

12. Resource Adapter

The Java EE Connector Architecture (JCA) specification defines a standard architecture for connecting the Java EE platform to enterprise information systems (EISs).

A JMS provider (whether it forms part of a Java EE application server or not) is required to include a resource adapter which connects to that JMS provider and which conforms to the Java EE Connector Architecture specification and as further specified in this chapter. Such a resource adapter is referred a "JMS standard resource adapter".

The version of the Java EE Connector Architecture specification which should be used is 1.6.

This chapter is not intended to prevent the creation and use of additional resource adapters for connecting to a JMS provider which do not conform to the specifications in this chapter. However Java EE applications which use such resource adapters may be less portable.

12.1. ActivationSpec properties

A JMS standard resource adapter must support the ActivationSpec JavaBean properties defined in the following table. It may support additional properties in addition to those listed.

Table 12.1 ActivationSpec properties that a JMS standard resource adapter must support

| ActivationSpec property | Description |
|--------------------------------------|--|
| <code>destinationLookup</code> | This property may be used to specify the lookup name of an administratively-defined <code>javax.jms.Queue</code> or <code>javax.jms.Topic</code> object which defines the JMS queue or topic from which the endpoint (message-driven bean) is to receive messages. |
| <code>connectionFactoryLookup</code> | This property may be used to specify the lookup name of an administratively-defined <code>javax.jms.ConnectionFactory</code> , <code>javax.jms.QueueConnectionFactory</code> or <code>javax.jms.TopicConnectionFactory</code> object that will be used to connect to the JMS provider from which the endpoint (message-driven bean) is to receive messages. |
| <code>acknowledgeMode</code> | <p>If bean-managed transaction demarcation is used, this property may be used to indicate whether JMS <code>AUTO_ACKNOWLEDGE</code> semantics or <code>DUPS_OK_ACKNOWLEDGE</code> semantics should apply.</p> <p>This property may be set to either <code>Auto-acknowledge</code> or <code>Dups-ok-acknowledge</code>. If this property is not specified, a default of <code>Auto-acknowledge</code> will be used.</p> |
| <code>messageSelector</code> | This property may be used to specify a message selector. If this property is not specified then a message selector will not be used. |

| ActivationSpec property | Description |
|-------------------------|---|
| destinationType | <p>This property may be used to specify whether the specified destination is a queue or topic. The valid values are <code>javax.jms.Queue</code> or <code>javax.jms.Topic</code>.</p> |
| subscriptionDurability | <p>This property only applies to endpoints (message-driven beans) that receive messages published to a topic. It may be used to specify whether the subscription is durable or non-durable.</p> <p>This property may be set to either <code>Durable</code> or <code>NonDurable</code>. If this property is not specified, a default of <code>NonDurable</code> will be used.</p> |
| clientId | <p>This property may be used to specify the client identifier that will be used when connecting to the JMS provider from which the endpoint (message-driven bean) is to receive messages.</p> <p>Setting this property is always optional. If <code>subscriptionScope</code> is set (to <code>instance</code> or <code>cluster</code>) then this property must not be set.</p> |
| subscriptionName | <p>This property only applies to endpoints (message-driven beans) that receive messages published to a topic. It may be used to specify the name of the durable or non-durable subscription.</p> <p>If <code>subscriptionScope</code> is not set and the <code>subscriptionDurability</code> property is set to <code>NonDurable</code> then the <code>subscriptionName</code> property may be left unset.</p> <p>If <code>subscriptionScope</code> is set (to <code>instance</code> or <code>cluster</code>) then the <code>subscriptionName</code> property may be left unset. A suitable subscription name will be generated automatically if needed.</p> <p>If <code>subscriptionScope</code> is set to <code>instance</code> and the <code>subscriptionName</code> property has been specified then the value of the <code>subscriptionName</code> property will be used as part of the subscription name.</p> <p>If <code>subscriptionScope</code> is set to <code>cluster</code> and the <code>subscriptionName</code> property has been specified then the value of the <code>subscriptionName</code> property will be used as the subscription name.</p> |

| ActivationSpec property | Description |
|--------------------------|--|
| <p>subscriptionScope</p> | <p>The <code>subscriptionScope</code> property only applies to message-driven beans that receive messages published to a topic. It applies to both durable and non-durable subscriptions, as specified using the <code>subscriptionDurability</code> property.</p> <p>Setting the <code>subscriptionScope</code> property is optional. If this property is set then it must be set to either <code>instance</code> or <code>cluster</code>.</p> <p>For both durable and non-durable subscriptions, setting this property allows the deployer to specify the scope of the subscription that will be used.</p> <p>instance scope</p> <p>If the scope is <code>instance</code> then the resource adapter will create a separate topic subscription for each application server instance into which the message-driven bean is deployed.</p> <p>cluster scope</p> <p>If the scope is <code>cluster</code>, and the message-driven bean is deployed into a clustered application server, then the resource adapter will create a single shared topic subscription for the entire cluster.</p> <p>If the scope is <code>cluster</code>, and the application server is not clustered, then the resource adapter will create a separate topic subscription for each application server instance into which the message-driven bean is deployed.</p> <p>Generation of subscription name</p> <p>The resource adapter will generate a suitable subscription name in the cases where a shared subscription is used.</p> <p>If the scope is <code>instance</code>, the <code>subscriptionDurability</code> is <code>Durable</code> and the <code>subscriptionName</code> property has been specified then the resource adapter will use the <code>subscriptionName</code> property as part of the subscription name.</p> <p>If the scope is <code>cluster</code>, the <code>subscriptionDurability</code> is <code>Durable</code> and the <code>subscriptionName</code> property has been specified then the the resource adapter will use the <code>subscriptionName</code> property as the subscription name. In this case the deployer is responsible to ensuring that the specified <code>subscriptionName</code> is unique to this cluster.</p> <p>Client identifier</p> <p>If the <code>subscriptionScope</code> property is specified then <code>clientId</code> must not be specified. Otherwise a deployment error will occur.</p> |

12.1.1. Implementation of topic subscriptions

This section contains some additional recommendations as to how the specified `ActivationSpec` properties should be used in a resource adapter implementation.

12.1.1.1. When `subscriptionScope` is not specified

This section applies if the `subscriptionScope` property is not specified.

It is not defined whether a `subscriptionDurability` of `NonDurable` should be implemented using a shared or unshared non-durable subscription. If an unshared durable subscription is used then any `subscriptionName` specified will be ignored.

It is also not defined whether a `subscriptionDurability` of `Durable` should be implemented using a shared or unshared durable subscription.

12.1.1.2. When `subscriptionScope` is set to `cluster`

This section applies if the `subscriptionScope` property is set to `cluster`.

It is recommended that a `subscriptionDurability` of `NonDurable` be implemented using a shared non-durable subscription.

It is recommended that a `subscriptionDurability` of `Durable` be implemented using a shared durable subscription.

If the message-driven bean is deployed into a clustered application server, then the subscription name that is generated should be the same for the same endpoint in each application server instance within the cluster but otherwise unique.

12.1.1.3. When `subscriptionScope` is set to `instance`

This section applies if the `subscriptionScope` property is set to `instance`.

It is not defined whether a non-durable subscription should be implemented using a shared or unshared non-durable subscription, or whether a durable subscription should be implemented using a shared or unshared durable subscription.

If the `subscriptionScope` property is set to `instance`, and the message-driven bean is deployed into a clustered application server, then the subscription name that is generated must be different for every endpoint and for every application server instance.

12.1.1.4. When `subscriptionScope` is set to `instance` or `cluster`

This section applies if the `subscriptionScope` property is set to either `instance` or `cluster`.

It is recommended that the subscription name that is generated includes a unique identifier to ensure that it is unique across other clusters or across other application server instances that are not part of the cluster.

If the application server instance into which the message-driven bean is deployed is not part of a cluster, then that the subscription name that is

generated must be different for every endpoint and for every application server instance.

In this case it is recommended that the subscription name that is generated includes a unique identifier to ensure that it is as unique as possible across all application server instances.

12.1.1.5. Requirements for generated subscription names

The subscription name generated by the resource adapter must be a valid JMS subscription name. This means that it must be no longer than 128 characters and must consist only of Java letters or digits (as defined in the Java Language Specification) or the underscore (`_`), dot (`.`) or minus (`-`) characters.

Since a durable subscription can be used to store messages indefinitely it is recommended that its name remains unchanged even if the application server is restarted or reconfigured, or if the application is redeployed.

Since a subscription name may be visible to the user or administrator it is recommended that the subscription name is at least partly human-readable.

12.1.2. Implementation in a resource adapter

The Java EE Connector Architecture (JCA) specification defines a method `getInstanceName` on `javax.resource.spi.BootstrapContext` and a method `getActivationUniqueName` on `MessageEndpointFactory`. If a scope of `cluster` is specified then a suitable subscription name may be obtained by calling the `getActivationUniqueName` method. If a scope of `instance` is specified then a suitable subscription name may be obtained by calling the `getInstanceName` and `getActivationUniqueName` methods and concatenating the results.

However if the `subscriptionName` property and the subscription is durable then the value of this property should be used instead of the value returned by `getActivationUniqueName`.

The term "application server instance" as used in this section refers to a single application server JVM. The exact meaning of the term "application server cluster" as used in this section is left to the application server to define but is intended to refer to a group of co-operating application server JVMs to which an identical Java EE application may be deployed.