



z/VM, VSE and Linux on IBM zSeries



Session E40

Migrating to CICS Transaction Server for VSE/ESA

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Agenda

- Part 1: Chris Smith - IBM
 - ▶ Migration Overview

- Part 2: John Lawson - Intellware Systems Inc
 - ▶ Migration Experiences, Issues and Tips

Agenda - Part 1

- What's new in CICS Transaction Server
- Migration Overview
 - ▶ Planning
 - ▶ Installation
 - ▶ Tailoring/Customisation
 - ▶ Resource Definition
 - ▶ Monitoring and Statistics
 - ▶ Trace and Dump
 - ▶ Security
 - ▶ Application Programming
 - ▶ Coexistence
 - ▶ Further Information
 - ▶ Summary

What's new in CICS Transaction Server?

e-business and Network Computing

- ▶ CICS Transaction Gateway
- ▶ CICS Web Support
- ▶ CICS Universal Clients

Application Support

- ▶ Shared Data Tables
- ▶ External CICS Interface (EXCI)
- ▶ 3270 Bridge
- ▶ REXX for CICS
- ▶ Front End programming Interface (FEPI)
- ▶ Global User Exit enhancements
- ▶ Exit Programming Interface (XPI)
- ▶ Comms Programming Interface (CPI-C)
- ▶ API enhancements
- ▶ SPI enhancements
- ▶ Report Controller enhancements

System Management/Administration

- ▶ RDO extensions, including Files
- ▶ Autoinstall extensions, including Programs
- ▶ Automatic journal archiving
- ▶ Data Management Facility
- ▶ Monitoring and Statistics enhancements
- ▶ Dump and Trace enhancements
- ▶ External Security Manager support
- ▶ In-Doubt Window Resolution Utility Program
- ▶ Dynamic Transaction Routing enhancements
- ▶ Sysgen step removal

Availability

- ▶ Storage Protection
- ▶ Intersystem Session Queue Management
- ▶ VTAM Persistent Sessions
- ▶ DTB Failure Recovery

Restructured CICS Code Base from CICS for MVS/ESA V4.1

- ▶ Improved code quality, reliability, serviceability
- ▶ Extensive Virtual Storage Constraint Relief
- ▶ 31-bit support
- ▶ Dynamic DSA Management

Planning

- Understand the CICS Transaction Server product changes
- Discontinued support
 - ▶ Macro level programs
 - ▶ Direct Control Block access
 - ▶ RPG, old PL/I & COBOL
 - ▶ BTAM
 - ▶ CICS internal security
- IBM database product dependencies
 - ▶ DL/I 1.11
 - ▶ DB2
 - V6.1 (VSE/ESA V2.4)
 - V7.1 (VSE/ESA V2.5)
 - V7.2 (VSE/ESA V2.6)

Planning....

- Position current system in preparation
 - ▶ e.g. move to RDO
- Understand third party product status
- Decide if to run coexistent with CICS/VSE 2.3
- Migration aids:
 - ▶ CICS TS coexistence with CICS/VSE V2.3
 - ▶ Application Migration Aid
 - ▶ Security Migration Aid
 - ▶ DFHMSCAN utility

Installation

- CICS Transaction Server supplied on VSE/ESA base tape
- CICS TS for VSE/ESA V1.1.1 delivered with VSE/ESA V2.5
 - ▶ Provides CICS Web Support, 3270 Bridge and REXX
- CICS/VSE V2.3 supplied on the extended base tape
- Increase in virtual storage for predefined environments
- Changes to CICS Datasets
 - ▶ New Catalogs
 - ▶ CSD mandatory
 - ▶ New Monitoring & Statistics files

Tailoring/Customisation

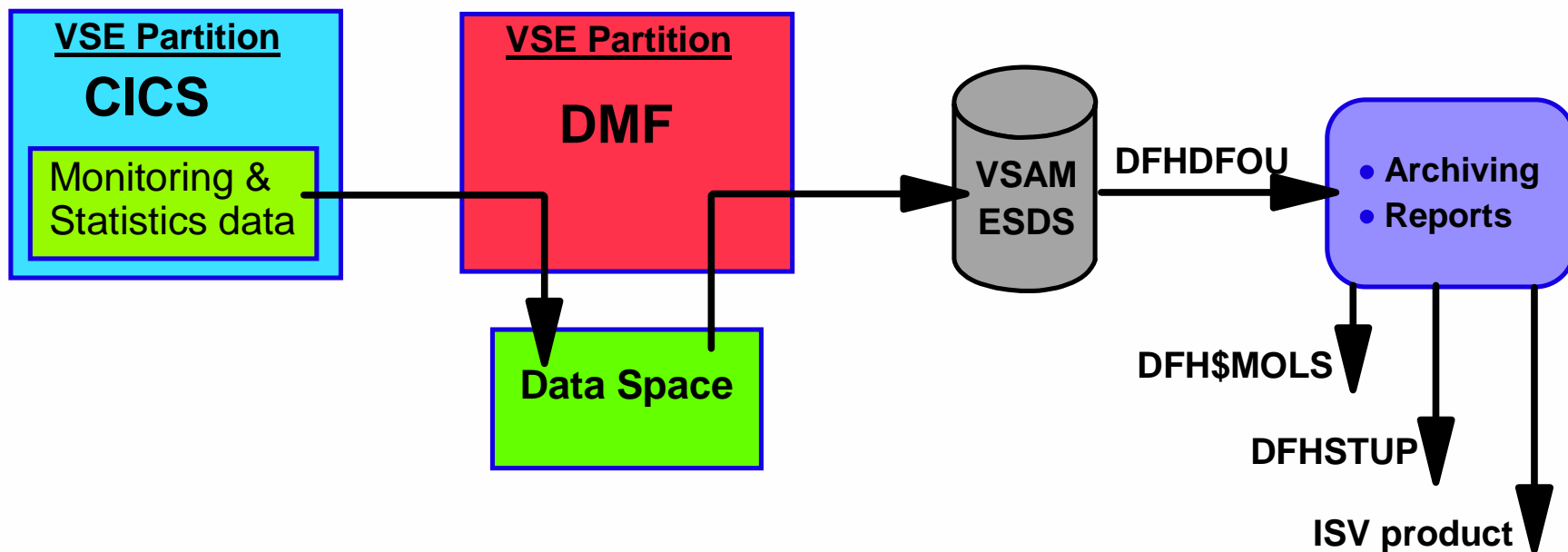
- *Many* SIT changes
- SYSGEN step removed
- Two phase PLTPI
 - ▶ Limited
 - ▶ Full function
- SIMODS removed - Use PLT stage 2
- Review all User Replaceable Modules
 - ▶ Must be command level and AMODE (31)
 - ▶ Must use COMMAREA
 - ▶ Some new URM's, some obsoleted
- Review all Global User Exits
 - ▶ Will need some change due to interface changes
 - ▶ Many new exit points, some removed

Resource Definition

- The CSD...
 - ▶ Is mandatory
 - ▶ Use DFHCSDUP to convert existing CSD for CICS TS use
 - ▶ Can be shared between CICS TS and CICS/VSE V2.3
- Some resources now RDO only
 - ▶ Transactions, Programs, Mapsets, VTAM terminals/links, MRO connections, Consoles
 - ▶ Use DFHCSDUP to migrate tables to CSD
- All tables must be reassembled against CICS TS macros

Monitoring and Statistics

- New collection method - Data Management Facility (DMF)
 - ▶ New DMF datasets and operational procedures
 - ▶ Transient Data queues CSSM and CSSN obsolete
 - ▶ Journals no longer used for monitoring data
 - ▶ Records produced in SMF format - existing programs that interpret monitoring or statistics data will need modifying



Monitoring and Statistics....

- **Monitoring**
 - ▶ MCT revised
 - ▶ Accounting and global performance class records obsolete
 - ▶ Performance class records enhanced
 - ▶ New Global User Exit, XMNOUT
 - ▶ New CEMT and SPI commands
 - ▶ DFHEMP macro obsolete - use EXEC CICS MONITOR API

- **Statistics**
 - ▶ New CEMT and SPI commands
 - ▶ Changes in pattern of statistics collection
 - ▶ CSTT obsolete
 - ▶ New online sample program, DFHOSTAT
 - ▶ DFHSTUP enhanced

Trace and Dump

- More granularity
- New CEMT and SPI commands
- Trace
 - ▶ Trace data volume has increased
 - ▶ New CETR control Transaction
 - ▶ New auxiliary trace formatting utility program
- Dump
 - ▶ All CICS system dumps now produced with VSE SDUMP
 - ▶ CICS dump data sets contain only transaction dumps
 - ▶ New Dump Table used to control the taking of Dumps
 - ▶ New supplied dump formatting programs
 - DFHPD410 for system dumps, used with Info/Analysis
 - DFHDU410 for transaction dumps

Security

- CICS Internal Security discontinued and all security checking now performed by an External Security Manager (ESM)
- Basic External Security Manager (BSM) supplied with VSE/ESA
- All security based on User ID
- Applications exploiting CICS internal security will need changing
- Decide which External Security Manager meets security needs
 - ▶ BSM supports Signon and Transaction Attach security only
 - ▶ CA-Top Secret delivered on VSE/ESA extended base tape
 - ▶ Other ESM products from BI Moyle and MacKinney Systems
- BSM includes a utility to migrate SNT and PCT data

Application Programming

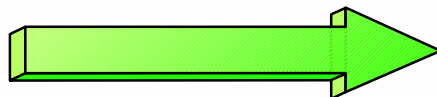
- CICS/VSE 2.3 command level programs are object compatible with CICS Transaction Server provided they don't:
 - ▶ issue any CICS macros
 - ▶ access any CICS control blocks directly
 - ▶ issue any EXEC CICS ADDRESS CSA commands
- Language support:

High-level Assembler
COBOL for VSE/ESA
PL/I for VSE/ESA
C for VSE/ESA



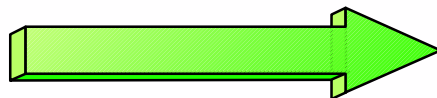
Application will run on CICS TS without need to recompile

DOS/VS COBOL
VS COBOL II



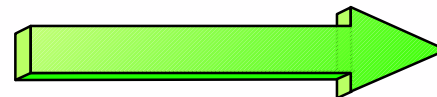
Application will run OK, but re-link with LE libraries for Y2K support

C/370
DOS PL/I



Application will not run on CICS TS; recompile with LE enabled compiler

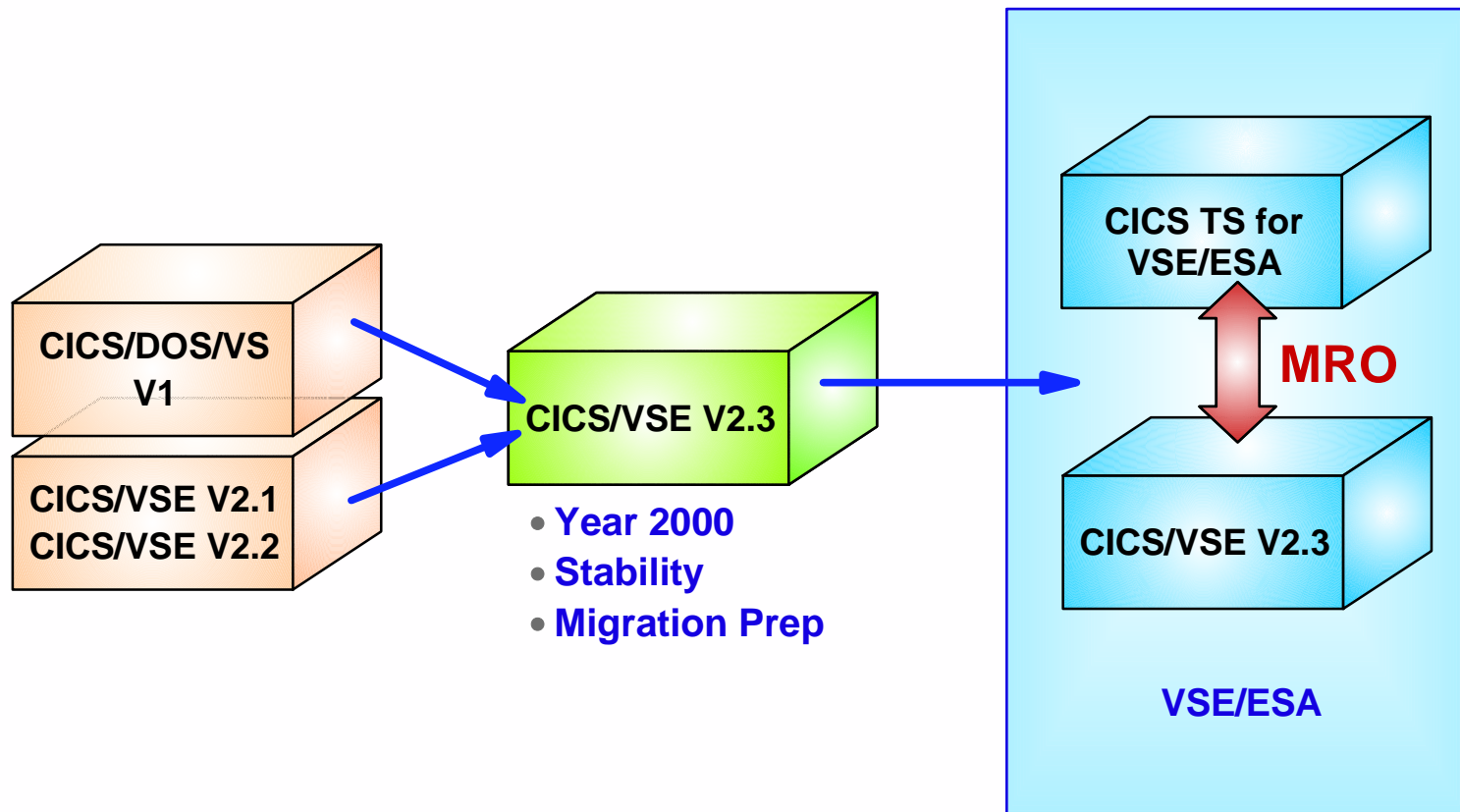
RPG



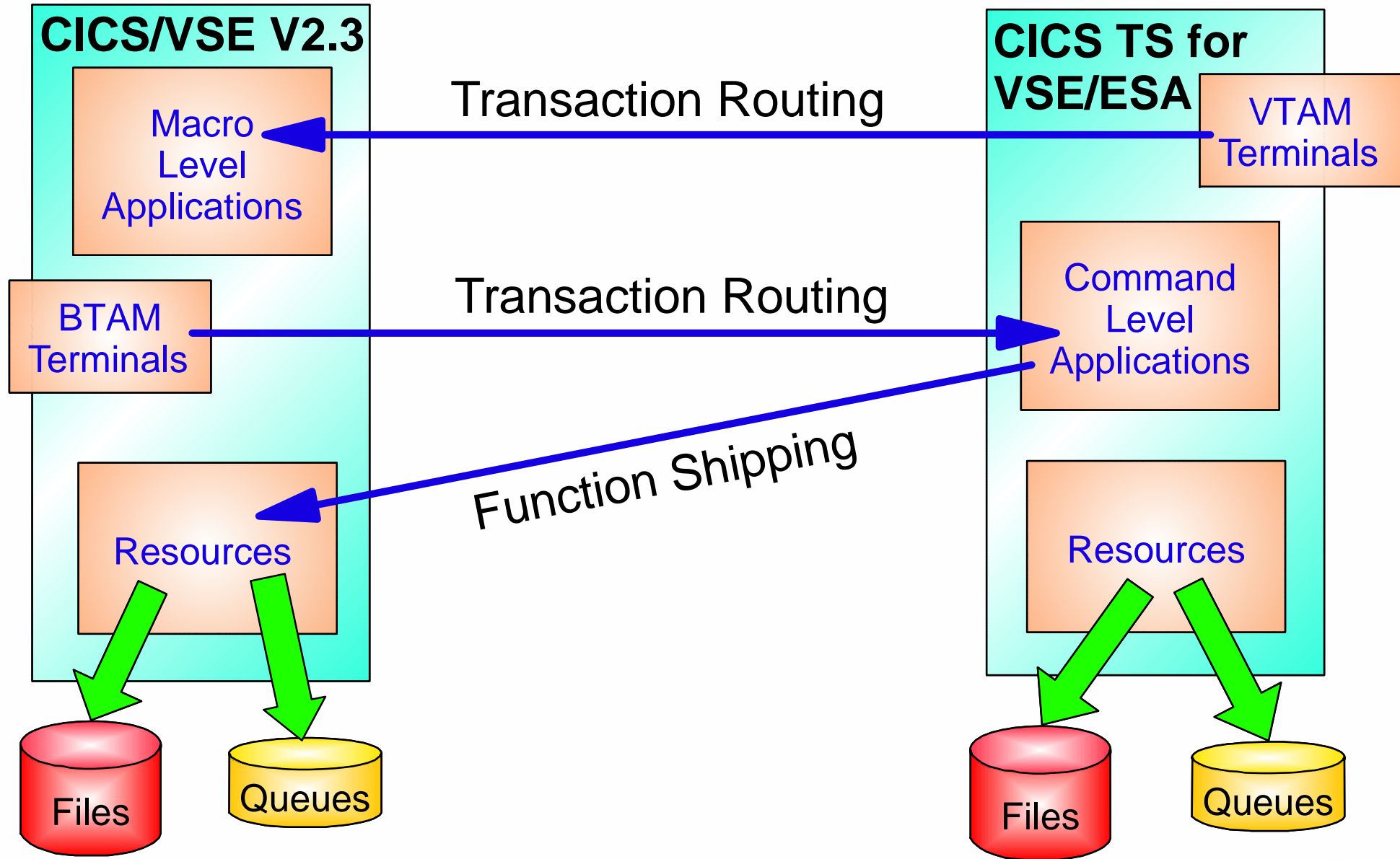
Not supported - run on CICS/VSE 2.3 in coexistence mode.

Coexistence

- Provided to enable a staged migration
- MRO communication between CICS TS and CICS/VSE V2.3



Coexistence....



Further Information

Web Sites

- **CICS (main site)**
 - ▶ <http://www.ibm.com/software/cics>
- **CICS Transaction Server for VSE/ESA**
 - ▶ <http://www.ibm.com/software/cics/platforms/cicsvse/vse.html>
- **CICS (SupportPacs)**
 - ▶ <http://www.ibm.com/software/cics/txppacs>
- **VSE/ESA**
 - ▶ <http://www.s390.ibm.com/vse>
- **Redbooks**
 - ▶ <http://www.redbooks.ibm.com>

Further Information....

Publications

Title	Number
IBM CICS Transaction Server for VSE/ESA product publications	
Release Guide	GC33-1645
Migration Guide	GC33-1646
Enhancements Guide	GC34-5763
Internet Guide	SC34-5765
External Interfaces Guide	SC33-1669
REXX Guide	SC33-5764
IBM Redbooks	
Migration to VSE/ESA V2.4 and CICS Transaction Server for VSE/ESA V1.1	SG24-5595
Implementing VSE/ESA V2.4 and CICS Transaction Server for VSE/ESA V1.1	SG24-5624

- Accessible from the CICS and Redbooks Web sites

Further Information....

- **Announcement Letters**
 - ▶ CICS Transaction Server for VSE/ESA: 298-373, 299-156
 - ▶ CICS Transaction Server for VSE/ESA V1.1.1: 200-293
 - ▶ VSE/ESA V2.5: 200-288
 - ▶ VSE/ESA V2.6: 201-325
- **Performance Papers on the VSE/ESA Web site**
 - ▶ VSE/ESA Version 2.5 & 2.6 Performance Considerations
 - ▶ CICS TS for VSE/ESA Performance Considerations
- **CICS SupportPacs**
 - ▶ CD15 - CICS Autoinstall

Further Information....

- Education (IBM/Intelliware)
 - ▶ CICS Transaction Server for VSE/ESA classes
 - Under the Covers (A3730)
 - Migration (A3731)
 - ✓ *Also offered as a pre-conference class*
 - Tuning and Problem Determination (A3732)
 - ✓ *Also offered as a post-conference class*
- Education (Other)
 - ▶ WDR offer Migration and Problem Determination classes on CICS Transaction Server for VSE/ESA
- Websites for education
 - ▶ <http://www.intelliware.com/intelliedu.htm>
 - ▶ <http://www.ibm.com/software/cics/education>
 - ▶ <http://www.wdr.co.uk/>

Further Information....

Related Conference Sessions

- E23: *CICS Transaction Server for VSE/ESA: CICS Web Support Overview*
- E24: *The CICS Transaction Gateway: Web and Java Access to CICS*
- E41: *Exploiting CICS TS for VSE/ESA 31-bit Support*
- E42: *Implementing CICS TS for VSE/ESA Shared Data Tables*
- E43, E44: *Problem Determination under CICS TS for VSE/ESA*

Summary

- Significant product changes
- Migration more complex than previous
- Start planning **now**
- Implement RDO on CICS/VSE V2.3 if not already
- Convert macro applications to command level
- Analyse security requirements
- Coexist CICS TS with CICS/VSE V2.3 for staged migration

Agenda

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Migrating to CICS TS for VSE/ESA Experiences, Issues and Tips

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E40 (part 2)**



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Installation/Tailoring



- VSE/ESA 2.4, 2.5, 2.6
 - New install only, no Fast Service Upgrade from 2.3
 - FSU from 2.4 and 2.5 to 2.6 supported
 - Supports Turbo-Dispatcher only
 - Possible increase in processor utilization
 - Performance document on VSE website
 - www.s390.ibm.com/vse
 - Supported on ESA/390 processors only

Installation/Tailoring...

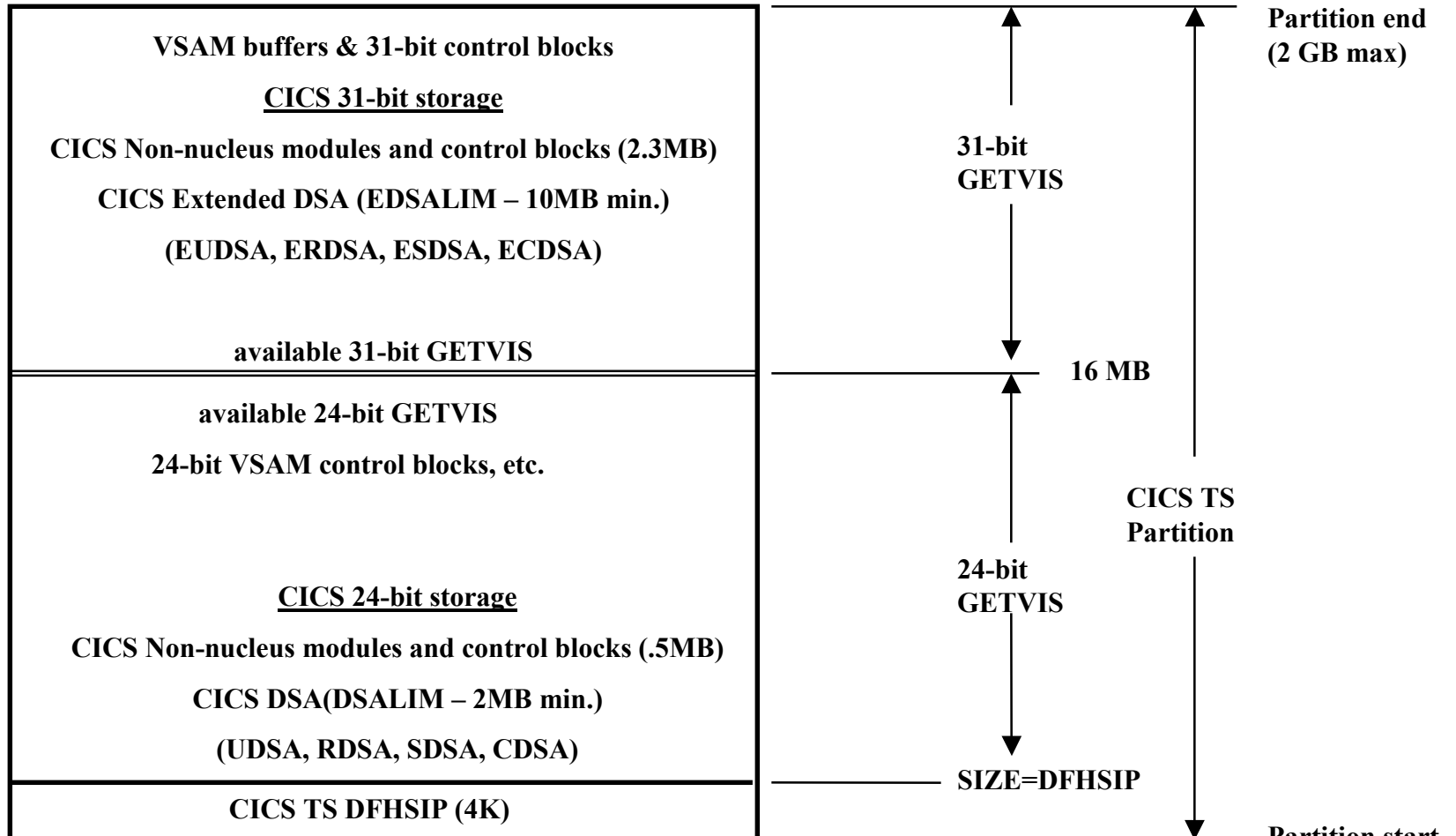
- Use environment B
- Environment B partition allocations
 - 50MB F2 for CICS TS with ICCF
 - 50MB F8 for second CICS TS
 - 20MB F4 for CICS/VSE
 - Cannot run CICS TS with subsystem storage protection in F4
 - 512K FB (default) for VSE BSM Security Server

Installation/Tailoring...

- 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

Installation/Tailoring...

CICS Transaction Server Partition



Installation/Tailoring...



- Virtual Storage Considerations
 - 24-bit and 31-bit dynamic storage areas required
 - EDSALIM - limits 31-bit DSAs
 - 25MB setting in supplied DFHSITSP and DFHSITC2
 - DSALIM - limits 24-bit DSAs
 - 5MB setting in supplied DFHSITSP and DFHSITC2
 - Check 'Subpool Available' message in CICS/VSE startup
 - Individual DSA sizes specified in startup overrides
 - Use default of 0

Installation/Tailoring...



- Maxtask (MXT) Considerations
 - MXT defines maximum number of user tasks
 - MXT=20 override in supplied CICSICCF job is too small (skeleton SKCICS)
 - MXT=50 in supplied DFHSITSP and DFHSITC2 is probably ok
 - Task storage allocated based on MXT value
 - MXT=999 is not good (uses 3.6MB)

Installation/Tailoring...



- 6 Transaction Class Considerations
 - TRANCLASSES defined in CSD
 - Replace SIT CMXT parameter and PCT TCLASS parameter
 - Supplied names for transaction classes 1 –10 (DFHTCL01 – DFHTCL10)
 - Default is 1 maximum active task per class

Installation/Tailoring...



- CICS system initialization parameter changes
 - 96 new parameters
 - 28 changed
 - 30 removed
 - Some defined in startup job only
 - Use skeleton DFHSITSP and DFHSITC2 in ICCF library 59 as models

Resource Definition



- CICS system definition file (CSD) is mandatory
 - *Required* for transactions, transaction classes, programs, mapsets, VTAM terminals, MRO/ISC connections and sessions, VSE console terminals
 - *Optional* for VSAM file and LSRPOOL definitions
 - FCT macro table still supported

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...



- Migrate discontinued macro tables
 - Remove IBM supplied entries
 - Assemble with CICS TS supplied macros
 - Migrate to CSD with DFHCSDUP batch utility
- Migrate supported macro tables
 - Update with new/changed parameters and entries or use supplied CICS copybooks
 - Reassemble with CICS TS

Resource Definition...



- Migrate CSD definitions
 - Restore old CSD on new install system
 - Method 1: Upgrade old CSD with DFHCSDUP utility
 - CICS and VSE supplied entries
 - Method 2: Copy application groups from old CSD to new VSE-supplied CSD

Security



- Internal security no longer supported
 - No SNT
 - CSSN and CSSF transactions removed
 - Replaced by CESN and CESF
- Application security interface
 - User written signon/signoff program
 - EXEC CICS SIGNON
 - EXEC CICS SIGNOFF

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

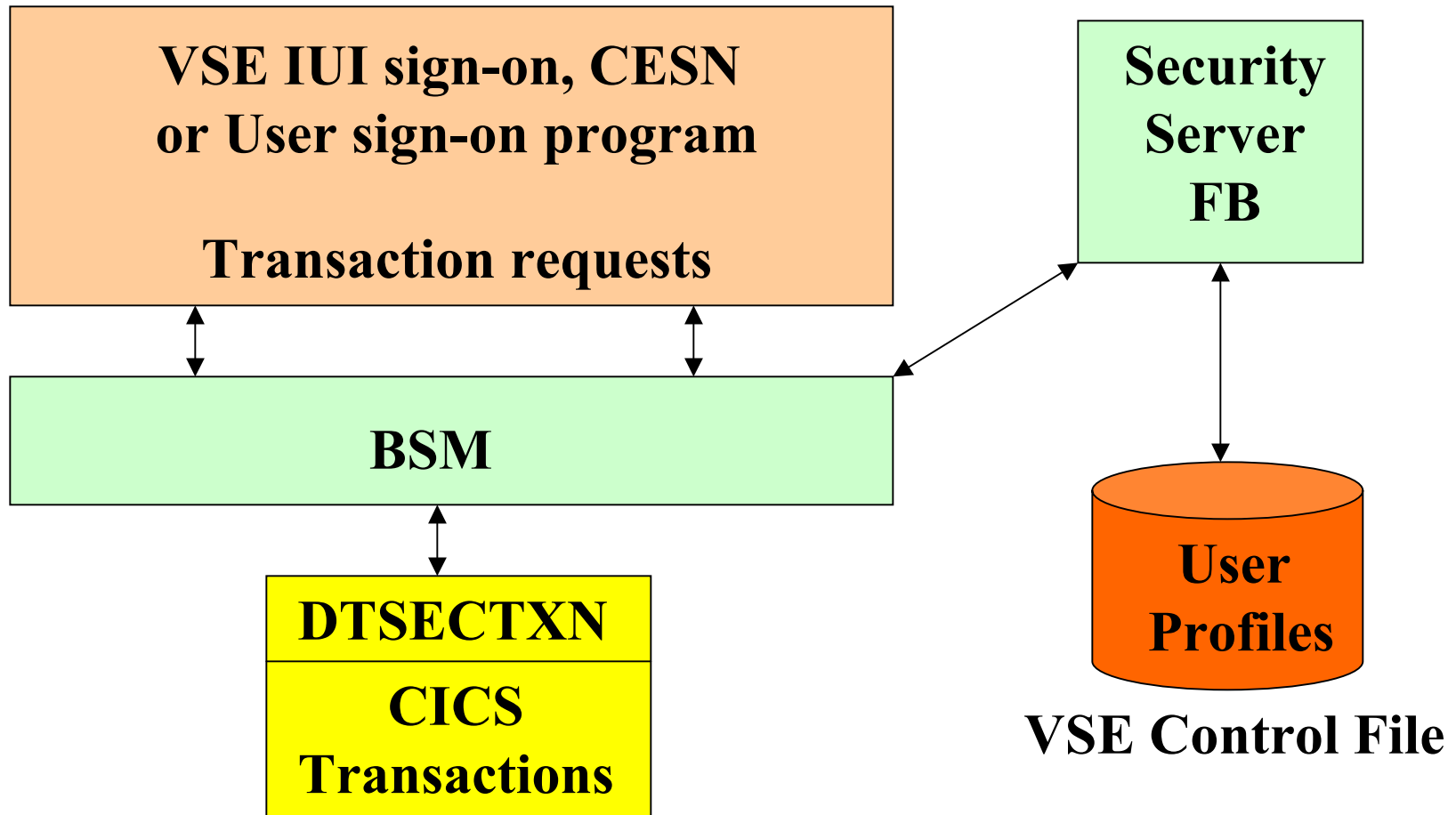
Security Choices



- 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

CICS TS



Basic Security Manager...



- User profiles
 - Defined in VSE control file
 - IUI Maintain User Profile dialog
 - Batch utility (IESUPDCF)
 - Special CICS userids must be defined
 - CICS region userid from // ID statement in CICS startup job
 - CICS default userid from SIT DFLTUSER

Basic Security Manager...



- Transaction security
 - All transactions must be defined to BSM
 - IUI Define Transaction Security dialog
 - User maintained DTSECTXN table
 - Refresh definitions in each CICS partition
CEMT PERFORM SECURITY

Security Migration



- Utilities to convert CICS security to BSM
 - IESBLDUP
 - Converts SNT entries to VSE control file user profile entries
 - REXX procedures to convert transaction definitions to BSM transaction security
 - DTSECTXS – converts PCT source
 - DTSECTX2 – converts Security Migration Aid (SMA) file transaction entries
 - DTSECTX3 – converts RDO transaction 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 DFHX SMA
 - Records containing VTAM APPLID, resource type, resource name, RSL and TRANSEC values
 - Used as input to ESM supplied stage two utilities

Application Program Considerations



- Command level only
- Macro level programs are not supported
 - ASRD abend if executed in CICS TS partition
 - Identify with DFHMSCAN utility
 - Convert to Command Level
 - Run in “Co-existence” mode under CICS/VSE 2.3
- New translator option (XOPTS SP) to use System Programming Interface EXEC commands

Application Program Considerations...



- EXEC CICS API commands
 - ADDRESS CSA not supported
 - Causes ASRA protection exceptionabend
 - 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

Customization



- Review all customization interfaces
- No sysgen or SIT overlays
- Rework Global User Exits (GLUEs)
- Review User Replaceable Modules (URMs)
 - VSE supplied URMs in ICCF lib 59 have been updated
 - DFHPEP, IESZNEP (NEP), IESZATDX (autoinstall)
- Define PLT, URM and GLUE programs with EXECKEY(CICS)

Trace and Dump

• CICS TS System Dumps

- Requires more dump library space

- Increase SYSDUMP library or define separate dump library for CICS

- Suppress ASRA and ASRB system dumps

- SIT ABDUMP and PCDUMP options obsolete

- Specify in system dump table with PLT program

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

Trace and Dump...

• CICS TS Trace

- More trace points and larger entries
- Control amount of trace with new CETR transaction
- Trace table sizes defined in SIT
 - Internal trace
 - SIT TRTABSZ=16 (256KB in VSE 2.6 supplied SIT)
 - Transaction trace
 - SIT TRTRANSZ=40 (512KB in VSE 2.6 supplied SIT)

Coexistence Considerations



- Shared or separate CSDs
 - CICS/VSE 2.3 compatible entries in groups DFHCOMP1 and DFHCOMP2 in CICS TS CSD
- CICS tables and user-replaceable modules
 - Separate compile procedures and libraries for CICS/VSE and CICS TS
- CICS modules in SVA
 - CICS TS SIT SVA=NO and CICS/VSE modules in SVA

Coexistence Considerations...



- Interactive Interface and ICCF support
 - CICS TS only
- Application programs
 - Separate compile procedures and libraries for CICS/VSE and CICS TS
- Sharing data
 - MRO function shipping
 - VSAM shareoptions

Summary

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

