IBM Software Group

Service Integration Bus Messaging Engine Startup Problems and Solutions
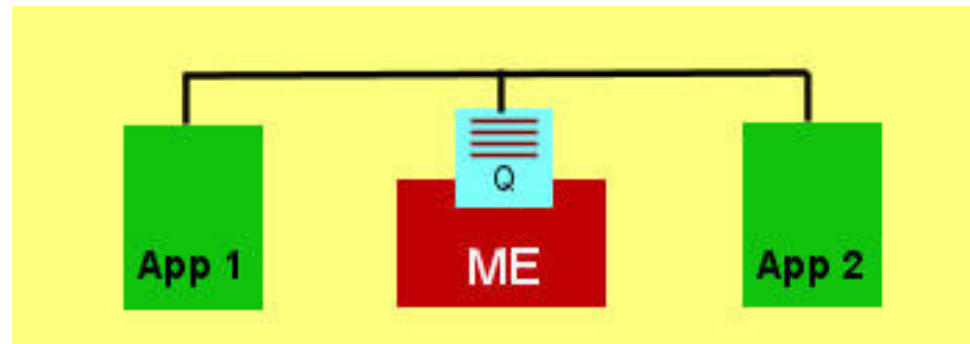
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Agenda

- Messaging Engine Overview
- Messaging Engine Startup Sequence
- Messaging Engine Startup Failures and Solutions
- Slow Messaging Engine Startups
- Messaging Engine APARs

Messaging Engine Overview

- ## What is a Messaging Engine?

From the WAS Information Center: **A messaging engine is a server component that provides the core messaging function of a service integration bus. A messaging engine manages bus resources and allows applications to communicate with the bus.**

Messaging Engine Overview

Each messaging engine is associated with a server or a server cluster that has been added as a member of a bus. When you add an application server or a server cluster as a bus member, a messaging engine is **automatically** created for this new member. If you add the same server as a member of multiple buses, the server is associated with multiple messaging engines (one messaging engine for each bus). You can create additional messaging engines for use with server clusters that are bus members, for availability and scalability reasons. However, in its simplest form a bus can be realized by a single engine.
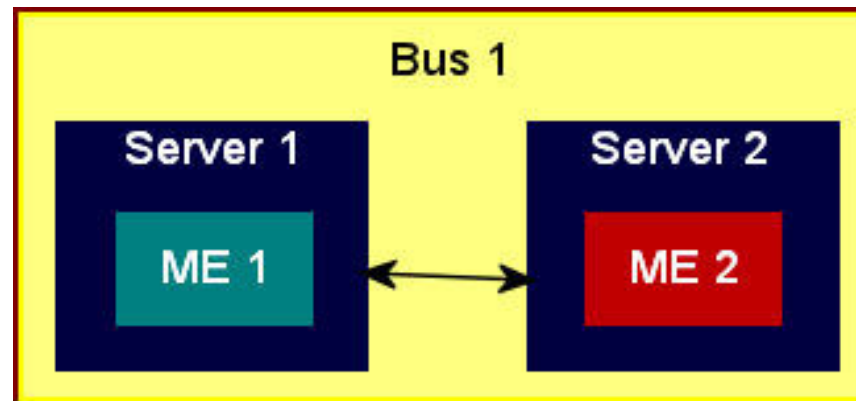
Each messaging engine has its own data store. A messaging engine uses an instance of a JDBC data source to interact with the database that contains the data store for that messaging engine.

Messaging Engine Overview

- ## What is a Bus?

Technically, a Bus is a network of Messaging Engines, although as the WAS Information Center states, only 1 Messaging Engine is required to define a Bus.

This is a typical Bus…

Messaging Engine Startup Sequence

- **This is a normal Messaging Engine startup sequence as it would appear in the SystemOut.log:**

- 0000000a SibMessage   I   [:] CWSID0021I: Configuration reload is enabled for bus Bus2.
- 0000000a SibMessage   A   [:] CWSIC2001I: Messaging connections are being accepted.

- 00000015 SibMessage   I   [Bus2:tyshrakeNode01.server1-Bus2] CWSID0016I: Messaging engine tyshrakeNode01.server1-Bus2 is in state Joined.

- 00000017 SibMessage   I   [Bus2:tyshrakeNode01.server1-Bus2] CWSID0016I: Messaging engine tyshrakeNode01.server1-Bus2 is in state Starting.

Messaging Engine Startup Sequence

- 0000001c SibMessage   I   [Bus2:tyshrakeNode01.server1-Bus2] CWSIS1538I: The messaging engine, ME_UUID=E9559146F69BE94B, INC_UUID=3114b5bc38c080f6, is attempting to obtain an exclusive lock on the data store.

- 0000001d SibMessage   I   [Bus2:tyshrakeNode01.server1-Bus2] CWSIS1543I: No previous owner was found in the messaging engines data store.

- 0000001c SibMessage   I   [Bus2:tyshrakeNode01.server1-Bus2] CWSIS1537I: The messaging engine, ME_UUID=E9559146F69BE94B, INC_UUID=3114b5bc38c080f6, has acquired an exclusive lock on the data store.

- 00000017 SibMessage   I   [Bus2:tyshrakeNode01.server1-Bus2] CWSIP0212I: messaging engine tyshrakeNode01.server1-Bus2 on bus Bus2 is starting to reconcile the WCCM destination and link configuration.

- 00000017 SibMessage   I   [Bus2:tyshrakeNode01.server1-Bus2] CWSIP0213I: messaging engine tyshrakeNode01.server1-Bus2 on bus Bus2 has finished reconciling the WCCM destination and link configuration.

- 00000017 SibMessage   I   [Bus2:tyshrakeNode01.server1-Bus2] CWSID0016I: Messaging engine tyshrakeNode01.server1-Bus2 is in state Started.

Messaging Engine Startup Failures and Solutions

- Datastore Related Exceptions
- Messaging Engine Cannot Be Found
- Messaging Engine Starts on 2 Different Servers
- Messaging Engine Authentication Exception

Messaging Engine Troubleshooting Tips

- The WAS Information Center has a list of Messaging Engine problems/solutions here…

  http://publib.boulder.ibm.com/infocenter/wasinfo/v6r0/index.jsp?topic=/com.ibm.websphere.pmc.express.doc/ref/rjk_prob0.html

  The information in this link is somewhat dated but does cover a few interesting cases.

Datastore Related Exceptions

- First a warning: DO NOT use the JDBC Oracle Driver Version.Release --> 9.2.0.x driver!

- CWSIS1500E: The dispatcher cannot accept work.

  This message often indicates a problem with the actual database the Messaging Engine is connecting to. Check the SystemOut.log for SQL exception and other database problems.

Datastore Related Exceptions

- CWSIS1546I: The messaging engine, ME_UUID={0}, INC_UUID={1}, has lost an existing lock or failed to gain an initial lock on the data store.

This is an informational message. There are a number of possible causes for this exception. Using the older version 9 Oracle JDBC driver can cause this. Another cause is that there is already a lock on the datastore, either by another ME or, more likely, a database tool such as runstats.There will usually be other messages in association with this that will narrow the cause. It is often associated with the message on the next slide...

Datastore Related Exceptions

- **CWSIS1535E: The messaging engine's unique id does not match that found in the data store. ME_UUID={0}, ME_UUID(DB)={1}**

  This exception occurs when the ME_UUID value in the datastore doesn't match the value of the Messaging Engine. This is usually caused by deleting a Messaging Engine but not deleting its datastore, and then recreating the Messaging Engine with exactly the same name as before. The solution is to drop the tables owned by the previous Messaging Engine and then recreate the tables on Messaging Engine startup.

Datastore Related Exceptions

- CWSIP0056E: The link with name com.ibm.ws.sib.processor.impl.DestinationManager and UUID 1:1049:1.428.1.6 cannot be recovered from data store. com.ibm.websphere.sib.exception.SIResourceException: com.ibm.websphere.sib.exception.SIErrorException: java.io.StreamCorruptedException: invalid stream header at com.ibm.ws.sib.processor.impl.BaseDestinationHandler.reconstitute(BaseDestinationHandler.java:1544)

This exception often indicates a corrupt datastore. In most cases the only solution is to drop the database and recreate it.

Messaging Engine Cannot Be Found

- CWSIV0759W: During activation of a message-driven bean, no suitable active messaging engines were found in the local server on the bus Your_Bus.

  Often seen when applications are started before the Messaging Engine they connect to is ready to accept work. Most of the time these messages are transient, especially if they appear shortly after application server startup. In most cases, once the Messaging Engine starts these messages will go away and normal message processing will begin. This exception does not necessarily indicate an actual problem.

Messaging Engine Cannot Be Found

- CWSIT0103E: No messaging engine was found that matched the following parameters: bus=YOUR_BUS, targetGroup=null, targetType=BusMember, targetSignificance=Preferred, transportChain=InboundBasicMessaging, proximity=Bus.
    at com.ibm.ws.sib.trm.client.TrmSICoreConnectionFactoryImpl.

Messaging Engine Cannot Be Found

If you see a message like this check to see that the Messaging Engine is actually running. If it shows a Started status in the Admin Console then this problem is likely occurring in the Workload Management (WLM) selection code. You are likely to see the following failure after the message above...

0000002c SelectionAdvi : select failed
  Removal (com.ibm.ws.cluster.selection.rule.
    ReachabilityRule@28cc28cc)
com.ibm.ws.cluster.selection.rule.

Messaging Engine Cannot Be Found

If the WLM code is not able to select the Messaging Engine then the ME will not be available to other resources. One solution to this is to force the ME to become available by calling the setAvailable() method on the Cluster MBean. A Jython script that includes the complete code to do this will be posted on the web in the the DCF item for this presentation. The **Cluster MBean** Javadoc can be found here…

http://publib.boulder.ibm.com/infocenter/wasinfo/v6r0/index.jsp?topic=/com.ibm. websphere.javadoc.doc/public_html/mbeandocs/html/Cluster.html

For completeness, the **SIBMessagingEngine MBean** Javadoc is here…

http://publib.boulder.ibm.com/infocenter/wasinfo/v6r0/index.jsp?topic=/com.ibm. websphere.javadoc.doc/public_html/mbeandocs/html/SIBMessagingEngine.html

Messaging Engine Starts on 2 Different Servers

- This problem is often discovered by the appearance of the following exception…

  CWSIS1546I: The messaging engine, ME_UUID=329E8A06FEE5D24F, INC_UUID=47dd95641dc6f03b, has lost an existing lock or failed to gain an initial lock on the data store.

  Notice this is the same exception is discussed on page 11 of this presentation.

Messaging Engine Starts on 2 Different Servers

This exception will appear on 2 different servers. They will be identical except for the INC_UUID values. For example:

Server 1 SystemOut.Log shows…

CWSIS1546I: The messaging engine, ME_UUID=329E8A06FEE5D24F, INC_UUID=47dd95641dc6f03b, has lost an existing lock or failed to gain an initial lock on the data store.

Server 2 SystemOut.Log shows…

CWSIS1538I: The messaging engine, ME_UUID=329E8A06FEE5D24F, INC_UUID=5120eb701d9cefde, is attempting to obtain an exclusive lock on the data store.

Messaging Engine Starts on 2 Different Servers

This exception can occur if the HA Manager in WAS is not enabled. The HA Manager sorts out which ME to start on which server. The solution to this problem is to start the HA Manager. This can be done in the Admin Console.

Messaging Engine Authentication Exception

- Sometimes during Messaging Engine startup it is not possible for the Messaging Engine to connect to its datastore due to a security problem. The following exception is typically thrown…

  00000028 SibMessage   E   YOUR_Bus:
  YourNode01.server1-YOUR_Bus¨ CWSIS0002E: The messaging
  engine encountered an exception while starting. Exception: com.ibm.ws.
  sib.msgstore.PersistenceException: CWSIS1501E: The data source has
  produced an unexpected exception: java.sql.SQLException: ORA-01031:
  insufficient privileges

Messaging Engine Authentication Exception

This exception indicates that the Messaging Engine does not have the authority to connect to its own datastore. In most cases the JDBC Component-managed Authentication Alias is set incorrectly. Make sure you have the correct user ID specified (the ID the database requires for connections).

Slow Messaging Engine Startups

If you are using persistent messages and you have a large number of these messages on a queue (or topic) on a Messaging Engine and the messaging engine is restarted for any reason the Messaging Engine may take a long time to startup. The reason for this is that during Messaging Engine restart each message must be read from the datastore and recreated on the (queue). Until all of these messages are restored to the queue messaging will not be possible for this queue. To avoid this situation try not to leave large numbers of persistent messages on queues. If your applications are working properly there should be very few messages on a queue at any given time.

Messaging Engine APARs

Note: This list of APARs applies to WAS 6.1.

- **Messaging Engine Startup APARs**

► **PK62534** - Messaging engine fails if it cannot connect to its file store files and subsequently it does not attempt to

reconnect.
► **PK55056** - Increasing number of rows in a messaging engine's SIBXACTS table eventually causing a DSRA8650W error during startup.
► **PK56890** - CWSIT0034E with reason CWSIT0064E during startup of a messaging engine.

► **PK53424** - WLM selection in messaging engine failover may return incorrect target.
► **PK55515** - Messaging engine unable to start with file store.
► **PK45306** - NullPointerException thrown by persistentmessagestoreimpl.start causes a sib messaging engine startup to fail.
► **PK30717** - Not possible to restart a messaging engine after database failures.

Messaging Engine APARs

Note: This list of APARs applies to WAS 6.1.

- **Other Messaging Engine APARs**

  - ► **PK53368** - JMS client fails to receive messages after messaging engine failback.
  - ► **PK57207 -** Unexpectedly high memory usage by a messaging engine with large publish/subscribe messages and low throughput.
  - ► **PK57432 -** Messaging engine entered an infinite loop condition when an inter-bus link starts, reallocateMsgs in java stack.
  - ► **PK57736 -** Messaging engine not committing messages over bus link. Messages stack up on local destination.
  - ► **PK58940** - Resource adapter does not detect messages on the queue after messaging engine datastore is stopped and re-started.
  - ► **PK53356** - Deadlock in a messaging engine after closing a JMS connection.
  - ► **PK57389** - NullPointerException being issued by a messaging engine.
  - ► **PK58076** - Possible deadlock of messaging engine threads when client connections fail and FFDCs are produced.
  - ► **PK51004** - Restarting a messaging engine in a service integration bus link causes the link to stop.

Messaging Engine APARs

Note: This list of APARs applies to WAS 6.1.

- **Other Messaging Engine APARs**

► **PK34718** - CWSIS1546i: The messaging engine,has lost an existing lock or failed to gain an

 initial lock on the data store.

► **PK39620** - A messaging engine configured with topic space mappings may see messages stuck

 on remote publication point.

► **PK58940** - Resource adapter does not detect messages on the queue after messaging engine
 datastore is stopped and re-started.

► **PK35941** - Messaging engine connection leak results in hang.

► **PK30105** - JMS exception: No suitable messaging engine is available.

Summary

- **Messaging Engine Overview**
- **Messaging Engine Startup Sequence**
- **Messaging Engine Startup Failures and Solutions**
- **Slow Messaging Engine Startups**
- **Messaging Engine APARs**

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Questions and Answers