



IBM Software Group

## IBM WebSphere Application Server V7

### *z/OS optimized local adapters – CICS support*



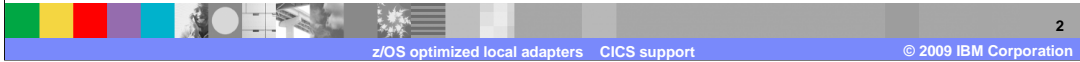
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This presentation discusses the CICS® support in the optimized local adapter feature available in WebSphere® Application Server V7.0.0.4.

## Overview

- CICS support



This presentation briefly discusses the CICS support available in the optimized local adapters function for z/OS®.

## Transactions provided for CICS

- BBOC – Control transaction
  - ▶ Optimized local adapter support is provided as a CICS Task Related User Exit (TRUE)
  - ▶ Enables/disables the TRUE
  - ▶ Enables/disables tracing for optimized local adapters in CICS
  - ▶ Drives BBOA1REG/BBOA1URG
  - ▶ Starts/stops the CICS Link Server
  - ▶ Displays optimized local adapters status



Optimized local adapters provides three transactions to you with the installation of the optimized local adapter feature. The first transaction is a control transaction called BBOC. This transaction is what you use in CICS to enable and disable the task related user exit TRUE that you have installed. You will also use BBOC to enable or disable client tracing. You can use it to drive the register and un-register APIs. You can start or stop the CICS link server. To a limited extent you can display the status of the optimized local adapters on the CICS terminal. When you do enable tracing for TRUE, (BBOC start TRUE xtr=yes) all the trace records go inside an extra partition transient queue inside of CICS called BBOQ. This name can be changed to a name of your choice. The dd name is bboout. The exit traces will go to that queue, not the console or message user in CICS. Also, when you start the link server, use BBOC to do a registration or have trace set to 1 or 2, the messages will go to this queue.

## Transactions provided for CICS

- BBO\$ -- CICS link server
  - ▶ Accepts requests from WebSphere – delegates to CICS invocation task
- BBO# -- CICS invocation task
  - ▶ Links to user specified CICS transactions



The next two transactions are BBO\$ and BBO# and are associated with the link server. The BBO\$ transaction accepts requests from a WebSphere Application Server instance and delegates to BBO#, the second transaction. BBO# runs whatever application logic that you want it to run.

## CICS link server

- Receiving requests in the CICS link server
  - ▶ Link server is started using the BBOC transaction
  - ▶ Caller provides a register name on BBOC transaction (like BBOA1REG)
  - ▶ A BBO\$ transaction is started to receive requests (like BBOA1RCA “\*”)
  - ▶ Received requests are created in a new BBO# transaction
  - ▶ The requested service name is the name of a CICS program which the BBO# transaction will ‘EXEC CICS LINK’ to
    - Container names to send/receive parameters are defined on the com.ibm.websphere.ola.ConnectionSpecImpl object
  - ▶ Each BBO# transaction has “sync on return” behavior
  - ▶ The server will continue to receive requests until it is stopped using BBOC

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z/OS optimized local adapters CICS support

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The CICS link server is essentially support that is provided that allows you to receive requests inside of CICS. This is a managed environment that you can use to drive work into CICS from a WebSphere Application Server instance. The main difference between the link server and a CICS application running, is optimized local adapters provides an automatic way to invoke a CICS program that corresponds to the service name that you requested in your Java™ application. If your Java application wants to invoke a pre-existing CICS program you supply that name as the service name, drive a request into the link server and optimized local adapters will link to that program for you. The link server is started through a BBOC transaction and you will provide the register name that you want to use. Optimized local adapters will do the BBOA1REG call for you. This is the name that your JCA application will use to find the registration. A BBO\$ transaction is started up to receive requests inside the link server. This behavior is similar to a call to BBOA1RCA with an \* option, allowing any request to be accepted from a WebSphere application for the registered name that you specified. This is handled by the BBOC transaction. When a request is received a new transaction is created to process that request which is the BBO# transaction. You can specify a different transaction name to accommodate your installation (if BBO# is already in use). You specify the four character transaction name using a method on the JCA connection. Once the BBO# transaction receives your request, it will look at the service name that you provided and it will do an ‘EXEC CICS LINK’ to a program name corresponding to that service. Each BBO# transaction has a sync on return behavior. After the ‘EXEC CICS LINK’ you are returned to the BBO\$ transaction to perform a sync point and commit any work that was done under the BBO# transaction. The server will continue to receive requests until it is stopped using a BBOC stop server API.

## CICS link server

- Security
  - ▶ CICS can be set up to assert the caller's identity (from WebSphere)
  - ▶ SAF must be set up with a SURROGAT class definition

CICS can be set up with security support to assert the callers identity from a WebSphere Application Server instance if your using the link server. This is done through a SAF SURROGAT class definition. This means optimized local adapters will take the user ID that you have authenticated in a WebSphere Application Server instance that your EJB or servlet is running under and you can select whether the ID is asserted into CICS.

## CICS link server

### ▪ Channels/Containers

- ▶ By default, CICS transaction receives input parms in a commarea
- ▶ EJB/Servlet can specify a container name for the request/response using the JCA ConnectionSpecImpl
  - get/setUseCICSContainer() – 1 for container, 0 for commarea
  - get/setLinkTaskReq/RspContID() – Set request/response container name
  - get/setLinkTaskReq/RspContType() – 1 for bit, 0 for char (default)
- ▶ Channel name is always IBM-WAS-ADAPTER
- ▶ This only applies to requests initiated from WebSphere using JCA



With optimized local adapters you get channels and containers support. By default your data will go into a commarea and that is how your CICS program will receive it. You can set your program to receive data in the container. You will tell the link server what you want to do using the set methods listed above. The JCA ConnectionSpecImpl is used. You can say whether you want to use a container, the container name for request/response option, and the type of the response and request you want to use. A bit container or a char container can be specified. The channel name is fixed and is always IBM-WAS-ADAPTER. If you set these options, when optimized local adapters sends your request to CICS a container is populated with your request data that your program can then receive into. A container is made available for the response, which is read and flowed back to your Java application. This only applies to requests initiated from WebSphere using the JCA adapter and only if your receiving the request into the link server. The link server is essentially an implementation under CICS of the optimized local adapter APIs. Optimized local adapters are using its own APIs to link to existing CICS applications.

## Driving work into WebSphere from CICS

- Global transactions
  - ▶ WebSphere can join a CICS UOW when invoked on BBOA1INV/BBOA1SRQ
    - BBOA1REG call must indicate it wants global transaction support
    - Target EJB must be deployed with the correct transaction attribute
  - ▶ WebSphere participates in the two phase commit when
    - CICS application issues 'EXEC CICS SYNCPOINT'
    - on return (if sync on return)



When driving work into a WebSphere Application server instance from CICS, global transactions are supported. You can extend your CICS application unit of work (UOW) into your WebSphere Application Server instance either using BBOA1INV or BBOA1SRQ. During the registration using the BBOA1REG API you must indicate that you want global transaction support by setting a flag on the register call. The target EJB must be deployed with the correct transactional attributes. After control returns back to your CICS application, your CICS application is going to do a sync on return or it will do an 'EXEC CICS SYNCPOINT' call for commit or rollback. When this happens your WebSphere Application Server instance coordinates with CICS to ensure that all the resources that were accessed by CICS and WebSphere are committed or rolled back together. RRS is used to merge the transaction contexts between CICS and WebSphere.



## Driving work into WebSphere from CICS

### ▪ Security

- ▶ CICS can propagate the CICS region user ID (default) or the CICS Task user ID when calling BBOA1INV/BBOA1SRQ
- ▶ WebSphere can reject the CICS Task user ID using an environment variable



By default, any native application that calls into a WebSphere Application Server instance using optimized local adapters, the user ID is pulled off the calling thread and that information is flowed into WebSphere. The WebSphere application controls how the user ID is use. You can set EJB run as attributes to change an ID to whoever you need it to be, you can also define roles in the EJB to specify whether the ID has the ability to call the EJB. These are standard EJB Java EE security controls. The additional capability optimized local adapters provides is the option to pick the CICS region user ID or the CICS task user ID when you call BBOA1INV, or BBOA1SRQ. The WebSphere Application Server instance can reject the task ID using an environment variable.

## Summary

- Transactions provided for CICS support
- CICS link server
- Security



This presentation has discussed the new transactions provided by optimized local adapters for CICS support. Also discussed was the CICS link server as well as a couple of security considerations.

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