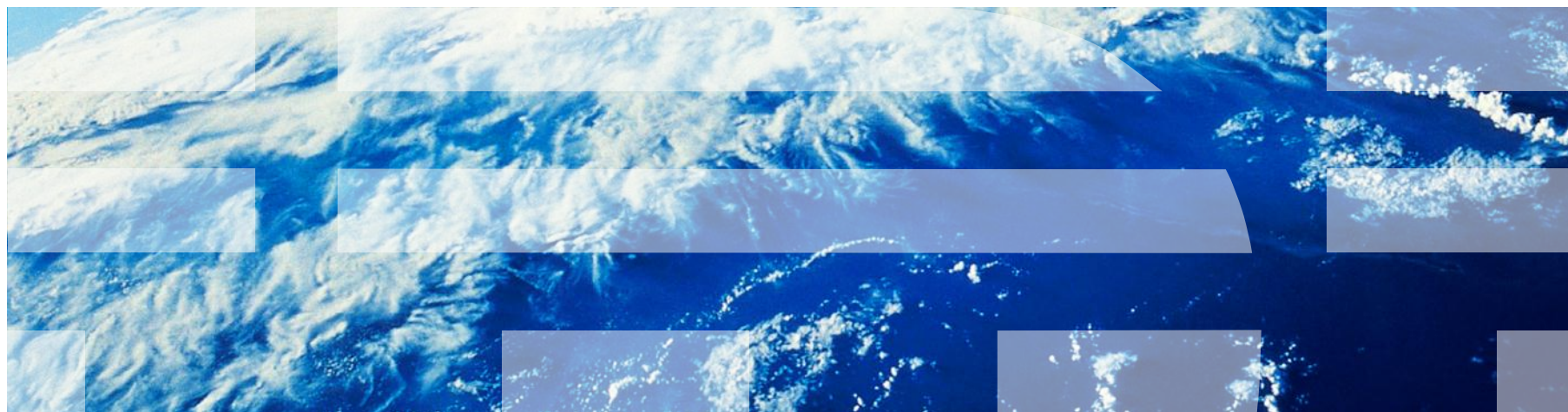


IBM Worklight Foundation V6.2.0 Getting Started

JMS adapter – Communicating with JMS



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Agenda

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

What is it?

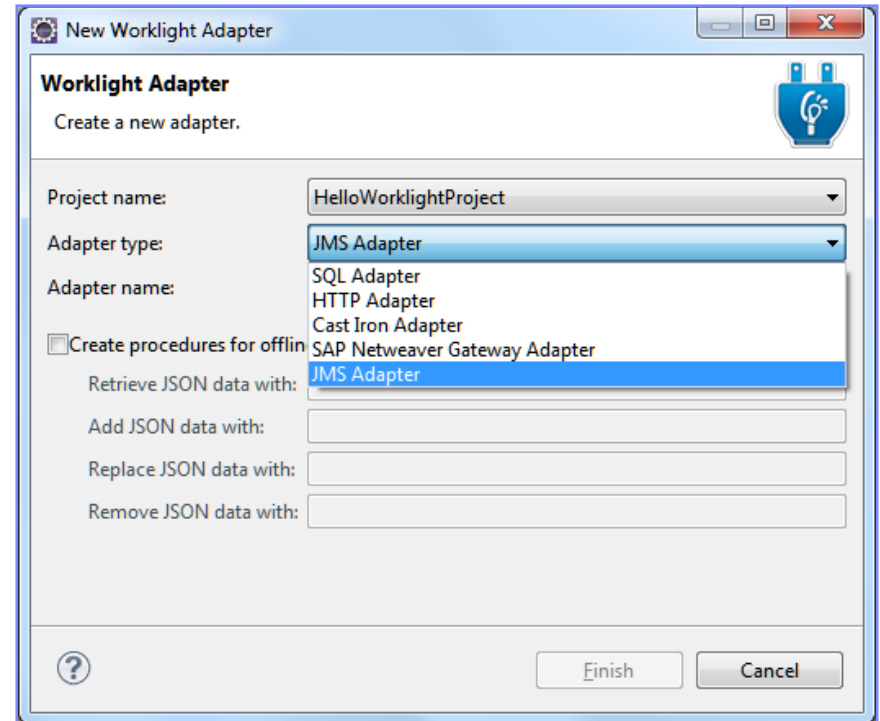
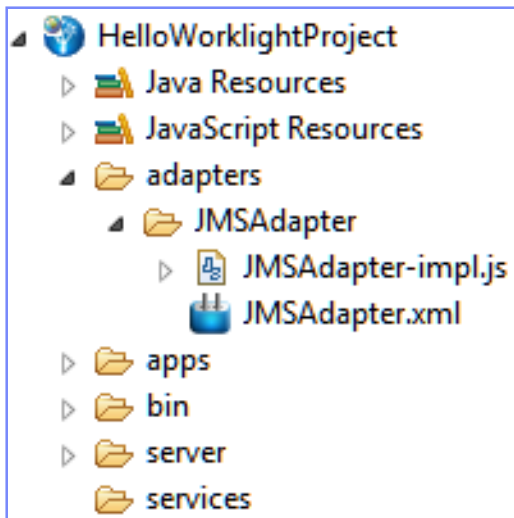
- Java™ Message Service (JMS) is the standard messaging Java API.
- With JMS Adapter, you can read and write messages from any messaging provider that supports the API.

Agenda

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

Creating the adapter

- In Worklight Studio, create a Worklight Adapter.
 - Choose the JMS Adapter type.
 - A standard JMS adapter structure is created:



Creating the adapter – continued

JS file: Procedures implementation

- Procedures are implemented in the adapter JavaScript™ file.
- 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

Creating the adapter – continued

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.

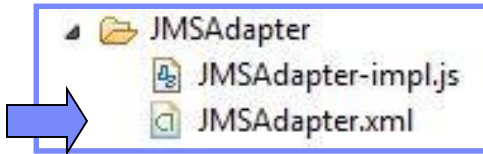
```
function writeMessage(message) {  
    var result = WL.Server.writeJMSMessage({  
        destination : "dynamicQueues/IBMWorklight",  
        message : {  
            body : message,  
            properties : {  
                MY_USER_PROPERTY : 123456  
            }  
        }  
    });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



Creating the adapter – continued

XML file: Connection properties

- Connection properties are configured in the adapter XML file.



Creating the adapter – continued

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>
```

Creating the adapter – continued

XML file: Connection properties

- `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"
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  <displayName>JMS_Adapter</displayName>
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        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>
```

Creating the adapter – continued

XML file: Connection properties

- 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"
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      <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>
```

Creating the adapter – continued

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>
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        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"/>
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  <procedure name="readAllMessages"/>
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Creating the adapter – continued

XML file: Connection properties

- 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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    <connectionPolicy xsi:type="jms:JMSConnectionPolicyType">
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        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>
```

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 – continued

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",
      "JMSPriority": 4,
      "JMSRedelivered": false,
      "JMSReplyTo": null,
      "JMSTimestamp": 1350319533527,
      "JMSType": null,
      "MY_USER_PROPERTY": 123456
    }
  }
}
```

Adapter methods – continued

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-9-41-62-243-50565-1350319511250-1:4:1:1:1",
      "JMSPriority": 4,
      "JMSRedelivered": false,
      "JMSReplyTo": null,
      "JMSTimestamp": 1350319659819,
      "JMSType": null,
      "MY_USER_PROPERTY": 123456
    }
  }
],
```

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

Adapter methods – continued

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:414d51204d59514d20202020202020202755bb4f2000b602",
  "isSuccessful": true
}
```

Adapter methods – continued

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?
- Creating the adapter
- Adapter methods
- Configurations for working with an external JMS provider

Configurations for working with an external JMS provider

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

- When you work with an external JMS provider, check its documentation to see what steps needs 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 – continued

- `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/nortey/JMS"
      initialContextFactory="com.sun.jndi.fscontext.RefFSContextFactory"
      user="JNDIUserName"
      password="JNDIPassword"/>

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

Configurations for working with an external JMS provider – continued

- `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;  
}
```


Quiz

Test your knowledge. Answers are in the following slide.

- 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.

Quiz - answers

- JMS adapters can be used to:
 - Read a single message from a queue.
 - Read all messages from a queue.
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 - All of the above.
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