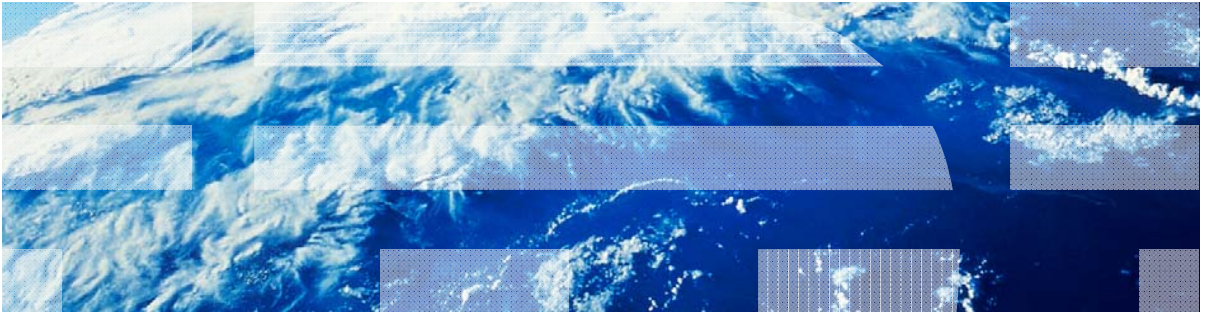


IBM Worklight V6.0.0 Getting Started

JMS adapter – Communicating with JMS



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Agenda

- What is it?
- Creating an adapter
- Adapter methods
- Configurations for working with an external JMS provider

What is it?

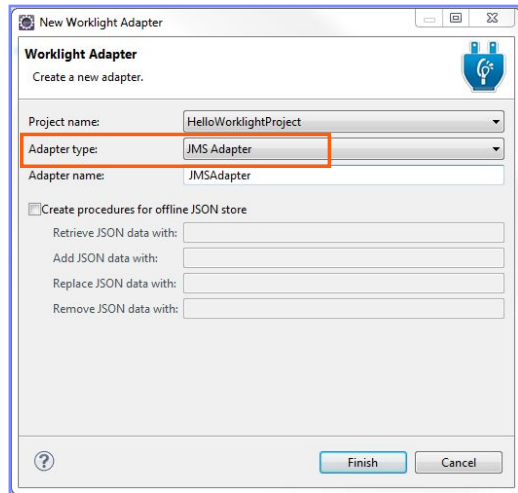
- Java™ Message Service (JMS) is the standard messaging Java API.
- With JMS Adapter, you can read and write messages from any messaging provider that supports the API.

Agenda

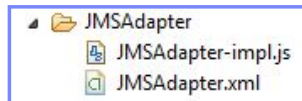
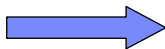
- What is it?
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Creating a Worklight JMS adapter

- In Worklight® Studio, right-click a Worklight project and add a Worklight JMS adapter.

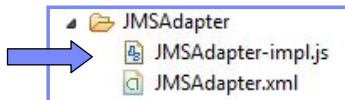


- A standard adapter structure is created.



JS File: Procedures implementation

- Procedures are implemented in the adapter JavaScript™ file.



JS File: Procedures implementation

- Procedure names in the JavaScript file must be the same as in the XML file.

```
<connectivity>
  <connectionPolicy xsi:type="jms:JMSConnection
    <jmsConnection
      connectionFactory="java:comp/env/
      user="myusername"
      password="mypassword"
    />
  </connectionPolicy>
  <loadConstraints maxConcurrentConnectionsPerN
</connectivity>

<procedure name="writeMessage"/>
<procedure name="readMessage"/>
```

XML file


```
function writeMessage(message) {
  var result = WL.Server.writeJMSMessage({
    destination : "dynamicQueues/IBMWorklight",
    message : {
      body : message,
      properties : {
        MY_USER_PROPERTY : 123456
      }
    }
  });
};
```

JavaScript file

JS File: Procedures implementation

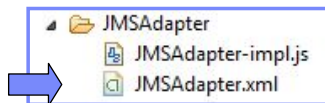
- **destination** is the target for messages that are produced by the client and the source for messages that are used by the client.

```
function writeMessage(message) {  
    var result = WL.Server.writeJMSMessage({  
        destination : "dynamicQueues/IBMWorklight",  
        message : {  
            body : message,  
            properties : {  
                MY_USER_PROPERTY : 123456  
            }  
        }  
    });  
}
```



XML File: Connection properties

- Connection properties are configured in the adapter XML file.



XML File: Connection properties

- **namingConnection** – necessary only if you are using an external JNDI (Java™ Naming and Directory Interface) repository
 - URL: the URL of JNDI repository

```
<?xml version="1.0" encoding="UTF-8"?>
<wl:adapter name="JMS_Adapter"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:wl="http://www.worklight.com/integration"
  xmlns:jms="http://www.worklight.com/integration/jms">

  <displayName>JMS_Adapter</displayName>
  <description>JMS_Adapter</description>
  <connectivity>
    <connectionPolicy xsi:type="jms:JMSConnectionPolicyType">
      <namingConnection url="tcp://localhost:61616"
        initialContextFactory="org.apache.activemq.jndi.ActiveMQInitialContextFactory"
        user="admin"
        password="admin"/>

      <jmsConnection
        connectionFactory="ConnectionFactory"
        user="admin"
        password="admin"/>

    </connectionPolicy>
    <loadConstraints maxConcurrentConnectionsPerNode="10"/>
  </connectivity>

  <procedure name="writeMessage"/>
  <procedure name="readMessage"/>
  <procedure name="readAllMessages"/>
</wl:adapter>
```

XML File: Connection properties

- (continued)
 - **initialContextFactory**: the classname for factory that is used for JNDI property configuration

```
<?xml version="1.0" encoding="UTF-8"?>
<wl:adapter name="JMS_Adapter"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:wl="http://www.worklight.com/integration"
  xmlns:jms="http://www.worklight.com/integration/jms">

  <displayName>JMS_Adapter</displayName>
  <description>JMS_Adapter</description>
  <connectivity>
    <connectionPolicy xsi:type="jms:JMSConnectionPolicyType">
      <namingConnection url="tcp://localhost:61616"
        initialContextFactory="org.apache.activemq.jndi.ActiveMQInitialContextFactory"
        user="admin"
        password="admin"/>

      <jmsConnection
        connectionFactory="ConnectionFactory"
        user="admin"
        password="admin"/>

    </connectionPolicy>
    <loadConstraints maxConcurrentConnectionsPerNode="10"/>
  </connectivity>

  <procedure name="writeMessage"/>
  <procedure name="readMessage"/>
  <procedure name="readAllMessages"/>
</wl:adapter>
```

XML File: Connection properties

- (continued)
 - **user, password:** the credentials as set up by the JNDI administrator

```
<?xml version="1.0" encoding="UTF-8"?>
<wl:adapter name="JMS_Adapter"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:wl="http://www.worklight.com/integration"
  xmlns:jms="http://www.worklight.com/integration/jms">

  <displayName>JMS_Adapter</displayName>
  <description>JMS_Adapter</description>
  <connectivity>
    <connectionPolicy xsi:type="jms:JMSConnectionPolicyType">
      <namingConnection url="tcp://localhost:61616"
        initialContextFactory="org.apache.activemq.jndi.ActiveMQInitialContextFactory"
        user="admin"
        password="admin"/>

      <jmsConnection
        connectionFactory="ConnectionFactory"
        user="admin"
        password="admin"/>

    </connectionPolicy>
    <loadConstraints maxConcurrentConnectionsPerNode="10"/>
  </connectivity>

  <procedure name="writeMessage"/>
  <procedure name="readMessage"/>
  <procedure name="readAllMessages"/>
</wl:adapter>
```

XML File: Connection properties

- **jmsConnection**

- **connectionFactory**: the classname for JMS Connection Factory that contains JMS configuration properties

```
<?xml version="1.0" encoding="UTF-8"?>
<wl:adapter name="JMS_Adapter"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:wl="http://www.worklight.com/integration"
  xmlns:jms="http://www.worklight.com/integration/jms">

  <displayName>JMS_Adapter</displayName>
  <description>JMS_Adapter</description>
  <connectivity>
    <connectionPolicy xsi:type="jms:JMSConnectionPolicyType">
      <namingConnection url="tcp://localhost:61616"
        initialContextFactory="org.apache.activemq.jndi.ActiveMQInitialContextFactory"
        user="admin"
        password="admin"/>

      <jmsConnection
        connectionFactory="ConnectionFactory"
        user="admin"
        password="admin"/>

    </connectionPolicy>
    <loadConstraints maxConcurrentConnectionsPerNode="10"/>
  </connectivity>

  <procedure name="writeMessage"/>
  <procedure name="readMessage"/>
  <procedure name="readAllMessages"/>
</wl:adapter>
```

XML File: Connection properties

- (continued)
 - **user, password**: the credentials as set up by JNDI administrator

```
<?xml version="1.0" encoding="UTF-8"?>
<wl:adapter name="JMS_Adapter"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
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        user="admin"
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      <jmsConnection
        connectionFactory="ConnectionFactory"
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        password="admin"/>

    </connectionPolicy>
    <loadConstraints maxConcurrentConnectionsPerNode="10"/>
  </connectivity>

  <procedure name="writeMessage"/>
  <procedure name="readMessage"/>
  <procedure name="readAllMessages"/>
</wl:adapter>
```

Agenda

- What is it?
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Adapter methods

- There are 4 basic JMS adapter methods:
 - WL.Server.readMessage
 - WL.Server.readAllJMSMessages
 - WL.Server.writeMessage
 - WL.Server.requestReplyJMSMessage

Adapter methods

- The **readMessage** method
 - Gets the next message from the destination.
 - Waits for timeout in milliseconds.
 - Returns a JMS message:
 - body
 - All available properties

```
var result = WL.Server.readSingleJMSMessage({  
  destination : "dynamicQueues/IBMWorklight",  
  timeout : 60  
});
```

```
{  
  "isSuccessful": true,  
  "message": {  
    "body": "Hello World",  
    "properties": {  
      "JMSCorrelationID": null,  
      "JMSDeliveryMode": 2,  
      "JMSDestination": "queue:\\/\\worklightQueue",  
      "JMSExpiration": 0,  
      "JMSMessageID": "ID:dhcp-9-41-62-243-50565-1350319511250-1:2:1:1:1",  
      "JMSPriority": 4,  
      "JMSRedelivered": false,  
      "JMSReplyTo": null,  
      "JMSTimestamp": 1350319533527,  
      "JMSType": null,  
      "MY_USER_PROPERTY": 123456  
    }  
  }  
}
```

Adapter methods

- The **readAllJMSMessages** method:
 - Accepts the same parameters as the `readSingleJMSMessage` method.
 - Returns a list of JMS messages in the same format as the `readSingleJMSMessage` method.
 - **The result is contained in a “messages” object.**

```
"isSuccessful": true,
"messages": [
  {
    "body": "Hello World",
    "properties": {
      "JMSCorrelationID": null,
      "JMSDeliveryMode": 2,
      "JMSDestination": "queue:\\/\\worklightQueue",
      "JMSExpiration": 0,
      "JMSMessageID": "ID:dhcp-9-41-62-243-50565-1350319511250-1:4:1:1",
      "JMSPriority": 4,
      "JMSRedelivered": false,
      "JMSReplyTo": null,
      "JMSTimestamp": 1350319659819,
      "JMSType": null,
      "MY_USER_PROPERTY": 123456
    }
  }
],
```

**** To use this method you should use an external server (not the one that Worklight is using)***

Adapter methods

- The **writeJMSMessage** method:
 - Writes a JMSText message to the destination.
 - Features user properties that can be set.

```
var result = WL.Server.writeJMSMessage({  
  destination : "dynamicQueues/IBMWorklight",  
  message : {  
    body : message,  
    properties : {  
      MY_USER_PROPERTY : 123456  
    }  
  }  
});
```

- Returns the JMSMessageID of the message that is sent.

```
{  
  "JMSMessageID": "ID:414d51204d59514d2020202020202020202020202755bb4f2000b602",  
  "isSuccessful": true  
}
```

Adapter methods

- The **requestReplyJMSMessage** method:
 - Accepts the same parameters as the writeJMSMessage method.
 - Writes a JMSText message to the destination.
 - Waits for a response on a dynamic destination.
 - Is designed for services that use the replyTo destination from the originating message.
 - Returns a JMS message in the same format as the readSingleJMSMessage method.

Agenda

- What is it?
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Configurations for working with an external JMS provider

- Several JMS providers exist that can be accessed by using IBM Worklight. Configurations might vary depending on the provider that you select.

- When working with an external JMS provider, check its documentation to see what steps need to be taken for the implementation
 - Usually copy JAR files to the server/lib directory of your project.
 - Validate what is the URL / port

Configurations for working with an external JMS provider

- **url** – the JMS provider URL
- **initialContextFactory** – JNDI provider Initial context factory class name
- **connectionFactory** – Name of JMS ConnectionFactory in JNDI.
- **user** and **password** are optional, depending on your configuration.

Example:

```
<connectivity>
  <connectionPolicy xsi:type="jms:JMSConnectionPolicyType">
    <namingConnection url="file:/home/norley/JMS"
      initialContextFactory="com.sun.jndi.fscontext.RefFSContextFactory"
      user="JNDIUserName"
      password="JNDIPassword"/>

    <jmsConnection
      connectionFactory="CF2"
      user="norley"
      password="password"/>
  </connectionPolicy>
```


Configurations for working with an external JMS provider

- **destination** – Name of the destination that was configured in the JMS provider.
- Example:

```
function writeMessage(message) {  
    var result = WL.Server.writeJMSMessage  
    (  
        {  
            destination: "JMS2",  
            message: {  
                body: message,  
                properties: {MY_USER_PROPERTY: 123456}  
            }  
        }  
    );  
    return result;  
}
```

Check yourself questions

- JMS adapters can be used to:
 - Read a single message from a queue
 - Read all messages from a queue
 - Write a message to a queue
 - All of the above
- JMS adapters can send and receive messages from:
 - Any messaging provider that supports the JMS API
 - Only WebSphere® MQ
 - Only Apache Active MQ
 - Only OpenJMS
- The purpose of the requestReplyJMSMessage method is:
 - To instruct the message broker where to send a message
 - To request messages that were queued while the client was offline
 - To write a message to a queue and wait for a response all in one invocation
 - To reply to a message sent from the broker

Check yourself questions

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