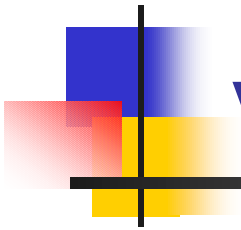
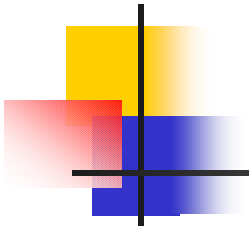


# VSE/ESA GETVIS Tuning

WAVV 2002

Pete Clark



# Documentation

- VSE/ESA Collection CDROM
- Guide to System Functions SC33-6611
- System Control Statements SC33-6613
- Administration SC33-6605

CPR Systems

# The Critical Componets

- With VSE/ESA the only constrained storage areas are:
  - 24 Bit Supervisor, System SVA and GETVIS
  - 24 Bit Partition Storage (program and GETVIS), Specifically CICS 24 Bit DSA
- When running with minimal 24 Bit GETVIS storage re-IPL or re-start partition on a frequent basis. (Daily)

CPR Systems

# Definitions

- SVA - Shared Virtual Area
  - 24 Bit
  - 31 Bit
- SDL - System Directory List
  - Example - SET SDL (during IPL, BG only)
- VLA - Virtual Library Area
  - 24 Bit User and System
  - 31 Bit User and System
- DSA – CICS Dynamic Storage Area 24/32

CPR Systems

# FAQS MAP +PF4

```
 FAQMENM1.4      ** BIM-FAQS/ASO Online V5.0A  **       ID=A1110222.PET
===>
              ** BIM-FAQS/ASO -- SYSTEM MAP Display **

            ----------------real----------------   -------------virtual---------------
  area       lo-addr     hi-addr    r-size     lo-addr     hi-addr    v-size
  SP        00000000  00095FFF     600K  00000000  000A5FFF     664K  $$A$SUPE
  SD        00096000 000A5FFF      64K                                    SD
  SVA                                          000A6000  005FFFFF    5480K SVA
  SGV                                          00327000  005D4FFF    2744K SGV
  VP        005F0000  005FFFFF     64K                                    VP
  SHR       00600000  005FFFFF      0K                                    SHR
  PRV                                          00600000  023FFFFF   30720K  PRV
  SVA HI                                       02400000  02DFFFFF   10240K  SVA HI
  VLB HI                                       02400000  025D8FFF    1892K  VLB HI
  SGV HI                                       025D9000 02DFFFFF    8348K  SGV HI
  TOTAL                                                            409600K
  USED                                                               1600K
```

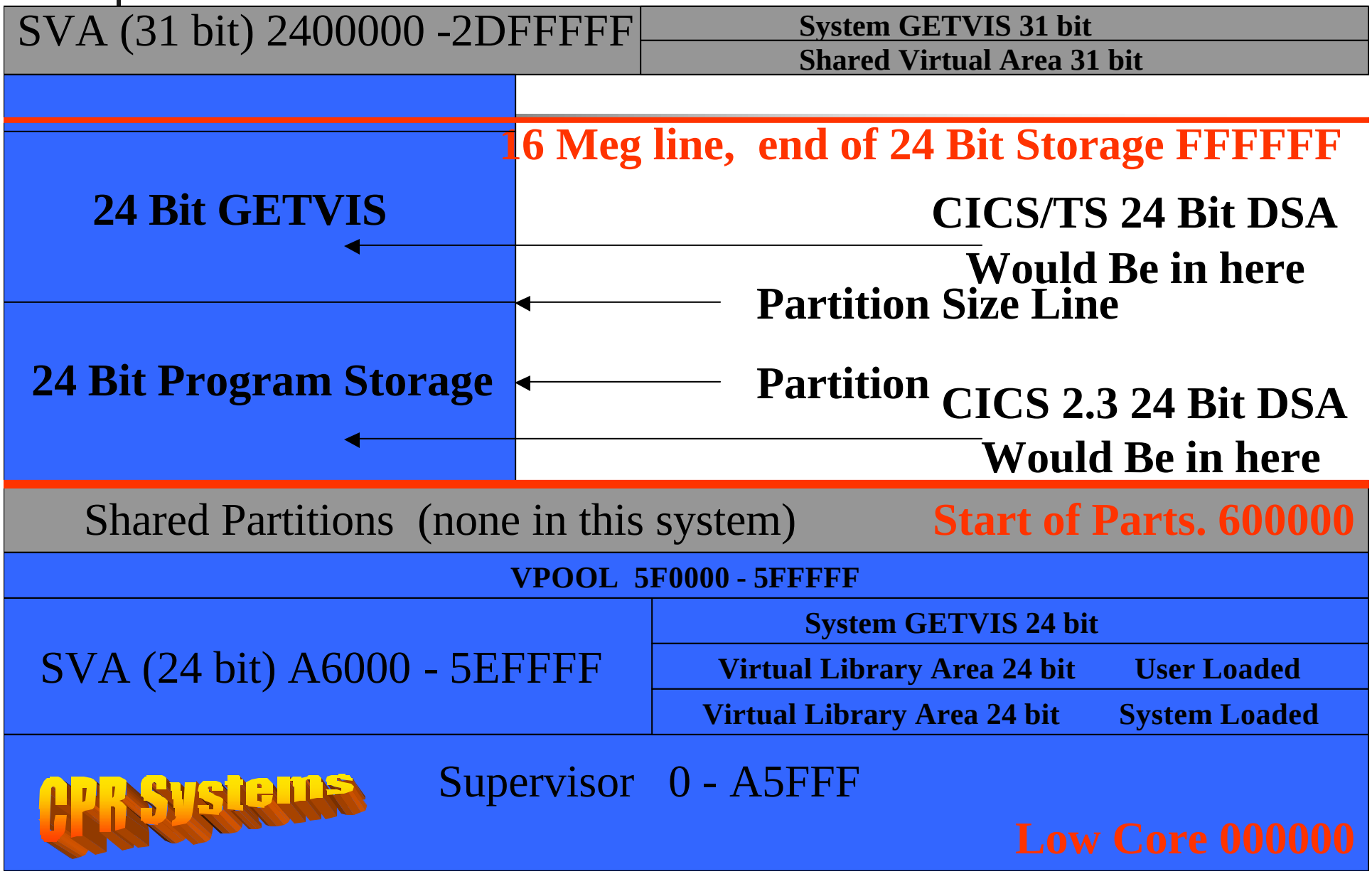
# Other Display Resources

- MAP
- GETVIS xxx
- Will supply some, but not all, of the same information as the FAQS command

CPR Systems

# Blue Indicates 24 Bit Tunable Area

SVA PSIZE=(1664K,2M),SDL=400,GETVIS=(1600K,6M)



# SVA Tuning Objectives

- What?
  - Place the most highly used SVA eligible programs in the SVA
  - Conversely, remove little used programs
- Why?
  - So that repeated SVC Loads of the phases are not required, improving performance
  - Conserve valuable Systems GETVIS storage

CPR Systems

# SVA Tuning Objectives

- How?
  - By understanding what your Systems requirements are
  - By collecting statistics on SVA program use
  - By altering various $SVAxxxx phases
  - And then Re-IPLing the system

CPR Systems

# SVA Load Process

- AT IPL some systems required Phases are loaded automatically by VSE ($$A$SVA)
- Within the IPL procedure a SET SDL command loads individual additional Phases
- The SET SDL command may also include load list that are also loaded
- After IPL additional phases can be loaded by issuing another SET SDL  in BG

CPR Systems

# SVA General Information

- If a relocatable phase is also designed as a re-enterable phase, it is eligible to be loaded into the shared virtual area (SVA)
- When SVA eligible phases are eliminated from or not put into the SVA they end up **USUALLY** being loaded in the partition during execution
- SVA Entries loaded MOVE option are moved to the appropriate area for execution

CPR Systems

# SVA General Information

- If an SVA Eligible Phase is accessed/loaded 100's or 1000's of time a day it should be SVA resident???
  - Yes if loaded - batch or online and production (not test)
  - Maybe Yes if accessed by multiple partitions (single copy)
  - Which storage is most important to you at the time, System GETVIS or Partition GETVIS?

CPR Systems

# SVA General Information

- RMODE=24  loads into SVA 24 Bit VLA
- RMODE=ANY loads into SVA 31 Bit VLA first.
  - If the space there is not sufficient, VSE/ESA stores it in SVA 24 Bit VLA, if available.
- 3rd Party Vendor Systems Software products also have SVA requirements
  - Sort, Disk/Tape Managers, Console Managers, Compressors, Buffering Products, etc.

CPR Systems

# Output of a LIBR LISTDIR Command

```
 M E M B E R      CREATION   LAST      BYTES     LIBR CONT SVA  A- R-
NAME     TYPE     DATE      UPDATE   RECORDS    BLKS STOR ELIG MODE
-------------------------------------------------------------------
xxxxxxxx PHASE    98-12-21   -  -       128 B      1 YES YES  31 ANY
xxxxxxx  PHASE    99-02-21   -  -    214184 B    217  NO YES ANY  24
xxxxxxxx PHASE    99-02-21 99-02-22    1204 B      2 YES YES  24  24
xxxxxxx  PHASE    99-02-21   -  -      4312 B      5 YES YES  31 ANY
xxxxxxx  PHASE    99-02-21   -  -     18840 B     20  NO  NO  24  24
```

CPR Systems

# $$A$SVA System Load List

- The VSE System load list
- Required in the directory chain at IPL
  - or IPL Halted
- Generally not considered tailor-able by user
- Tailor-able by the user, but not documented
- Use the list function of LIBR to view in object and create source

CPR Systems

# $$A$SVA LIBR List Output

```
MEMBER=$$A$SVA.PHASE    SUBLIBRARY=IJSYSRS.SYSLIB    DATE: 99-07-09
                                                       TIME: 13:42
------------------------------------------   ------------------
000000  5BE2E5C1 C3E2C340 5BE2E5C1 C2C1D440   *$SVACSC $SVABAM *
000010  5BE2E5C1 E5E2C1D4 5BE2E5C1 F0F0F0F0   *$SVAVSAM$SVA0000*
000020  615C                                 */*               *
```

- Each name refers to a phase that is an SVA load list.
- Each phase must be in the as defined library search chain - recommend IJSYSRS.SYSLIB

# $$A$SVA Source

```
// OPTION CATAL
 PHASE $$A$SVA,*,SVA
// EXEC ASMA90
         PRINT NOGEN
         DC    CL8'$SVACSC '
         DC    CL8'$SVABAM '
         DC    CL8'$SVAVSAM'
         DC    CL8'$SVA0000'
         DC    CL2'/*'                  EOF
         END
/*
// EXEC LNKEDT,PARM='MSHP'
```

# SVA Load List Shipped in IPL Procedures (current)

- // EXEC PROC=LIBSDL
- SET SDL
- LIST=$SVAVTAM
- LIST=$SVACICS
- LIST=$SVAREXX
- LIST=$SVAASMA
- /*

CPR Systems

# $SVAxxxx Phase List

- $SVA0000 - User
- $SVA3800 - 3800 printer supprt
- $SVAASMA - Assembler
- $SVABAM - Sequential Access Method DI,PR,SD, etc
- $SVACICS - CICS
- $SVACSC - System Control
- $SVADLI - DL/I

CPR Systems

# $SVAxxxx Phases

- $SVAICCF - ICCF
- $SVALOG - Access Control Logging & Reporting
- $SVAOCCF - Operator Communication Control Facility
- $SVARCF - CICS Report Controller
- $SVAREXX - REXX

CPR Systems

# $SVAxxxx phases

- $SVASA - VSE System Phases
- $SVASEC - Security
- $SVAUSER - User
- $SVAVSAM - VSAM
- $SVAVTAM - VTAM

CPR Systems

# Create $SVAxxxx Example

```
// OPTION CATAL
// EXEC ASMA90....
     TITLE '$SVAxxxx - LOAD LIST EXAMPLE'
     SVALLIST $SVAxxxx,(phase01),(phase02),(phase03),                C
               (phase04),(phase05),(phase06),(phase07),              C
               (phase08),   ...   ,(phasenn)
END
/*
// EXEC LNKEDT,PARM='MSHP'
```

CPR Systems

# $SVAxxxx Source Example

```
// OPTION CATAL
 PHASE $SVAxxxx,*
// EXEC ASSEMBLY
         PRINT NOGEN
         DC    CL4'SVAL‘                        Header
         DC    CL8‘phasenme',XL4'0‘              Entry
         ....................
         DC    CL2'/*'                          Trailor
         END
/*
// EXEC LNKEDT,PARM='MSHP'
```

CPR Systems

# $SVA0000 Source Example

```
// OPTION CATAL
 PHASE $SVA0000,*,SVA
// EXEC ASMA90
         PRINT NOGEN
         DC    CL4'SVAL'                HEADER
         DC    CL8'$JOBEX00',XL4'0'     1ST JOBEXIT
         DC    CL8'$JOBEX02',XL4'0'     3RD JOBEXIT
*        DC    CL8'$JOBEX04',XL4'0'     5TH JOBEXIT
         DC    CL8'$JOBEX06',XL4'0'     7TH JOBEXIT
         DC    CL8'$JOBEX08',XL4'0'     9TH JOBEXIT
         DC    CL2'/*'                  EOF
         END
/*
// EXEC LNKEDT,PARM='MSHP'
```

# SVALLIST Macro

```
// OPTION CATAL
// EXEC ASMA90....
     TITLE '$SVAxxxx - LOAD LIST EXAMPLE'
     SVALLIST $SVAxxxx,(phase01),(phase02),                    C
           (phase04),(phase05),(phase06),                      C
           (phase08),   ...    ,(phasenn)
     END
/*
// EXEC LNKEDT,PARM='MSHP‘
/*
```

# $SVA Tailoring

- $SVA Phases or Phase list may be included in:
  - $SVASVA - System SVA Load List
  - $SVA0000 - SVA Load List
  - IPL/JCL Startup Procedures as Set SDL
  - Vendor Program Startup facilities as Set SDL

CPR Systems

# SVA Move Mode Transients

- Using a Monitor and  get use counts
- Then remove those that get few accesses per day
- Include those that get hundreds of accesses per day
- Usually in IPL proc SET SDL procedure as
  - See next page

CPR Systems

# Set SDL command (BG Only)

- SET SDL
- CPRPROG1,SVA
- CPRPROG2,SVA
- CPRPROG3,SVA
- CPRPROG4,SVA
- $$BATTNA,MOVE
- /*

CPR Systems

# CICS/VSE Storage Tailoring

- VSAM Local Shared Resources LSRPOOL.
- Dynamic file opens.
- TCT Auto install.
- Remove unused table entries (all Tables)
- COBOL
  - Restricted verbs.
  - CBL options.
  - Application vendor programs.
- RES = NO

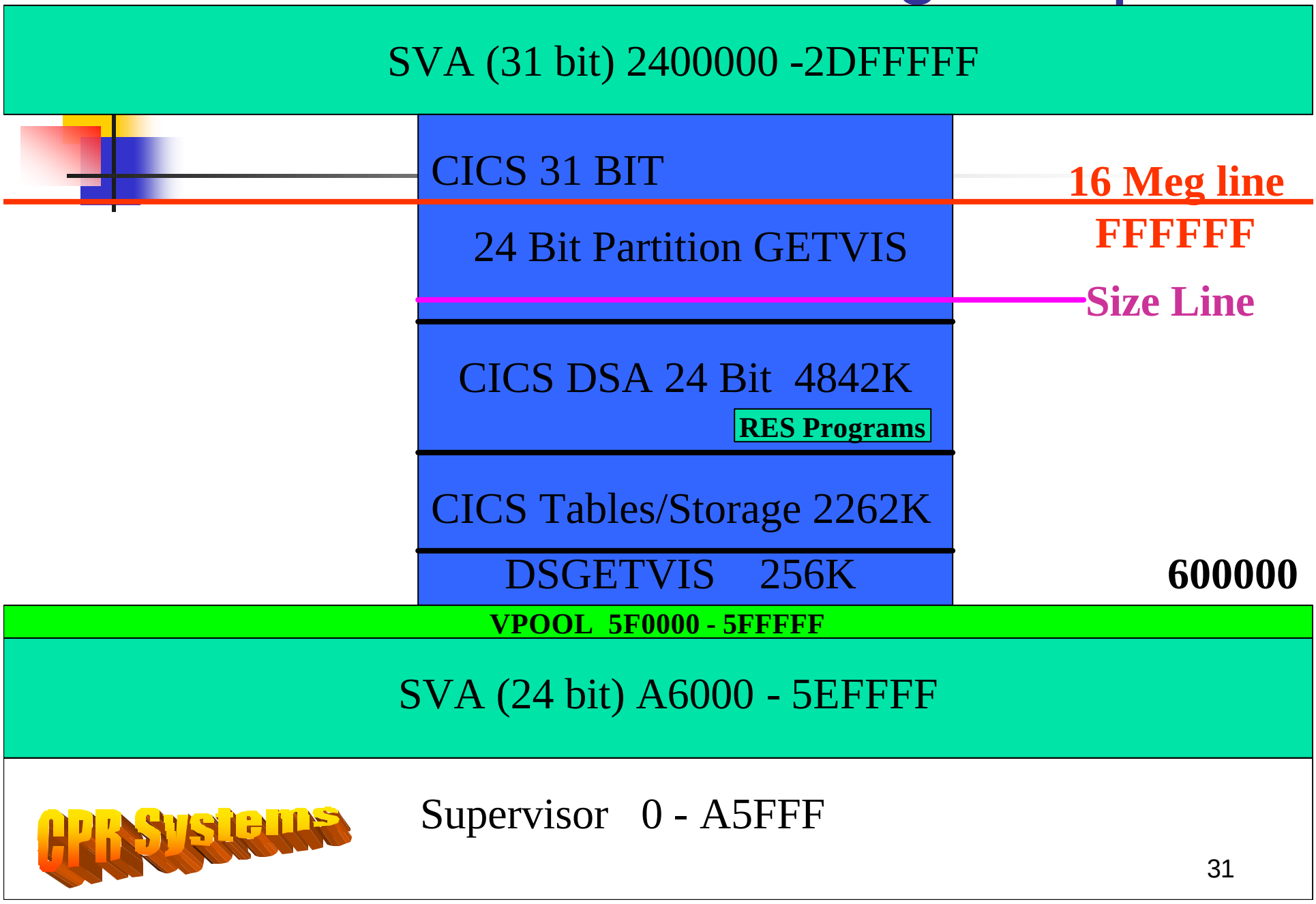
CPR Systems

# CICS/VSE Storage Tailoring

- Define 31 Bit Partition storage for CICS/VSAM to use, so it will not load 31 Bit modules/Code into 24 Bit.
- Remember DSA is what is left of partition program storage after CICS initiates
- Re-initiate on a periodic basis.

CPR Systems

# CICS/VSE Partition Storage Map



# CICS/VSE Storage Display

```
MAP CLASS=K
 CLASS    LO-ADDR   SP-SIZE   LO-ADDR   HI-ADDR    V-SIZE    GETVIS
 K D     00600000      256K  00640000  021FFFFF      384K    28032K

// EXEC DFHSIP,SIZE=7104K,DSPACE=3M
SIT=0A
$END
/*

K1 0047 DFH1922 - SUBPOOL SIZE BEFORE LOADING RESIDENT PROGRAMS IS  4842K
K1 0047 DFH1920 - SUBPOOL SIZE AFTER LOADING RESIDENT PROGRAMS  4548K
K1 0047 DFH1921 - SUBPOOL SIZE AVAILABLE FOR THIS START-UP IS  4028K
```

CPR Systems

# CICS/TS Storage View

- AR 0015 SPACE AREA V-SIZE GETVIS V-ADDR UNUSED NAME
- AR 0015 2 F2 V 2048K 49152K 500000 0K CICSICCF

- F2 0002 DFHSM0122I DBDCCICS Limit of DSA storage below 16MB is 5120K
- F2 0002 DFHSM0123I DBDCCICS Limit of DSA storage above 16MB is 25M.

- NOTE: DSA 24 Bit seems to be in 24 Bit GETVIS

# CICS/TS MAP F2

```
AR 0015  PARTITION: F2       SPACE-GETVIS.....:  (N/A)
AR 0015  SPACE....: 2        ALLOC (VIRTUAL)...: 51200K  ADDR: 500000
AR 0015  STATUS...: VIRTUAL    SIZE............:  2048K
AR 0015  POWER-JOB: CICSICCF    EXEC-SIZE......:     4K
AR 0015  JOBNUMBER: 348        GETVIS..........: 49152K
AR 0015  JOBNAME..: CICSICCF    EXEC-GETVIS....: 51196K  ADDR: 501000
AR 0015  PHASE....: DFHSIP
AR 0015                      PFIX(BELOW)-LIMIT :   144K
AR 0015                                -ACTUAL:    28K
AR 0015                      PFIX(ABOVE)-LIMIT :     0K
AR 0015                                -ACTUAL:     0K
```

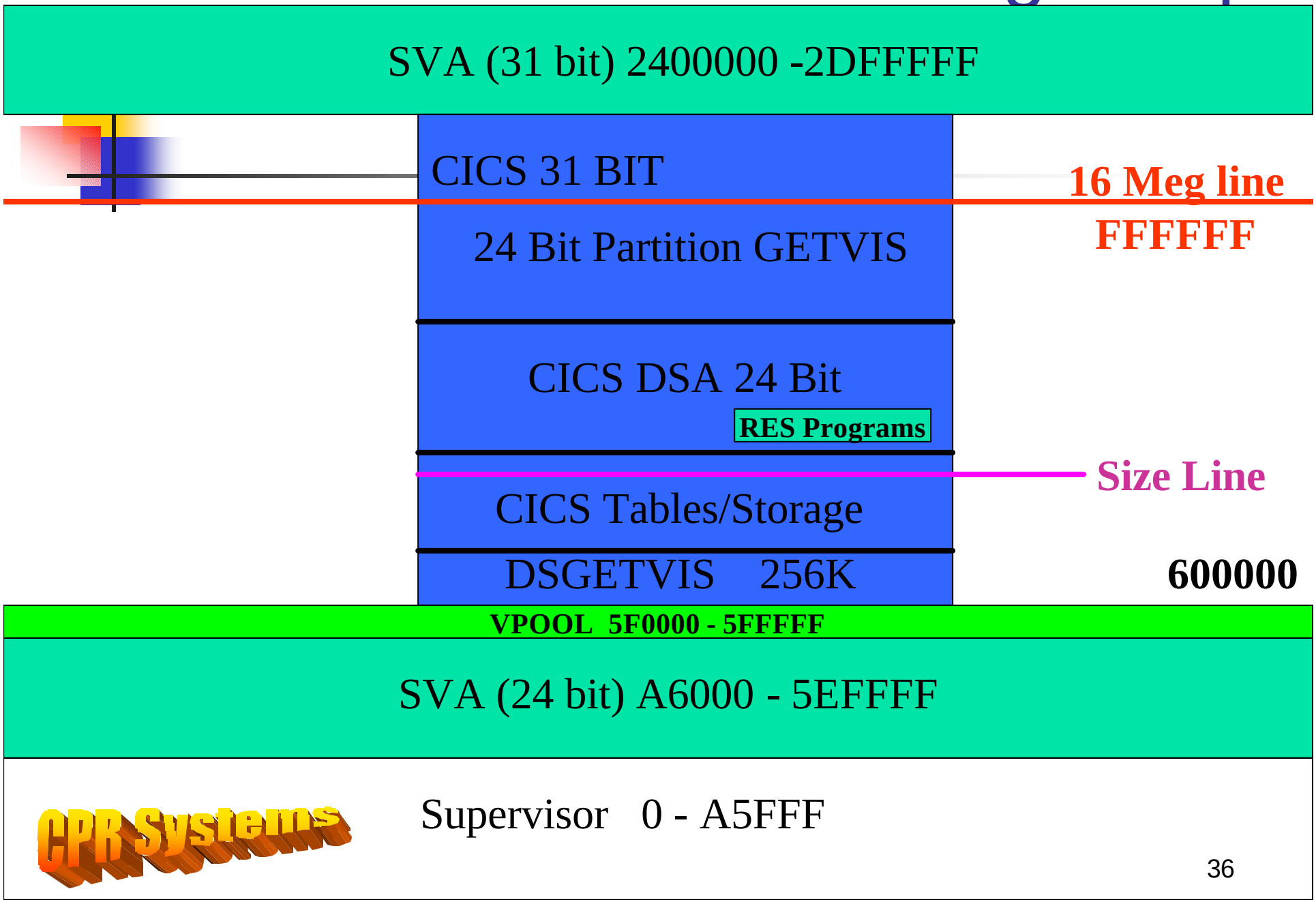
CPR Systems

# CICS/TS IUI Display- Path 364

```
 IESADMDCST                DISPLAY CICS TS STORAGE          Time:  13:39:51
   Applid: DBDCCICS    Sysid: CIC1    Jobname: CICSICCF    CICS TS Level:
111
 Storage Protection ..... INACTIVE       Reentrant Programs .....
PROTECT
                                          CICS Trace Table size..       80
 Extended DSA:                        (All sizes in kbyte)    LIMIT   25600
                                     ECDSA   EUDSA   ESDSA   ERDSA  Totals
   Current DSA Size .............     2048    1024    1024    7168   11264
   Current DSA used .............     2012      64      20    6460    8556
  *Peak DSA used ................     2020      64      20    6460
   Peak DSA Size ................     2048    1024    1024    7168   11264
   Largest free area/Free Storage    0.89    1.00    1.00    0.97
   Times short-on-storage (SOS)..       0       0       0       0       0

 DSA:                                                        LIMIT    5120
                                      CDSA    UDSA    SDSA    RDSA  Totals
   Current DSA Size .............      512     256     256     512    1536
   Current DSA used .............      236       8     212     416     872
  *Peak DSA used ................      292      36     212     416
   Peak DSA Size ................      512     256     256     512    1536
   Largest free area/Free Storage.    0.81    1.00    1.00    0.83
   Times short-on-storage (SOS)...       0       0       0       0       0
 PF1=HELP      2=REFRESH   3=END       4=RETURN
```

# CICS/TS Partition Storage Map



# SVA Tuning, Worth the Effort?

- 24 Bit Storage is still managed resource
- 24 Bit Systems GETVIS is still a finite resource
- Placing proper phases into memory (and removing those not used) still yields significant performance benefits
- Managing 31 Bit? Just be sure you have enough.

CPR Systems