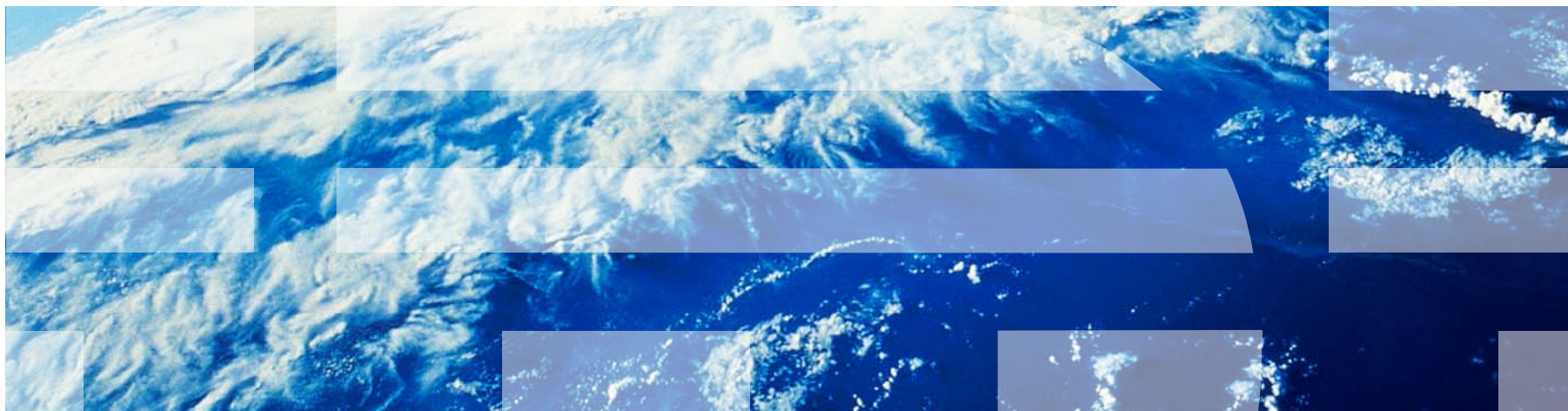


IBM Worklight V6.1.0 Getting Started

Working offline



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- 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
- 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, 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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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

- 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 the 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 useful to restart connectivity on the device when the user leaves 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 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 module

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Periodic Connectivity Test Sample

- The following sample shows an offline and online detection mechanism

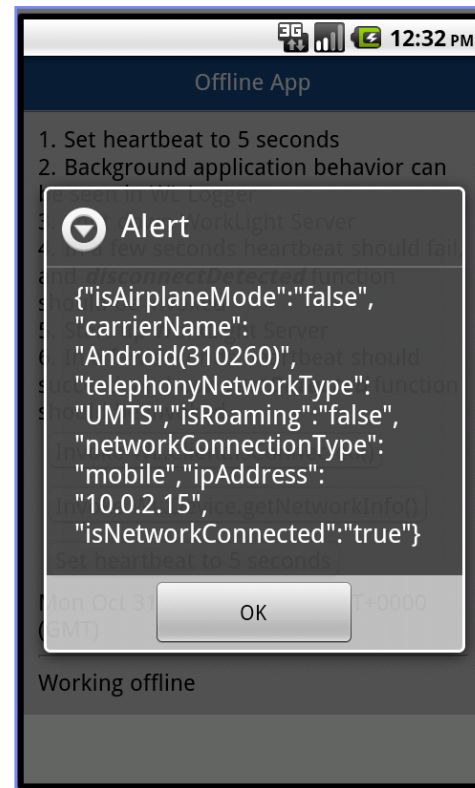
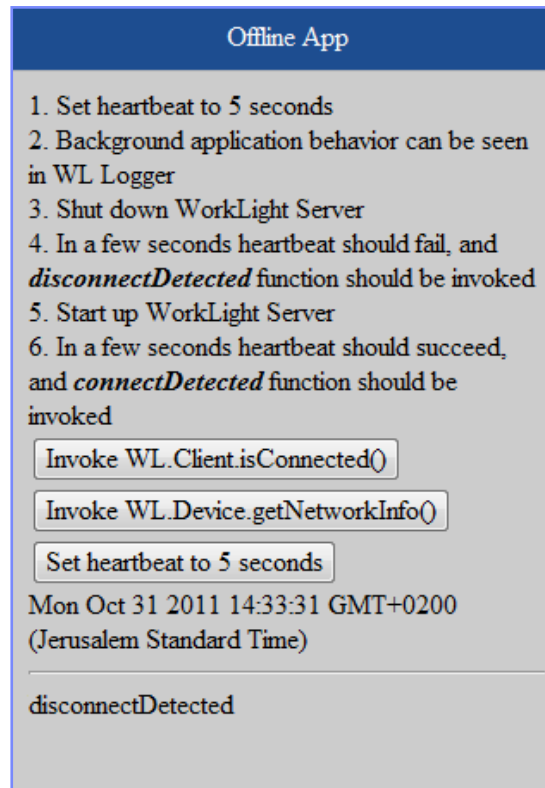
```
document.addEventListener(WL.Events.WORKLIGHT_IS_DISCONNECTED, MyApp.connectionFailure, false);

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/>



Check yourself questions

- 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 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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