



IBM Software Group

IBM WebSphere Application Server V7

Optimized local adapters for z/OS - Installation



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This presentation discusses the new optimized local adapter for z/OS® feature.

Installing optimized local adapters

- `$WAS_HOME/bin/olaInstall.sh`
 - ▶ Three options – INIT UNINIT OLAMODS
 - ▶ INIT will prepare `WAS_HOME` with new jars / libraries, and populate a dataset with libraries needed for CICS® and Batch clients
 - `olaInstall.sh INIT <name of dataset>`
 - ▶ UNINIT will remove jars and libraries from `WAS_HOME`
 - ▶ OLAMODS will perform just the dataset portion of INIT
- `$INSTALL_ROOT/mso/OLA/bin/olaRar.py`
 - ▶ Sets WebSphere® Application Server environment variable to enable adapters in the WebSphere Application Server daemon
 - ▶ Installs the JCA RAR into specified server
 - ▶ Can also perform these actions using WebSphere Application Server administrative console
 - ▶ Script is in ASCII – needs to be edited with defaults for your system/server



Although optimized local adapters is delivered in WebSphere Application Server V7.0.0.4, it is not by default installed into your configuration hfs. Optimized local adapters is an optional feature and does not need to be activated. If you want to take advantage of optimized local adapters, an installation script called `olaInstall.sh`, which is located in your configuration hfs, can be executed.

There are three possible choices for the first parameters for the `olaInstall` script; the first being INIT. INIT will link the optimized local adapter files into your configuration hfs. There is a jar file linked into your plug-in directory and a dll file linked into your lib directory that WebSphere Application Server uses to support the adapter function. Those files are for WebSphere use only. An additional file that is linked is a resource adapter file, this is the actual JCA connector that you will install in WebSphere to be able to use the connector adapter support. The second parameter after the installation option is the name of a dataset that optimized local adapters will populate with dlls that you will need in your client application and in CICS. After you run the installation script your hfs is setup to use optimized local adapters. The next script listed above, `olaRar.py` is a script provided to run required configuration steps against your WebSphere Application Server environment. This is a sample script.

Listed above are the three steps the script will execute, setting a WebSphere environment variable in the daemon, installing the JCA RAR file into your application server and creating the connection factory in the RAR file. You can modify the sample script to fit your environment or you can complete all the required steps using the administrative console which is shown on the next slides.

The second choice for the first parameter to the `olaInstall` script is UNINIT. UNINIT will remove the optimized local adapter feature from your configuration hfs.

The third choice for the `olaInstall` script is OLAMODS. OLAMODS will create the dataset containing dlls that are used in your client application.

Finally, if your configuration uses RACF® then you will need to set up the CBIND class to allow the batch and CICS region to connect to WebSphere Application Server.

Installing optimized local adapter

- Optimized local adapter RAR

- Located at \$WAS_HOME/installableApps/ola.rar

Resource adapters

Use this page to manage resource adapters, which provide the fundamental interface for connecting applications to an Enterprise Information System (EIS). The WebSphere(R) Relational Resource Adapter is embedded within the product to provide access to relational databases. To access another type of EIS, use this page to install a standalone resource adapter archive (RAR) file. You can configure multiple resource adapters for each installed RAR file.

☐ Scope: **-All scopes**

☐ Preferences

Select	Name	Scope
You can administer the following resources:		
<input type="checkbox"/>	OptimizedLocalAdapter	Node=SY1
<input type="checkbox"/>	WebSphere MQ Resource Adapter	Cell=SY1
<input type="checkbox"/>	WebSphere MQ Resource Adapter	Node=SY1
<input type="checkbox"/>	WebSphere MQ Resource Adapter	Node=SY1,Server=server1
Total 4		



Above is a screen capture of installing the RAR file into your installation from the administrative console. The RAR file is located in the installable apps directory of your configuration hfs.

Installing optimized local adapter

- Optimized local adapter RAR connection factory

Resource adapters > OptimizedLocalAdapter > J2C connection factories

Use this page to create a connection factory for use with the resource adapter. The connection factory is a collection of configuration values that define a WebSphere(R) Application Server connection to your Enterprise Information System (EIS). The connection pool manager uses these properties as directions for allocating connections during runtime. You can configure multiple connection factories for each resource adapter.

Preferences

Select	Name	JNDI name	Scope	Provider	Description	Connection factory interface	Category
<input type="checkbox"/>	OLACF	eis/ola	Node=SY1	OptimizedLocalAdapter		javax.resource.cci.ConnectionFactory	
Total 1							

Once the RAR file is installed you will need to create a connection factory shown above. It is recommended you have one connection factory per node.

Installing optimized local adapter

- Optimized local adapter daemon environment variable

- Set this under “environment->WebSphere variables”

- WebSphere Variables**

Use this page to define substitution variables. Variables specify a level of indirection for some system-defined values, such as file system root directories. Variables have a scope level, which is either server, node, cluster, or cell. Values at one scope level can differ from values at other levels. When a variable has conflicting scope values, the more granular scope value overrides values at greater scope levels. Therefore, server variables override node variables, which override cluster variables, which override cell variables.

Scope: Cell=SY1, Node=SY1

Preferences

Select	Name	Value	Scope
<input type="checkbox"/>	WAS_DAEMON_ONLY_CONFIG_ROOT	/WebSphere/v7R0/Daemon/config	Node=SY1
<input type="checkbox"/>	WAS_DAEMON_ONLY_control_region_configured_system	SY1	Node=SY1
<input type="checkbox"/>	WAS_DAEMON_ONLY_enable_adapter	1	Node=SY1

6

Optimized local adapters for z/OS Installation

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Above is a screen capture of the WebSphere Application Server environment variable `WAS_DAEMON_ONLY_enable_adapter` that needs to be set to 1 to enable the adapter support. Once set to 1 the Daemon will need to be recycled. If successful, in your Daemon log you will see `enable_adapters=1`, the control and servant region will still indicate `enable_adapters=0`, this is expected.

This property tells the Daemon to enable itself to be in charge of any connection between WebSphere Application Server and batch or CICS. The Daemon is the central point where all the connections take place. The Daemon will allocate shared storage to maintain the control blocks that the optimized local adapters need to function correctly.

CICS setup

- Transaction and resource definitions
 - ▶ Copy “CSDUPDAT” from samples dir, update JCL and run
 - ▶ Defines CICS TRUE and supporting programs/transactions
- Start PROC changes
 - ▶ Dataset containing optimized local adapter load modules should be added to DFHRPL
- Optional changes
 - ▶ PLTPI program to start TRUE automatically (see DFHPLTOL in samples dir) - BBOACPLT
 - ▶ PLTPI program to pass a BBOC command during initialization. Could use this to Register automatically or do a start server during CICS initialization - BBOACPL2
 - ▶ SAF changes to define a SURROGAT class (for WebSphere Application Server->CICS user ID assertion) – refer to information center for details

7

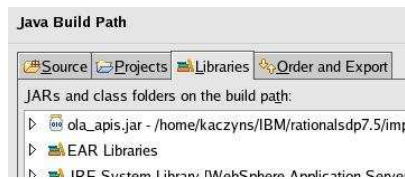
After installation and activation of the optimized local adapter feature you must perform certain steps to configure your CICS environment. In the samples directory, `$INSTALL_ROOT/mso/OLA/samples`, you will need to take a copy of the CSDUPDAT jcl, update the jcl accordingly and execute. This job will define supporting programs and supporting transactions in CICS such as control transaction and link server transaction. Also, this job will install the CICS TRUE. TRUE is installed a little differently than a regular programmer transaction.

The dataset that you created during the optimized local adapter INIT step will need to be added to the CICS start proc in step DFHRPL.

Other optional features that are provided are a sample that shows you how to use PLTPI to automatically start the TRUE adapter support when the CICS region starts. Another optional feature you can use is if you want to have WebSphere Application Server cert the user ID when you call into CICS from WebSphere. You will have to setup a SAF SURROGAT class to allow optimized local adapters to assert the user ID inside of CICS.

Preparing your development environment

- COBOL / C / Assembler / PL1
 - ▶ Header files for C provided in samples (BBOAAPI)
 - ▶ The dataset specified in “olaInstall.sh” is required to link applications
- Rational® Application Developer (RAD) / RDz
 - ▶ APIs jar file shipped in \$INSTALL_ROOT/mso/OLA/lib/ola_apis.jar
 - ▶ Add this jar to your project classpath
 - ▶ Contents:
 - EJB™ Home/Remote interface classes
 - JCA ConnectionSpecImpl, InteractionSpecImpl, IndexedRecordImpl



8

Optimized local adapters for z/OS Installation

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A development system consists of two sides, a native side and a Java side. The native side is where your client code runs and contains batch or Cobol programs. Optimized local adapters provide a C header file called bboaapi.h in the samples directory. The dataset that you created during the optimized local adapter INIT step needs to be available to client programs during the bind step. The stubs in this dataset contain the implementation of the functions provided in the bboaapi.h file.

For the Java environment optimized local adapters provide a jar file, called ola_apis.jar located in your \$INSTALL_ROOT path. You can use this jar file inside of Rational Application Developer (RAD) or Rational Developer for Z (RDZ), and from the command line. You should add the jar file to your class path in RAD or RDZ. The jar file contains EJB™ Home and Remote interface classes that you will use if you want to make an EJB call from a batch or a CICS process into WebSphere Application Server. It also creates three JCA classes that your Java application will use if you make calls from your WebSphere Application Server into a batch or CICS process.

Samples

- Located in \$INSTALL_ROOT/mso/OLA/samples directory
- OLACC01 (Batch/CICS)
 - ▶ Uses the basic APIs to drive work into WebSphere (BBOA1REG, BBOA1INV, BBOA1URG)
 - ▶ Uses the sample EJB provided
- OLACC02 (Batch/CICS)
 - ▶ Uses the advanced APIs to drive work into WebSphere
 - BBOA1SRQ with the ASYNC option
 - ▶ Target EJB calls back into OLACC02 using the JCA API
 - ▶ OLACC02 receives the callback using the basic APIs to drive work into a Batch or CICS program (BBOA1SRQ, BBOA1SRP)
- OLACBnn (Batch/CICS) – Cobol samples
- More samples – see @@README file samples directory

9

Optimized local adapters has provided several samples to be run in both a batch and CICS environment. The samples will use both basic and advanced API's to drive work into a WebSphere Application Server. The samples are located in the \$INSTALL_ROOT/mso/OLA/samples directory of your installation. OLACC01 demonstrates how to use the basic inbound APIs to drive work into a WebSphere Application Server system. Also provided is a sample EAR file located in the samples directory and is called OLA_Sample1.ear.

OLACC02 is a similar application but uses the advanced APIs to drive work into a WebSphere Application Server system. The EJB implementation, however, will then use the outbound APIs to go back into the client program.

Additional samples are provided and listed in the @@README file in the samples directory. The samples are a comprehensive collection of programs used to demonstrate optimized local adapter capabilities.

Summary

- Installation and activation of optimized local adapter code
- Sample optimized local adapter applications



In this presentation you have viewed how to install and activate the optimized local adapter feature provided in WebSphere Application Server for z/OS. Additionally, samples have been provided to demonstrate how to use the optimized local adapter function.

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