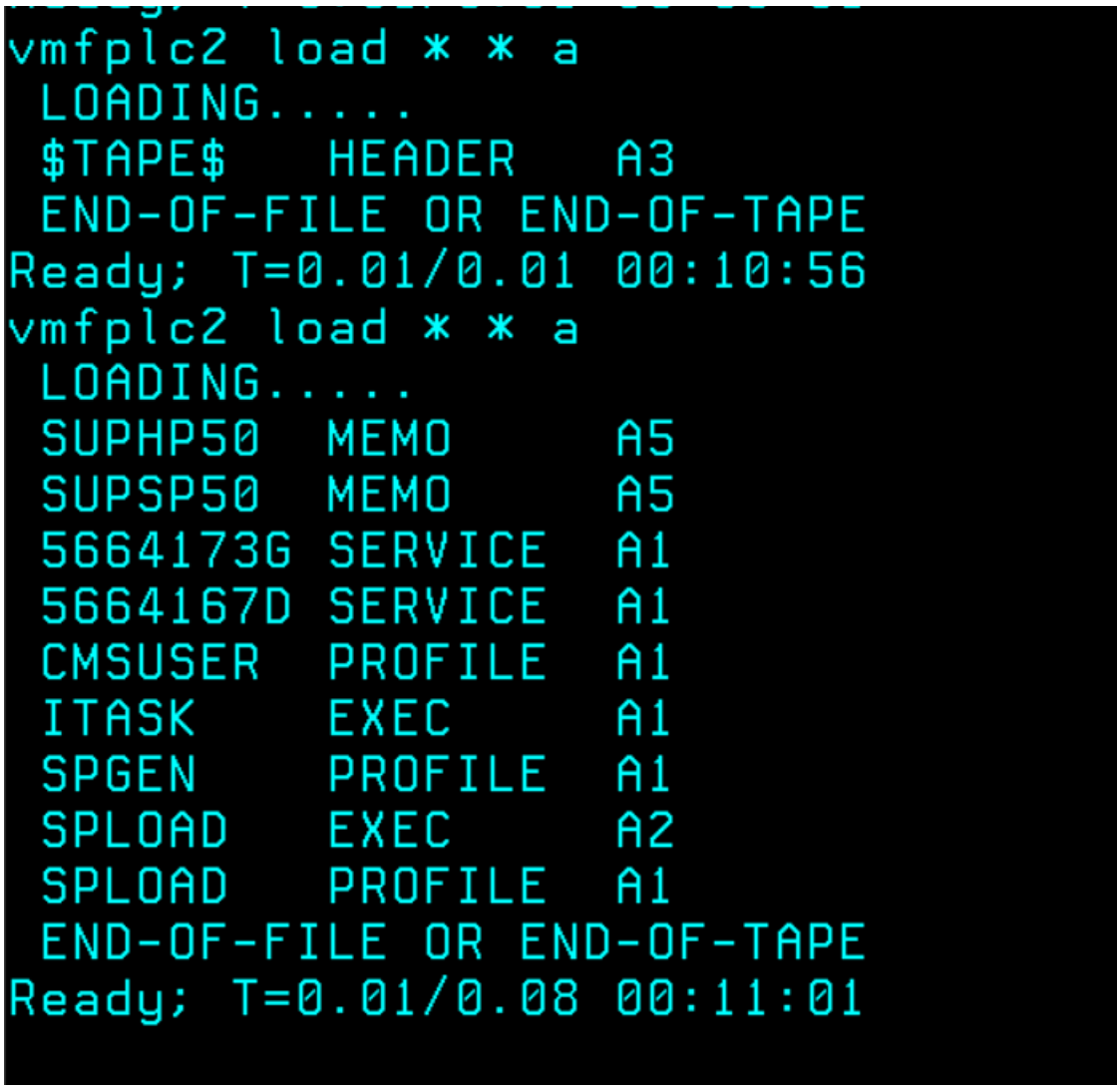
```
HHC01603I devinit 581 vmsup.aws
HHC00221I 0:0581 Tape file vmsup.aws, type aws: format type AWS Format tape file
HHC00224I 0:0581 Tape file vmsup.aws, type aws: display " NT RDY "
HHC02245I 0:0581 device initialized
herc =====>
CP00 PSW=030E000000000000 24..W.....
```

Then attach tape 581 to maint's virtual address 181 :

```
att 581 * 181
00:08:31 TAPE 0581 ATTACH TO MAINT    181
Ready; T=0.01/0.01 00:08:31
```

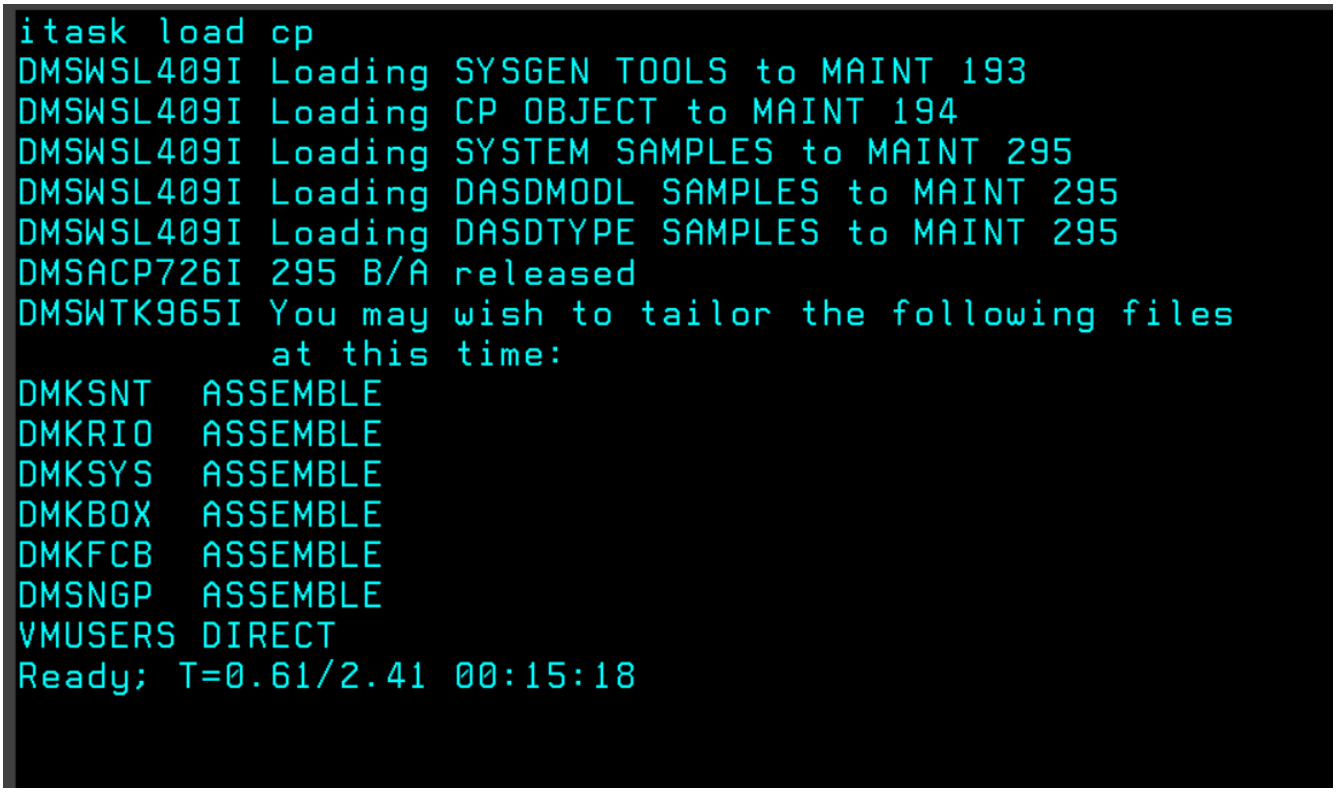
This is a VMFPLC2 formatted tape. The first file contains the utilities to manage the installation

Type "VMFPLC2 LOAD * * A" twice :



The first tape file contains a volume identifier. The second the procedures to load the rest of the product (namely, ITASK (a front end procedure), SPGEN (nucleus builder) and SPLOAD (which loads files from the tape))

First, load the CP product (the hypervisor). The files loaded are what is necessary to generate the hypervisor nucleus :



Then do the same for CMS

When loading CMS you will get :

There is a bug in the CMS nucleus generation procedure, so just press enter

```
itask load cms
DMSWSL409I Loading CMS SYSTEM to MAINT 190
DMSWSL409I Loading CMS BASE to MAINT 193
DMSACC724I 190 replaces A (191)
DMSACP725I 190 also = S disk
ASSEMBLE XF GEND PROC
ENTER TARGET DISK MODE FOR ASSEMBLE MODULES
DEFAULTS TO S-DISK IF NONE ENTERED.

ASSEMBLE XF GEND COMPLETE
DMSACC724I 191 replaces A (190)
DMSACC059E 295 already accessed as read/write C-disk
DMSACC724I 190 replaces C (295)
DMSACP725I 190 also = S disk
DMSACC724I 295 replaces A (191)
DMSUPD181E No update files were found
ASMBLING DMSNGP

ASSEMBLER (XF) DONE
NO STATEMENTS FLAGGED IN THIS ASSEMBLY
DMSNGP TEXT A1 CREATED
DMSACC724I 191 replaces A (295)
_                                                          HOLDING
```

There is a workaround which will be covered next in this document

```
DMSACP726I 191 B released
DMSACP723I O (295) R/O
DMSACP723I R (193) R/O
DMSACP725I 190 also = S disk
SYSTEM LOAD DECK COMPLETE
00:19:02 PUN FILE 0003  TO  MAINT    COPY 001   NOHOLD
DMSINQ609R Nucleus (CYL or BLK) address =
```

at this point type : #cp i 190 (this reipls CMS inside the main virtual machine)

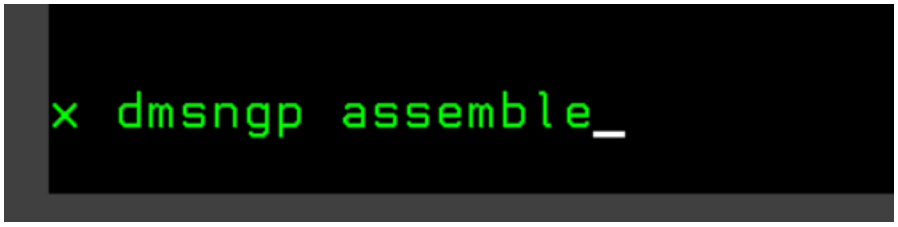
5.2) Circumventing the VMSUP MAINT 190 format bug

The VMSUP Starter system 190 minidisk (the CMS residence disk) is incorrectly formatted. It should be a 4K format but it is formatted as a 1K minidisk, leading to a failure to IPL CMS if the nucleus is generated as is. The workaround is to use the 595 minidisk (GCS residence disk) as a staging area to correct the problem.

First edit DMSNGP ASSEMBLE and redefine the CMS residence minidisk as 595

```
acc 295 B
DMSACC724I 295 replaces B (295)
Ready; T=0.01/0.01 00:27:29
q disk b
LABEL   CUU M  STAT   CYL TYPE BLKSIZE   FILES  BLKS USED-(%) BLKS LEFT  BLK TOTAL
MNT295 295 B    R/W    14 3380 4096          17        149-07       1951       2100
Ready; T=0.01/0.01 00:27:32
```

Edit DMSNGP ASSEMBLE B :

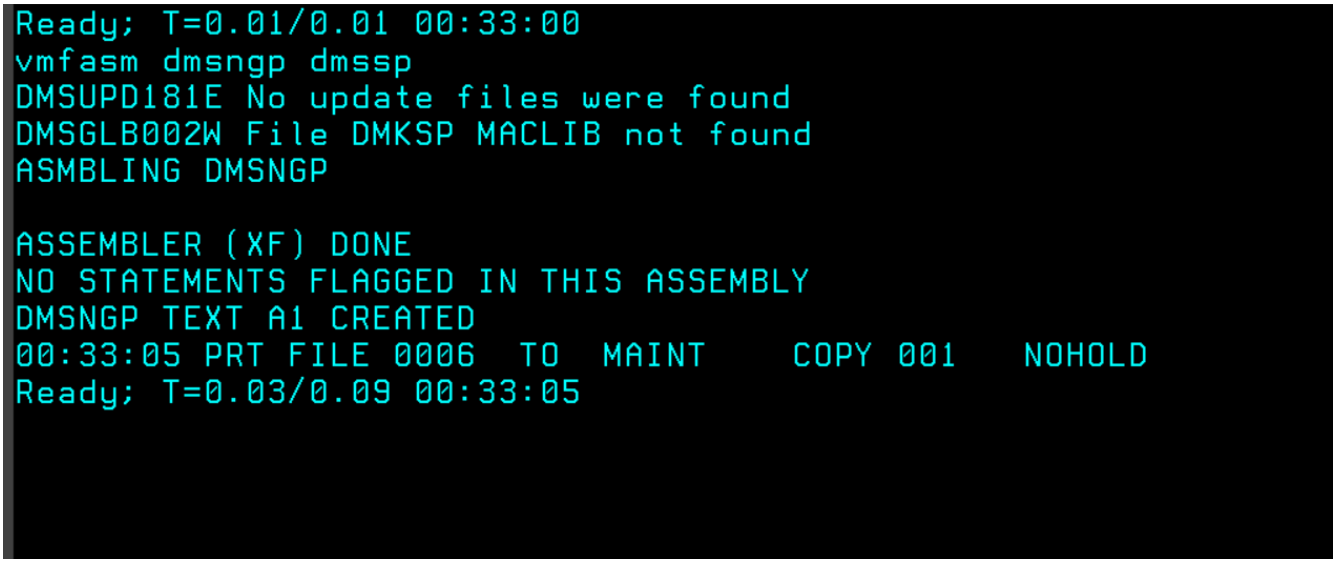


Then update the following 2 parameters :

SYSDISK and IPLADDR to be 595 instead of 190 :

```
 DMSNGP   ASSEMBLE B1  F 80  Trunc=71 Size=28 Line=10 Col=1 Alt=0
====>
00010          SPACE 2
00011 DMSNGP   CSECT
00012          DEFNUC SYSDISK=595,        * S-disk address                  *
00013                 YDISK=19E,          * Y-disk address                  *
00014                 HELP=19D,           * Help disk address               *
00015                 LANGID=AMENG,       * Default is American English     *
00016                 DBCS=NO,            * Default is not a DBCS lang      *
00017                 LANGLEV=S,          * DCSS ID for multiple DCSS       *
00018                 USEINST=YES,        * Using EXEC/XEDIT in DCSS        *
00019                 INSTSEG=CMSINST,    * Name of above DCSS to save      *
      |...+....1....+....2....+....3....+....4....+....5....+....6....+....7>.
00020                 SAVESYS=YES,        * Using CMS in DCSS yes or no     *
00021                 SYSNAME=CMS,        * Name of above DCSS to save      *
00022                 REWRITE=YES,        * Write nucleus yes or no         *
00023                 IPLADDR=595,        * Address of where to write       *
00024                 CYLADDR=?,          * Cyl/Blk of where to write       *
00025                 IPLCYL0=YES,        * write ipl text on cyl 0         *
00026                 VERSION=,           * VM/SP REL n mm/dd/yy hh mm ss   *
00027                 INSTID=             * VM/SP CONVERSATIONAL MONITOR SY
00028          END
00029 * * * End of File * * *
```

Generate the DMSNGP binary :



Now format the 595 disk to hold the CMS system :

```
format 595 Z
DMSFOR603R FORMAT will erase all files on disk Z(595). Do you wish to continue?
Enter 1 (YES) or 0 (NO).
1
DMSFOR605R Enter disk label:
MNT595
DMSFOR733I Formatting disk Z
DMSFOR732I 31 cylinders formatted on Z(595)
Ready; T=0.01/0.11 00:35:59
format 595 Z 28 ( recomp
LABEL   CUU M  STAT  CYL TYPE BLKSIZE   FILES  BLKS USED-(%) BLKS LEFT  BLK TOTAL
MNT595 595 Z   R/W   28 3380 4096          0          6-00       4194       4200
Ready; T=0.01/0.01 00:36:06
```

This formats the 595 disk as a CMS minidisk and leaves a few cylinders at the end to contain the CMS nucleus.

Copy the 190 CMS Product files to the staging disk :

```
acc 190 w
DMSACP725I 190 also = S disk
Ready; T=0.01/0.01 00:37:36
copy * * w = = z ( oldd repl
Ready; T=0.84/1.62 00:37:49
```

(Note the 190 disk is accessed R/W as disk W so as to ensure to pick up ALL the files since files with mode 0 are not visible when the disk is accessed R/O)

Now generate the CMS nucleus :

```
spgen nucleus cms
DMSACP723I O (295) R/O
DMSACP723I R (193) R/O
SYSTEM LOAD DECK COMPLETE
00:39:43 PUN FILE 0010  TO  MAINT    COPY 001   NOHOLD
00:39:43 PRT FILE 0009  TO  MAINT    COPY 001   NOHOLD
DMSINQ609R Nucleus (CYL or BLK) address =
28
00:39:48 SYSTEM SAVED
DMSWSP327I The installation DCSS could not be loaded
VM/SP REL 5 08/28/88 00:39

DMSACP723I B (295) R/O
DMSACP723I R (193) R/O
Ready; T=0.01/0.02 00:39:50
q disk
LABEL   CUU M  STAT  CYL TYPE BLKSIZE   FILES  BLKS USED-(%) BLKS LEFT  BLK TOTAL
MNT191 191 A   R/W   10 3380 1024          12        535-12       4115       4650
MNT295 295 B/A R/O   14 3380 4096          16        148-07       1952       2100
MNT193 193 R/A R/O   27 3380 1024         664       5995-48       6560      12555
MNT595 595 S   R/O   28 3380 4096         213       3025-72       1175       4200
Ready; T=0.01/0.01 00:39:56
_                                                                 RUNNING
```

Now time to get stuff back to normal… Format the 190 minidisk, copy back the files to 190, update DMSNGP to be back to 190.

The 190 disk now needs to be formated as a 4K disk, to prepare it for nucleus installation and to restore the files saved on the staging disk.

(Screenshot missing)

Type :

FORMAT 190 W (BLKSIZE 4K

FORMAT 190 W 30 (RECOMP

ACC 595 Z

COPY * * Z = = W (OLDD REPL

Then edit the DMSNGP ASSEMBLE file, but first access 295 R/W by typing : “ACC 295 B”

Then XEDIT DMSNGP ASSEMBLE

```
 DMSNGP   ASSEMBLE B1  F 80  Trunc=71 Size=28 Line=10 Col=1 Alt=0
====> _
00010          SPACE 2
00011 DMSNGP   CSECT
00012          DEFNUC SYSDISK=190,         * S-DISK ADDRESS                  *
00013                 YDISK=19E,           * Y-disk address                  *
00014                 HELP=19D,            * Help disk address               *
00015                 LANGID=AMENG,        * Default is American English     *
00016                 DBCS=NO,             * Default is not a DBCS lang      *
00017                 LANGLEV=S,           * DCSS ID for multiple DCSS       *
00018                 USEINST=YES,         * Using EXEC/XEDIT in DCSS        *
00019                 INSTSEG=CMSINST,     * Name of above DCSS to save      *
      |...+....1....+....2....+....3....+....4....+....5....+....6....+....7>.
00020                 SAVESYS=YES,         * Using CMS in DCSS yes or no     *
00021                 SYSNAME=CMS,         * Name of above DCSS to save      *
00022                 REWRITE=YES,         * Write nucleus yes or no         *
00023                 IPLADDR=190,         * ADDRESS OF WHERE TO WRITE       *
00024                 CYLADDR=?,           * Cyl/Blk of where to write       *
00025                 IPLCYL0=YES,         * write ipl text on cyl 0         *
00026                 VERSION=,            * VM/SP REL n mm/dd/yy hh mm ss   *
00027                 INSTID=              * VM/SP CONVERSATIONAL MONITOR SY
00028          END
00029 * * * End of File * * *
```

Regenerate the assembler by typing ASMGEND (otherwise DMSNGP won’t assemble)

```
asmgend
ASSEMBLE XF GEND PROC
ENTER TARGET DISK MODE FOR ASSEMBLE MODULES
DEFAULTS TO S-DISK IF NONE ENTERED.

ASSEMBLE XF GEND COMPLETE
Ready; T=0.02/0.08 00:45:04
```

Note : The ASMGEND procedure regenerates the XF Assembler (IFOX) Directory of modules. These modules are located on the CMS residence disk but have file mode 0 (invisible). The procedure allows the generation of the table needed to access those hidden files through the DMSLADAD API.

Regenerate DMSNGP with the 190 disk now in place :

```
vmfasm dmsngp dmssp
DMSUPD181E No update files were found
DMSGLB002W File DMKSP MACLIB not found
ASMBLING DMSNGP

ASSEMBLER (XF) DONE
NO STATEMENTS FLAGGED IN THIS ASSEMBLY
DMSNGP TEXT A1 CREATED
00:45:43 PRT FILE 0013  TO  MAINT    COPY 001   NOHOLD
Ready; T=0.03/0.09 00:45:43
```

Regenerate the CMS Nucleus

```
spgen nucleus cms
DMSACP723I O (295) R/O
DMSACP723I R (193) R/O
SYSTEM LOAD DECK COMPLETE
00:46:31 PUN FILE 0014  TO  MAINT    COPY 001   NOHOLD
DMSINQ609R Nucleus (CYL or BLK) address =
30
00:46:36 SYSTEM SAVED
DMSWSP327I The installation DCSS could not be loaded
VM/SP REL 5 08/28/88 00:46

DMSACP723I B (295) R/O
DMSACP723I R (193) R/O
Ready; T=0.01/0.02 00:46:38
q disk
LABEL  CUU M  STAT  CYL TYPE BLKSIZE   FILES  BLKS USED-(%) BLKS LEFT  BLK TOTAL
MNT191 191 A   R/W   10 3380 1024         30        702-15       3948       4650
MNT295 295 B/A R/O   14 3380 4096         16        148-07       1952       2100
MNT193 193 R/A R/O   27 3380 1024        664       5995-48       6560      12555
MNT190 190 S   R/O   30 3380 4096        213       3025-67       1475       4500
Ready; T=0.01/0.01 00:46:52
```

Note that the CMS system residence disk is now again 190

5.3) Loading the rest of the system and the source files

Type :

ITASK LOAD GCS

ITASK LOAD HELP

ITASK LOAD IPCS

ITASK LOAD TSAF

GCS and TSAF are pretty useless as is without VTAM. HELP is really useful (gives access to the CMS HELP command) and IPCS contains the utilities to examine SYSTEM crash dumps.

```
itask load gcs
DMSWSL409I Loading GCS INTERFACE to MAINT 193
DMSWSL409I Loading GCS OBJECT to MAINT 595
DMSACC724I 295 replaces A (191)
DMSACP726I 295 B/A released
DMSACP723I B (595) R/O
DMSACP723I C (191) R/O
Ready; T=0.22/0.93 00:50:54
itask load tsaf
DMSWSL409I Loading TSAF INTERFACE to MAINT 193
DMSWSL409I Loading TSAF OBJECT to MAINT 492
Ready; T=0.18/0.71 00:51:02
itask load ipcs
DMSWSL409I Loading IPCS OBJECT to MAINT 193
Ready; T=0.09/0.37 00:51:08
itask load help$
DMSWTK070E Invalid parameter HELP$
Ready(00024); T=0.02/0.08 00:51:17
itask load help
DMSWSL409I Loading HELP FILES to MAINT 19D
DMSWTK966I Do you wish to have the HELP files
           converted to uppercase?
_                                                              HOLDING
```

```
DMSWTK967R Type: (No) or Yes
no
DMSSFD401S VM size cannot exceed segment start address (00E10000)
DMSSFD288I HELP DCSS not saved
Ready(00040); T=1.78/7.14 00:52:12
```

The last issue is resolved by doing the following :

```
00:55:14
CP DEF STOR 12M
00:55:14 STORAGE = 12288K
00:55:17
CP I CMS
DMSWSP327I The installation DCSS could not be loaded
VM/SP REL 5 08/28/88 00:46

DMSACP723I B (295) R/O
DMSACP723I R (193) R/O
Ready; T=0.01/0.02 00:55:18
itask load help
DMSWSL409I Loading HELP FILES to MAINT 19D
DMSWTK966I Do you wish to have the HELP files
           converted to uppercase?
DMSWTK967R Type: (No) or Yes
no
DMSACP723I Z (19D) R/O
00:55:57 SYSTEM SAVED
Ready; T=1.76/7.17 00:55:57


_                                                                    RUNNING
```

5.4) Fixing DMKSYS

When issuing ITASK BUILD CP The following shows :

```
ASMBLING DMKSYS

ASSEMBLER (XF) DONE
             549         SYSLOCS
  880550     550+    4,SYSIPL MACRO NOT SPECIFIED. DEFAULT VALUE OF NO AUTO RE-
IPL HAS B*
  880600         +EEN SET
IFO197 *** MNOTE ***
NUMBER OF STATEMENTS FLAGGED IN THIS ASSEMBLY =     1
*** ERROR ASMBLING DMKSYS ***
```

So DMKSYS must be amended to include the SYSIPL Macro.

```
00101            SYSMIH
00102            SYSFCN
00103            SYSIPL SYSTYPE=WARM
00104            SYSLOCS
```

5.5) Generate the CP nucleus

```
Ready; T=0.01/0.02 00:59:58
itask build cp
DMSACC724I 295 replaces A (191)
DMSACP726I 295 C released
DMSUPD181E No update files were found
ASMBLING DMKBOX

ASSEMBLER (XF) DONE
NO STATEMENTS FLAGGED IN THIS ASSEMBLY
DMKBOX TEXT A1 CREATED
01:00:02 PRT FILE 0020  TO  MAINT    COPY 001   NOHOLD
DMSUPD181E No update files were found
ASMBLING DMKFCB

ASSEMBLER (XF) DONE
NO STATEMENTS FLAGGED IN THIS ASSEMBLY
DMKFCB TEXT A1 CREATED
01:00:03 PRT FILE 0021  TO  MAINT    COPY 001   NOHOLD
DMSUPD181E No update files were found
ASMBLING DMKSNT

ASSEMBLER (XF) DONE
_                                                          HOLDING
```

```
NO STATEMENTS FLAGGED IN THIS ASSEMBLY
DMKSNT TEXT A1 CREATED
01:05:20 PRT FILE 0035  TO  MAINT    COPY 001   NOHOLD
DMSUPD181E No update files were found
ASMBLING DMKSYS

ASSEMBLER (XF) DONE
NO STATEMENTS FLAGGED IN THIS ASSEMBLY
DMKSYS TEXT A1 CREATED
01:05:21 PRT FILE 0036  TO  MAINT    COPY 001   NOHOLD
DMSUPD181E No update files were found
ASMBLING DMKRIO

ASSEMBLER (XF) DONE
NO STATEMENTS FLAGGED IN THIS ASSEMBLY
DMKRIO TEXT A1 CREATED
01:05:24 PRT FILE 0037  TO  MAINT    COPY 001   NOHOLD
DMSACC724I 191 replaces A (295)
DMSACP726I 191 B released
DMSACP723I N (295) R/O
DMSACP723I P (194) R/O
DMSACP723I R (193) R/O
_                                                          HOLDING
```

```
SYSTEM LOAD DECK COMPLETE
01:05:26 PUN FILE 0038  TO  MAINT    COPY 001    NOHOLD
NUCLEUS LOADED ON VMSRES --- STARTING CYL/BLK=0001  , LAST CYL/BLK USED=0003
```

5.6) Start newly generated system

Time to shutdown the starter system and restart with the newly built hypervisor

Quit hercules directly… (VM is very confused at this point because the nucleus has been regenerated)

```
HHC02915I client 0 COMM: connection received
HHC02914I 0:0010 COMM: client 0 negotiations complete; ttype = 'IBM-3278-5-E'
HHC01018I 0:0010 COMM: client 192.168.77.1 devtype 3270: connected
HHC01603I ostailor quiet
HHC01603I iplc 2D0
HHC00107I Starting thread cckd_ra(), active=0, started=0, max=2
HHC00100I Thread id 00007f92edfb3700, prio 2147483647, name Read-ahead thread-1 started
HHC00107I Starting thread cckd_ra() from cckd_ra(), active=1, started=1, max=2
HHC00100I Thread id 00007f92edeb2700, prio 2147483647, name Read-ahead thread-2 started
HHC00107I Starting thread cckd_writer(), active=0, started=0, max=2
HHC00100I Thread id 00007f92edcb0700, prio 2147483647, name Writer thread-1 started
herc =====>
CP00 PSW=030E000000000000 24..W.....
```

```
VM/SP Release 5, Service Level 0521; created on 08/28/88 at 01:05:54

It is now 01:09:28 EDT SUNDAY 08/28/88
Change TOD clock (YES|NO) :


DMKCPI971I System is uniprocessor generated
DMKUDR476I System directory loaded from volume VMSRES

DMKCPI974I No valid override file; using system defaults
Start ((WARM|CKPT|FORCE|COLD) (DRAIN))|(SHUTDOWN) :
COLD
01:10:53 DMKLNM107E MAINT 19E not linked; not in CP directory
01:10:53 AUTO LOGON   ***   OPERATOR USERS = 001  BY  SYSTEM
01:10:53
_                                                        HOLDING
```

Enter and COLD (the shutdown was a bit abrupt, so the warm start area is corrupted)

You are now logged as operator

Enable log on from other terminals by typing “ENABLE ALL”

and log in as main (password : CPCMS)

Connect

Type maint/CPCMS (you can also press enter and type L MAINT (short for logon))

```
Enter one of the following commands:

   LOGON userid            (Example:  LOGON VMUSER1)
   DIAL userid             (Example:  DIAL VMUSER2)
   MSG userid message      (Example:  MSG VMUSER2 GOOD MORNING)
   LOGOFF

L MAINT
Enter password (It will not appear when typed):

DMKLNM108E MAINT 129 not linked; volid PROFPK not mounted
DMKLNM108E MAINT 130 not linked; volid SQLPK  not mounted
DASD 19D LINKED R/W; R/O BY OPERATOR
DASD 190 LINKED R/W; R/O BY OPERATOR
LOGON AT 01:14:53 EDT SUNDAY 08/28/88
The installation DCSS could not be loaded
VM/SP REL 5 08/28/88 00:46

B (295) R/O
R (193) R/O
Ready; T=0.01/0.02 01:14:54

-                                                                    RUNNING
```

Ensure all DASDs are mounted :

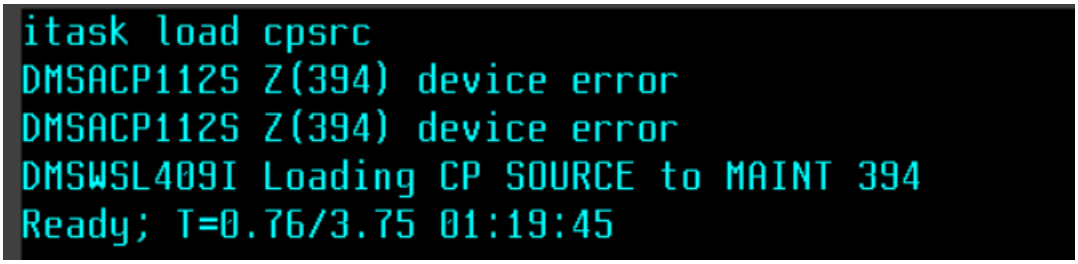
```
q da
DASD 2D0 CP OWNED  VMSRES   0013
DASD 2D1 CP OWNED  VMPK01   0010
DASD 2D2 CP SYSTEM VMPK04   0005
Ready; T=0.01/0.01 01:16:29
```

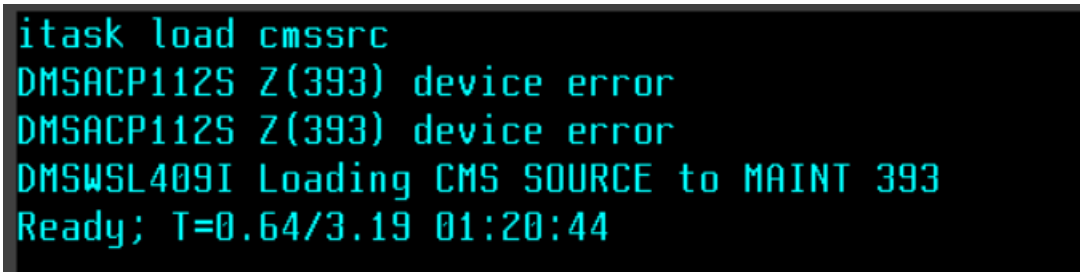
Attach a tape drive with VMSUPSRC.AWS mounted :

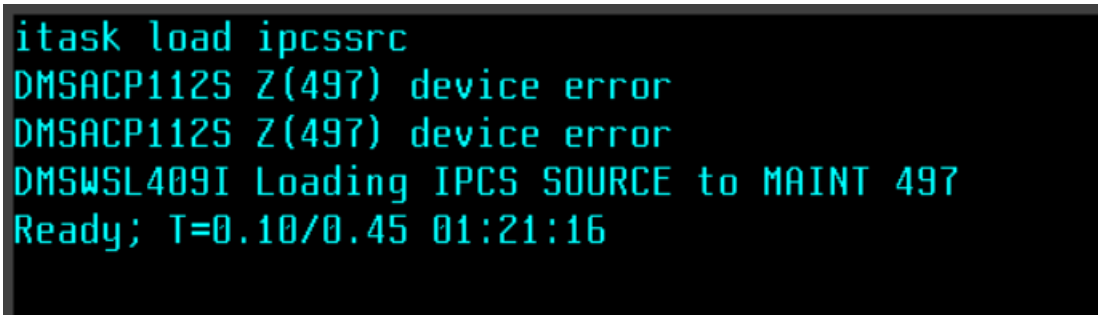
```
HHC01603I devinit 580 vmsupsrc.aws
HHC00221I 0:0580 Tape file vmsupsrc.aws, type aws: format type AWS Format tape file
HHC00224I 0:0580 Tape file vmsupsrc.aws, type aws: display " NT RDY "
HHC02245I 0:0580 device initialized
herc =====>
CP00 PSW=030E000000000000 24..W.....
```

```
att 580 * 181
TAPE 580 ATTACH TO MAINT    181
Ready; T=0.01/0.01 01:17:58
```

Load the following : CPSRC, CMSSRC, IPCSSRC







There is no source for GCS and TSAF.

6) Customizing the system

The following files are basic customization files :

6.1) Nucleus files

The following are files that need to be assembled and a nucleus regenerated :

DMKRIO ASSEMBLE : This file contains the I/O configuration of the system

DMKBOX ASSEMBLE : This file contains the logo displayed upon login

DMKSNT ASSEMBLE : This files contains the definition and DASD location of shared segments

DMKSYS ASSEMBLE : This file contains general system configuration, such as storage size, location of spool checkpoint/warmstart area, the location of error logging (EREP), the list of CP Owned volumes (those that can contain paging, spooling, etc..)

6.2) User directory

The file USER DIRECT contains the definition of all virtual machines, including : name, password, Virtual storage size, privilege classes, virtual I/O devices definition, etc. It can be updated dynamically by issuing the command “DIRECT USER”

7) Feedback

Any feedback, request for corrections can be sent to

ivan@vmfacility.fr