Location Matters™

LOC-AID Xchange Gateway (LXG)

Privacy System Flows

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LOC-AID Technologies, Inc.

Getting Started

This guide provides a description and system level Privacy flows for managing LBS subscriber OPT-IN, Notification, Location and Authorization. Additional services are described for service Cancellation, Suspension and Resumption.

LOC-AID operates as an aggregator for location based services by which it brings together – or operates as an information gateway for – wireless carriers ("Carriers") and the providers of wireless applications and content ("Providers"). LOC-AID's customers are businesses, not consumers.

LOC-AID provides location-based services through a network-based gateway with the world's largest and most respected Carriers. Our gateway, called the LOC-AID Xchange Gateway™, enables companies to locate mobile devices, but only with the corresponding permission-level approved for a particular application, campaign or query on the mobile device.

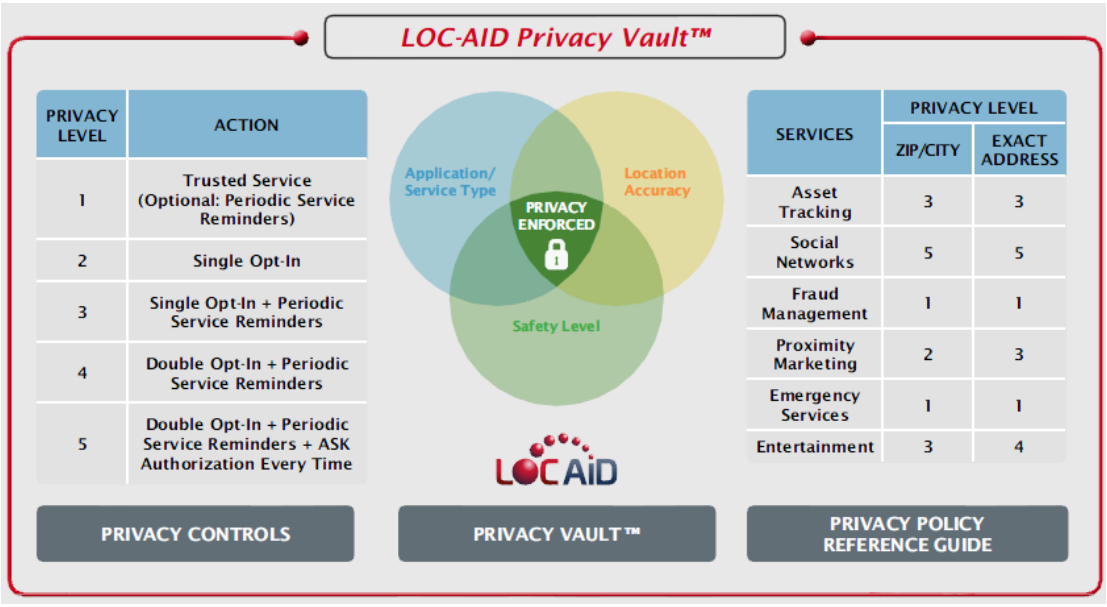
Our location aggregation services obtain location information from multiple sources, but primarily from direct connections to Carrier network infrastructures.

The LOC-AID Privacy Vault™

LOC-AID, the world's largest mobile location data gateway, has also built the most secure LBS location data exchange available today. Our patent-pending privacy protocols ensure that users decide how they wish to share personal information and location-based data for their devices.

Privacy and security are paramount in LBS services. That's why "lock" is part of our name at LOC-AID. Locking down privacy is not only core to our brand, it's also our unwavering business practice. As the world's largest location-enabling mobile transaction platform, we insist on the highest levels of privacy that exceed even the most rigorous industry guidelines.

LOC-AID has been recognized in the LBS industry for our excellence in privacy innovation. Our unique Privacy Vault™ approach to personal location information is unparalleled, and award-winning. We offer the most consistent, user-friendly privacy controls and security features for wireless operators and application developers. Every program we location-enable is 100 percent permission-based, with complete controls for the developers and their mobile customers.



Privacy Control Components

Introduction

While LBS Applications are powered by the location request and response, users rely on control mechanisms to manage their privacy.

There are three components of privacy control:

1) OPT-IN, includes Registration / Provision with Carrier
2) Authorize location
3) Periodic reminder of OPT-IN

The specific procedures for each of these components are described in this section.

The LOC-AID Xchange Gateway (LXG) implements Privacy by Application; each Application is assigned a unique identifier, referred to as “Class ID” (CLASSID). Each Application is granted access by the Carrier conditioned on a specific configuration for Privacy components; the LXG maintains the flows as consistent with that configuration.

OPT-IN

Before requesting a phone’s location; the application must first OPT-IN the end-user’s phone. The OPT-IN can be one of two variations, depending upon the type of application and requirements of the Carrier:

The first type of OPT-IN is a single OPT-IN; in this flow the user is notified of the subscription and advised of the OPT-OUT and HELP methods available.

The second type of OPT-IN is the double OPT-IN; in this flow the user is notified and asked to confirm his/her desire to enroll. The user must respond affirmatively to complete the OPT-IN; a negative or non-response suspends the process.

Most Carriers require Registration and Provisioning to associate the Application with a newly-enrolled mobile phone; this is reflected in the flows as part of the OPT-IN process.

When the OPT-IN is successfully completed, the phone is available to be located.

Authorization

Enhanced user awareness and specific control of location is provided by Authorization. There are 3 configurations for this component:

- Yes: user grants authorization to all location requests
- No: user suspends authorization for all location requests
- Ask: user must grant authorization for specific request

For certain applications, the end-user must confirm each location request before the phone's location can be requested.

Carriers may require Authorization for specific Applications based on the frequency they locate or their target population. Developers should note that Authorization can increase the latency in the transaction, so Applications must be designed to tolerate this.

Only when the Authorization is successfully completed is the location request honored, regardless of the amount of time it takes to secure that.

Reminders

For long-running applications, user awareness of location-enablement is delivered by Reminders. For these applications, the end-user is given a periodic notification that a location-enabled application is active and may be used to locate their phone. As part of this Reminder, the user is reminded of how to get Application-specific information as well as how to cancel their subscription.

Reminders are often issued as a courtesy, positive user feedback is not required for the Application to continue to access the location. They can be configured as

- Off: no reminders are provided
- Periodic: given at regular intervals

The standard for periodic reminders is monthly, but optional configurations for weekly or quarterly may be available.

Privacy Flows

The remainder of this document describes the transactional steps implemented to manage Privacy. The diagrams that accompany the text apply the following convention for the groupings of the various steps:

- Yellow / Gold: OPT-IN process
- Pink: Authorization process
- Green: Location process
- Blue: Reminder process

The Privacy Flow enforced by the LXG will depend upon configuration of the components of OPT-IN, Authorization and Reminders. There are several options, but every Application must conform to only one specific Flow.

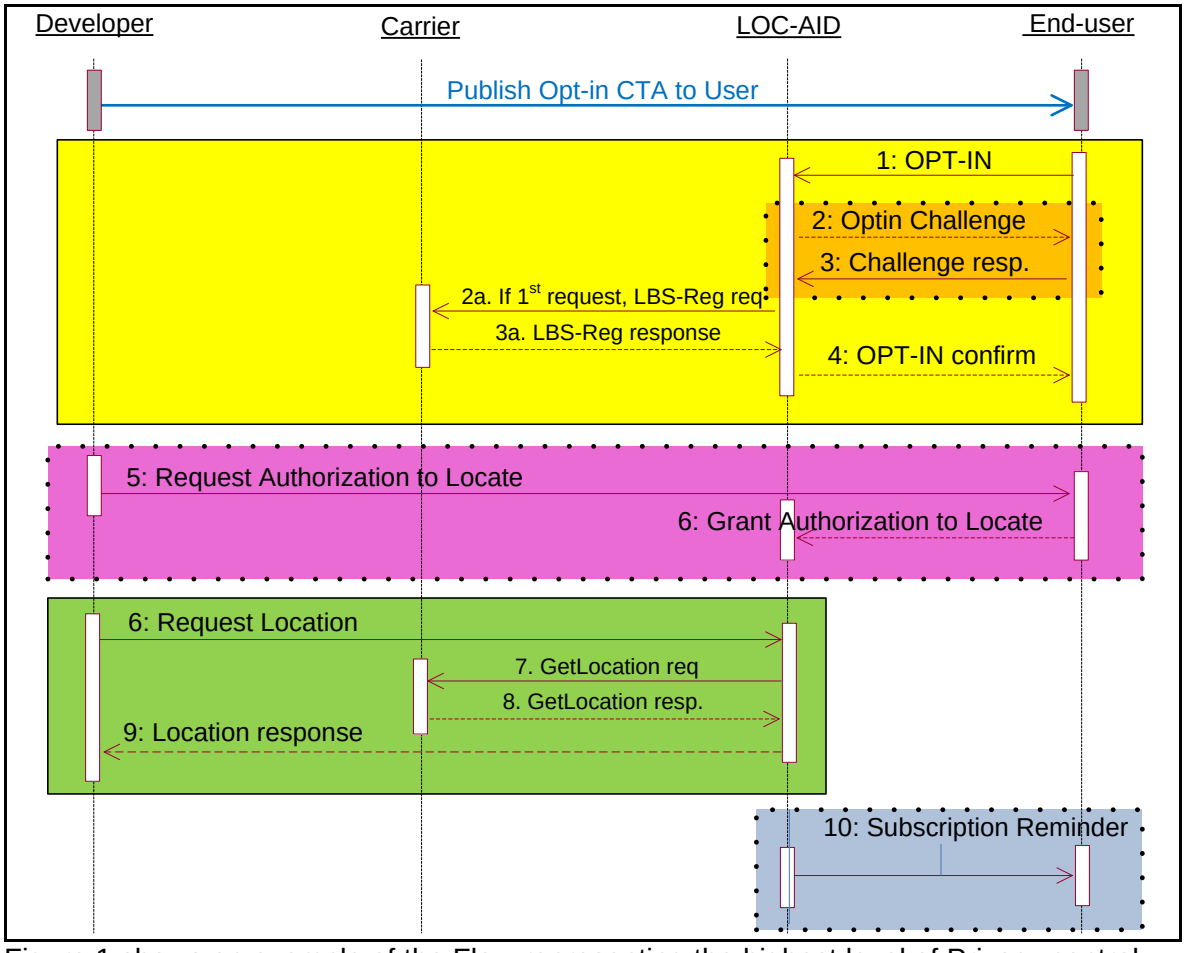


Figure 1 shows an example of the Flow representing the highest level of Privacy control.

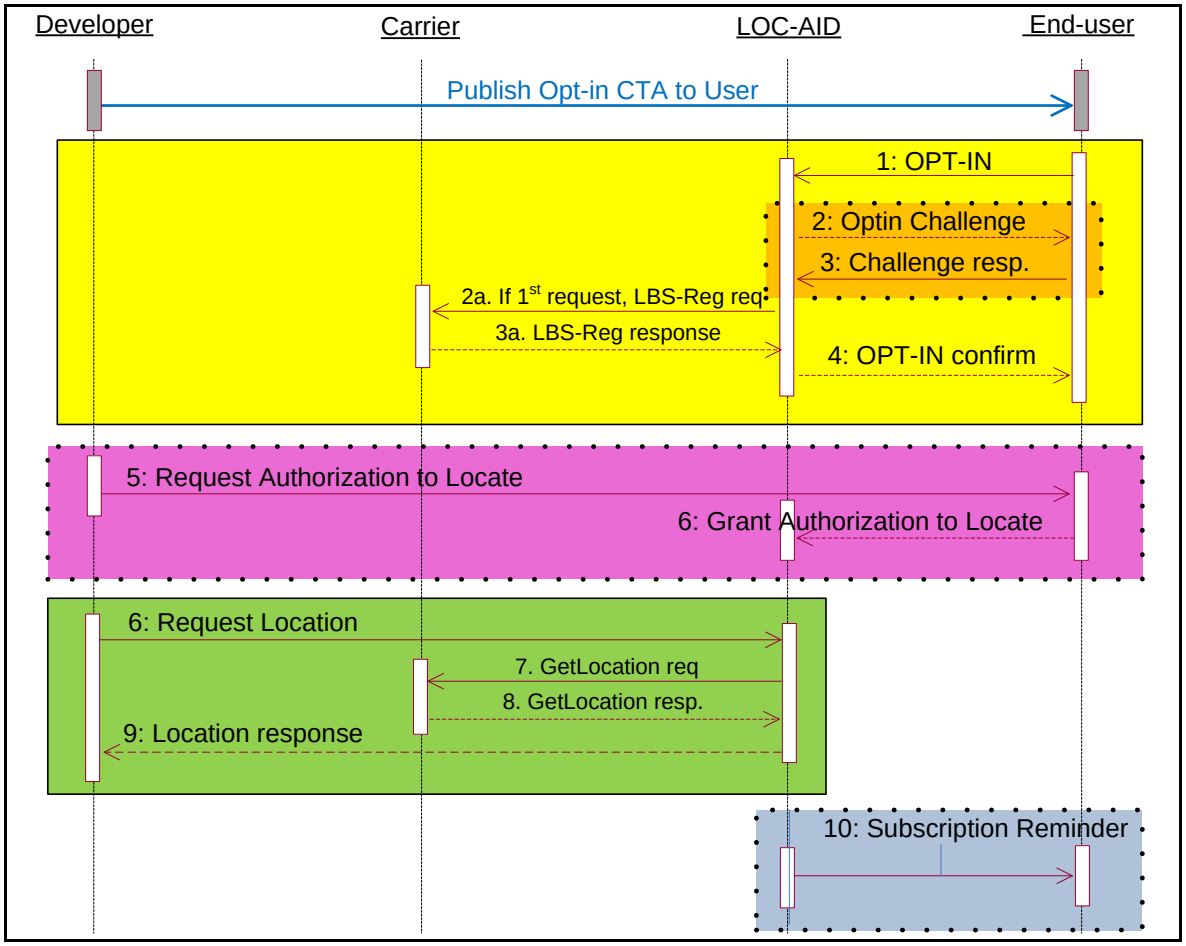


Figure 1: Full flow where all 3 Privacy Components are active at their highest level (OPT-IN=Double, Authorization=Ask, Reminders=On)

System Flows

The LOC-AID Xchange Gateway (LXG) implements Privacy by Application via the System Flows. Each Application is assigned a unique “Class ID” and each transaction enabled by the LXG references a Class ID; any transaction that does not conform to the expected Flow will be returned with an error.

Each Class ID also references the authorized Developer of the Application; accountability to the agreed-upon Flows is thus traceable to a specific LXG client. Thus a “rogue” Application may be disabled by LOC-AID at the Class ID level or for the entire Developer Account (any Class ID associated to that Developer).

Applications are approved for location-enablement by Carriers contingent on specific Privacy controls. The three components of Privacy are

1) OPT-IN
2) Reminders
3) Authorization

The LXG implements Privacy via System Flows, which provide a “framework” for the individual transactions between LOC-AID, the Carrier, Developer and end-user.

This section covers the System Flows related to various configurations of the three Privacy Components

- Single OPT-IN
- Single OPT-IN with Reminder
- Double OPT-IN with Reminder
- Double OPT-IN with Reminder and Authorization

Single OPT-IN

In the default case, LXG receives the OPT-IN by the end-user. The Developer maintains responsibility for publishing the Call-to-Action for users to invoke the proper MO SMS, and the Subscriber Update API is used to provide updates on MSISDNs that have completed this process and are successfully Registered to the Carrier.

The end-users will invoke the SINGLE OPT-IN process to subscribe into the service by sending the MO SMS containing the command: OPTIN + the CLASSID of the application

to the LOC-AID short-code. Once the Carrier Registration process is complete; the end-user receives an OPTIN confirmation message to confirm their enrollment.

The Developer may use the Subscription Update API (or the Get X/Y API) to query LXG for MSISDNs that have successfully completed these steps.

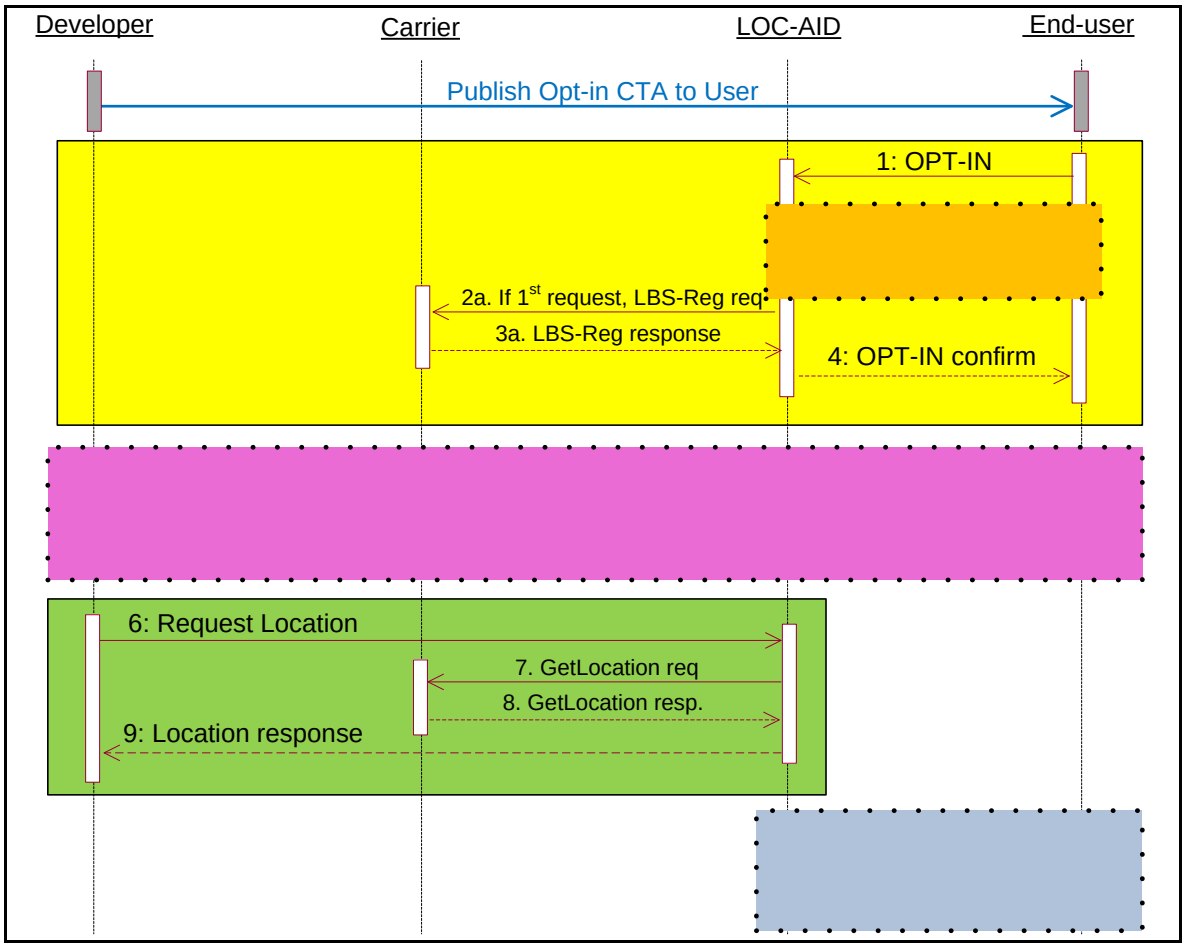


Figure 2: Single OPT-IN flow

Single OPT-IN with Reminder

For Applications with long-term subscriptions, LOC-AID implements the Single OPT-IN with a periodic reminder to the end-user.

The OPT-IN is completed as described above, the LXG Periodic Reminder timer will set a trigger for the following month. Once that trigger is fired, LXG will 1) validate that the

MSISDN is still Opted-In and Registered, then 2) send the user a reminder of their subscription via MT SMS.

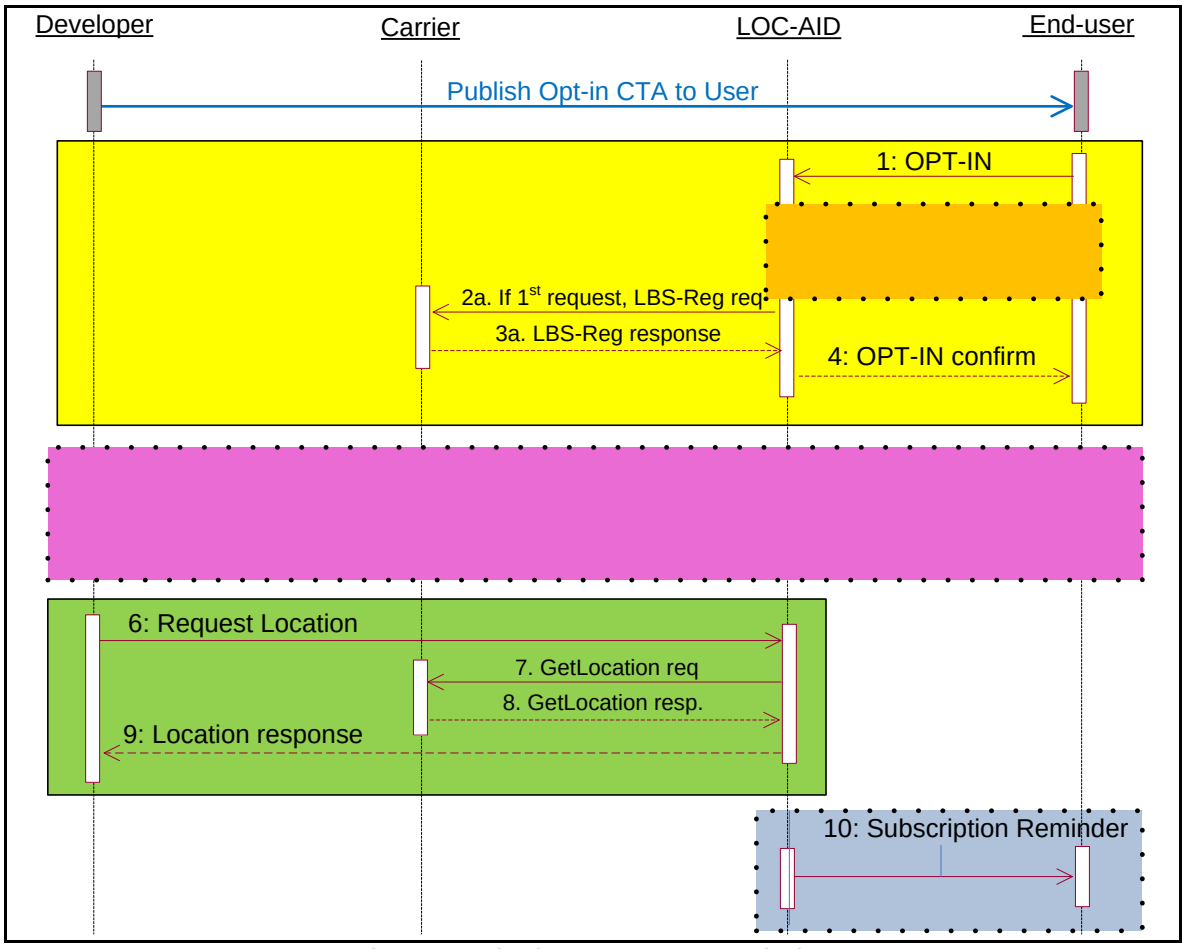


Figure 3: Single OPT-IN & Reminder

In some cases, the LOC-AID Subscription Update API is used to notify the Developer that a Reminder has been sent on behalf of the application

Double OPT-IN with Reminders

To support increased levels of privacy the LXG implements a Double OPT-IN, which provides positive confirmation of the end-user's intent to use (and as applicable be charged for) the location-enabled Application. The initial step can be secured via Web or paper contract, but when the confirmation is performed via SMS, it serves to positively authenticate and verify the MSISDN entered by the would-be subscriber.

In this case the LOC-AID's short code (32010) may be used to perform the second interaction. A Developer may access this via the LXG Messaging API.

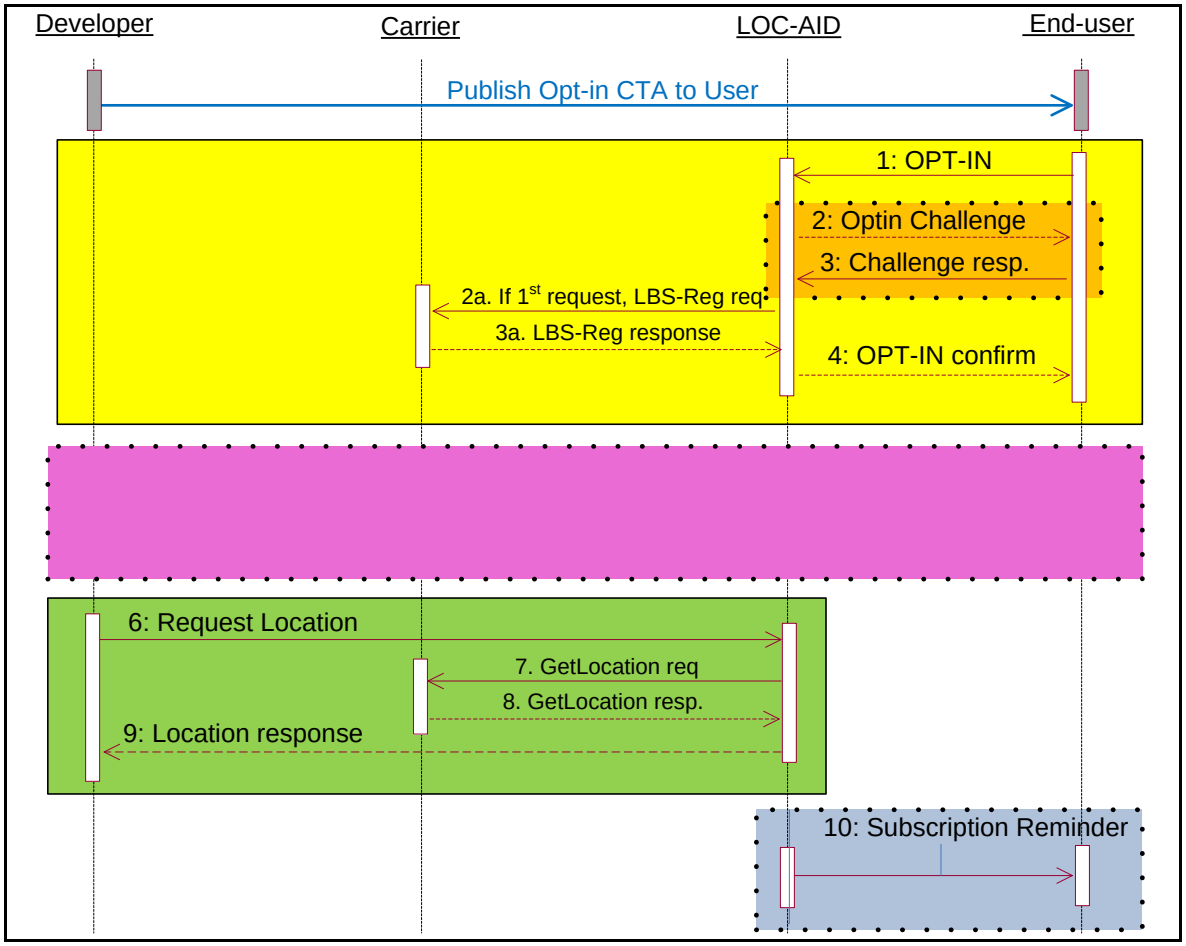


Figure 4: Double OPT-IN w/reminder

The flow shown outlines the process; note that Step #2 & 3 secure the user's confirmation and—because the confirmation is SMS-based—also serves to validate the correct MSISDN.

The Initial OPT-IN remains the same as in previous flows, but adds the confirmation; In order to validate the subscription, the end-users will need to send the command: YES + the CLASSID of the application to the short-code provided by LOC-AID. They will receive an OPT-IN confirmation message after the phone has been successfully Registered with the Carrier.

In addition, this flow sends the user a periodic reminder.

Double OPT-IN with Reminders and Authorization

The highest level of Privacy Control is the Double OPT-IN with Authorization and Reminders. This flow adds an authorization step for every use of location. It enforces another level of user interaction to ensure awareness and consent to use location. Note that any location request is not valid until the authorization has been provided by the end-user.

This Flow typically covers LBS services that may share end-user's high-accuracy location information with others and requires explicit end-user authorization.

The Initial Double OPT-IN remains the same as in the previous flow, in addition, a positive authorization is secured prior to each request of the users location. For every location request, the end-user is required to grant authorization by returning the command Y + the CLASSID of the application to the short-code provided by LOC-AID.

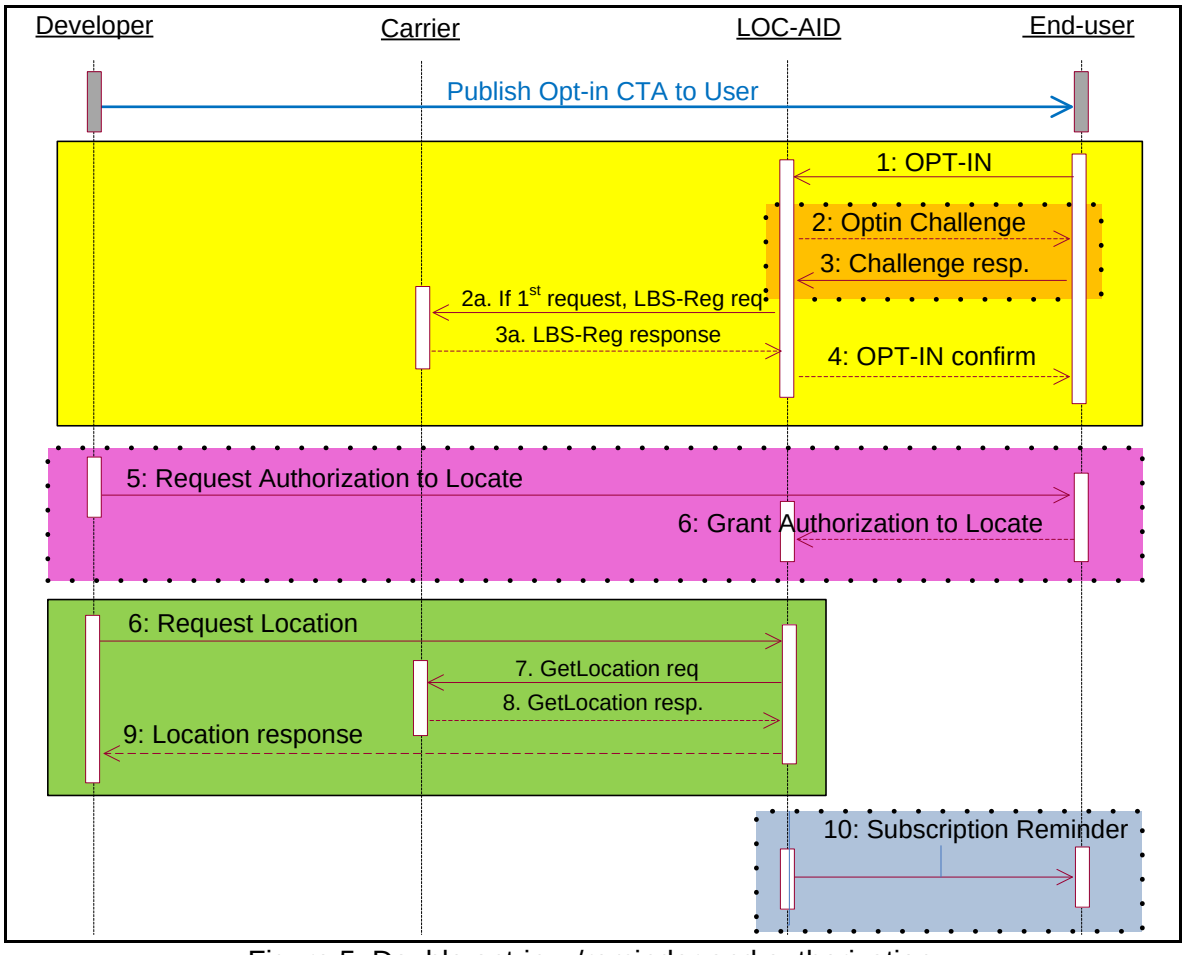


Figure 5: Double opt-in w/reminder and authorization

II. Other Processes

There are several other process commands that are available to the End User and Developer. These are:

1) Service Cancellation
2) Service Suspension
3) Resumption of Suspended Service

Service Cancellation

In order to discontinue the end-user's LBS service permanently; the user will send CANCEL.

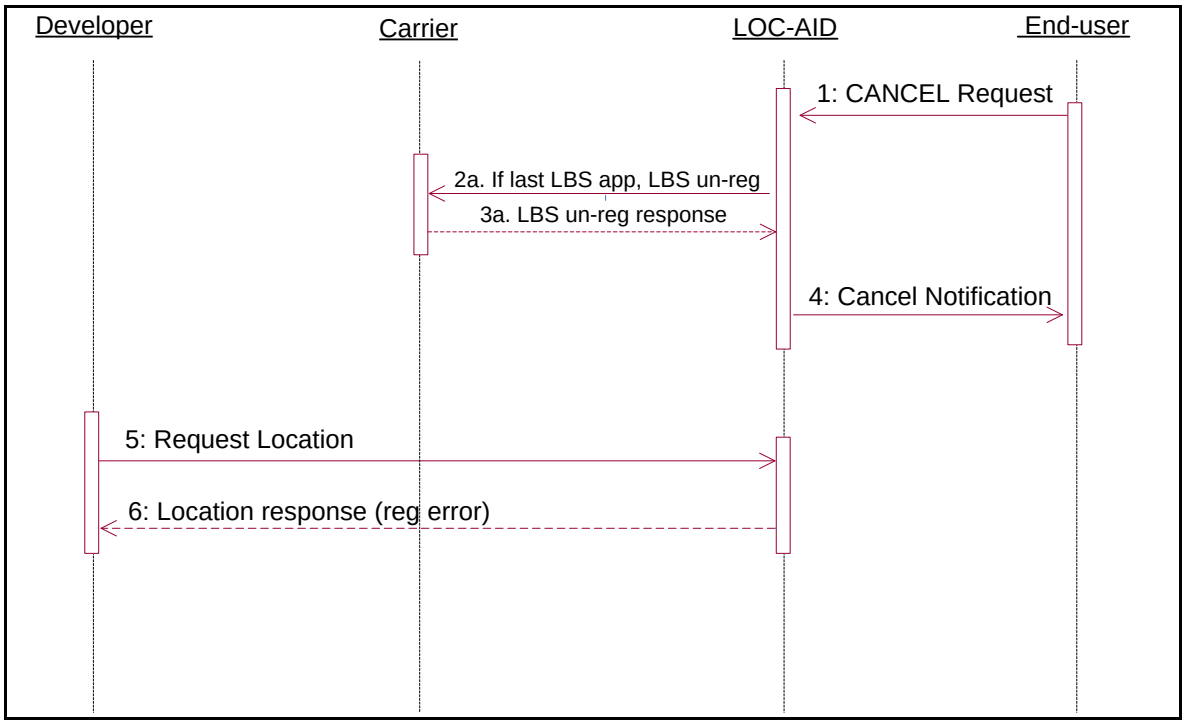


Figure 5: CANCEL LBS service

This process may also be made by the end-user via the LOC-AID Web Application Signer (www.loc-aid.net/signer). Upon successful cancellation the end user will receive a confirmation message.

Service Suspension

SUSPEND is used to discontinue the end-user's LBS service temporarily (without un-subscribing or de-provisioning the phone number).

In the default case, the user will send the following command:
LOCK + the CLASSID of the application to the short-code provided by LOC-AID. They will receive a confirmation message via MT-SMS.

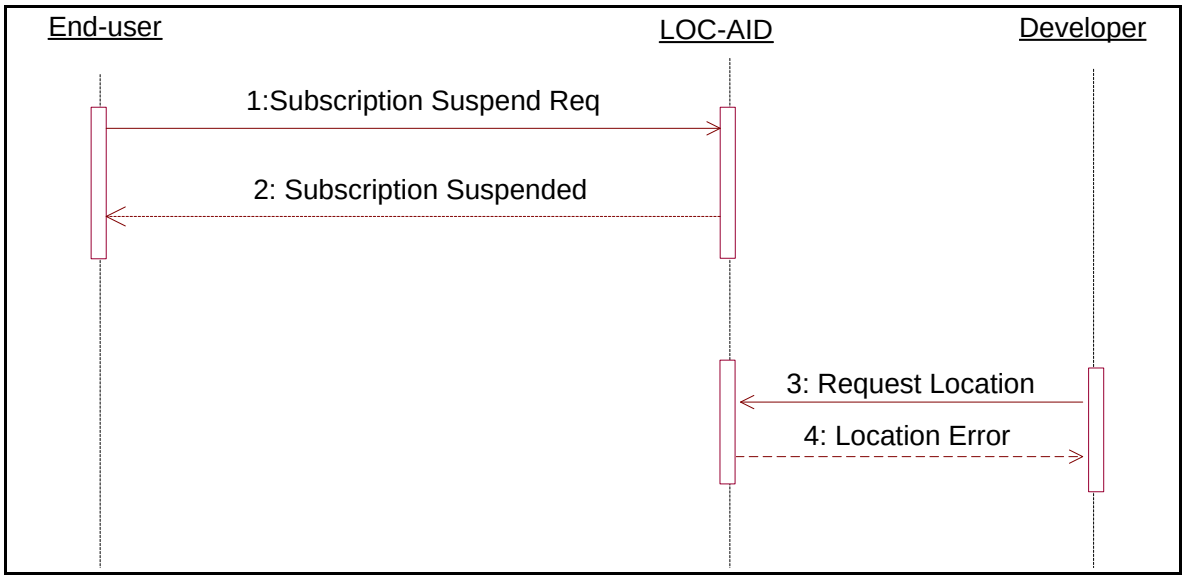


Figure 6: Default SUSPEND flow

This process may also be made by the end-user via the LOC-AID Web Application Signer (www.loc-aid.net/signer). Upon successful suspension the end user will receive a confirmation message via MT-SMS.

Service Resumption

To resume the end-user's previously SUSPEND'ed LBS service the user sends the command: UNLOCK + the CLASSID of the application to the short-code provided by LOC-AID. They will receive a confirmation message.

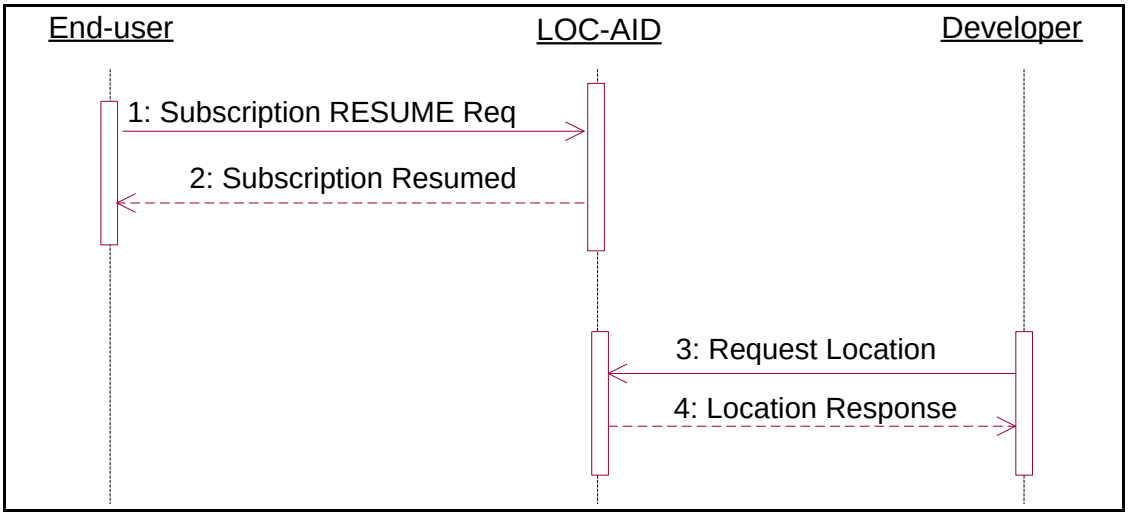


Figure 7: Default RESUME flow

This process may also be made by the end-user via the LOC-AID Web Application Signer (www.loc-aid.net/signer): Upon successful resumption the end user will receive a confirmation message via MT SMS.

About LOC-AID Technologies

LOC-AID operates the world's largest mobile location data gateway and manages the most secure, privacy-protected platform for wireless providers including Verizon Wireless, Sprint, America Movil, TelCel, Bell Mobility, AT&T and TELUS. Based in San Francisco, CA, with offices across North America, LOC-AID simplifies and manages the complex technical and approval interfaces of location-based services (LBS) for mobile developers. LOC-AID also offers a portfolio of location-enablement services including geo-fencing, geo-coding, map appends and location analytics.

For more information, visit www.loc-aid.com