

CI6030 - CICS/TS Web Services

Course Synopsis	Duration:	Three (3) days.
	Audience:	Programmers, system programmers, system architects and system analysts responsible for putting a CICS/Web applications together. There are 5 exercises which will require a little bit of programming; all exercises will be using COBOL program skeletons.
	Prerequisites:	A good knowledge of the standard CICS/API and Web technologies basics are required.
	Delivery Method:	Instructor led, Hands-on workshops
Brief Description	<p><i>For the past ten years one of the main corporate mandates has been on implementing web services. During the same period the major changes in CICS TS have been the implementing of web service functions, beginning with CICS TS 1.3. and continuing with CICS TS 3.2 and 4.1. This course will cover how CICS applications can talk to web browsers just as well as they can talk to web servers; with the introduction of web services and SOAP. All in all, CICS TS 4.1 is now an important player in implementing Service Oriented Architecture in your organization.</i></p> <p><i>This course will concentrate on the new facilities implemented in CICS/TS 3.2 and 4.1. We will discuss HTTP 1.1 support, CICS transactions acting as clients in a CICS/Web scenario, XML, SOAP, MTOM, XOP and web services.</i></p>	
Course Objectives What You'll Learn	<p>Upon successful completion of this course, the student will be able to:</p> <ul style="list-style-type: none"> • Describe the components of a web service • Deploy web services for requester and provider applications • Use CICS/HTTP client capabilities to call server programs • Describe how to integrate your applications in a Service Oriented Architecture (SOA) • Use the Web Services Assistant utilities • Develop applications which will be sending/receiving chunked or pipelined messages • Use CICS/API commands to invoke a web service and manage SOAPFAULTS • Describe the Small Object Access Protocol (SOAP) • Understand XML basics • Understand the usage of the URIMAPs, Web Service and PIPELINE definitions • Describe, define and configure CICS PIPELINEs • Use CICS facilities to debug programs using this environment • Understand the usage of Channel Containers to carry information from program to program 	
Topics Covered	<p>I. Introduction</p> <p>This section will provide a quick review of the web facilities available in CICS; it will discuss the CICS Business Logic Interface, CICS/WEB API, and TCP/IP API that have been available for a while now. IT will also provide an overview of the various ways one can connect to a CICS system and provide some information on some of the products available in this</p>	<p>area which could help you build a web application that will interact with your CICS systems.</p> <ul style="list-style-type: none"> • Connections to CICS • What is the ATOM Service • What is WSRR • What is Service Component Architecture • Migration from TS 3.1 and TS 3.2

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II. HTTP 1.1 Support

HTTP 1.1 opens new doors to CICS applications. We will discuss the new date format and the CICS commands that will help you get to these new formats, chunked and pipelined messages, virtual hosts, CICS URIMAP and TCPIP SERVICE definitions, new compliancy rules, new behavior of the CICS Web Monitor transaction. The exercise will be about formatting dates so they can display in HTTP RFC format.

- WEB OPEN and WEB CLOSE
- WEB SEND & RECEIVE in CICS client programs
- Chunked messages
- PIPELINE messages
- HTTP RFC date conversion and formatting

III. CICS CHANNEL CONTAINERS

This chapter describes the CICS/API commands related to implementing CONTAINERS in your CICS programs. We will discuss the GET, PUT and MOVE commands as well as providing information on how to browse through the list of CONTAINER names available within the CHANNEL. It will review existing CICS/API commands that can be used to pass CHANNEL to other programs, namely XCTL, LINK, START and RETURN. The hands-on exercise will consist on converting 2 programs which are using COMMAREA to CONTAINERS. This technology is required when writing web service requester applications.

- Channel definition
- Container definition
- Channel commands
- Container commands
- Usage notes

IV. Web Service, SOAP and XML

CICS/TS 3.1 introduced Web Service and SOAP support; a brief overview of these facilities will be provided. Since these facilities rely heavily on XML, we will also discuss the tools that are available to programmers for dealing with XML messages.

- SOAP message format - envelope, header, body, SOAPFAULT
- XML basics - message format, schema
- Web Services - provider and requester applications

V. CICS as a Web Service Provider

In this section, the attendant will build the necessary objects that will make CICS a provider of web services. We will discuss the Web Service Assistant DFHLS2WS in detail, review the parameter to the utility, the rules that the application program must follow in order to have a successful implementation. In this chapter, we will also introduce the concept of PIPELINE. The exercise will be about building a pipeline and preparing a server program which will be used as web service provider.

- PIPELINE configuration
- URIMAP usage in configuring PIPELINE
- Atomic transaction support
- Binding files
- WSDL files
- DFHLS2WS utility
- Channel vs COMMAREA interfaces
- Web Service definitions

VI. CICS as a Web Service Requester

In this section, the attendant will build the necessary objects that will make CICS a requester of web services. We will discuss the Web Service Assistant DFHWS2LS in detail, review the parameter to the utility, the rules that the application program must follow in order to have a successful implementation. A review of the CICS commands available to the programmer to invoke a web service will also be provided. In this chapter, we will also provide a quick overview of CICS CHANNEL CONTAINER which must be used by the requester application. The exercise will be about building a pipeline and preparing a requester program which will invoke the web service provider application prepared in the previous exercise.

- Channel Container
- DFHWS2LS utility
- PIPELINE configuration
- EXEC CICS INVOKE command
- URIMAP
- Web Service

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Covered Continued****VII. Message Processing**

In this section, we discuss some of the elements involved in processing web services. More specifically, we will review the methodology to use when dealing with arrays and variable arrays in a web service message, processing MTOM/XOP and WSDL 2.0 facilities supported by CICS/TS 3.2

- WSDL 2.0 facilities
- Fixed length arrays of data in web services message
- Variable length arrays of data in web services message
- MTOM/XOP processing

VIII. Security

A brief overview of the security available in CICS/TS 3.1 will be provided; we will discuss the changes to SSL support, certificate revocation lists, behavior changes of the EXEC CICS VERIFY PASSWORD command and the introduction of the support for TLS.

- Basic security configuration
- SOAP message security
- WS-Trust support
- SSL/TLS support