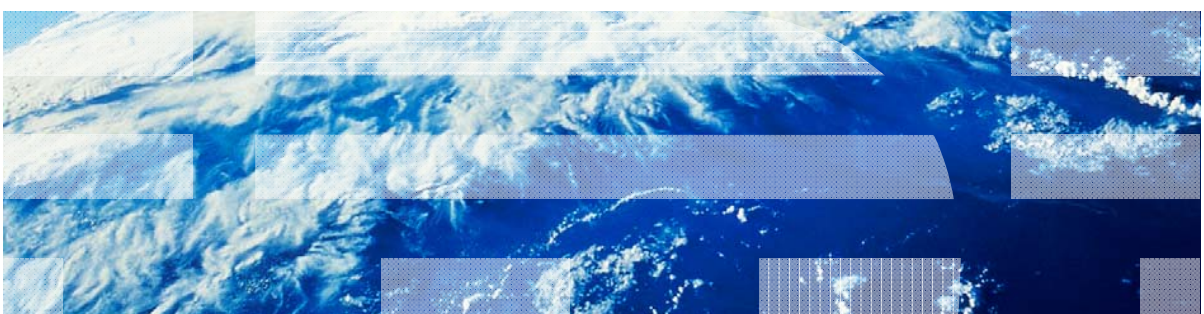
IBM Worklight V5.0.6
Getting Started

Using Rational Team Concert to build your applications



17 January 2014

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Agenda

- Building Worklight® projects with the Rational Team Concert™ build system
  - Building the native binary for iOS
  - Building the native binary for Android
  - Building and deploying hybrid resources
- Sample Worklight build scripts

Building Worklight projects with the Rational Team Concert build system (1 of 2)

- You can deliver the code that is contained within your Worklight® projects to Rational Team Concert™.
- You can use the Rational Team Concert (RTC) build system to build Worklight projects by using either of the following methods:
  - Request personal builds based on the private contents of your personal workspaces.
  - Schedule regular builds based on contents that are delivered in a stream.
- The Consumer and Enterprise editions of IBM® Worklight contain Ant tasks. These Ant tasks build the web code within your Worklight projects and deploy the build results to the Worklight Server.
- Mobile operating system native SDKs contain command-line interfaces, such as the Android SDK and Xcode. You can use these command-line interfaces with Ant to build the native executabl files (such as .apk files for Android and .ipa files for iOS) to run on the device.
- Tip: If you are using the Application Center that is available in the Enterprise Edition of IBM Worklight, you can use the provided Ant tasks to deploy the native executable files to the application.

Building Worklight projects with the Rational Team Concert build system (2 of 2)

- The following build and deploy tasks are supported in the Rational Team Concert build system:
  - **Building the native binary for iOS**: You can create a build definition to build iPhone and iPad native executable files, by using the command-line interfaces provided with Xcode.
  - **Deploying the native binary for iOS to the Application Center**: For details on deploying the native binary for iOS to the Application Center, see Command-line tool for uploading an application in the IBM Worklight user documentation.
  - **Building the native binary for Android**: You can create a build definition to build Android native executable files, by using the command-line interfaces provided with the Android SDK.
  - **Deploying the native binary for Android to the Application Center**: For details on deploying the native binary for Android to the Application Center, see Command-line tool for uploading an application in the IBM Worklight user documentation.
  - **Building and deploying hybrid resources**: You can create a build definition to build hybrid web code that is contained within Worklight projects.
    - The build definition uses the Ant tasks from the **worklight-ant.jar** file to build and deploy your hybrid code.

Agenda

- Building Worklight projects with the Rational Team Concert build system
  - Building the native binary for iOS
  - Building the native binary for Android
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Building the native binary for iOS (1 of 10)

- As part of the native build for iOS, you must first build the web resources in the common and environment layers (and optionally skin layers) of the Worklight project. In addition, you must generate the native artifacts that are required by Xcode and other Worklight client-side runtime libraries, such as Cordova and JSON Store API.
- You can create a build definition to build iPhone and iPad native executable files, by using the command-line interfaces provided with X Code.
- Before you begin, ensure that the appropriate version of Xcode is installed on your Mac workstation.
- To prepare the environment on the Mac workstation that runs the Jazz™ build engine for your iOS builds, follow the steps in the next slides.

Building the native binary for iOS (2 of 10)

1. Use one of the following methods to set up the Mac workstation with developer certificates and provisioning profiles:
   A. Provisioning portal
   B. Manual setup

Building the native binary for iOS (3 of 10)

A. **Provisioning portal**: Use this method if you can dedicate the Mac to a particular developer account.
   a. Log on to the iOS Developer Program Member Center.
   b. In the iOS Provisioning Portal, click **Launch Assistant** within the Development Provisioning Assistant section.
   c. Follow the Development Provisioning Assistant to set up the workstation.

Building the native binary for iOS (4 of 10)

B. **Manual setup**: Use this method if you cannot configure the Mac as the primary development workstation for a development account.

   a. Open Xcode and select **Window > Organizer > Library > Provisioning Profiles**.

   b. Beside the **Automatic Device Provisioning** option, click **Refresh**.

   c. When prompted to log on to the Provisioning Portal, use the iOS Enterprise Developer Program account to log on.

   d. Verify that the provisioning profiles are successfully imported.

   e. Various warnings are displayed for the provisioning profiles to indicate that the profiles cannot be validated with matching private keys. Complete the following steps to resolve this issue:

      i. On the Mac workstation that is set up using the Provisioning Portal, open **Keychain Access**.

      ii. Locate the certificate that is installed from the iOS program, such as login or System.

      iii. Expand the certification to view the private key that is associated with the certificate.

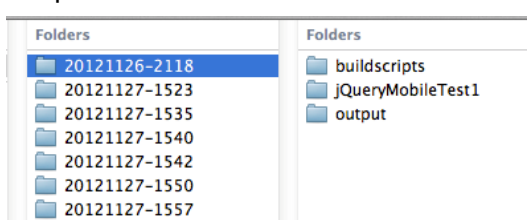
      iv. Right-click the private key and select **Export to a .p12 file**.

      v. Transfer the file to the build workstation and import it into the Keychain.

      vi. Verify that the provisioning profiles are now recognized.

Building the native binary for iOS (5 of 10)

2. Copy the following files from <*WLInstall*>, your IBM Worklight installation folder, to a directory on the build host:
   - **worklight-ant.jar** from <*WLInstall*>/WorklightServer
   - **applicationcenterdeploytool.jar**: from <*WLInstall*>/ApplicationCenter/tools
   - **json4j.jar** from <*WLInstall*>/ApplicationCenter/tools
3. Create a build folder, such as **/Users/username/Documents/wlbuild**
   - This folder will hold temporary resources that the RTC build engine checks out, and build output.
   - During each build, the RTC build engine creates a unique folder to hold the project resources and build output. This folder looks like the one shown here:



Building the native binary for iOS (6 of 10)

4. Download the sample scripts from the compressed file that is associated with this module. For more information, see the **Sample build scripts** slide, at the end of this module
5. Copy the following files to a project, call it "**buildscripts**", and check them into RTC:
   - **ios.build.xml**: main script for iOS builds
   - **hybrid.build.xml**: used by the main script to perform the hybrid build
   - **appcenter.build.xml**: used by the main script to upload the build results to an Application Center

Building the native binary for iOS (7 of 10)

6. Create the build definition in Rational Team Concert:

   Tip: You must use the Eclipse Rational Team Concert client to complete this step.

   a. Open the Rational Team Concert Eclipse client and connect to the project area.
   b. In the Team Artifacts view, ensure that there is a connection to the target Rational Team Concert server.
   c. Connect to the project area that contains the Worklight projects.
   d. Within this project area, right-click **Builds** and click **New Build Definition**.
   e. Ensure that the target project area is selected and click **Next**.
   f. Select the Command Line-Jazz Build Engine template and click **Next**.
   g. Select the **Jazz Source Control** check box for Pre-Build.
   h. Ensure that all check boxes for Post-Build actions are cleared.
   i. Click **Finish**.
   – The editor for the new build definition opens.

Building the native binary for iOS (8 of 10)

7. Update the following values in the new build definition:

Option	Description
Supporting Build Engines	Specify the id of the build engine that is set up to run the iOS build.
Load directory	/Users/username/Documents/wlbuild/${buildLabel}
Build file	/Users/username/Documents/wlbuild/${buildLabel}/buildscripts/ios.build.xml
Build target	Specify **all**
Jazz build toolkit	Check on “Include the Jazz build toolkit tasks on the Ant library path”
Ant arguments	Specify “`-verbose -lib <path to worklight-ant.jar> -lib <path to applicationcenterdeploytool.jar> -lib <path to json4j.jar>`”

Building the native binary for iOS (9 of 10)

8. Specify the values of the following properties in the “Properties” tab:

Property	Description
appcenterAdminId	Specify the administrator id of the Application Center
appcenterAdminPwd	Specify the administrator password of the Application Center
appcenterContext	Specify the context root value of the Application Center, default is “applicationcenter”
appVersion	Specify the version of the application, such as “1.0”
certificate	Specify the name of the certificate that is configured in step 3 or 4. This name generally starts with “iPhone Developer:” or “iPhone Distribution:”.
configuration	Specify the configuration setting. – Default is **Ad Hoc** so that the resulting ipa can be installed over the air for QA purposes. – Can be overridden in the build definition with **Debug** or **Release**, depending on project need. – See the iOS development guide for details.
mobilePlatform	Specify “**iphone**”
provisioning.profile	Specify the path to the .mobileprovision file that corresponds to the *configuration* setting.
rtcPassword	Specify the password for the RTC account to be used by the build engine
rtcUserId	Specify the user ID for the RTC account to be used by the build engine

Building the native binary for iOS (9 of 10)

8. (continued)

Property	Description
wlAdapter	Specify the Worklight adapter to build
wlApp	Specify the Worklight application to build
wlContext	Specify the context root value of the Application Center, default is “applicationcenter”
wlHost	Specify the hostname and port number of the Worklight server to publish the web archive
wlProject	Specify the name of the Worklight Studio project that contains the adapters and applications
xcodeSDK	Specify “**iphoneos**” to build for running on devices instead of the simulator
xcodeSDKver	Specify the version of the iOS SDK, for example “6.0”

Building the native binary for iOS (10 of 10)

9. Save the updated build definition.
10. Test the build:
    a. Ensure that the build engines on the workstations that are configured for iOS native builds are started, running, and waiting to receive build requests.
        - For more information about setting up Jazz build engines, see the Rational Team Concert user documentation.
    b. In the Eclipse Rational Team Concert client, right-click the new build definition and click **Request Build**.
        - You can monitor the status of the build in the Builds view.

Agenda

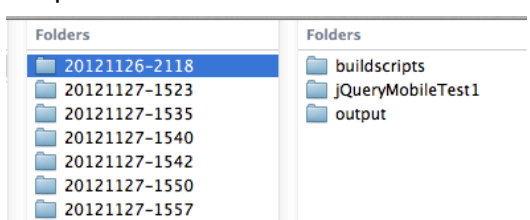
- Building Worklight projects with the Rational Team Concert build system
  - Building the native binary for iOS
  - Building the native binary for Android
  - Building and deploying hybrid resources
- Sample Worklight build scripts

Building the native binary for Android (1 of 8)

- As part of the native build for Android, you must first build the web resources in the common and environment layers (and optionally skin layers) of the Worklight project. In addition, you must generate the native artifacts that are required by Android and other Worklight client-side runtime libraries, such as Cordova and JSON Store API.
- You can create a build definition to build Android native executable files, by using the command-line interfaces provided with the Android SDK.
- Before you begin, ensure that the following software is installed on your build workstation:
  - Oracle Java™ Development Kit (JDK)
  - Android SDK (available from http://developer.android.com/sdk)
  - Ant (available from Apache.org)
    - **Important**: Ensure that you add the bin directory to the PATH system variable.
- To prepare the environment on the workstation that runs the Jazz™ build engine for your Android builds, follow the steps in the next slides.

Building the native binary for Android (2 of 8)

1. Copy the following files from <*WLInstall*>, your IBM Worklight installation folder, to a directory on the build host:
   - **worklight-ant.jar** from <*WLInstall*>/WorklightServer
   - **applicationcenterdeploytool.jar**: from <*WLInstall*>/ApplicationCenter/tools
   - **json4j.jar** from <*WLInstall*>/ApplicationCenter/tools
2. Create a build folder, such as **/Users/username/Documents/wlbuild**
   - This folder will hold temporary resources that the RTC build engine checks out, and build output.
   - During each build, the RTC build engine creates a unique folder to hold the project resources and build output. This folder looks like the one shown here:



Building the native binary for Android (3 of 8)

3. Download the sample scripts from the compressed file that is associated with this module. For more information, see the **Sample build scripts** slide, at the end of this module.
4. Copy the following files to a project, call it "**buildscripts**", and check them into RTC:
   - **android.build.xml**: main script for Android builds
   - **hybrid.build.xml**: used by the main script to perform the hybrid build
   - **appcenter.build.xml**: used by the main script to upload build results to an Application Center

Building the native binary for Android (4 of 8)

5. Configure the environment to sign the Android executable (.apk) files:
   - Refer to the procedures available at: http://developer.android.com/guide/publishing/app-signing.html.
   - Use the keytool command to generate a valid key pair.

Building the native binary for Android (5 of 8)

6. Create the build definition in Rational Team Concert:

   Tip: You must use the Eclipse Rational Team Concert client to complete this step.

   a. Open the Rational Team Concert Eclipse client and connect to the project area.
   b. In the Team Artifacts view, ensure that there is a connection to the target Rational Team Concert server.
   c. Connect to the project area that contains the Worklight projects.
   d. Within this project area, right-click Builds and click **New Build Definition**.
   e. Ensure that the target project area is selected and click **Next**.
   f. Select the Ant-Jazz Build Engine template and click **Next**.
   g. Select the **Jazz Source Control** check box for Pre-Build.
   h. Ensure that all check boxes for Post-Build actions are cleared.
   i. Click **Finish**.
   – The editor for the new build definition opens.

Building the native binary for Android (6 of 8)

7. Update the following values in the new build definition:

Option	Description
Supporting Build Engines	Specify the id of the build engine that is set up to run the Android build.
Load directory	/Users/username/Documents/wlbuild/${buildLabel}
Build file	/Users/username/Documents/wlbuild/${buildLabel}/buildscripts/android.build.xml
Build target	Specify **all**
Jazz build toolkit	Check on “Include the Jazz build toolkit tasks on the Ant library path”
Ant home	Specify the directory that contains Ant 1.8.3 or later
Ant arguments	Specify “`-verbose -lib <path to worklight-ant.jar> -lib <path to applicationcenterdeploytool.jar> -lib <path to json4j.jar>`”

Building the native binary for Android (7 of 8)

8. Specify the values of the following properties in the “Properties” tab:

Property	Description
androidSDKPath	Specify the directory that contains the Android SDK
androidTarget	Specify the id of the SDK compile target, such as “android-15”, the list of IDs can be obtained from the command line “<android sdk>/tools/android list targets”
appcenterAdminId	Specify the administrator id of the Application Center
appcenterAdminPwd	Specify the administrator password of the Application Center
appcenterContext	Specify the context root value of the Application Center, default is “applicationcenter”
configuration	Specify the configuration setting, “debug” or “release”
rtcPassword	Specify the password for the RTC account to be used by the build engine
rtcUserId	Specify the user ID for the RTC account to be used by the build engine
wlAdapter	Specify the Worklight adapter to build
wlApp	Specify the Worklight application to build
wlContext	Specify the context root value of the Application Center, default is “applicationcenter”
wlHost	Specify the host name and port number of the Worklight server to publish the web archive
wlProject	Specify the name of the Worklight Studio project that contains the adapters and applications

Building the native binary for Android (8 of 8)

9. Save the updated build definition.
10. Test the build:
    a. Ensure that the build engines on the workstations that are configured for Android native builds are started, running, and waiting to receive build requests.
       - For more information about setting up Jazz build engines, see the Rational Team Concert user documentation.
       - Before the build engine is started, ensure that the environment variable JAVA_HOME exists and identifies the Oracle JDK installation location.
    b. In the Eclipse Rational Team Concert client, right-click the new build definition and click **Request Build**.
       - You can monitor the status of the build in the Builds view.

Agenda

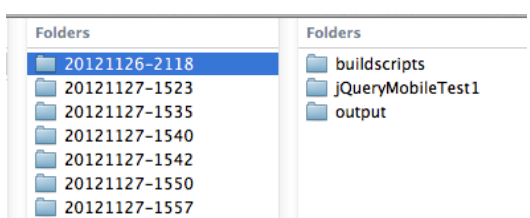
- Building Worklight projects with the Rational Team Concert build system
  - Building the native binary for iOS
  - Building the native binary for Android
  - Building and deploying hybrid resources
- Sample Worklight build scripts

Building and deploying hybrid resources (1 of 7)

- You can create a build definition to build hybrid web code that is contained within Worklight projects. This build definition is used when the application updates involve changes to the web code only, without any native code changes.
- The build definition uses the Ant tasks from the **worklight-ant.jar** file to build and deploy your hybrid code.
- To prepare the environment on the workstation that runs the Jazz™ build engine for your hybrid builds, follow the steps in the next slides.

Building and deploying hybrid resources (2 of 7)

1. Copy the following files from <*WLInstall*>, your IBM Worklight installation folder, to a directory on the build host:
   - **worklight-ant.jar** from <*WLInstall*>/WorklightServer
2. Create a build folder, such as **/Users/username/Documents/wlbuild**
   - This folder will hold temporary resources that the RTC build engine checks out, and build output.
   - During each build, the RTC build engine creates a unique folder to hold the project resources and build output. This folder looks like the one shown here:



Building and deploying hybrid resources (3 of 7)

3. Download the sample scripts from the compressed file that is associated with this module. For more information, see the **Sample build scripts** slide, at the end of this module.
4. Copy the following files to a project, call it "**buildscripts**", and check them into RTC:
   - **hybrid.build.xml**: used by the main script to perform the hybrid build
   - If you use the Dojo Toolkit in the application, add the **skinBuildExtensions="build-dojo.xml"** attribute to the **app-builder** element. This attribute is required to run the Ant tasks necessary to copy the required Dojo resources to the application output folder.

Building and deploying hybrid resources (4 of 7)

5. Create the build definition in Rational Team Concert:

   Tip: You must use the Eclipse Rational Team Concert client to complete this step.

   a. Open the Rational Team Concert Eclipse client and connect to the project area.
   b. In the Team Artifacts view, ensure that there is a connection to the target Rational Team Concert server.
   c. Connect to the project area that contains the Worklight projects.
   d. Within this project area, right-click Builds and click **New Build Definition**.
   e. Ensure that the target project area is selected and click **Next**.
   f. Select the Ant-Jazz Build Engine template and click **Next**.
   g. Select the **Jazz Source Control** check box for Pre-Build.
   h. Ensure that all check boxes for Post-Build actions are cleared.
   i. Click **Finish**.
   – The editor for the new build definition opens.

Building and deploying hybrid resources (5 of 7)

6. Update the following values in the new build definition:

Option	Description
Supporting Build Engines	Specify the id of the build engine that is set up to run the hybrid build.
Load directory	/Users/username/Documents/wlbuild/${buildLabel}
Build file	/Users/username/Documents/wlbuild/${buildLabel}/buildscripts/hybrid.build.xml
Build target	Specify **all**
Jazz build toolkit	Check on “Include the Jazz build toolkit tasks on the Ant library path”
Ant arguments	Specify “`-verbose -lib <path to worklight-ant.jar>`”

Building and deploying hybrid resources (6 of 7)

7. Specify the values of the following properties in the “Properties” tab:

Property	Description
rtcPassword	Specify the password for the RTC account to be used by the build engine
rtcUserId	Specify the user ID for the RTC account to be used by the build engine
wlAdapter	Specify the Worklight adapter to build
wlApp	Specify the Worklight application to build
wlContext	Specify the context root value of the Application Center, default is “applicationcenter”
wlHost	Specify the host name and port number of the Worklight server to publish the web archive
wlProject	Specify the name of the Worklight Studio project that contains the adapters and applications

Building and deploying hybrid resources (7 of 7)

8. Save the updated build definition.
9. Test the build:
   a. Ensure that the build engines on the workstations that are configured for hybrid builds are started, running, and waiting to receive build requests.
      - For more information about setting up Jazz build engines, see the Rational Team Concert user documentation.
   b. In the Eclipse Rational Team Concert client, right-click the new build definition and click **Request Build**.
      - You can monitor the status of the build in the Builds view.

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Sample build scripts

- Sample build scripts for this training module can be found on the Getting Started page of the IBM Worklight documentation website at http://www.ibm.com/mobile-docs
- Download these build scripts to explore:
  - Rational Team Concert build toolkit that contains many tasks, such as publishing the build results as download links on the build result page
  - Worklight Application Center build tasks to publish the native applications to the Application Center catalog

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  - 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