



*The future runs on System z*

# Upgrading to CICS Transaction Server for z/OS V4.1



# 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 V4.1**
  
- **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 V1.10 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, JVMSERVER, 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 upgrade 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

## ■ Upgrading

- Application Programmers
  - Review use of time functions
- Systems Programmers
  - Review ALL GLUEs, TRUEs and URM