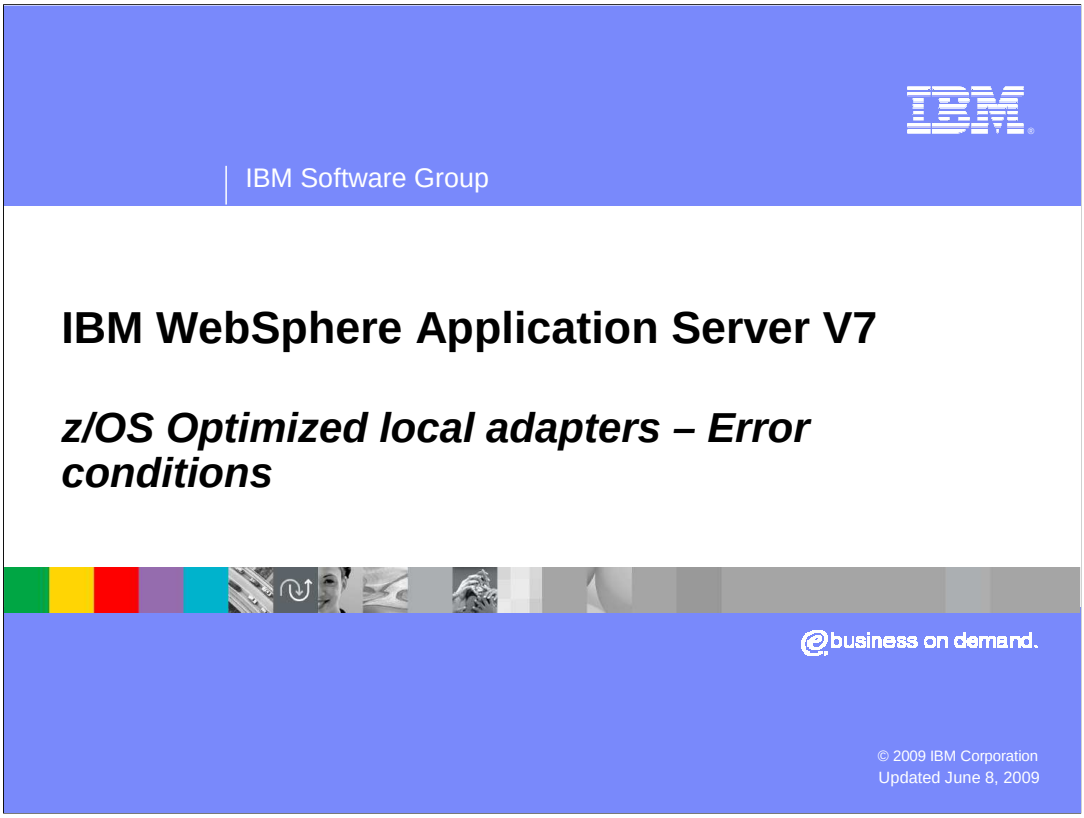


This presentation discusses common error conditions in the optimized local adapter feature available in WebSphere® Application Server V7.0.0.4.

Overview

- Common error conditions

This presentation briefly discusses common error conditions in the optimized local adapters function for z/OS®.

Error conditions

- Timeouts
  - Connection wait timeout (BBOA1CNG,BBOA1INV,BBOA1SRV)
    - Time to wait for a connection to become available from the free pool (max/min defined on BBOA1REG)
    - RC = 8 RSN = 10
  - Connection wait timeout (JCA)
    - Set on ConnectionSpecImpl (setConnectionWaitTimeout)
  - Normal IIOP/HTTP timeouts apply for EJB/Servlet which invokes the JCA APIs

The connection wait timeout is a timeout that tells optimized local adapters how long to wait for a physical connection to become available to your process. When you register you will specify the minimum and maximum number of physical connections between the client (CICS® or a batch program) and a WebSphere Application Server instance. When you call get connection, or any API that will get a connection implicitly, and there is not a connection available optimized local adapters will wait the number of seconds you specified. If a connection does not become available in the specified number of seconds, optimized local adapters will create a connection wait timeout (return code=8, reason code=10).

All the APIs return a return code and reason code and possibly some bytes of information. All codes are documented in the information center. This presentation will only discuss the more common error conditions.

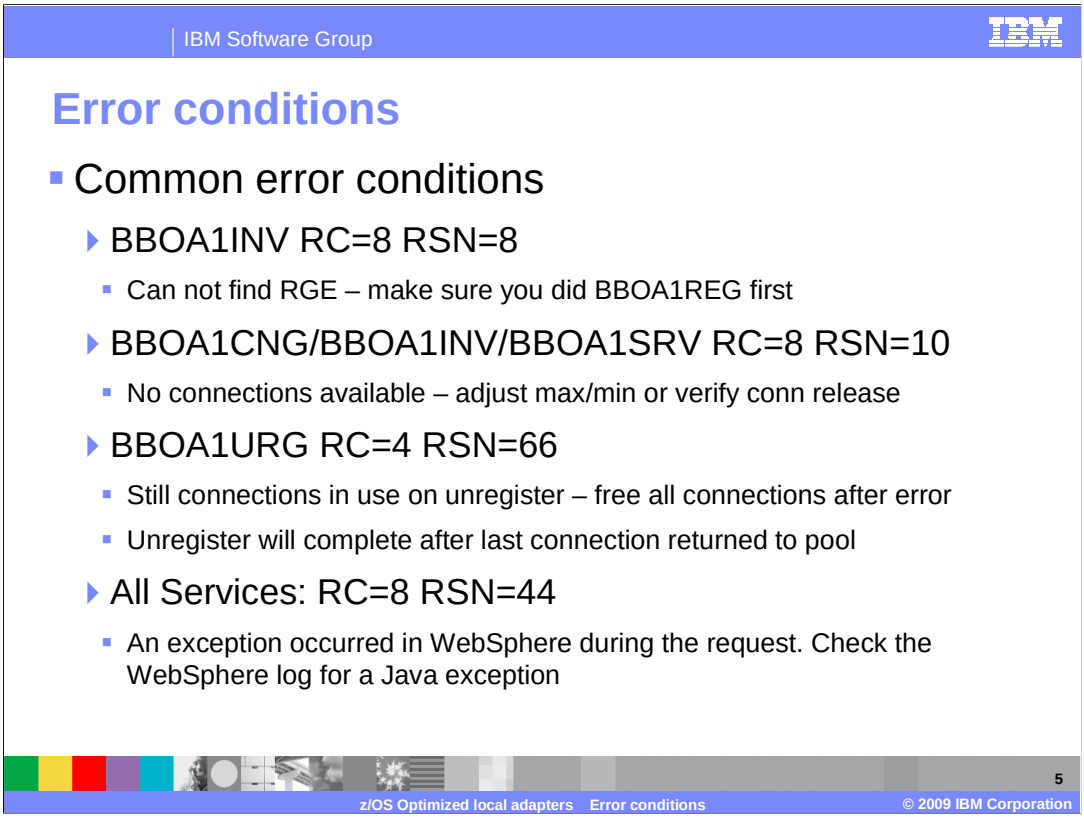
Similarly, on the Java side you can specify a timeout on the JCA connection. You specify the JCA connection on the ConnectionSpecImpl using the setConnectionWaitTimeout method. This method will take the number of seconds that optimized local adapters will wait for the physical connection / host service combination to become available. Once the number of seconds has expired optimized local adapters will create an exception back to your application. The setConnectionWaitTimeout is specific to the service, not the registration.

Finally, optimized local adapters is bound to the normal WebSphere Application Server timeout criteria. There are traditional IIOP/HTTP timeouts that are used for outbound work. If you have a Java application that is used to call into a CICS or batch program you probably used a servlet or an EJB™. The IIOP / HTTP timeouts that applied to that request also applie here.

Error conditions

- Java exceptions
  - JCA follows standard JCA exception style (creates javax.resource.ResourceException)

When you are calling the JCA adapter the javax.resource.RessourceException is the standard way you will receive and error from the JCA adapter. Optimized local adapters will follow the same behavior, creating a javax.resource.ResourceException with some details in the exception string explaining what happened.

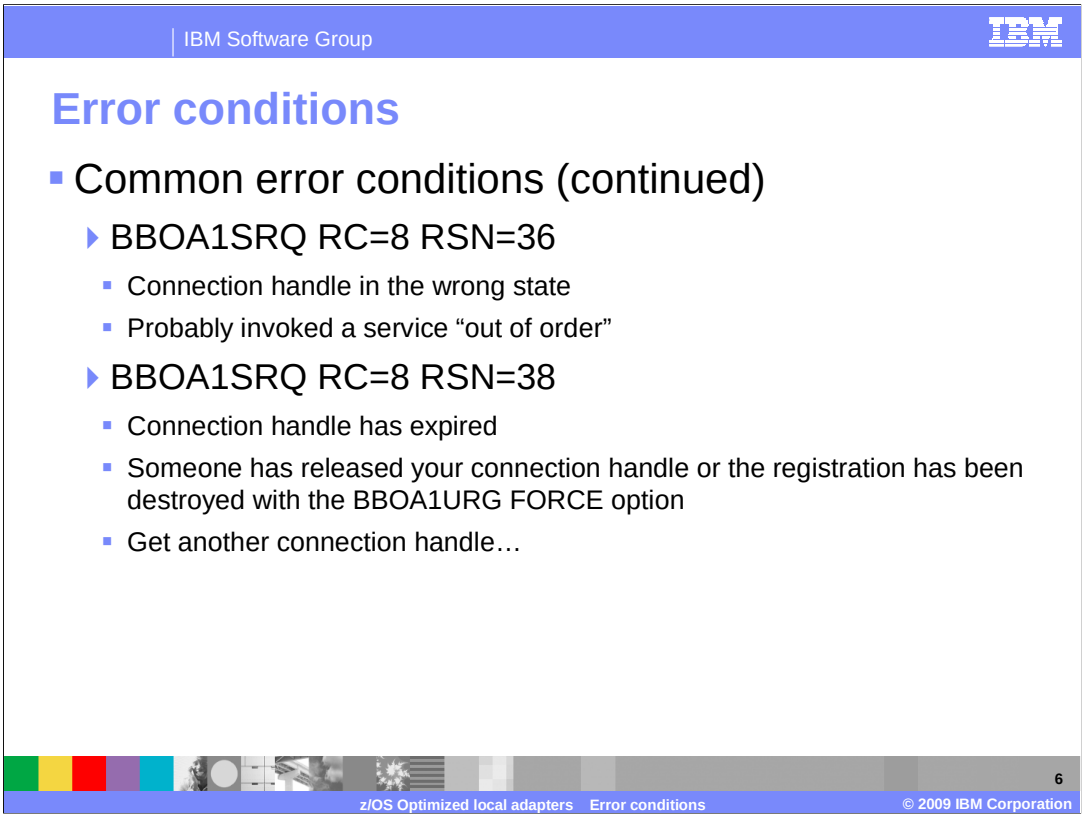


These are some of the common error conditions that optimized local adapters experiences. The first is a return code=8, reason code=8 from BBOA1INV. The 8,8 combination means optimized local adapters can not find a registration for the service that you requested. Common mistakes include mis-spelling the registration name or failing to invoke the registration API.

The next condition is a return code=8, reason code=10 that was previously discussed. Again this combination is a timeout because no connections are available. You can get into this state because you are in a multi-treaded environment and there are truly no connections left or you have called a host service several times, forgetting to release the connection.

The third situation listed is a return code=4,reason code=66 from the un-register API. Return code 4 means warning in the optimized local adapter APIs. In this case you called un-register which was a valid request but there are still connections that are in use. Optimized local adapters will proceed with the un-registration, but only after all the connections are released back to the connection pool. This occurs if your in a multi-threaded environment and you called un-register and you still had a thread left processing work. You, also, might have forgot to release one of your connections back to the pool and you really are done with your processing. If you are unable to return the connection back to the pool, optimized local adapters provides a flag you can specify on the un-register. This flag states, it doesn't matter if there are connections left, do the un-register. This is referred to as a force. After executing the un-register API and receiving the return code=4, reason code=66, you can re-issue the un-register API using the force flag. If this situation happens you should review your application to ensure it does not continue to happen in the future. If you call un-register with force before calling the un-register you will receive an error code.

The last condition on the slide is return code=8, reason code=44. This exception implies



The send request API will return a return code 8, reason code 36 if the connection handle is in the wrong state. Because the connection handle represents physical connections between the client program and a WebSphere Application Server instance you need to ensure that the connection state is handled correctly. For example, you cannot call send request consecutively because optimized local adapters cannot order the responses.

The send request API also can issue a return code 8, reason code 38. This error condition means your connection handle has expired. This can happen if someone has issued an un-register force or if your WebSphere Application Server instance decided to close your physical connection. When this situation occurs your registration is probably still valid, you just need to return this connection back to the connection pool and get a new one.

Error recovery

- Things to keep in mind…
  - If a service fails (ex BBOA1SRV), the caller has to put the connection back in the free pool by calling BBOA1CNR
    - Failure to do this can result in leaked connections

A final note to keep in mind, is if you have a service that fails, the caller has the responsibility to put the connection back in the connection pool by calling BBOA1CNR. Failure to release the connections can result in leaked connections. Leaked connections will lead you to issue an un-register force to handle the outstanding connections.

Summary

- Common error conditions

This presentation has discussed common error conditions that occur in the optimized local adapters feature.

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