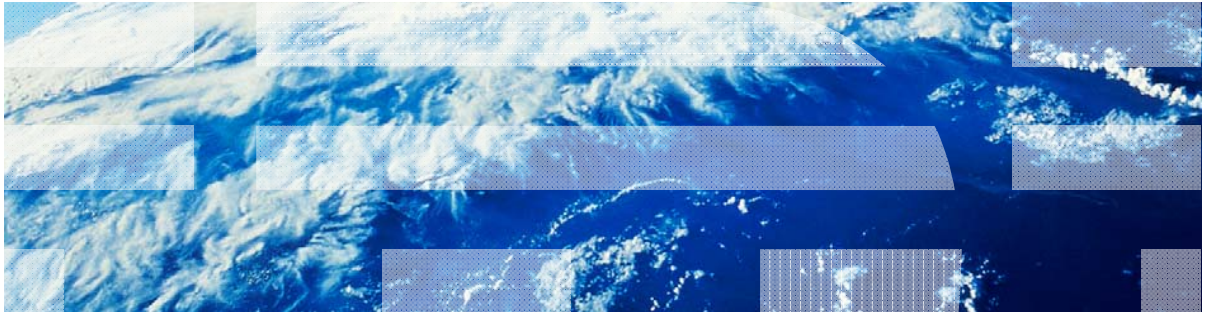


# ***IBM Worklight V6.0.0 Getting Started***

## **JMS adapter – Communicating with JMS**



## Trademarks

- IBM, the IBM logo, ibm.com, WebSphere, and DB2 are trademarks or registered trademarks of International Business Machines Corporation, registered in many jurisdictions worldwide. Worklight is a trademark or registered trademark of Worklight, an IBM Company. Other product and service names might be trademarks of IBM or other companies. A current list of IBM trademarks is available on the Web at “[Copyright and trademark information](http://www.ibm.com/legal/copytrade.shtml)” at [www.ibm.com/legal/copytrade.shtml](http://www.ibm.com/legal/copytrade.shtml).
- Java and all Java-based trademarks and logos are trademarks or registered trademarks of Oracle and/or its affiliates.
- Other company products or service names may be trademarks or service marks of others.
- This document may not be reproduced in whole or in part without the prior written permission of IBM.

## About IBM®

- See <http://www.ibm.com/ibm/us/en/>

# Agenda

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

## ***What is it?***

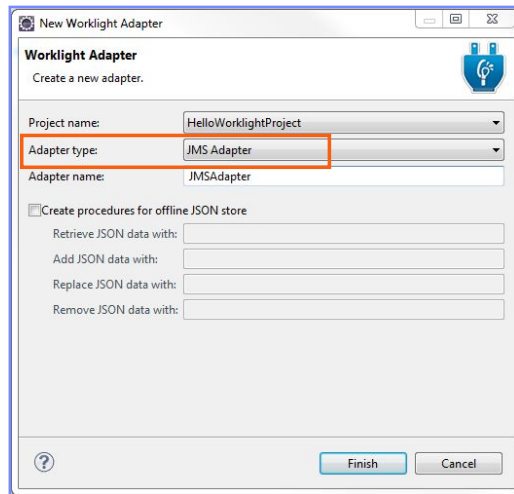
- Java™ Message Service (JMS) is the standard messaging Java API.
- With JMS Adapter, you can read and write messages from any messaging provider that supports the API.

# Agenda

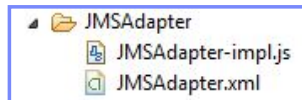
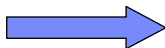
- What is it?
- Creating an adapter
- Adapter methods
- Configurations for working with an external JMS provider

## Creating a Worklight JMS adapter

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

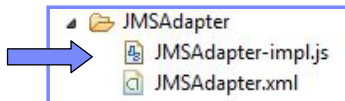


- A standard adapter structure is created.



## ***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:JMSConnectionPolicy">
    <jmsConnection
      connectionFactory="java:comp/env/jms/ConnectionFactory"
      user="myusername"
      password="mypassword"
    />
  </connectionPolicy>
  <loadConstraints maxConcurrentConnectionsPerNode="1" />
</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

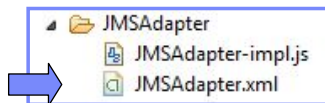
- destination** is the target for messages that are produced by the client and the source for messages that are used by the client.



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

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


```

# Agenda

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



## ***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-9-41-62-243-50565-1350319511250-1:4:1:1:1",
      "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:414d51204d59514d20202020202020202755bb4f2000b602",  
  "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?
- Creating an 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. 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***

- **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>
```



## ***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

- 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

# Notices

- Permission for the use of these publications is granted subject to these terms and conditions.
- This information was developed for products and services offered in the U.S.A.
- IBM may not offer the products, services, or features discussed in this document in other countries. Consult your local IBM representative for information on the products and services currently available in your area. Any reference to an IBM product, program, or service is not intended to state or imply that only that IBM product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any IBM intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any non-IBM product, program, or service.
- IBM may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not grant you any license to these patents. You can send license inquiries, in writing, to:
  - IBM Director of Licensing  
IBM Corporation  
North Castle Drive  
Armonk, NY 10504-1785  
U.S.A.
- For license inquiries regarding double-byte character set (DBCS) information, contact the IBM Intellectual Property Department in your country or send inquiries, in writing, to:
  - Intellectual Property Licensing  
Legal and Intellectual Property Law  
IBM Japan Ltd.  
1623-14, Shimotsuruma, Yamato-shi  
Kanagawa 242-8502 Japan
- **The following paragraph does not apply to the United Kingdom or any other country where such provisions are inconsistent with local law: INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.**
- This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. IBM may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.
- Any references in this information to non-IBM Web sites are provided for convenience only and do not in any manner serve as an endorsement of those Web sites. The materials at those Web sites are not part of the materials for this IBM product and use of those Web sites is at your own risk.
- IBM may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you.
- Licensees of this program who wish to have information about it for the purpose of enabling: (i) the exchange of information between independently created programs and other programs (including this one) and (ii) the mutual use of the information which has been exchanged, should contact:
  - IBM Corporation  
Dept F6, Bldg 1  
294 Route 100  
Somers NY 10589-3216  
USA

- Such information may be available, subject to appropriate terms and conditions, including in some cases, payment of a fee.
- The licensed program described in this document and all licensed material available for it are provided by IBM under terms of the IBM Customer Agreement, IBM International Program License Agreement or any equivalent agreement between us.
- Information concerning non-IBM products was obtained from the suppliers of those products, their published announcements or other publicly available sources. IBM has not tested those products and cannot confirm the accuracy of performance, compatibility or any other claims related to non-IBM products. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products.

## COPYRIGHT LICENSE:

- This information contains sample application programs in source language, which illustrate programming techniques on various operating platforms. You may copy, modify, and distribute these sample programs in any form without payment to IBM, for the purposes of developing, using, marketing or distributing application programs conforming to the application programming interface for the operating platform for which the sample programs are written. These examples have not been thoroughly tested under all conditions. IBM, therefore, cannot guarantee or imply reliability, serviceability, or function of these programs.
- Each copy or any portion of these sample programs or any derivative work, must include a copyright notice as follows:
  - © (your company name) (year). Portions of this code are derived from IBM Corp. Sample Programs. © Copyright IBM Corp., enter the year or years. All rights reserved.

## Privacy Policy Considerations

- IBM Software products, including software as a service solutions, ("Software Offerings") may use cookies or other technologies to collect product usage information, to help improve the end user experience, to tailor interactions with the end user or for other purposes. In many cases no personally identifiable information is collected by the Software Offerings. Some of our Software Offerings can help enable you to collect personally identifiable information. If this Software Offering uses cookies to collect personally identifiable information, specific information about this offering's use of cookies is set forth below.
- Depending upon the configurations deployed, this Software Offering may use session cookies that collect session information (generated by the application server). These cookies contain no personally identifiable information and are required for session management. Additionally, persistent cookies may be randomly generated to recognize and manage anonymous users. These cookies also contain no personally identifiable information and are required.
- If the configurations deployed for this Software Offering provide you as customer the ability to collect personally identifiable information from end users via cookies and other technologies, you should seek your own legal advice about any laws applicable to such data collection, including any requirements for notice and consent. For more information about the use of various technologies, including cookies, for these purposes, see IBM's Privacy Policy at <http://www.ibm.com/privacy>, and IBM's Online Privacy Statement at <http://www.ibm.com/privacy/details> the sections entitled "Cookies, Web Beacons and Other Technologies" and the "IBM Software Products and Software-as-a-Service Privacy Statement" at <http://www.ibm.com/software/info/product-privacy>.

# Support and comments

- For the entire IBM Worklight documentation set, training material and online forums where you can post questions, see the IBM website at:
  - <http://www.ibm.com/mobile-docs>
- **Support**
  - Software Subscription and Support (also referred to as Software Maintenance) is included with licenses purchased through Passport Advantage and Passport Advantage Express. For additional information about the International Passport Advantage Agreement and the IBM International Passport Advantage Express Agreement, visit the Passport Advantage website at:
    - <http://www.ibm.com/software/passportadvantage>
  - If you have a Software Subscription and Support in effect, IBM provides you assistance for your routine, short duration installation and usage (how-to) questions, and code-related questions. For additional details, consult your IBM Software Support Handbook at:
    - <http://www.ibm.com/support/handbook>
- **Comments**
  - We appreciate your comments about this publication. Please comment on specific errors or omissions, accuracy, organization, subject matter, or completeness of this document. The comments you send should pertain to only the information in this manual or product and the way in which the information is presented.
  - For technical questions and information about products and prices, please contact your IBM branch office, your IBM business partner, or your authorized remarketer.
  - When you send comments to IBM, you grant IBM a nonexclusive right to use or distribute your comments in any way it believes appropriate without incurring any obligation to you. IBM or any other organizations will only use the personal information that you supply to contact you about the issues that you state.
  - Thank you for your support.
  - Submit your comments in the IBM Worklight forums at:
    - <https://www.ibm.com/developerworks/mobile/worklight/connect.html>
  - If you would like a response from IBM, please provide the following information:
    - Name
    - Address
    - Company or Organization
    - Phone No.
    - Email address

***Thank You***

