

Beacons in iOS

Overview

This tutorial discusses the client-side API for working with beacons in iOS.

This tutorial is a continuation of Working with Beacons (../) (introduction, setup, and server-side API).

The following topics are covered:

- Configuring your application
- Simplified APIs for ranging/monitoring iBeacons
- Running the sample application

Configuring your application

1. On iOS 8 and later, to enable Location services, add `NSLocationAlwaysUsageDescription` in the iOS project `Info.plist`.



The screenshot shows the Xcode interface with the `Info.plist` file selected in the project navigator. The main editor displays a table of key-value pairs for the Info.plist file. The key `NSLocationAlwaysUsageDescription` is highlighted in blue, indicating it has been added to the list. The value for this key is `This app does monitoring of iBeacons.`

Key	Type	Value
Information Property List	Dictionary	(16 items)
Localization native development region	String	en
Executable file	String	\$(EXECUTABLE_NAME)
Bundle identifier	String	com.mobilefirst.\${PRODUCT_NAME:rfc1034identifier}
InfoDictionary version	String	6.0
Bundle name	String	\$(PRODUCT_NAME)
Bundle OS Type code	String	APPL
Bundle versions string, short	String	1.0
Bundle creator OS Type code	String	????
Bundle version	String	1
Application requires iPhone environment	Boolean	YES
Required background modes	Array	(4 items)
Main storyboard file base name	String	Main
Required device capabilities	Array	(1 item)
Supported interface orientations	Array	(1 item)
NSLocationAlwaysUsageDescription	String	This app does monitoring of iBeacons.
Supported interface orientations (iPad)	Array	(4 items)

2. Copy the `iOSNativeiBeaconsLibrary` folder of the `iOSNativeiBeacons` project into your native iOS application. That folder contains the library that provides the simplified set of APIs for ranging/monitoring iBeacons.

To request permission to use location services and local/push notifications, write the following code:

```
- (void) viewDidLoad {
    [super viewDidLoad];
    ...
    [[WLB BeaconsLocationManager sharedInstance] requestPermissionToUseLocationServices]
    ;
    [[WLB BeaconsLocationManager sharedInstance] requestPermissionToUseNotifications];
}
```

Simplified APIs for ranging/monitoring iBeacons

Loading beacons and triggers from the server

To load information pertaining to beacons, triggers, and their associations from the server and storing it in the application JSONStore, write the following code:

```
[[WLB BeaconsAndTriggersJSONStoreManager sharedInstance] loadBeaconsAndTriggersFrom
mAdapter:@"BeaconsAdapter" withProcedure:@"getBeaconsAndTriggers" withCompletionH
andler:^(bool success, NSString *error) {
    if (success) {
        [self showBeaconsAndTriggers];
    } else {
        [self updateView:error];
    }
}};
```

Triggering actions

To set the monitoring/ranging of iBeacons and to fire trigger actions, write the following code:

```
/>
[[WLB BeaconsLocationManager sharedInstance] startMonitoring];
```

To let the user opt out of iBeacon monitoring, write the following code:

```
[[WLB BeaconsLocationManager sharedInstance] stopMonitoring];
// Optionally reset monitoring/ranging state
[[WLB BeaconsLocationManager sharedInstance] resetMonitoringRangingState];
```

Turning the device into an iBeacon

To turn a device into an iBeacon, write the following code:

```
NSString *uuidString = @"3d402cf0-3691-4bd9-97ff-0b0a93a160ef";  
int major = 1;  
int minor = 4417;  
  
[[WLB BeaconsLocationManager sharedInstance] turnIntoiBeaconWithUuid:uuidString withMajor:major withMinor:minor withStatusHandler:^(NSString *turnIntoiBeaconStatusDetails) {  
    [self updateView:turnIntoiBeaconStatusDetails];<br />  
}};
```

Generally, use this feature for testing and development purposes. The UUID string must match the UUID of the beacons that are registered on server.

Increasing the application running time

To increase the running time of the application when it runs in background (as part of iBeacon monitoring), write the following code:

```
- (void)applicationDidEnterBackground:(UIApplication *)application {  
    ...  
    [[WLB BeaconsLocationManager sharedInstance] notifyApplicationDidEnterBackground];  
}  
- (void)applicationDidBecomeActive:(UIApplication *)application {  
    ...  
    [[WLB BeaconsLocationManager sharedInstance] notifyApplicationDidBecomeActive];  
}
```

This code increases the running time of the application up to 3 minutes from the default 10 seconds.

Handling local notifications

To handle local notifications that originate from the application, write the following code:

```

- (BOOL)application:(UIApplication *)application didFinishLaunchingWithOptions:(NSDictionary *)launchOptions {
    ...
    UILocalNotification *localNotif = [launchOptions objectForKey:UIApplicationLaunchOptionsLocalNotificationKey];
    if (localNotif) {
        application.applicationIconBadgeNumber = application.applicationIconBadgeNumber - 1;
        [self processLocalNotification:localNotif];
    }
    return YES;
}

- (void)application:(UIApplication *)application didReceiveLocalNotification:(UILocalNotification *)notification {
    application.applicationIconBadgeNumber = application.applicationIconBadgeNumber - 1;
    [self processLocalNotification:notification];
}

- (void)processLocalNotification:(UILocalNotification *)notification {
    NSString *alertMessage = [notification.userInfo objectForKey:@"alertMessage"];
    UIAlertView *alert = [[UIAlertView alloc] initWithTitle:@"Received local notification" message:alertMessage delegate:nil cancelButtonTitle:@"OK" otherButtonTitles:nil, nil];
    [alert show];
}

```

Running the sample application

The sample is in two parts:

- The Beacons (<https://github.com/MobileFirst-Platform-Developer-Center/Beacons>) MobileFirst project contains a **MobileFirst native API** that you can deploy to your MobileFirst Server instance.
- The BeaconsObjC (<https://github.com/MobileFirst-Platform-Developer-Center/BeaconsObjC>) native project contains a **native library** that provides a simplified set of APIs for ranging/monitoring iBeacons and a **native iOS application** that demonstrates the usage of those APIs.

Make sure to update the `worklight.plist` file in `iOSNativePush` with the relevant server settings.

The sample showcases a simple banking scenario where actions are triggered based on proximity:

- When the user enters a Bank branch, a notification action is triggered with a Welcome message.
- When the user enters the loan processing section, an alert is triggered with a message stating that a bank personnel will assist the user soon.
- When the user exits the Bank branch, a notification action is triggered with a message.



