Text-to-9-1-1

Precise location for text-enabled jurisdictions

Apple's Hybridized Emergency Location (HELO) helps Public Safety Answering Points (PSAPs) locate users who text 9-1-1 in an emergency.

Background

Originally launched in 2015, Text-to-9-1-1 is now supported by an increasing number of PSAPs in the United States. This capability improves access to critical emergency services for people with disabilities, and offers a life-saving alternative for users who are otherwise unable to converse. Since Text-to-9-1-1 became available, PSAPs have received only limited location information with a text session: typically the location of the tower, or the "centroid" of the cell sector serving the user's device. Over the same time period, however, there have been tremendous advances in emergency location technologies for voice calls. Now, Apple is making those same technologies available when users text 9-1-1 in a supported jurisdiction.

What's New

iOS 13 makes available precise, device-based location information through both the traditional carrier-network path, and through Apple's own Enhanced Emergency Data service, when a user texts 9-1-1 in a jurisdiction that accepts text messages. As iOS 13 rolls-out via software update this Fall, PSAPs should begin to see dramatically-lower uncertainties for users who text 9-1-1 from an iPhone or Apple Watch, reducing response times and improving outcomes for users.

Text-enabled PSAPs should contact their carrier, Text Control Center, and text-handling software representatives to ensure that both the location estimate and search area guidance ("uncertainty") provided by HELO will be delivered automatically to telecommunicators and dispatchers during a Text-to-9-1-1 session.

Location data will also be available to jurisdictions using Apple's Enhanced Emergency Data feature via Apple's partnership with RapidSOS. In some cases, call-taking, computer-aided dispatching, or text-handling software may require an update to automatically fetch EED locations for text sessions.

Location-enabled Text-to-9-1-1 is available on iPhone 6s and later running iOS 13, and on Apple Watch GPS+Cellular running watchOS 6.

Hybridized Emergency Location
Apple devices contain a variety of location sensors. When a user initiates an emergency call, supported Apple devices can "fuse" information from various sensors, such as Global Navigation Satellite Systems (GNSSs) and Wi-Fi. This process takes advantage of proprietary methods and network-provided assistance data (if available), to quickly calculate a low-uncertainty, high-integrity estimate of the device's location. Apple calls this capability "Hybridized Emergency Location" or "HELO." Technologies such as HELO are often referred to as "Device-Based Hybrid" or "DBH."

Since 2015, Apple has offered wireless carriers free access to HELO for voice calls to 9-1-1. HELO for voice calls is available via participating carriers on iPhone 5s or later running iOS 9.0 or later and on Apple Watch. In independent testing, iPhone 7 and iPhone 8 were shown to exceed the Federal Communications Commission's 2021 requirements for horizontal location accuracy, yielding location fixes 89.1% of the time, and providing sub-50m accuracy 85.2% of the time, even when deep indoors in the most challenging "Dense Urban" environment.

In 2018, Apple launched Enhanced Emergency Data, bringing HELO location fixes to local 9-1-1 centers using a modern, all-IP path. Enhanced Emergency Data is available during voice emergency calls on devices running iOS 12 or later, or watchOS 5 or later.