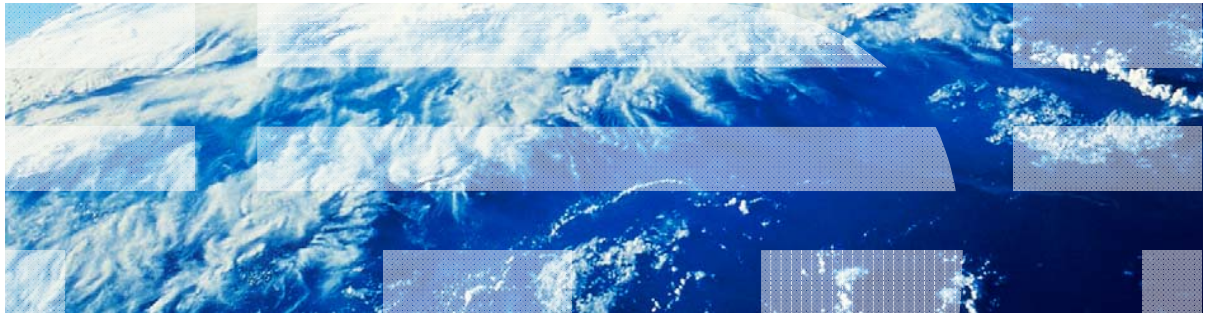


IBM Worklight V6.0.0 Getting Started

Location Services



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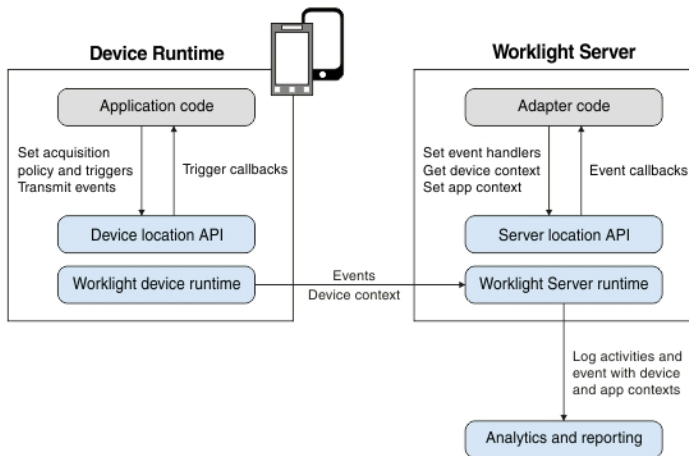
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Agenda

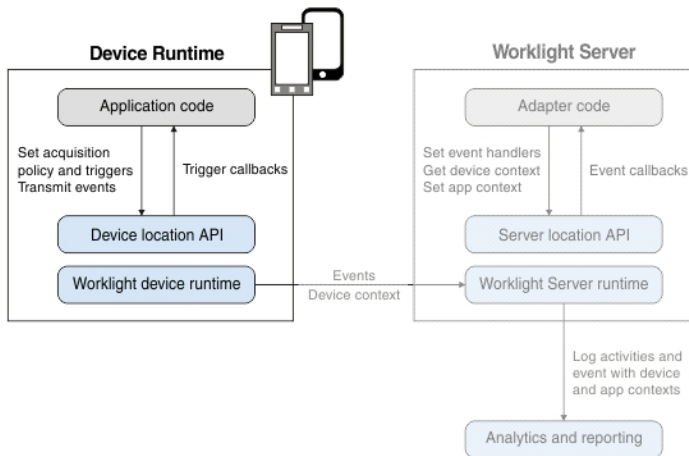
- Overview
 - Architecture
 - The two code lines that you need to know
- Acquisition Policy
 - Geo
 - WiFi
 - Permissions
- Triggers
- Events

Overview – Architecture (1 of 4)



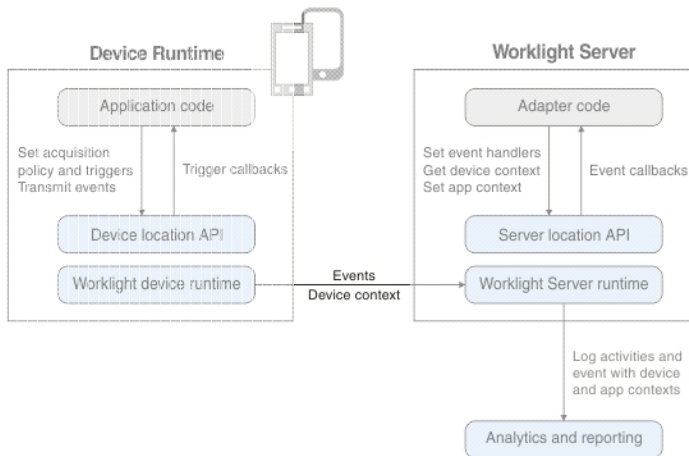
Overview – Architecture (2 of 4)

- 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.



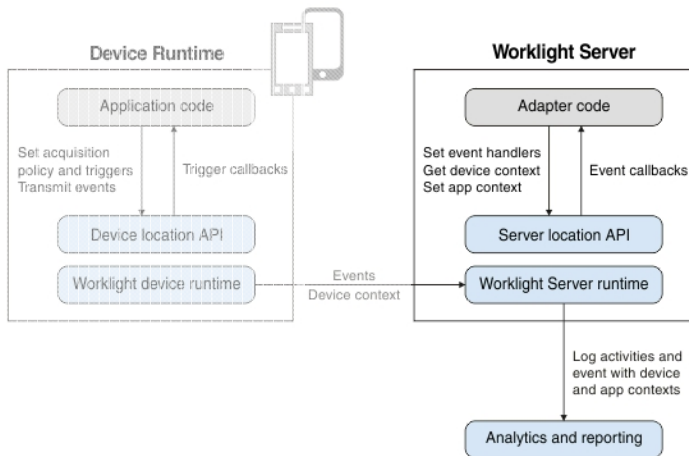
Overview – Architecture (3 of 4)

- 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

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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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    }  
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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(),  
  Wifi: {  
    interval: 10000,  
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  }  
};
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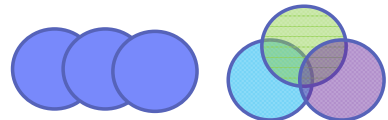

Acquisition Policy

- 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,  
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      [{SSID: "Net1"},  
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    }  
  }  
};
```

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.



- Enterprise / Area-wide: unify by SSID (Net1)
- Indoors: differentiate by MAC address of access points (Net2)

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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};
```

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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},  
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```

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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 Information Center at:
 - 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 Information Center at:
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