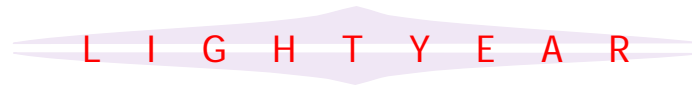


# IBM CICS® Transaction Server for z/OS™ V3.1

Integrating CICS applications in a **S**ervice-**O**riented **A**rchitecture



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## April 26<sup>th</sup> Integrating CICS applications in a Service-Oriented Architecture

This *TechTalk* is intended for *application designers and programmers*. It includes: using the new *Web Services Assistant* to publish existing and new CICS application functions as *Web Services*, and enable CICS applications to issue *SOAP* requests to other Web Service providers; other programming enhancements in areas such as *Web Support* and a new inter-program communication technique that eliminates the 32K COMMAREA size limit.

## May 10<sup>th</sup> Up and Running with CICS Transaction Server

This *TechTalk* is intended for *systems programmers and administrators*. It includes: *migration guidance* for TS Version 3; using the new *CICS Configuration Manager* tool for administration and change control of system definitions; enhancements in the newly available release 4 of *CICS Performance Analyzer*.

## *CICS Transaction Server V3 themes*

### **CICS Integration**

**Enable the re-use of CICS applications within a flexible On Demand operating environment via standard APIs and communication protocols.**

### **Application Transformation**

**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 TS V3.1 highlights

## • CICS Integration

- Web services and the CICS Web services assistant
- HTTP/1.1 including outbound API and URIMAPs
- Transport Layer Security, 256-bit encryption, and improved SSL V3

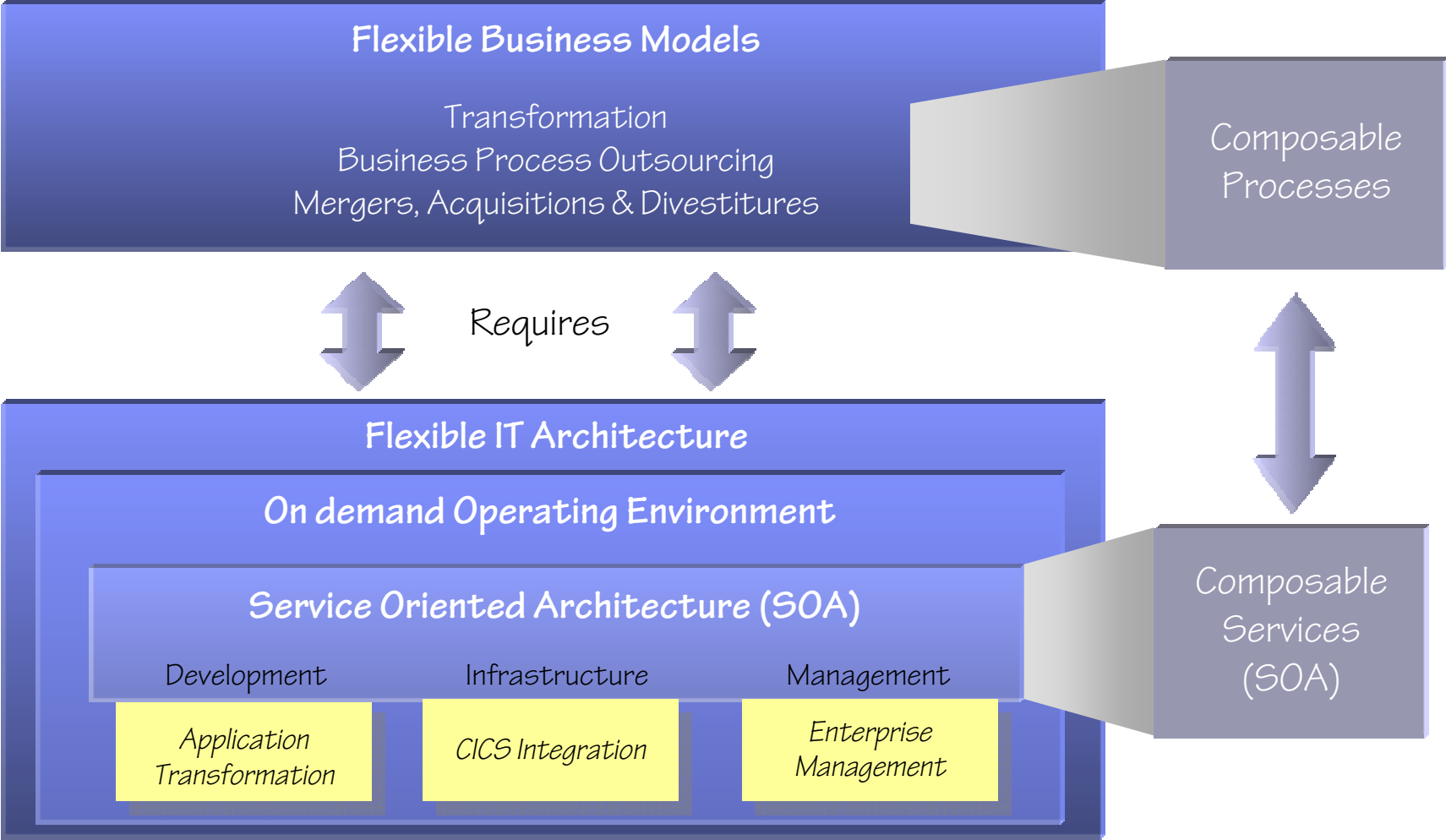
## • Application Transformation

- Containers and channels
- Codepage conversion enhancements
- Architectural patterns
- Information Center

## • Enterprise Management

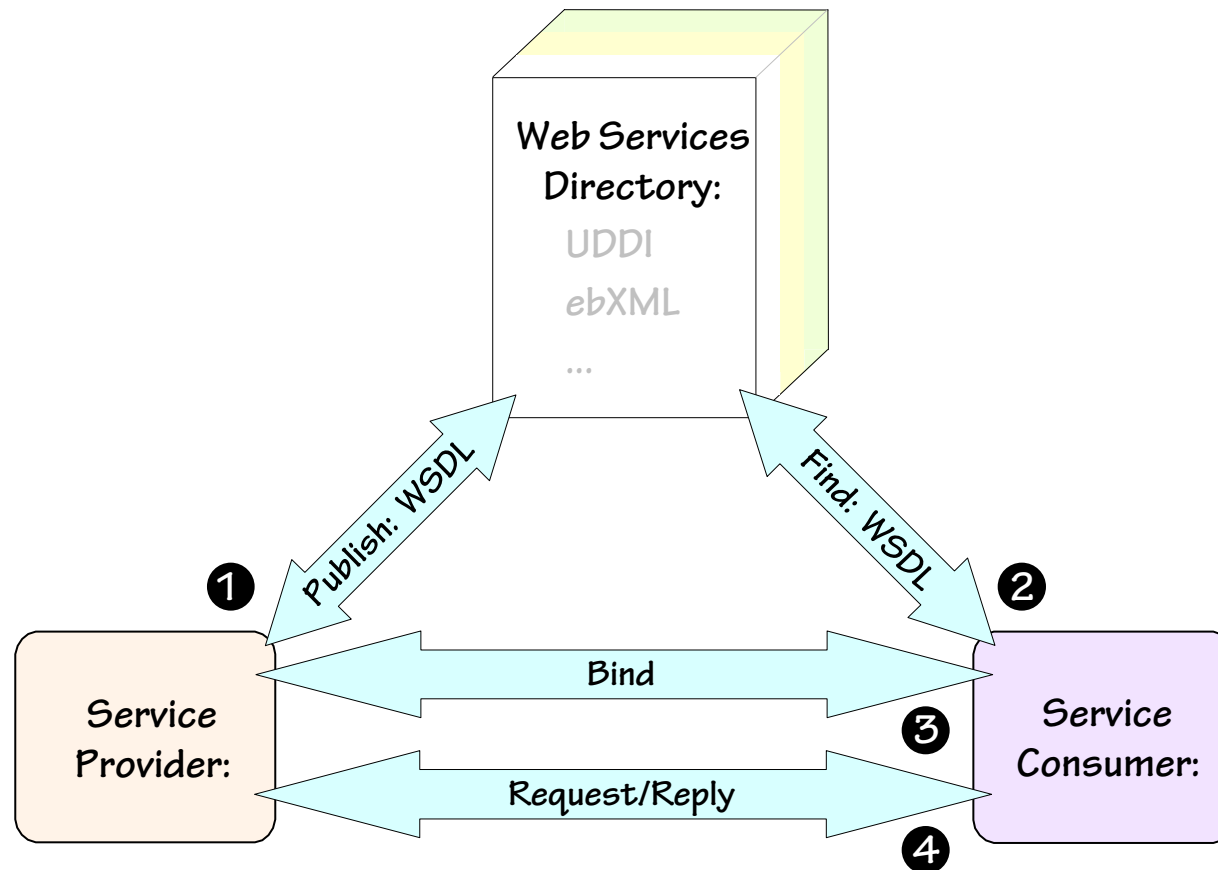
- Open Transaction Environment for all thread safe applications
- Thread safe WEB commands
- XPlink for C & C++ programs
- CPSM Web User Interface including user favourites, group profiles, & 2 column views
- Batchrep enhancements

# Service Oriented Architecture

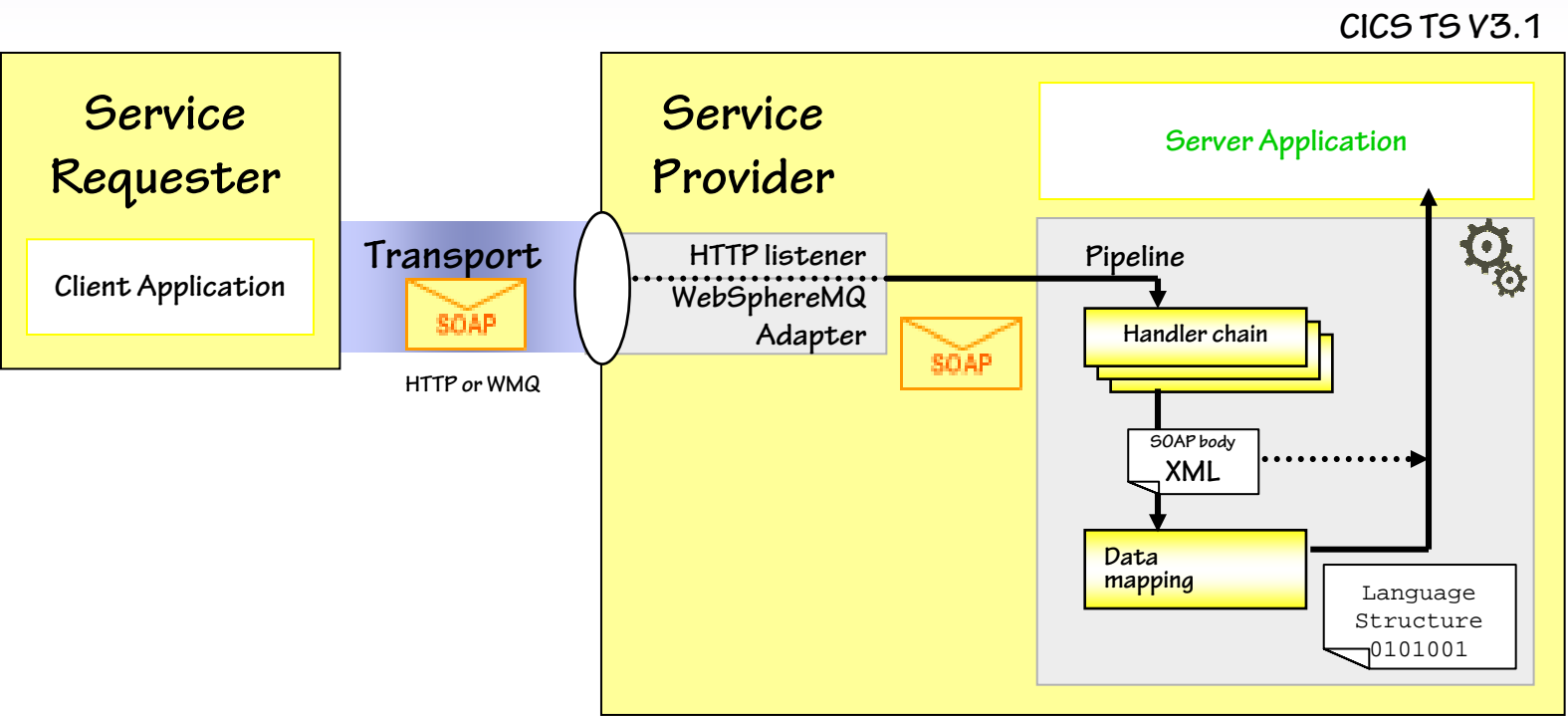


## *New Web Services capabilities - SOA*

- A CICS application can now be a Web service provider and requester
- CICS supports a rich set of Web services standards
  - SOAP 1.1 and 1.2 to send and receive Web services messages
  - WS-I Basic Profile 1.0a for interoperability with between providers and requesters using SOAP 1.1
  - WS-Coordination extensible coordination framework, & specific coordination of AtomicTransactions
  - WS-AtomicTransaction defines the type of transaction coordination to be used
  - WS-Security for authentication and encryption of all or part of a message
    - SOAP Message Security
    - Username Token Profile 1.0
    - X.509 Certificate Token Profile
- SOAP over HTTP/1.1 and WebSphereMQ supported
  - For flexible deployment options dependant on application and IT requirements
- Easy configuration and systems management for Web services
  - New CICS resource definitions
    - URIMAP, PIPELINE, WEBSERVICE
  - New CICS pipeline configuration file
  - Uses enhanced CICS services for traditional - monitoring, statistics and problem determination
- SOAP for CICS Feature customers can migrate to use these new capabilities



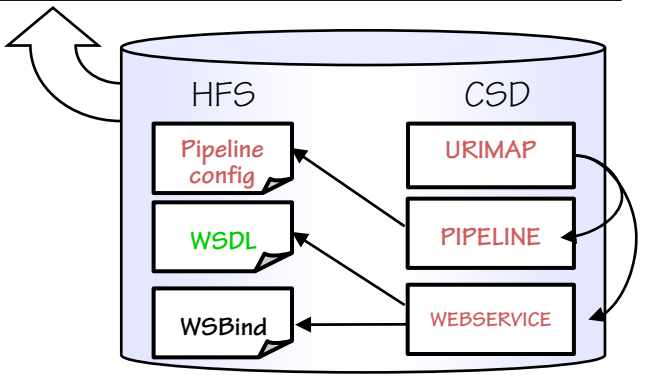
# CICS as a Web service provider



- 1. Develop**
- WSDL
  - or
  - Language structure
  - Server Application

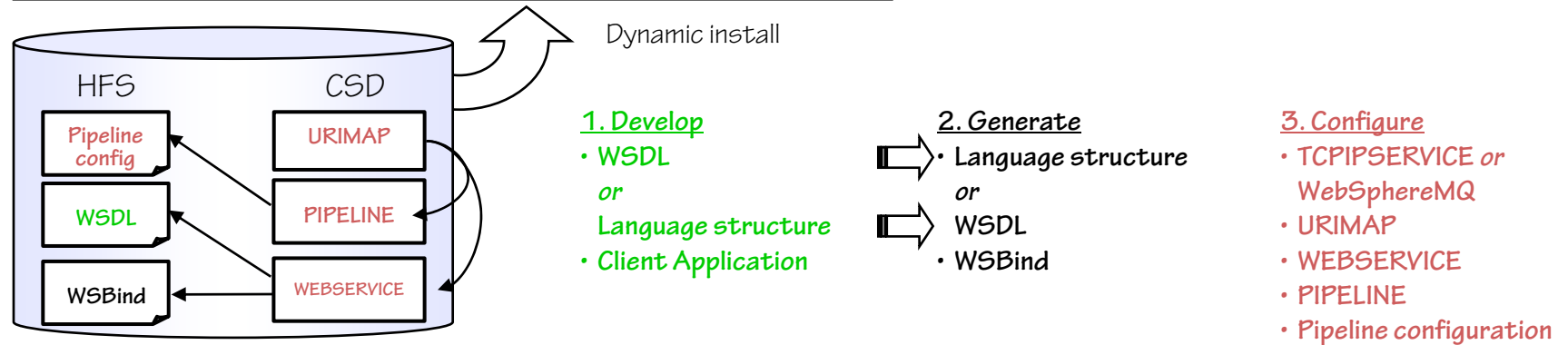
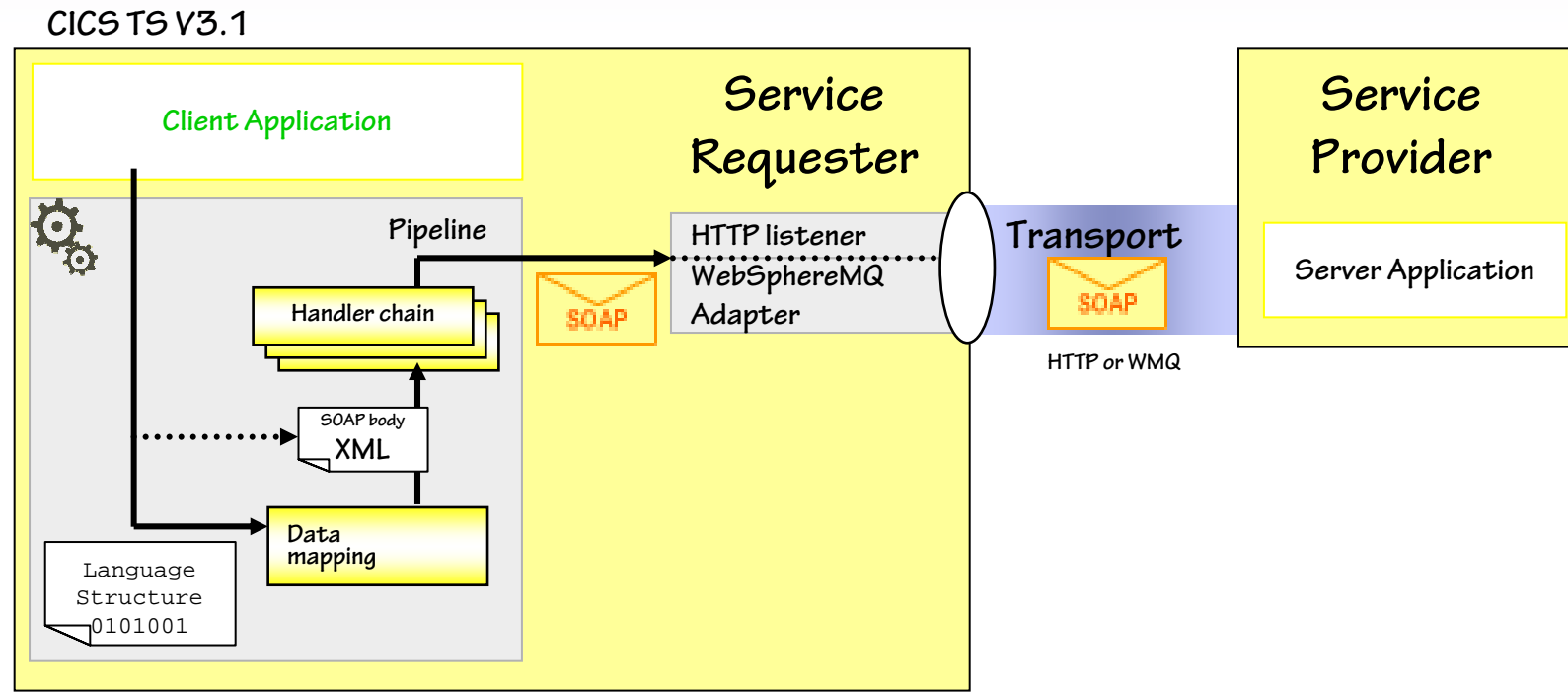
- 2. Generate**
- Language structure
  - or
  - WSDL
  - WSBind

- 3. Configure**
- TCPIP SERVICE or WebSphereMQ
  - URIMAP
  - WEBSERVICE
  - PIPELINE
  - Pipeline configuration





# CICS as a Web service requester



## Pipeline Configuration File

```
<?xml version="1.0" encoding="UTF-8"?>
<provider_pipeline xmlns="http://www.ibm.com/software/http/cics/pipeline"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://www.ibm.com/software/http/cics/pipeline_provider.xsd">
  <service>
    <terminal_handler>
      <cics_soap_1.1_handler/>
    </terminal_handler>
  </service>
  <apphandler>DFHPTP</apphandler>
</provider_pipeline>
```

## *New Web Services development capabilities*

- **Conversion between XML and COBOL, PL/I and C language structures**
  - **CICS Web services Assistant runs in z/OS batch to:**
    - *Generate WSDL and WSBind from a language structure*
      - *A bottom-up approach to expose an existing CICS application as a Web service*
      - *Based on Eclipse technology*
    - *Generate a language structure and WSBind from WSDL*
      - *Top down approach to implement an existing Web service or invoke a Web service*
  - **WSBind used by CICS for automatic data mapping support at runtime**
    - *Converts between SOAP messages and language structures*
- **New EXEC CICS API to invoke a Web Service**

# Web Services Assistant: DFHLS2WS

- \* Catalogue COMMAREA structure
  - 03 CA-REQUEST-ID PIC X(6).
  - 03 CA-RETURN-CODE PIC 9(2).
  - 03 CA-RESPONSE-MESSAGE PIC X(79).
- \* Fields used in Place Order
  - 03 CA-ORDER-REQUEST.
    - 05 CA-USERID PIC X(8).
    - 05 CA-CHARGE-DEPT PIC X(8).
    - 05 CA-ITEM-REF-NUMBER PIC 9(4).
    - 05 CA-QUANTITY-REQ PIC 9(3).
    - 05 FILLER PIC X(888).

```
<xsd: sequence>
  <xsd: element name="CA-REQUEST-ID" nillable="false">
    <xsd: simpleType>
      <xsd: restriction base="xsd:string">
        <xsd:length value="6"/>
        <xsd:whiteSpace value="preserve"/>
      </xsd:restriction>
    </xsd:simpleType>
  </xsd:element>
  <xsd: element name="CA-RETURN-CODE" nillable="false">
    <xsd: simpleType>
      <xsd:restriction base="xsd:short">
        <xsd:maxInclusive value="99"/>
        <xsd:minInclusive value="0"/>
      </xsd:restriction>
    </xsd:simpleType>
  </xsd:element>
  <xsd: element name="CA-RESPONSE-MESSAGE" nillable="false">
    ...
  </xsd:element>
  <xsd: element name="CA-ORDER-REQUEST" nillable="false">
    <xsd: complexType mixed="false">
      <xsd: sequence>
        <xsd: element name="CA-USERID" nillable="false">
          <xsd: simpleType>
            <xsd:restriction base="xsd:string">
              <xsd:length value="8"/>
              <xsd:whiteSpace value="preserve"/>
            </xsd:restriction>
          </xsd:simpleType>
        </xsd:element>
        <xsd: element name="CA-CHARGE-DEPT" nillable="false">
          ...
        </xsd:element>
        <xsd: element name="CA-ITEM-REF-NUMBER" nillable="false">
          ...
        </xsd:element>
        <xsd: element name="CA-QUANTITY-REQ" nillable="false">
          ...
        </xsd:element>
        <xsd: element name="FILLER" nillable="false">
          ...
        </xsd:element>
      </xsd:sequence>
    </xsd:complexType>
  </xsd:element>
</xsd:sequence>
```

## HTTP/1.1 enhancements

- HTTP listener, known as CICS Web support, has been significantly enhanced
  - HTTP/1.1 conditional compliance
  - RFC date and time formats
  - Persistent connections
  - Pipelining and chunking of messages
- New Web API commands
  - Convert HTTP RFC time formats to ABSTIME EXEC CICS CONVERTTIME
  - Convert ABSTIME to HTTP RFC formats EXEC CICS FORMATTIME
  - Open a session to a remote server EXEC CICS WEB OPEN
  - Send an HTTP request EXEC CICS WEB CONVERSE
  - Close an HTTP session with a remote server EXEC CICS WEB CLOSE
  - Breaks down a URL string into scheme, host, port, path, and query string EXEC CICS WEB PARSE URL
- A DOCTEMPLATE can now be retrieved from HFS

## HTTP/1.1 enhancements

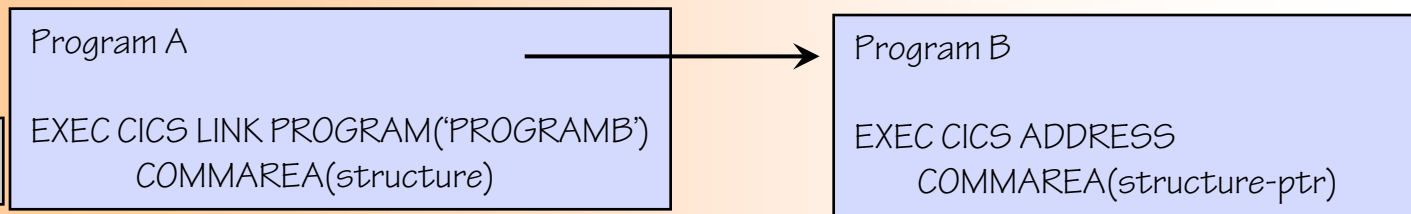
- **New URIMAP resource definition**
  - Specify the URI pattern to enable CICS to match requests to appropriate processing
  - **For CICS as a Web service provider**
    - Associate a URI for an Web service with a PIPELINE or WEBSERVICE resource
  - **For CICS as an HTTP server**
    - Replaces and simplifies the function previous provided by the CICS Web support analyzer exit
    - Static response, such as a DOCTEMPLATE or HFS file
    - Dynamic response using an application program using EXEC CICS Web APIs
    - Redirection to another server
  - **For a CICS application as an HTTP client**
    - Applications should use a URIMAP resource name to avoid hard coding URLs of HTTP server applications
- **Codepage conversions**
  - **CICS uses the z/OS Support for Unicode™ conversion services**
    - Converts character data between UTF-8, UTF-16, ASCII page pages, and EBCDIC codepages
    - Requires a conversion environment to be setup – see the z/OS manual SA22-7649-02
  - **Codepage conversions can be specified using:**
    - EXEC CICS WEB commands
    - An analyzer program
    - A URIMAP definition

## *Optimized data exchange between CICS programs*

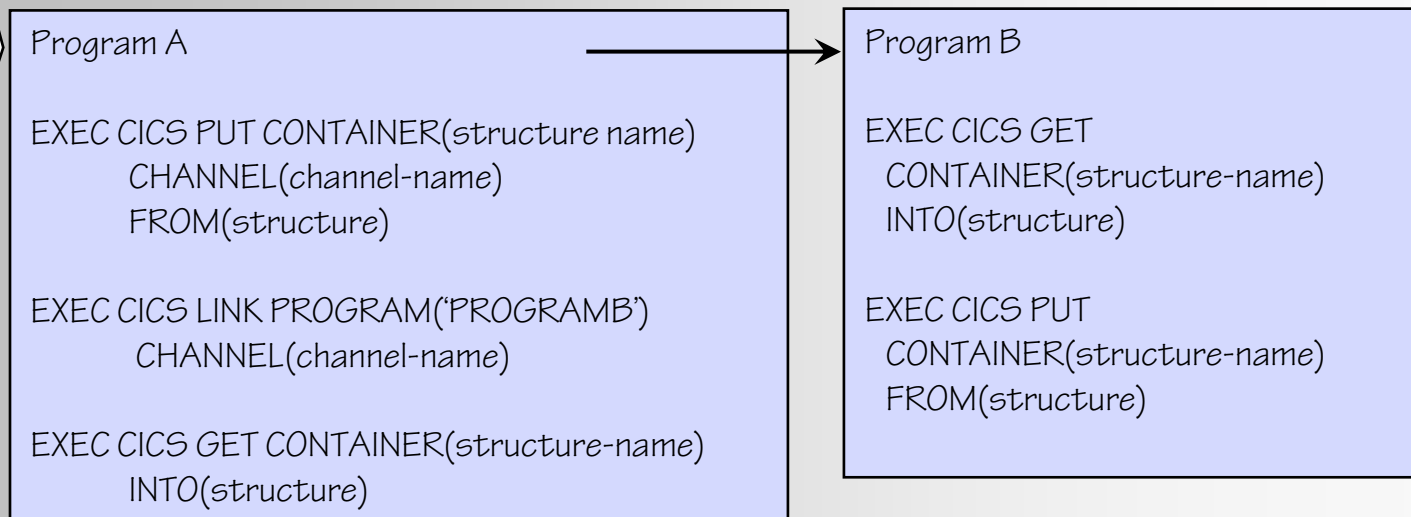
- A more flexible and intuitive alternative to the COMMAREA
  - By using separate containers for logically different data it will simplify language structures and minimize the impact of changes to the interface
    - For example; customer,account,orders
    - Avoids “overloading”
  - Dynamic creation and discovery by applications
- Enables large amounts of data to be passed between CICS applications
  - Not subject to 32KB restriction
- Optimized and managed by CICS
- Requires minimal application changes required to use

# COMMAREA vs. CONTAINER

## Existing application using a COMMAREA



## Application using a container and channel





- **A container is a named holder of information**
  - No CICS enforced size limitation - subject to “above the line” storage in the 2GB address space
  - Storage and lifetime managed by CICS
  - Non-persistent by default
    - Can be persistent if used within a controlling BTS process
- **A Channel is a named group of containers**
  - Containers are added to a channel
    - No limit on the number of containers in a channel
  - Channels are passed between CICS applications
    - Program to program using LINK and XCTL commands
    - Transaction to transaction using START and RETURN commands
    - Only one channel can be passed at a time
    - A channel is mutually exclusive with a COMMAREA
- **Supported between CICS regions and within the Web services support**
  - Only modified data is transferred between regions
- **Dynamic data conversion via GET and PUT APIs and transport resource definitions**
  - Uses CICS or z/OS Support for Unicode

## *Container and channel programming interfaces*

- **Container commands**
  - PUT CONTAINER
  - GET CONTAINER
  - MOVE CONTAINER
  - DELETE CONTAINER
- **Program transfer commands**
  - LINK PROGRAM  
[CHANNEL|COMMAREA]
  - XCTL PROGRAM  
[CHANNEL|COMMAREA]
- **Inquiry commands**
  - ASSIGN CHANNEL(data-area)
  - STARTBROWSE CONTAINER  
[CHANNEL(data-area)]
  - GETNEXT CONTAINER (data-area)
  - ENDBROWSE CONTAINER
- **Transaction transfer**
  - RETURN TRANSID  
[CHANNEL|COMMAREA]
  - START TRANSID [CHANNEL|FROM]
- **New JCICS classes Channel, Container, ContainerIterator provide access to containers and channels for Java programs**

## *Security enhancements*

- **Support for Transport Layer Security (TLS)**
- **New cipher suite selection**
  - Support for AES cipher suites (128-bit and 256-bit)
  - Can now specify minimum and maximum encryption levels
- **Performance enhancements**
  - SSL caching support across the Parallel Sysplex
  - Scalability improvements by increasing the number of simultaneous SSL sessions supported
- **Changes to revocation processing**
  - Certificate Revocation Lists (CRLs) are checked when negotiating with clients
    - New supplied transaction, CCRL, is provided for updating the CRL in an LDAP server
  - EXEC CICS START USERID() now returns USERIDERR for a revoked user or group connection
- **Support for mixed case passwords**

# *OTE delivering improved performance for core business logic applications*

- **OPENAPI program support**
  - For COBOL, PL/I, Assembler, C, and C++ programs not compiled with XPLink
  - Programs must be thread safe
    - Programs will run on new L8 and L9 TCBs
- **C and C++ programs can be compiled with XPLINK option**
  - Higher performance subroutine linkage and guard pages for stack extension
  - 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**

## Language enhancements

- **Support for IBM Software Developer Kit for z/OS, Java 2 Technology Edition, V1.4.2**
  - **Java improvements include:**
    - Enhancements to security, XML, networking, and debugging support
    - Numerous fixes and minor improvements
- **Support for LE Assembler programs**
  - **Application programs with LE MAIN**
    - Not for Global or Task Related User Exits
  - **New translator option LEASM**
    - DFHEIENT and DFHEIRET will generate appropriate LE calls
      - CEEENTY and CEETERM
  - **High Level Assembler for MVS & VM & VSE Release 4+**
    - Allows for use of LE debugger

- **New CICS example application**
  - **Generic catalog manager and purchase order application**
    - COBOL application
    - VSAM data files
  - **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
  - **Encompass “Best Practices”**
    - Separation of presentation, business and data access logic
    - Use of Channels and COMMAREAs

## Move to the Eclipse framework reflects strategic direction for delivering IBM documentation

- New search engine
- Consistent look and feel
- Integration with other product information
- Customizable – add your own information
- Navigation improvements
- Available on the IBM Web site, installable on your workstation, or servers;
  - Windows 2000 Server, Advanced Server, Professional (32-bit)
  - Windows XP Professional (32-bit)
  - Linux RedHat Enterprise 3.0 (AS), 32-bit
  - Linux SuSE Enterprise 8 and 9, 32-bit
  - AIX V5.2 and V5.3, 32-bit

The screenshot shows the 'Software information center' interface. The top navigation bar includes a search box and the text 'Search scope: All topics'. A left-hand 'Contents' pane lists various product components, with 'CICS TS 3.1 - Build 223 (2 Oct 2004)' selected. The main content area is titled 'CICS Transaction Server for z/OS Information Center' and features a welcome message, a 'Getting started' section with 'What's new' (listing 'Access to CICS', 'Application transformation', and 'Enterprise management'), 'Highlights' (listing 'Web Services in CICS', 'Java applications in CICS', and 'CICS Web support'), 'Information roadmaps', and 'Tutorials and demos' (listing 'SOAP for CICS Quick Tour'). The interface is clean and professional, typical of IBM documentation.

# CICS Information Center navigation improvements

- **What's New**
  - Organised by major functional area
  - Available from the navigation and welcome page
  - Integrated linking – no longer standalone

“contains everything you need to know about new functions”
- **Learning paths**
  - Available from the navigation
  - Covers new functions
  - CPSM WUI & Channels

“sequences of topics that help a user learn about a new area of the product”
- **Information roadmaps**
  - Function based - CPSM, Java and Web services
  - Available from the navigation and welcome page
  - Overview section with links to information center topics and web resources

“topics that provide comprehensive sets of links to information from various sources”
- **Troubleshooting and support**
  - Web search to find online support information
  - Getting fixes and contacting IBM support
  - Technotes

“a section that includes search page for querying online support documents and selection of technotes”



## Contents

- CICS Transaction Server V3.1
    - Using the information center
    - What's new
      - CICS integration
        - Web services in CICS
          - Benefits of Web services
          - Web services terminology
          - Requirements
        - How CICS supports Web services
          - Message handlers and pipelines
            - SOAP messages and the application
            - WSDL and the application data structure
            - The Web service binding file
        - Planning to use Web services
          - Planning a service provider application
          - Planning a service requester application
        - The CICS Web services assistant**
          - DFHLS2WS: high level language to WSDL
          - DFHWS2LS: WSDL to high level language
          - The pipeline configuration file
      - Changes to CICS externals
        - Security
      - Migration and coexistence
      - CICSplex SM support
    - Support for HTTP client requests from CICS
    - CICS Web support upgrade to HTTP/1.1
    - General enhancements to CICS Web support
    - Improvements to Internet security
  - Application transformation
  - CICS enterprise management
  - Other changes
  - Discontinued functions
  - General information
- Learning paths
- Information roadmaps
- Using CICS
- CICS functions
- Reference
- Troubleshooting and support

## What's New

## CICS Transaction Server V3.1

## The CICS Web services assistant

The CICS Web services assistant is a set of batch utilities which can help you to transform existing CICS applications into Web services, and to enable CICS applications to use Web services provided by external providers. The assistant supports rapid deployment of CICS applications for use in service providers and service requesters, with the minimum of programming effort.

When you use the Web services assistant for CICS, you do not have to write your own code for parsing inbound messages, and constructing outbound messages; CICS maps data between the body of a SOAP message and the application program's data structure.

Resource definitions are, for the most part, generated and installed automatically. You do have to define PIPELINE resources, but you can, in many cases, use one of the pipeline configuration file that CICS provides. These are:

**basicsoap11provider.xml**

Pipeline configuration file for a service provider using the SOAP 1.1 message handler.

**basicsoap11requester.xml**

Pipeline configuration file for a service requester using the SOAP 1.1 message handler.

The assistant can create a WSDL document from a simple language structure, or a language structure from an existing WSDL document, and supports COBOL, C/C++, and PL/I. It also generates information used to enable automatic runtime conversion of the SOAP messages to containers and COMMAREAs, and *vice versa*.

However, the assistant cannot deal with every possibility, and there are times when you will need to take a different approach. For example:

## L I G H T Y E A R

**You don't want to use SOAP messages**

If you prefer to use a non-SOAP protocol for your messages, you can do so. However, your application programs will be responsible for parsing inbound messages, and constructing outbound messages.

**You want to use SOAP messages, but don't want CICS to parse them**

For an inbound message, the assistant maps the SOAP body to an application data structure. In some applications, you may want to parse the SOAP body yourself.

**The CICS Web services assistant does not support your application's data structure**

Although the CICS Web services assistant supports the commonest data types and structures, there are some which are not supported. In this situation, you should first consider providing a program layer that maps your application's data to a format that the assistant can support. If this is not possible, you will need to parse the message yourself.

**Contents**

- CICS Business Event Publisher for MQSeries V1.2
- CICS Interdependency Analyzer V1.2
- CICS Integrat...
- CICS Perform...
- CICS Perform...
- REXX for CICS Tran... Server for VSE/ESA
- IBM Session Mana... for z/OS V1.2
- CICS Transaction... Server V3.1
- Using the inform... n center
- What's new
- Learning paths
  - Channels learning path
    - Introduction to channels
    - Basic Examples
    - Benefits of channels
    - Using channels: some typical scenarios
    - One channel, several programs (a compone...
    - Several channels, one component
    - Multiple interactive components
    - Creating a channel
    - The current channel
    - Current channel example, with XCTL comm...
    - Current channel: START and RETURN com...
    - The scope of a channel
    - Scope example, with LINK and XCTL comm...**
    - Discovering which containers a program's b...
    - Discovering which containers were returne...
    - CICS read only containers
    - Designing a channel: best practices
    - Constructing and using a channel: an exam...
    - Channels and BTS activities
    - Dynamic routing with channels
    - Data conversion with channels
    - How to cause CICS to convert data automa...
    - Using containers to do code page conversi...
    - A SOAP example
    - Learning path summary
  - Installing CICSplex SM - WUI scenario

Learning Paths

### Scope example, with LINK and XCTL commands

The figure below shows the same four interactive programs described in [Channels learning path: Current channel example with XCTL commands](#), plus a third-level program, C1, that is invoked by an EXEC CICS LINK command from program B1.

The scope of the X channel is restricted to A1 and B1.

The scope of the Y channel is B2 and B3.

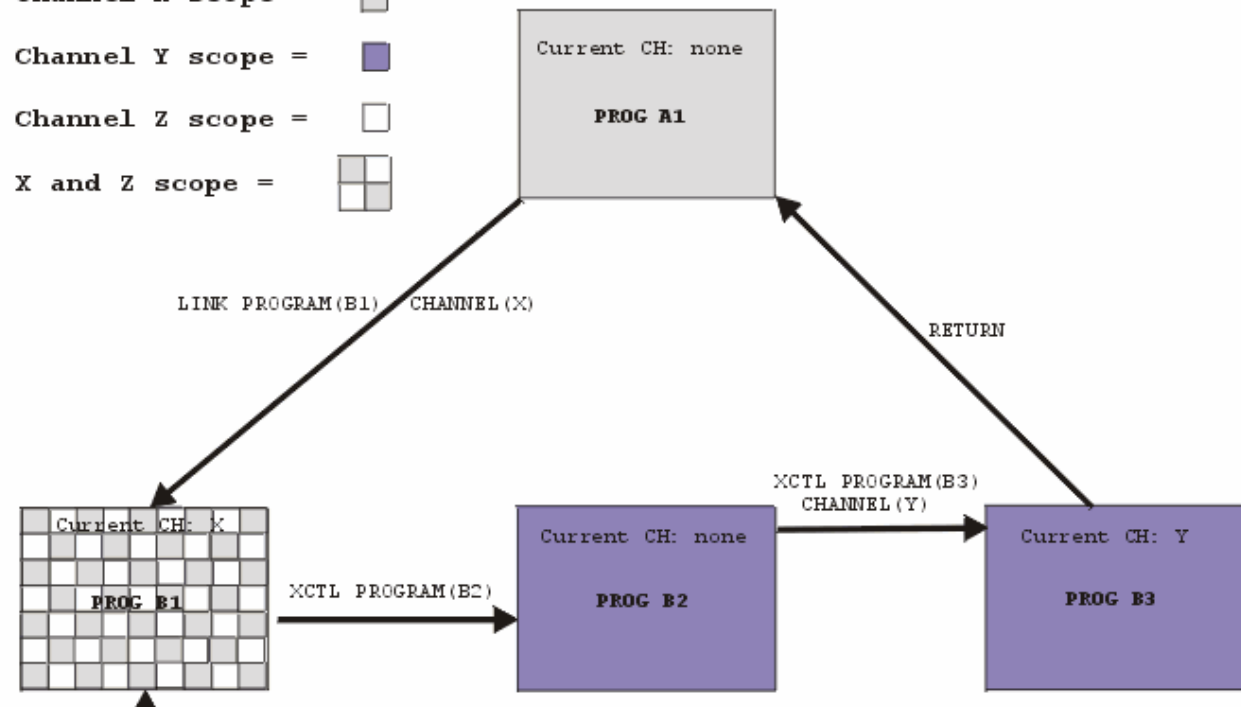
The scope of the Z channel is B1 and C1.



Note that, by the time control is returned to program A1 by program B3, it's possible that the X channel may have been modified by program B1—it might not contain the same set of containers as when it was created by A1.

Figure 1. The scope of a channel—example showing LINK and XCTL commands

- Channel X scope =
- Channel Y scope =
- Channel Z scope =
- X and Z scope =



Contents

- Workbench User Guide
- Java Development Tools
- Platform Plug-in
- JDT Plug-in Developer's Guide
- PDE Guide
- The Official Eclipse 3.0.0 Release Notes - Arthorne/Laffra
- CICS Business Event Manager for MQSeries V1.1
- CICS Interdependence Analyzer V1.2
- CICS Integrator Adapter for z/OS V6.0
- CICS Performance Analyzer V1.3
- CICS Performance Monitor V1.2
- REXX for CICS Transaction Server for VSE/ESA V1.1
- IBM Session Manager for z/OS V1.2
- CICS Transaction Server V3.1
  - Using the information center
  - What's new
  - Learning paths
  - Information roadmaps
    - Web Services**
      - CICSplex System Manager
      - Java programming and support
  - Using CICS
  - CICS functions
  - Reference
  - Troubleshooting and support
  - Library and PDFs
    - Find commands, messages, parameters and more
    - Glossary
    - Sitemap
- CICS VSAM Recovery V3.3
- CICS VSAM Transparency V1.1
- CICS Transaction Gateway V6.0
- CICS Universal Client V6.0

Information Roadmaps

CICS Transaction Server V3.1

# Web services roadmap



Table of Contents

- ↓ [Basic skills](#)
- ↓ [Migration](#)
- ↓ [Configuration](#)
- ↓ [Application development](#)
- ↓ [Deployment](#)
- ↓ [Administration](#)
- ↓ [Education](#)

Basic Skills

- [developerWorks Web services zone \(IBM developerWorks\)](#)  
Site that contains downloads, tutorials, education and tooling for developing web services.
- [WebSphere V5.1 Application Developer V5.1.1 Web Services handbook \(Redbook\)](#)  
A discussion of the standards and underlying concepts for the use of Web services, including the basic programming model. It also includes detailed information about implementing Web services with IBM tooling using a sample application.
- [Introduction to Web services and the WSDK v5.1 \(Tutorial\)](#)  
An online tutorial that introduces Web services concepts.
- [Additional Web services tutorials \(IBM developerWorks\)](#)
- [Web services - start here \(Information center\)](#)  
Start here to find out how CICS supports Web services.
- [Web services terminology \(Information center\)](#)  
A topic that contains definitions of the terminology that is used in the CICS documentation.
- [Web services architecture \(Information center\)](#)  
The Web services architecture is based upon interactions between three components: a service provider, a service requester, and an optional service registry.
- [Web services standards \(IBM developerWorks\)](#)  
A list of standards that relate to Web services, including links to where the standard is published and a brief description of what the standard is about.
- ↑ [Back to top](#)

**Contents**

- The Official Eclipse 3.0 FAQs - Arthorne/Laffra
- CICS Business Event Publisher for MQSeries V1.2
- CICS Interdependency Analyzer V1.2
- CICS Integrator Adapter for z/OS V6.0
- CICS Performance Analyzer V1.3
- CICS Performance Monitor V1.2
- REXX for CICS Transaction Server for VSE/ESA
- IBM Session Manager for z/OS V1.2
- CICS Transaction Server V3.1
  - Using the information center
  - What's new
    - CICS information
    - Applicat
    - CICS en
    - Other d
    - Discont
    - General inform
  - Learning paths
  - Information road
  - Using CICS
  - CICS functions
  - Reference
  - Troubleshooting and support
    - Searching knowledge bases
      - Web search**
      - Getting fixes
      - Contacting IBM Software Support
    - Support documents: CICS
  - Library and PDFs
    - Find commands, messages, parameters and more
    - Glossary
    - Sitemap
- CICS VSAM Recovery V3.3
- CICS VSAM Transparency V1.1
- CICS Transaction Gateway V6.0
- CICS Universal Client V6.0

Troubleshooting & Support

## Web search: CICS Transaction Server and related products

⚠ You must have an Internet connection to use the links and query fields on this page. For best results, use English keywords.

### Search IBM Software Support documents on the Web

Select product:

- CICS Transaction Server**
- CICS Transaction Gateway
- CICS Business Event Publisher

Select document type:

- All document types
- Technotes
- Flashes

Enter keywords:

Submit

Access a specific IBM Software Support site:

- [CICS product support](#)
- [Related CICS support pages](#)
- [Related product support pages](#)
- [LookAt message help](#)

Access a specific newsgroup:

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# WebSphere Studio Enterprise Developer (WSED)

Brings the power of modern application architectures and rapid application development and robust team support, to diverse enterprise IT organizations

- Intuitive, visual construction based on open standards (JSF and Struts)
- Broad SOA support through Web services and JCA linking visual environments and user sessions to CICS QOS
- Easy to learn, COBOL like language for rapid UI and Business dev.
- Facilities to develop, debug and deploy Java, COBOL, & PL/I applications and services



## Statement of Direction - What's Coming

CICS V3 exploitation - Subsystem support latest - CICS, WAS, DB2

- Connectivity enhancements
  - WSDL automation from existing processing
  - Support for new CICS WS run timemarshallers
  - XML based COBOL adapter enhancements
  - JCA connectors supporting latest CTG
- Modern Architectural enhancements
  - Service Flow Modeler support (Preview)
  - Leverages support for channels
- Traditional support for:
  - EGL support for VG based Web Transactions
  - BMS Editor
- Integration with other IBM application lifecycle products
- Eclipse V3 exploitation

## WSED Benefits

Single tool for all application transformation

- Increase developer productivity
- Leverage existing processing by enabling legacy assets to be used in SOA's
- Integrate with lifecycle
- Extend skill sets across the organization
- Enterprise Generation Language limits need for Java or traditional expertise



## *Comprehensive set of CICS focused tools and connectors*

- **Application Transformation**
  - CICS VSAM Transparency for z/OS V1.1
  - CICS Business Event Publisher for MQSeries V1.2
  - CICS Interdependency Analyzer for z/OS V1.3
- **Subsystem Management**
  - CICS Batch Application Control for z/OS V1.1
  - CICS Performance Analyzer for z/OS V1.3
  - Tivoli OMEGAMON XE for CICS V1.0
  - CICS Performance Monitor for z/OS V1.2
  - CICS VSAM Recovery for z/OS V3.3
  - CICS VSAM Copy for z/OS V1.1
  - IBM Session Manager for z/OS V1.2
  - CICS Online Transmission Time Optimizer for z/OS V1.1
- **CICS Connectors**
  - CICS Transaction Gateway V6.0
  - CICS Universal Client V6.0
  - MQSeries Integrator Agent for CICS V1.1
- **Application Development tools**
  - IBM Application Monitor for z/OS V2
  - IBM Fault Analyzer for z/OS V5.1
  - IBM Debug Tool for z/OS V5.1
  - IBM WebSphere Studio Enterprise Developer V5.1.2
- **Statement of direction to release CICS resource definition management in 1H05**

# Summary - CICS Transaction Server V3.1

- CICS TS and WebSphere Application Server are IBM's strategic middleware products that together support practically any mission critical solution
  - Interoperate well using Web services and connectors to support end-to-end on demand systems
  - Complement z/OS qualities of service such as high availability, scalability, low cost per transaction, and excellent security
- CICS TS provides the base for the majority of mainframe applications today
  - An efficient and optimized runtime for the reuse and transformation of existing CICS applications
  - Provides easy to use services that exploit new technologies by building on CICS skills
  - First class management and support of mixed application types and workloads
- CICS TS V3.1 is now generally available (25 March 2005)

## Increased ease of Integration

- Web services capabilities to extend CICS applications to a Services Oriented Architecture
- Support for industry-leading SSL and TLS protocols

## Enhanced CICS Application Transformation

- Ability to leverage single development tool for application transformation and integration
- Optimized CICS data exchange capabilities

## Improved performance & Enterprise Management

- Improved workload throughput
- Enhanced C and C++ programs performance
- Extension of CICSplex SM Web User Interface



*For more information*

Browse the CICS TS 3.1 Information Center online @:

[publib.boulder.ibm.com/infocenter/cicsts31/index.jsp](http://publib.boulder.ibm.com/infocenter/cicsts31/index.jsp)

Or install your own personal copy:

1. If you don't already have Eclipse, download the SDK from:

[www.eclipse.org/downloads/index.php](http://www.eclipse.org/downloads/index.php)

2. Go to IBM Publications...

[www.elink.ibm.link.ibm.com/public/applications/publications/cgibin/pbi.cgi](http://www.elink.ibm.link.ibm.com/public/applications/publications/cgibin/pbi.cgi)

...find SK3T-6965, and download it...

3. Add the CICS Info Center (SK3T-6965) to your Eclipse workbench





## Lightyear 'One-on-One' Seminars

To request a free 'One-on-One' seminar:

- e-mail to Carole ([crice@lightyr.com](mailto:crice@lightyr.com)), copy to me ([tonysk@lightyr.com](mailto:tonysk@lightyr.com)), specify which CICS 3.1 topic(s) would be of interest to you, include your 'phone #
- We will call you back to discuss:
  - Objectives
  - Content
  - Audience
  - Schedule