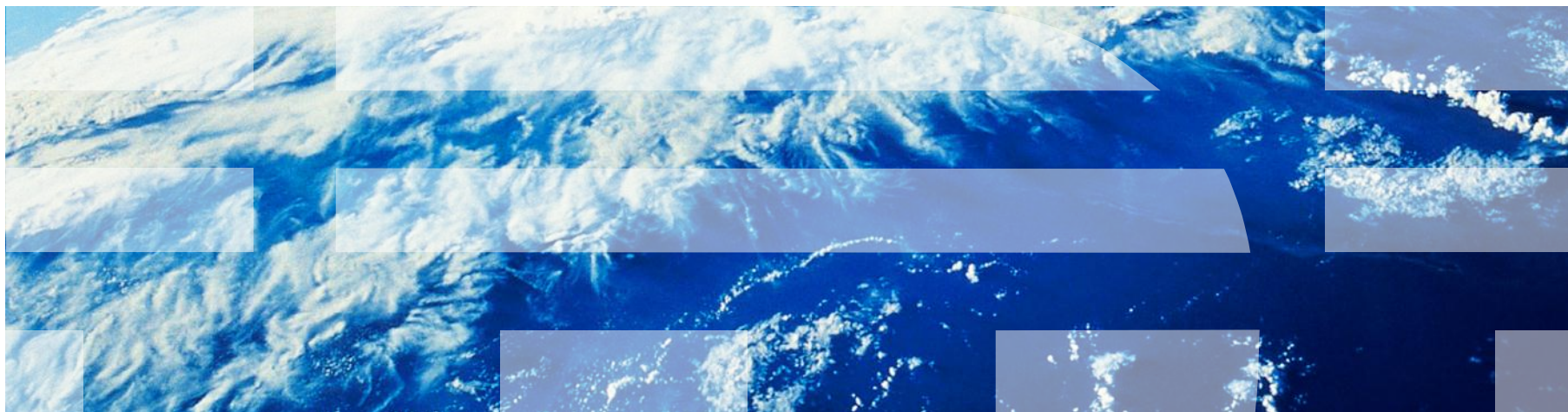


IBM Worklight Foundation V6.2.0 Getting Started

Working offline



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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® Foundation, 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
- You are responsible for maintaining the offline or online state within your application, and ensuring that your application can recover from failed attempts to connect to the server.
 - For example, before the application logs in a new user or accesses the server under a new user, the application must ensure that a successful logout was received by the server.

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Active detection – Using methods

- Connectivity loss can be detected in two locations in your application code:
 - Application initialization – `WL.Client.init()` method, typically 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 = {
  onConnectionFailure: function (data){
    connectionFailure(data);
  },
```

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

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Passive detection – Offline and online events

- Each time the Worklight framework attempts to access the Worklight Server, it might detect that the application 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:** `WL.Events.WORKLIGHT_IS_DISCONNECTED` and `WL.Events.WORKLIGHT_IS_CONNECTED` are namespace constants, not strings

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Additional methods (1 of 2)

- More 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 that contains 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 (2 of 2)

- `WL.Device.getNetworkInfo()` method is available for iOS and Android environments.

- A callback must be specified as a function parameter

```
function wlCommonInit() {  
    WL.App.hideSplashScreen();  
    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 a Worklight application returns to the foreground, the Cordova “resume” event is fired.
- You can add a listener for this event and specify the callback function that handles it

```
document.addEventListener("resume", function() {  
    WL.Device.getNetworkInfo( function(networkInfo) {  
        if (networkInfo.isNetworkConnected) {  
            // Perform client or server actions.  
        }  
    });  
}, false);
```

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Worklight heartbeat

- Worklight heartbeat pings the server at specified intervals to verify connectivity
- You can use a heartbeat to periodically 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 by using the `WL.Client.setHeartBeatInterval(intervalSeconds)` API
- Worklight heartbeat usage can be seen in the sample code for this training module

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Periodic Connectivity Test Sample

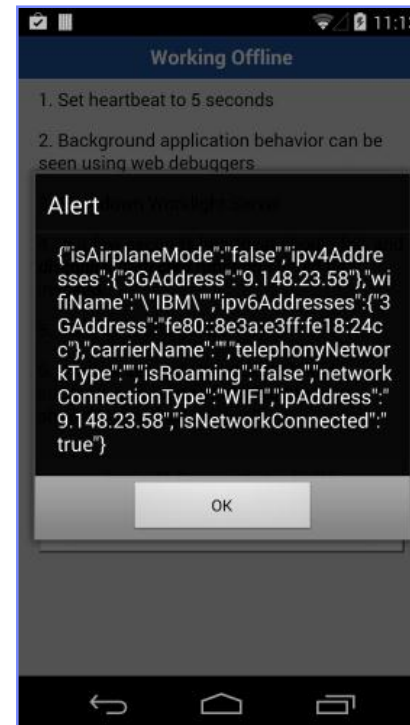
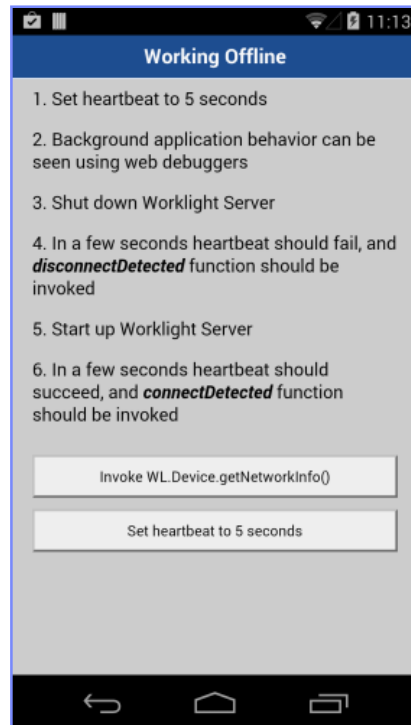
- The following sample shows an offline and online detection mechanism

```
document.addEventListener(WL.Events.WORKLIGHT_IS_DISCONNECTED,
MyApp.connectionFailure, false); ①
MyApp.connectionFailure = function() {
  WL.Client.connect({ ②
    onSuccess: function() {
      WL.Logger.debug("online");
      MyApp.onlineRestored(); ③
    },
    onFailure: function() {
      WL.Logger.debug("Still offline... Trying to connect again in 5
seconds.");
      window.setTimeout(MyApp.connectionFailure, 5000); ④
    }
  });
};
```

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 5 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 Foundation user documentation at <https://www.ibm.com/developerworks/mobile/worklight/getting-started/>



Quiz

Test your knowledge of the material in this module. Answers are in the following slide.

- What is the 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 that is specified in invocation options is invoked. The developer should use it to treat server connectivity issues
 - `onFailure` callback that is specified in invocation options is invoked. In addition, the `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 by using the `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 roaming
 - The phone number of the device

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