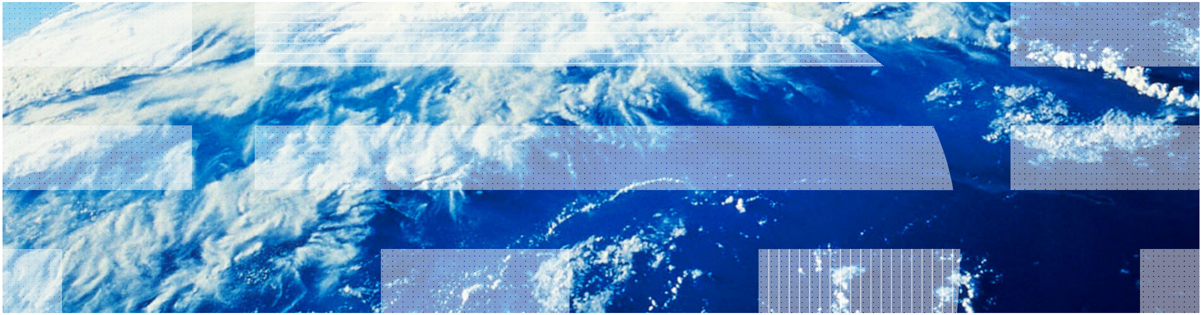
IBM Worklight V5.0.5
Getting Started

Module 7.7 – Offline Access



18 January 2013

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Agenda

- Working in offline mode
- Active detection - using methods
- Passive detection - offline and online events
- Additional methods
- Foreground event
- Worklight heartbeat
- Samples

Working in offline mode

- By using IBM Worklight®, you can detect application connectivity failures and determine a course of action
- Apps going offline and online can be detected in two ways:
  - Explicitly, on invoking server-based procedures
  - Implicitly, by using JavaScript event listeners
- You can define custom application behavior for offline and online status

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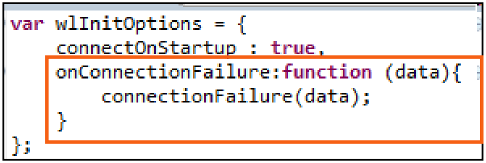
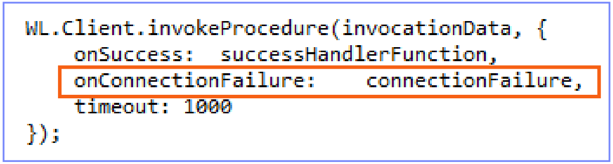
Explicit detection
Using methods

- Connectivity loss can be detected in two locations in your application code:
  - Application initialization – WL.Client.init() method, usually called from initOptions.js file
  - Adapter procedure invocation – WL.Client.invokeProcedure() method
- To add connectivity failure detection in either location, add the onConnectionFailure property and specify a callback function to be invoked if connectivity fails



```
var wlInitOptions = {
    connectOnStartup : true,
    onConnectionFailure:function (data){
        connectionFailure(data);
    }
};
```



```
WL.Client.invokeProcedure(invocationData, {
    onSuccess:  successHandlerFunction,
    onConnectionFailure:    connectionFailure,
    timeout: 1000
});
```

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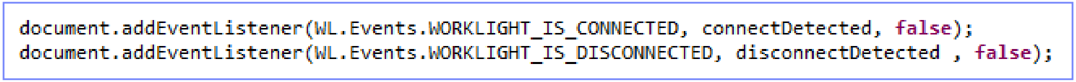
Implicit detection Offline and online events

- Each time the Worklight framework attempts to access the Worklight Server, it might detect that the application has switched from offline to online status or vice versa
- In both cases, JavaScript events are fired:
  - WL.Events.WORKLIGHT_IS_DISCONNECTED event is fired when connectivity to the Worklight Server fails
  - WL.Events.WORKLIGHT_IS_CONNECTED event is fired when connectivity to the Worklight Server is restored
- You can add event listeners to these events and specify the callback functions to handle them



```
document.addEventListener(WL.Events.WORKLIGHT_IS_CONNECTED, connectDetected, false);
document.addEventListener(WL.Events.WORKLIGHT_IS_DISCONNECTED, disconnectDetected , false);
```

- Note that both WL.Events.WORKLIGHT_IS_DISCONNECTED and WL.Events.WORKLIGHT_IS_CONNECTED are namespace constants, not strings

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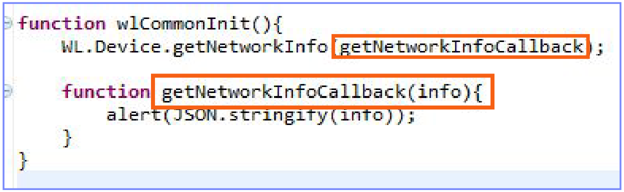
Additional methods

- Additional methods are provided by the Worklight framework to simplify online and offline development:
  - WL.Client.connect (options) – Attempt to establish a connection to the Worklight Server and return to online mode. `options` is an object containing the following keys:
    - onSuccess – Callback function to invoke when server connection is established
    - onFailure – Callback function to invoke when server connection fails
    - timeout – Number of milliseconds to wait for the server response before failing with request timeout

Additional methods

- WL.Device.getNetworkInfo() method is available for iOS and Android environments.
- A callback must be specified as a function parameter



```
function wlCommonInit(){
    WL.Device.getNetworkInfo(getNetworkInfoCallback);

    function getNetworkInfoCallback(info){
        alert(JSON.stringify(info));
    }
}
```

- A callback receives an object with the following properties:
  - isAirplaneMode – true/false
  - carrierName – string (for example, AT&T or VERIZON)
  - telephonyNetworkType – string (for example, UMTS or GPRS)
  - isRoaming – true/false
  - networkConnectionType – mobile/WIFI
  - ipAddress – string
  - isNetworkConnected – true/false

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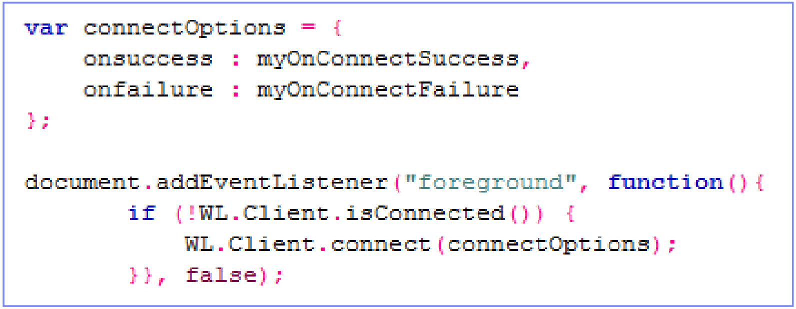
Foreground event

- When the Worklight Application returns to foreground, a foreground JavaScript event is fired
- You can add a listener for this event and specify the callback function that handles it
- This technique is particularly useful to restart connectivity on the device when the user has left the application. On returning to the app, the user expects the app to connect.



```
var connectOptions = {
    onsuccess : myOnConnectSuccess,
    onfailure : myOnConnectFailure
};

document.addEventListener("foreground", function(){
        if (!WL.Client.isConnected()) {
            WL.Client.connect(connectOptions);
        }}, false);
```

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Worklight heartbeat

- Worklight heartbeat pings the server at specified intervals to verify connectivity
- You can use Heartbeat periodically to make sure that the application remains connected to the server
- Both WL.Events.WORKLIGHT_IS_CONNECTED and WL.Events.WORKLIGHT_IS_DISCONNECTED events can be fired by heartbeat in designated cases
- You can specify the heartbeat interval using theWL.Client.setHeartBeatInterval(intervalSeconds) API
- Worklight heartbeat usage can be seen in the sample code for this module

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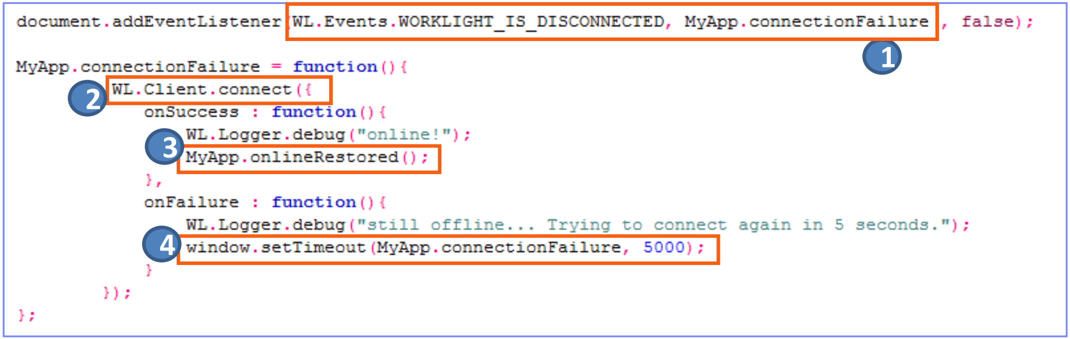
Periodic Connectivity Test Sample

- The following sample shows an offline and online detection mechanism



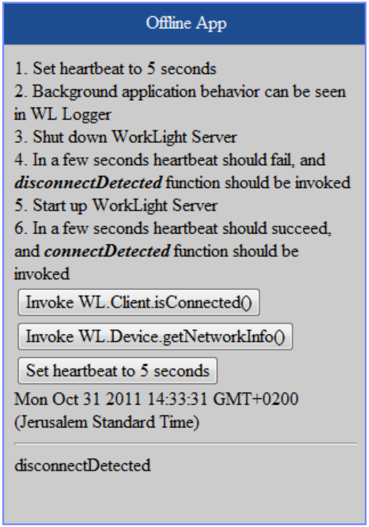
```
document.addEventListener(WL.Events.WORKLIGHT_IS_DISCONNECTED, MyApp.connectionFailure, false);

MyApp.connectionFailure = function(){
        WL.Client.connect({
            onSuccess : function(){
                WL.Logger.debug("online!");
                MyApp.onlineRestored();
            },
            onFailure : function(){
                WL.Logger.debug("still offline... Trying to connect again in 5 seconds.");
                window.setTimeout(MyApp.connectionFailure, 5000);
            }
        });
};
```

1. An event listener for a WL.Events.WORKLIGHT_IS_DISCONNECTED event is added to the document. MyApp.connectionFailure () is invoked when the event fires
2. WL.Client.connect () tries to establish a server connection
3. If connection is successfully established MyApp.onlineRestored () is invoked
4. If connection fails, a timeout is set for five seconds to invoke MyApp.connectionFailure () again

Worklight Heartbeat Sample

- The sample for this training module can be found in the Getting Started page of the IBM Worklight documentation website at https://www.ibm.com/developerworks/mobile/worklight/getting-started/



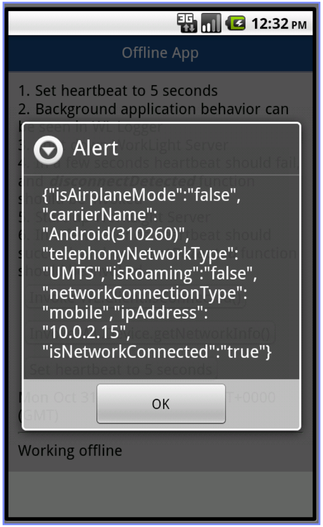
Offline App

1. Set heartbeat to 5 seconds
2. Background application behavior can be seen in WL Logger
3. Shut down WorkLight Server
4. In a few seconds heartbeat should fail, and ***disconnectDetected*** function should be invoked
5. Start up WorkLight Server
6. In a few seconds heartbeat should succeed, and ***connectDetected*** function should be invoked

Invoke WL.Client.isConnected()
Invoke WL.Device.getNetworkInfo()
Set heartbeat to 5 seconds

Mon Oct 31 2011 14:33:31 GMT+0200 (Jerusalem Standard Time)

disconnectDetected



Offline App

1. Set heartbeat to 5 seconds
2. Background application behavior can

Alert

{"isAirplaneMode":"false", "carrierName": "Android(310260)", "telephonyNetworkType": "UMTS","isRoaming":"false", "networkConnectionType": "mobile","ipAddress": "10.0.2.15", "isNetworkConnected":"true"}

Working offline

Check yourself questions

- What is a best way to keep an active server session alive?
  - Alert the user that the session is about to expire and to perform some action to keep it alive
  - Invoke any Worklight adapter procedure in the background, ignoring the response
  - Set heartbeat interval to a value lower than session timeout defined on Worklight Server
  - There is no way to keep the session alive from the client, the server is the only entity that can control this
- What happens when adapter procedure invocation fails because of inability to reach the Worklight server?
  - Client side framework tries to invoke the procedure until it succeeds
  - onFailure callback specified in invocation options is invoked. The developer should use it to treat server connectivity issues
  - onFailure callback specified in invocation options is invoked. In addition WL.Events.WORKLIGHT_IS_DISCONNECTED event is fired. The developer should use either of them to treat server connectivity issues
  - The client side framework shows an error message with a retry button
- What information cannot be retrieved using WL.Device.getNetworkInfo API?
  - The current IP address of the device
  - The telephony type currently in use (for example, GSM or UMTS)
  - Whether the device is currently roaming
  - The phone number of the device

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  - [✓ The phone number of the device]

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