iOS 13 and Locations

The changes regarding location permissions and location data management have left end users and developers confused about which prompt means what or which prompt belongs to which process due to Apple's lack of documentation.

This document describes processes, clarifies the connections between different prompts and those processes, and the purpose behind those changes from iOS 12 to iOS 13.

Locations in iOS 12

iOS 12 used **single-step authorization** for location access. Basically the developer used to request an **Always** access, and used to be able to get that **Always** access immediately, right after the request.

Locations in iOS 13

iOS 13 changes the location authorization concept fundamentally with several additions on top of how it was in iOS 12.

Location Authorization

There are two ways to reach to "Always" access, one through Provisional Location Authorization and the other through Explicit Location Authorization.

Provisional Location Authorization

With this authorization, users are automatically notified about each step, with relevant options and details available.
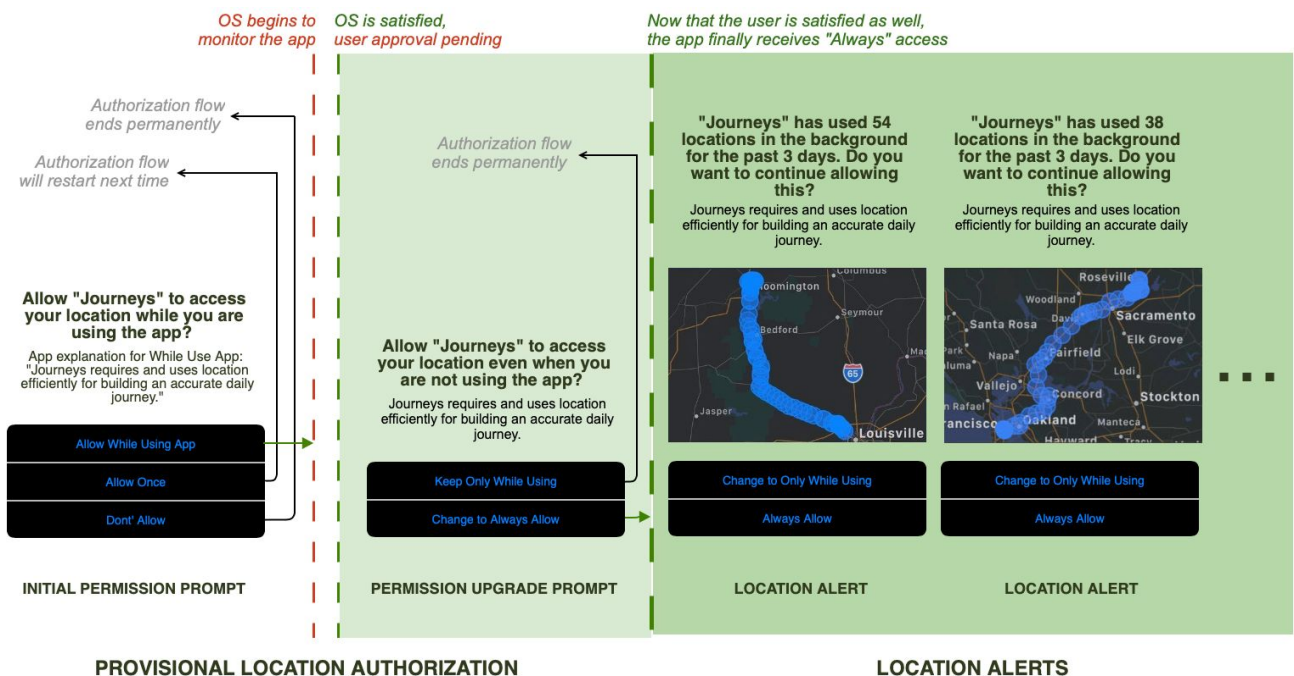
Initial Permission Prompt

Triggered by the developer, Initial Permission Prompt is very similar to the one in iOS 12, except that **it does not include "Always" permission option**. But it has the ability to activate an internal monitoring process.

Let's see what happens when you tap on each option:

Don't Allow

- If you tap on "Don't Allow", you will terminate the Provisional Authorization process altogether and will lock yourself out of the process permanently.
- The only way to get "Always" access at this point is through the **Explicit Authorization,** by going to Settings and giving the permission manually.

Allow Once

- If you tap on "Allow Once", the OS will not save your permission like it does with other permissions.
- After this point, if you lock your device, the permission will expire and you will be presented with the Initial Permission Prompt again as soon as you unlock.
- If you leave the app, the permission will expire and you will be presented with the same Initial Permission Prompt again as soon as you go back to the app.
- If you kill the app, the permission will expire and you will be presented with the same Initial Permission Prompt again as soon as you start the app.

Allow While Using App

If the developer specifically requested "While In Use" access, there is actually nothing new to learn here. The app receives "While In Use" access and location authorization process ends.

If though, the developer asks for "Always" access and if you tap on this option;

- The option will appear as "While In Use" to the end user but at the same time it will be received as "Always" permission by the developer.
- Even if it is received as "Always" permission by the developer, after this point **all background locations are accumulated but not delivered to the app yet** (preserving timestamps and all other properties of locations)**,**until the next step.
- As soon as the app goes to background with this permission, iOS initiates an **internal monitoring process over the app's location usage behaviour**. The goals of this monitoring process are;
  - To prove that the app really will obtain any location while in the background. **This avoids apps requesting "Always" access unnecessarily.**
  - To notify the user as soon as the first background location is obtained, so that he/she knows when exactly that happened. This gives further proof to the end user as in the past **there has been cases that apps used to claim they retrieve background locations at a later time but in fact they used to start doing this as soon as the app starts or the user logs in.**
- You will have the chance to upgrade your permission (Permission Upgrade Prompt) when the OS is satisfied with app's location usage behaviour.

Permission Upgrade Prompt

This prompt appears only if you have selected "Allow While Using App" on the "Initial Permission Prompt".

- This prompt can only be triggered by the OS, not the developer.
- If you see this prompt, it means the app has just proved to the OS that it really uses background locations.
- The OS is satisfied at this point, but there is still one more entity to get the final approval, and that is the end user.

Let's see what happens when you tap on each option:

Keep Only While Using

- Your final permission is set as "While In Use", so you never get any location in background.
- iOS does not bother you again with any location prompt.
- **Authorization process ends.**

Change to Always Allow

- **All pending locations waiting at the door of the app are released and delivered to the app as a bunch, with timestamps preserved.**
- Your final permission is now set to "Always", so you will always get all locations in background after that moment.
- Now you are also eligible to receive **Location Alerts,** which **are not part of the authorization process.**
- **Authorization process ends. This is very important since a lot of users and developers are still not aware that this is the end of the authorization process.**

Crucial tips about Permission Upgrade Prompts;

- The prompt might be delayed if the smartphone is locked.
- The prompt might be delayed if the user is busy with another app.
- **The accumulated background locations might not be delivered if the prompt gets delayed so much that the event is no longer relevant, which means loss of location data.**

Explicit Location Authorization

The permissions you give from the Settings app manually will create different consequences, all are detailed below:

Permissions	Will I be eligible for Provisional Location Authorization flow?	Will I be eligible for Location Alerts?
Never	No, it's over.	No
Ask Next Time	Yes	Depends on what permission you give next time
While Using the App	No, since you explicitly stated that you want the actual "While in Use" permission.	No
Always	No	Yes

One thing to remember about Explicit Authorization is that the **developers cannot automatically send the user to the screen where the explicit permission is given manually**. Users can only be instructed to do that with a proper message, which is a technique already used by Apple's own apps.

Location Alerts

The most anticipated part iOS 13 brings to location management is certainly "Location Alerts".

- Alerts can only be triggered by the OS, not the developer.
- You need to have "Always" access in order to see Location Alerts.
- Alerts appear even if you have given "Always" access explicitly from the Settings app.
- Alerts cannot be opted out.
- Maps in Location Alerts can be disabled from Settings, but the rest still remains in Location Alerts.
- OS never stops showing Location Alerts.
- The timing Location Alerts are shown depends on internal usage metrics of the app, with the details not disclosed by Apple.
- Location Alerts are shown less frequently over time.
- When the app is updated, the frequency to show Location Alerts is reset.
- Alerts have a goal to inform the user about the locations that are successfully obtained by the app.
- Alerts are also OS' continuous attempts to pull the user to the green zone above, just in case.
- Alerts are always presented with locations limited to last 3 days. But **that does not mean you will get a location alert every 3 days.**