

# Upgrading and Migrating your IBM CICS Systems

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# Session Agenda

- Software prerequisites
- General external changes
  - Resource definition
  - Application and systems programming interfaces
  - Global user exits
  - Monitoring and statistics
- Functional changes
  - Obsolete function removal
- Documentation
- Summary

# CICS Transaction Server V4.1 Elements

- CICS Transaction Server V4.1
  - CICS 0660
  - Service Flow Runtime now shipped with CICS TS V4.1
- CICSplex SM V4.1
- CICS Explorer
  - Available via download site
- REXX
  - Development System
  - Runtime Facility
  - REXX Common for z/OS
- CICS Information Center
- Rational Developer for System z promotion
  - 1 unrestricted entitlement, no service entitlement
  - Integrated development environment for CICS and WebSphere
    - COBOL, PL/I, Java for CICS and J2EE applications
- *CICS Application Migration Aid V1.1 is no longer provided as an element in CICS TS V4.1*

# Software Prerequisites

- CICS TS V4.1 requires z/OS V1.9, or later
  - The product will not initialize with a lower level of operating system installed
- The IBM XML Toolkit for z/OS is not required for installation
  - Required at runtime if WS-Security is used
  - If not present at runtime DFHPI0119 will be issued
- IBM SDK for z/OS, Java Technology Edition, V6, Service Refresh 4
  - 64-bit SDK is not supported
- IBM XML Toolkit and SDK NOT shipped with CICS

# Software Prerequisites...

- CICS Tools
  - CICS Performance Analyzer V3.1
  - CICS Interdependency Analyzer V2.2 + PTF
  - CICS Configuration Manager V1.2 + PTF
- IMS database Manager V9 or later
- DB2 V8 or later
- WebSphere MQ V6 or later
- WebSphere Application Server V6.0 or later
- WebSphere Business Events V6.1.01 or later
- WebSphere Business Monitor V6.1 or later
- Tivoli Federated Identify Manager V6.1 or later
- CICS Transaction Gateway for z/OS V6.0 or later
- CICS Transaction Gateway for Multiplatforms V6.0 or later
- CICS Universal Client V6.0 or later

# Operating System Setup

- CICS uses z/OS conversion services
  - Conversion facility must be enabled
    - Documented in “z/OS Support for Unicode Using Conversion Services”
- SDFHLINK modules are downward compatible
  - e.g. SVC, DFHIRP
- For 64 bit exploitation MEMLIMIT needs to be set equal to or greater than 2GB

# Installation Process

- Default installation process
  - Common IBM install procedures
    - SMP/E RECEIVE, APPLY, ACCEPT commands
  - Described in the CICS Installation Guide
- DFHISTAR process
  - CICS generated installation job stream
  - Described in the CICS Installation Guide

## Installation Process...

- CICSplex SM integrated into the standard install process
  - No separate installation job stream
    - SEYUINST integrated with SDFHINST
      - SEYUJCL starter set library removed
    - EYUINST integrated with DFHINST
    - EYUISTAR integrated with DFHISTAR
  - EYUCMSDS & EYU9XDUT
    - Enhanced CICSplex SM Data repository setup
  - New CPSM Installation Verification Programs



# CICS Local and Global Catalog Changes

- Key length increased to 52 bytes
  - Local and Global catalog
- Maximum record size increased
  - Local and Global catalog
- Define new datasets for CICS TS V4.1
  - Initialize the Local catalog
  - Perform an INITIAL start

## Systems Initialization Table: New Parameters

- USSHOME={/usr/lpp/cicsts/cicsts41/|directory}  
– Name/Path of the root directory for CICS files on z/OS UNIX
- MNIDN={OFF|ON}  
– Monitoring identity class recording

## Systems Initialization Table: Changed Parameters

- INITPARM=(DFHMQPRM=....)
  - Specify the MQ connection parameters
  - Replaced** by the MQCONN resource definition
- MQCONN={NO|YES}
  - Connect to MQ during initialization
  - Use the attributes in the MQCONN resource definition
- JVMPROFILEDIR={ /usr/lpp/cicsts/cicsts41/JVMProfiles | directory }
  - Location of the JVM profile directory
  - USSHOME SIT parameter + JVMPROFILEDIR
- PSTYPE={SNPS|MNPS|NOPS}
  - Specifies persistent session support required

# CICS Supplied Transactions

- CEMN
  - New options for:
    - Identity class monitoring
    - DPL, FILE and TSQ Limits
- CKQC
  - MQCONN resource definitions supplies default settings
- CRTE
  - Supports transaction routing over IPIC
- CWWU
  - Alias transaction for the system management client API
- CW2A
  - Alias transaction for Atom service requests

# CICS Supplied Transactions...

- New CICS RACF category 1 transactions
  - CEPD
    - Event Processing Dispatcher
  - CEPM
    - Event Processing Queue Manager
  - CISB
    - IPCONN release processing
  - CISM
    - IS remote scheduler
  - CISQ
    - IS local queue processor
  - CISX
    - IPCONN recovery processing
  - CIS4
    - IS external security interface
  - CJSR
    - JVM server resolution
  - CRLR
    - Bundle resource resolution

# CICS Supplied Transactions: CEMT

- Obsolete options
  - INQ CLASSCACHE (PROFILE option)
- New options
  - DISCARD
    - ATOMSERVICE, BUNDLE, EVENTBINDING, JVMSERVER, MQCONN
  - INQ & SET
    - ATOMSERVICE, BUNDLE, EVENTBINDING, EVENTPROCESS, JVMSERVER, MQCONN, MQINI (INQ only), XMLTRANSFORM
  - INQUIRE SYSTEM
    - CICSTSLEVEL returns 040100
    - RELEASE returns 0660

# CICS Supplied Transactions: CEMT...

- Changed options
  - Changes to support IPv6
    - CORBASERVER, IPCONN, TCPIP SERVICE, WORKREQUEST
  - INQ DISPATCHER
    - ACTTHRDTCBS, MAXTHRDTCBS
  - INQ Monitor
    - Identity class
    - DPL limit
  - INQ TERMINAL and TRANSACTION
    - REMOTESYSTEM shows IP information
  - INQ URIMAP
    - New option AUTHENTICATE indicates whether specified host requires authentication
  - INQ VTAM
    - Persistent sessions specification
  - Resource signature data options added

# Resource Definition

- CICS System Definition (CSD)
  - Define New CSD
  
  - REPRO existing CSD to new dataset
  
  - Run DFHCSDUP UPGRADE
    - ☒ Use DFHCSDUP SCAN command to check for user changes
    - ☒ Review CEE group
    - ☒ MIGRATE command has been removed
  
  - Sharing the CSD
    - ☒ CICS TS V4.1 CSD can be shared with prior releases
    - ☒ Check for the appropriate compatibility groups



# Resource Definition...

- New resource definitions
  - ATOMSERVICE
  - BUNDLE
  - JVMSERVER
  - MQCONN
- Changed resource definitions
  - Changes to support IPv6
    - CORBASERVER, IPCONN, TCPIPService
  - IPCONN
    - IDPROP option added
  - URIMAP
    - ATOMSERVICE and AUTHENTICATE option added
- New resource groups
  - DFHRL
  - DFHRS
  - DFHWEB2
  - DFHWU

# EXEC CICS Application Programming Interface

- New commands
  - BIF DIGEST
  - SIGNAL EVENT
  - TRANSFORM DATATOXML and TRANSFORM XMLTODATA
  - WEB READ QUERYPARM and browse QUERYPARM
  - WSACONTEXT
  - WSAEPR CREATE
  - INVOKE SERVICE command
    - Replaces INVOKE WEBSERVICE command
    - INVOKE WEBSERVICE available for compatibility

# EXEC CICS Application Programming Interface...

- Changed commands
  - Options added to support IPv6
    - EXTRACT TCPIP
    - EXTRACT WEB
    - WEB OPEN
    - WEB PARSE URL

# Application Programming Interface...

- Changed commands...
  - EXEC CICS ASKTIME
    - ABSTIME value returned is:
      - The system time-of-day clock
      - Adjusted for leap seconds and the local time zone offset
      - Truncated to the millisecond
        - » No longer rounded to 1/100 of a second
  - EXEC CICS CONVERTTIME
    - Recognizes date and time stamp strings in the RFC 3339 format
      - e.g. 2003-04-01T10:01:02.498Z
  - EXEC CICS FORMATTIME
    - STRINGFORMAT option now allows 'RFC3339'
    - New MILLISECONDS option

# Systems Programming Interface

- New commands
  - CREATE
    - ATOMSERVICE, BUNDLE, JVMSERVER, MQCONN
  - DISCARD
    - ATOMSERVICE, BUNDLE, EVENTBINDNG, MQCONN
  - INQ
    - ATOMSERVICE, BUNDLE, BUNDLEPART, CAPTURESPEC, EVENTBINDING, EVENTPROCESS, JVMSERVER, MQCONN, MQINI, XMLTRANSFORM
  - SET
    - ATOMSERVICE, BUNDLE, EVENTBINDING, EVENTPROCESS, JVMSERVER, MQCONN, XMLTRANSFORM
  - CSD
    - Allows manipulation of the CICS System Definition file
- Changed commands
  - Similar to CEMT changes

# Global User Exits

- ***It is HIGHLY recommended that ALL global user exits be analyzed to ensure that they are THREADSAFE and that their PROGRAM definitions changed to specify CONCURRENCY(THREADSAFE)***
- Changes to the standard parameter list (DFHUEPAR)
  - UEPGIND, task indicator field
    - EP
      - Event processing TCB
    - TP
      - Owns the LE enclave and THRD TCB pool for a JVM server
    - T8
      - Used by a JVM server to attach pthreads for system processing
- All exits using XPI calls **MUST be reassembled !!**

# Global User Exits...

- New exits
  - XISQLCL, XWSPRRWI, XWSPRROI, XWSPRROO, XWSPRRWO, XWSRQRWO, XWSRQROO, XWSRQROI, XWSRQRWI, XWSSRRWO, XWSSRROO, XWSSRROI, XWSSRRWI
- Changed exits
  - Changes to support IPv6
    - XWBAUTH, XWBOPEN, XWBSNDO
  - Changes to support Breaking Event Address Register
    - XPCTA, XPCABND, XPCHAIR
  - Changes to support extended z/Architecture
    - XSRAB
  - XRSINDI
    - Changes to support new resources
    - Changes to support resource signatures

## Global User Exits...

- Exit point moved to the Web Domain from the EXEC Layer
  - XWBAUTH now may be driven for outbound Web Services requests
    - Exit driven for a Web Services Requester if:
      - A URIMAP with USAGE(CLIENT) is present
      - Basic authentication is requested
        - » AUTHENTICATE(BASIC)
      - Exit XWBAUTH is enabled
  - EXEC CICS WEB SEND|CONVERSE requests will drive the exit



# User Replaceable Modules

- Changes to support IPv6
  - Analyzer program for web support
  - Converter program for web support
  - Web error program
- DFHPEP
  - Changes to support Breaking Event Address Register
  - Changes to support extended z/Architecture linkage conventions

# Monitoring and Statistics

- Monitoring
  - Record size increases to 2672 bytes
  - **COMPRESS=YES** is now the default
  - New monitoring data
    - Event Processing
    - Web Services
    - Web 2.0
    - Identity class
  - DFH\$MOLS
    - Support for DPL resource and identity class
- Statistics
  - DFHSTUP support for new resources
    - ATOMSERVICE, BUNDLE, CAPTURESPEC, EVENTBINDING, EVENTPROCESS, JVMSERVER, PROGRAMDEF, XMLTRANSFORM

# CICSplex Systems Manager

- CICSplex migrations similar to previous releases
  - Maintenance point CMAS must be upgraded first
  - CMAS and MAS agent code must all be at V4.1 level
    - CMAS CWA size now 2048
  - WUI Server and its connected CMAS must be at V4.1 level
    - Migrate contents of WUI Server repository
    - Views and resource tables added to reflect the new resource types

## Discontinued Function

- Support for the SOAP for CICS feature
- CICS documentation in Book Manager format
- Support for Java 1.4.2 and Java 5
- Support for the DFHCSDUP MIGRATE command
- Support for CPSM's WLMLOADCOUNT & WLMLOADTHRSH values
- Removal of EWLM support

# Planning Information

- Enterprise Java Bean support
  - Will be removed in a future release of CICS TS for z/OS
- ONC RPC feature
  - Will be removed in a future release of CICS TS for z/OS
- CICS Web Interface COMMAREA interfaces
  - Will be removed in a future release of CICS TS for z/OS
- CICS Web Server plug-in
  - Will be removed in a future release of CICS TS for z/OS

# Summary

- **Installation**
  - Similar to previous releases
    - Standard installation procedure or DFHISTAR
  - Additional Unix System Services and zFS components
- **Migration**
  - Application Programmers
    - Review use of time functions
  - Systems Programmers
    - Review ALL GLUEs, TRUEs and URM
- **CICS TS 4.1 InfoCenter**
  - <http://publib.boulder.ibm.com/infocenter/cicsts/v4r1>