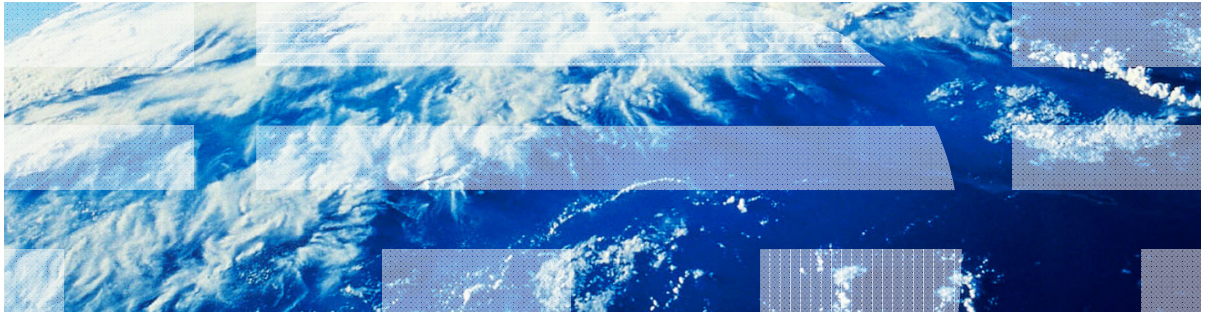


IBM Worklight V5.0.5 Getting Started

Module 43 – Moving from Development Environment to Remote QA and Production Servers



Trademarks

- IBM, the IBM logo, and ibm.com 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.
- Microsoft, Windows, Windows NT, and the Windows logo are trademarks of Microsoft Corporation in the United States, other countries, or both.
- 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/>

Using this module

- This module is intended for use with either the IBM® Worklight® Consumer Edition or the IBM Worklight Enterprise Edition.

Agenda

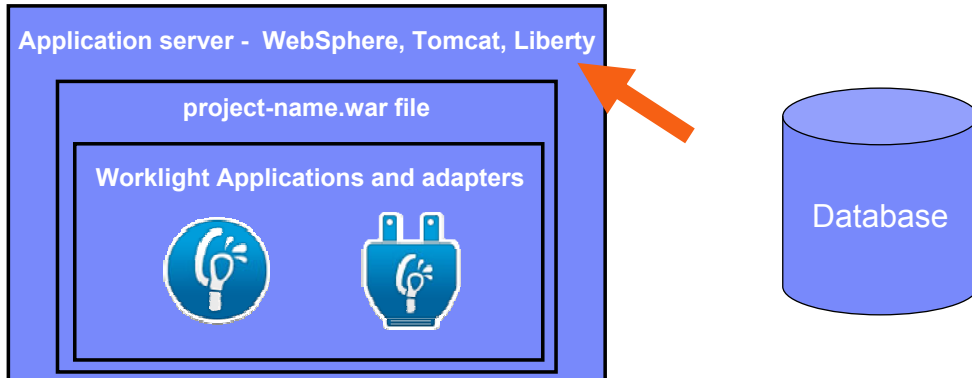
- Overview
- Prepare your application for deployment
- Deploy your application to a remote server
- Worklight Apache Ant utility
- Working in cluster environments

Overview

- The Worklight project contains various components, such as applications, adapters, configuration files, custom Java™ code, and libraries.
- During development stages all of these components are deployed to a local development server bundled within Worklight Studio.
- Deploying those components to a local development server is automated by Worklight Studio.
- Each environment (for example production, pre-production, QA, and development) has its own unique Worklight-specific settings, for example: locations of back-end services, public URL, database connectivity parameters, logging setting.
- Eventually a need to transfer these settings and components to the remote server arises.
- This training module describes how to package those Worklight components and deploy them to a remote server.

Overview

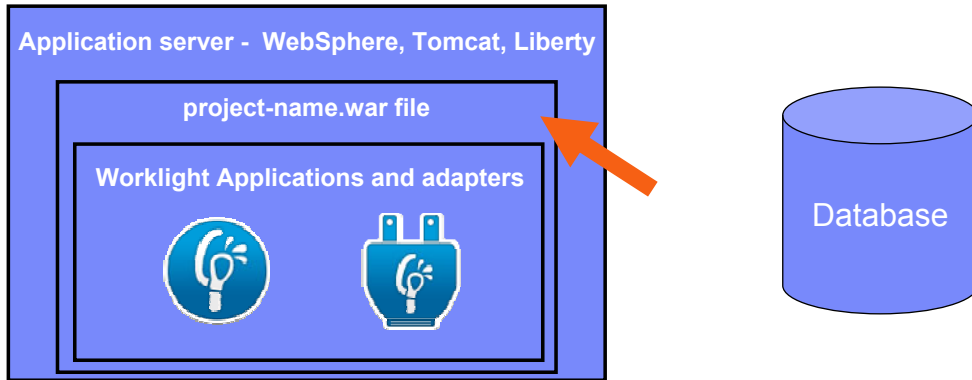
- The following diagram shows a stand-alone Worklight Server architecture. See the [IBM Worklight Information Center](#) for a full guide to installing Worklight Server.



You need a Java web application server to run Worklight - WebSphere, Tomcat, or Liberty. When your server is set up, copy the supplied `worklight-jee.jar` file to its libraries folder

Overview

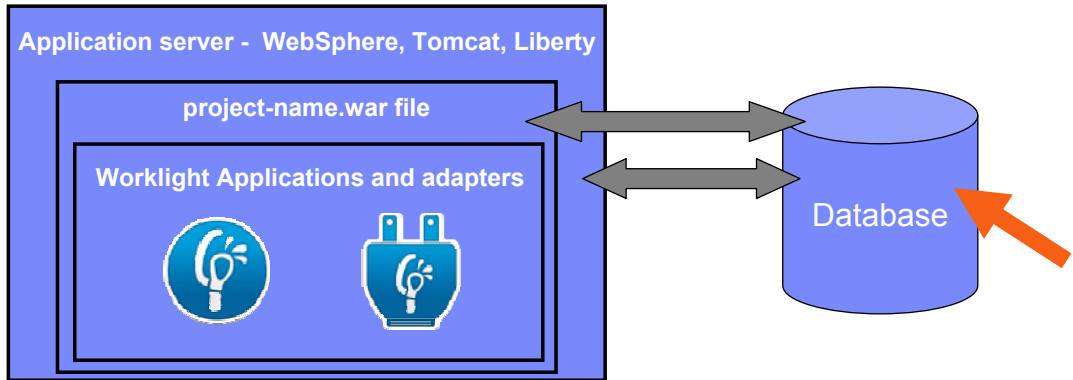
- The following diagram shows a stand-alone Worklight Server architecture. See the [IBM Worklight Information Center](#) for a full guide to installing Worklight Server.



Your Worklight project contains various server-related settings under the `\server\conf` folder, for example `worklight.properties` and `AuthenticationConfig.xml` files. In addition, it is possible to add custom Java code and libraries to the `\server\java` and `\server\lib` folders. All of those files are automatically compiled to the `project-name.war` file under the `\project` folder of your project.

Overview

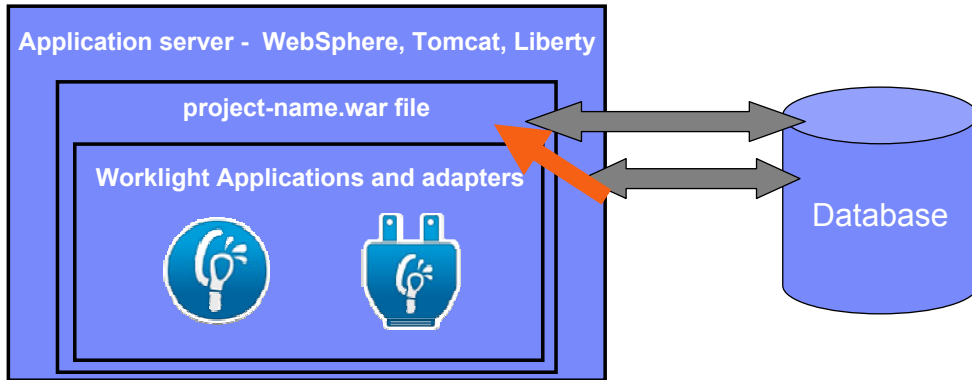
- The following diagram shows a stand-alone Worklight Server architecture. See the [IBM Worklight Information Center](#) for a full guide to installing Worklight Server.



Database connection properties are defined in the `worklight.properties` file. Note that you can use either application server level JNDI or Worklight server level JDBC connections.

Overview

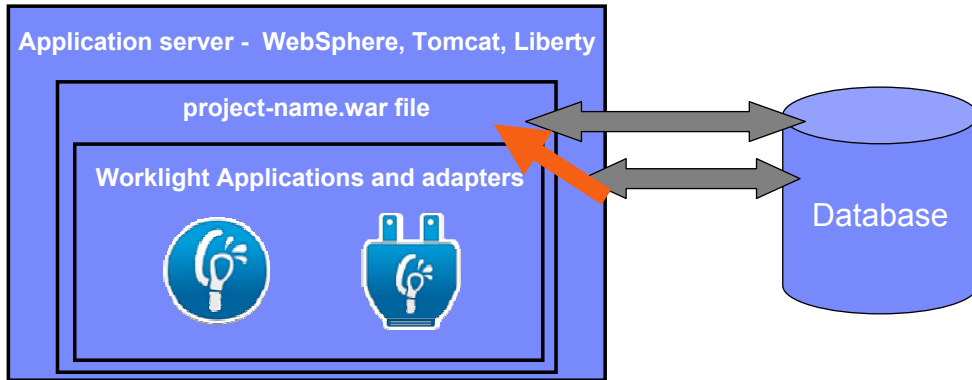
- The following diagram shows a stand-alone Worklight Server architecture. See the [IBM Worklight Information Center](#) for a full guide to installing Worklight Server.



When you have finished updating server-related files under the `\server\` folder of your project, you must deploy the generated `.war` file to the application server. Worklight Console is also bundled within this `.war` file. In Worklight terms, this `.war` file is called a *Server customization bundle*. Note that you can have only one `.war` file deployed per application server.

Overview

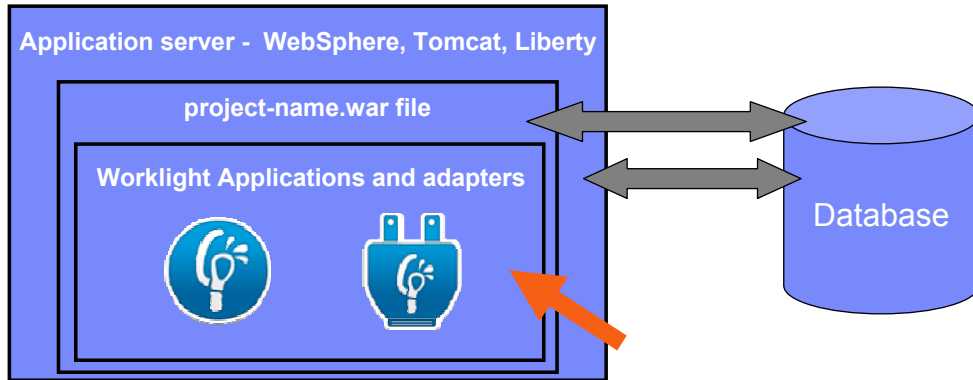
- The following diagram shows a stand-alone Worklight Server architecture. See the IBM Worklight Information Center for a full guide to installing Worklight Server.



After you deploy a .war file to your application server, you can open Worklight Console at `http://server:port/context/console`. Note that .war file functionality is using the `worklight-jee.jar` file that you previously copied to the `lib` folder of the application server.

Overview

- The following diagram shows a stand-alone Worklight Server architecture. See the [IBM Worklight Information Center](#) for a full guide to installing Worklight Server.



When your Worklight Console is accessible, you can start deploying applications and adapters. You are not limited to the number of applications and adapters that are deployed, but remember that they all share the same server customization bundle. Note that you must update the `<worklightServerRootURL>` property in the `application-descriptor.xml` file with the new server address and rebuild your app.

Overview

- The previously described process consists of two main steps:
 - Prepare the application for deployment:
 - Adjust application properties in the `application-descriptor.xml` file
 - Adjust server and database properties in the `worklight.properties` file
 - Build the application
 - Rename the generated `.war` file (optional)
 - Deploy the application:
 - Deploy the `.war` file to the remote server
 - Deploy applications and adapters by using Worklight Console

Agenda

- Overview
- Prepare your application for deployment
- Deploy your application to a remote server
- Worklight Apache Ant utility
- Working in cluster environments

Adjusting application-descriptor.xml

- The `application-descriptor.xml` file contains all the application-specific information and settings.
- When you work with a local development environment, Worklight applications try to connect to a local developer's workstation.
- You can set up the URL that applications will try to connect to in the `application-descriptor.xml` file.
- The `worklightServerRootURL` element contains the URL that the application will attempt to connect to. Update it to the URL of the remote server that the application will be using.

```
<worklightServerRootURL>http://your-remote-server-url:8080</worklightServerRootURL>
```

- You can also adjust other properties, like security features, before you build the application.

Adjusting worklight.properties

- When you are working with a remote server, the `worklight.properties` file must contain properties that describe connection to an SQL database that Worklight uses.
 - Select the database type that you will use, for example: MySQL, Oracle, DB2
 - Enter the jdbc URL
 - Enter your database user name and password

```
#####
# DB Settings
#####
# jndi name; empty value means Apache DBCP data source
#wl.db.jndi.name=

# For MySQL
wl.db.type=MYSQL
wl.db.url=jdbc:mysql://localhost:3306/Worklight

# For Derby
#wl.db.type=DERBY
#wl.db.url=jdbc:derby:${worklight.home}/derby/Worklight
#wl.reports.db.url=jdbc:derby:${worklight.home}/derby/

# For HSQL
#wl.db.type=HSQL
#wl.db.url=jdbc:hsqldb:file:${worklight.home}/hsqldb/W
#wl.reports.db.url=jdbc:hsqldb:file:${worklight.home}/

# For DB2
#wl.db.type=DB2
#wl.db.url=jdbc:db2:Worklight

# For Oracle
#wl.db.type=ORACLE
#wl.db.url=jdbc:oracle:thin:@localhost:1521:SID

wl.db.username=Worklight
wl.db.password=Worklight
```

Adjusting worklight.properties

- Adjust properties that describe public Worklight Server access
 - Protocol
 - Port
 - Context

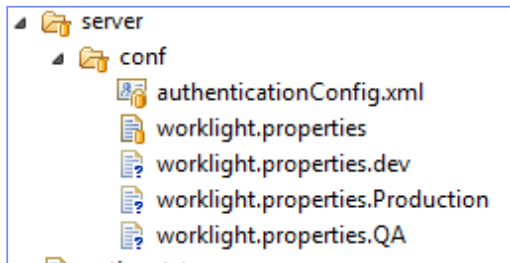
```
#####  
# Public Worklight Server address  
#####  
#publicWorkLightHostname=localhost  
# http or https  
publicWorkLightProtocol=http  
# For default port leave empty  
publicWorkLightPort=8181  
publicWorkLightContext=/MyContext/
```



Your Worklight Server will be available at
<http://my-remote-server:8181/MyContext/>

Building the project

- When you have made all the required modifications to the configuration of your Worklight project, build your application, adapter, or both
- This creates a `projectName.war` file in the `\bin` folder which is used to deploy projects configuration to a remote server
- In addition to project configuration, this `.war` file contains classes that are built from Java code in the `server\java` folder
- Change the name of this `.war` file to `context-root-name.war`. Use the same context root name as in previous steps
- For ease of use, you can create several copies of configuration files with various names and copy their contents to the main configuration file before you build your application



Agenda

- Overview
- Prepare your application for deployment
- **Deploy your application to a remote server**
- Worklight Apache Ant utility
- Working in cluster environments

Deploy your application to a remote server

- Deploy the generated `.war` file to your remote server
- If you are using Tomcat application server, copy the `.war` file to the `webapps` directory and restart the server
- Alternatively, Tomcat provides a management console to deploy `.war` files

The screenshot shows the Tomcat management console deployment interface. It is divided into two main sections: "Deploy" and "WAR file to deploy".

The "Deploy" section has a yellow header and contains the text "Deploy directory or WAR file located on server". Below this, there are three input fields: "Context Path (required):", "XML Configuration file URL:", and "WAR or Directory URL:". A "Deploy" button is located below these fields.

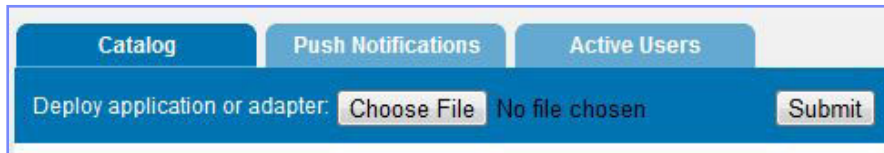
The "WAR file to deploy" section also has a yellow header and contains the text "Select WAR file to upload". Below this, there are two buttons: "Choose File" and "No file chosen". A "Deploy" button is located below these buttons.

A red rectangular box highlights the "Choose File" and "No file chosen" buttons in the "WAR file to deploy" section.

- See the IBM Worklight Information Center for information about deploying to other application Servers

Deploy your application to a remote server

- After you deploy the `.war` file, open Worklight Console by browsing to <http://your-remote-server:server-port/<context root name>/console>
- Now you can deploy `.wlap` and `.adapter` files from the `bin\` folder of your Worklight project
 - In the console, click **Choose File**
 - Select the `.wlap` or `.adapter` file
 - Click **Submit** to deploy the adapter



- Your application is now ready to use.

Agenda

- Overview
- Prepare your application for deployment
- Deploy your application to a remote server
- **Worklight Apache Ant utility**
- Working in cluster environments

Worklight Apache Ant utility

- Apache Ant is a project that is developed and maintained by the Apache Software Foundation.
- It provides command-line tools that can be used for various tasks such as building applications and copying files.
- Apache Ant can be downloaded at <http://ant.apache.org/>.
- Worklight provides an Apache Ant utility for automating build and deploy processes of Worklight artifacts.
- In following slides, you learn how to use it for various tasks.
- More documentation about Apache Ant can be found here <http://ant.apache.org/manual/index.html>.

Apache Ant basics

- Install Apache Ant and make sure that its binary files are in the path variable of your operating system.
- Apache Ant is run by invoking the following syntax from the command line.

```
ant -buildfile build-script-name.xml
```

- The build script is an XML file with following structure template.

```
<?xml version="1.0" encoding="UTF-8"?>  
<project base="." default="target-name">  
  <target name="target-name">  
  </target>  
</project>
```

- The <target> element contains a set of tasks which are performed one by one. You will learn to define them in the following slides.
- You can use <echo message="messageText"/> task to output the debug information.

Adding a reference to Worklight Ant JAR file


- The first thing to add to your <target> element is a <taskdef> reference to Worklight Ant utility

```
<?xml version="1.0" encoding="UTF-8"?>
<project basedir="." default="buildApplication">

  <target name="buildApplication">

    <echo message="Loading ANT tool"/>
    <taskdef resource="com/worklight/ant/defaults.properties">
      <classpath>
        <pathelement location="c:\IBM\Workspace\worklight-ant-5.0.2.jar" />
      </classpath>
    </taskdef>

    </target>
  </project>
```

 **Add Worklight tasks here**

- This makes sure that Ant recognizes the Worklight tasks such as application-builder and has a default configuration for performing them

Ant task - Application builder

- To build your application, add an <app-builder> task with the following syntax:

```
<echo message="Building application"/>
<app-builder
  applicationFolder="c:\IBM\Workspace\TestProject\apps\TestApplication"
  environments="common"
  nativeProjectPrefix="com.mycompany.TestApplication"
  outputFolder="c:\IBM\Workspace\TestProject\bin"
/>
```

- Parameters:
 - **applicationFolder** – the root folder of your application.
 - **environments** – comma-separated list of environments to build. Optional parameter, omitting it means build all environments that are found in the application-descriptor.xml file.
 - **nativeProjectPrefix** – mandatory parameter when building iOS applications.
 - **outputFolder** – the folder to put generated .wlapp files in.

Ant task - Application deployer

- To deploy your application, add an <app-deployer> task with the following syntax:

```
<echo message="Deploying application"/>
<app-deployer
  worklightServerHost="http://localhost:8080/"
  deployable="c:\IBM\Workspace\TestProject\bin\TestApplication-common.wlapp"
/>
```

- Parameters:
 - **worklightServerHost** – full URL of your Worklight server. Deployment fails if Worklight console is protected by a user name and password.
 - **deployable** – the .wlapp file to deploy.
- If you need to deploy several .wlapp files, you can add several <app-deployer> entries.

Ant task - Adapter builder

- To build your adapter, add an <adapter-builder> task with the following syntax:

```
<echo message="Building adapter"/>
<adapter-builder
  folder="c:\IBM\Workspace\TestProject\adapters\TestAdapter"
  destinationfolder="c:\IBM\Workspace\TestProject\bin"
/>
```

- Parameters:
 - **folder** – the root folder of your adapter
 - **destinationfolder** – the folder to put the generated .adapter file in
- If you need to build several adapters, you can add several <adapter-builder> entries.

Ant task - Adapter deployer

- To deploy your adapter, add an <adapter-deployer> task with the following syntax:

```
<echo message="Deploying adapter"/>
<adapter-deployer
  worklightServerHost="http://localhost:8080/"
  deployable="c:\IBM\Workspace\TestProject\bin\TestAdapter.adapter"
/>
```

- Parameters:
 - **worklightServerHost** – full URL of your Worklight server. Deploy fails if Worklight console is protected by a user name and password.
 - **deployable** – the .adapter file to deploy
- If you need to deploy several .wlap files, you can add several <adapter-deployer> entries.

Ant task – WAR builder

- To build the server customization archive (.war file), add a <war-builder> task with the following syntax:

```
<war-builder
  projectfolder="c:\IBM\Workspace\TestProject"
  destinationfolder="c:\IBM\Workspace\TestProject\bin\"
  warfile="c:\IBM\Workspace\TestProject\bin\TestProject.war"
  classesFolder="c:\IBM\Workspace\TestProject\bin\classes"
/>
```

- Parameters:
 - **projectfolder** – the path to your project
 - **destinationfolder** – folder for temporary files generation
 - **warfile** – destination and file name of a generated .war file
 - **classesFolder** – a folder with compiled Java classes to add to the .war file
- **.jar** files under the `projectfolder\server\lib` directory are added automatically.

Agenda

- Overview
- Prepare your application for deployment
- Deploy your application to a remote server
- Worklight Apache Ant utility
- Working in cluster environments

Working in cluster environments

- Several Worklight servers can be set up in a cluster environment, sharing a database.
- When a `.wlappr` or `.adapter` file is deployed on one of the servers in a cluster it is automatically synchronized to other servers.
- When an application or an adapter is deleted from one of the servers in a cluster, it is automatically deleted from other servers as well.
- A `.war` file, however, is a part of the application server customization. It must therefore be deployed manually to each server in the cluster.
- By default cluster synchronization is performed with a 2-second interval. You can change this interval by adjusting **`cluster.data.synchronization.taskFrequencyInSeconds`** property in the `worklight.properties` file.

Notices

- 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.

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/mobileforum.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

