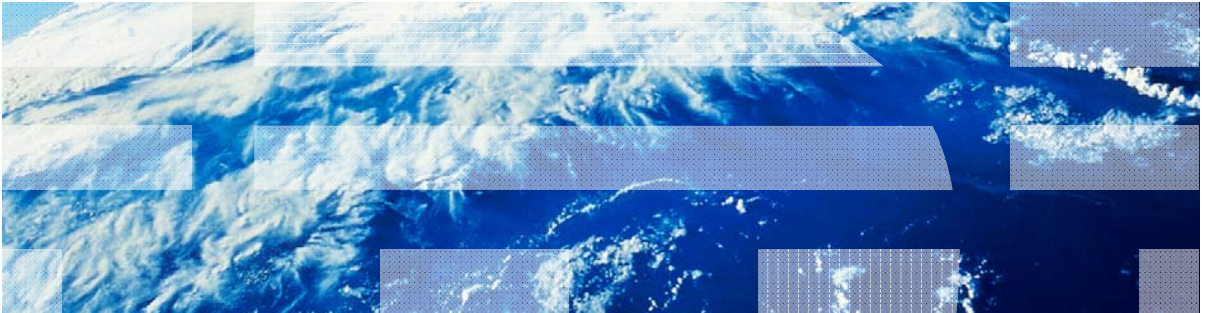


# ***IBM Worklight V6.0.0 Getting Started***

## **Location Services**



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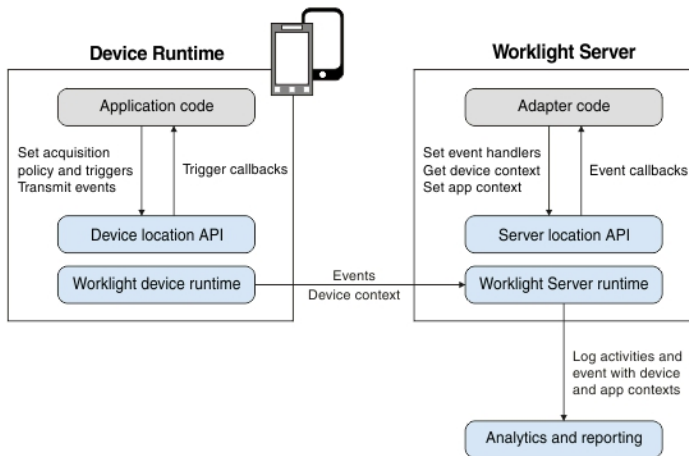
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# Agenda

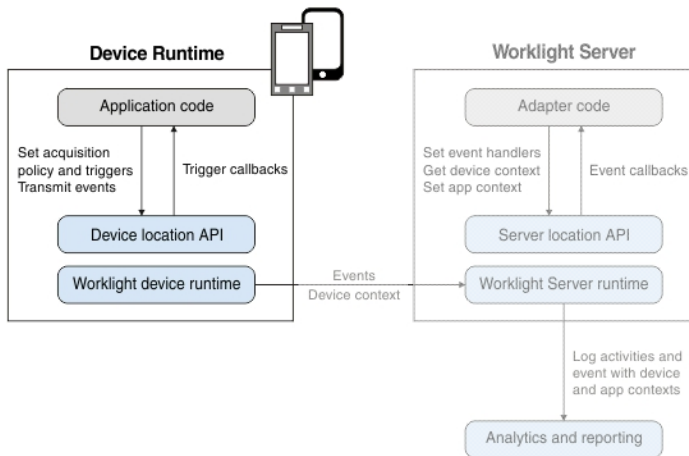
- Overview
  - Architecture
  - The two code lines that you need to know
- Acquisition Policy
  - Geo
  - WiFi
  - Permissions
- Triggers
- Events

## Overview – Architecture (1 of 4)



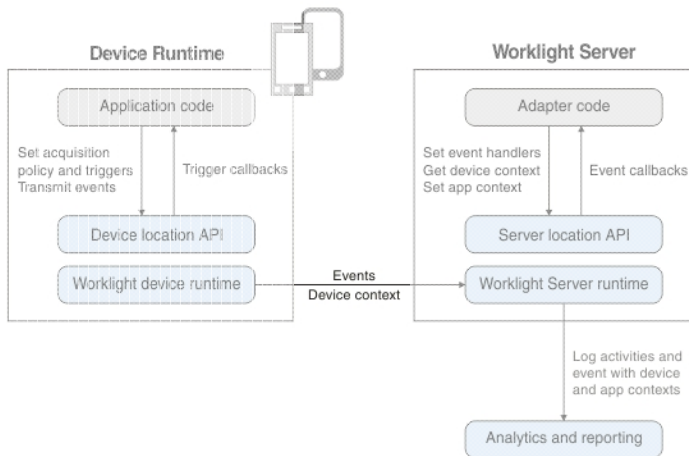
## Overview – Architecture (2 of 4)

- The Application code on the mobile device, in the form of an acquisition policy, controls the collection of data from device sensors.
- The collected data is referred to as the device context.
- When a change occurs in the device context, such as a change in the geolocation of the device, or the fact that it entered a WiFi zone, triggers can be activated.
- The triggers specify that an action should occur: either a callback function is called, or an event is sent to the server, based on the device context.



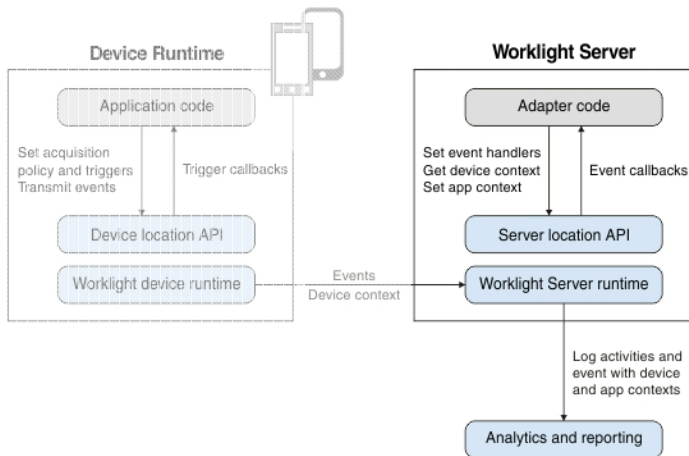
## Overview – Architecture (3 of 4)

- Events are created by triggers and application code, and include a snapshot of the device context at the time of their creation.
- Events are buffered on the client, and are transmitted to the server periodically.
- The server might process the event later.
- During the event transmission process, the device context is synchronized transparently to the server.



## Overview – Architecture (4 of 4)

- To handle the events, the server uses adapter application code.
- This code sets up event handlers on the server. These handlers filter event data and pass matching events to a callback function.
- The code also accesses the client device context (its location and WiFi network information) and sets an application context.
- Server activities and received events are logged, together with the device and application contexts, for future reporting and analytics.



## Overview – *The two code lines that you need to know*

- `WL.Device.startAcquisition(policy, triggers, onFailure)`
  - `policy`: how do you acquire the sensor data?
  - `triggers`: what do you act on and how?
  - `onFailure`: how do you handle acquisition failures?
  
- `WL.Server.setEventHandlers(eventHandlers)`
  - `eventHandlers`: what events do you act on and how?



# Agenda

- Overview
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## Acquisition Policy

- Defines how acquisition takes place

```
var policy = {  
  Geo: WL.Device.Geo.Profiles.LiveTracking(),  
  Wifi: {  
    interval: 10000,  
    accessPointFilters: {  
      [{SSID: "Net1"},  
       {SSID: "Net2", MAC: "*"}]  
    }  
  }  
};
```

# Acquisition Policy

- Geo Acquisition

```
var policy = {  
  Geo: WL.Device.Geo.Profiles.LiveTracking(),  
  Wifi: {  
    interval: 10000,  
    accessPointFilters: {  
      [{SSID: "Net1"},  
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    }  
  }  
};
```

## Acquisition Policy

- Geo Acquisition
- *LiveTracking* – a preset profile that uses the most accurate settings to track the device.

```
var policy = {  
  Geo: WL.Device.Geo.Profiles.LiveTracking(),  
  Wifi: {  
    interval: 10000,  
    accessPointFilters: {  
      [{SSID: "Net1"},  
       {SSID: "Net2", MAC: "*"}]  
    }  
  }  
};
```

## Acquisition Policy

- Geo Acquisition
- *LiveTracking* – a preset profile that uses the most accurate settings to track the device.
- Additional Configuration Options
  - *RoughTracking* and *PowerSaving Profiles*
  - Custom Settings

```
var policy = {  
  Geo: WL.Device.Geo.Profiles.LiveTracking(),  
  Wifi: {  
    interval: 10000,  
    accessPointFilters: {  
      [{SSID: "Net1"},  
       {SSID: "Net2", MAC: "*"}]  
    }  
  }  
};
```

## Acquisition Policy

- WiFi Acquisition

```
var policy = {  
  Geo: WL.Device.Geo.Profiles.LiveTracking(),  
  Wifi: {  
    interval: 10000,  
    accessPointFilters: {  
      [{SSID: "Net1"},  
       {SSID: "Net2", MAC: "*"}]  
    }  
  }  
};
```

## Acquisition Policy

- WiFi Acquisition
- The polling interval, in milliseconds; WiFi polling is performed each interval.

```
var policy = {  
  Geo: WL.Device.Geo.Profiles.LiveTracking(),  
  Wifi: {  
    interval: 10000,  
    accessPointFilters: {  
      [{SSID: "Net1"},  
       {SSID: "Net2", MAC: "*"}]  
    }  
  }  
};
```

## Acquisition Policy

- WiFi Acquisition
- The polling interval, in milliseconds; WiFi polling is performed each interval.
- Which access points are of interest?
  - Acquisition ignores everything except “Net1” and “Net2” – doing so assists in dynamic environments, such as when there are mobile hotspots.

```
var policy = {  
  Geo: WL.Device.Geo.Profiles.LiveTracking(),  
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    interval: 10000,  
    accessPointFilters: {  
      [{SSID: "Net1"},  
       {SSID: "Net2", MAC: "*"}]  
    }  
  }  
};
```



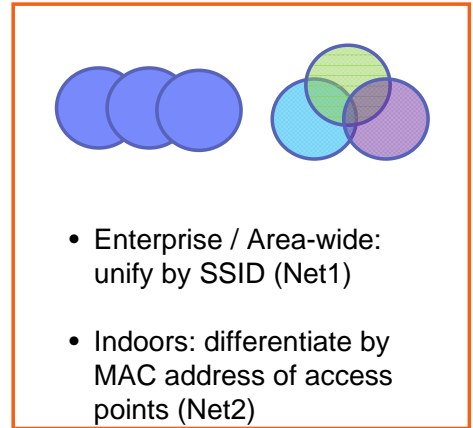
## Acquisition Policy

- WiFi Acquisition
- The polling interval, in milliseconds; WiFi polling is performed each interval.
- Which access points are of interest?
  - Acquisition ignores everything except “Net1” and “Net2” – doing so assists in dynamic environments, such as when there are mobile hotspots.
  - Treat all “Net1” access points as though they were one access point.
  - Differentiate “Net2” access points by MAC address.

```
var policy = {
  Geo: WL.Device.Geo.Profiles.LiveTracking(),
  Wifi: {
    interval: 10000,
    accessPointFilters: {
      [{SSID: "Net1"},
       {SSID: "Net2", MAC: "*"}]
    }
  }
};
```

# Acquisition Policy

- WiFi Acquisition
- The polling interval, in milliseconds; WiFi polling is performed each interval.
- Which access points are of interest?
  - Acquisition ignores everything except “Net1” and “Net2” – doing so assists in dynamic environments, such as when there are mobile hotspots.
  - Treat all “Net1” access points as though they were one access point.
  - Differentiate “Net2” access points by MAC address.



## Acquisition Policy – Permissions

- Permissions for Geo
  - AndroidManifest.xml:
    - ACCESS\_COARSE\_LOCATION
    - ACCESS\_FINE\_LOCATION
  - iOS info.plist
    - UIRequiredDeviceCapabilities:
      - location-services, gps
- Permissions for WiFi
  - AndroidManifest.xml:
    - ACCESS\_WIFI\_STATE
    - CHANGE\_WIFI\_STATE
  - iOS info.plist
    - UIRequiredDeviceCapabilities: wifi

```
var policy = {  
  Geo: WL.Device.Geo.Profiles.LiveTracking(),  
  Wifi: {  
    interval: 10000,  
    accessPointFilters: {  
      [{SSID: "Net1"},  
       {SSID: "Net2", MAC: "*"}]  
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};
```

# Agenda

- Overview
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- Triggers
- Events

## Triggers

- You can set up triggers for:
  - Geo / WiFi fences
    - Enter / Exit
    - Dwell Inside / Outside
  - Movement
    - Geo: PositionChange
    - WiFi: VisibleAccessPointsChange
  - WiFi Connect / Disconnect

```
var triggers = {
  Geo: {
    trigger1: {
      type: "Enter",
      circle: {
        longitude: -74.044444,
        latitude: 40.689167,
        radius: 100},
      callback: libertyAtLast,
      eventToTransmit: {
        event: {
          bring: "me",
          your: "huddledMasses"
        }
      }
    }
  }
};
```

# Triggers

- You can set up triggers for:
  - Geo / WiFi fences
    - Enter / Exit
    - Dwell Inside / Outside
  - Movement
    - Geo: PositionChange
    - WiFi: VisibleAccessPointsChange
  - WiFi Connect / Disconnect
- When a trigger activates, it can:
  - Call a callback function.
  - Create an event to be sent to the server.

```
var triggers = {  
  Geo: {  
    trigger1: {  
      type: "Enter",  
      circle: {  
        longitude: -74.044444,  
        latitude: 40.689167,  
        radius: 100},  
        callback: libertyAtLast,  
        eventToTransmit: {  
          event: {  
            bring: "me",  
            your: "huddledMasses"  
          }  
        }  
      }  
    }  
  }  
};
```

# Triggers

- Enter Trigger
  - Activates after the device enters the circle.
  - longitude and latitude are the coordinates of the center of the circle.
  - The circle radius is given in meters.

```
var triggers = {  
  Geo: {  
    trigger1: {  
      type: "Enter",  
      circle: {  
        longitude: -74.044444,  
        latitude: 40.689167,  
        radius: 100},  
      callback: libertyAtLast,  
      eventToTransmit: {  
        event: {  
          bring: "me",  
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};
```

# Agenda

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## ***Events – Client Side***

- Events are created on the client in one of two ways:
  - Triggers
  - Calling `WL.Client.transmitEvent(event, immediate)`
  
- By default, events are periodically sent to the server.

## Events – Server Side

- In adapter code, create event handlers by using:

```
WL.Server.createEventHandler(  
    filter,  
    handlerFunction)
```

- Events that match `filter` will be passed to `handlerFunction`.

- Filter examples:

- `{status: "platinum"}` – handle platinum members only
- `{hotel: { country: "USA" } }` – hotels in the USA
- `{}` – all events

- Register the event handlers by using:

```
WL.Server.setEventHandlers([...])
```

## ***Exercise***

- The sample for this training module can be found in the Getting Started page of the IBM® Worklight documentation website at <http://www.ibm.com/mobile-docs>.
- To use the sample for this module, you must install IBM Worklight V6.0.0 Interim Fix (IF) 201307011413 or later.

## ***For more information***

- For more information about location service, see the IBM Worklight user documentation at:
  - [http://pic.dhe.ibm.com/infocenter/wrklight/v6r0m0/topic/com.ibm.worklight.help.doc/devref/c\\_overview\\_location\\_services.html](http://pic.dhe.ibm.com/infocenter/wrklight/v6r0m0/topic/com.ibm.worklight.help.doc/devref/c_overview_location_services.html)
- For more information about location service API, see the IBM Worklight user documentation at:
  - [http://pic.dhe.ibm.com/infocenter/wrklight/v6r0m0/topic/com.ibm.worklight.help.doc/apiref/r\\_wl\\_location.html](http://pic.dhe.ibm.com/infocenter/wrklight/v6r0m0/topic/com.ibm.worklight.help.doc/apiref/r_wl_location.html)

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