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CICS Loader Domain

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Session Number **12447**

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SHARE in San Francisco 2013

CICS Loader Domain

- CICS pre-ESA Loader
- CICS ESA Loader
- CICS TS Loader
- Loader Domain Control Blocks
- CICS TS 5.1 Loader
- Remaining Issues
- Wish List
- Questions

CICS pre-ESA Loader

- Used a pair of routines that were part of system initialization (DFHSIP). The two routine names were named: SIPBLDLE, and SILOADR
- MVS/ESA load was not used for 24-bit programs, instead a BPAM DCB was used to open the DFHRPL load library, and read it.
- SIPBLDLE did uses a MVS macro called BLDL to acquire the PDS member location, but discarded most of the returned information except TTRz, Length, AMODE, RMODE and entry point offset.
- The retained BLDL information was stored in the PPT itself, and was restored on a WARM or EMER restart.

CICS pre-ESA Loader issues

- CICS program subpool compressions or “Tree shakes” were nothing more than tossing out all programs with a current use count of 0, instead of using a Less Recently Used chain.
- Following the tree shake all the programs were slowly reloaded one at a time, on the QR TCB!
- ISV Software such as XA/Relo was a popular solution to eliminate the problem prior to CICS/ESA Loader redesign.

CICS ESA LOADER

- CICS ESA introduced the use of the MVS “directed Load” facility. Which reportedly uses CCW chaining information, to eliminate individual I/Os.

- This is an Authorized facility, as the invoker can tell MVS the location to load the program into.

- Reentrant DSA(s) introduced in CICS 3.3, allowing RENT programs to be loaded into non-fetch protected Key 0 storage.

CICS ESA LOADER

- In the new Loader domain design, a MVS/ESA BLDL macro was initially used to acquire the PDS directory information, later LLACOPY was added in TS 4.1, but still returns the BLDL information in the same format.

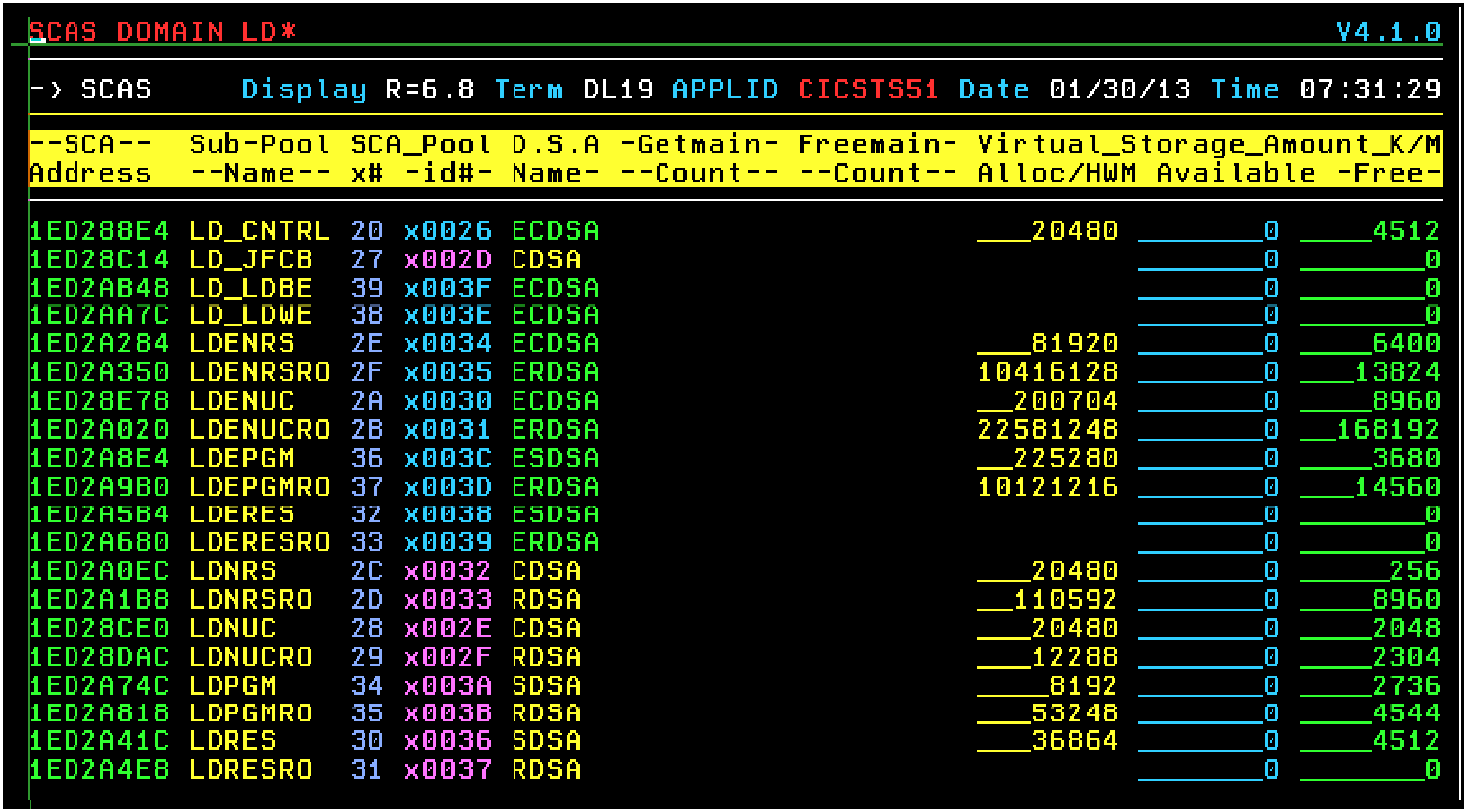
- The returned BLDL information is then stored in the CPE control block, not the APE! Only the 1ST x3C bytes of the returned BLDL information is retained of the x4C bytes.

- The “RO” TCB is used by the Loader Domain, but has many other users, such as SAF/RACF security calls!!!

Loader Domain Program Storage

- Currently there are 16 Loader domain program storage subpools, starting with LDENRS on the following page.
- The loader domain subpools get distilled down to only 6 DSAs (3 DSAs and 3 EDSAs)

Loader Domain Program Storage



```
SCAS DOMAIN LD*                                                           V4.1.0
-> SCAS     Display R=6.8 Term DL19 APPLID CICSTS51 Date 01/30/13 Time 07:31:29
--SCA--  Sub-Pool SCA_Pool D.S.A -Getmain- Freemain- Virtual_Storage_Amount_K/M
Address  --Name-- x# -id#- Name- --Count-- --Count-- Alloc/HWM Available -Free-

1ED288E4 LD_CNTRL 20 x0026 ECDSA                     ___20480 _______0 ____4512
1ED28C14 LD_JFCB  27 x002D CDSA                               _______0 _______0
1ED2AB48 LD_LDBE  39 x003F ECDSA                              _______0 _______0
1ED2AA7C LD_LDWE  38 x003E ECDSA                              _______0 _______0
1ED2A284 LDENRS   2E x0034 ECDSA                     ___81920 _______0 ____6400
1ED2A350 LDENRSRO 2F x0035 ERDSA                     10416128 _______0 ___13824
1ED28E78 LDENUC   2A x0030 ECDSA                     __200704 _______0 ____8960
1ED2A020 LDENUCRO 2B x0031 ERDSA                     22581248 _______0 __168192
1ED2A8E4 LDEPGM   36 x003C ESDSA                     __225280 _______0 ____3680
1ED2A9B0 LDEPGMRO 37 x003D ERDSA                     10121216 _______0 ___14560
1ED2A5B4 LDERES   32 x0038 ESDSA                              _______0 _______0
1ED2A680 LDERESRO 33 x0039 ERDSA                              _______0 _______0
1ED2A0EC LDNRS    2C x0032 CDSA                      ___20480 _______0 _____256
1ED2A1B8 LDNRSRO  2D x0033 RDSA                      __110592 _______0 ____8960
1ED28CE0 LDNUC    28 x002E CDSA                      ___20480 _______0 ____2048
1ED28DAC LDNUCRO  29 x002F RDSA                      ___12288 _______0 ____2304
1ED2A74C LDPGM    34 x003A SDSA                      ____8192 _______0 ____2736
1ED2A818 LDPGMRO  35 x003B RDSA                      ___53248 _______0 ____4544
1ED2A41C LDRES    30 x0036 SDSA                      ___36864 _______0 ____4512
1ED2A4E8 LDRESRO  31 x0037 RDSA                               _______0 _______0
```

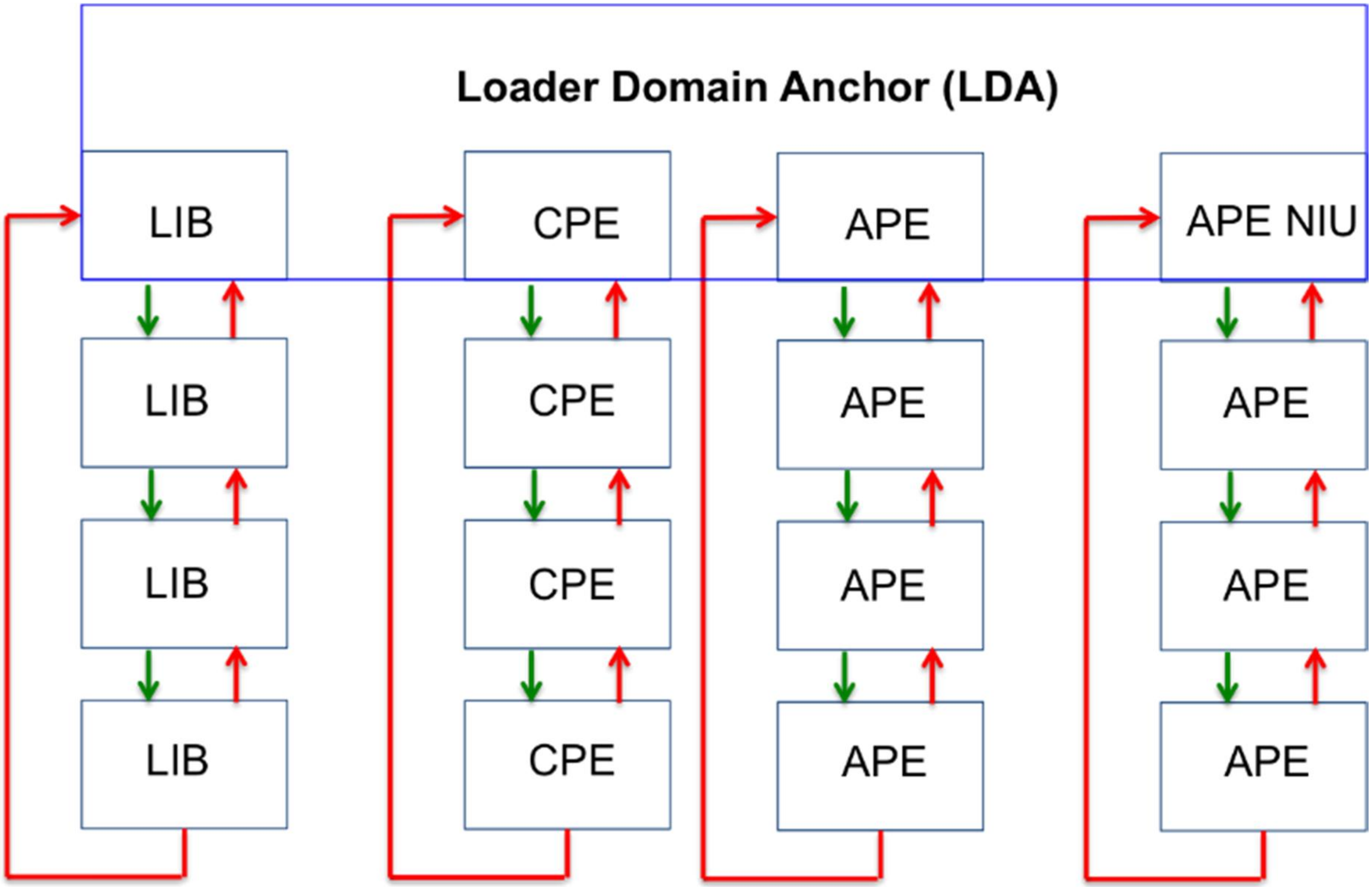
Some Loader Domain Control Blocks

APE	Active Program Element
CPE	Current Program Element
NIU	Not In Use Active Program Element
CSECTL	CSECT List
LDA	Loader Domain Anchor area
LCA	Library Control Area
PLIBE	Program Library Element

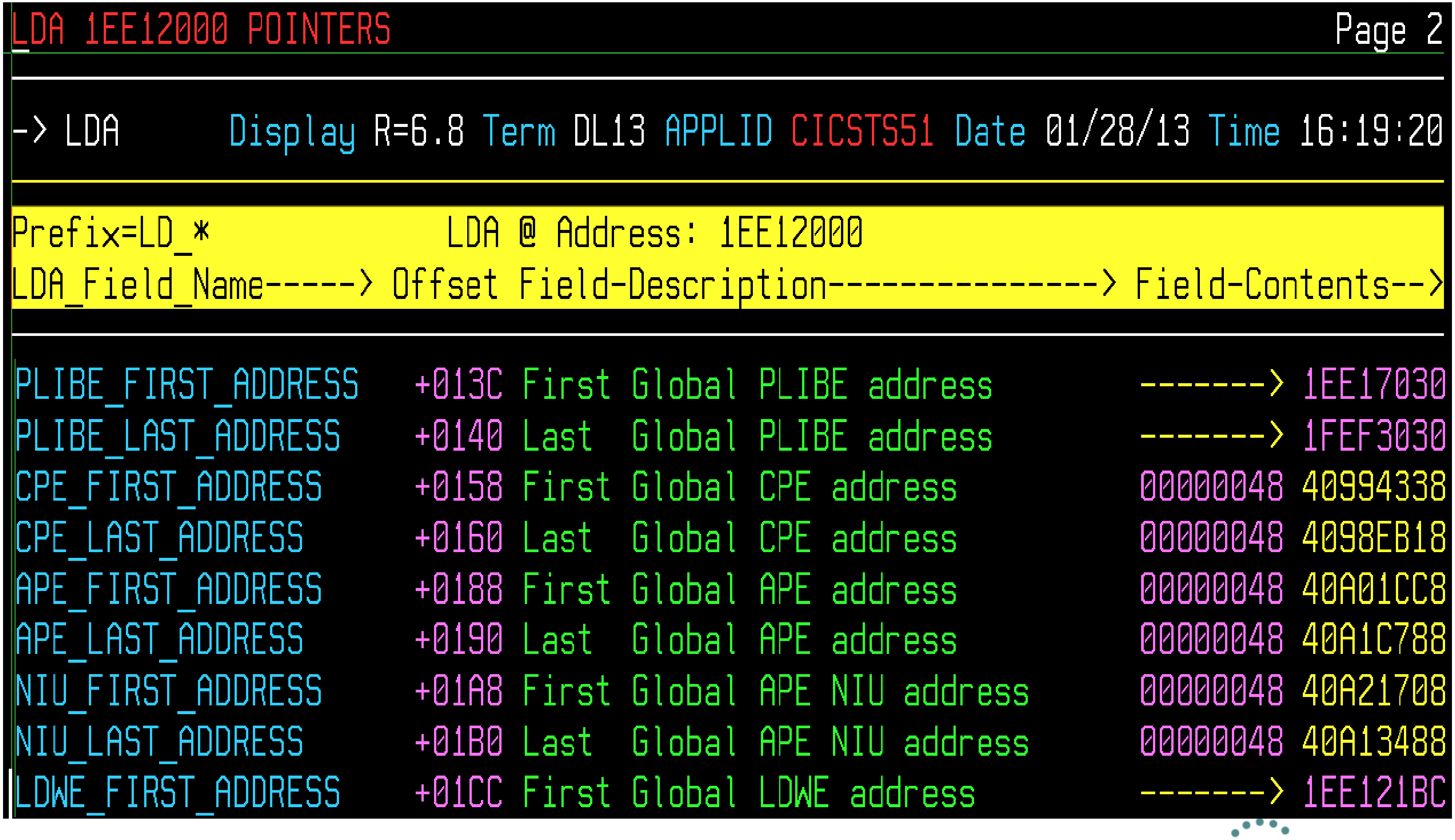
Loader Domain Control Block Roles

- **APE** **Active** in Loader domain terms means it is occupying DSA storage, 2 chains: Storage Sequence and Not In Use sequence (or NIU) used during DSA/EDSA program subpool compressions
- **CPE** **Current** in Loader domain terms means it contains the current BLDL Information
- **CSECT** Lists are used by CICS Management modules to identify CSECTs within a Fat Load module
- **LDA** Anchor point or starting point for most Loader Domain storage chains
- **PLIBE** Program Library Entry – in ranking seq.
- **LCA** Library Control Area – in creation seq.

Some of the LDA Chains

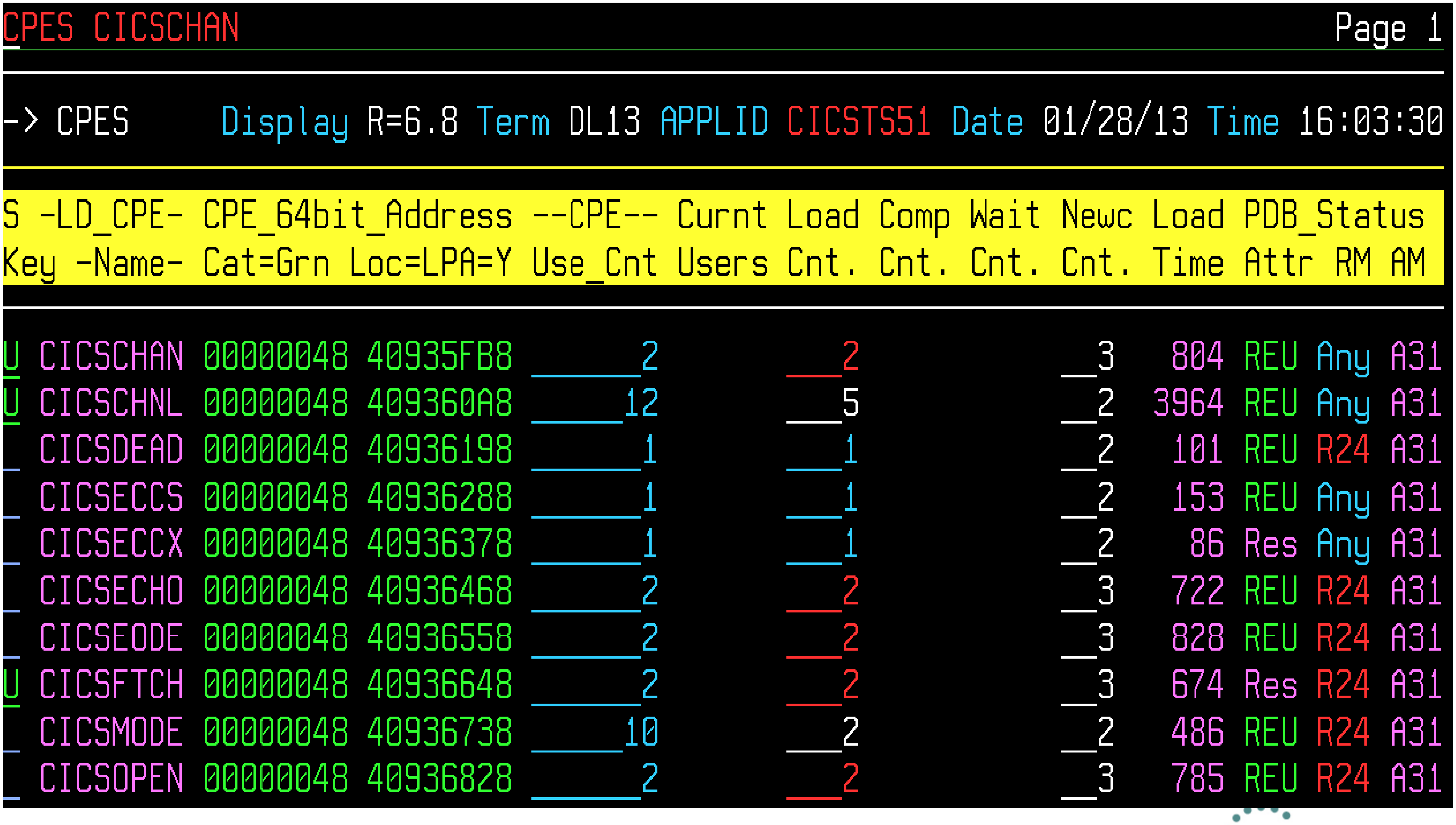

Loader Domain Anchor (LDA)
LIB
CPE
APE
APE NIU
LIB
CPE
APE
APE
LIB
CPE
APE
APE
LIB
CPE
APE
APE

CICS Loader Domain Anchor Area



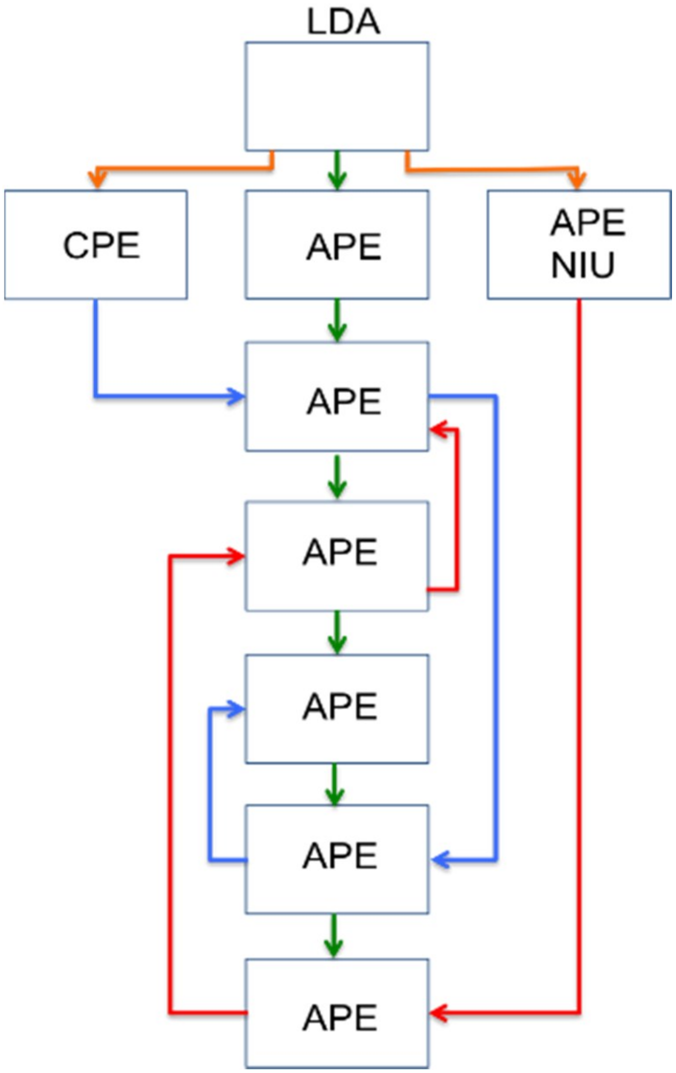
```
LDA 1EE12000 POINTERS                                                       Page 2

-> LDA      Display R=6.8 Term DL13 APPLID CICSTS51 Date 01/28/13 Time 16:19:20

Prefix=LD_*                LDA @ Address: 1EE12000
LDA_Field_Name-----> Offset Field-Description---------------> Field-Contents-->

PLIBE_FIRST_ADDRESS   +013C First Global PLIBE address          -------> 1EE17030
PLIBE_LAST_ADDRESS    +0140 Last  Global PLIBE address          -------> 1FEF3030
CPE_FIRST_ADDRESS     +0158 First Global CPE address            00000048 40994338
CPE_LAST_ADDRESS      +0160 Last  Global CPE address            00000048 4098EB18
APE_FIRST_ADDRESS     +0188 First Global APE address            00000048 40A01CC8
APE_LAST_ADDRESS      +0190 Last  Global APE address            00000048 40A1C788
NIU_FIRST_ADDRESS     +01A8 First Global APE NIU address        00000048 40A21708
NIU_LAST_ADDRESS      +01B0 Last  Global APE NIU address        00000048 40A13488
LDWE_FIRST_ADDRESS    +01CC First Global LDWE address           -------> 1EE121BC
```

Single CPE chain in Alpha Seq.

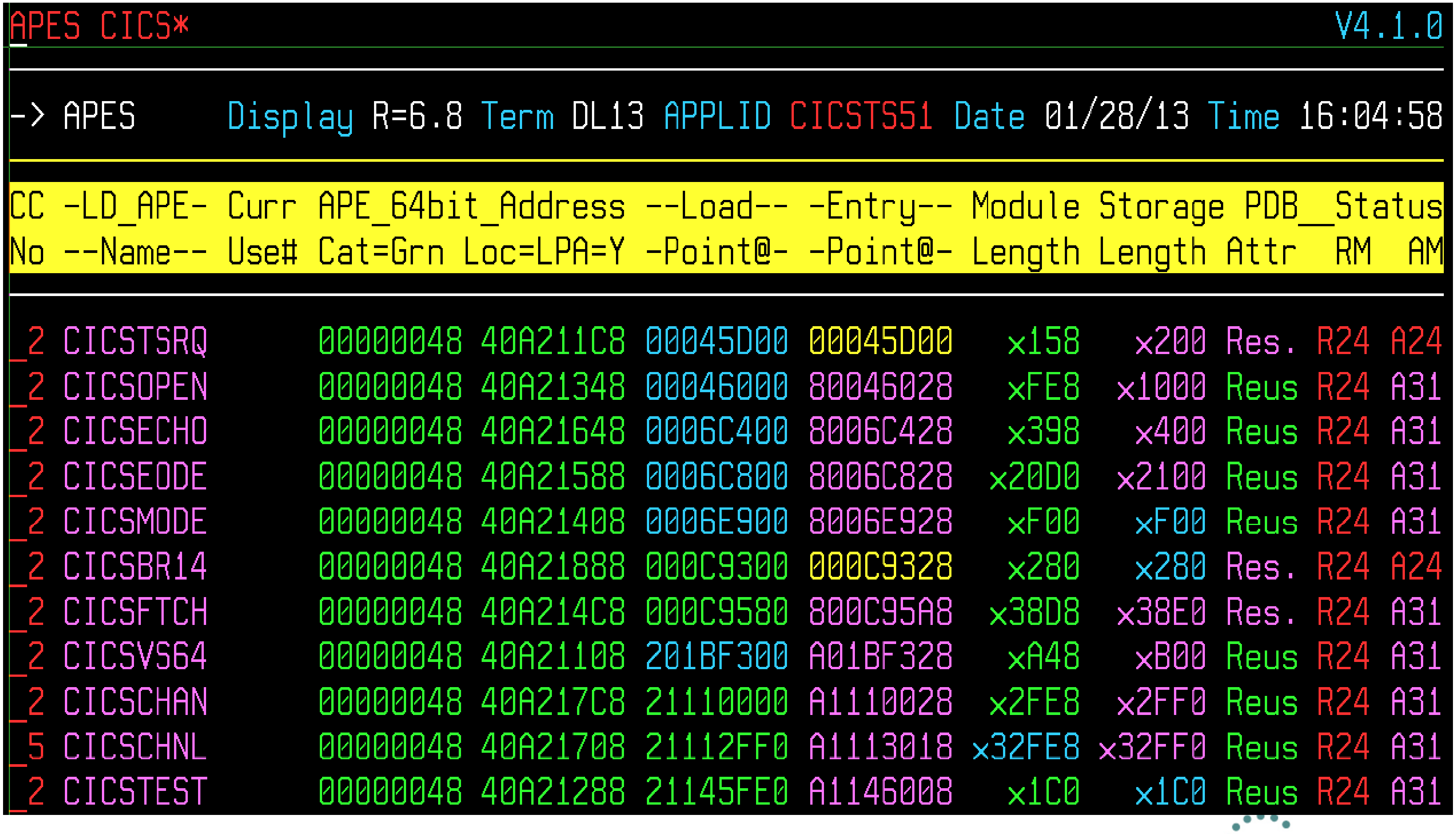


```
CPES CICSCHAN                                                           Page 1

-> CPES     Display R=6.8 Term DL13 APPLID CICSTS51 Date 01/28/13 Time 16:03:30

S -LD_CPE- CPE_64bit_Address --CPE-- Curnt Load Comp Wait Newc Load PDB_Status
Key -Name- Cat=Grn Loc=LPA=Y Use_Cnt Users Cnt. Cnt. Cnt. Cnt. Time Attr RM AM

U CICSCHAN 00000048 40935FB8 ______2       ___2           __3   804 REU Any A31
U CICSCHNL 00000048 409360A8 _____12       ___5           __2  3964 REU Any A31
_ CICSDEAD 00000048 40936198 ______1       ___1           __2   101 REU R24 A31
_ CICSECCS 00000048 40936288 ______1       ___1           __2   153 REU Any A31
_ CICSECCX 00000048 40936378 ______1       ___1           __2    86 Res Any A31
_ CICSECHO 00000048 40936468 ______2       ___2           __3   722 REU R24 A31
_ CICSEODE 00000048 40936558 ______2       ___2           __3   828 REU R24 A31
U CICSFTCH 00000048 40936648 ______2       ___2           __3   674 Res R24 A31
_ CICSMODE 00000048 40936738 _____10       ___2           __2   486 REU R24 A31
_ CICSOPEN 00000048 40936828 ______2       ___2           __3   785 REU R24 A31
```

APE can be on 3 chains at once!

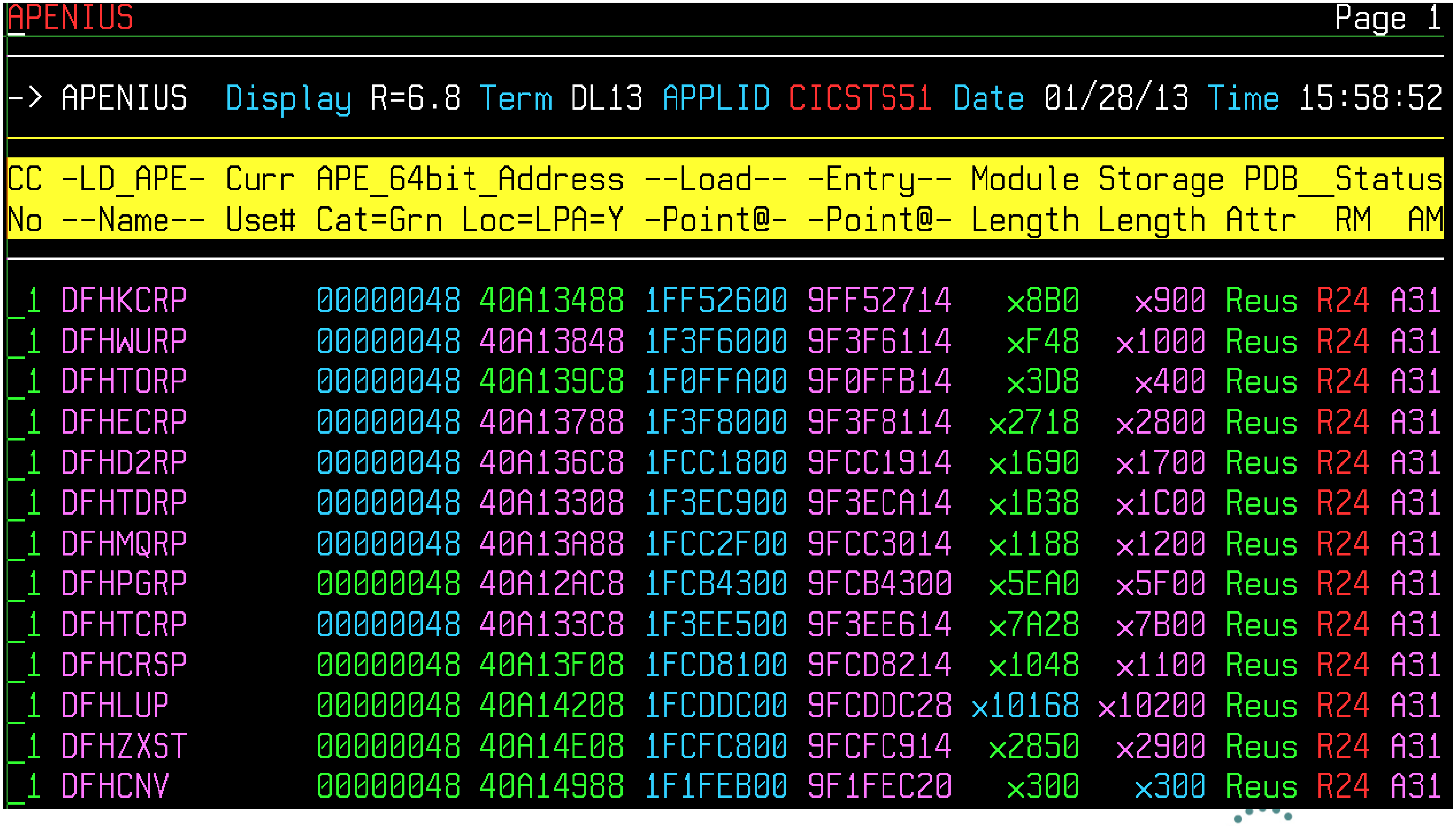

LDA
CPE
APE
APE NIU
APE
APE
APE
APE
APE

Global APE chain in Storage Seq.



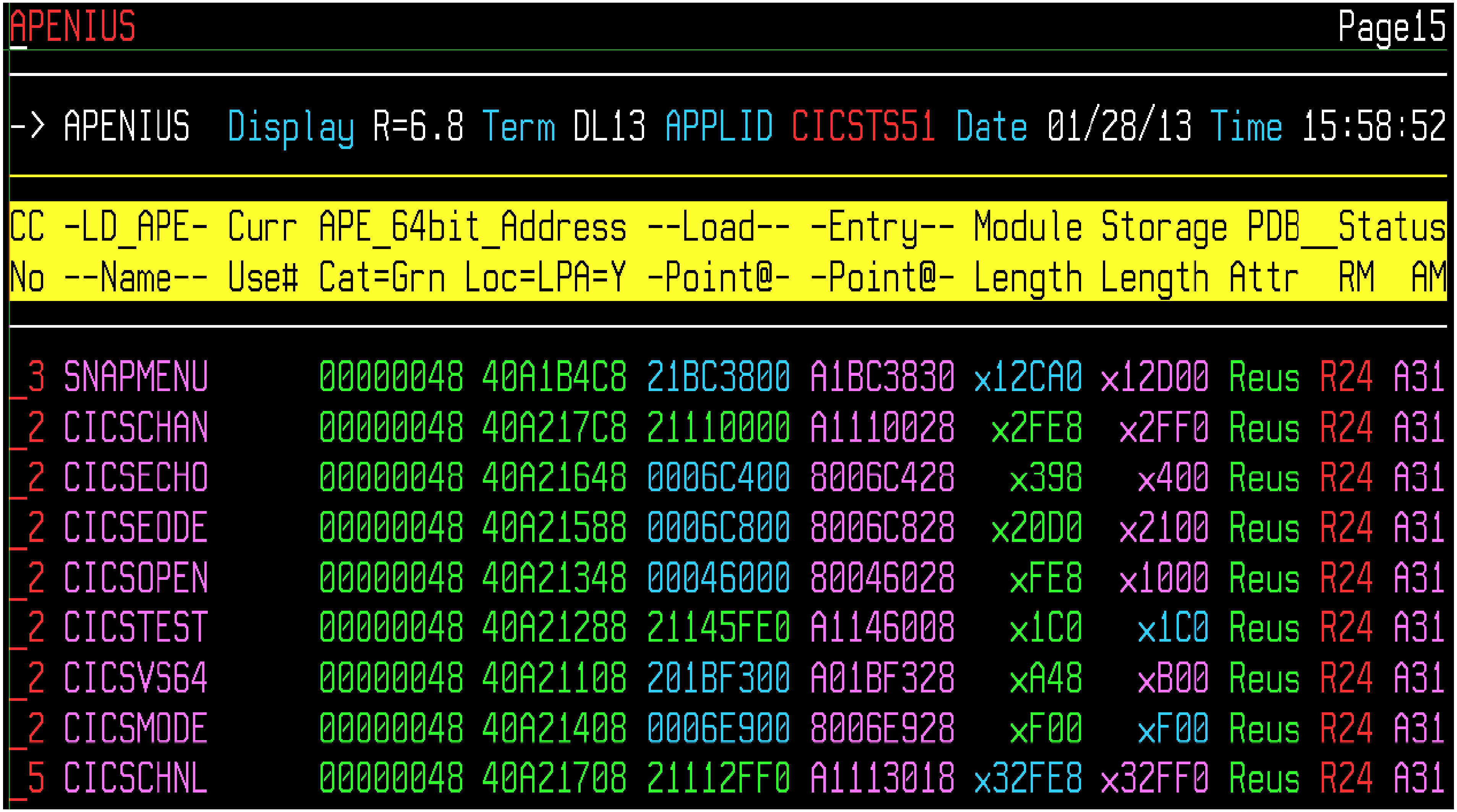
```
APES CICS*                                                               V4.1.0

-> APES     Display R=6.8 Term DL13 APPLID CICSTS51 Date 01/28/13 Time 16:04:58

CC -LD_APE- Curr APE_64bit_Address --Load-- -Entry-- Module Storage PDB__Status
No --Name-- Use# Cat=Grn Loc=LPA=Y -Point@- -Point@- Length Length Attr  RM  AM

_2 CICSTSRQ      00000048 40A211C8 00045D00 00045D00   x158   x200 Res. R24 A24
_2 CICSOPEN      00000048 40A21348 00046000 80046028   xFE8  x1000 Reus R24 A31
_2 CICSECHO      00000048 40A21648 0006C400 8006C428   x398   x400 Reus R24 A31
_2 CICSEODE      00000048 40A21588 0006C800 8006C828  x20D0  x2100 Reus R24 A31
_2 CICSMODE      00000048 40A21408 0006E900 8006E928   xF00   xF00 Reus R24 A31
_2 CICSBR14      00000048 40A21888 000C9300 000C9328   x280   x280 Res. R24 A24
_2 CICSFTCH      00000048 40A214C8 000C9580 800C95A8  x38D8  x38E0 Res. R24 A31
_2 CICSVS64      00000048 40A21108 201BF300 A01BF328   xA48   xB00 Reus R24 A31
_2 CICSCHAN      00000048 40A217C8 21110000 A1110028  x2FE8  x2FF0 Reus R24 A31
_5 CICSCHNL      00000048 40A21708 21112FF0 A1113018 x32FE8 x32FF0 Reus R24 A31
_2 CICSTEST      00000048 40A21288 21145FE0 A1146008   x1C0   x1C0 Reus R24 A31
```

CICS APE NIU chain page 1 of 15



```
APENIUS                                                                  Page 1

-> APENIUS  Display R=6.8 Term DL13 APPLID CICSTS51 Date 01/28/13 Time 15:58:52

CC -LD_APE- Curr APE_64bit_Address --Load-- -Entry-- Module Storage PDB__Status
No --Name-- Use# Cat=Grn Loc=LPA=Y -Point@- -Point@- Length Length Attr  RM  AM

_1 DFHKCRP       00000048 40A13488 1FF52600 9FF52714   x8B0    x900 Reus R24 A31
_1 DFHWURP       00000048 40A13848 1F3F6000 9F3F6114   xF48   x1000 Reus R24 A31
_1 DFHTORP       00000048 40A139C8 1F0FFA00 9F0FFB14   x3D8    x400 Reus R24 A31
_1 DFHECRP       00000048 40A13788 1F3F8000 9F3F8114  x2718   x2800 Reus R24 A31
_1 DFHD2RP       00000048 40A136C8 1FCC1800 9FCC1914  x1690   x1700 Reus R24 A31
_1 DFHTDRP       00000048 40A13308 1F3EC900 9F3ECA14  x1B38   x1C00 Reus R24 A31
_1 DFHMQRP       00000048 40A13A88 1FCC2F00 9FCC3014  x1188   x1200 Reus R24 A31
_1 DFHPGRP       00000048 40A12AC8 1FCB4300 9FCB4300  x5EA0   x5F00 Reus R24 A31
_1 DFHTCRP       00000048 40A133C8 1F3EE500 9F3EE614  x7A28   x7B00 Reus R24 A31
_1 DFHCRSP       00000048 40A13F08 1FCD8100 9FCD8214  x1048   x1100 Reus R24 A31
_1 DFHLUP        00000048 40A14208 1FCDDC00 9FCDDC28 x10168  x10200 Reus R24 A31
_1 DFHZXST       00000048 40A14E08 1FCFC800 9FCFC914  x2850   x2900 Reus R24 A31
_1 DFHCNV        00000048 40A14988 1F1FEB00 9F1FEC20   x300    x300 Reus R24 A31
```

CICS APE NIU chain page 15

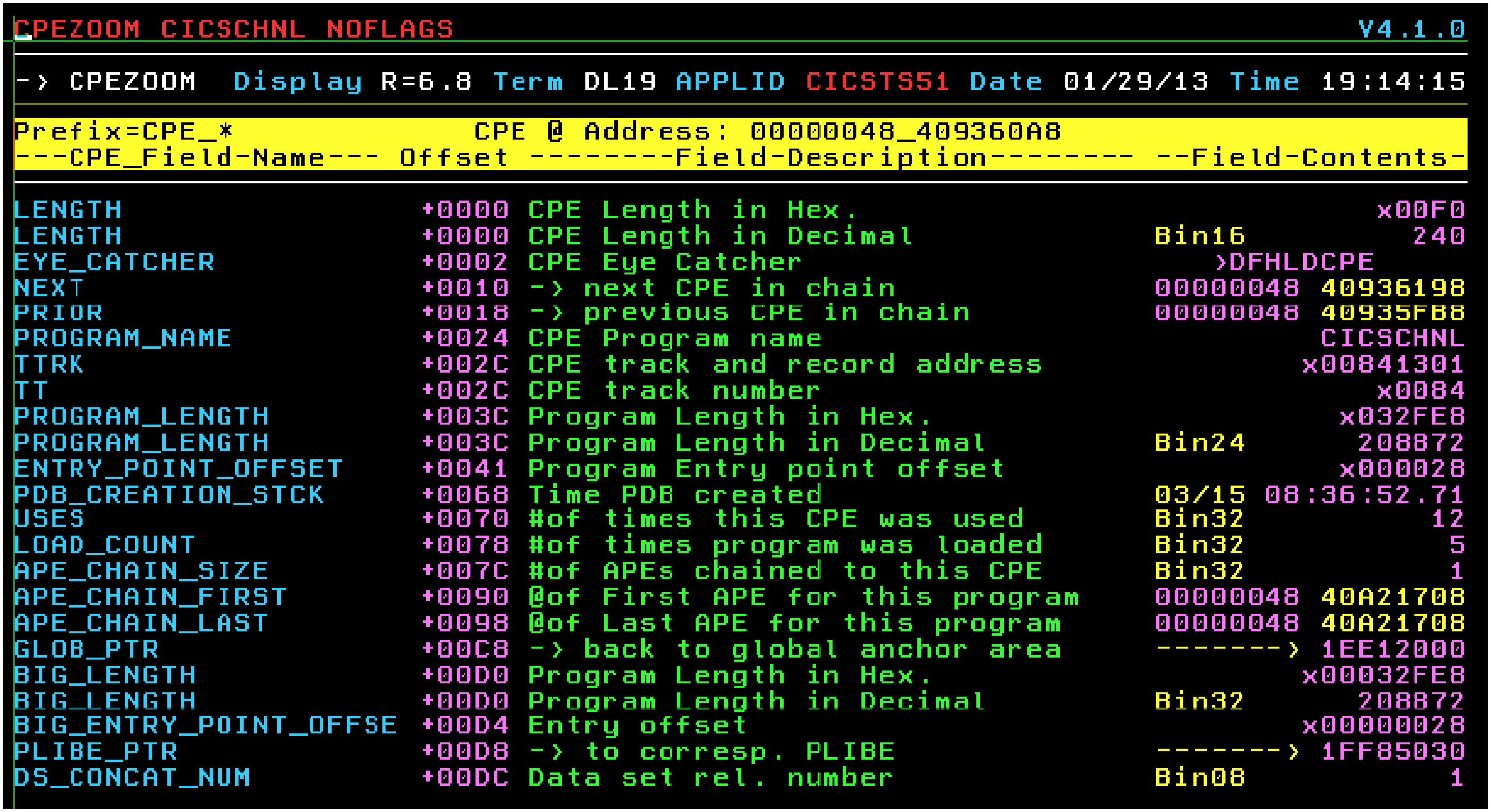


```
APENIUS                                                             Page15

-> APENIUS  Display R=6.8 Term DL13 APPLID CICSTS51 Date 01/28/13 Time 15:58:52

CC -LD_APE- Curr APE_64bit_Address --Load-- -Entry-- Module Storage PDB__Status
No --Name-- Use# Cat=Grn Loc=LPA=Y -Point@- -Point@- Length Length Attr  RM  AM

_3 SNAPMENU      00000048 40A1B4C8 21BC3800 A1BC3830 x12CA0 x12D00 Reus R24 A31
_2 CICSCHAN      00000048 40A217C8 21110000 A1110028  x2FE8  x2FF0 Reus R24 A31
_2 CICSECHO      00000048 40A21648 0006C400 8006C428   x398   x400 Reus R24 A31
_2 CICSEODE      00000048 40A21588 0006C800 8006C828  x20D0  x2100 Reus R24 A31
_2 CICSOPEN      00000048 40A21348 00046000 80046028   xFE8  x1000 Reus R24 A31
_2 CICSTEST      00000048 40A21288 21145FE0 A1146008   x1C0   x1C0 Reus R24 A31
_2 CICSVS64      00000048 40A21108 201BF300 A01BF328   xA48   xB00 Reus R24 A31
_2 CICSMODE      00000048 40A21408 0006E900 8006E928   xF00   xF00 Reus R24 A31
_5 CICSCHNL      00000048 40A21708 21112FF0 A1113018 x32FE8 x32FF0 Reus R24 A31
```

Relation of a PPTe to LD CPE and APE

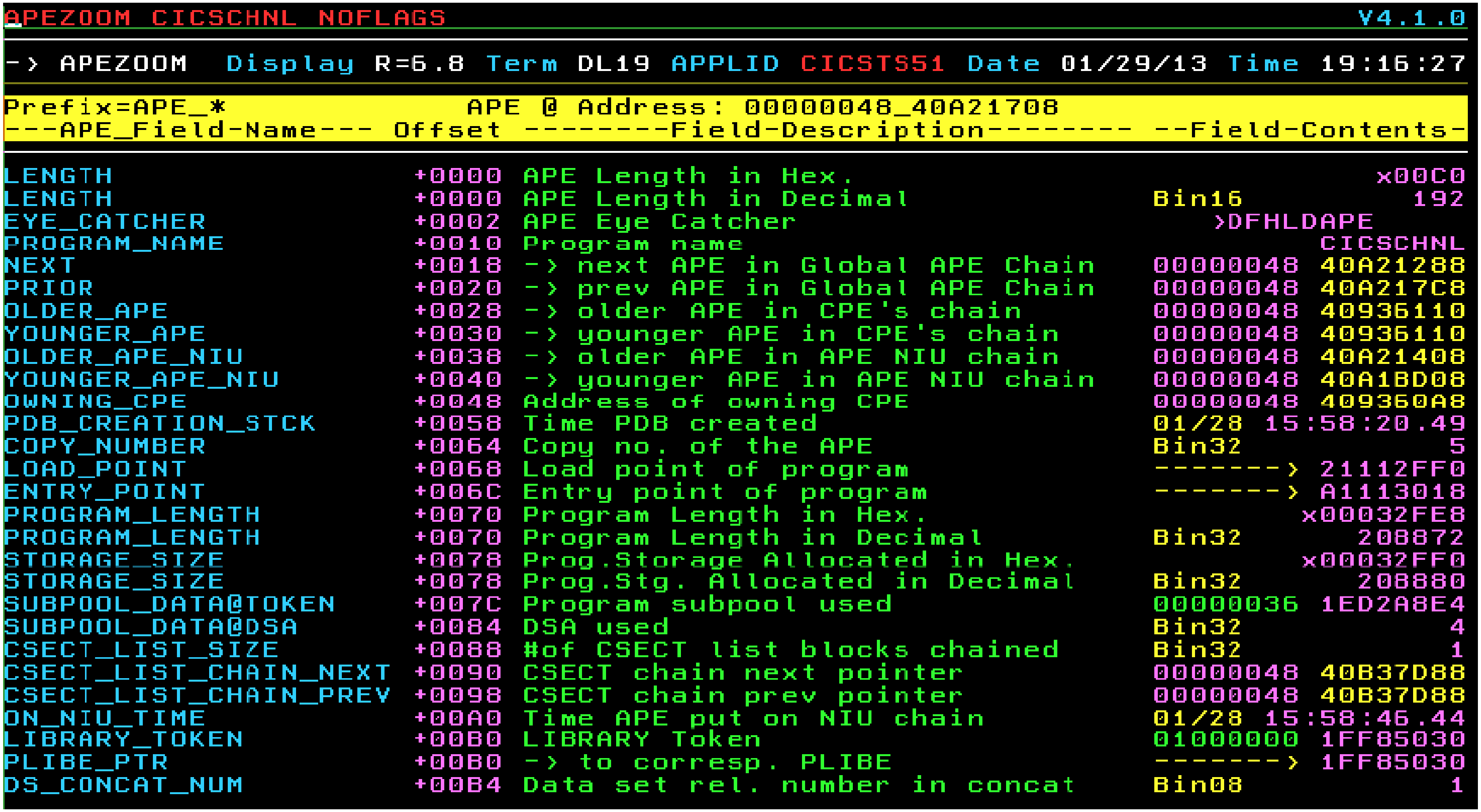
- Every Program will have a CPE, but the APE is acquired the first time the program is referenced.
- A CPE can exist without a corresponding PPT entry, such as CICS management modules.
- One more APEs are chained from the CPE entry, and is normally one 1 to 1 relationship, unless a New Copy Phase-in was used on an active program.

What is the purpose of a CPE ?



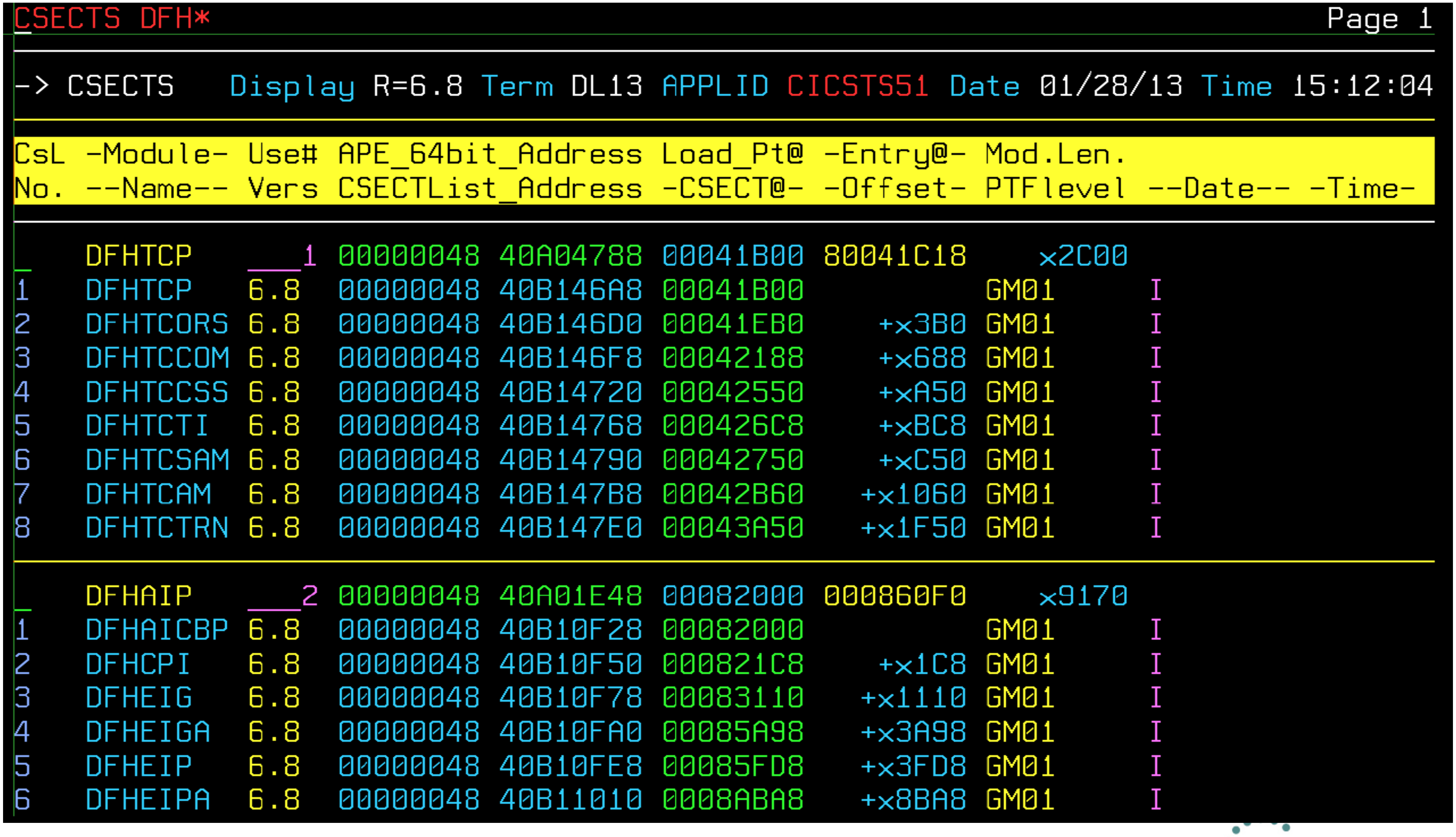
```
CPEZOOM CICSCHNL NOFLAGS                                                 V4.1.0
-> CPEZOOM  Display R=6.8 Term DL19 APPLID CICSTS51 Date 01/29/13 Time 19:14:15
Prefix=CPE_*             CPE @ Address: 00000048_409360A8
---CPE_Field-Name--- Offset --------Field-Description-------- --Field-Contents-

LENGTH                +0000 CPE Length in Hex.                            x00F0
LENGTH                +0000 CPE Length in Decimal             Bin16         240
EYE_CATCHER           +0002 CPE Eye Catcher                      >DFHLDCPE
NEXT                  +0010 -> next CPE in chain              00000048 40936198
PRIOR                 +0018 -> previous CPE in chain          00000048 40935FB8
PROGRAM_NAME          +0024 CPE Program name                           CICSCHNL
TTRK                  +002C CPE track and record address              x00841301
TT                    +002C CPE track number                              x0084
PROGRAM_LENGTH        +003C Program Length in Hex.                      x032FE8
PROGRAM_LENGTH        +003C Program Length in Decimal         Bin24      208872
ENTRY_POINT_OFFSET    +0041 Program Entry point offset                  x000028
PDB_CREATION_STCK     +0068 Time PDB created                  03/15 08:36:52.71
USES                  +0070 #of times this CPE was used       Bin32          12
LOAD_COUNT            +0078 #of times program was loaded      Bin32           5
APE_CHAIN_SIZE        +007C #of APEs chained to this CPE      Bin32           1
APE_CHAIN_FIRST       +0090 @of First APE for this program    00000048 40A21708
APE_CHAIN_LAST        +0098 @of Last APE for this program     00000048 40A21708
GLOB_PTR              +00C8 -> back to global anchor area     -------> 1EE12000
BIG_LENGTH            +00D0 Program Length in Hex.                    x00032FE8
BIG_LENGTH            +00D0 Program Length in Decimal         Bin32      208872
BIG_ENTRY_POINT_OFFSE +00D4 Entry offset                              x00000028
PLIBE_PTR             +00D8 -> to corresp. PLIBE              -------> 1FF85030
DS_CONCAT_NUM         +00DC Data set rel. number              Bin08           1
```

What is the purpose of a APE ?



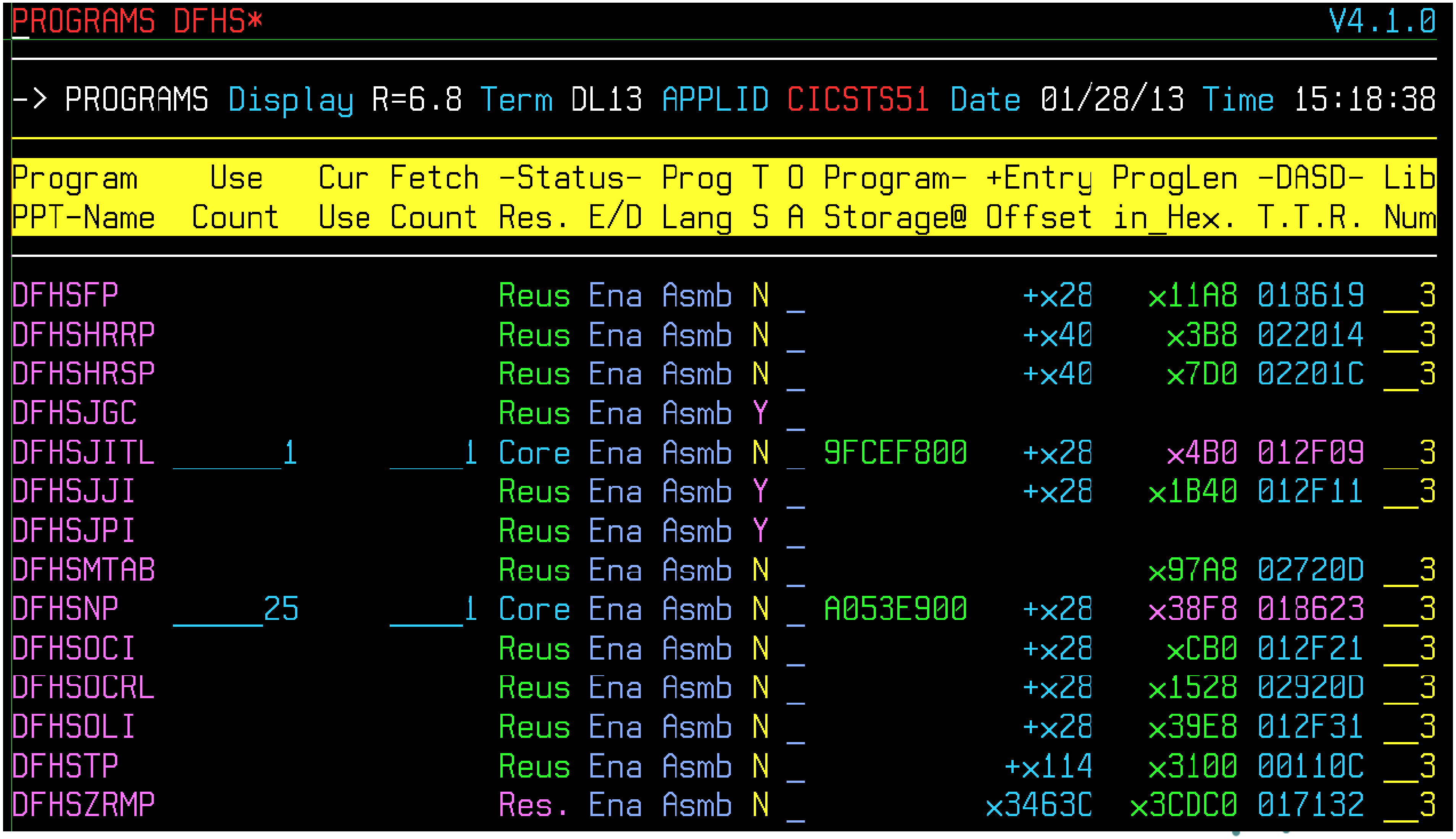
```
APEZOOM CICSCHNL NOFLAGS                                                 V4.1.0

-> APEZOOM  Display R=6.8 Term DL19 APPLID CICSTS51 Date 01/29/13 Time 19:16:27
Prefix=APE_*             APE @ Address: 00000048_40A21708
---APE_Field-Name--- Offset --------Field-Description-------- --Field-Contents-

LENGTH                +0000 APE Length in Hex.                            x00C0
LENGTH                +0000 APE Length in Decimal             Bin16         192
EYE_CATCHER           +0002 APE Eye Catcher                      >DFHLDAPE
PROGRAM_NAME          +0010 Program name                               CICSCHNL
NEXT                  +0018 -> next APE in Global APE Chain   00000048 40A21288
PRIOR                 +0020 -> prev APE in Global APE Chain   00000048 40A217C8
OLDER_APE             +0028 -> older APE in CPE's chain       00000048 40936110
YOUNGER_APE           +0030 -> younger APE in CPE's chain     00000048 40936110
OLDER_APE_NIU         +0038 -> older APE in APE NIU chain     00000048 40A21408
YOUNGER_APE_NIU       +0040 -> younger APE in APE NIU chain   00000048 40A1BD08
OWNING_CPE            +0048 Address of owning CPE             00000048 409360A8
PDB_CREATION_STCK     +0058 Time PDB created                  01/28 15:58:20.49
COPY_NUMBER           +0064 Copy no. of the APE               Bin32           5
LOAD_POINT            +0068 Load point of program             -------> 21112FF0
ENTRY_POINT           +006C Entry point of program            -------> A1113018
PROGRAM_LENGTH        +0070 Program Length in Hex.                    x00032FE8
PROGRAM_LENGTH        +0070 Program Length in Decimal         Bin32      208872
STORAGE_SIZE          +0078 Prog.Storage Allocated in Hex.            x00032FF0
STORAGE_SIZE          +0078 Prog.Stg. Allocated in Decimal    Bin32      208880
SUBPOOL_DATA@TOKEN    +007C Program subpool used              00000036 1ED2A8E4
SUBPOOL_DATA@DSA      +0084 DSA used                          Bin32           4
CSECT_LIST_SIZE       +0088 #of CSECT list blocks chained     Bin32           1
CSECT_LIST_CHAIN_NEXT +0090 CSECT chain next pointer          00000048 40B37D88
CSECT_LIST_CHAIN_PREV +0098 CSECT chain prev pointer          00000048 40B37D88
ON_NIU_TIME           +00A0 Time APE put on NIU chain         01/28 15:58:46.44
LIBRARY_TOKEN         +00B0 LIBRARY Token                     01000000 1FF85030
PLIBE_PTR             +00B0 -> to corresp. PLIBE              -------> 1FF85030
DS_CONCAT_NUM         +00B4 Data set rel. number in concat    Bin08           1
```

What is a CSECT List?



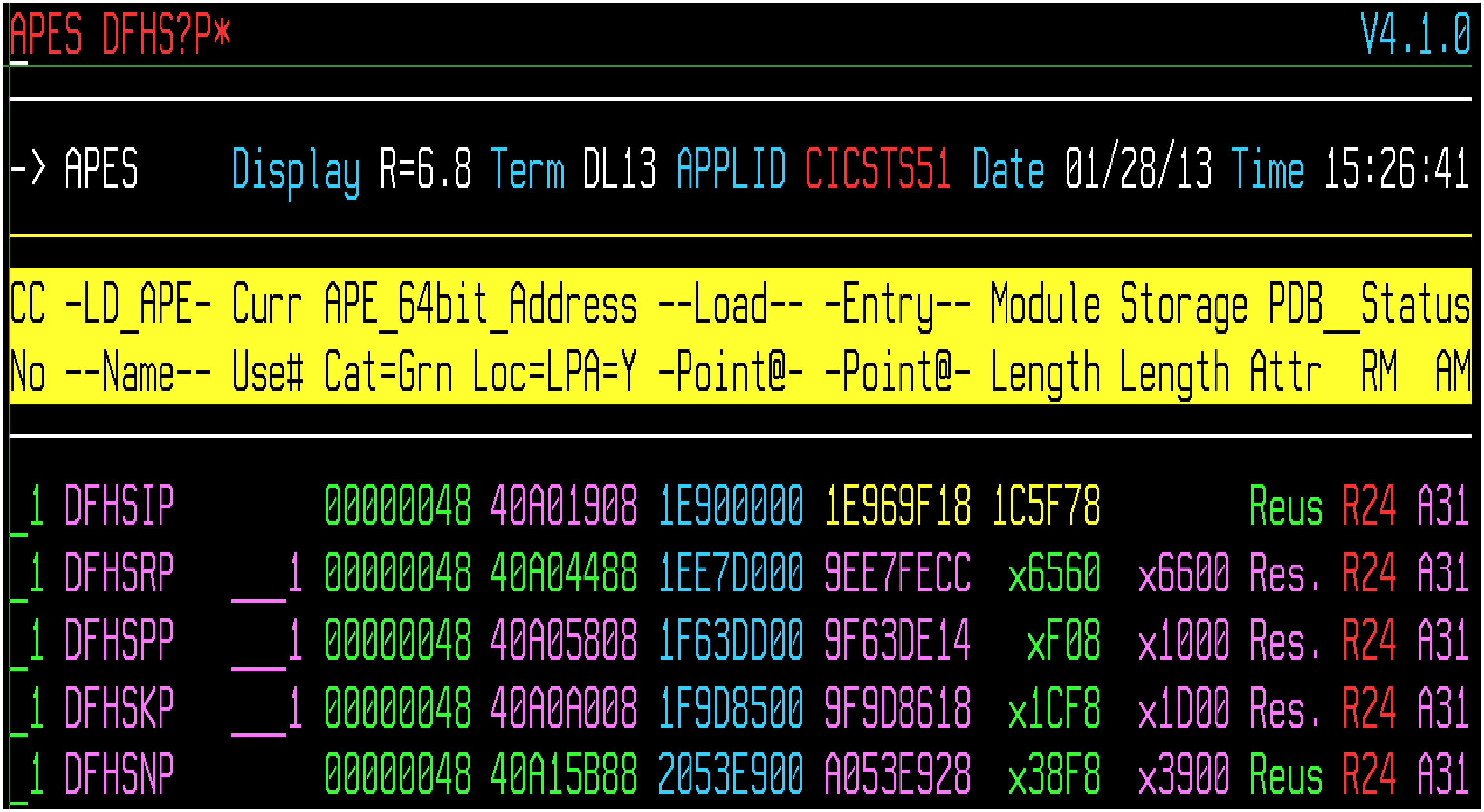
```
CSECTS DFH*                                                              Page 1

-> CSECTS    Display R=6.8 Term DL13 APPLID CICSTS51 Date 01/28/13 Time 15:12:04

CsL -Module- Use# APE_64bit_Address Load_Pt@ -Entry@- Mod.Len.
No. --Name-- Vers CSECTList_Address -CSECT@- -Offset- PTFlevel --Date-- -Time-

_   DFHTCP   ___1 00000048 40A04788 00041B00 80041C18    x2C00
1   DFHTCP   6.8  00000048 40B146A8 00041B00          GM01     I
2   DFHTCORS 6.8  00000048 40B146D0 00041EB0    +x3B0 GM01     I
3   DFHTCCOM 6.8  00000048 40B146F8 00042188    +x688 GM01     I
4   DFHTCCSS 6.8  00000048 40B14720 00042550    +xA50 GM01     I
5   DFHTCTI  6.8  00000048 40B14768 000426C8    +xBC8 GM01     I
6   DFHTCSAM 6.8  00000048 40B14790 00042750    +xC50 GM01     I
7   DFHTCAM  6.8  00000048 40B147B8 00042B60   +x1060 GM01     I
8   DFHTCTRN 6.8  00000048 40B147E0 00043A50   +x1F50 GM01     I

_   DFHAIP   ___2 00000048 40A01E48 00082000 000860F0    x9170
1   DFHAICBP 6.8  00000048 40B10F28 00082000          GM01     I
2   DFHCPI   6.8  00000048 40B10F50 000821C8    +x1C8 GM01     I
3   DFHEIG   6.8  00000048 40B10F78 00083110   +x1110 GM01     I
4   DFHEIGA  6.8  00000048 40B10FA0 00085A98   +x3A98 GM01     I
5   DFHEIP   6.8  00000048 40B10FE8 00085FD8   +x3FD8 GM01     I
6   DFHEIPA  6.8  00000048 40B11010 0008ABA8   +x8BA8 GM01     I
```

CPE and APE without a PPT ! Ex: SIP & SRP



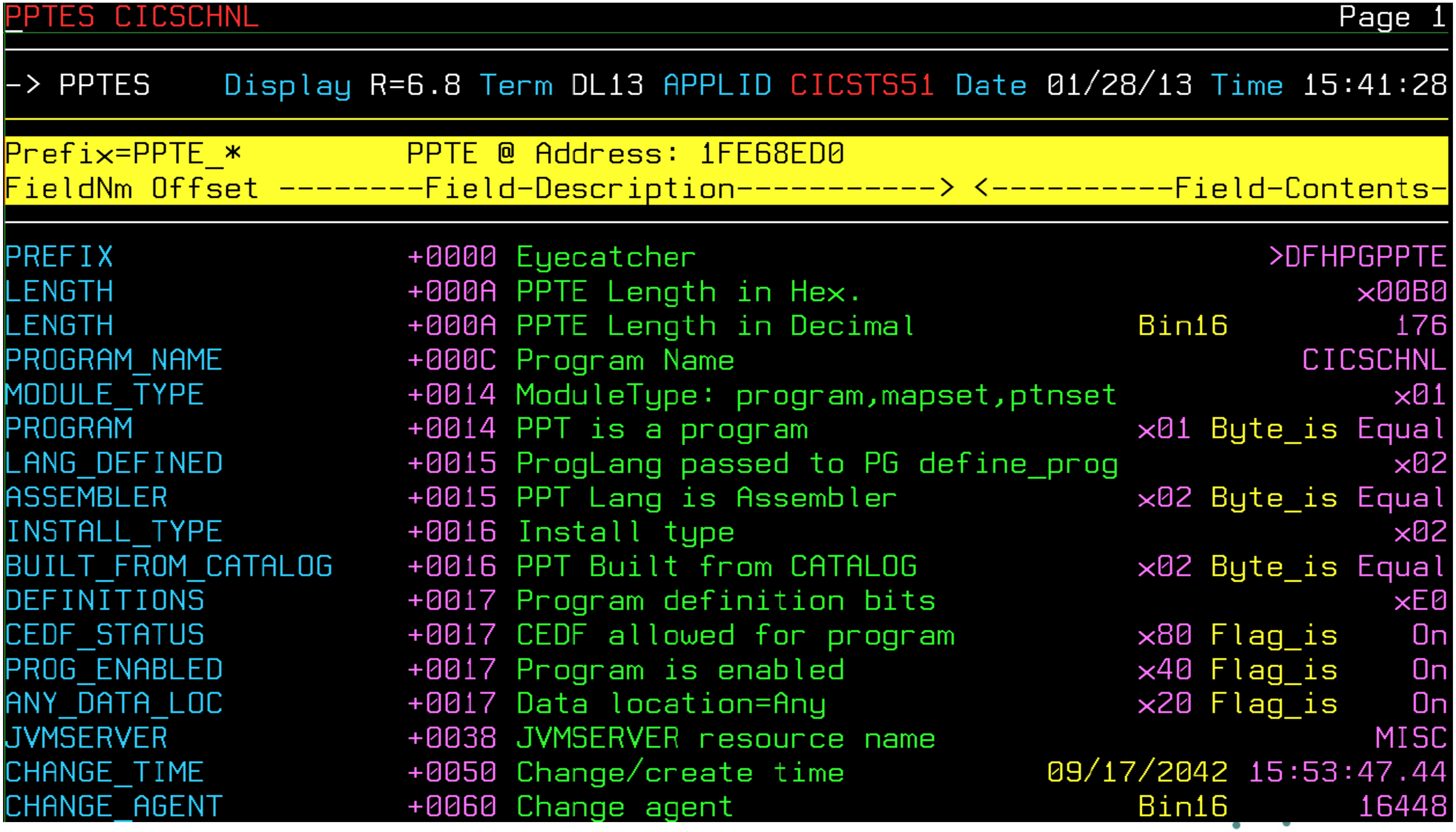
```
PROGRAMS DFHS*                                                           V4.1.0

-> PROGRAMS Display R=6.8 Term DL13 APPLID CICSTS51 Date 01/28/13 Time 15:18:38

Program    Use   Cur Fetch -Status- Prog T O Program- +Entry ProgLen -DASD- Lib
PPT-Name  Count  Use Count Res. E/D Lang S A Storage@ Offset in_Hex. T.T.R. Num

DFHSFP                     Reus Ena Asmb N _            +x28   x11A8 018619 __3
DFHSHRRP                   Reus Ena Asmb N _            +x40    x3B8 022014 __3
DFHSHRSP                   Reus Ena Asmb N _            +x40    x7D0 02201C __3
DFHSJGC                    Reus Ena Asmb Y _
DFHSJITL ______1     ____1 Core Ena Asmb N _ 9FCEF800   +x28    x4B0 012F09 __3
DFHSJJI                    Reus Ena Asmb Y _            +x28   x1B40 012F11 __3
DFHSJPI                    Reus Ena Asmb Y _
DFHSMTAB                   Reus Ena Asmb N _                   x97A8 02720D __3
DFHSNP   _____25     ____1 Core Ena Asmb N _ A053E900   +x28   x38F8 018623 __3
DFHSOCI                    Reus Ena Asmb N _            +x28    xCB0 012F21 __3
DFHSOCRL                   Reus Ena Asmb N _            +x28   x1528 02920D __3
DFHSOLI                    Reus Ena Asmb N _            +x28   x39E8 012F31 __3
DFHSTP                     Reus Ena Asmb N _           +x114   x3100 00110C __3
DFHSZRMP                   Res. Ena Asmb N _          x3463C  x3CDC0 017132 __3
```

CPE and APE without a PPTe !



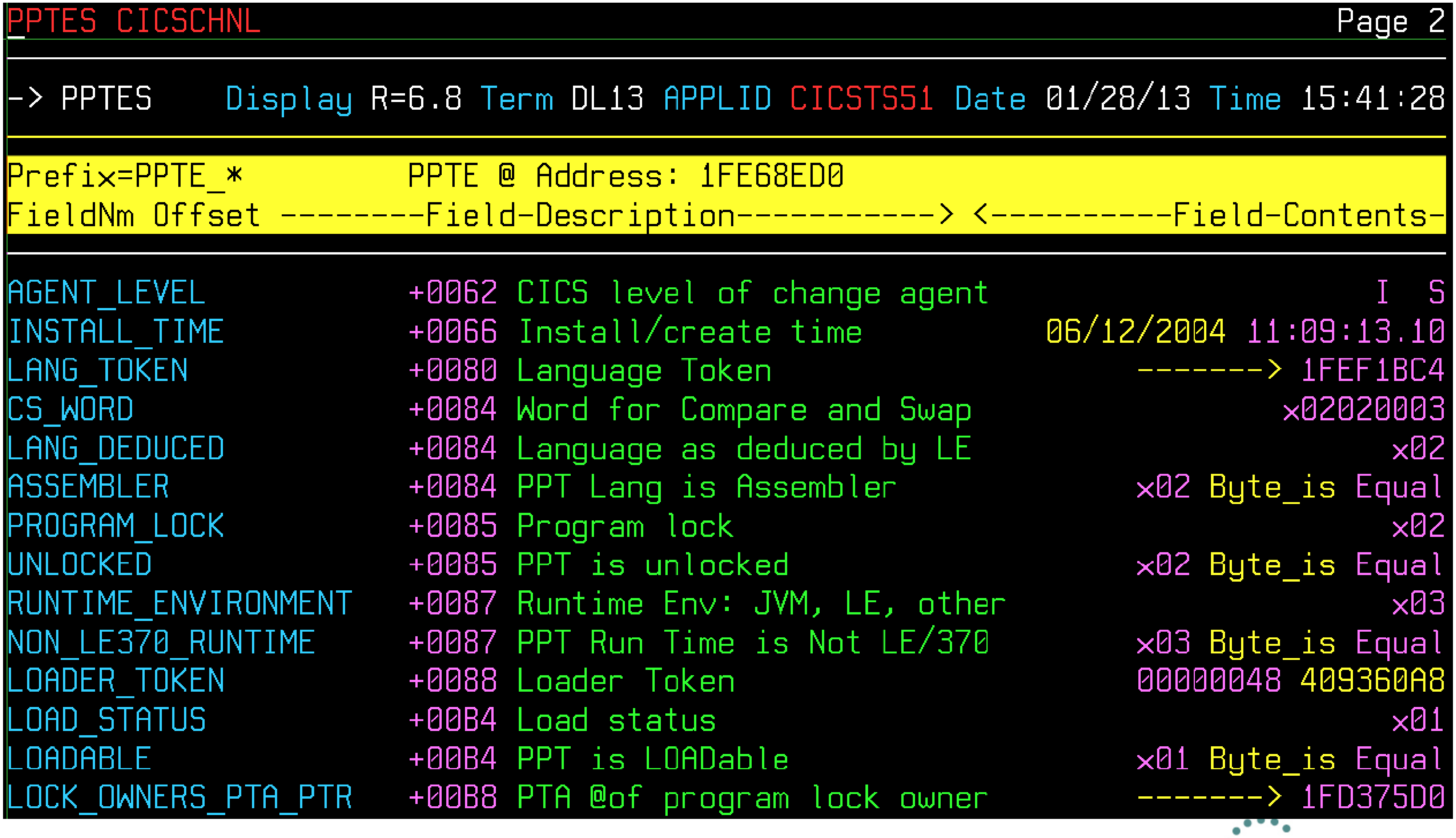
```
APES DFHS?P*                                                              V4.1.0

-> APES    Display R=6.8 Term DL13 APPLID CICSTS51 Date 01/28/13 Time 15:26:41

CC -LD_APE- Curr APE_64bit_Address --Load-- -Entry-- Module Storage PDB__Status
No --Name-- Use# Cat=Grn Loc=LPA=Y -Point@- -Point@- Length Length Attr  RM  AM

_1 DFHSIP        00000048 40A01908 1E900000 1E969F18 1C5F78        Reus R24 A31
_1 DFHSRP   ___1 00000048 40A04488 1EE7D000 9EE7FECC  x6560  x6600 Res. R24 A31
_1 DFHSPP   ___1 00000048 40A05808 1F63DD00 9F63DE14   xF08  x1000 Res. R24 A31
_1 DFHSKP   ___1 00000048 40A0A008 1F9D8500 9F9D8618  x1CF8  x1D00 Res. R24 A31
_1 DFHSNP        00000048 40A15B88 2053E900 A053E928  x38F8  x3900 Reus R24 A31
```

PPTs and CPEs are cataloged, not APEs



```
PPTES CICSCHNL                                                           Page 1

-> PPTES    Display R=6.8 Term DL13 APPLID CICSTS51 Date 01/28/13 Time 15:41:28

Prefix=PPTE_*         PPTE @ Address: 1FE68ED0
FieldNm Offset --------Field-Description-----------> <----------Field-Contents-

PREFIX                +0000 Eyecatcher                               >DFHPGPPTE
LENGTH                +000A PPTE Length in Hex.                           x00B0
LENGTH                +000A PPTE Length in Decimal            Bin16         176
PROGRAM_NAME          +000C Program Name                               CICSCHNL
MODULE_TYPE           +0014 ModuleType: program,mapset,ptnset               x01
PROGRAM               +0014 PPT is a program                  x01 Byte_is Equal
LANG_DEFINED          +0015 ProgLang passed to PG define_prog               x02
ASSEMBLER             +0015 PPT Lang is Assembler             x02 Byte_is Equal
INSTALL_TYPE          +0016 Install type                                    x02
BUILT_FROM_CATALOG    +0016 PPT Built from CATALOG            x02 Byte_is Equal
DEFINITIONS           +0017 Program definition bits                         xE0
CEDF_STATUS           +0017 CEDF allowed for program          x80 Flag_is     On
PROG_ENABLED          +0017 Program is enabled                x40 Flag_is     On
ANY_DATA_LOC          +0017 Data location=Any                 x20 Flag_is     On
JVMSERVER             +0038 JVMSERVER resource name                        MISC
CHANGE_TIME           +0050 Change/create time           09/17/2042 15:53:47.44
CHANGE_AGENT          +0060 Change agent                      Bin16       16448
```

Relation of a PPTe to LD CPE and APE

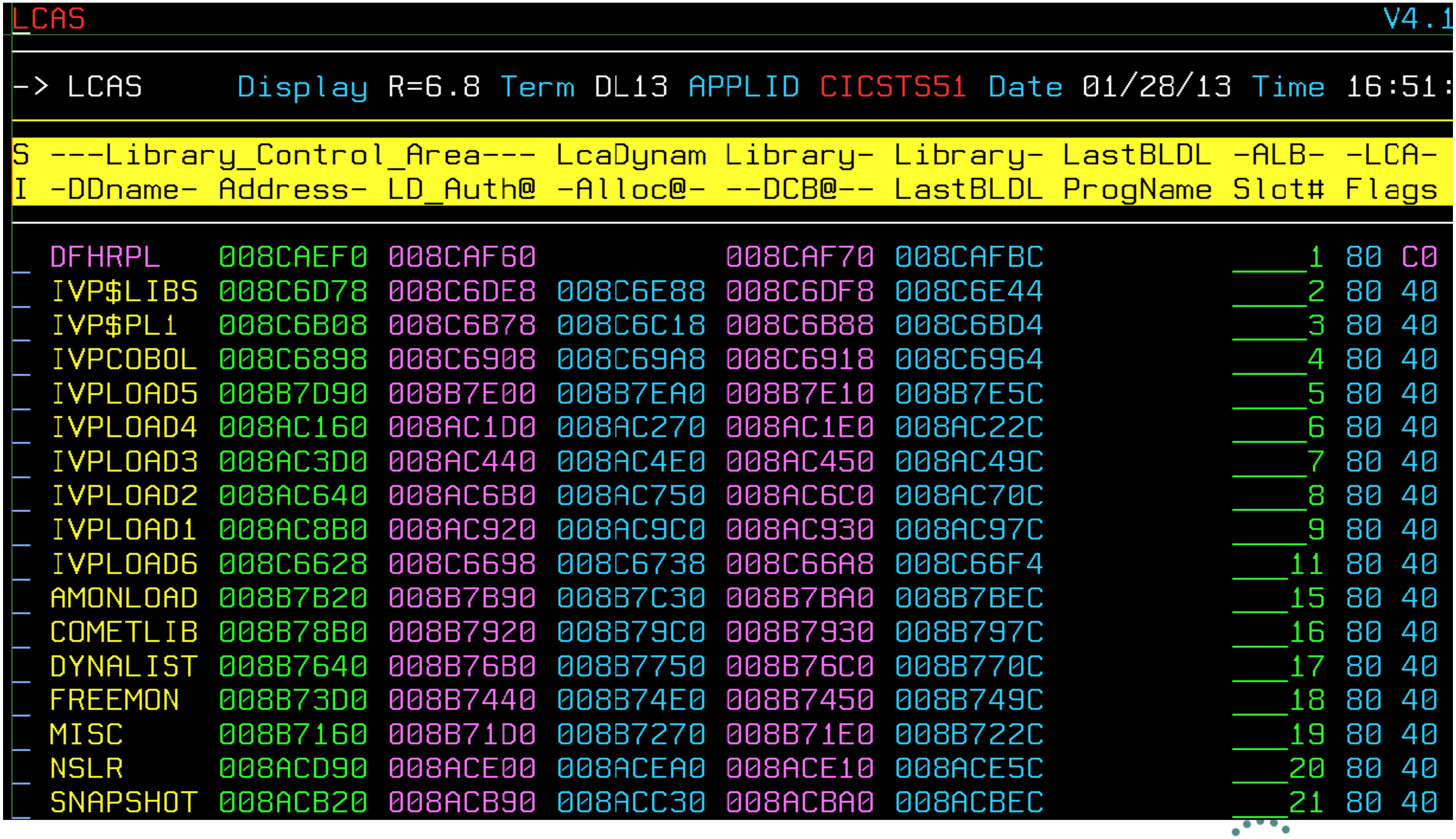


```
PPTES CICSCHNL                                                       Page 2

-> PPTES    Display R=6.8 Term DL13 APPLID CICSTS51 Date 01/28/13 Time 15:41:28

Prefix=PPTE_*         PPTE @ Address: 1FE68ED0
FieldNm Offset --------Field-Description-----------> <----------Field-Contents-

AGENT_LEVEL           +0062 CICS level of change agent                     I  S
INSTALL_TIME          +0066 Install/create time         06/12/2004 11:09:13.10
LANG_TOKEN            +0080 Language Token                     --------> 1FEF1BC4
CS_WORD               +0084 Word for Compare and Swap                 x02020003
LANG_DEDUCED          +0084 Language as deduced by LE                       x02
ASSEMBLER             +0084 PPT Lang is Assembler              x02 Byte_is Equal
PROGRAM_LOCK          +0085 Program lock                                    x02
UNLOCKED              +0085 PPT is unlocked                    x02 Byte_is Equal
RUNTIME_ENVIRONMENT   +0087 Runtime Env: JVM, LE, other                     x03
NON_LE370_RUNTIME     +0087 PPT Run Time is Not LE/370         x03 Byte_is Equal
LOADER_TOKEN          +0088 Loader Token                       00000048 409360A8
LOAD_STATUS           +00B4 Load status                                     x01
LOADABLE              +00B4 PPT is LOADable                    x01 Byte_is Equal
LOCK_OWNERS_PTA_PTR   +00B8 PTA @of program lock owner         --------> 1FD375D0
```

CICS TS Loader

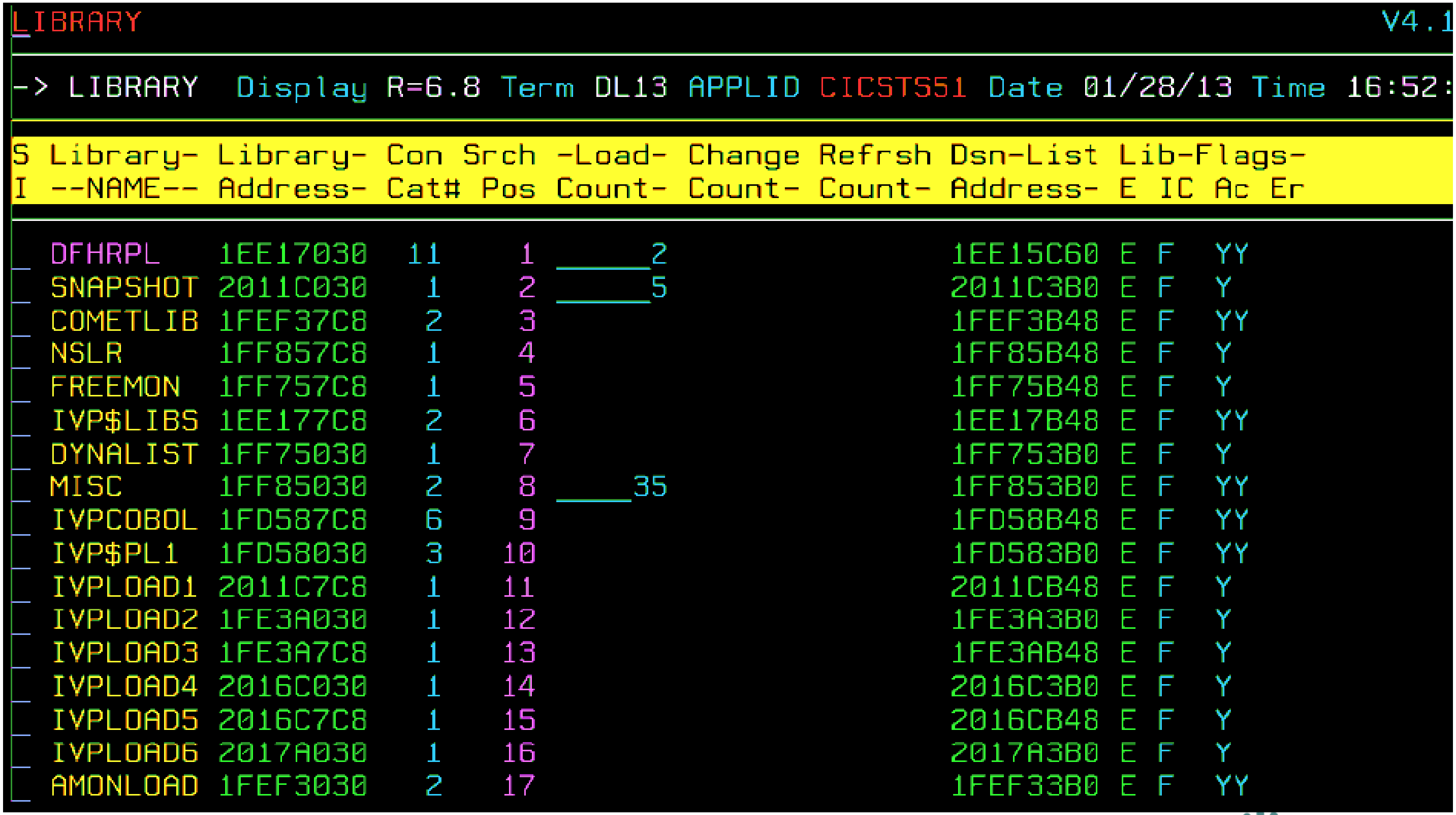
- CICS TS 3.2 added the concept of “Libraries”.
- Each Library uses 624 bytes of 24-bit storage for the LCA, forced below because it contains a z/OS DCB and BLDL parmlist.
- Each Library defined has a PLIBE area and an Library control area or LCA
- The following pages show what they look like:

CICS TS Loader LCA & DCB



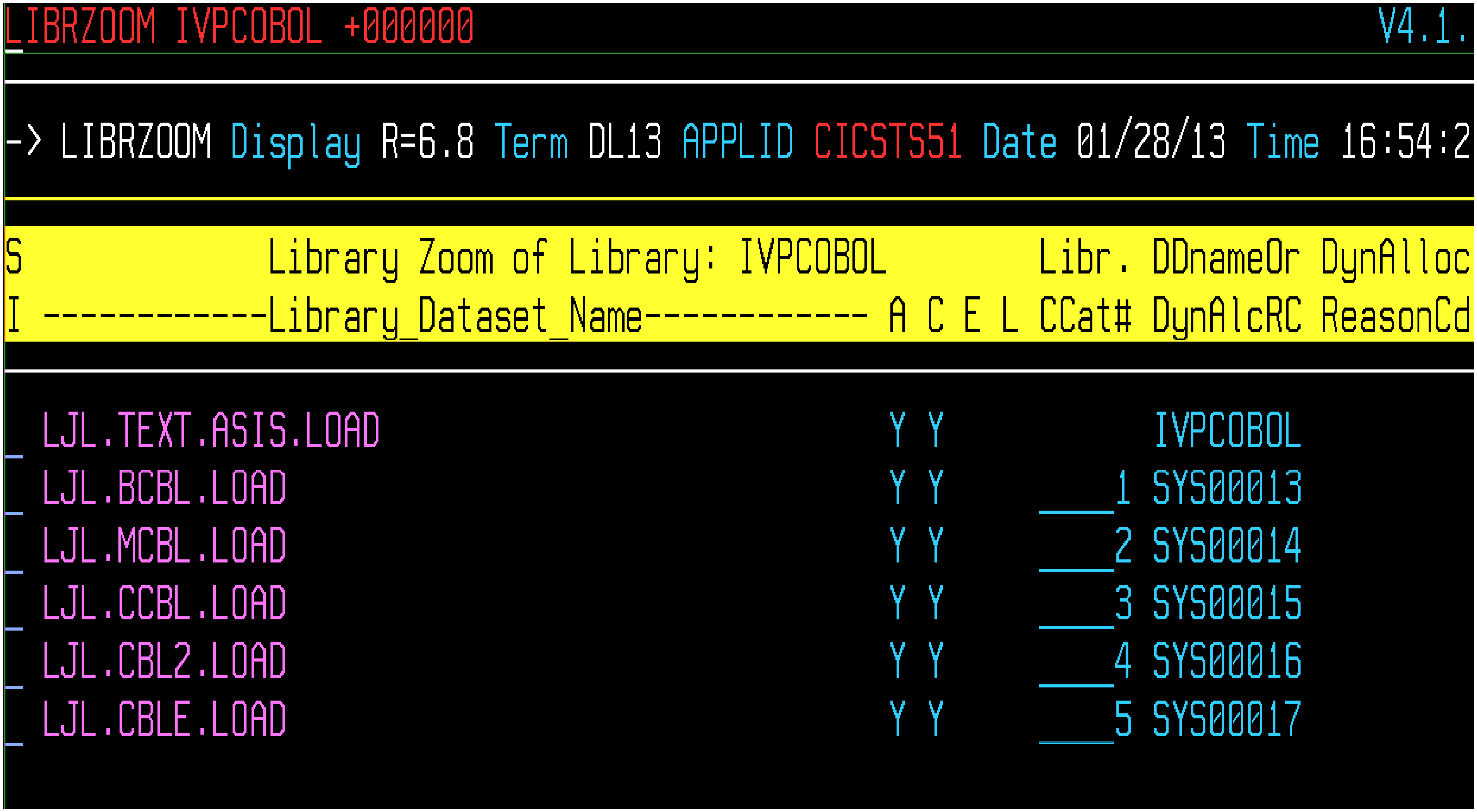
```
LCAS                                                                     V4.1

-> LCAS     Display R=6.8 Term DL13 APPLID CICSTS51 Date 01/28/13 Time 16:51:

S ---Library_Control_Area--- LcaDynam Library- Library- LastBLDL -ALB- -LCA-
I -DDname- Address- LD_Auth@ -Alloc@- --DCB@-- LastBLDL ProgName Slot# Flags

_ DFHRPL   008CAEF0 008CAF60          008CAF70 008CAFBC          ____1 80 C0
_ IVP$LIBS 008C6D78 008C6DE8 008C6E88 008C6DF8 008C6E44          ____2 80 40
_ IVP$PL1  008C6B08 008C6B78 008C6C18 008C6B88 008C6BD4          ____3 80 40
_ IVPCOBOL 008C6898 008C6908 008C69A8 008C6918 008C6964          ____4 80 40
_ IVPLOAD5 008B7D90 008B7E00 008B7EA0 008B7E10 008B7E5C          ____5 80 40
_ IVPLOAD4 008AC160 008AC1D0 008AC270 008AC1E0 008AC22C          ____6 80 40
_ IVPLOAD3 008AC3D0 008AC440 008AC4E0 008AC450 008AC49C          ____7 80 40
_ IVPLOAD2 008AC640 008AC6B0 008AC750 008AC6C0 008AC70C          ____8 80 40
_ IVPLOAD1 008AC8B0 008AC920 008AC9C0 008AC930 008AC97C          ____9 80 40
_ IVPLOAD6 008C6628 008C6698 008C6738 008C66A8 008C66F4          ___11 80 40
_ AMONLOAD 008B7B20 008B7B90 008B7C30 008B7BA0 008B7BEC          ___15 80 40
_ COMETLIB 008B78B0 008B7920 008B79C0 008B7930 008B797C          ___16 80 40
_ DYNALIST 008B7640 008B76B0 008B7750 008B76C0 008B770C          ___17 80 40
_ FREEMON  008B73D0 008B7440 008B74E0 008B7450 008B749C          ___18 80 40
_ MISC     008B7160 008B71D0 008B7270 008B71E0 008B722C          ___19 80 40
_ NSLR     008ACD90 008ACE00 008ACEA0 008ACE10 008ACE5C          ___20 80 40
_ SNAPSHOT 008ACB20 008ACB90 008ACC30 008ACBA0 008ACBEC          ___21 80 40
```

CICS TS Loader PLIBE



```
LIBRARY                                                                  V4.1
-> LIBRARY  Display R=6.8 Term DL13 APPLID CICSTS51 Date 01/28/13 Time 16:52:
S Library- Library- Con Srch -Load- Change Refrsh Dsn-List Lib-Flags-
I --NAME-- Address- Cat# Pos Count- Count- Count- Address- E IC Ac Er
_ DFHRPL   1EE17030  11    1 ______2              1EE15C60 E F  YY
_ SNAPSHOT 2011C030   1    2 ______5              2011C3B0 E F  Y
_ COMETLIB 1FEF37C8   2    3                      1FEF3B48 E F  YY
_ NSLR     1FF857C8   1    4                      1FF85B48 E F  Y
_ FREEMON  1FF757C8   1    5                      1FF75B48 E F  Y
_ IVP$LIBS 1EE177C8   2    6                      1EE17B48 E F  YY
_ DYNALIST 1FF75030   1    7                      1FF753B0 E F  Y
_ MISC     1FF85030   2    8 ____35               1FF853B0 E F  YY
_ IVPCOBOL 1FD587C8   6    9                      1FD58B48 E F  YY
_ IVP$PL1  1FD58030   3   10                      1FD583B0 E F  YY
_ IVPLOAD1 2011C7C8   1   11                      2011CB48 E F  Y
_ IVPLOAD2 1FE3A030   1   12                      1FE3A3B0 E F  Y
_ IVPLOAD3 1FE3A7C8   1   13                      1FE3AB48 E F  Y
_ IVPLOAD4 2016C030   1   14                      2016C3B0 E F  Y
_ IVPLOAD5 2016C7C8   1   15                      2016CB48 E F  Y
_ IVPLOAD6 2017A030   1   16                      2017A3B0 E F  Y
_ AMONLOAD 1FEF3030   2   17                      1FEF33B0 E F  YY
```

CICS TS Loader datasets



```
LIBRZOOM IVPCOBOL +000000                                                V4.1.

-> LIBRZOOM Display R=6.8 Term DL13 APPLID CICSTS51 Date 01/28/13 Time 16:54:2

S             Library Zoom of Library: IVPCOBOL        Libr. DDnameOr DynAlloc
I ------------Library_Dataset_Name------------ A C E L CCat# DynAlcRC ReasonCd

_ LJL.TEXT.ASIS.LOAD                           Y Y           IVPCOBOL
_ LJL.BCBL.LOAD                                Y Y     ____1 SYS00013
_ LJL.MCBL.LOAD                                Y Y     ____2 SYS00014
_ LJL.CCBL.LOAD                                Y Y     ____3 SYS00015
_ LJL.CBL2.LOAD                                Y Y     ____4 SYS00016
_ LJL.CBLE.LOAD                                Y Y     ____5 SYS00017
```

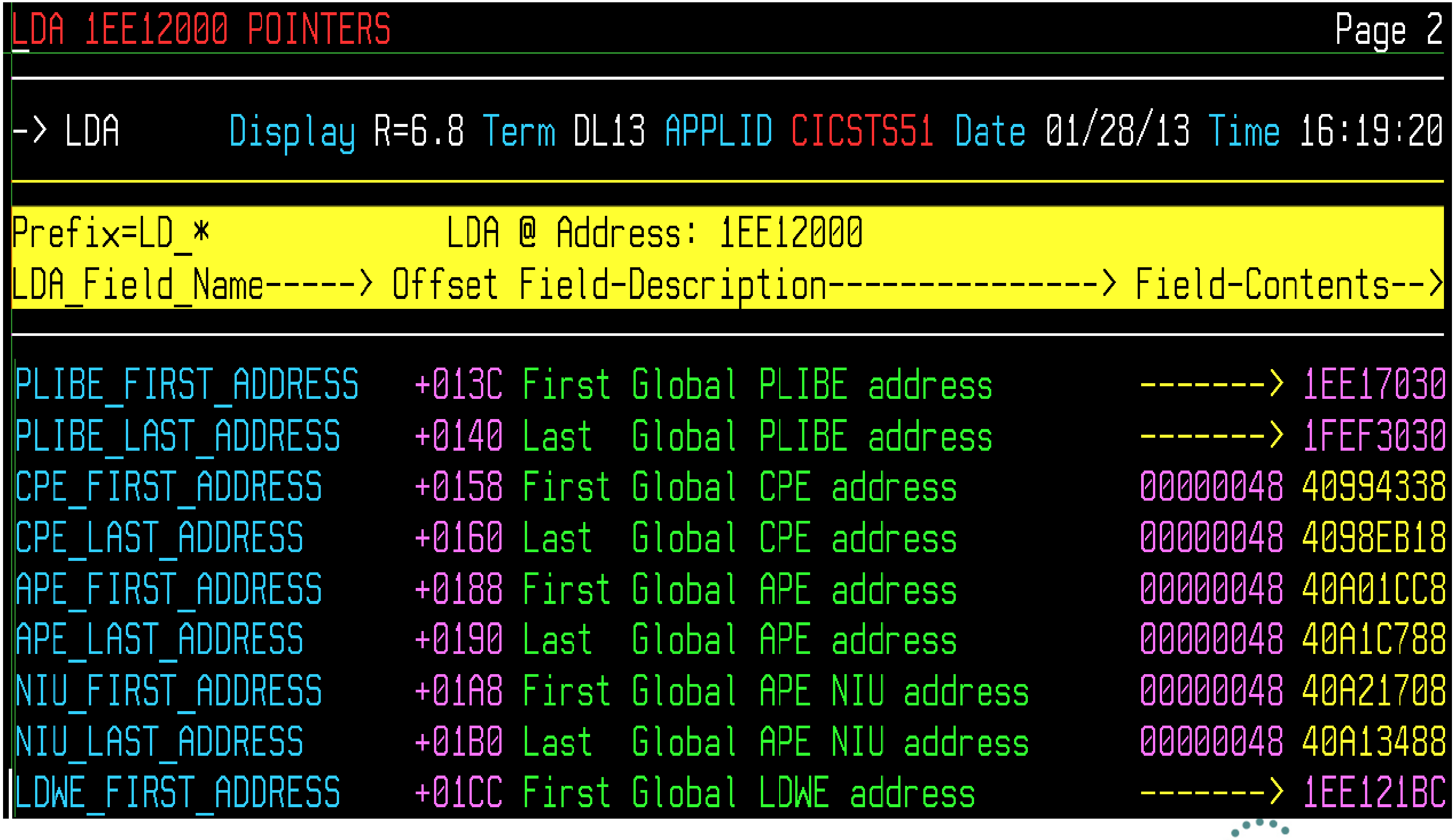
CICS TS Loader

- Misuse of Libraries can be detrimental to performance! See example of LD trace at: **http://tinyurl.com/LD-Trace**
- Around CICS TS 4.1 time Loader TCB bottlenecks started to reappear in higher transaction rate CICS systems, and could impact SAF performance!
- Vendors that open their own DFHRPL DCB will have problems!
- Is it a good idea to put all vendor programs in Library(s) and leave the DFHRPL for CICS and IBM Load Libraries?

CICS TS 5.1 Loader

- The CICS TS Loader has been improved in TS v5.1 to move all the CPE, APE and CSECT List control blocks into 64-bit addressable storage (31-bit VSCR)
- New CPE Chain added from the Library Resource (PLIBE) to keep track of all programs loaded from that Library. This is done for support of Application Bundles.
- Another major improvement to the loader domain was that LOAD requests for Threadsafe tasks no longer have to switch to the Loader “RO” TCB. LLACOPY and BLDL still use the RO TCB
- CPE in TS 5.1 is 240 bytes, APE in TS 5.1 is 192 bytes. A CPE with a single APE occupies 432 bytes per program.
- Moving 10,000 to 64-bit storage is roughly 4Meg of EDSA

CICS Loader Domain Anchor Area



```
LDA 1EE12000 POINTERS                                                 Page 2

-> LDA      Display R=6.8 Term DL13 APPLID CICSTS51 Date 01/28/13 Time 16:19:20

Prefix=LD_*                 LDA @ Address: 1EE12000
LDA_Field_Name-----> Offset Field-Description---------------> Field-Contents-->

PLIBE_FIRST_ADDRESS   +013C First Global PLIBE address        --------> 1EE17030
PLIBE_LAST_ADDRESS    +0140 Last  Global PLIBE address        --------> 1FEF3030
CPE_FIRST_ADDRESS     +0158 First Global CPE address          00000048 40994338
CPE_LAST_ADDRESS      +0160 Last  Global CPE address          00000048 4098EB18
APE_FIRST_ADDRESS     +0188 First Global APE address          00000048 40A01CC8
APE_LAST_ADDRESS      +0190 Last  Global APE address          00000048 40A1C788
NIU_FIRST_ADDRESS     +01A8 First Global APE NIU address      00000048 40A21708
NIU_LAST_ADDRESS      +01B0 Last  Global APE NIU address      00000048 40A13488
LDWE_FIRST_ADDRESS    +01CC First Global LDWE address         --------> 1EE121BC
```

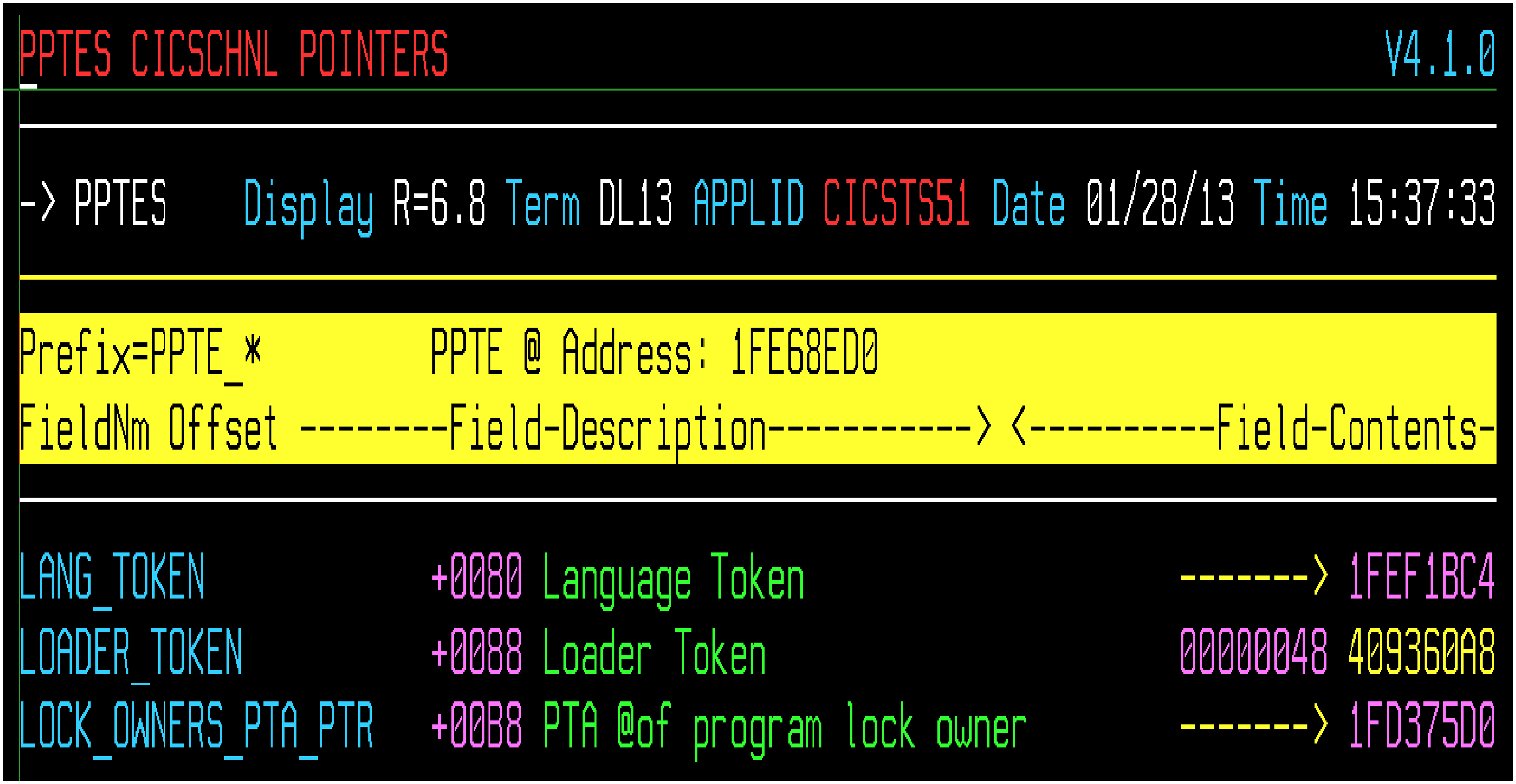
Impact of CICS TS 5.1 Loader changes

- Loader domain CPE chains are now 64-bit addresses!
- (CPE_NEXT, CPE_PRIOR)

- Loader domain APE chains are now 64-bit addresses! (APE_NEXT, APE_PRIOR, APE_OLDER_APE, APE_YOUNGER_APE, APE_OLDER_APE_NIU, APE_YOUNGER_APE_NIU)

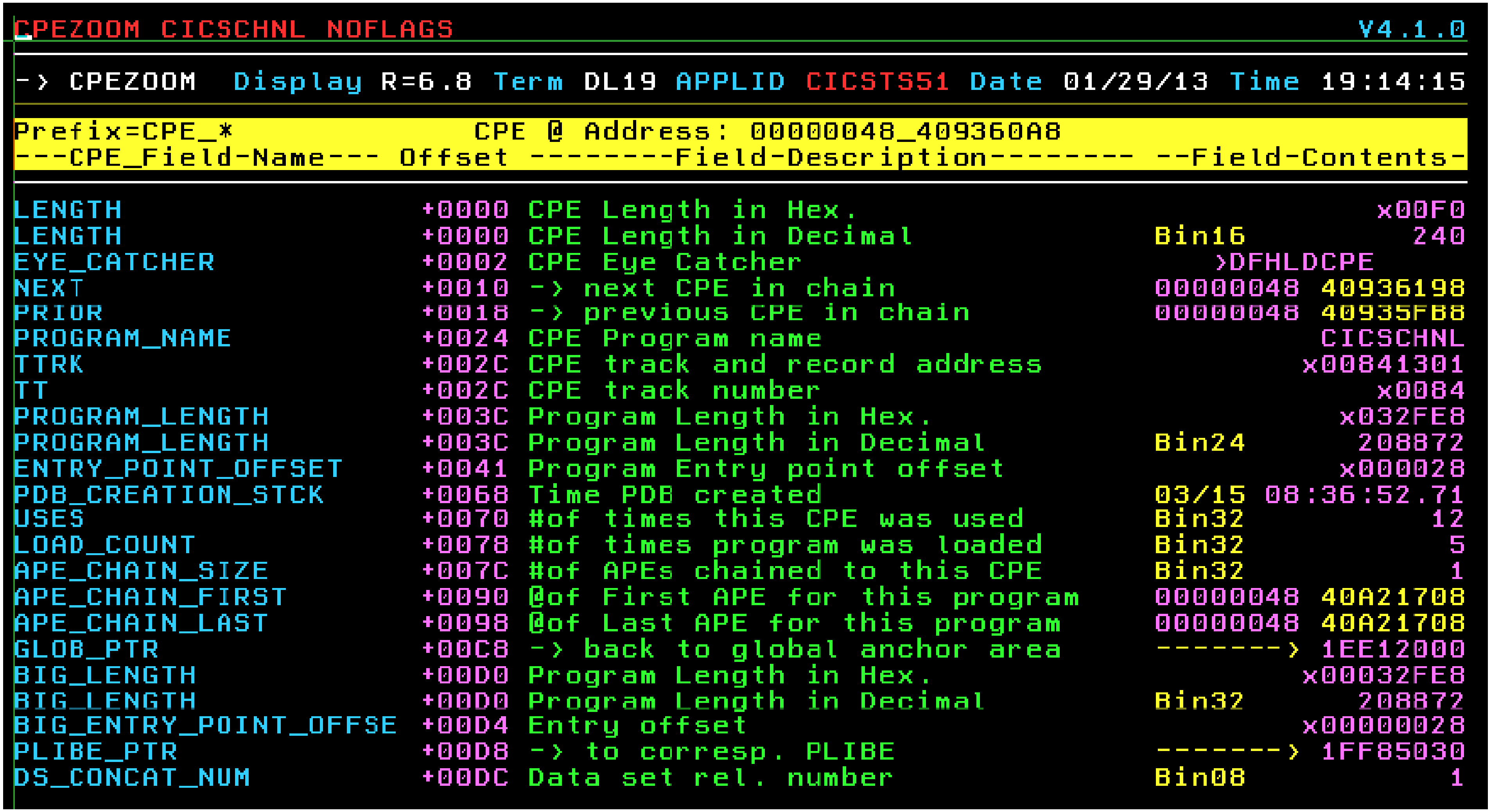
- The PPTE loader domain token address, is now 64-bit ! (PPTE_LOADER_TOKEN) points to the Loader Domain's corresponding 64-bit CPE entry

PPT Pointer Change, and EXT.



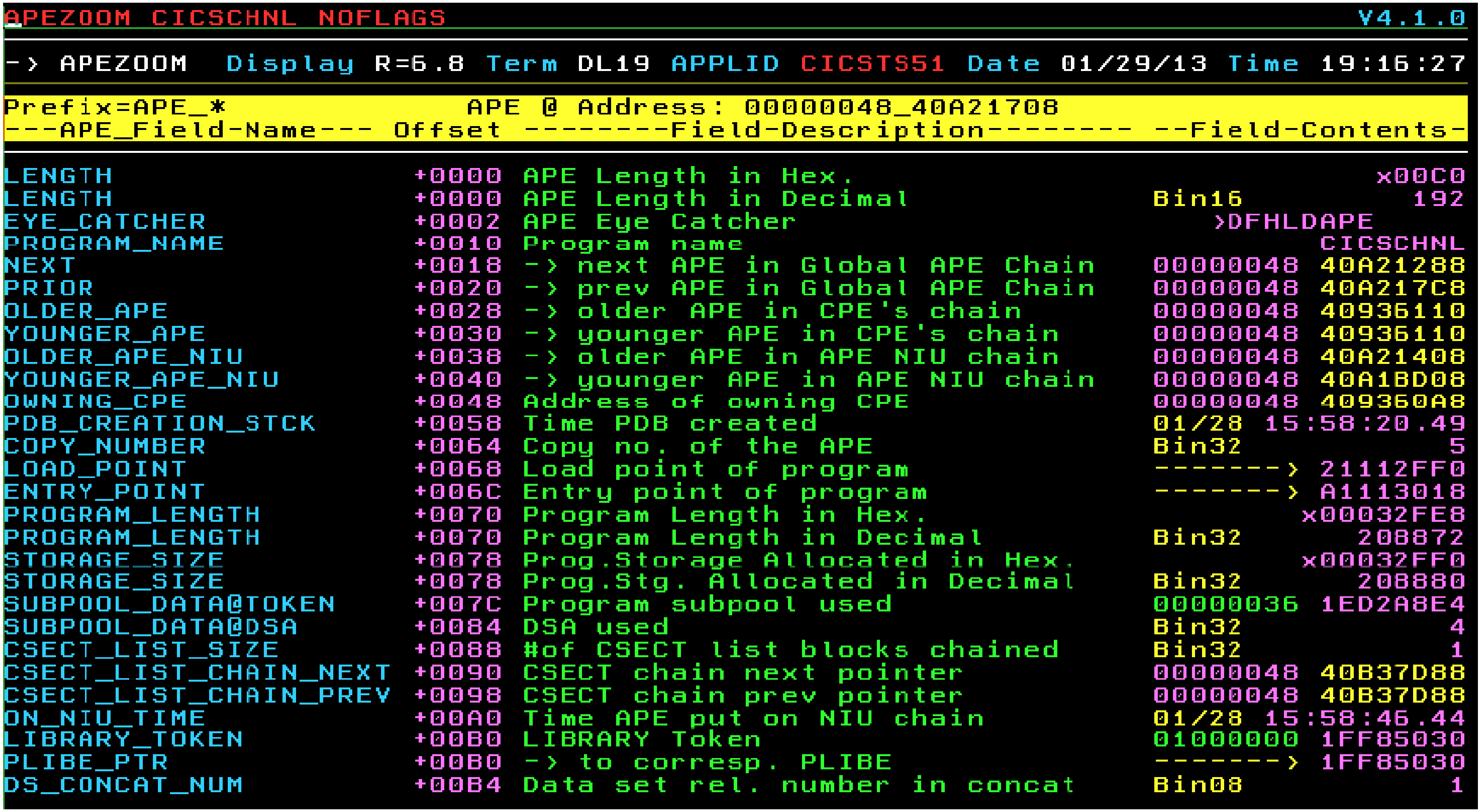
```
PPTES CICSCHNL POINTERS                                      V4.1.0

-> PPTES    Display R=6.8 Term DL13 APPLID CICSTS51 Date 01/28/13 Time 15:37:33

Prefix=PPTE_*          PPTE @ Address: 1FE68ED0
FieldNm Offset --------Field-Description----------> <----------Field-Contents-

LANG_TOKEN            +0080 Language Token                   -------> 1FEF1BC4
LOADER_TOKEN          +0088 Loader Token                     00000048 409360A8
LOCK_OWNERS_PTA_PTR   +00B8 PTA @of program lock owner       -------> 1FD375D0
```

64-Bit CPE addresses



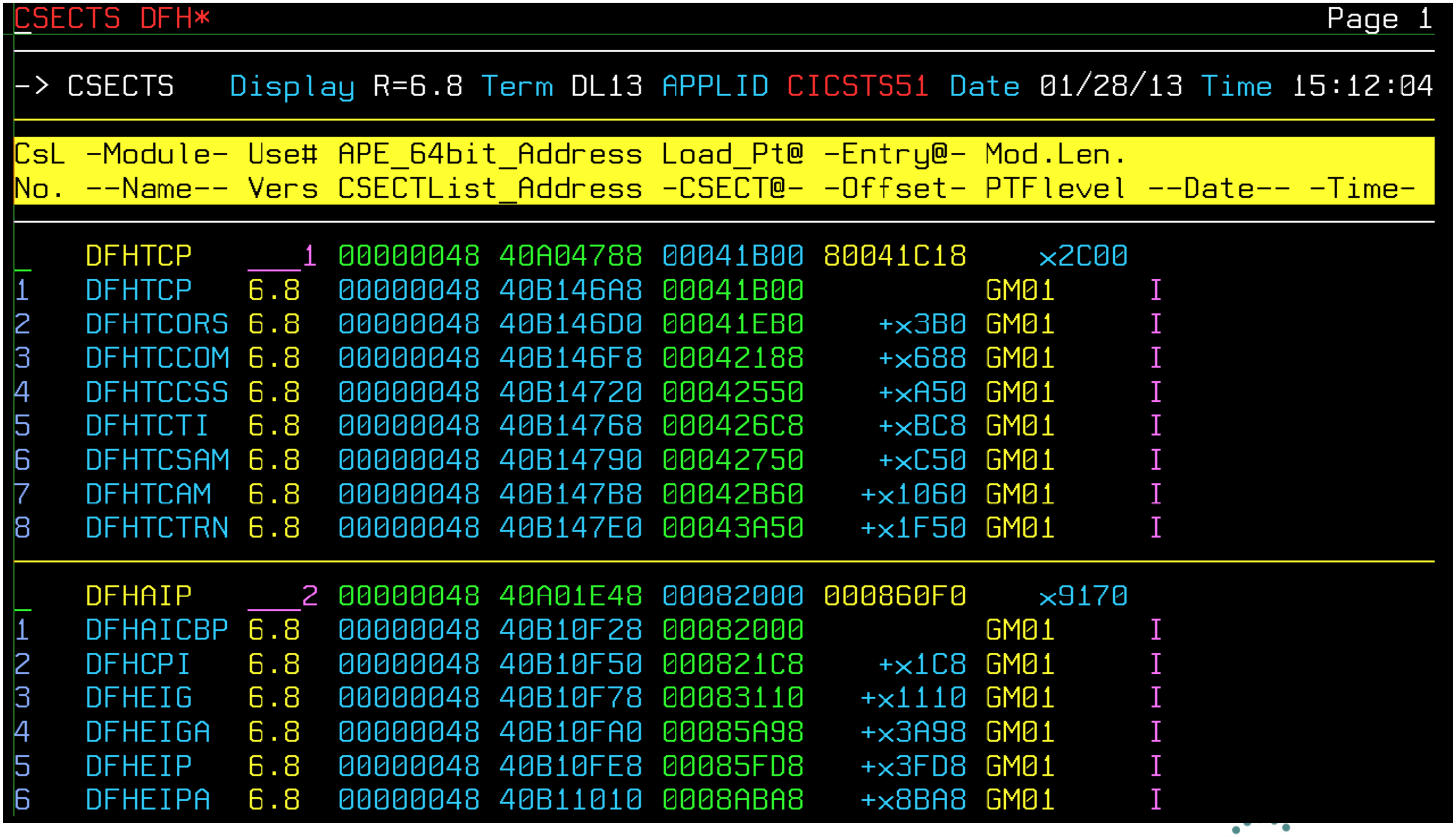
```
CPEZOOM CICSCHNL NOFLAGS                                                 V4.1.0

-> CPEZOOM  Display R=6.8 Term DL19 APPLID CICSTS51 Date 01/29/13 Time 19:14:15

Prefix=CPE_*             CPE @ Address: 00000048_409360A8
---CPE_Field-Name--- Offset --------Field-Description-------- --Field-Contents-

LENGTH                +0000 CPE Length in Hex.                            x00F0
LENGTH                +0000 CPE Length in Decimal             Bin16         240
EYE_CATCHER           +0002 CPE Eye Catcher                      >DFHLDCPE
NEXT                  +0010 -> next CPE in chain              00000048 40936198
PRIOR                 +0018 -> previous CPE in chain          00000048 40935FB8
PROGRAM_NAME          +0024 CPE Program name                           CICSCHNL
TTRK                  +002C CPE track and record address              x00841301
TT                    +002C CPE track number                              x0084
PROGRAM_LENGTH        +003C Program Length in Hex.                      x032FE8
PROGRAM_LENGTH        +003C Program Length in Decimal         Bin24      208872
ENTRY_POINT_OFFSET    +0041 Program Entry point offset                  x000028
PDB_CREATION_STCK     +0068 Time PDB created                  03/15 08:36:52.71
USES                  +0070 #of times this CPE was used       Bin32          12
LOAD_COUNT            +0078 #of times program was loaded      Bin32           5
APE_CHAIN_SIZE        +007C #of APEs chained to this CPE      Bin32           1
APE_CHAIN_FIRST       +0090 @of First APE for this program    00000048 40A21708
APE_CHAIN_LAST        +0098 @of Last APE for this program     00000048 40A21708
GLOB_PTR              +00C8 -> back to global anchor area     -------> 1EE12000
BIG_LENGTH            +00D0 Program Length in Hex.                    x00032FE8
BIG_LENGTH            +00D0 Program Length in Decimal         Bin32      208872
BIG_ENTRY_POINT_OFFSE +00D4 Entry offset                             x00000028
PLIBE_PTR             +00D8 -> to corresp. PLIBE              -------> 1FF85030
DS_CONCAT_NUM         +00DC Data set rel. number              Bin08           1
```

64-Bit APE addresses



```
APEZOOM CICSCHNL NOFLAGS                                                  V4.1.0

-> APEZOOM  Display R=6.8 Term DL19 APPLID CICSTS51 Date 01/29/13 Time 19:16:27
Prefix=APE_*             APE @ Address: 00000048_40A21708
---APE_Field-Name--- Offset --------Field-Description-------- --Field-Contents-

LENGTH                +0000 APE Length in Hex.                             x00C0
LENGTH                +0000 APE Length in Decimal             Bin16          192
EYE_CATCHER           +0002 APE Eye Catcher                      >DFHLDAPE
PROGRAM_NAME          +0010 Program name                               CICSCHNL
NEXT                  +0018 -> next APE in Global APE Chain   00000048 40A21288
PRIOR                 +0020 -> prev APE in Global APE Chain   00000048 40A217C8
OLDER_APE             +0028 -> older APE in CPE's chain       00000048 40936110
YOUNGER_APE           +0030 -> younger APE in CPE's chain     00000048 40936110
OLDER_APE_NIU         +0038 -> older APE in APE NIU chain     00000048 40A21408
YOUNGER_APE_NIU       +0040 -> younger APE in APE NIU chain   00000048 40A1BD08
OWNING_CPE            +0048 Address of owning CPE             00000048 409360A8
PDB_CREATION_STCK     +0058 Time PDB created                  01/28 15:58:20.49
COPY_NUMBER           +0064 Copy no. of the APE               Bin32            5
LOAD_POINT            +0068 Load point of program             --------> 21112FF0
ENTRY_POINT           +006C Entry point of program            --------> A1113018
PROGRAM_LENGTH        +0070 Program Length in Hex.                     x00032FE8
PROGRAM_LENGTH        +0070 Program Length in Decimal         Bin32       208872
STORAGE_SIZE          +0078 Prog.Storage Allocated in Hex.             x00032FF0
STORAGE_SIZE          +0078 Prog.Stg. Allocated in Decimal    Bin32       208880
SUBPOOL_DATA@TOKEN    +007C Program subpool used              00000036 1ED2A8E4
SUBPOOL_DATA@DSA      +0084 DSA used                          Bin32            4
CSECT_LIST_SIZE       +0088 #of CSECT list blocks chained     Bin32            1
CSECT_LIST_CHAIN_NEXT +0090 CSECT chain next pointer          00000048 40B37D88
CSECT_LIST_CHAIN_PREV +0098 CSECT chain prev pointer          00000048 40B37D88
ON_NIU_TIME           +00A0 Time APE put on NIU chain         01/28 15:58:46.44
LIBRARY_TOKEN         +00B0 LIBRARY Token                     01000000 1FF85030
PLIBE_PTR             +00B0 -> to corresp. PLIBE              --------> 1FF85030
DS_CONCAT_NUM         +00B4 Data set rel. number in concat    Bin08            1
```

64-Bit CSECT List addresses

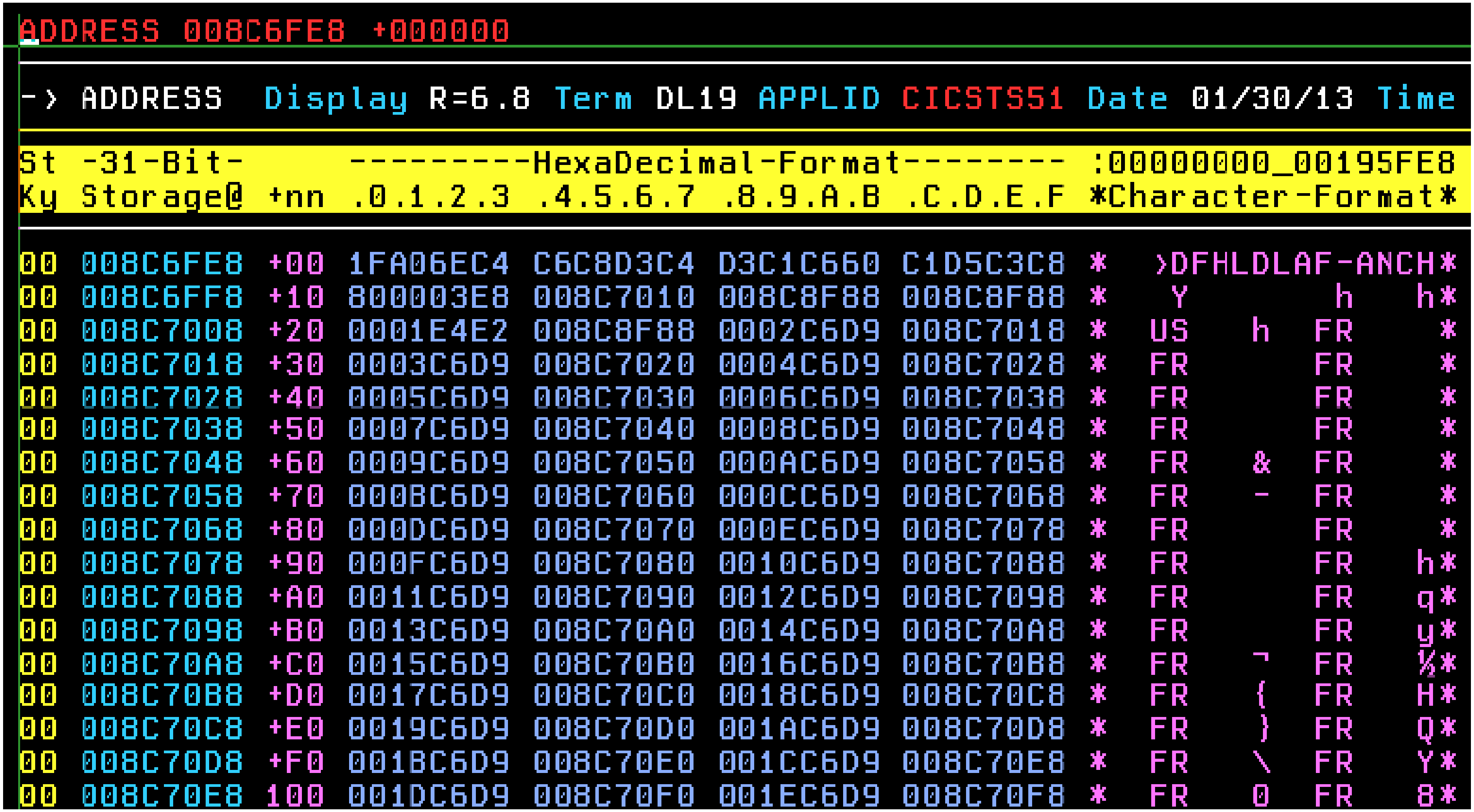


```
CSECTS DFH*                                                               Page 1

-> CSECTS   Display R=6.8 Term DL13 APPLID CICSTS51 Date 01/28/13 Time 15:12:04

CsL -Module- Use# APE_64bit_Address Load_Pt@ -Entry@- Mod.Len.
No. --Name-- Vers CSECTList_Address -CSECT@- -Offset- PTFlevel --Date-- -Time-

_   DFHTCP   ___1 00000048 40A04788 00041B00 80041C18    x2C00
1   DFHTCP   6.8  00000048 40B146A8 00041B00          GM01     I
2   DFHTCORS 6.8  00000048 40B146D0 00041EB0     +x3B0 GM01     I
3   DFHTCCOM 6.8  00000048 40B146F8 00042188     +x688 GM01     I
4   DFHTCCSS 6.8  00000048 40B14720 00042550     +xA50 GM01     I
5   DFHTCTI  6.8  00000048 40B14768 000426C8     +xBC8 GM01     I
6   DFHTCSAM 6.8  00000048 40B14790 00042750     +xC50 GM01     I
7   DFHTCAM  6.8  00000048 40B147B8 00042B60    +x1060 GM01     I
8   DFHTCTRN 6.8  00000048 40B147E0 00043A50    +x1F50 GM01     I

_   DFHAIP   ___2 00000048 40A01E48 00082000 000860F0    x9170
1   DFHAICBP 6.8  00000048 40B10F28 00082000          GM01     I
2   DFHCPI   6.8  00000048 40B10F50 000821C8     +x1C8 GM01     I
3   DFHEIG   6.8  00000048 40B10F78 00083110    +x1110 GM01     I
4   DFHEIGA  6.8  00000048 40B10FA0 00085A98    +x3A98 GM01     I
5   DFHEIP   6.8  00000048 40B10FE8 00085FD8    +x3FD8 GM01     I
6   DFHEIPA  6.8  00000048 40B11010 0008ABA8    +x8BA8 GM01     I
```

Remaining Topics

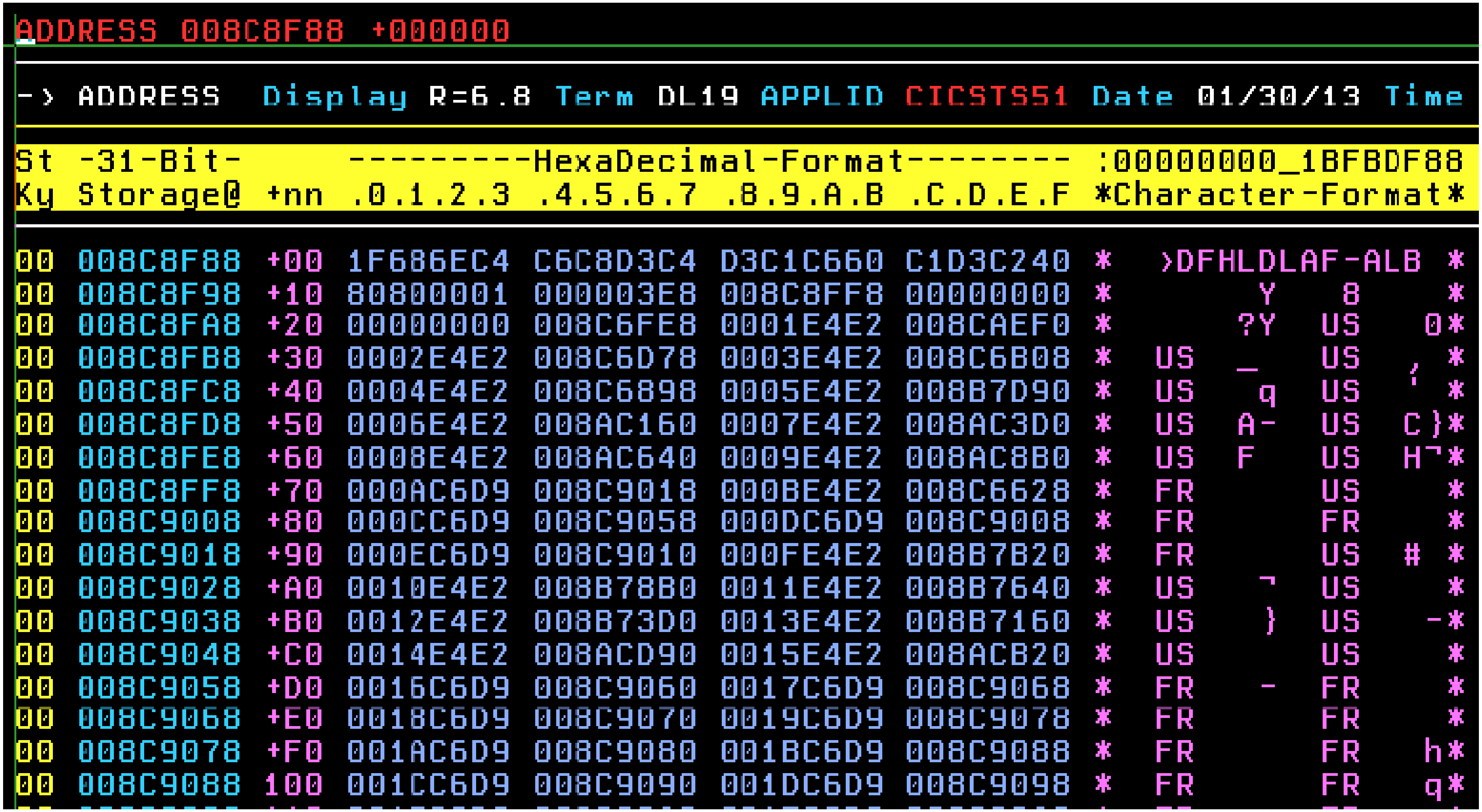
- Order of magnitude improvement in the Loader domain for Threadsafe tasks, which can load their own programs without Queuing up on the Loader TCB.
- Are the bulk of your tasks still on the QR TCB? If so, this enhancement may not help you!
- The single RO or Loader TCB is still used for: SAF calls, BLDLs, LLACOPYs, NEWCOPYs, PHASEINs and QR task LOADs!
- Are your Loader Domain Global user exits: XLDLOAD and XLDELETE Threadsafe, so they can be driven on Multiple TCBs ?

LCA Index Anchor US/FR



```
ADDRESS 008C6FE8 +000000

-> ADDRESS  Display R=6.8 Term DL19 APPLID CICSTS51 Date 01/30/13 Time

St -31-Bit-     ---------HexaDecimal-Format-------- :00000000_00195FE8
Ky Storage@ +nn .0.1.2.3 .4.5.6.7 .8.9.A.B .C.D.E.F *Character-Format*

00 008C6FE8 +00 1FA06EC4 C6C8D3C4 D3C1C660 C1D5C3C8 *  >DFHLDLAF-ANCH*
00 008C6FF8 +10 800003E8 008C7010 008C8F88 008C8F88 *   Y       h   h*
00 008C7008 +20 0001E4E2 008C8F88 0002C6D9 008C7018 *  US   h  FR    *
00 008C7018 +30 0003C6D9 008C7020 0004C6D9 008C7028 *  FR      FR    *
00 008C7028 +40 0005C6D9 008C7030 0006C6D9 008C7038 *  FR      FR    *
00 008C7038 +50 0007C6D9 008C7040 0008C6D9 008C7048 *  FR      FR    *
00 008C7048 +60 0009C6D9 008C7050 000AC6D9 008C7058 *  FR   &  FR    *
00 008C7058 +70 000BC6D9 008C7060 000CC6D9 008C7068 *  FR   -  FR    *
00 008C7068 +80 000DC6D9 008C7070 000EC6D9 008C7078 *  FR      FR    *
00 008C7078 +90 000FC6D9 008C7080 0010C6D9 008C7088 *  FR      FR   h*
00 008C7088 +A0 0011C6D9 008C7090 0012C6D9 008C7098 *  FR      FR   q*
00 008C7098 +B0 0013C6D9 008C70A0 0014C6D9 008C70A8 *  FR      FR   y*
00 008C70A8 +C0 0015C6D9 008C70B0 0016C6D9 008C70B8 *  FR   ¬  FR   ½*
00 008C70B8 +D0 0017C6D9 008C70C0 0018C6D9 008C70C8 *  FR   {  FR   H*
00 008C70C8 +E0 0019C6D9 008C70D0 001AC6D9 008C70D8 *  FR   }  FR   Q*
00 008C70D8 +F0 001BC6D9 008C70E0 001CC6D9 008C70E8 *  FR   \  FR   Y*
00 008C70E8 100 001DC6D9 008C70F0 001EC6D9 008C70F8 *  FR   0  FR   8*
```

LCA Index ALB US/FR



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00 008C8FA8 +20 00000000 008C6FE8 0001E4E2 008CAEF0 *      ?Y  US   0*
00 008C8FB8 +30 0002E4E2 008C6D78 0003E4E2 008C6B08 *  US  _   US  ; *
00 008C8FC8 +40 0004E4E2 008C6898 0005E4E2 008B7D90 *  US   q  US     *
00 008C8FD8 +50 0006E4E2 008AC160 0007E4E2 008AC3D0 *  US  A-  US  C}*
00 008C8FE8 +60 0008E4E2 008AC640 0009E4E2 008AC8B0 *  US  F   US  H¬*
00 008C8FF8 +70 000AC6D9 008C9018 000BE4E2 008C6628 *  FR      US    *
00 008C9008 +80 000CC6D9 008C9058 000DC6D9 008C9008 *  FR      FR    *
00 008C9018 +90 000EC6D9 008C9010 000FE4E2 008B7B20 *  FR      US  # *
00 008C9028 +A0 0010E4E2 008B78B0 0011E4E2 008B7640 *  US   ¬  US    *
00 008C9038 +B0 0012E4E2 008B73D0 0013E4E2 008B7160 *  US   }  US   -*
00 008C9048 +C0 0014E4E2 008ACD90 0015E4E2 008ACB20 *  US      US    *
00 008C9058 +D0 0016C6D9 008C9060 0017C6D9 008C9068 *  FR   -  FR    *
00 008C9068 +E0 0018C6D9 008C9070 0019C6D9 008C9078 *  FR      FR    *
00 008C9078 +F0 001AC6D9 008C9080 001BC6D9 008C9088 *  FR      FR   h*
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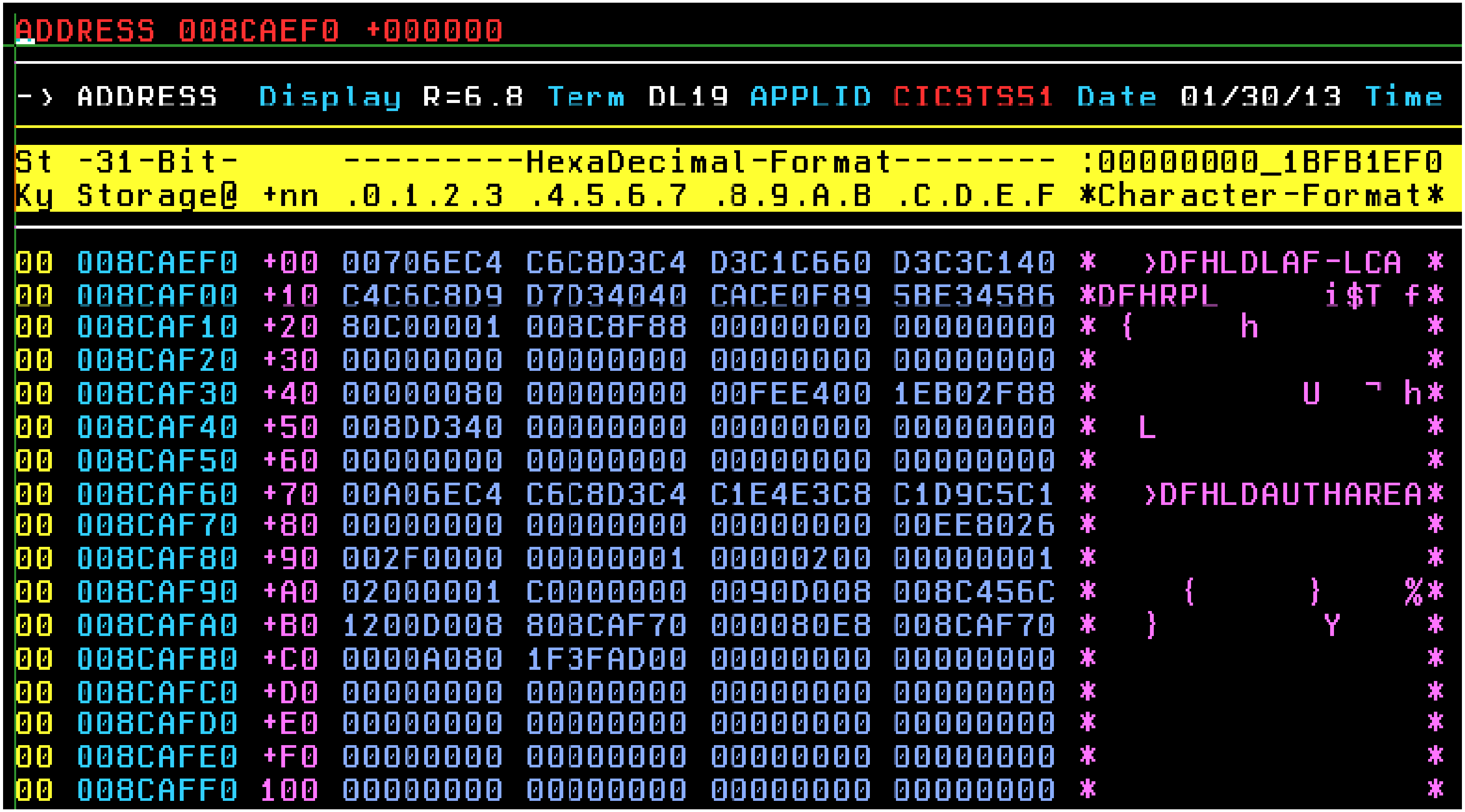
```

LCA, DCB and BLDL Plist



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00 008CAF00 +10 C4C6C8D9 D7D34040 CACE0F89 5BE34586 *DFHRPL     i$T f*
00 008CAF10 +20 80C00001 008C8F88 00000000 00000000 * {       h      *
00 008CAF20 +30 00000000 00000000 00000000 00000000 *                *
00 008CAF30 +40 00000080 00000000 00FEE400 1EB02F88 *          U  ¬ h*
00 008CAF40 +50 008DD340 00000000 00000000 00000000 *  L             *
00 008CAF50 +60 00000000 00000000 00000000 00000000 *                *
00 008CAF60 +70 00A06EC4 C6C8D3C4 C1E4E3C8 C1D9C5C1 *  >DFHLDAUTHAREA*
00 008CAF70 +80 00000000 00000000 00000000 00EE8026 *                *
00 008CAF80 +90 002F0000 00000001 00000200 00000001 *                *
00 008CAF90 +A0 02000001 C0000000 0090D008 008C456C *    {     }    %*
00 008CAFA0 +B0 1200D008 808CAF70 000080E8 008CAF70 *  }        Y    *
00 008CAFB0 +C0 0000A080 1F3FAD00 00000000 00000000 *                *
00 008CAFC0 +D0 00000000 00000000 00000000 00000000 *                *
00 008CAFD0 +E0 00000000 00000000 00000000 00000000 *                *
00 008CAFE0 +F0 00000000 00000000 00000000 00000000 *                *
00 008CAFF0 100 00000000 00000000 00000000 00000000 *                *
```

Remaining Issues

- Sequential search using BLDL or LLACOPY on a series of Libraries, even if they are defined after the DFHRPL search order can significantly impact an already over taxed Loader TCB!
- Customer had a cool idea to put each vendor Load library in a separate CICS LIBRARY definition, and leave DFHRPL for CICS, LE, and their application programs. They called to ask why this would make our PLTPI time startup process so slow, on COLD starts? From a CICS Trace we could see we our Load Library, was 50th in the ranking List! So each of our 30+ programs we load at PLTPI time had to do 50 BLDL or LLACOPY requests before finding the program !!

Wish List

- Move the 16K of Library Control Area (LCA) indexes to
- 31-bit storage

- Create a new TCB for SAF/RACF requests, that is separate from the Loader TCB

- Option when defining a “Library” resource via CEDA or RDO to indicate you want a separate TCB for this Library.

- RDO Program entry to allow the specification of a single Library definition.

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CICS TS 255 LSR Pools

Larry Lawler
Unicom Global

Thursday February 8th, 2013 - 3:00 PM-4:00 PM
Session Number **12447**

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SHARE in San Francisco 2013

CICS TS 255 LSR Pools

- Local Shared Resources
- Threadsafe impact on LSR pools
- Control interval sizes
- Remaining Issues
- Wish List
- Questions

Local Shared Resources

- Tuning a moving target
- DBA tunes CI sizes
- Index levels increase
- Index records increase
- Some type of Automatic setting needed

Threadsafe impact on LSR pools

- Some of the threadsafe file control code needs to be serialized, this is done by using a new LSR pool lock.
- For years sharing was a good idea, now we need to rethink this for threadsafe applications, to avoid lock contention between different application files in the LSR pool! For example Is an open order file in the same LSR pool as payroll file?

Remaining Issues

- LSR Buffers remain 31-bit, can impact transaction rates due to EDSA compressions

- Odd Control Interval sizes can cause round up, and wasted virtual and real storage.

Wish List

- CICS needs to support all Control interval sizes supported by the VSAM BLDVRP macro, to avoid wasted space!
- Move LSR Buffers to 64-bit storage, to free up EDSA
- After the investment made in VSAM RLS, is IBM even willing to reinvest in going back to add 64-bit buffers into older code set containing LSR pools?

Wish List

- Allow CICS to pick a LSR pool dynamically, for example in the range of 100 to 200
- Allow specification of # of strings, and let CICS select index and data buffers based on a Minimum, Maximum, or average specification. CICS would then access a bit more information from the VSAM catalog, so calculate the number of High level index records for example. The number of strings plus High level index records becomes the average setting. Maximum would be the total # or index records.
- Come to Boston Share for my update on this topic!

#SHAREorg

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CICS Loader Domain LSR Pools

Larry Lawler
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Thursday February 8th, 2013 - 3:00 PM-4:00 PM
Session Number **12447**

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