

# ***IBM Worklight V6.1.0 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?***

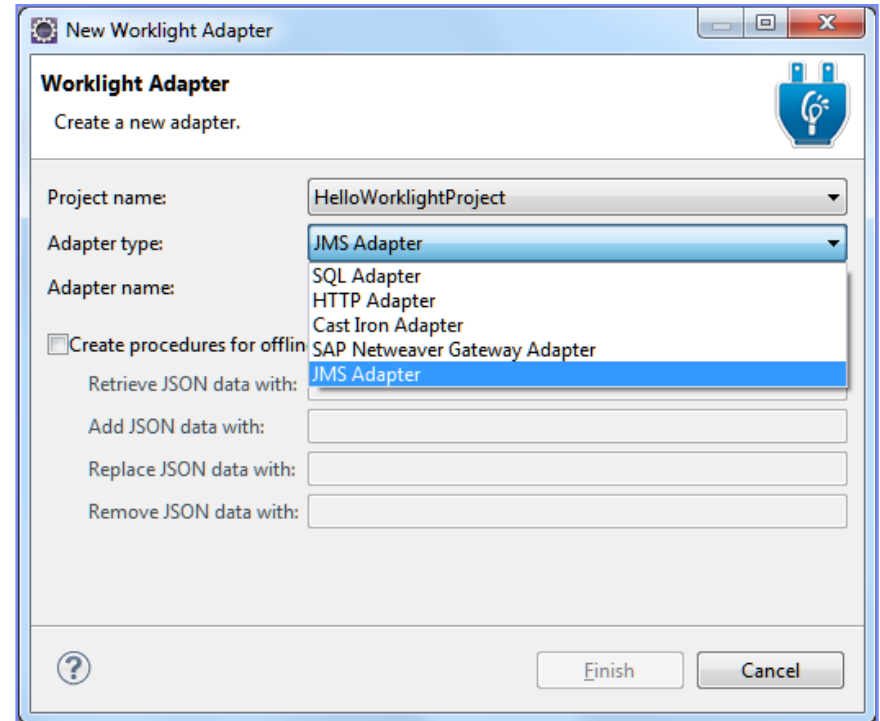
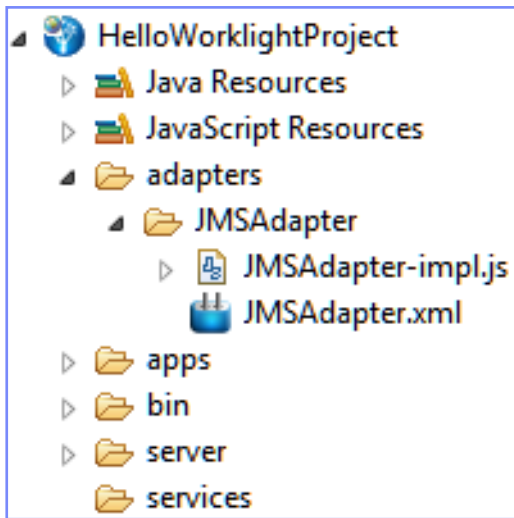
- Java™ Message Service (JMS) is the standard messaging Java API.
- With JMS Adapter, you can read and write messages from any messaging provider that supports the API.

# 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  
            }  
        }  
    });  
}
```

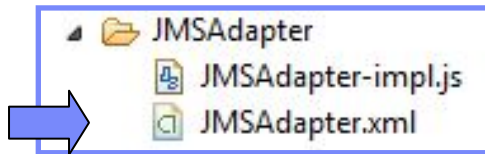




## ***Creating the adapter – continued***

### ***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"
  xmlns:jms="http://www.worklight.com/integration/jms">

  <displayName>JMS_Adapter</displayName>
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  <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

- 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"
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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>
```

# 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>
  <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

- 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"
  xmlns:wl="http://www.worklight.com/integration"
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    <connectionPolicy xsi:type="jms:JMSConnectionPolicyType">
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        user="admin"
        password="admin"/>

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

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

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- 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",
      "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 – 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:414d51204d59514d2020202020202020202020202755bb4f2000b602",
  "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?
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## ***Configurations for working with an external JMS provider***

- Several JMS providers exist that can be accessed 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 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;  
}
```



## ***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

- JMS adapters can be used to:
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