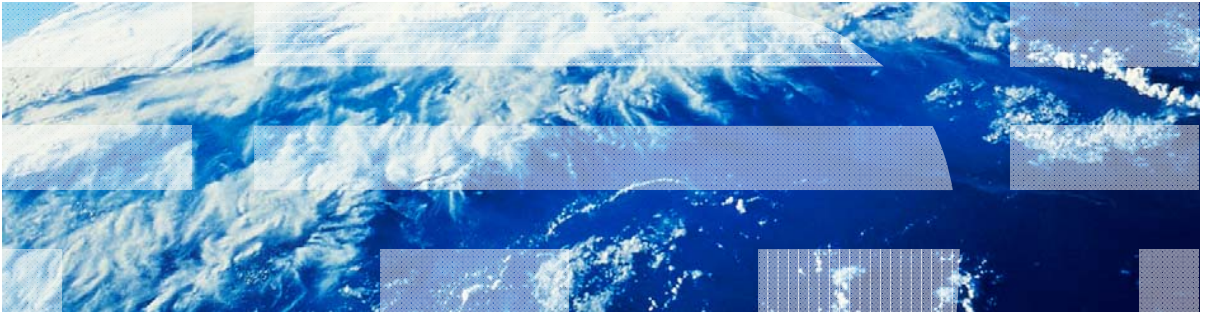


# ***IBM Worklight V5.0.6 Getting Started***

Container for advanced pages



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## ***Using this module and its companion sample***

- This module and its companion sample are intended for use with either the IBM® Worklight® Consumer Edition or the IBM Worklight Enterprise Edition.
  - You cannot use as is the sample that is associated with this module with the free IBM Worklight Developer Edition. This sample provides a WAR file that demonstrates the remote load functionality in this module. This WAR file requires a servlet container, such as Tomcat, WebSphere Application Server Full Profile, or WebSphere Application Server Liberty Profile.

# Agenda

- **Background of IBM Mobile Conference Application**
  - Mobile Views
  - Form-based Authentication
- **Migrating Applications to IBM Worklight**
  - Creating IBM Worklight Projects and Environments
  - Remote Loading – Android
  - Remote Loading – iOS
- **Enhancing the IBM Mobile Conference Application**
  - IBM Worklight Client APIs
  - IBM Worklight Integration
  - Encrypted Cache
  - Camera Support
- **Proxy Considerations**

## Background

- IBM Mobile Conference Application
  - Mobile Web Application
  - Server Programming Model
    - JavaServer™ Pages (JSP)
    - JavaServer Pages Standard Tag Library (JSTL)
    - JavaServer Pages Expression Language (EL)
  - Client Programming Model
    - Dojox Mobile
    - Dojo Mobile Device Theming
  - Security
    - Container Managed
    - Java™ Enterprise Edition (Java EE) form-based Login



## Mobile Views

- Dojo provides mobile widgets that developers can use to quickly generate mobile views.

```
<div id="locations" dojoType="dojox.mobile.ScrollableView" selected="true">
  <h1 dojoType="dojox.mobile.Heading" label="Locations"></h1>
  <div class="list-category" dojoType="dojox.mobile.RoundRectCategory">USA</div>
  <ul dojoType="dojox.mobile.RoundRectList">
    <c:forEach var="location" items="${applicationScope.locationRegistryList['usa']}">
      <li dojoType="dojox.mobile.ListItem" class="mblVariableHeight"
        url="/confs.jsp?locationId=${location}"
        urlTarget="conferences" transition="slide">
        <div class="list-detail">
          <div>${locationMap[location].city}, ${locationMap[location].state}</div>
        </li>
      </c:forEach>
    </ul>
    .....
  </div>
```

- JSTL provides a simple API for iterating over lists to generate Dojox Mobile list items dynamically on the server.

## Form-based Authentication Client

- The IBM Mobile Conference Application requires users to be registered and authenticated with the enterprise that is hosting the application.
- The application is protected by a form-based login, by using a mobile web form that is contained within a Dojox Mobile view.

```

<div dojoType="dojox.mobile.View">
  <c:set var="conferences" scope="session" value=""></c:set>
  <h1 style="text-align: center;" dojoType="dojox.mobile.Heading">
    IBM Mobile Conference App</h1>
  <form action="j_security_check" method="post" name="loginForm">
    <div class="loginClass">
      <div>
        <span>Username </span> <input id="username"
          dojoType="dojox.mobile.TextBox"
          name="j_username" />
        </div>
        <div>
          <span>Password </span> <input id="password"
            type=password name="j_password"
            dojoType="dojox.mobile.TextBox"> </input>
          </div>
        <div style="text-align: center;">
          <input id="login" type="submit" class="mblButton" value="Login"/>
        </div>
      </div>
    </form>
  </div>

```

## Form-based Authentication Server

- The IBM Mobile Conference Application is configured to use Java Enterprise Edition Role Support
  - White list or pattern-based URIs of secured resources
  - Support for logout in addition to Java Enterprise Edition standard logout functionality

```

<security-role>
  <role-name>tomcat</role-name>
</security-role>
<security-constraint>
  <display-name>SecurityConstraint</display-name>
  <web-resource-collection>
    <web-resource-name>Conference</web-resource-name>
    <url-pattern>/common/location.jsp</url-pattern>
    <url-pattern>/common/confjs.jsp</url-pattern>
    <url-pattern>/common/presenter.jsp</url-pattern>
    <url-pattern>/common/seccions.jsp</url-pattern>
  </web-resource-collection>
  <auth-constraint>
    <role-name>tomcat</role-name>
  </auth-constraint>
</security-constraint>
<login-config>
  <auth-method>FORM</auth-method>
  <form-login-config>
    <form-login-page>/common/login.jsp</form-login-page>
    <form-error-page>/common/loginError.jsp</form-error-page>
  </form-login-config>
</login-config>
</web-app>

```

```

<div style="position: relative; float: left;">
  <form method="post" action="ibm_security_logout" name="Logout">
    <span data-dojo-type="dojo.mobile.ToolBarButton"
      data-dojo-props="onClick:function(){
        window.location="Logout";
        if(window.location.port == 9080){
          // for liberty logout...
          document.forms["Logout"].submit();
        }
      }">logout</span>
    <input type="hidden" name="logoutExitPage" value="/">
  </form>
</div>
</div>

```



# Simplified User Registry and Role Configuration

## Liberty server.xml

```

<server description="new server">
  <!-- Enable features -->
  <featureManager>
    <feature>jsp-2.2</feature>
    <feature>servlet 3.0</feature>
    <feature>localConnector-1.0</feature>
    <feature>appSecurity-1.0</feature>
  </featureManager>

  <httpEndpoint host="0.181.110.137" httpPort="9080"
    httpsPort="9443" id="defaultHttpEndpoint">
  </httpEndpoint>

  <applicationMonitor updateTrigger="mbean"/>

  <basicRegistry id="basic" realm="liberty">
    <user name="demo" password="demo"/>
    <group name="test">
      <member name="demo"/>
    </group>
  </basicRegistry>

  <application context-root="conference"
    id="module_45_2_ContainerForAdvancedPagesWar"
    location="module_45_2_ContainerForAdvancedPagesWar.war"
    name="module_45_2_ContainerForAdvancedPagesWar" type="war">
    <application-bnd>
      <security-role name="liberty">
        <group name="test" />
      </security-role>
    </application-bnd>
  </application>
</server>

```

## Tomcat server.xml

```

<GlobalNamingResources>
  <!-- Editable user database that can also be used by
  UserDatabaseRealm to authenticate users
  -->
  <Resource auth="Container" description="User database that can be updated and saved"
    factory="org.apache.catalina.users.MemoryUserDatabaseFactory" name="UserDatabase"
    pathname="conf/tomcat-users.xml" type="org.apache.catalina.UserDatabase"/>
</GlobalNamingResources>

```

Add role and user in tomcat-users.xml

```

<role rolename="tomcat"/>
<user password="tomcat" roles="tomcat" username="tomcat"/>

```

<http://tomcat.apache.org/tomcat-6.0-doc/realm-howto.html>

# Agenda

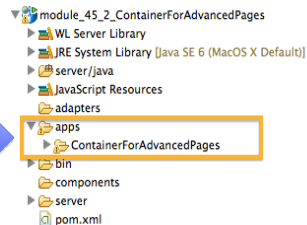
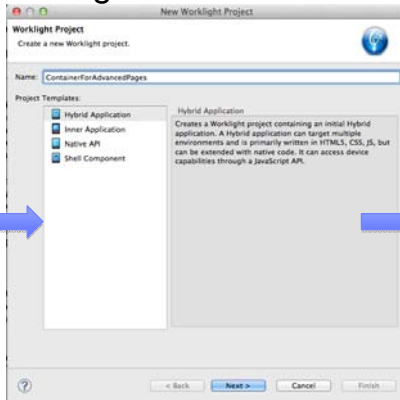
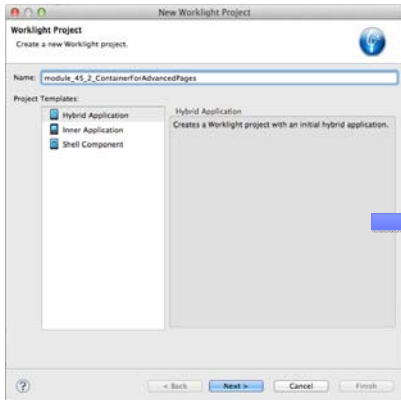
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## ***Migrating Applications to IBM Worklight®***

- By using mobile web technology, you can deploy applications to the widest variety of devices.
- The presence of application stores (for example: Apple iTunes and Google Play) added a dimension where the hosting and marketing of these applications made broader-reaching applications less relevant.
- IBM Worklight provides the solution to building cross platform applications that can be distributed through the application stores by using the hybrid application programming model.
- In the hybrid model, developers typically package the application HTML, CSS, and JavaScript™ code as part of the application that is deployed to the application store.
- In this module, you see the remote loading of dynamic content capability, where the HTML, CSS, and JavaScript code is hosted externally from the natively packaged hybrid.

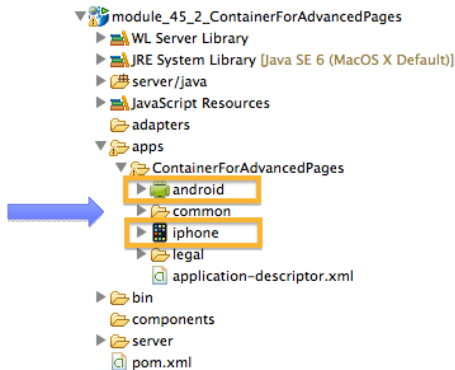
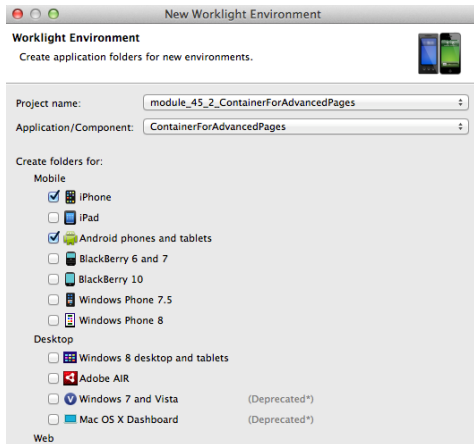
## Creating IBM Worklight Applications

- A project and applications are created by using the IBM Worklight Project wizard.
- A project might host multiple applications.
  - However, in this module, you use only one app: ContainerForAdvancedPages.



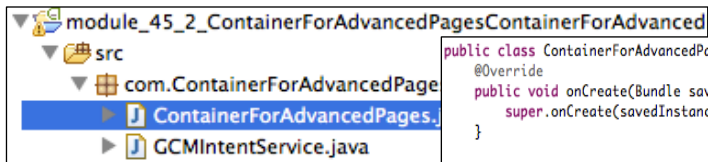
# Worklight Environments

- IBM Worklight provides a model for organizing the application project structure for each targeted environment (for example, Android, iPhone, iPad).
- Because the target environments are known, both the iPhone and Android environments are selected as part of the Worklight Environment wizard.



## Worklight Android Environment

- When the Worklight Environment wizard process completes, template files are generated and included in the project.
- Assumptions:
  - The main web resources are packaged with the application (getWebMainFilePath() assumes a local file).
  - The initial HTML page is configured to be loaded when the Android Application initially starts.



```
public class ContainerForAdvancedPages extends WLDroidGap {
    @Override
    public void onCreate(Bundle savedInstanceState){
        super.onCreate(savedInstanceState);
    }

    /**
     * onWLInitCompleted is called when the Worklight runtime framework initialization is complete
     */
    @Override
    public void onWLInitCompleted(Bundle savedInstanceState){
        super.loadUrl(getWebMainFilePath());
        // Add custom initialization code after this line
    }
}
```

## ***Remote Loading in Android***

- In the previous section, the default instance of WLDroidGap is attempting to load a local resource.
- Enabling remote loading of resources requires a small modification to the application to load the appropriate resource.
- As part of configuring the IBM Worklight application, you can specify the Worklight Root URL, which is where the Worklight Server is hosted.
- IBM Worklight provides an API for obtaining elements of this root URL such as scheme, host, and port, through the `wlclient.properties` resource that is packaged within the Android application.
- The Remote Load Application uses this API as part of the remote loading.
  - Note: Due to same domain restrictions of the browser (web view), the remotely loaded application and Worklight Server must either be co-located on same host and port, or have a common proxy host and port.

## Remote Load Android Code Snippet

```
*wliclient.properties
wlServerProtocol = http
wlServerHost = 9.181.110.43
wlServerPort = 9080
wlServerContext = /
wlAppId = module_45_2_ContainerForAdvancedPages
wlAppVersion = 1.0
GcmSenderId =
enableSettings = true
testWebResourcesChecksum = false
ignoredFileExtensions =
```

- Developers can use the resource `wliclient.properties` to update the app properties when the application transitions from development to test to production.

- Remote loading uses the `wliclient.properties` file to denote where to remotely load web resources from.

```
*ContainerForAdvancedPages.java
//Container Materials - Property of IBM

package com.ContainerForAdvancedPages;

import android.os.Bundle;

public class ContainerForAdvancedPages extends WLDroidGap {
    @Override
    public void onWInitCompleted(Bundle savedInstanceState) {
        // Additional initialization code from onCreate() was moved here
        CookieSyncManager.createInstance(appView.getContext());
        CookieManager.getInstance().removeSessionCookie();
        String resourceHome = getWMLConfig().getProtocol() + "://" + getWMLConfig().getHost();
        String port = getWMLConfig().getPort();
        //If port is 80, do not need use this port, otherwise need add port.
        if(Integer.parseInt(port)!=80){
            resourceHome+=":"+port;
        }
        loadUrl(resourceHome + "/conference", false); // do not clear cache
        appView.setBackgroundColor(Color.WHITE); // set background to white to ensure errors display
    }

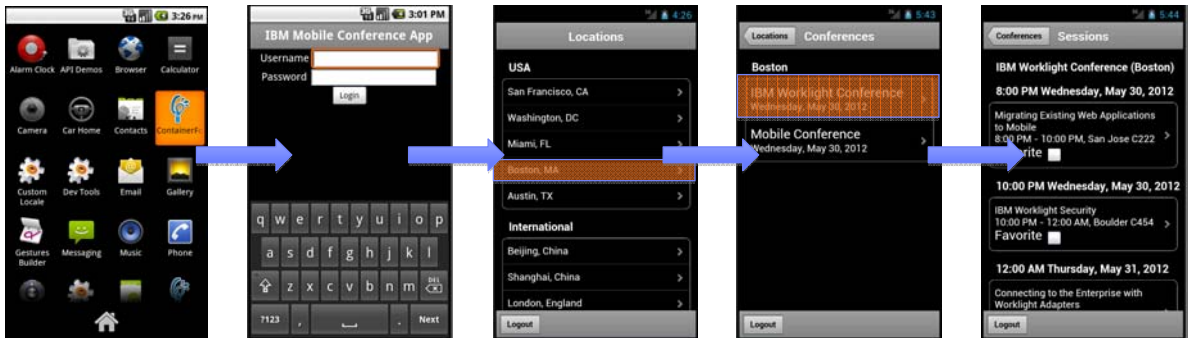
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        // Additional initialization code was moved to onWInitCompleted()
    }

    public void loadUrl(String url) {
        loadUrl(url, false); // default is false
    }
}
```



## Remote Load Android in Action

- After the application is installed, click the icon to start the application and authenticate.
- Each view for the IBM Mobile Conference App is loaded through Ajax XHR where each view is generated by the JSP responsible for each distinct view.
- Click the right arrow to transition between the various views.



## Worklight iOS Environment

- Ensure that the `OpenAllWhitelistURLsInWebView` setting is set to **true** in the `config.xml` file
  - If this setting is not set to **true**, non-local HTML files are loaded in Safari instead of in the WebView of the application.
- Cordova does not allow the specification of a remote URL on startup: you must tell the WebView to load your remote URL.
- Override this method in your application delegate class (**module452ContainerForAdvancedPages.m**):

```

-(BOOL)application:(UIApplication *)application didFinishLaunchingWithOptions:(NSDictionary *)launchOptions
{
    BOOL ret = [super application:application didFinishLaunchingWithOptions:launchOptions];
    [[NSNotificationCenter defaultCenter] addObserver:self selector:@selector(didFinishWLNativeInit:)
        name:@"didFinishWLNativeInit" object:nil];
    return ret;
}

// Use this function to refer to webview
-(void) didFinishWLNativeInit:(NSNotification *)notification
{
    NSURL* remoteURL = [NSURL URLWithString:[self getRemoteURL]];
    NSURLRequest* request = [NSURLRequest requestWithURL:remoteURL];
    [self.viewController.webView loadRequest:request];
}

```

```

//Ensure all required keys are in the plist
if(proto == nil || host == nil || port == nil){
    [NSException raise:@"[Remote Load Initialization Error]" format:@"host, port and protocol are
        all required keys in worklight.plist"];
}
NSString* baseURL = [NSString stringWithFormat:@"%s://%s:%s@", proto, host, port, @"/conference"];
return baseURL;

```

## Remote Load iOS in Action



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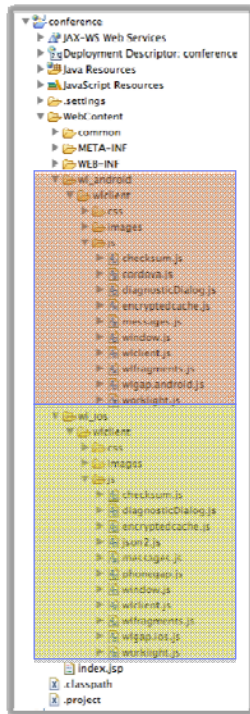
## Extending IBM Mobile Conference App to IBM Worklight

- IBM Worklight provides client libraries for hybrid application development.
- Although the APIs are platform-neutral, there are often platform-specific implementations that are backing those APIs.
- Because the conference app is served remotely, these client side libraries must be packaged with the conference app.
- Each platform-specific implementation is in its own folder structure in the web application.

```

<c:choose>
  <c:when test="${fn:contains(iOSClient, 'Android')}">
    <link rel="stylesheet" type="text/css"
        href="dojo/mobile/themes/android/android.css"></link>
  </c:when>
  <c:otherwise>
    <link rel="stylesheet" type="text/css"
        href="dojo/mobile/themes/iphone/iphone.css"></link>
  </c:otherwise>
</c:choose>
</head>

```



## IBM Worklight Integration

- When the IBM Mobile Conference Application completes the authentication process, the mobile device client initializes the device with the server by using `WL.Client.init()`.
- `WL.Client.init` provides a flexible model for application integrity validation, application updates, and other features.

```

WL.StaticAppProps = {
  "APP_DISPLAY_NAME": "ContainerForAdvancedPages",
  "APP_SERVICES_URL": "\Vapps\servicesV",
  "APP_VERSION": "1.0",
  "ENVIRONMENT": "android",
  "LOGIN_DISPLAY_TYPE": "embedded",
  "WORKLIGHT_ROOT_URL": "\Vapps\services\VapiVContainerForAdvancedPagesVandroidV"
};

```

```

function success(){
  console.info('WL init success...');
}

function failure(){
  console.info('WL init failure...');
}

ready(function(){
  parser.parse();
  WL.Client.init({onSuccess:success, connectOnStartup:false, showLogger:true});
  photo.init();

  var presentersView = registry.byId("presenters");
  dojo.connect(presentersView, "onBeforeTransitionIn", null,

```

## Encrypted Cache

- The Encrypted Offline Cache (EOC) API is used for securely storing data by using HTML5 Local Cache.
- The Conference app uses EOC to save a list of favorite sessions in a secure way.

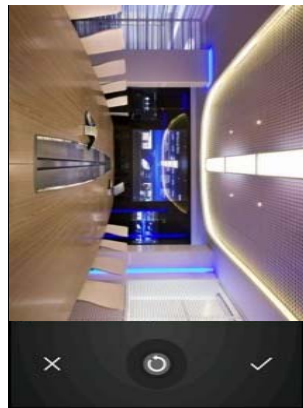


```
function saveToCache(key, value) {
    if (isEOCOpen == false) {
        __openEOC(function() {
            __writeEOC(key, value, function() {
                });
        });
    } else {
        __writeEOC(key, value, function() {
        }, function() {
            alert('Unable to write to Encrypted Offline Cache');
        });
    }
}
```

```
function __writeEOC(mykey, mydata, callback) {
    WL.EncryptedCache.write(mykey, mydata, function() {
        callback();
    }, function() {
        alert('an error occurred writing to the EOC');
    });
}
```

## Camera Support

- Use the IBM Worklight Client API to extend the application to take photos of the conference.
- The application has a social aspect, where users can view photos from the other conference attendees.





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## Proxy Considerations

- IBM Worklight is compatible with most known proxy solutions.
- WebSphere® HTTP Plug-in Support
  - Requires single shared plugin-cfg.xml for routing requests to both Worklight Server and the WebSphere Application Server that is hosting the IBM Mobile Conference App
- Apache Web Server Support
  - Requires mod proxy module to be loaded by web server

```
<IfModule mod_proxy.c>
<Proxy *>
    Order deny,allow
    Allow from all
</Proxy>
## ibm mobile conference app
ProxyPass /conference http://${hostname1}:7080/conference
ProxyPassReverse /conference http://${hostname1}:7080/conference
## Worklight services
ProxyPass /apps http://${hostname2}:8080/apps
ProxyPassReverse /apps http://${hostname2}:8080/apps
</IfModule>
```

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