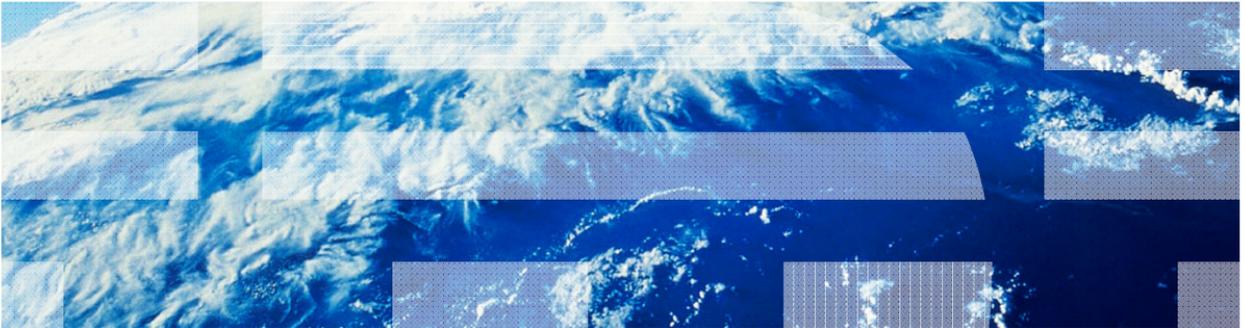


# ***IBM Worklight V5.0.5 Getting Started***

## **Module 5 – Integration Adapters**



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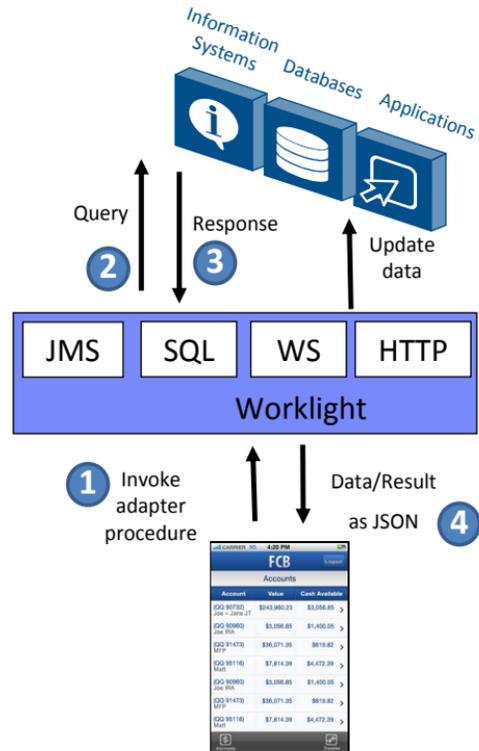
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# Agenda

- **Adapters overview**
- Creating an adapter
- Deploying an adapter
- Adapter structure

## Adapters overview

- An adapter is a transport layer used by the Worklight® Platform to connect to various back-end systems.
- Adapters are used to:
  - Retrieve information
  - Perform actions
- Adapters provided with the product:
  - SQL adapter
  - HTTP adapter (supports both REST and SOAP)
  - Cast Iron® adapter
  - JMS adapter



## ***Benefits***

- **Universality**
  - Supports multiple integration technologies and back-end information systems
- **Read-only as well and Transactional Capabilities**
  - Adapters support read-only and transactional access modes to back-end systems
- **Fast Development**
  - Use simple XML syntax and easily configured with JavaScript API
- **Security**
  - Use of flexible authentication facilities to create connections with back-end systems
  - Adapters offer control over the identity of the connected user
- **Scalability**
  - Adapters reduce the number of transactions on back-end systems by using cache to store retrieved back-end data
- **Transparency**
  - Data retrieved from back-end applications is exposed in a uniform manner regardless of the adapter type

## ***Adapter anatomy***

- Each Worklight adapter consists of:
  - An XML file, describing the connectivity options and listing the procedures exposed to the application or other adapters.
  - A JavaScript file, containing the implementation of procedures declared in the XML file.
  - Zero or more XSL files, containing a transformation scheme for retrieved raw XML data.
- Data retrieved by an adapter can be returned raw or preprocessed by the adapter itself. In both cases, it is presented to the application as a JSON object.

## ***Adapter anatomy: procedures***

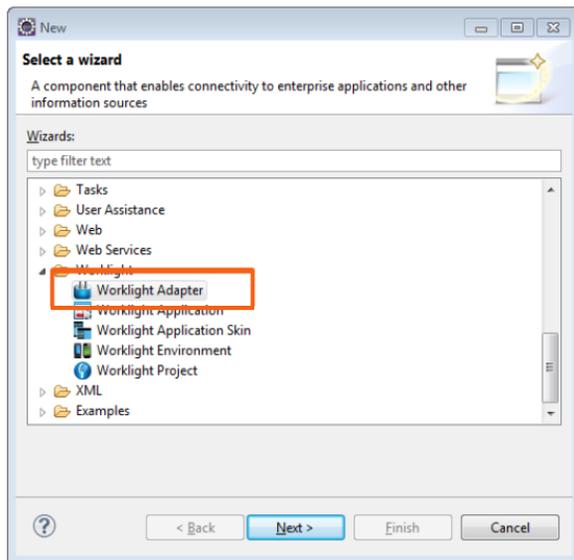
- Procedures provide Adapter functions to the application
- Procedures call back-end services to retrieve data or to perform actions
- Procedures are declared in XML and are implemented with server-side JavaScript
- Using server-side JavaScript, a procedure can process the data before or after calling the service
- Additional filtering can be applied to retrieved data with simple XSLT
- Usually, adapter procedures are implemented in JavaScript, but since an adapter is a server-side entity, it is possible to use Java snippets in the adapter code

# Agenda

- Adapters overview
- **Creating an adapter**
- Deploying an adapter
- Adapter structure

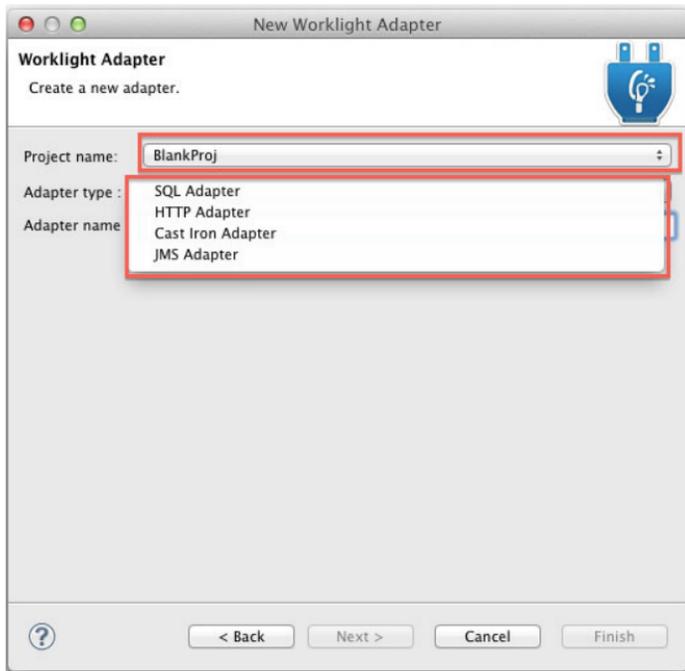
## Creating an adapter

- Right-click the Worklight Project node
- Add a new Worklight adapter



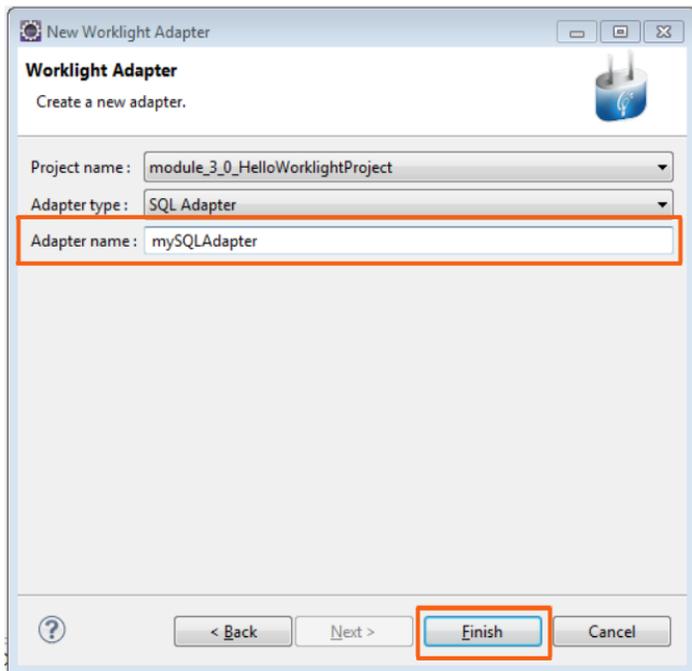
## Creating an adapter

- Select a Worklight project
- Select an Adapter type



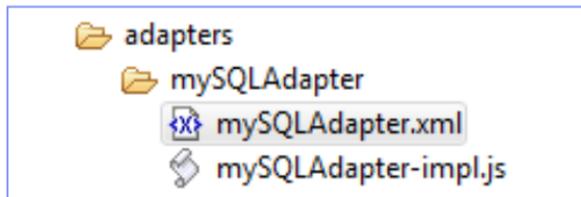
## Creating an adapter

- Select a Worklight project
- Select an Adapter type
- Type the Adapter name
  - Applications access the adapter with this name
- Click **Finish**



## Creating an adapter

- Select a Worklight project
- Select an Adapter type
- Type the Adapter name
  - Applications access the adapter with this name
- Click **Finish**
  
- The result
  - XML files which declare procedures and connection properties
  - A JavaScript file which defines procedures and the adapter logic

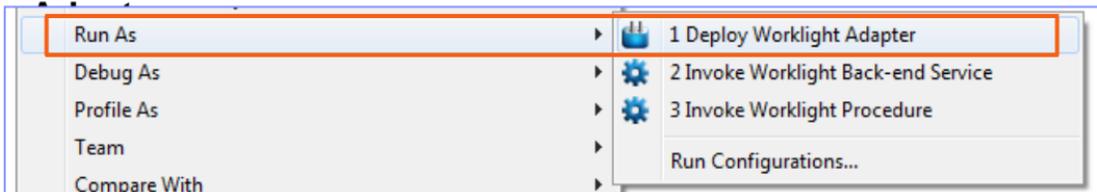


# Agenda

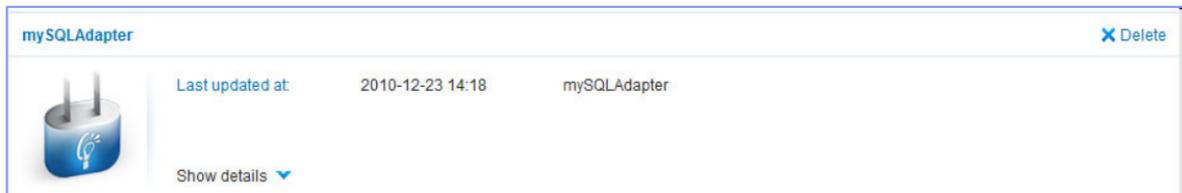
- Adapters overview
- Creating an adapter
- **Deploying an adapter**
- The adapter structure

## Adapter deployment

- Select an adapter to deploy
- Right-click the adapter and then **Run As > Deploy Worklight**

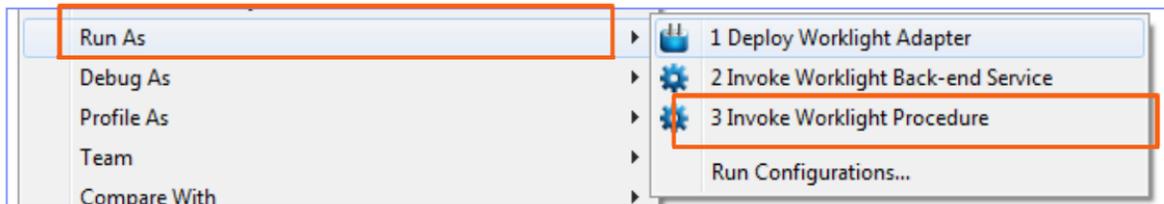


- The Worklight Studio archives the adapter code and deploys it onto the Worklight Server
- You can see the deployed adapter in the Worklight Console



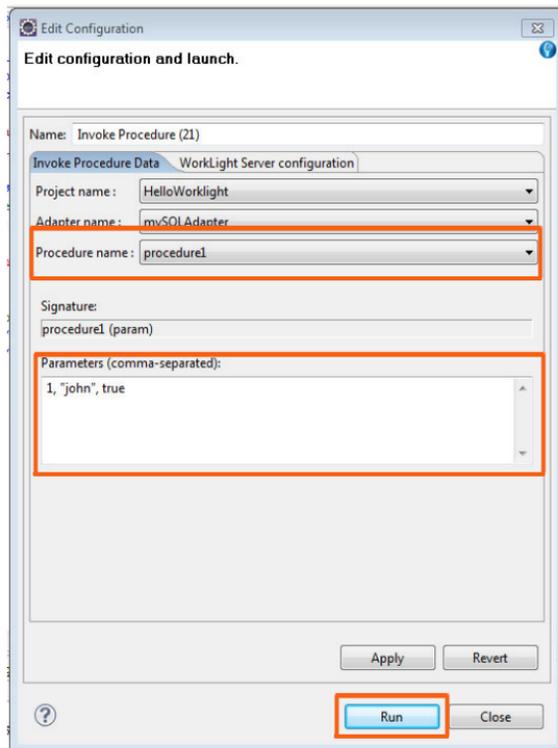
## Testing the adapter procedures

- Use the Worklight Studio to test the adapter procedures
- To run a procedure test, click **Invoke Worklight Procedure** from the **Run As** menu



## Testing the adapter procedures

- Select the procedure you want to test
- Enter comma-separated procedure parameters
- Click **Run**



## Agenda

- Adapters overview
- Creating an adapter
- Deploying an adapter
- The adapter structure

## Reviewing the adapter structure: XML

```
<wl:adapter name="mySQLAdapter" >
```

```
<displayName />
```

```
<description />
```

```
<connectivity>
```

```
    <connectionPolicy>
```

```
    <loadConstraints>
```

```
</connectivity>
```

```
</wl:adapter>
```

The adapter Name is a required attribute.

## Reviewing the adapter structure: XML

```
<wl:adapter name="mySQLAdapter" >
```

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```
<description />
```

```
<connectivity>
```

```
    <connectionPolicy>
```

```
    <loadConstraints>
```

```
</connectivity>
```

```
<procedure />
```

```
<procedure />
```

```
.....
```

```
</wl:adapter>
```

*Optional:* Name is displayed in the Worklight Console

## Reviewing the adapter structure: XML

```
<wl:adapter name="mySQLAdapter" >  
  <displayName />  
  <description />  
  <connectivity>  
    <connectionPolicy>  
    <loadConstraints>  
  </connectivity>  
  <procedure />  
  <procedure />  
  .....  
</wl:adapter>
```

*Optional:* Additional information is displayed in the Worklight Console

## Reviewing the adapter structure: XML

```
<wl:adapter name="mySQLAdapter" >
  <displayName />
  <description />
  <connectivity>
    <connectionPolicy>
    <loadConstraints>
  </connectivity>
  <procedure />
  <procedure />
  .....
</wl:adapter>
```

### Connectivity

- Defines the connection properties and load constraints of the back-end system
- When the back-end system requires user authentication, this element defines how user credentials are obtained

## Reviewing the adapter structure: XML

```
<wl:adapter name="mySQLAdapter" >  
  <displayName />  
  <description />  
  <connectivity>  
    <connectionPolicy>  
    <loadConstraints>  
  
  </connectivity>  
  <procedure />  
  <procedure />  
  .....  
</wl:adapter>
```

### Procedures

Declare a service for accessing a back-end application. One entry for each adapter procedure.

## Reviewing the adapter structure: JavaScript

- Each procedure declared in the adapter XML file must have a corresponding function in the JS file
- WL.Server API defines a procedure logic in JavaScript

```
17 <procedure name="procedure1"/>  
18 <procedure name="procedure2"/>
```

XML File

```
8 var procedure1Statement =  
9 WL.Server.createStatement("select COLUMN1, COLUMN2 from TABLE1 where COLUMN3 = ?");  
10 function procedure1(param) {  
11     return WL.Server.invokeSQLStatement({  
12         preparedStatement : procedure1Statement,  
13         parameters : [param]  
14     });  
15 }
```

JS File

## Check yourself questions

- A Worklight adapter is used to:
  - Adapt the application to various environments; iOS, Android, and so on
  - Connect to various back-end systems
  - Make sure that client application works directly with a corporate back-end system
  - Make sure that client application is not running on a JailBroken or Rooted device
- What type of adapter is not provided by Worklight?
  - SQL adapter to connect to SQL-based servers
  - HTTP adapter to communicate with web-based services
  - Cast Iron adapter
  - SIP adapter for VoIP communications
- Each Worklight adapter consists of:
  - Single XML file with adapter settings, single JS file with adapter implementation
  - Single XML file with adapter settings, multiple JS files with adapter implementation
  - Multiple XML files with adapter settings, multiple JS files with adapter implementation
  - Multiple XML files with adapter settings, single JS file with adapter implementation

## Check yourself questions

- A Worklight adapter is used to:
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