CICS Transaction Server
V2.3 or 3.1
Technical Overviews

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Session Agenda

- **CICS TS 2.3 Overview / Enhancements**

  – IBM Java Virtual Machine (JVM)

  – Enterprise Java Beans

  – Application Development

  – Enterprise Management

  – Miscellaneous Changes

- **CICS TS 3.1 Overview / Enhancements**

  – Strategic Themes

  – Web Services

  – OTE exploitation

  – CPSM Web User Interface

  – Removal of obsolete functions

- **Which CICS Release should I choose?**

CICS TS 2.3 Overview / Enhancements

IBM Java Virtual Machine (JVM)

- **Continuous JVM**

  – Greater transaction throughput and lower CPU

  – Three levels of reusability – Controlled by REUSE option in JVM profile

    • Single Use   REUSE=NO
    • Resettable   REUSE=RESET
    • Continuous REUSE=YES

- **Shared Class Cache**

  – JVM's start up more quickly and lower storage requirements

  – Created using –Xjvmset option

  – JVM's can share a single cache of class files

  – Replaces system heap and application class system heap

- **Miscellaneous Changes for JVM**

  – Dedicated Storage Monitor

  – Can now run in User Key

  – Statistics and INQUIRE JVM

Enterprise Java Beans

- **Provides SPI and CEMT commands to enable/disable CorbaServer**
  - Allows CICS to remain active
  - CPSM recognizes DISABLED state

- **CTG includes ECI Resource Adapter (CCI)**
  - Standard CCI interface using COMMAREA's
  - Written in any CICS support Language
  - May not perform terminal input/output

- **Improved Authentication / Encryption for SSL**
  - IIOP can use asserted identity authentication
  - HTTP/IIOP can select level of encryption

- **EJB Trace enhancements**
  - New SPI commands
    - INQUIRE WORKREQUEST
    - SET WORKREQUEST

Java Application Support

- **Supports CICS applications written in Java**
  - Allows CICS Java programs to integrate and interoperate with CICS programs written in any other language
  - May be invoked as stand-alone transactions, as Session Beans or as CORBA objects

- **Access to existing programs and data**
  - CICS services accessed by using JCICS classes

Java Application Support…

- **CICS Java Classes**

  – Provide access to CICS services using Java programming model

• File Control	Interval Control
• Program Control	Task Control
• Temporary Storage	Transient Data
• Document API	Web API
• APPC	Limited 3270 Terminal Control
• Abend Handling	Diagnostics

  – No requirement for CICS translator

- **Support for DB2**

  – SQLJ and JDBC support

  - • Compatible with current CICS DB2 support
  - • Uses the existing CICS/DB2 attach

Application Development

- **Improved Interactive Debugging**

  - Support for debuggers

    - Work-station based
      - WSED 5.0.1 or later
      - WSAD 5.0.1 or later
    - Host-based
      - Debug Tool 3.1 with UQ77541 or later
    - Web-based interface
      - Microsoft Internet Explorer 6.0
      - Netscape Navigator 7.0
      - Mozilla 1.4

Application Development...

- **JCICS Support for Web-aware applications**

  - API now supports CICS Commands
    - DOCUMENT CREATE
    - DOCUMENT INSERT
    - DOCUMENT RETRIEVE
    - DOCUMENT SET
    - EXTRACT CERTIFICATE
    - EXTRACT TCPIP
    - EXTRACT WEB
    - WEB READ
    - WEB WRITE
    - WEB SEND
    - WEB RECEIVE
    - WEB RETRIEVE
    - WEB STARTBROWSE
    - WEB READNEXT
    - WEB ENDBROWSE
    - WEB EXTRACT

Enterprise Management

- **Dynamic workload management LINK3270 Bridge**

  - CPSM workload balancing

  - CPSM workload separation

- **CICSPlex System Manager Web User Interface**

  - Introduces Create, Update and Remove actions

  - Enhanced security for views/menus with audit trail

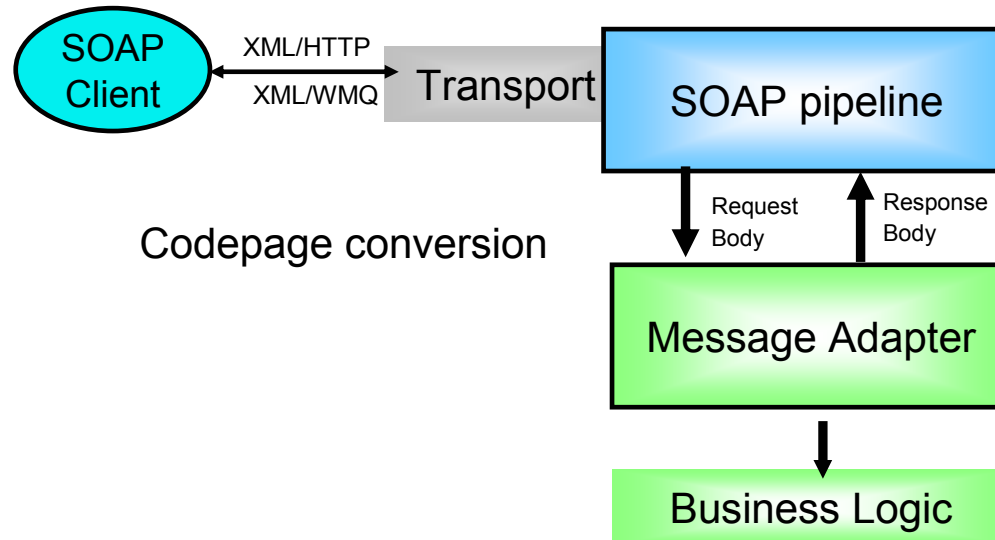 - Enhanced starter set of views/menus

Miscellaneous Changes

- **TCP/IP address of VTAM autoinstalled terminals which connect via TELNET 3270**

- **Improved statistics utility program DFHSTUP**
  - Customizable reports

- **VS COBOL II, OS PL/I and C/370 runtimes have been removed**

- **CEDA transaction supports mixed case attributes**

- **Supports enhanced DB2 restart-light capability (DB2 V8)**

- **Extended threadsafe EXEC CICS commands**

- **Link3270 bridge supports the ACCUM option**
  - EXEC CICS SEND MAP, SEND TEXT and SEND CONTROL commands

SOAP for CICS feature

▪**Why process SOAP in CICS?**

►Easily and efficiently reuse CICS assets from SOAP clients
- –drive existing CICS programs with user supplied XML<->COMMAREA mapping
- –Supports IBM WSED generated code for mapping

►Performance focused

►Language neutral approach, works for COBOL, C and Java

►Synergy with WebSphere and industry direction for Web Services

SOAP Client —— XML/HTTP / XML/WMQ —→ Transport —→ SOAP pipeline

Codepage conversion

Request Body ↓   Response Body ↑

Message Adapter

↓

Business Logic

SOAP for CICS
- Transport
- Envelope parsing
- URI mapping
- Envelope building

COBOL code
- generated by WSED

SOAP for CICS feature…

- **Enables CICS to be a SOAP 1.1 server and client**
  - SOAP over HTTP uses the proven and easy to use CICS Web support, incl. SSL
    - CICS TS V2 required to initiate outbound HTTP
  - SOAP over WebSphere MQ provides guaranteed delivery
  - Simple SOAP processing node - limited SOAP header processing

- **SOAP for CICS optional feature**
  - Free orderable feature with CICS TS V2.2 and V2.3
  - Inbound and outbound HTTP support
  - Fully supported for production use by normal IBM CICS service

- **SOAP for CICS SupportPac CA1M**
  - Free download from **ibm.com**/software/htp/cics/soap/index.html
  - Requires CICS TS V1.3 or above
  - Supplied AS-IS and unsupported although there is a public newsgroup

- **Requirements**
  - OS/390 V2R10 LE with APAR PQ65085 or above
  - Some means to parse XML eg. Enterprise COBOL or Enterprise PL/I in user program

CICS TS 3.1 Overview / Enhancements

CICS TS Version 3 Strategic Themes

- ## e-Business Access to CICS Applications

Enable the re-use of CICS applications within e-Business scenarios, via standard APIs and protocols

- ## Application Modernization

Enable the enhancement of existing applications, and construction of new applications, using contemporary programming languages, constructs and tools

- ## Enterprise Management

Enable the effective management of large runtime configurations via modern user interfaces

CICS Transaction Server Version 3 Highlights

	e-business Access to CICS	Application Modernization	Enterprise Management
CICS TS V3.1	Web Services - SOAP 1.2 - Configurable pipelines Web Services for CICS tooling HTTP 1.1 support - Easier setup with URIMAPs Outbound HTTP API Transport Layer Security 256-bit encryption Increased max SSL connections CICS Integrator Adapter runtime	OTE Exploitation - Threadsafe WEB commands - XPlink for C & C++ programs - SSL connection management LE Main for assembler programs Container and channels Codepage conversion enhancements Architectural patterns - "Example" Web Service app IBM SDK for z/OS, Java 2 Technology Edition V1.4.2	CPSM WUI - User favorites - Group profiles - Result set warnings - 2 column views Batchrep enhancements Eclipse based Info Center

HTTP Enhancements

- **Support for HTTP in CICS has been extended**
  - Compliant with the HTTP/1.1 specification
    - Date and time formats
    - Persistent Connections
    - Pipelining and Chunking of messages

- **Codepage Conversions**
  - CICS will use conversion services provided by z/OS support for Unicode
    - Convert character data between UTF-8 or UTF-16 and any of the currently supported EBCDIC codepages
  - Codepage conversions can be specified using:
    - EXEC CICS WEB commands
    - An analyzer program
    - A URIMAP definition

HTTP Enhancements…

- **New URIMAP resource definition**
  - Specifies how CICS is to treat the request
    - Server: inbound request
    - Client: outbound request
    - Pipeline: web service request
  - Determine type of processing for inbound requests (Usage=SERVER)
    - Dynamic Application response
    - Redirection
    - Static response

- **Web API Commands**
  - EXEC CICS CONVERTTIME
    - Converts HTTP formats to ABSTIME
  - EXEC CICS FORMATTIME
    - Converts ABSTIME to HTTP format
  - EXEC CICS WEB OPEN
    - Opens a session to a remote server
  - EXEC CICS WEB CONVERSE
  - EXEC CICS WEB CLOSE
    - Close a session with a remote server
  - EXEC CICS WEB PARSE URL
    - Breaks down URL string into: scheme, host, port, path, and query string

Security Enhancements…

- **Support for Transport Layer Security (TLS)**

- **Support for mixed case passwords**

- **Cipher suites**
  – Support for AES Cipher suites (128-bit and 256-bit)
  – Specification of minimum and maximum encryption level

- **Changes to revocation processing**
  – EXEC CICS VERIFY processing
  – Certificate revocation lists

- **Performance Enhancements**
  – SSL Caching support
  – Support for increased number of secure connections

Enhanced Inter-program Data Transfer

- **New CICS programming constructs:**

- **Container**
  - Named block of data designed for passing information between programs
    - "Named" COMMAREAs
  - No CICS enforced size limitation
    - Channels are stored above the line but below the bar
  - Multiple containers can be passed between programs

- **Channel**
  - A group of Containers
    - No limit on the number of Containers in a Channel
  - Non-persistent
    - Non-recoverable resource
  - Specified on LINK, XCTL, START and RETURN commands
    - Only one channel can be passed
    - Mutually exclusive with COMMAREA

Enhanced Inter-program Data Transfer…

- **New CICS commands and options:**

    - EXEC CICS PUT CONTAINER CHANNEL
    - EXEC CICS GET CONTAINER CHANNEL
    - EXEC CICS MOVE CONTAINER TOCHANNEL
    - EXEC CICS DELETE CONTAINER CHANNEL

    - EXEC CICS STARTBROWSE CONTAINER CHANNEL
    - EXEC CICS GETNEXT CONTAINER (data-area)
    - EXEC CICS ENDBROWSE CONTAINER

    - EXEC CICS ASSIGN CHANNEL

    - EXEC CICS LINK PROGRAM CHANNEL
    - EXEC CICS XCTL PROGRAM CHANNEL
    - EXEC CICS RETURN TRANSID CHANNEL
    - EXEC CICS START TRANSID CHANNEL

Web Services

- **Evolution of SOAP for CICS feature**
  - New infrastructure to act as a first class Web service end-point
  - Simplification of pipeline and system management
  - Fully integrated into CICS
    - RDO, problem determination, monitoring & statistics
    - New tooling support for easier application development

- **New features**
  - Resource definitions
    - URIMAP, PIPELINE, WEBSERVICE
  - Flexible configuration of the pipeline
  - Utility programs to:
    - Generate language structure from WSDL
    - Generate WSDL from language structures
  - Data mapping support in runtime
    - Between SOAP messages and language structures
  - New EXEC CICS API to support outbound requests

Open Transaction Environment Exploitation

- **OPENAPI program support**
  - COBOL, PL/I, Assembler, C (not compiled with XPLink)
  - Programs must be thread safe
    - Programs will run on new L8 and L9 TCBs

- **C/C++ programs can be compiled with XPLINK option**
  - Higher performance for C/C++ function calls
  - Programs must be thread safe to use XPLink
    - XPLink programs will start and run on new X8 and X9 TCBs

- **OTE exploitation by CICS SSL connection management**
  - New SP mode TCB
    - Reduces system storage requirements
  - Existing S8 TCBs
    - Now only allocated for the duration of the SSL requests
    - Provides for increased number of simultaneous SSL sessions

- **EXEC CICS WEB commands are now thread safe**

Architectural Patterns

- **New CICS example application**

  – Generic catalog manager and purchase order application

    - COBOL application

    - VSAM data files

  – Can be used to illustrate end to end scenarios

    - Demonstrate CICS Web Services

      – WMQ and http transports

      – "Bottom up", "Top down" and "Meet in the middle" approaches

  – "Best Practices"

    - Separation of presentation, business and data access logic

    - Use of Channels and COMMAREAs

CICS Integrator Adapter for z/OS V6

- **Equivalent to MQIAC V1.1.3+**
  - Renamed from MQIAC

- **Runtime included in CICS TS V3.1 packaging**
  - Tooling to be provided by next version of WSED
    - WebSphere Studio based user interface

- **Enhancements**
  - Additional vector handling and usability enhancements
    - Support for SEND / SEND TEXT type commands, ACCUM option
    - Remove prereq of WMQ
  - Support for XML messages
    - Will use XML parser of Enterprise COBOL of z/OS

CICS Integrator Adapter for z/OS V6…

- **Support of new processing patterns**

  – In MQIAC

    • Aggregate connector, persistent

  – In CICS Integrator Adapter

    • Aggregate connector, persistent

    • Aggregate connector, non-persistent (new)

    • Single connector, persistent (new)

    • Single connector, non-persistent (new)

- **Support for LINK3270 bridge passthrough processing**

CPSM Web User Interface Usability Enhancements

- **WUI now is functionally equivalent to the TSO EUI**
  - Dynamic selection lists
    - Generates lists of potential values for various attributes in the WUI
  - Filter confirmation
    - Specify a filter criteria before displaying the view
  - Result set warning count
    - Users can be warned before navigating to a view that will generate large amounts of records
  - User group profiles
    - Allow administrators to configure the WUI in different ways for different groups of users (e.g. operators, sysprogs)
  - Favorites support
    - Save views that are used frequently
  - BATCHREP enhancements

Language Environment Enhancements

- **Support for LE Assembler programs**

  – Application programs with LE MAIN

    • Not for Global or Task Related User Exits

  – New translator option LEASM

    • Must be Linkedited with DFHELII

  – High Level Assembler for MVS & VM & VSE Release 4+

    • Allows for use of LE debugger

Language Environment Enhancements…

- **Integrated Translator for C and C++ Programs**
  - Benefits
    - Translation and Compilation are combined
    - Evaluation of preprocessor statements
      - #include and #define
    - Easier to use with on-line debuggers
    - C/C++ source can be in HFS Files or PDS/PDSE Data sets
    - Removal of CICS translator input source restrictions such as Margins, columns
  - Requires:
    - z/OS 1.7 C/C++ compiler

Support for:

- **IBM Software Developer Kit for z/OS, Java 2 Technology Edition - Version 1.4.2**

  – Features of Java 1.4.2 are:

  - Enhancements to security, XML, networking, and debugging support
  - Numerous fixes and minor improvements

- **WebSphere Application Server**

  – Version 5 and 6

Support for:

- **EJB 2.1 deployment descriptor toleration**

  – Allows use of WebSphere V6 tooling, ASTK, for the deployment of EJB 1.1 session beans

- **64-bit toleration**

  – Toleration of 64-bit code in CICS address space

    • CICS TS V3.1 does not support execution of 64-bit applications

    • Extensions are provided to the CICS abend capture mechanisms

      – Report the contents of the full 64-bit general purpose registers

The Information Center

- **Migration to Eclipse**
  - Linux in Intel
    - Suse and RedHat
- **Consistent look and feel**
- **New welcome page**
- **Improved search engine**
- **What's New section**
- **Learning paths**
- **Information roadmaps**
- **Navigation revision**
- **e-support plugin**

The Information Center…

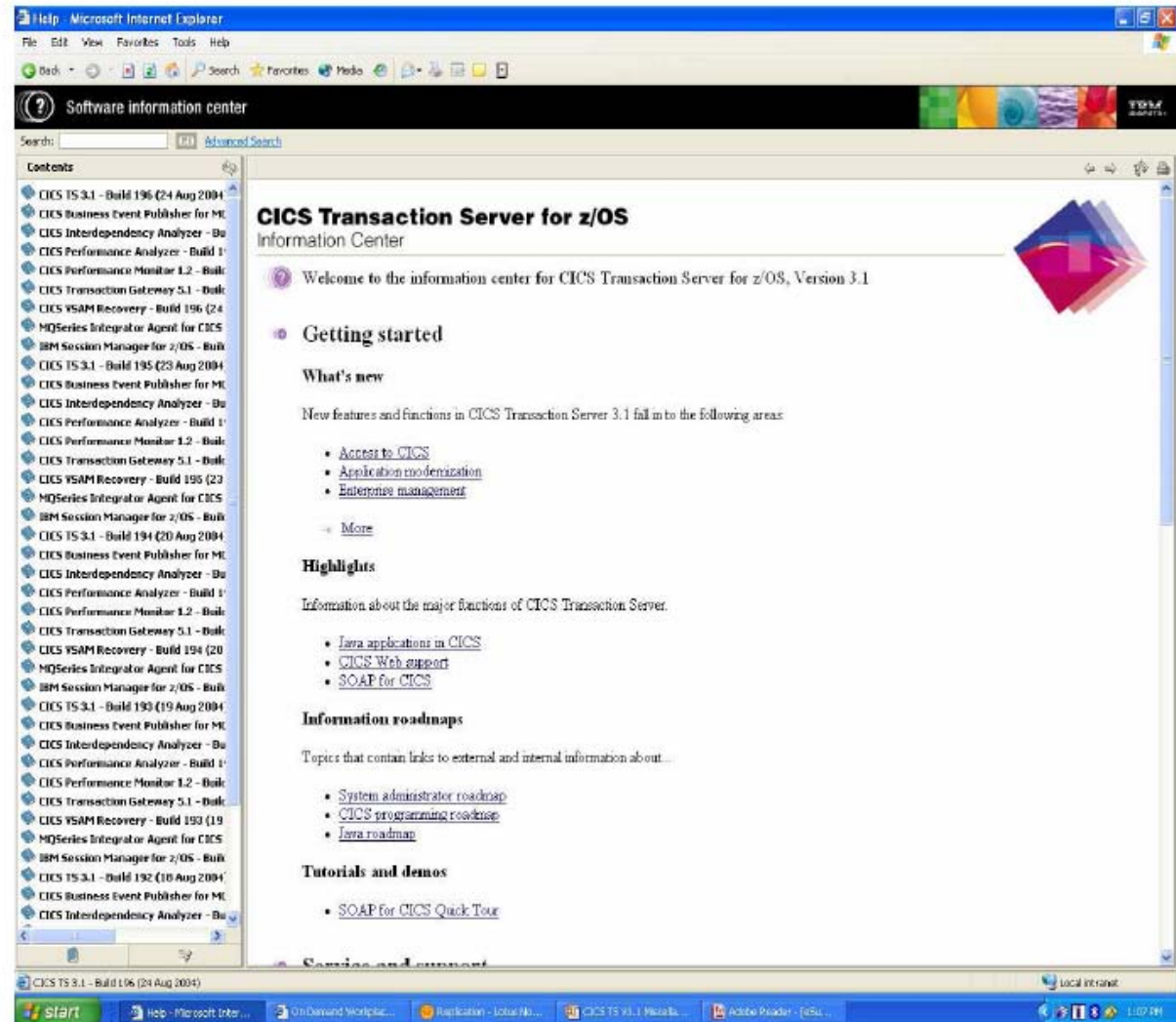"can support many information centers in the same framework."

Standard look and feel

New welcome page

New navigation tree

Immediate access to key information:
- What's New
- Highlights
- Information roadmaps
- Learning paths

Functionality Removals

- **OS/VS COBOL**
  - Programs using this level of COBOL will abend APCE
- **1 byte console ids**
- **High Performance Java**
- **ECI base classes (ECIREQUEST)**
- **Common Connector Framework (CCF)**
- **TCAM TOR**
  - Network support
- **BTAM**
- **CPSM remote MAS agent for Windows**
- **Affinity Analysis Utility**
  - Merged with the Interdependency Analysis tool (CICS IA)

Planning Information

- **CICSPlex SM TSO End User Interface**

  – Will be removed in the next 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
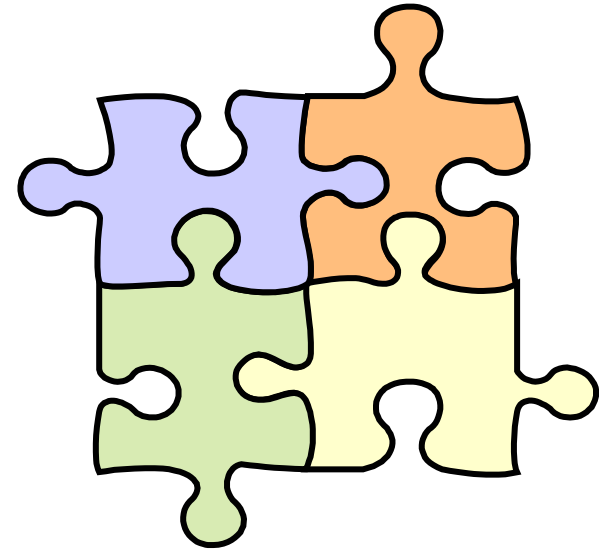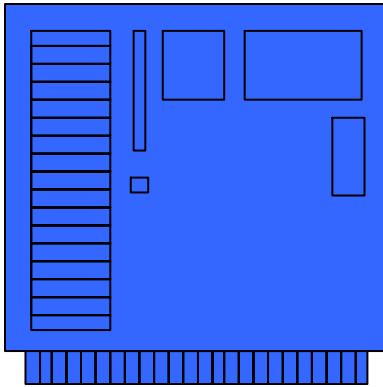
Which CICS Release ?
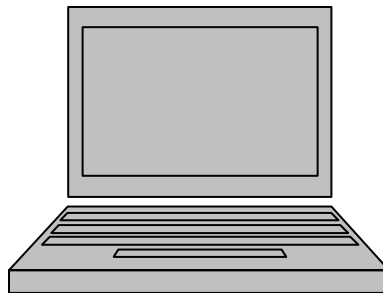
Which Release ?

- **Software Currency**

  – Single most important factor

    - Supported Software
    - New Technology and Enhanced Functionality
    - Industry Standards
    - Ease of use

- **Business Requirements**

  – Allows for fast ROI

    - Reuse of existing applications
    - Multi-language support
    - Application interfaces
    - WWW usage

Summary

CICS today

—CICS is IBM's premier transaction processor for the z/OS and OS/390 environments

The role of CICS TS in an enterprise solution on z/OS is to enable:

—Efficient and optimized extension and reuse of existing CICS applications

—Allow enterprises to create applications using new technologies by building on CICS skills

—Support and manage mixed application types and workloads

CICS TS 3.1 new features

—CICS TS 3.1 provides a platform from which an enterprise can evolve towards the adoption of e-business exploiting all the advantages of the evolutionary approach while capturing new opportunities derived from the latest industry standard e-business technologies

- e-business Access to CICS
- Application Modernization
- Enterprise Management