



IBM IT Education Services

E30

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CICS TS for VSE/ESA Migration Considerations

VSE Technical Conference

November 10 - 12, 2003 | Hilton, Las Vegas, NV

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Topics



- Planning
- Implementation
- Resource Definition
- Security
- Application Program Considerations

Topics...



- Customization
- Statistics and Monitoring
- Problem Determination
- Additional information
- Summary

Planning...



- Not your typical CICS migration
- Major differences
 - Re-architected CICS
 - Discontinued functions
 - | PCT, PPT and RDO-eligible TCT macro definitions
 - | Support for macro level programs
 - | Support for RPG programs
 - | Direct access to CICS control blocks
 - | Internal security
 - | BTAM

Planning...



- CICS Transaction Server for VSE/ESA 1.1
 - Based on CICS for MVS/ESA 4.1 + function from CICS TS for OS/390
 - Report Controller integrated into product
 - Pre-installed in PRD1.BASE
 - | Generation Feature into PRD2.GEN1 (Optional)
 - Works with
 - | Basic Security Manager or External Security Manager
 - | VSE/ESA Interactive Interface
 - | VSE/ICCF

Planning...



■ Optional Products

- BTAM no longer orderable, must be copied from current system, not support by CICS TS
- DL/I VSE 1.11 supports CICS TS only
- DL/I DOS/VS 1.10 supports CICS/VSE 2.3 only
- DB2 Server for VSE and VM 6.1 or higher required for CICS TS

Planning...



■ Optional Products

- COBOL for VSE/ESA, PL/I for VSE/ESA, C for VSE/ESA
- DOS/VS COBOL no longer available
 - | Copy jobs in APARs PQ00970 and PQ00971
- DFSORT/VSE or equivalent sort product with E15 and E35 exits
 - | Required to process statistics with DFHSTUP

Planning...



■ Vendor Products

- Review currently installed versions for CICS TS support
 - Vendor websites
 - Service and Support page on VSE/ESA website
www-1.ibm.com/servers/eserver/zseries/os/vse/
- May require release or maintenance upgrade
- May require replacement if no CICS TS support

Planning...



- Preparing to migrate
 - Read the CICS TS Migration Guide and Redbook
 - Read them again!!
- Develop a migration plan
 - Install, test
 - Migrate discontinued functions on current CICS/VSE system
 - Gain familiarity with new parameters and tuning options

Implementation



- CICS TS Partitions
 - 50MB F2 for CICS TS with ICCF
 - Additional CICS TS partitions
 - | Static or dynamic partition
 - | Recommended minimum 50MB allocation
 - | Virtual storage requirements larger the CICS/VSE
 - Cannot run CICS TS with subsystem storage protection in F4
 - FB (default) for VSE BSM Security Server

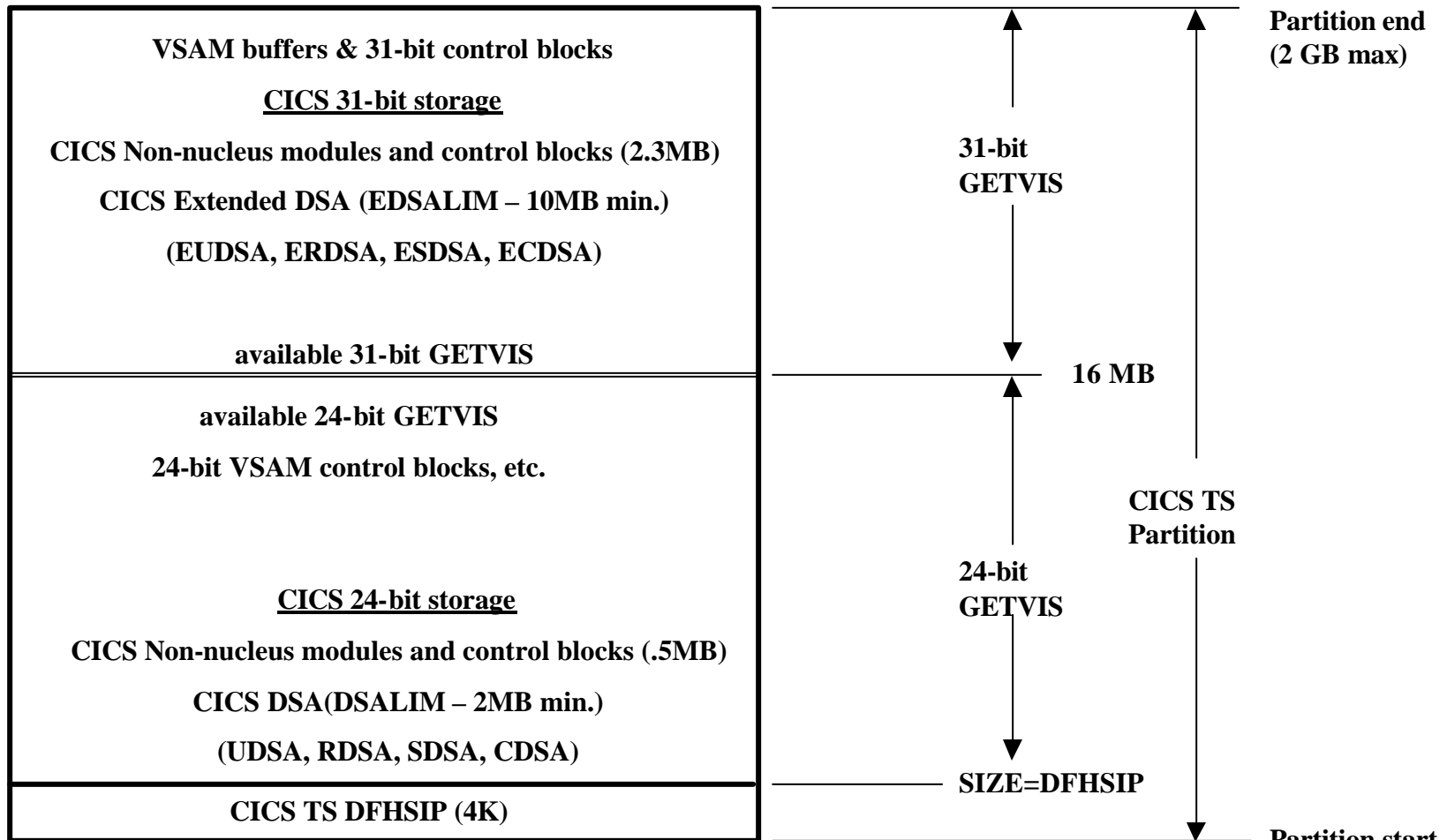
Implementation...



- Virtual storage requirements are larger
 - CICS TS 31-bit partition GETVIS
 - | Must be at least 12.5MB plus storage for VSAM buffers
 - More data space usage
 - | Basic Security Manager
 - | CICS Data Management Facility (DMF)
 - | CICS Shared Data Tables
 - | Environment B SYSDEF DSIZE=20MB
 - May require more real memory

Implementation...

CICS Transaction Server Partition



Implementation...



■ Virtual Storage Considerations

- 24-bit and 31-bit dynamic storage areas required
 - | EDSALIM - limits 31-bit DSAs
 - Recommend supplied value of 25MB or greater
 - | DSALIM - limits 24-bit DSAs
 - Use value based on CICS/VSE 2.3 startup message:
"SUBPOOL SIZE BEFORE LOADING RESIDENT PROGRAMS"
 - | Other SIT parameters allocate individual DSAs
 - Recommend default 0 to let CICS do dynamic allocations

Implementation...



- Virtual Storage Considerations
 - Task storage allocated based on MXT value
 - | Limits total number of user tasks
 - | Storage pre-allocated in DSAs for MXT and 10 system tasks
 - | MXT=999 is not good (uses 3.6MB)
 - | Specify MXT value based on CICS/VSE 2.3 shutdown statistics:
 - “Peak number of tasks reached”
 - “Number of times at max task”

Implementation...



- CICS system datasets
 - CSD file is required!!!
 - | Definition moved from FCT to SIT
 - Restart dataset (DFHRSD)
 - | For emergency restart only
 - | Other information moved to new VSAM KSDS catalog datasets
 - DFHSTM and DFHSTN obsolete

Implementation...



- CICS system datasets... (new)
 - Global catalog (DFHGCD)
 - | Journal status and restart control records
 - | Installed RDO resources
 - | Restart control record
 - Local catalog (DFHLCD)
 - | CICS TS domain status information
 - | Formatted with DFHCCUTL utility

Implementation...



- CICS system datasets... (new)
 - Data Management Facility (DMF) datasets
 - | Statistics and monitoring data collection
 - | DFHDMFA, DFHDMFB
 - Journal Archive Control Dataset (DFHJACD)
 - | Required for automatic journal archiving
 - | Not created during installation

Implementation...



- CICS System Datasets...
 - Defined for CICS/ICCF partition during install
 - | VSAMDEFS.Z and VSAMINIT.Z
 - Definitions for second CICS partition
 - | Use skeleton jobstream in ICCF library 59
 - | SKPREPC2

Implementation...

■ Startup jobstream changes

■ CICS/VSE 2.3

```
EXEC DFHSIP,SIZE=nnnnK,PARM='xxx',DSPACE=2M
```

■ CICS TS

```
// ID USER=DBDCCICS
```

- CICS region userid for security

```
EXEC DFHSIP,SIZE=DFHSIP,PARM='xxx',DSPACE=2M,OS390
```

- Program area only used for DFHSIP
- CICS TS functions use OS/390 emulation mode
- Use SKCICS and SKCICS2 skeletons in ICCF library 59

Implementation...



- Migrate macro tables to CSD and RDO
 - PCT, PPT, RDO-eligible TCT entries
 - FCT (optional)
- Update SIT parameters
 - Many new/changed/obsolete entries
- Review other tables for new/changed parameters

Implementation...



- CICS system initialization parameter changes
 - 96 new parameters
 - 28 changed
 - 30 removed
 - Some defined in startup job only
 - Use skeletons in ICCF library 59
 - DFHSITSP for CICSICCF
 - DFHSITC2 for additional CICS TS partitions

Resource Definition



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

Resource Definition...



- New support for defining
 - | VSAM files
 - | LSRPOOLS
 - | TRANCLASes
 - | VSE console terminals
- Can still use FCT macro table for VSAM files and LSRPOOLS
 - | Must use macro table for DA files

Resource Definition...



- Use IBM supplied definitions for new entries and new/changed parameters
- Transactions, programs, mapsets, VTAM and VSE console terminals
 - RDO entries in supplied CSD file
 - DFHxxxxx and VSExxxxx groups
 - CEE group (LE/VSE), TCPIP group (TCPIP for VSE/ESA)

Resource Definition...



- Other resources still defined using tables
 - TCT for SAM terminals, remote terminals for transaction routing, logical device codes
 - Journals (JCT), Transient Data Queues (DCT), Program Lists for startup and shutdown (PLTPI and PLTSD), MCT, SRT, TLT, TST, XLT, etc.
 - ALT, NLT and SNT are no longer supported

Resource Definition...



- Macro tables
 - DCT, FCT, JCT, PLT, SIT, TST, XLT
 - Supplied skeletons in ICCF library 59 (DFHxxxxx)
 - | Suffix SP for primary CICS TS partition
 - Startup PLT – PI, shutdown PLT - SD
 - | Suffix C2 for second CICS TS partition
 - Startup PLT – P2, shutdown PLT – S2

Resource Definition...



- Migrate discontinued macro tables
 - Remove IBM supplied entries
 - Optionally add DFHxxx TYPE=GROUP to define RDO groups
 - Assembly with CICS TS supplied macros
 - Migrate to CSD with DFHCSDUP batch utility
- Migrate supported macro tables
 - Update with new/changed parameters and entries
 - Reassemble with CICS TS

Resource Definition...



- Migrate CSD definitions
 - Restore CICS/VSE CSD
 - Method 1: Upgrade CICS/VSE CSD with DFHCSDUP utility
 - CICS and VSE supplied entries
 - Method 2: Copy application groups from CICS/VSE CSD to CICS TS CSD (recommended)

Security



- Internal security withdrawn
 - No SNT
 - CICS sign-on changed
 - Several parameters obsolete
- External Security Manager (ESM) used for all security checking
- All security based on 8 character USERID
- Utilities to convert DFHSNT and PCT definitions

Security...



- Obsolete parameters
 - TRANSEC on transaction definitions
 - RSL on resource definitions
 - OPERID, OPERPRTY, OPERRSL, OPERSEC in terminal and session definitions
 - XSNAME (SECURITYNAME) in MRO/ISC definitions
 - EXTSEC in SIT

CICS TS Security Choices



- No security
 - Built into application or not required
 - SIT SEC=NO
- Basic Security Manager (BSM)
 - User sign-on and transaction security only
- External Security Manager
 - Vendor product or write your own
 - “Full function” depending on product

Basic Security Manager



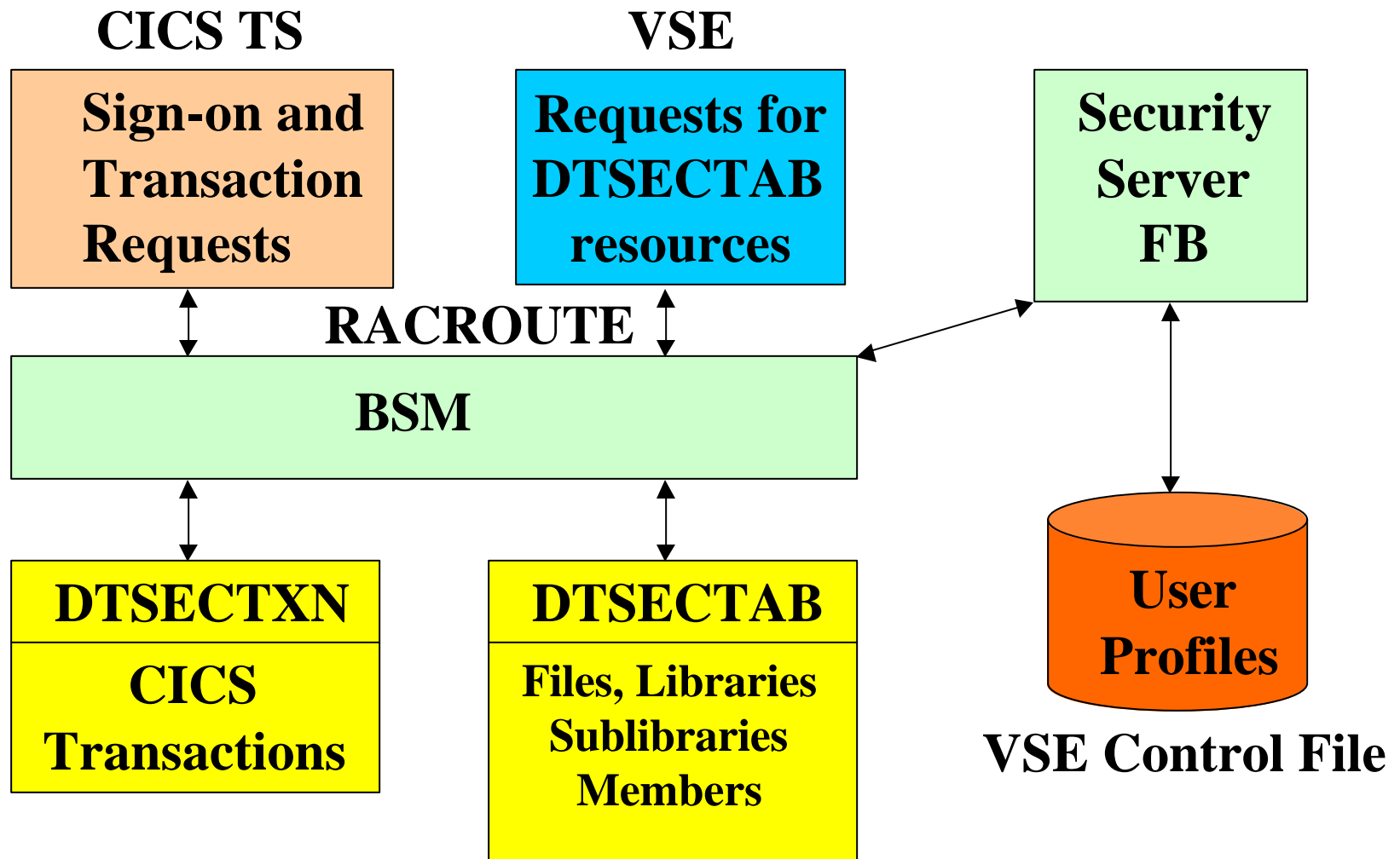
- Basic ESM supplied as part of VSE/ESA 2.4+
- Basic security support for CICS TS
 - Sign-on security
 - Transaction-attach security
 - Operates independent of IPL SYS SEC setting
 - Requires SIT SEC=YES, XTRAN=YES
- Support for DTSECTAB system security
 - IPL SYS SEC=YES

Basic Security Manager...



- BSM does not support
 - Resource security checking
 - Report Controller security
 - Command security
 - Surrogate user checking
 - MRO/ISC security

Basic Security Manager...



Basic Security Manager...



- CICS TS signon options
 - VSE/ESA signon panel (IEGM)
 - CICS TS CESN transaction
 - User written sign-on program
 - EXEC CICS SIGNON

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

Security Migration...



■ Utilities to convert PCT definitions

- REXX procedures in ICCF library 59

- DTSECTXS.PROC

 - | Converts PCT source to BSM transaction security definitions

- DTSECTX2.PROC

 - | Converts Security Migration Aid (SMA) file entries to BSM transaction security definitions

- DTSECTX3.PROC

 - | Converts DEFINE TRANSACTION definitions from DFHCSDUP EXTRACT function to BSM transaction security definitions

Security Migration...



- Security Migration Aid (SMA)
 - Stage one of two stage security migration
 - Menu driven online program
 - Extracts security information from a running CICS/VSE system and the VSE IUI control file
 - Creates VSAM KSDS file DFHXSMA
 - Records containing VTAM APPLID, resource type, resource name, RSL and TRANSEC values
 - Used as input to ESM supplied stage two utilities

External Security Manager



- Vendor supplied products
 - Level of security support may vary
 - Check vendor documentation for details
- Computer Associates Top Secret
- B.I. Moyle BIM-Alert/CICS
- MacKinney Systems CICS/Signon
- Others???

Application Program Considerations



- Command level only
 - DOS/VS COBOL programs compiled with CBL STATE and FLOW will abend CICS TS
- Macro level programs are not supported
 - Identify with DFHMSCAN utility
 - Convert to Command Level using the CICS Application Migration Aid (AMA)
- New translator option SPI to use System Programming Interface EXEC Commands

Application Program Considerations...

Supported: Programs Compiled By

<u>Compiler</u>	<u>Run-Time Library</u>
COBOL for VSE/ESA	LE/VSE
High Level Assembler/Assembler	None or LE/VSE
PL/I for VSE/ESA	LE/VSE
C for VSE/ESA	LE/VSE
DOS/VS COBOL	LE/VSE ¹
VS COBOL II	LE/VSE ²

¹ Will probably run if link-edited with DOS/VSE COBOL or COBOL II run-time library, but not supported if it fails. Support for compiler ended 12/1999.

² Will probably run if link-edited with COBOL II run-time library, but not supported if it fails. Support for compiler ended 4/1998.

Application Program Considerations...



Not Supported: Programs Compiled By

Compiler

DOS PL/I

C/370

RPG II

Run-Time Library

Any

Any

Any

Application Program Considerations...



- EXEC CICS API commands
 - Security related parameters
 - | ASSIGN OPERKEYS or OPSECURITY
 - Not supported
 - | ASSIGN USERNAME
 - Returns blanks using BSM
 - Depends on ESM
 - | Can use ASSIGN USERID and ASSIGN OPID
 - ADDRESS CSA not supported

Customization



- Review all customization interfaces
- No sysgen or SIT overlays
- PLTPI separated into three stages
- Define PLT programs with EXECKEY(CICS)
- Rework Global User Exits (GLUEs)
- Review User Replaceable Modules (URMs)

Customization...



- Global User Exits
 - 35 New and 8 removed exit points
 - Standardized linkage conventions for all exits
 - New Exit Programming Interface (XPI)
 - Access to CICS services
 - Must be 31-Bit capable
 - Existing programs must be changed

Customization...



- User Replaceable Modules (URMs)
 - Must be command level
 - Must be AMODE(31)
 - Use COMMAREA instead of internal control blocks
 - VSE supplied URMs in ICCF lib 59 have been updated
 - DFHPEP, IESZNEP (NEP), IESZATDX (autoinstall)

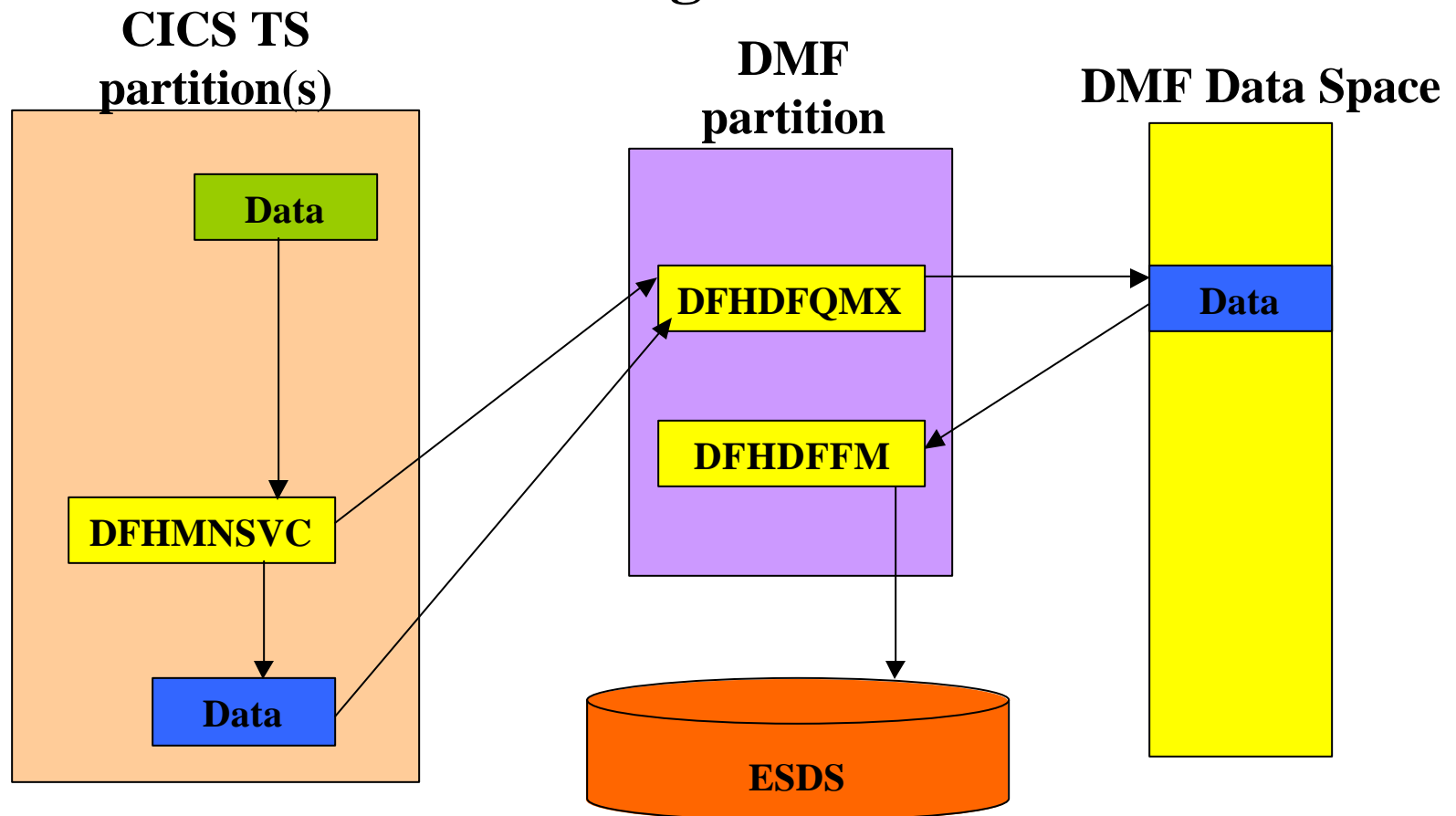
Statistics and Monitoring...



- New Data Management Facility (DMF) used for collecting statistics and monitoring data
- Obsolete statistics/monitoring definitions
 - CSSM and CSSN transient data queues
 - CSTT statistics transaction
 - DFHSTM and DFHSTN statistic datasets
 - Journals for monitoring data

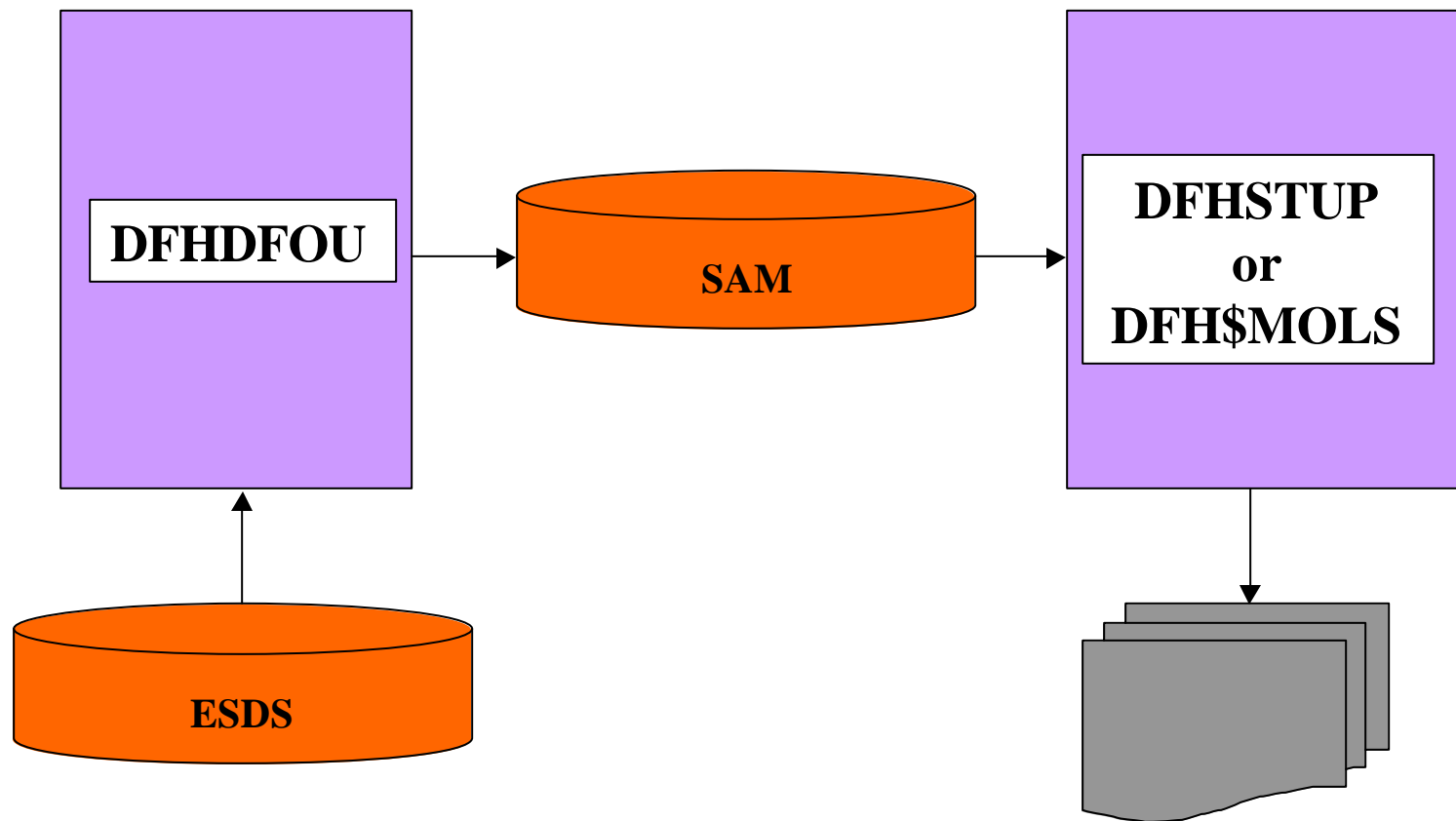
Statistics and Monitoring...

Collecting the Data



Statistics and Monitoring...

Offloading and Processing the Data



Statistics - DFH0STAT



- Sample program DFH0STAT.C
 - COBOL for VSE/ESA source in PRD1.BASE
 - Uses EXEC CICS statistics commands (SPI)
 - Output to
 - | VSE/POWER LST queue using Report Controller
 - | CICS Temporary Storage queue
 - Can be invoked from
 - | Terminal
 - | VSE console
 - | PLTSD
 - | As a STARTed transaction

Problem Determination



- More trace and dump granularity
 - Dump Tables
 - | Transaction
 - By transaction abend code
 - | System
 - By system dump code
 - | Created by
 - CEMT SET
 - EXEC CICS SET
 - New trace entries and trace levels

Problem Determination...



- New trace and dump utility programs
 - DFHTU410 formats auxiliary trace
 - DFHDU410 formats transaction dumps
 - DFHPD410 formats system dumps
- Several options to control dump and trace
 - New SIT parameters
 - New CEMT options
 - New CETR transaction

Problem Determination...

- Review SIT options affecting dump and trace
 - DUMP=YES|NO
 - | Controls taking of system dumps
 - SYDUMAX=999, TRDUMAX=999
 - | Maximum number of system and transaction dumps per dump code
 - TRTRANSZ=512
 - | Size of transaction trace table in KB
 - TRTABSZ=256
 - | Size of system trace table in KB

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
```


Summary

- Migration to CICS TS takes more planning
- Some steps can be done on current CICS/VSE partition
 - Implement RDO
 - Install a security manager
 - Migrate discontinued functions
- Good planning and education will lead to a successful migration



Additional Information



■ CICS TS books

- Release Guide (GC33-1646)
- Migration Guide (GC33-1645)
- <http://www.software.ibm.com/ts/cics>

■ Redbooks

- Migration to VSE/ESA 2.4 and CICS Transaction Server for VSE/ESA 1.1 (SG24-5595)
- Implementation of VSE/ESA 2.4 and CICS Transaction Server for VSE/ESA 1.1 (SG24-5624)
- <http://www.redbooks.ibm.com>

Additional Information...



■ Education (in the US)

- CICS Transaction Server for VSE/ESA Migration (A3731)
- CICS Transaction Server for VSE/ESA Tuning and Problem Determination (A3732)
- CICS Transaction Server for VSE/ESA Under the Covers (A3733)