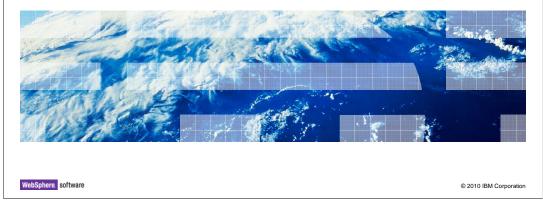IBM

WebSphere Message Broker Version 7

Configurable services for EDA nodes

This short session describes how to use configurable services in the Event Driven Architecture or EDA nodes, in WebSphere® Message Broker. The EDA nodes are responsible for combining data from a variety of sources. They often require state data to be stored locally, and this is done by using a series of WebSphere MQ queues.

Background

- Message Broker has several 'EDA' node types that store their state on MQ queues
  - Aggregation, timeout, collector, resequence
- Message Broker version 6:
  - For each node type, the queue names are currently fixed
  - The queues are therefore shared by multiple message flows
  - A problem with one of the queues can affect all message flows that contain that type of node
  - No 'application isolation'
- Message Broker version 7:
  - For each node type, allow user-defined queues using new configurable services
  - Allow timeouts to be defined in the configurable service

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The nodes which are in this category are the aggregation, timeout, collector, sequence and resequence nodes. All of these nodes hold state temporarily, and must therefore store this state locally, within the broker environment. This state is stored on a series of MQ queues, defined in the queue manager on which the broker instance is running.

For each of these nodes, in Message Broker version 6.1 and earlier, the queue names are fixed, and it is not possible to define separate queues for separate instances of these nodes. These nodes can be used in different message flows. Each one of these queues is therefore used by all message flows which happen to use these particular nodes. The consequence of this is that if one of these queues encounters a problem, then all flows which make use of this node will be affected.

This problem has been addressed in version 7 by allowing user-defined queues for these nodes. These queues are then associated with particular flows using configurable services. This has also allowed different timeout parameters to be specified uniquely for each queue, again using the configurable service.

Configurable services for aggregation nodes
(This also applies similarly to other EDA nodes)

- Aggregation nodes use five queues
  - SYSTEM.BROKER.AGGR.*

- New 'Aggregation' configurable service, with properties:
  - *queuePrefix*
    - Inserts prefix after SYSTEM.BROKER.AGGR and uses those queue names instead
  - *TimeoutSeconds*
    - Sets the expiry time for the aggregation

- No new node property, broker looks for a configurable service with a name that matches:
  1) The *Aggregate name* node property of the aggregation nodes
  2) The name of the execution group

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In the case of the aggregation node, the existing queue definition uses five queues.

When defining the configurable service for the aggregation node, if the *queuePrefix* property is specified then it is inserted in the appropriate place in the standard queue name. This must be 16 characters or less.

The queues can be created in advance.

If the queues do not exist then an attempt is made to create them at deploy time, and deployment will fail if they can not be created. The created queues will be modeled on the equivalent broker default queues.

Two different configurable services can use the same queue prefix, allowing you to define the scope of your 'application isolation'.

If a configurable service is deleted, the queues are not deleted.

You must restart the appropriate execution group to pick up any configurable service change.

If a property is not specified, the node property is used instead.

This same approach is used for all of the EDA nodes described on the previous slide.

Configurable service creation

```
 mqsicreateconfigurableservice WBRK7
-c Aggregation
-o Aggr1
-n queuePrefix,timeoutSeconds
-v AGGR1,60
```

Configurable services for EDA nodes

All the new configurable services are created and modified in the typical way, using the command interface, or the MB Explorer. The example shown here is for the aggregation node.

Configurable service for timeout nodes

- Timeout nodes use one default queue
  - SYSTEM.BROKER.TIMEOUT.QUEUE

- New 'Timer' configurable service, with properties:
  - *queuePrefix*
    - Inserts prefix after SYSTEM.BROKER.TIMEOUT.queuePrefix.QUEUE and uses that queue name instead
  - *timeoutIntervalSeconds*
    - Sets the timeout interval when using 'automatic' mode

- No new node property, broker looks for a configurable service with a name that matches
  1) The Unique Identifier property of the timeout node pair
  2) The name of the execution group

- If no queue prefix is specified, the timer nodes use the default queue:
  - SYSTEM.BROKER.TIMEOUT.QUEUE

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For the timeout node, you can now specify a separate queue for each application which uses this function. You can do this by specifying the "queuePrefix" variable, which is included in the name of the queue that is used for this purpose, as shown on this slide.

There is no new node property for this facility. The new configurable service is checked for a match against the "unique identifier" property of the timeout node pair. If a queue name with this name is found, then it is used. If a match is not found, the name of the execution group is used. If a match is still not found, the default queue is used.

Configurable service for collector node

- Collector node uses two queues
  - SYSTEM.BROKER.EDA.*

- New 'Collector' configurable service, with properties:
  - *queuePrefix* inserted as follows:
    - SYSTEM.BROKER.EDA.queuePrefix.EVENTS
    - SYSTEM.BROKER.EDA.queuePrefix.COLLECTIONS

- *collectionExpirySeconds*
  - Sets the expiry time for the collection

- Broker looks for a configurable service with a name that matches:
  1) The *configurable service* property value of the node (new property)
  2) The name of the execution group

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This slide shows the configurable services for the collector node. It is very similar to the timeout nodes, except for the name of the queues and the property specified for the collection expiry time.

In this case, there are two queues that are used. As with the timer node, a configurable service called queuePrefix can be created. This is imbedded into the queue names, as shown on this slide.

However, unlike the timeout node, there is no convenient node property that can be used to match the required queue name. Message Broker version 7 has therefore provided a new node property to allow the node to be matched against the defined configurable service. In this case, since the presence of the configurable service indicates that such a value should be found. At runtime, if the broker does not find this configurable service, then an error is thrown. If the configurable service node property is left blank, then the broker will then try to find a configurable service with the name of the execution group.

Configurable service for Resequence node

- Resequence nodes use two queues
    - SYSTEM.BROKER.EDA.* (same as collector)

- New 'Resequence' configurable service, with properties:
    - *queuePrefix*
        - Inserts prefix after SYSTEM.BROKER.EDA and uses those queue names instead
    - *missingMessageTimeoutSeconds*
        - Sets the missing message timeout
    - *startSequenceSeconds*
        - Sets the time to wait to establish start of sequence
    - *endSequenceSeconds*
        - Sets the time to wait for end of sequence

- Broker looks for a configurable service with a name that matches:
    1) The *configurable service* property value of the node
    2) The name of the execution group

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This slide shows the configurable services for the resequence node. This works in the same way as the collector node. The queue names are the same as for the collector node, and the properties are associated with the timings of various sequence actions. In this case, there are some additional properties that can be set. These timeout values for the resequence node are new, and have been placed in the new configurable service.

As with the collector node, at runtime, the broker searches for a configurable service with the name that you specify in the node property. If this is not available, an error is thrown. If it has not been set, the broker searches for a configurable service with the name of the execution group. If this is not found, then the default queues are used.

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