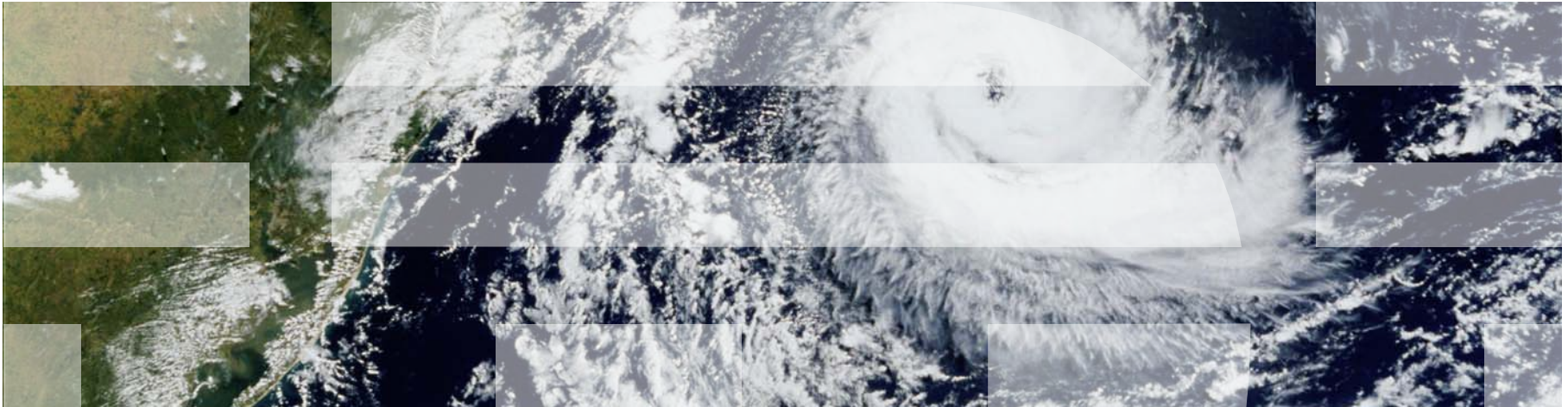




z/VSE 4.3 Support of four-digit-cuu device addresses



<http://www.ibm.com/zVSE>

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Introduction

I/O devices can have physical device numbers in the range of x'0' to x'FFFF'

Today:

- z/VSE only supports I/O devices with device numbers in the range of x'0' to x'FFF'

I/O devices with device numbers > x'FFF' were ignored during the z/VSE installation process and cannot be added in the IPL procedure

With z/VSE 4.3:

- z/VSE 4.3 supports I/O devices with device numbers in the range of x'0' to x'FFFF'

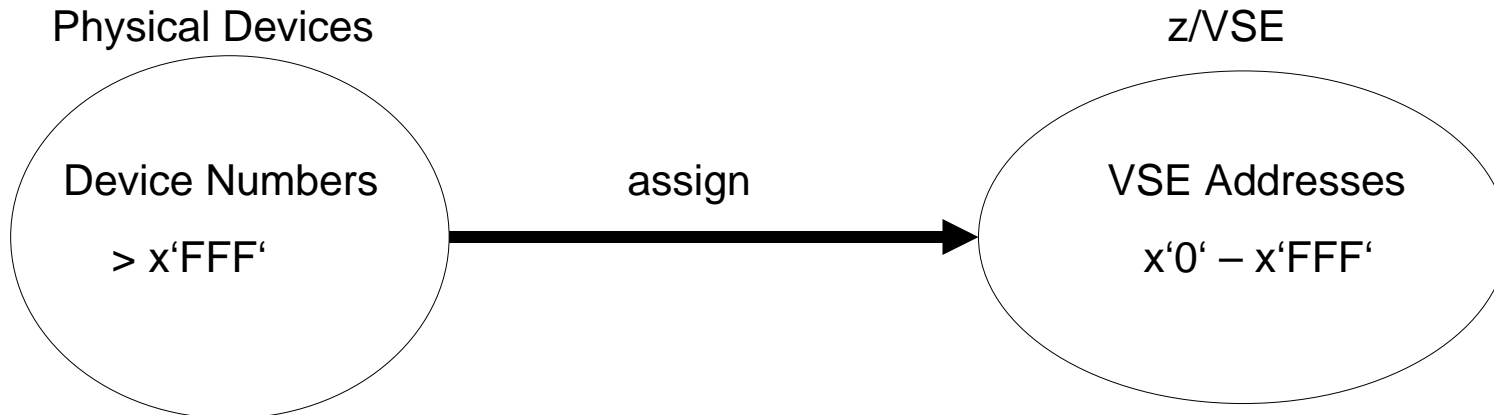
I/O devices with device numbers > x'FFF' were recognized during the z/VSE installation process and can be added into the IPL procedure

Advantage:

The system administrator can now assign devices to z/VSE without considering the device number.

Physical Device Addresses and VSE Addresses

- If the physical device address of an I/O device is $\leq x'FFF'$ then - by default - the physical device address is equal to the VSE address - nothing changes.
- If the physical device address of an I/O device is $> x'FFF'$ then a VSE address in the range between $x'0'$ and $x'FFF'$ will be assigned to the device



Assigning a VSE address

Extended ADD Statement:

Syntax:

- ADD <physical device address > as <VSE address>,<device type>
- ADD <phy_addr1> : <phy_addr2> as <VSEaddr1> : <VSEaddr2>, <device type>
- ADD <phy_addr1> .. <phy_addr2> as <VSEaddr1> .. <VSEaddr2>, <device type>

Note :

You only have to specify a VSE address if your physical device address is larger than x'FFF'

If the physical device address is lower or equal than x'FFF' then the VSE address is equal to the physical device address by default.

This assignment cannot be changed any more after IPL

The VSE address must be unique: You cannot assign the same VSE address twice.

Examples:

- ADD 1555 as 555, ECKD
- ADD 1010:1020 as 200:210, 3480
- ADD 1010..1020 as 200..210, 3480

Example

IPL Procedure:

ADD 380,ECKD

ADD 200,ECKD

ADD 22A3 as FFA,TPA

ADD FA04 as A04,TPA

ADD 300 as 500, ... → NOT allowed !

Assignment of physical device addresses to VSE addresses:

Physical device address	VSE address	
380	380	default setting by the system – cannot be changed
200	200	default setting by the system – cannot be changed
22A3	FFA	defined by the user
FA04	A04	defined by the user
300	500	not possible !

Note: **With z/VSE 4.3 each device has a physical device address AND a VSE address**

Display VSE addresses

```

QUERY IO-----
      |--,CUU-----|
            |=-----|
            |=cuu-----|
  
```

QUERY IO,CUU=1200

AR 0015	PHYSICAL ADDRESS	ADDRESS USED BY Z/VSE	DEVICE CLASS
AR 0015	1200	200	DASD

QUERY IO,CUU=FFB

AR 0015	VSE ADDR	PHYSICAL ADDR	DEVICE CLASS
AR 0015	FFB	2000	DASD

Display VSE Addresses

- SYSTEM: z/VSE z/VSE 5.1 TURBO (01) USER: SYS
- VM USER ID:HHOFF TIME: 09:36:52

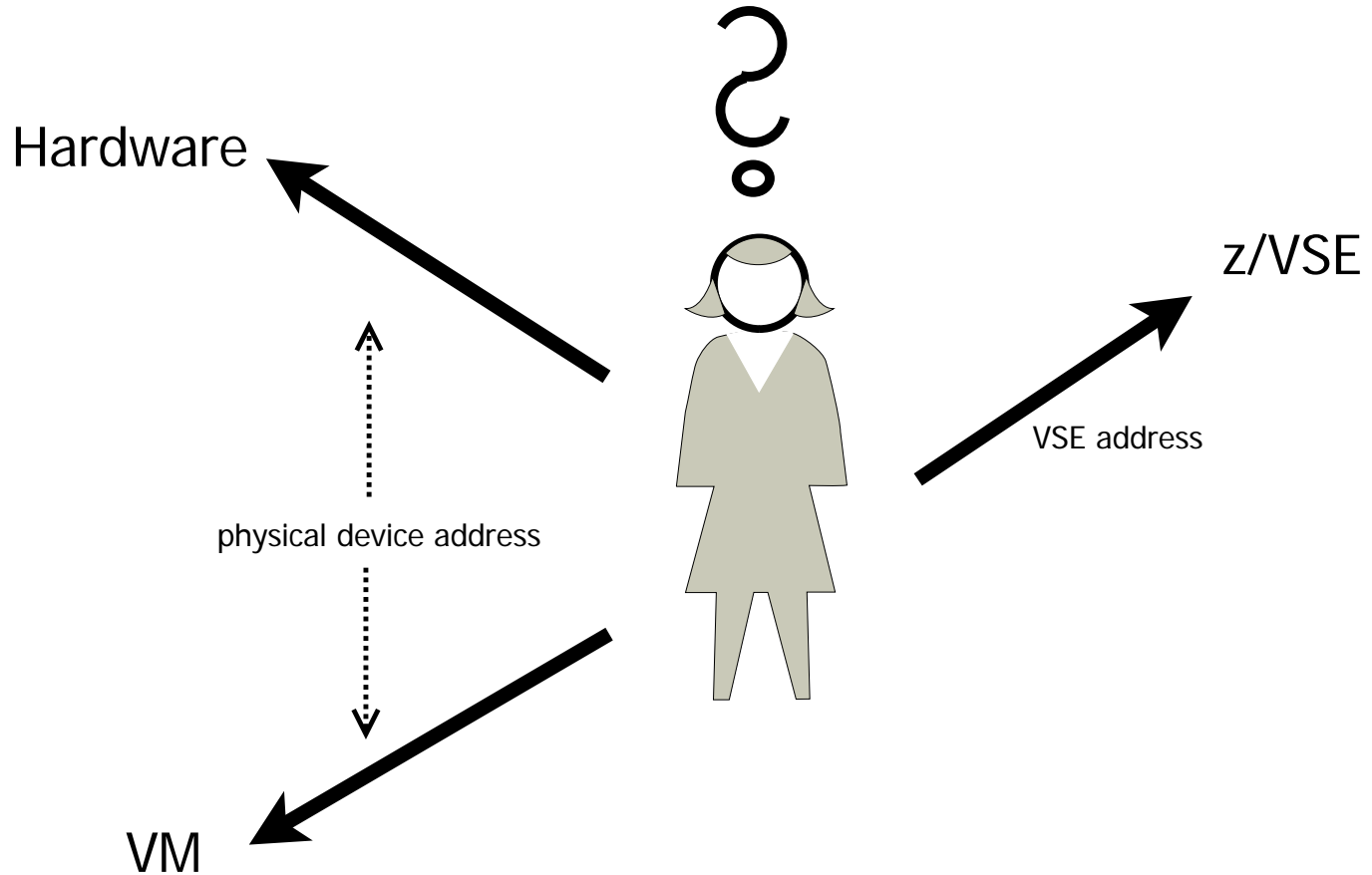
- status_c01
- AR 0015 SCHIB DEV INT-PARM ISC FLG LP PNO LPU PI MBI PO PA CHPID0-3 CHPID4-7
- AR 0015 0003 C01 00005548 3 81 80 00 80 80 0000 80 80 50000000 00000000
- AR 0015 DEVICE ADDRESS CCA=50 DDC=24
- AR 0015 1140I READY

- QUERY IO,CUU=c01
- AR 0015 VSE ADDR PHYSICAL ADDR DEVICE INFORMATION
- AR 0015 C01 CC01 COMMUN. CONTROLLER
- AR 0015 1140I READY
-
-
-
-
- ==> QUERY IO,CUU=c01
-
- 1=HLP 2=CPY 3=END 4=RTN 5=DEL 6=DELS 7=RED 8=CONT 9=EXPL 10=HLD 11=PCUU 12=RTRV
-
- ACT_MSG: HOLDRUN PAUSE: 01 SCROLL: 1 MODE: CONSOLE

Summary

1. Today, there is only one device address for a device; the device address is in the range x'000' to x'FFF'
With z/VSE 4.3:
Each device has a **physical device address** in the range of x'0000' to x'FFFF' AND a **VSE address** in the range of x'000' to x'FFF'
The physical device address of an I/O device and its VSE address may differ.
2. For physical device addresses less or equal to x'FFF', the VSE address is equal to the physical address by default.
For physical device addresses larger than x'FFF' the user has to assign a VSE address to it.
3. The physical device address and the VSE address of a device, both are unique.
4. The Support of Physical Device Addresses up to x'FFFF' does not mean to support more devices in VSE !
The max. number of I/O devices is still limited to x'FFF' = 1024 devices (number of VSE addresses)

Addressing a device



Addressing a device

Use the physical device address, for:

- I/O: Hardware is only aware of the 4-digit-cuu (IOCP)
- VM is only aware of the 4-digit cuu (VM cmds)
- During the Installation process

Use the VSE address:

- For specifying cuus in JCL / procs / VTAM Books / TCP/IP ipinit members
- For all z/VSE AR commands
- In SA Environment

Limitations:

- Error messages at „early“ IPL time may show physical addresses
- Console address in the Supervisor Control Statement
- Alias Devices (PAV Support) do not have VSE addresses
- Recorder File

Example: Addressing devices in z/VSE Jobs

IOCP:

Control Unit:

```
CNTLUNIT CUNUMBR=8000,PATH=(A1,B1,A2,B2,A3,B3,A4,B4),          X
UNITADD=((00,256)),CUADD=0,UNIT=2105
```

4 DASDs of type 3390 with the physical device addresses 8000-8003:

```
IODEVICE ADDRESS=(8000,4),CUNUMBR=(8000),FEATURE=(SHARED),UNIT=3390B
```

z/VSE:

IPL Procedure:

```
ADD 8000:8003 as 800:803,eckd
```

Job:

```
// JOB CLRDK
* DLBL DISK,'DISK.FILE.1',1,SD,DSF
// ASSGN SYS012,801
// DLBL UOUT,'DISK.XXXXX',9999
// EXTENT SYS012,,,,2590,5
// EXEC CLRDK
// END
/*
/ &
```

Example: Addressing devices in AR commands

IOCP: Define the devices CC00-CC02

IPL:

```
ADD CC00:CC02 as C00:C02,OSAX
```

```
,,,,,,,,,,,,,,,,
```

AR:

status C01

```
AR 0015 SCHIB DEV INT-PARM ISC FLG LP PNO LPU PI MBI PO PA CHPID0-3 CHPID4-7
```

```
AR 0015 0003 C01 00005548 3 81 80 00 80 80 0000 80 80 50000000 00000000
```

```
AR 0015 DEVICE ADDRESS CCA=50 DDC=24
```

Example: Addressing devices in the SA Environment

SA Environment:

- BG 0000 SA09I SELECT ONE OF THE FOLLOWING PROGRAMS, OR TYPE END
 - BG 0000 SA10D FASTCOPY, RESTORE, ICKDSF, DITTO, REIPL
 - BG-0000
 - 0 ickdsf
 -
 - 0 INIT UNIT(00B) NVFY NOMAP PURGE VOLID(dsk300)
 - BG 0000 INIT UNIT(00B) NVFY NOMAP PURGE VOLID(DSK300)
 - BG 0000
-

AR command:

- QUERY IO,CUU=8000
- AR 0015 PHYSICAL ADDRESS ADDRESS USED BY Z/VSE DEVICE CLASS
- AR 0015 8000 00B DASD

Limitations: Supervisor Control Statement

```
A009,$A$SUPI,VSIZE=264M,VIO=512K,VPOOL=64K,LOG,IODEV=1024
```

```
ADD A009 as 009,3277
```

```
ADD 00C,2540R
```

```
ADD 00D,2540P
```

```
ADD 00E,1403
```

```
ADD 140:141,ECKD,DVCDN
```

```
ADD 150:151,ECKD,DVCDN
```

```
ADD 160:161,ECKD,DVCDN
```

```
ADD 170:171,ECKD,DVCDN
```

```
ADD 180:181,ECKD
```

```
ADD 190:193,ECKD
```

Note: Specifying the Console Device in the Supervisor Control Statement requires the physical device address

Limitations: PAV Alias Devices

q v pav

```
PAV BASE 2000 ON 0D00 DOSRES
PAV ALIAS 4001 ON 0D18 DOSRES FOR BASE 2000
PAV ALIAS 4002 ON 0D19 DOSRES FOR BASE 2000
PAV ALIAS 4003 ON 0D1A DOSRES FOR BASE 2000
```

query io,cuu=2000

```
AR 0015 VSE ADDR  PHYSICAL ADDR  DEVICE CLASS
AR 0015   FFB      2000  DASD
```

volume ffb,detail

```
AR 0015 CUU CODE DEV.-TYP  VOLID  USAGE  SHARED STATUS  CAPACITY
AR 0015 FFB 6E*B 2107-900  DOSRES  USED              3339 CYL
AR 0015   BASE TO 4001,4002,4003
AR 0015 1I40I  READY
```

volume 4001

```
AR 0015 1I02I  INVALID COMMAND
```

query io,cuu=4002

```
AR 0015 1YS3I  NO DEVICES DEFINED FOR: 4002
```

Limitations: Recorder File

ADD 202E as 02E,xxxx (Printer)

Channel Check results in the console message:

BG 0017 0T12I IRRECOVERABLE CHANNEL ERROR ON 02E

And the entry in the EREP Report shows:

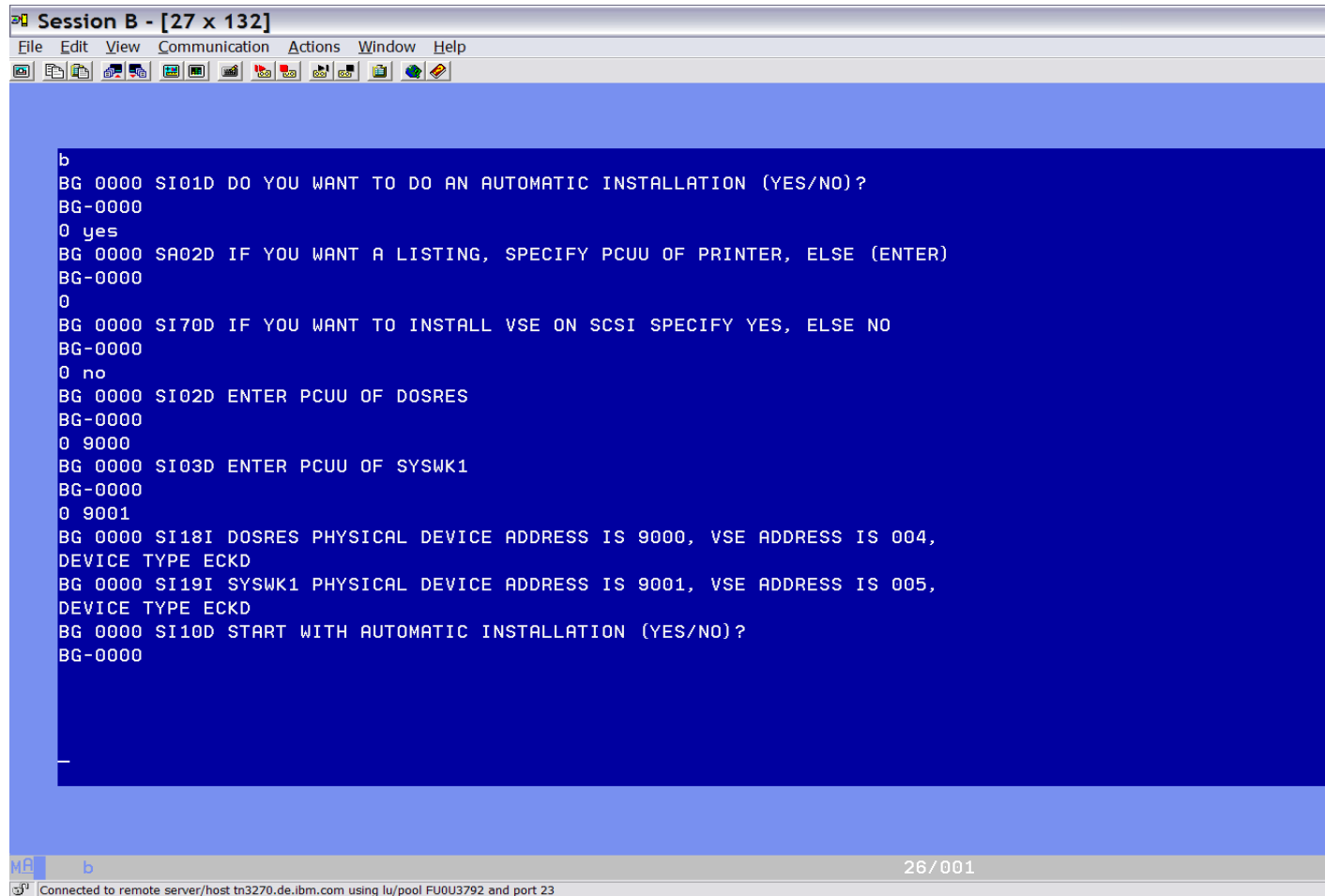
CPU MODEL:	2084	REPORT: CCH EDIT	DAY YEAR	JOB IDENTITY: PAUSEBG
DATE: 163 09		D7C1E4E2C5C2C740		
CPU ID: 036F6A	VSE/ESA		HH MM SS.TH	TIME: 08 48 32.74

CHANNEL UNIT ADDR: 202E

CHANNEL TYPE: CHANNEL UNKNOWN

	CC DA	FL	CT
FAILING CCW	01 005920	24 00	0078
	K CA	US CS	CT
CSW	00 005898	00 02	0000

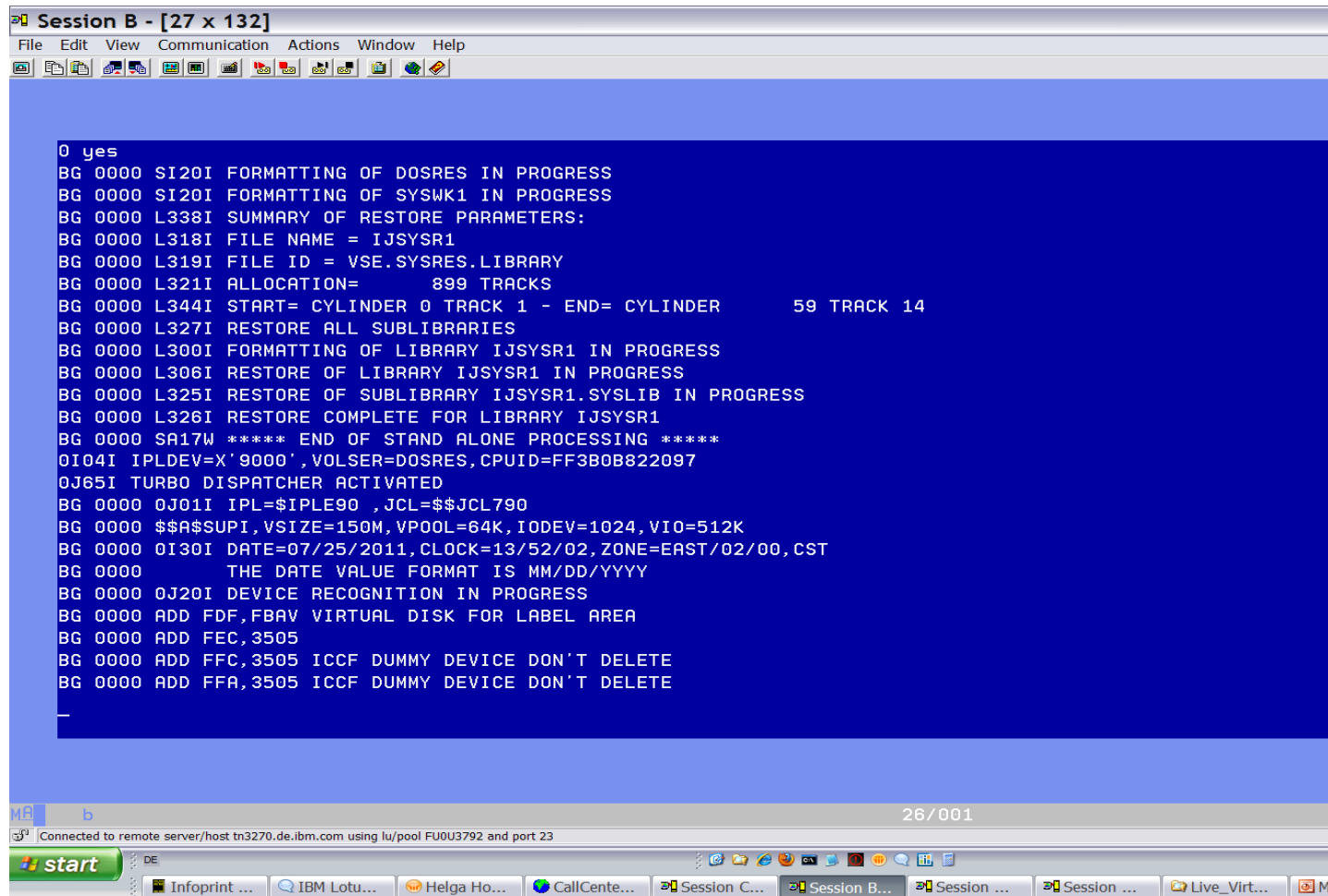
Installation with 4-digit-cuu device addresses



```
Session B - [27 x 132]
File Edit View Communication Actions Window Help
b
BG 0000 SI01D DO YOU WANT TO DO AN AUTOMATIC INSTALLATION (YES/NO)?
BG-0000
0 yes
BG 0000 SA02D IF YOU WANT A LISTING, SPECIFY PCUU OF PRINTER, ELSE (ENTER)
BG-0000
0
BG 0000 SI70D IF YOU WANT TO INSTALL VSE ON SCSI SPECIFY YES, ELSE NO
BG-0000
0 no
BG 0000 SI02D ENTER PCUU OF DOSRES
BG-0000
0 9000
BG 0000 SI03D ENTER PCUU OF SYSWK1
BG-0000
0 9001
BG 0000 SI18I DOSRES PHYSICAL DEVICE ADDRESS IS 9000, VSE ADDRESS IS 004,
DEVICE TYPE ECKD
BG 0000 SI19I SYSWK1 PHYSICAL DEVICE ADDRESS IS 9001, VSE ADDRESS IS 005,
DEVICE TYPE ECKD
BG 0000 SI10D START WITH AUTOMATIC INSTALLATION (YES/NO)?
BG-0000
_

MR b 26/001
Connected to remote server/host tn3270.de.ibm.com using lu/pool FU0U3792 and port 23
```

Installation with 4-digit-cuu device addresses

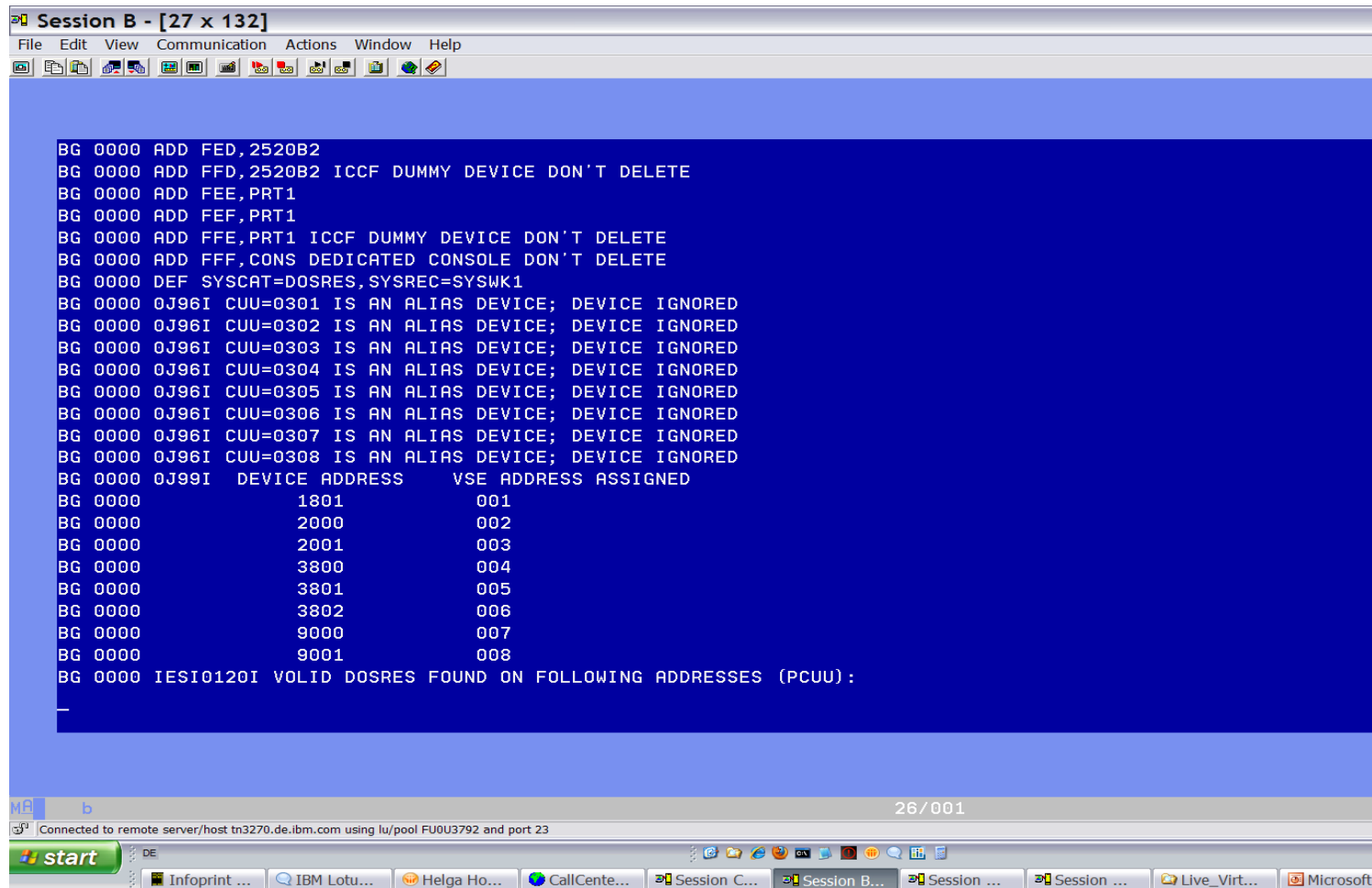


```
Session B - [27 x 132]
File Edit View Communication Actions Window Help
0 yes
BG 0000 SI20I FORMATTING OF DOSRES IN PROGRESS
BG 0000 SI20I FORMATTING OF SYSWK1 IN PROGRESS
BG 0000 L338I SUMMARY OF RESTORE PARAMETERS:
BG 0000 L318I FILE NAME = IJSYSR1
BG 0000 L319I FILE ID = VSE.SYSRES.LIBRARY
BG 0000 L321I ALLOCATION=      899 TRACKS
BG 0000 L344I START= CYLINDER 0 TRACK 1 - END= CYLINDER      59 TRACK 14
BG 0000 L327I RESTORE ALL SUBLIBRARIES
BG 0000 L300I FORMATTING OF LIBRARY IJSYSR1 IN PROGRESS
BG 0000 L306I RESTORE OF LIBRARY IJSYSR1 IN PROGRESS
BG 0000 L325I RESTORE OF SUBLIBRARY IJSYSR1.SYSLIB IN PROGRESS
BG 0000 L326I RESTORE COMPLETE FOR LIBRARY IJSYSR1
BG 0000 SA17W ***** END OF STAND ALONE PROCESSING *****
0I04I IPLDEV=X'9000', VOLSER=DOSRES, CPUID=FF3B0B822097
0J65I TURBO DISPATCHER ACTIVATED
BG 0000 0J01I IPL=$IPL90 , JCL=$$JCL790
BG 0000 $$$A$SUPI, VSIZE=150M, VP00L=64K, IODEV=1024, VI0=512K
BG 0000 0I30I DATE=07/25/2011, CLOCK=13/52/02, ZONE=EAST/02/00, CST
BG 0000      THE DATE VALUE FORMAT IS MM/DD/YYYY
BG 0000 0J20I DEVICE RECOGNITION IN PROGRESS
BG 0000 ADD FDF,FBV VIRTUAL DISK FOR LABEL AREA
BG 0000 ADD FEC,3505
BG 0000 ADD FFC,3505 ICCF DUMMY DEVICE DON'T DELETE
BG 0000 ADD FFA,3505 ICCF DUMMY DEVICE DON'T DELETE
-
26/001
Connected to remote server/host tn3270.de.ibm.com using lu/pool FU0U3792 and port 23
start DE
Infoprint ... IBM Lotu... Helga Ho... CallCentr... Session C... Session B... Session ... Session ... Live_Virt...
```

Installation with 4-digit-cuu device addresses: DEV / DEL command

```
0 dev
BG 0000 DEVICES ADDED AND/OR SENSED:
BG 0000 CUU RANGE    DEVICE TYPE
BG 0000 0009         3277
BG 0000 000C         2540R
BG 0000 000D         2540P
BG 0000 000E         1403
BG 0000 0150:0151   ECKD
BG 0000 0180:0181   ECKD
BG 0000 0190:0194   ECKD
BG 0000 019B         ECKD
BG 0000 019D:019E   ECKD
BG 0000 0200:0201   ECKD
BG 0000 0280:0281   3480
BG 0000 2000        ECKD
BG-0000
0 DEL 2000
```

Installation with 4-digit-cuu device addresses



```
Session B - [27 x 132]
File Edit View Communication Actions Window Help
BG 0000 ADD FED,2520B2
BG 0000 ADD FFD,2520B2 ICCF DUMMY DEVICE DON'T DELETE
BG 0000 ADD FEE,PRT1
BG 0000 ADD FEF,PRT1
BG 0000 ADD FFE,PRT1 ICCF DUMMY DEVICE DON'T DELETE
BG 0000 ADD FFF,CONS DEDICATED CONSOLE DON'T DELETE
BG 0000 DEF SYSCAT=DOSRES,SYSREC=SYSWK1
BG 0000 0J96I CUU=0301 IS AN ALIAS DEVICE; DEVICE IGNORED
BG 0000 0J96I CUU=0302 IS AN ALIAS DEVICE; DEVICE IGNORED
BG 0000 0J96I CUU=0303 IS AN ALIAS DEVICE; DEVICE IGNORED
BG 0000 0J96I CUU=0304 IS AN ALIAS DEVICE; DEVICE IGNORED
BG 0000 0J96I CUU=0305 IS AN ALIAS DEVICE; DEVICE IGNORED
BG 0000 0J96I CUU=0306 IS AN ALIAS DEVICE; DEVICE IGNORED
BG 0000 0J96I CUU=0307 IS AN ALIAS DEVICE; DEVICE IGNORED
BG 0000 0J96I CUU=0308 IS AN ALIAS DEVICE; DEVICE IGNORED
BG 0000 0J99I DEVICE ADDRESS      VSE ADDRESS ASSIGNED
BG 0000                1801          001
BG 0000                2000          002
BG 0000                2001          003
BG 0000                3800          004
BG 0000                3801          005
BG 0000                3802          006
BG 0000                9000          007
BG 0000                9001          008
BG 0000 IESI0120I VOLID DOSRES FOUND ON FOLLOWING ADDRESSES (PCUU):
_

26/001
Connected to remote server/host tn3270.de.ibm.com using lu/pool FU0U3792 and port 23
start DE
Infoprint ... IBM Lotu... Helga Ho... CallCent... Session C... Session B... Session ... Live_Virt... Microsoft
```

IUI: Hardware Configuration

The last step of the installation is to invoke the IUI “Configure Hardware” dialog

- It shows all devices for which the device information is not complete (indicated by “?”)
- It shows for all devices the physical device address and the VSE address assigned

You can now check and alter the assigned VSE address

Note:

When the installation process has completed you cannot change the VSE address of a device any more.

If you would like to have another VSE address for a device then you have to delete the device and add it again with another VSE address.

IUI: Hardware Configuration (first time ...)

```

Session C - [24 x 80]
File Edit View Communication Actions Window Help
ADM$HDWF          HARDWARE CONFIGURATION: UNIDENTIFIED DEVICE LIST

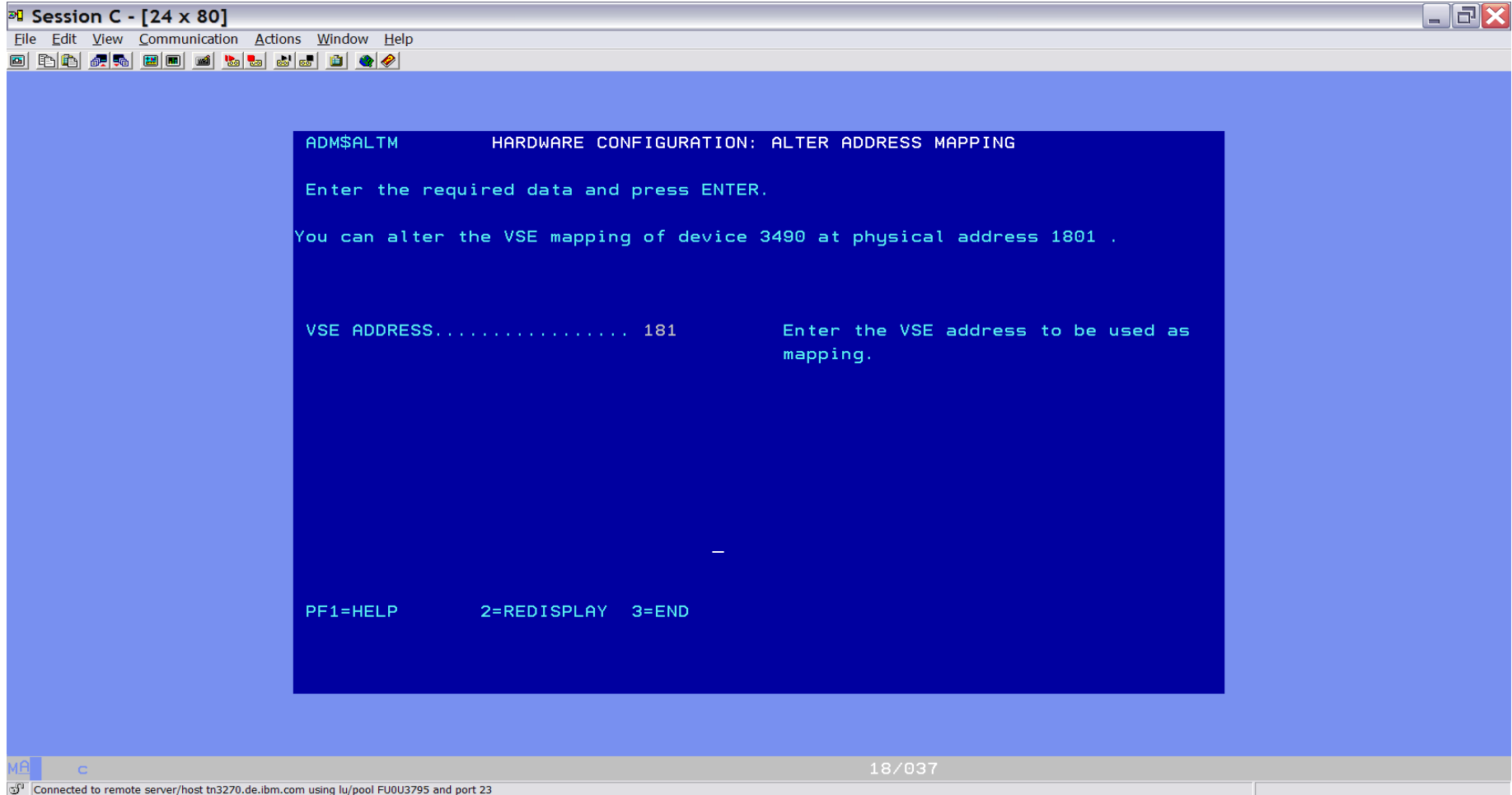
OPTIONS:  1 = DEFINE A DEVICE      5 = DELETE A DEVICE
          6 = ALTER MAPPING
          '=' = REPEAT LAST DEFINED DEVICE

OPT      VSE      PHYSICAL  DEVICE  DEVICE TYPE  DEVICE  SPECIFICATION
        ADDR      ADDR      ADDR      CODE          (MODE)
-----
=       001      1801      3490-DC  3490
-       002      2000      3390-3   ECKD
-       003      2001      3390-3   ECKD
-       004      3800      ?        3277
-       005      3801      ?        3277
-       006      3802      ?        3277
-       007      9000      3390-X   ECKD
-       008      9001      3390-X   ECKD
-----
PF1=HELP      2=REDISPLAY  3=END          5=PROCESS

CHECK THE DEFINITIONS OF FBA-SCSI DISKS.
  
```

MA C 11/006
 Connected to remote server/host tn3270.de.ibm.com using lu/pool FU0U3795 and port 23

IUI: Hardware Configuration



The screenshot shows a terminal window titled "Session C - [24 x 80]". The window contains a menu bar with "File", "Edit", "View", "Communication", "Actions", "Window", and "Help". Below the menu bar is a toolbar with various icons. The main content area is a dark blue screen with white text. The text reads: "ADM\$ALTM HARDWARE CONFIGURATION: ALTER ADDRESS MAPPING", "Enter the required data and press ENTER.", "You can alter the VSE mapping of device 3490 at physical address 1801 .", "VSE ADDRESS..... 181 Enter the VSE address to be used as mapping.", and "PF1=HELP 2=REDISPLAY 3=END". At the bottom of the terminal window, there is a status bar showing "MA C" on the left, "18/037" in the center, and "Connected to remote server/host tn3270.de.ibm.com using lu/pool FU0U3795 and port 23" on the right.

```
ADM$ALTM      HARDWARE CONFIGURATION: ALTER ADDRESS MAPPING

Enter the required data and press ENTER.

You can alter the VSE mapping of device 3490 at physical address 1801 .

VSE ADDRESS..... 181      Enter the VSE address to be used as
                             mapping.

                             -

PF1=HELP      2=REDISPLAY  3=END
```

MA C 18/037
Connected to remote server/host tn3270.de.ibm.com using lu/pool FU0U3795 and port 23

IUI Hardware Configuration: Sorted by VSE device addresses

```

CT1 - [32 x 80]
File Edit View Communication Actions Window Help

ADM$HDWB                HARDWARE CONFIGURATION: UNIT ADDRESS LIST

OPTIONS:  2 = ALTER DEVICE TYPE CODE/MODE      3 = SELECT FOR FURTHER PROCESSING
          4 = LIST SIMILAR DEVICES              5 = DELETE A DEVICE

      OPT      VSE  PHYSICAL  DEVICE      DTYPE      DEVICE  DEVICE  DEF
            ADDR  ADDR      ADDR      CODE      MODE    DOWN    INCOMPL
      --
      --      009  0009      3270CONS   3277
      --      00C  000C      2540-R     2540R
      --      00D  000D      2540-P     2540P
      --      00E  000E      1403      1403
      --      02E  002E      PRT1      PRT1
      --      120  1200      24X80Q    3277
      --      121  1201      24X80Q    3277
      --      122  1202      24X80Q    3277
      --      152  0152      3390-X    ECKD
      --      153  0153      3390-X    ECKD

POSITION NEAR ADDR == >
PF1=HELP      2=REDISPLAY  3=END          5=PROCESS      6=ADD ADDR
               8=FORWARD   9=PRINT       10=SORT PHY
  
```

MA c 10/007

Connected to remote server/host boevmspa using port 23

Print to Disk - Append

IUI Hardware Configuration: Sorted by physical device addresses

CT1 - [32 x 80]

File Edit View Communication Actions Window Help

ADM\$HDWB HARDWARE CONFIGURATION: UNIT ADDRESS LIST

OPTIONS: 2 = ALTER DEVICE TYPE CODE/MODE 3 = SELECT FOR FURTHER PROCESSING
 4 = LIST SIMILAR DEVICES 5 = DELETE A DEVICE

OPT	VSE ADDR	PHYSICAL ADDR	DEVICE	DTYPE CODE	DEVICE MODE	DEVICE DOWN	DEF INCOMPL
—	FFC	0FFC	DUMMY	3505			
—	FFD	0FFD	DUMMY	2520B2			
—	FFE	0FFE	DUMMY	PRT1			
—	FFF	0FFF	DUMMY	CONS			
—	120	1200	24X80Q	3277			
—	121	1201	24X80Q	3277			
—	122	1202	24X80Q	3277			
—	B82	AA82	FBA	FBA			
—	B83	AA83	FBA	FBA			
—	B84	AA84	FBA	FBA			

POSITION NEAR ADDR == >
 PF1=HELP 2=REDISPLAY 3=END 5=PROCESS 6=ADD ADDR
 PF7=BACKWARD 8=FORWARD 9=PRINT 10=SORT VSE

MR b 10/007

Connected to remote server/host boevmspa using port 23 Print to Disk - Append

start DE 100% 10:24 Freitag 29.10.2010

Infopri... C:\WI... Mail - I... 2 PC... IBM Lo... BluePa... Micros... skill-tr... BSO A... 4.3 +...

IUI Hardware Configuration: Print Configuration List

CT1 - [32 x 80]

File Edit View Communication Actions Window Help

ADM\$CFLV HARDWARE CONFIGURATION: PRINT CONFIGURATION LIST

Place an X next to the object you want to select, and press ENTER.

- local non-SNA terminals
- local SNA terminals
- NCP-attached devices
- OSA-or 3172-attached devices
- other devices (e.g. disks, tapes)
- x physical addresses and the associated VSE addresses

PF1=HELP 2=REDISPLAY 3=END

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Connected to remote server/host boevmspa using port 23 Print to Disk - Append

start DE 100% 12:52

Infoprint Mana... Mail - Inbox - I... 4 PCSWS.EXE IBM Lotus Sam... 2 Internet Ex... skill-transfer 4.3 4.3 4-dig cuu.... Donnerstag 28.10.2010

IUI Add a device (fastpath 241 and PF6=ADD)

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CT1 - [32 x 80]
File Edit View Communication Actions Window Help

ADM$ADD2          HARDWARE CONFIGURATION: ADD A DEVICE

Enter the required data and press ENTER.

Specify the following physical addresses.
STARTING ADDRESS..... A120          The physical start address of an
                                     address range, or the only address to
                                     be added.
END ADDRESS..... A121              The upper limit of the address range
                                     to be added.
Specify the following 3-digit VSE address, if needed.
VSE STARTING ADDRESS..... 120       The VSE address which is the mapping
                                     of the physical starting address.
VSE END ADDRESS..... 121           The VSE address which is the mapping
                                     of the physical end address.
DEVICE NAME..... 3390-3_          The device you want to add or a "?"
                                     to get the group selection panel.

PF1=HELP          2=REDISPLAY      3=END

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FSU

- FSU does not change the I/O Configuration
- After FSU only device addresses up to x'FFF' are known to VSE
- But after FSU the new support for 4-digit-cuus is active
- Therefore devices with physical device addresses > x'FFF' can then be added

Internals / Supervisor Services

New GETFLD Service:

GETFLD FIELD=CUUMAP,CUU={name|(Rx)|(0)}

Input:

name= name of a halfword containing the CUU value or

Rx = Register containing the CUU value

0 = default register used to for CUU value

Note: the CUU value can either be a 3-digit OR 4-digit cuu value !

Output:

R0 = Physical address

R1 = VSE address

R2 changed

R15=return code

Internals

PUBX:

```

V000985E0 to 0009860F suppressed line(s) same as above ....
V00098610 00000000 80BA8000 OFFE0005 00980000 *.....q..*
V00098620 43FFFFFF FFFFFFFF 00FBCA80 00000000 *.....*
V00098630 00000000 80000000 00808080 00000000 *.....*
V00098640 00008000 FA010080 8A030000 00000000 *.....*
V00098650 00000000 6EFF3990 E933900A 20002024 *...>...Z.....*
V00098660 24150000 00000090 00000094 000986AC *.....m..f.*
V00098670 00000000 00404007 0002F058 0C000000 *.....0.....*
V00098680 00808001 00098C98 00000000 000967FA *.....q.....*
V00098690 00000000 00000000 00000000 00000000 *.....*
V000986A0 00000000 00000000 20000000 00000000 *.....*
V000986B0 00000020 00000000 00000000 00000000 *.....*
V000986C0 00000000 00000000 00000000 00000000 *.....*
    
```

VSE Address

Physical device address

Internals

```

PUB:
V00005460 0901FFFF 6EFF02FC 0C01FFFF E00202F8 *....>.....8*
V00005470 0D01FFFF E00202F8 0FF0FFFF 90FF0200 *.....8.0.....*
V00005480 0FF1FFFF 90FF0200 0FFFFFFF 400000F8 *.1..... ..8*
V00005490 OFFEFFFF 6EFF02FC 0FFDFFFF 6EFF02FC *....>.....>...*
V000054A0 FF000000 00000000 FF000000 00000000 *.....*

```



VSE address

Restrictions

- Don't use device addresses $> x'FFF'$ for virtual and dummy devices
(POWER dummy devices, virtual Tape, virtual Disk)
- SCSI disks are restricted to device addresses $\leq x'FFF'$

Questions ??

- Please forward any questions you have to:
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