Session: E19

CICS TS for VSE/ESA Hot Topics

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CICS TS for VSE/ESA Hot Topics

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Objectives

- Provide you with useful CICS tips you can take home and use

- Get you to share your tips with the rest of us

```
Note: The topics covered in this presentation
assume no vendor products are being used, just a
standard IBM VSE and CICS TS system
```

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CICS Startup and Shutdown

- **CICS startup recommendations**
  - Use START=AUTO in CICS SIT or startup JCL overrides
    - Type of startup based on last CICS shutdown
      - WARM start if normal CICS shutdown
      - Emergency restart if not normal CICS shutdown
        - CEMT PERFORM SHUTDOWN IMMEDIATE is not a normal shutdown
  - Use START=COLD in CICS SIT or startup JCL overrides only if necessary

CICS Startup and Shutdown

- ■ **CICS startup recommendations…**
  - ❑ COLD start
    - ■ Forced if CICS system catalog datasets (DFHGCD and DFHLCD) are redefined
      - ❑ Skeleton SKCICCLD in ICCF library 59
      - ❑ May also need to redefine restart dataset (DFHRSD)
    - ■ Cold starts all resources in SIT
    - ■ Loads resource definitions from CSD groups define in lists in SIT GRPLIST parameter

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CICS Startup and Shutdown

- **CICS startup recommendations…**
  - WARM start
    - After CEMT PERFORM SHUTDOWN (NORMAL) and START=AUTO startup
    - Warm starts all resources in SIT except those with COLD option specified
    - Loads resource definitions defined when CICS was last running from system catalog DFHGCD
    - Startup override NEWSIT=YES
      - Uses all SIT settings except FCT, CSDxxxx and GRPLIST parameters

CICS Startup and Shutdown

- ■ **CICS startup recommendations…**
  - ❑ Emergency restart
    - ■ After CEMT PERFORM SHUTDOWN IMMEDIATE or CICS crash and START=AUTO startup
    - ■ Backout and recovery of inflight tasks
      - ❑ Performed using system log and restart dataset (DFHRSD)
    - ■ Loads resource definitions defined when CICS was last running from system catalog DFHGCD

CICS Startup and Shutdown

- ## CICS startup recommendations…
  - ### Global catalog (DFHGCD)
    - #### Journal status
      - Ignored if JSTATUS=RESET in startup overrides
      - Taken from DFHJACD for automatic archive journals
    - #### Installed RDO resources
    - #### Restart control record
    - #### Warm keypoint information
    - #### Heavily used during warm start and shutdown
      - Specify BUFNI=nn and BUFND=nn on DLBL

CICS Startup and Shutdown

- ## CICS startup recommendations…
  - ### Local catalog (DFHLCD)
    - CICS TS domain parameter records and status information
    - Formatted with DFHCCUTL utility
  - ### If one system catalog dataset is redefined, both must be

CICS Startup and Shutdown

- **CICS startup recommendations…**
  - Define parameters for each LSRPOOL
    - KEYLEN – maximum keylength for files in pool
    - STRNO – number of strings for pool
    - Buffers – number and size of index and data buffers
  - Don't let CICS calculate LSR pool values
    - Delays CICS startup
      - SHOWCB issued for each file
      - Extra I/O to VSAM catalog to determine LSR pool parameter values

CICS Startup and Shutdown...

- **How can I ensure CICS TS shuts down?**
  - Issue CEMT P SHUT IMMEDIATE
    - Generally a very bad idea!
  - Manually try to find and terminate task(s)
    - Can take a long time
    - Operator training?
  - SIT terminal shutdown limit
  - Write program to find and fix hung tasks
    - Time, effort, testing, skills available, etc.
  - Implement sample shutdown program DFH$SDAP

CICS Startup and Shutdown...

- ## SIT terminal shutdown limit
  - Helps ensure completion of normal shutdown
    - VTAM terminals and ISC LU6.1 and LU6.2 sessions
  - TCSWAIT=mm
    - Time CICS waits before taking terminal shutdown actions
    - Facility disabled if TCSWAIT=NO|NONE|0
  - TCSACTN=action
    - Action CICS takes after TCSWAIT time expires
    - NONE - no action, message issued if terminal hung
    - UNBIND – force close all hung terminals
    - FORCE – force close VTAM ACB

CICS Startup and Shutdown...

- ## DFH$SDAP implementation
  - Customize DFH$SDAP if needed
    - Change delay time - default is 10 seconds
  - Translate and compile DFH$SDAP
    - Assembler source in DFH$SDAP.A in PRD1.BASE
  - Define transaction SDAP
  - Define program DFH$SDAP
  - Add PLT shutdown table entry for DFH$SDAP
    - In Phase 1 (before DFHDELIM)

CICS Startup and Shutdown...

- ## General logic flow of DFH$SDAP
  - ### Phase 0 (called from PLTSD)
    - Check that system shutdown is in progress
    - START transaction SDAP with 10 second delay
  - ### Phase 1
    - PURGE all tasks except shutdown and itself
    - START transaction SDAP with 10 second delay
  - ### Phase 2
    - FORCEPURGE all tasks except shutdown and itself
    - START transaction SDAP with 10 second delay

CICS Startup and Shutdown...

- ## General logic flow of DFH$SDAP...
  - Phase 3
    - FORCECLOSE VTAM
    - START transaction SDAP with 10 second delay
  - Phase 4
    - PERFORM SHUTDOWN IMMEDIATE
    - End SDAP task

- ## Console messages to keep operator informed of progress

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Resource Definition

- **CICS system definition file (CSD) is** *mandatory*
  - *Required* for transactions (PCT) and transaction classes
  - *Required for* VTAM terminals, MRO/ISC connections and sessions, VSE console terminals (TCT)
  - *Required* for programs and mapsets (PPT)
    - Or use new Program Autoinstall

Resource Definition…

- Use of CICS CSD is optional but recommended for FCT definitions:
    - CEDA DEFINE FILE
    - CEDA DEFINE LSRPOOL
        - Index and data buffers can be defined separately
    - Can still use FCT macro table
        - DFHFCT TYPE=FILE for files
        - DFHFCT TYPE=SHRCTL for LSR pools
            - One set of buffer definitions for index and data buffers
        - *Must* use macro table for DA files

Resource Definition…

- **Installing files defined in the CSD**
  - If the file already exists in the running system
    - CEMT SET FILE(filename) CLOSED DISABLED
  - Install the file definition
    - CEDA INSTALL GROUP(groupname) with the file definition
- **Installing LSRPOOLS defined in the CSD**
  - LSRPOOL is created when first file using the pool is opened
  - LSRPOOL is not deleted until all files in the pool are closed

Resource Definition...

CEDA DEFINE FILE

```
 DEFINE FILE(TESTFIL)        GROUP(TEST)        LSRPOOL(6)
 OVERTYPE TO MODIFY                                      CICS RELEASE = 0410
  CEDA  DEFine File( TESTFIL )
   File            : TESTFIL
   Group           : TEST
   DEScription  ==>
  VSAM PARAMETERS
   DSNAme       ==>
   Password     ==>                      PASSWORD NOT SPECIFIED
   Lsrpoolid    ==> 06                   1-15 | None
   Catname      ==>
   DSNSharing   ==> Noreqs               Noreqs | Allreqs | Modifyreqs
   STRings      ==> 005                  1-255
   Nsrgroup     ==>
   SHr4access   ==> Key                  Key | Rba
  REMOTE ATTRIBUTES
   REMOTESystem ==>
   REMOTEName   ==>
   RECORDSize   ==>                      1-32767
 + Keylength    ==>                      1-255
   I New group TEST created.
                                         SYSID=CIC1 APPLID=DBDCCICS
  DEFINE SUCCESSFUL                          TIME:  17.06.43  DATE: 00.117
 PF 1 HELP 2 COM 3 END          6 CRSR 7 SBH 8 SFH 9 MSG 10 SB 11 SF 12 CNCL
```
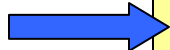
Resource Definition…

CEDA DEFINE FILE...

```
 DEFINE FILE(TESTFIL)       GROUP(TEST)       LSRPOOL(6)
 OVERTYPE TO MODIFY                                       CICS RELEASE = 0410
  CEDA  DEFine File( TESTFIL )
+ INITIAL STATUS
   STAtus        ==> Enabled            Enabled | Disabled | Unenabled
   Opentime      ==> Firstref           Firstref | Startup
  BUFFERS
   DAtabuffers  ==> 00002               2-32767
   Indexbuffers ==> 00001               1-32767
  DATATABLE PARAMETERS
   Table         ==> No                 No | Cics | User
   Maxnumrecs    ==>                     16-16777215
  DATA FORMAT
   RECORDFormat ==> V                   V | F
  OPERATIONS
   Add           ==> No                 No | Yes
   Browse        ==> No                 No | Yes
   DELete        ==> No                 No | Yes
   REAd          ==> Yes                Yes | No
+  Update        ==> No                 No | Yes
   I New group TEST created.
                                            SYSID=CIC1 APPLID=DBDCCICS

 PF 1 HELP 2 COM 3 END          6 CRSR 7 SBH 8 SFH 9 MSG 10 SB 11 SF 12 CNCL
```
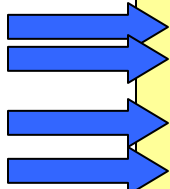
Resource Definition…

CEDA DEFINE LSRPOOL

```
DEFINE L(TESTPOOL) G(TEST) L(6) DATA4K(5) DATA8K(3) DATA16K(6) INDEX512(10)I
OVERTYPE TO MODIFY                                      CICS RELEASE = 0410
 CEDA  DEFine Lsrpool( TESTPOOL )
  Lsrpool        : TESTPOOL
  Group          : TEST
  DEscription  ==>
  Lsrpoolid    ==> 06                    1-15
  Maxkeylength ==> 030                       0-255
  SHarelimit   ==>                       1-100
  STrings      ==> 015                       1-255
 DATA BUFFERS
  DATA512      ==>                       3-32767
  DATA1K       ==>                       3-32767
  DATA2K       ==>                       3-32767
  DATA4k       ==> 00005                 3-32767
  DATA8k       ==> 00003                 3-32767
  DATA12k      ==>                       3-32767
  DATA16k      ==> 00006                 3-32767
  DATA20k      ==>                       3-32767
+ DATA24k      ==>                       3-32767

                                        SYSID=CIC1 APPLID=DBDCCICS

PF 1 HELP 2 COM 3 END               6 CRSR 7 SBH 8 SFH 9 MSG 10 SB 11 SF 12 CNCL
```
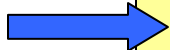
Resource Definition…

CEDA DEFINE LSRPOOL...

```
 DEFINE L(TESTPOOL) G(TEST) L(6) DATA4K(5) DATA8K(3) DATA16K(6) INDEX512(10)I
 OVERTYPE TO MODIFY                                          CICS RELEASE = 0410
  CEDA  DEFine Lsrpool( TESTPOOL )
+  DATA28k        ==>                    3-32767
   DATA32k        ==>                    3-32767
   INDEX BUFFERS
   INDEX512       ==> 00010              3-32767
   INDEX1K        ==> 00008              3-32767
   INDEX2K        ==> 00003              3-32767
   INDEX4k        ==>                    3-32767
   INDEX8k        ==>                    3-32767
   INDEX12k       ==>                    3-32767
   INDEX16k       ==>                    3-32767
   INDEX20k       ==>                    3-32767
   INDEX24k       ==>                    3-32767
   INDEX28k       ==>                    3-32767
   INDEX32k       ==>                    3-32767




                                          SYSID=CIC1 APPLID=DBDCCICS

 PF 1 HELP 2 COM 3 END           6 CRSR 7 SBH 8 SFH 9 MSG 10 SB 11 SF 12 CNCL
```

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Resource Definition...

Batch Define (DFHCSDUP)

```
// JOB DEFGROUP    DEFINE GROUP DEMOGRP
// EXEC DFHCSDUP
DELETE G(DEMOGRP)
DEFINE TRANS(TEST)          GROUP(DEMOGRP)      PROGRAM(TESTPROG)
       TWA(200)             TASKDATALOC(ANY)
DEFINE PROGRAM(TESTPROG)    GROUP(DEMOGRP)      LANG(COBOL)
       DATA(ANY)
DEFINE FILE(TESTFIL)        GROUP(DEMOGRP)      LSRPOOL(10)
       STRINGS(5)           DA(6)               IN(5)
       RECORDF(F)           BROWSE(YES)         UPDATE(YES)
DEFINE LSRPOOL(TESTPOOL)    GROUP(TEST)         LSRPOOLID(10)
       DATA4K(5)            DATA8K(3)           DATA16K(6)
       INDEX512(10)         INDEX1K(8)          INDEX2K(3)
       MAXKEYLENGTH(30)     STRINGS(15)
/*
/&
```

Resource Definition…

Extracting Definitions (DFHCSDUP)

```
// JOB EXTGROUP    EXTRACT GROUP DEMOGRP
// DLBL CBDOUT,'CICS.EXTRACT.FILE',0,VSAM,CAT=VSESPUC,          x
           RECSIZE=80,DISP=(NEW,KEEP),RECORDS=(500,100)
// EXEC DFHCSDUP
EXTRACT GROUP(DEMOGRP) USERPROGRAM(DFH0CBDC) OBJECTS
/*
/&

NOTE:    Sample COBOL user program DFH0CBDC in PRD1.BASE must be
         compiled
```

Resource Definition…

- Define user groups in separate group list
  - Group list: a list of groups that CICS installs on a CICS <u>COLD</u> start
    - Specified in SIT GRPLIST=list parameter
      - Up to 4 lists can be specified during CICS TS startup
      - GRPLIST *not* used on WARM or EMER restart
    - IBM supplied definitions in VSELIST, VSELST2, and DFHLIST
  - Duplicate definition hierarchy
    - RDO definitions override duplicates in macro table
    - Last group in last list processed overrides duplicates in earlier groups

31-Bit Exploitation CICS Applications

- **How to control 31-bit DSA usage**
  - Transaction definition
  - Program definition
  - EXEC CICS GETMAIN requests
  - Program's addressing mode (AMODE) and residency mode (RMODE)
  - SIT options

31-Bit Exploitation CICS Applications

CICS 31-bit Extended DSA (EDSA)

COMMAREA

CICS 24-bit DSA (DSA)

COMMAREA

Task Storage

TCA, TWA, EIB, etc.

Working Storage

GETMAINed Storage

EXEC CICS SET(address) storage

TCT User Area

BMS mapset

RMODE(24)

Application program

AMODE(24), RMODE(24)

CICS TS DFHSIP (4K)
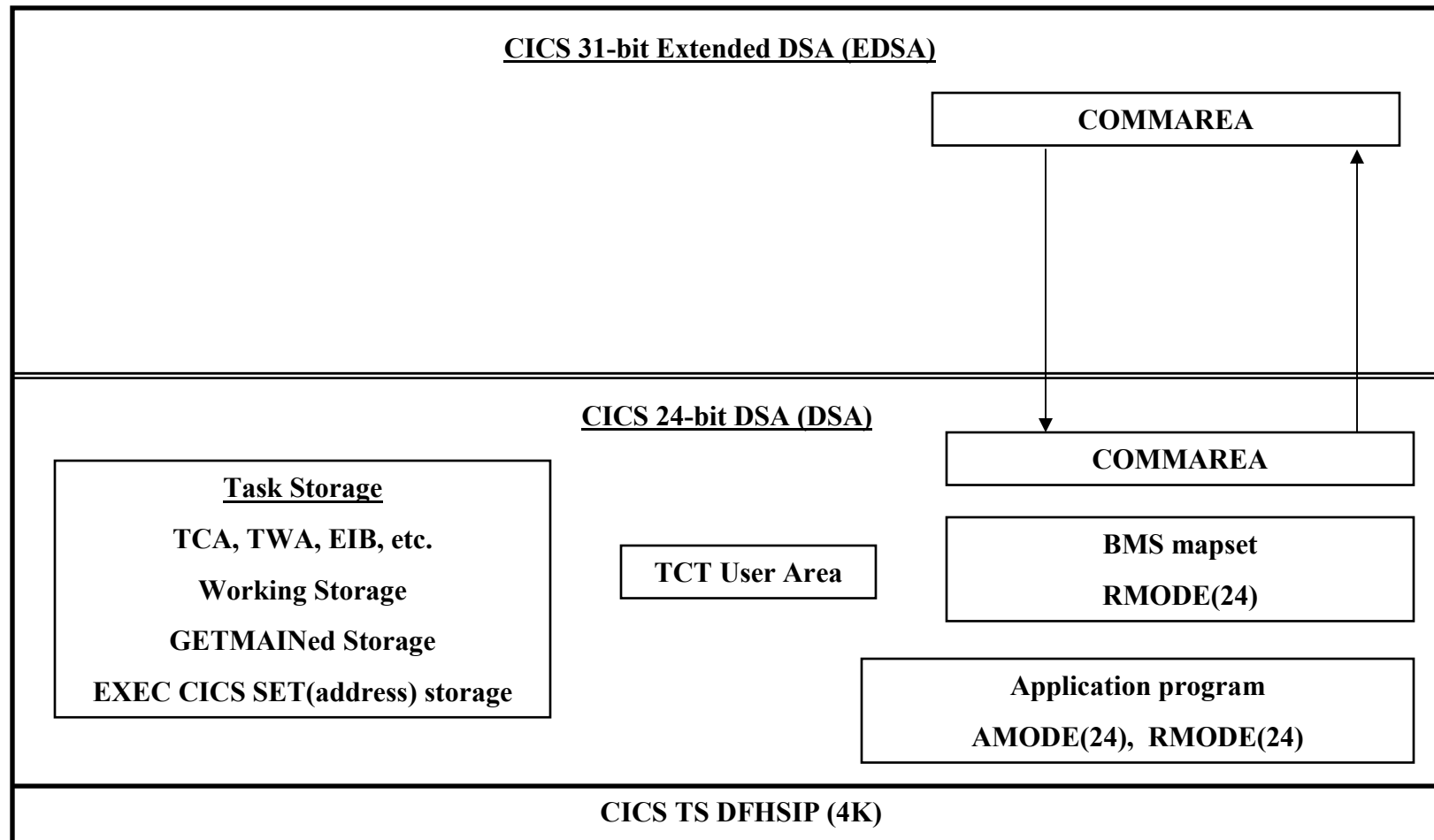
CICS Transaction Server Partition – 24-bit application storage layout

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31-Bit Exploitation CICS Applications

- **Controlling DSA usage with transaction definition parameters**
  - Controls DSA used for task lifetime storage
    - TASKDATALOC(value)
      - <u>BELOW</u>   UDSA or CDSA
      - ANY   EUDSA, ECDSA, UDSA, or CDSA
        - Program must be linked AMODE(31)
    - TASKDATAKEY(value)
      - <u>USER</u>   UDSA or EUDSA
      - CICS   CDSA or ECDSA

31-Bit Exploitation CICS Applications

- **Controlling DSA usage with program definition parameters**
  - Controls DSA used for EXEC commands with SET option
    - DATALOCATION(value)
      - <u>BELOW</u>   UDSA or CDSA
      - ANY   EUDSA, ECDSA UDSA, or CDSA
        - Program must be linked AMODE(31)

31-Bit Exploitation CICS Applications

- **Controlling DSA usage with program definition parameters …**
  - Controls DSA used for loading non-reentrant programs
    - EXECKEY(value) and program linked RMODE(24)
      - USER   SDSA (24-bit)
      - CICS   CDSA (24-bit)
    - EXECKEY(value) and program linked RMODE(ANY)
      - USER   ESDSA (31-bit)
      - CICS   ECDSA (31-bit)

31-Bit Exploitation CICS Applications

- **Controlling DSA usage with program definition parameters …**
  - Controls DSA used for loading reentrant programs
    - Program linked RMODE(24) and SVA-eligible
      - RDSA (24-bit)
    - Program linked RMODE(ANY) and SVA-eligible
      - ERDSA (31-bit)

31-Bit Exploitation CICS Applications

- **Controlling DSA usage by applications**
  - EXEC CICS GETMAIN options
    - Requested storage acquired in 24-bit DSA
      - LENGTH option
      - FLENGTH BELOW option
      - FLENGTH option in program linked AMODE(24)
    - Requested storage acquired in 31-bit DSA
      - FLENGTH option in program linked AMODE(31)

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31-Bit Exploitation CICS Applications

- **Controlling DSA usage by application request**
  - ❑ EXEC CICS GETMAIN options
    - Override TASKDATAKEY
      - ❑ USERDATAKEY without SHARED option
        - UDSA (24-bit) or EUDSA (31-bit)
      - ❑ USERDATAKEY + SHARED option
        - SDSA (24-bit) or ESDSA (31-bit)
      - ❑ CICSDATAKEY
        - CDSA (24-bit) or ECDSA (31-bit)

31-Bit Exploitation CICS Applications
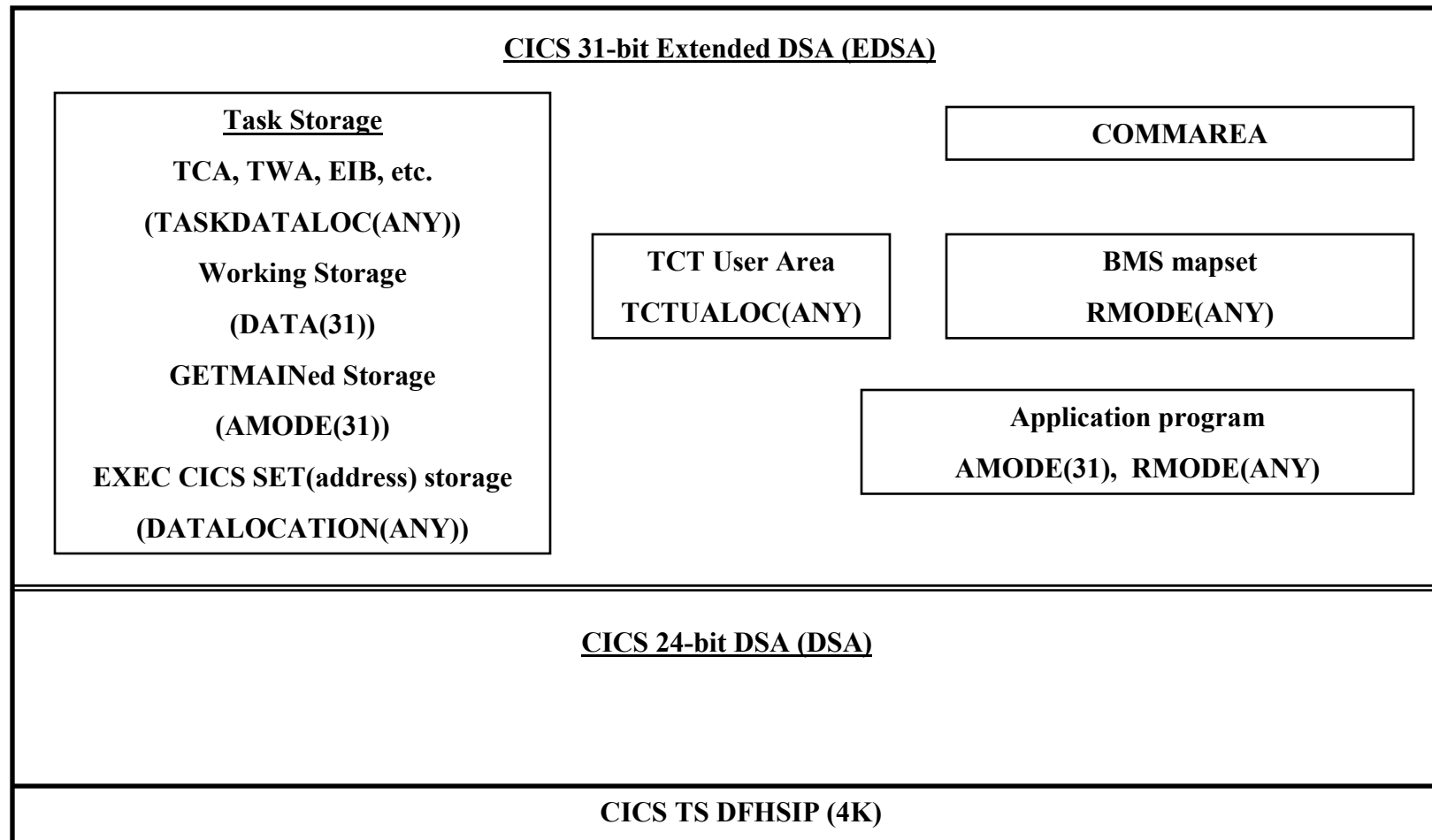
- **Controlling DSA usage with SIT options**
  - TCT User Area (TCTUA)
    - SIT TCTUALOC=<u>BELOW</u>|ANY
      - <u>BELOW</u>   UDSA or CDSA
      - ANY   EUDSA, ECDSA, UDSA or CDSA
        - Programs referencing TCTUA must be AMODE(31)
    - SIT TCTUAKEY=<u>USER</u>|CICS
      - <u>USER</u>   SDSA (24-bit) or ESDSA (31-bit)
      - CICS   CDSA (24-bit) or ECDSA (31-bit)

31-Bit Exploitation CICS Applications

CICS 31-bit Extended DSA (EDSA)

Task Storage

TCA, TWA, EIB, etc.

(TASKDATALOC(ANY))

Working Storage

(DATA(31))

GETMAINed Storage

(AMODE(31))

EXEC CICS SET(address) storage

(DATALOCATION(ANY))

COMMAREA

TCT User Area

TCTUALOC(ANY)

BMS mapset

RMODE(ANY)

Application program

AMODE(31), RMODE(ANY)

CICS 24-bit DSA (DSA)

CICS TS DFHSIP (4K)

CICS Transaction Server Partition – 31-bit application storage layout

Basic Security Manager

- ## Basic ESM supplied with VSE/ESA 2.4+

- ## Basic security support for CICS TS
  - ❑ Sign-on security
  - ❑ Transaction-attach security
  - ❑ Operates independent of IPL SYS SEC setting
  - ❑ Requires SIT SEC=YES, XTRAN=YES

- ## Support for DTSECTAB system security
  - ❑ IPL SYS SEC=YES

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Basic Security Manager...

- **BSM prior to z/VSE 3.1.1 does not support**
  - Resource security checking
  - Report Controller security
  - Command security
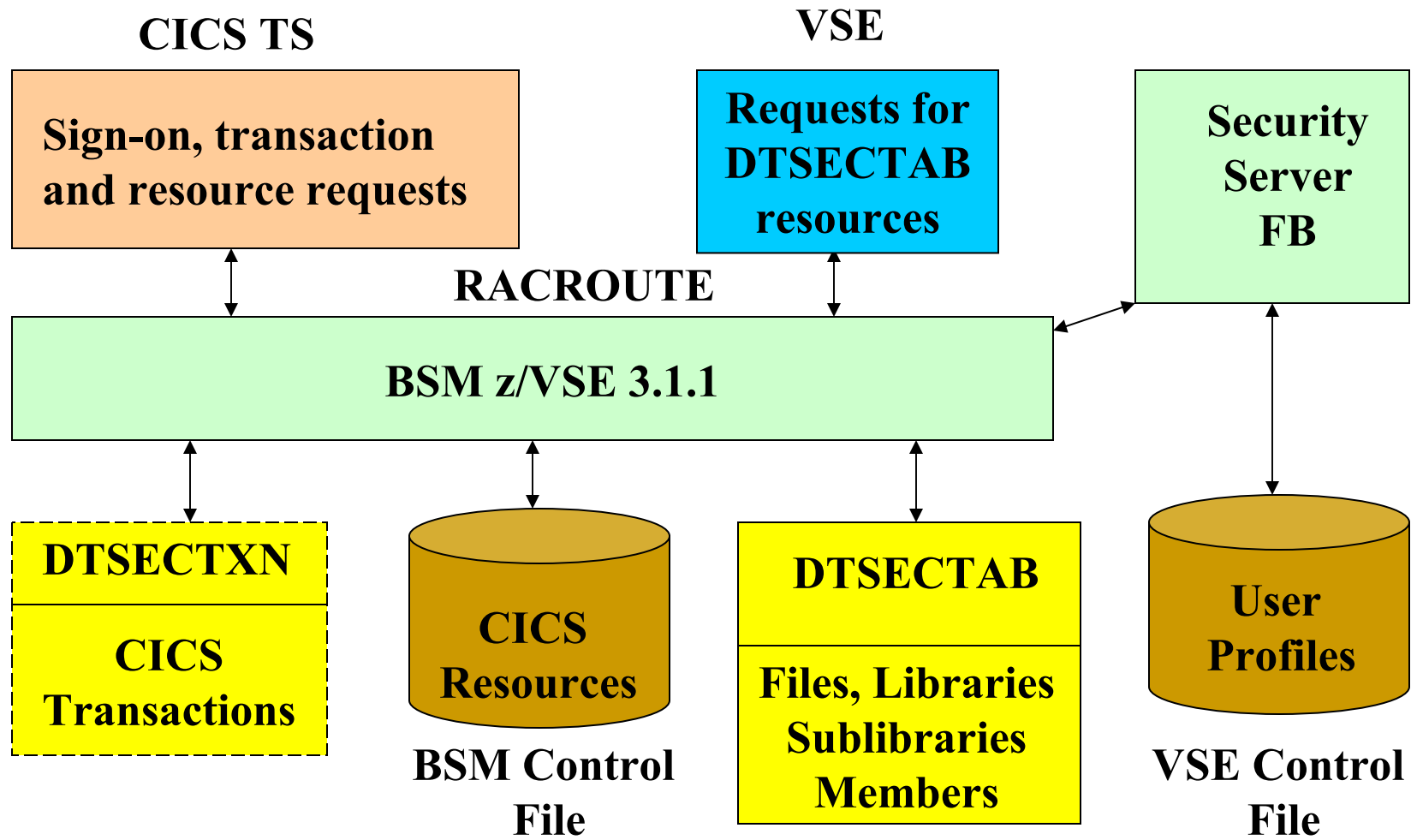 - Surrogate user checking
  - MRO/ISC security

Basic Security Manager...

- **Enhanced in z/VSE 3.1.1**
  - Support for CICS resource access security
    - Programs, files, journals
    - Started transactions
    - Temporary storage and transient data
    - Uses SIT XPPT, XFCT, XJCT, XPCT, XTST, XDCT
  - Support for application (APPL) and facility resource classes
  - New BSM security dialogs and security repository VSAM file BSTCNTL

Basic Security Manager…

CICS TS

VSE

Sign-on, transaction and resource requests	Requests for DTSECTAB resources	Security Server FB

RACROUTE

BSM z/VSE 3.1.1

DTSECTXN	CICS Resources	DTSECTAB	User Profiles
CICS Transactions	BSM Control File	Files, Libraries Sublibraries Members	VSE Control File

Basic Security Manager…

- **Review and update BSM security definitions**
  - Transaction security definitions
    - Security class 1 defined for all CICS transactions (CEMT, CEDA, CECI, etc.)
    - DITT(O) transaction defined with security class 61
  - Default security
    - Security profile required for CICS default user
      - SIT DFLTUSER=CICSUSER
      - CICSUSER profile defined with security classes 1, 60-64
    - Default user should have minimum level security
      - Security classes 1 and 61

Basic Security Manager…

- ## CICS TS sign-on options
  - ### VSE/ESA Interactive Interface sign-on panel
    - IEGM transaction
  - ### CICS TS CESN transaction
    - CICS TS partition without Interactive User Interface
  - ### User written sign-on program
    - EXEC CICS SIGNON

Monitoring CICS DSA usage

- ## CEMT INQ DSA

```
I DSA
STATUS:  RESULTS - OVERTYPE TO MODIFY
   SOSStatus( NOTSOS )

 Dsalimit( 05242880 )
  Cdsasize( 00524288 )
  Rdsasize( 00524288 )
  SDsasize( 01048576 )
  Udsasize( 00262144 )

 EDsalimit( 0026214400 )
  ECdsasize( 0003145728 )
  ERdsasize( 0005242880 )
  ESdsasize( 0001048576 )
  EUdsasize( 0001048576 )




                                     SYSID=CIC1 APPLID=DBDCCICS
  RESPONSE: NORMAL                    TIME:  11.49.53  DATE: 04.28.00
PF 1 HELP      3 END               7 SBH 8 SFH 9 MSG 10 SB 11 SF
```

Monitoring CICS DSA usage...

- **VSE transaction IEDC**

```
IESADMDCST                    CICS TS Storage Reporter        Time:  09:02:27
  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 ............    3072      1024      1024      6144    11264
   Current DSA used ............    2584        64       132      5948     8728
  *Peak DSA used ...............    2608        64       132      5948
   Peak DSA Size ...............    3072      1024      1024      6144    11264
   Largest free area/Free Storage   1.00      1.00      1.00      0.55
   Times short-on-storage (SOS)..      0         0         0         0        0

DSA:                                                        LIMIT    5120
                         CDSA      UDSA      SDSA      RDSA    Totals
   Current DSA Size .............     512       256       512       512     1792
   Current DSA used .............     408         8       404       416     1236
  *Peak DSA used ................     428        32       424       416
   Peak DSA Size ................     512       256       512       512     1792
   Largest free area/Free Storage.  0.69      1.00      0.93      0.83
   Times short-on-storage (SOS)...     0         0         0         0        0
PF1=HELP      2=REFRESH    3=END       4=RETURN
```

Monitoring CICS DSA usage…

- ## VSE transaction IEDC…
  - VSE IUI Display CICS TS Storage Dialog
    - Fastpath option 364
  - Can be implemented in CICS without IUI
    - Copy transaction and program definitions from groups VSESPG and DFH$STAT
      - Transaction IEDC
      - Programs IESXCTS, IESSVL, IESCVDA, IESSCRIO, IESEDSC, IESSCRH, DFH$STAS
      - Mapset IESEDSC

Problem Determination

- Debugging non-terminal tasks
  - EXEC CICS START TRANSID
  - Transient data DCT entries with DEST=FILE,TRANSID=
- CEDX
  - Same as CEDF for terminal related tasks
  - CEDX TRNX,ON|OFF
  - EDFs first occurrence of TRNX

Problem Determination...

- **Displaying task information**
  - CEMT INQ TAS
    - Enter ? by task for more detail on 3270 terminal
    - Detailed output on CICS console terminal
  - CECI INQ TASK
  - EXEC CICS INQ TASK

Problem Determination…

```
  IN TAS
 STATUS:  RESULTS - OVERTYPE TO MODIFY
  Tas(0000023) Tra(CXPB)            Sus Tas Pri( 001 )
  Tas(0000025) Tra(IESO)            Sus Tas Pri( 020 )
  Tas(0014443) Tra(FTPC)            Sus Tas Pri( 001 )
  Tas(0025805) Tra(TELC)            Sus Tas Pri( 001 )
? Tas(0025814) Tra(TELW) Fac(NB02) Sus Ter Pri( 001 )
  Tas(0030063) Tra(ASRA) Fac(NA05) Sus Ter Pri( 001 )
  Tas(0030106) Tra(CEMT) Fac(NA04) Run Ter Pri( 255 )




                                     SYSID=CIC1 APPLID=DBDCCICS
  RESPONSE: NORMAL                 TIME:  17.20.02  DATE: 08.15.00
PF 1 HELP      3 END               7 SBH 8 SFH 9 MSG 10 SB 11 SF
```

Problem Determination…

```
    IN TAS
 SYNTAX OF SET COMMAND
  Tas(0025814) Tra(TELW) Fac(NB02) Sus Ter Pri( 001 )
     Hty(ZCIOWAIT) Hva(DFHZARQ1) Hti(590068) Sta(SD)
     Use(SYSA     ) Rec(X'B47665E905237B00')
  CEMT  Set TAsk() | < All >
   < PRiority() >
   < PUrge | FOrcepurge >




                                          SYSID=CIC1 APPLID=DBDCCICS


 PF 1 HELP       3 END                   7 SBH 8 SFH 9 MSG 10 SB 11 SF
```

Problem Determination…

- ## CEMT INQ TAS
  - ### Status of task
    - RUN (running)
    - DIS (dispatchable)
    - SUS (suspended)
  - ### Principal facility
    - TER (terminal), TAS(non-terminal task)

Problem Determination…

- ## CEMT INQ TAS
  - ### Suspended task information
    - Name of resource transaction is waiting on - Hva
    - Resource type suspend is waiting on - Hty
    - How long suspended – Hti
    - Types of suspends described in CICS TS Problem Determination Guide
  - ### How the transaction was started
    - STA(TO|TP|QD|S|SD|U|D|DS)

Problem Determination…

- ## CEMT INQ TAS

  - ### How the transaction was started (STA)

    TO   terminal operator input

    TP   permanent transaction terminal attach

    QD transient data trigger level attach

    S   START command without any data

    SD START command with data

    U   User attached task

    D   Distributed program link

    DS Distributed program link with syncpoint

Problem Determination…

- **Review SIT dump and trace options**
  - DUMP=<u>YES</u>|NO
    - Controls taking of system dumps
  - SYDUMAX=<u>999</u>,TRDUMAX=<u>999</u>
    - Maximum number of system and transaction dumps per dump code
    - VSE supplied SIT skeletons specified 1 for each
  - TRTRANSZ=512
    - Size of transaction trace table in KB
  - TRTABSZ=256
    - Size of system trace table in KB

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Problem Determination…

- ## Suppress system dumps for ASRA and ASRB abend

  - ☐ SIT ABDUMP and PCDUMP options obsolete
  - ☐ Specify in system dump table

```
CEMT SET SYDUMPCODE(AP0001)  ADD  NOSYSDUMP
CEMT SET SYDUMPCODE(SR0001)  ADD  NOSYSDUMP


           or from a PLT initialization program


EXEC CICS SET SYDUMPCODE(AP0001)  ADD  NOSYSDUMP
EXEC CICS SET SYDUMPCODE(SR0001)  ADD  NOSYSDUMP
```

Problem Determination...

- **Analyzing short on storage problems**
  - Create entries in system dump table for short on storage conditions

```
CEMT SET SYDUMPCODE(SM0131)  ADD  SYSDUMP MAX(1)
CEMT SET SYDUMPCODE(SM0133)  ADD  SYSDUMP MAX(1)


            or from a PLT initialization program


EXEC CICS SET SYDUMPCODE(SM0131)  ADD  SYSDUMP MAX(1)
EXEC CICS SET SYDUMPCODE(SM0133)  ADD  SYSDUMP MAX(1)
```

Problem Determination...

- ## Analyzing short on storage problems...
    - ### Format transaction and storage manager domains in system dump

```
INFOANA CICS system dump format options
    CALL DFHPD410 DATA XM=1,SM=1


==SM: Task subpool summary

   SMX Addr Name       Id Loc Acc    Gets    Frees   Elems   Elemstg Pagestg    <——
   03418020 M0000004 01  B   C          0       0       0         0      0K
      ——>   C0000004 03  A   C          1       0       1      1472      4K
            B0000004 02  B   C          0       0       0         0      0K
            U0000004 04  A   C          0       0       0         0      0K
              ...
==SM: Domain subpool summary (CDSA)

   Name     Id Chn   Initf Bndry Fxlen Q-c   Gets    Frees   Elems   Elemstg Pagestg  <——
   AP_TCA24 47        16K   128  1536  Y       83      75       8     12288     20K
   BBSSP1   5C              32                  0       0       0         0      0K
   BBSSP2   5D              4096                0       0       0         0      0K
            ...
```

Last 7 digits are Task number

Now it is your turn

Anybody got anything they want to contribute?

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