What’s New in Location Technologies

Clarity and control

Session 713

Brad Jensen, Software Engineer
API improvements
Authorization and usage reporting
Best practices
A Word of Warning
Experience with Core Location is assumed
CLGeocoder Improvements
CLGeocoder Improvements

Updated to support Contacts framework
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• Geocode CNPostalAddress
CLGeocoder Improvements

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• Geocode `CNPostalAddress`
• Obtain a `CNPostalAddress` from a `CLPlacemark`
CLGeocoder Improvements

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Supports geocoding with a locale
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Supports geocoding with a locale

• Overrides user preference
Heading vs. Course
Heading vs. Course
Heading vs. Course
Heading and Course
Better together
Heading and Course
Better together

Better heading estimates
Heading and Course
Better together

Better heading estimates

Fully automatic
Heading and Course
Better together

Better heading estimates

Fully automatic

Use `CMDeviceMotion` for raw heading
Indoor Positioning Improvements
Indoor Positioning Improvements

Accuracy
Indoor Positioning Improvements

Accuracy

Responsiveness
Indoor Positioning Improvements

Accuracy

Responsiveness

Availability
Indoor Positioning Improvements

Accuracy
Responsiveness
Availability
Interoperability
Continuous Background Location
Now available on watchOS
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Continuous location extends to background
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Previously available through HealthKit
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Workout apps must adopt
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Three easy steps
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Three easy steps

```swift
locationManager.allowsBackgroundLocationUpdates = true
```
Continuous Background Location
Now available on watchOS

Continuous location extends to background

Previously available through HealthKit

Good for navigation and fitness apps

Workout apps must adopt

Three easy steps

```swift
locationManager.allowsBackgroundLocationUpdates = true
locationManager.startUpdatingLocation() // While in the foreground!!
```
Best Practices for Workout Apps
Best Practices for Workout Apps

Use HKWorkoutSession
Best Practices for Workout Apps

Use HKWorkoutSession

Use CMPedometer for pedestrian distance
Authorization and Usage Reporting
Authorization Modes
Review
Authorization Modes

Review

Always authorization
• Access any time the app is running
• Background monitoring APIs

<table>
<thead>
<tr>
<th>Service</th>
<th>Available with Always</th>
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<tbody>
<tr>
<td>Region Monitoring</td>
<td>✓</td>
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<td>Significant Location Change Monitoring</td>
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<td>Visit Monitoring</td>
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<td>Ranging</td>
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Authorization Modes

Review

Always authorization
• Access any time the app is running
• Background monitoring APIs

WhenInUse authorization
• Access only when “in use”
• Improved user control

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Authorization Modes

Percentage Breakdown

- WhenInUse support: 79%
- Always only: 21%
Motivations for Requiring Always
Motivations for Requiring Always

Developer confusion
Motivations for Requiring Always

Developer confusion

Pursuit of magical experiences
Always Authorization in iOS 11
Always Authorization in iOS 11

WhenInUse support is required
Always Authorization in iOS 11

WhenInUse support is required
• Legacy apps included
Always Authorization in iOS 11

WhenInUse support is required

• Legacy apps included

NSLocationWhenInUseUsageDescription
Always Authorization in iOS 11

WhenInUse support is required

• Legacy apps included

NSLocationWhenInUseUsageDescription

Prompts for Always include WhenInUse option
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Prompts for Always include WhenInUse option

NSLocationAlwaysAndWhenInUseUsageDescription
• Always-using apps must adopt
Supporting Always Authorization

Best practices
Supporting Always Authorization

Best practices

Support older iOS builds and provide all keys

NSLocationWhenInUseUsageDescription
NSLocationAlwaysAndWhenInUseUsageDescription
NSLocationAlwaysUsageDescription
Supporting Always Authorization

Best practices

Support older iOS builds and provide all keys

NSLocationWhenInUseUsageDescription
NSLocationAlwaysAndWhenInUseUsageDescription
NSLocationAlwaysUsageDescription

Help the user choose
Supporting Always Authorization

Best practices

Support older iOS builds and provide all keys
- `NSLocationWhenInUseUsageDescription`
- `NSLocationAlwaysAndWhenInUseUsageDescription`
- `NSLocationAlwaysUsageDescription`

Help the user choose
- Explain what each authorization mode enables
Requesting Authorization

Best practices
Requesting Authorization
Best practices

Ask for authorization when you need it
Requesting Authorization

Best practices

Ask for authorization when you need it

Request WhenInUse first
Requesting Authorization

Best practices

Ask for authorization when you need it

Request WhenInUse first

• Always features are an addition to WhenInUse experience
Requesting Authorization

Best practices

Ask for authorization when you need it

Request WhenInUse first

• Always features are an addition to WhenInUse experience
• Transition from WhenInUse to Always later
From WhenInUse to Always
From WhenInUse to Always

Not Determined
From WhenInUse to Always

Request WhenInUse → Not Determined

Allow "Potloc" to access your location while you are using the app?
Your location will be used for demonstration purposes only when you are using the app

Don't Allow | Allow

Always ↔ WhenInUse ↔ Never

NSLocationWhenInUseUsageDescription
From WhenInUse to Always

Allow “Potloc” to access your location while you are using the app?
Your location will be used for demonstration purposes only when you are using the app

- Don’t Allow
- Allow

Allow “Potloc” to also access your location even when you are not using the app?
Your location will be used for demonstration purposes.

- Only While Using the App
- Always Allow

Request WhenInUse

Not Determined

Always

Never

Request Always

Always

Never

NSLocationWhenInUseUsageDescription

NSLocationAlwaysAndWhenInUseUsageDescription
From WhenInUse to Always

Allow “Potloc” to access your location while you are using the app?
- Don’t Allow
- Allow

Your location will be used for demonstration purposes only when you are using the app

Allow “Potloc” to also access your location even when you are not using the app?
- Only While Using the App
- Always Allow

NSLocationWhenInUseUsageDescription

NSLocationAlwaysAndWhenInUseUsageDescription
Allow “Maps” to access your location while you are using the app?
Your current location will be displayed on the map and used for directions, nearby search results, and
Location Usage Indication
iOS 10
Location Usage Indication

iOS 10

Based on requested service
Location Usage Indication
iOS 10

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Based on requested service

WhenInUse required for blue status bar
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Room for improvement
Location Usage Indication
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Based on requested service

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Room for improvement
• Over-represented some services
Location Usage Indication
iOS 10

Based on requested service

WhenInUse required for blue status bar

Room for improvement
• Over-represented some services
• Blue bar inconsistency
Location Usage Indication
iOS 10

Based on requested service

WhenInUse required for blue status bar

Room for improvement
• Over-represented some services
• Blue bar inconsistency
• Users could get the wrong impression
Location Usage Indicators
New behavior
Location Usage Indicators

New behavior

New arrow policy
Location Usage Indicators

New behavior

New arrow policy

• Hollow arrow when requesting
Location Usage Indicators

New behavior

New arrow policy

• Hollow arrow when requesting
• Solid arrow when receiving
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Blue status bar for Always apps
Location Usage Indicators

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New arrow policy
- Hollow arrow when requesting
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Blue status bar for Always apps

Matches user expectations
Location Usage Indicators

New behavior

New arrow policy

- Hollow arrow when requesting
- Solid arrow when receiving

Blue status bar for Always apps

Matches user expectations

Better for developers
Arrow Icon
Example
Arrow Icon

Example
Summary

Users have more control

Communicate with the user

Build a WhenInUse-first experience
More Information

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