Apple | Google

Exposure Notifications

Frequently Asked Questions

Preliminary — Subject to Modification and Extension

September 2020

v1.2

Overview

On April 10, 2020 Google and Apple announced a joint effort to enable the use of Bluetooth technology to help governments and health agencies reduce the spread of COVID-19 through contact tracing, with user privacy and security core to the design. Since that announcement, stakeholders including developers, consumers, health agencies and governments have reached out with questions. This document serves to address these questions and provide more clarity and transparency in the process.

1. What is conventional contact tracing and how does it work?

Conventional contact tracing is a technique used by public health authorities to measure and slow the spread of infectious diseases. It requires manually gathering information from infected individuals about the people they've previously been in contact with. These people can then be notified by public health authorities to take appropriate safety measures, such as undertaking self-quarantine and getting tested to break the chain of transmission. While this process will continue to be important to contact tracing efforts, we believe the system we developed can alleviate some of the challenges with this process. First, there is a significant organizational burden from a manual process, as many public health workers are needed to perform these tasks. Second, the process can be slow as it requires finding and interviewing infected individuals and then reaching out and talking to their high risk contacts - all of whom may not be able to remember or know all of the people that they came in contact with in the past days to weeks.

2. Can contact tracing help with slowing COVID-19?

Yes. Contact tracing has been used to slow down transmission for many infectious diseases in the past. Each contact tracing effort is unique in some ways as they manage the specific challenges of individual infectious diseases. Governments, public health authorities, and NGOs around the world are starting to deploy contact tracing as a valuable tool for managing the COVID-19 pandemic.

3. How can technology augment conventional contact tracing?

Technology can play an important role in those efforts. Mobile devices can be used in an automated and scalable way to help determine who has been exposed to a person who later reports a positive diagnosis of COVID-19. For example, they can be used to send a rapid notification to the exposed person with instructions on next steps. These notifications may be beneficial by alerting an exposed individual faster than they would be notified via conventional contact tracing. They will enable public health authorities to contact and provide guidance to the individual and, where appropriate, include them in conventional contact tracing efforts. Using digital exposure notifications is new and individual health authorities are determining how they best fit into their own public health systems.

4. What have Apple and Google announced as a technology solution and how does it work?

On April 10, 2020, Google and Apple announced an exposure notification solution that uses Bluetooth technology on mobile devices to aid in contact tracing efforts.

The Exposure Notifications system harnesses the power of Bluetooth technology to aid in exposure notification. Once enabled, users' devices will regularly send out a beacon via Bluetooth that includes a random Bluetooth identifier — basically, a string of random numbers that aren't tied to a user's identity and change every 10-20 minutes for additional protection. Other phones will be listening for these beacons and broadcasting theirs as well. When each phone receives another beacon, it will record and securely store that beacon on the device.

At least once per day, the system will download a list of the keys for the beacons that have been verified as belonging to people confirmed as positive for COVID-19. Each device will check the list of beacons it has recorded against the list downloaded from the server. If there is a match between the beacons stored on the device and the positive diagnosis list, the user may be notified and advised on steps to take next.

To power this solution, both companies have released software that enable Exposure Notifications from public health authorities that work across Android and iOS devices, while maintaining user privacy. Some public health authorities may build apps and offer them as a way to enable Exposure Notifications for users, and these apps will be available for users to download via the respective app stores. In some regions, public health authorities may offer Exposure Notifications without creating an app. If this is available in your region, you may receive a notification when it becomes available, and you can decide whether you want to participate. In both cases, the user will need to consent to the terms and conditions before Exposure Notifications become active.

If at some point a user is positively diagnosed with COVID-19, he or she can work with the health authority to report that diagnosis, and with their consent their beacons will then be added to the positive diagnosis list. User identity will not be shared with other users, Apple or Google as part of this process.
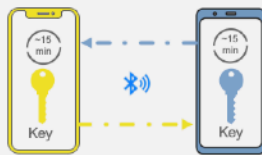
Alice and Bob don't know each other, but have a lengthy conversation sitting a few feet apart
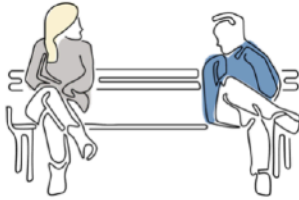
Bob is positively diagnosed for COVID-19 and enters the test result in an app from his public health authority

Their phones exchange beacons with random Bluetooth identifiers (which change frequently)

A few days later...

With Bob's consent, his phone uploads the last 14 days of keys for his Bluetooth beacons to the server

~15 min

~15 min

Key

Key

Apps can only get more information via user consent
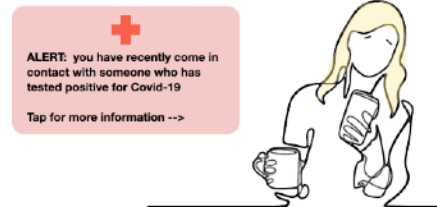
Positive Test

Submit

~14 day temporary store

 Google

Alice continues her day unaware she had been near a potentially contagious person

Alice sees a notification on her phone

ALERT: you have recently come in contact with someone who has tested positive for Covid-19
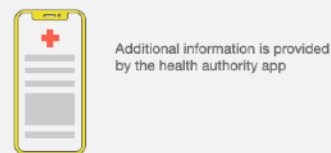
Tap for more information -->

Alice's phone periodically downloads the Bluetooth beacon keys of everyone who has tested positive for COVID-19 in her region. A match is found with Bob's random Bluetooth identifiers.
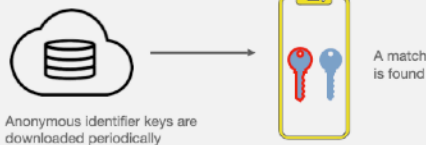
Sometime later...

Alice's phone receives a notification with information about what to do next.

Anonymous identifier keys are downloaded periodically

A match is found

Additional information is provided by the health authority app

 Google

5. How will the system protect user privacy and security?

Google and Apple put user privacy at the forefront of this exposure notification technology's design and have established strict guidelines to ensure that privacy is safeguarded:

- Each user will have to make an explicit choice to turn on the technology. It can also be turned off by the user at any time.

- The Exposure Notifications System does not share location data from the user's device with the Public Health Authority, Apple, or Google

- Random Bluetooth identifiers rotate every 10-20 minutes, to help prevent tracking.

- Exposure notifications are only done on the user's device. In addition people who test positive are not identified by the system to other users, or to Apple or Google.

- The system is only used to assist contact tracing efforts by public health authorities.

- Google and Apple will disable the Exposure Notifications System on a regional basis when it is no longer needed.

a. Can I turn it off?

Yes. The choice to use this technology rests with the user, and they can turn it off at any time in Settings.

6. Will governments have access to the information facilitated by this technology?

The goal of this project is to assist public health authorities in their efforts to fight COVID-19 by enabling exposure notification in a privacy-preserving manner, and the system is designed so that the identities of the people a device comes in contact with are protected.

Access to the technology will be granted only to public health authorities. If they create an app, it must meet specific criteria around privacy, security, and data control. The public health authority will be able to access a list of beacons provided by users confirmed as positive for COVID-19 who have consented to sharing them. The system was also designed so that Apple and Google do not have access to information related to any identifiable individual.

7. Where is the data stored and who has access to it?

If a user decides to participate, exposure notification data will be stored and processed on device. Other than the random Bluetooth identifiers that are broadcast, no data will be shared by the system with the public health authority unless one of the following two scenarios takes place:

- **If a user chooses to report a positive diagnosis of COVID-19**, the user's most recent keys to their Bluetooth beacons will be added to the positive diagnosis list shared by the public health authority so that other users who came in contact with those beacons can be alerted.

- **If a user is notified that they have come into contact with an individual who is positive for COVID-19** the system will share the day the contact occurred, how long it lasted and the Bluetooth signal strength of that contact, as well as the type of report (such as confirmed by test, clinical diagnosis, or self-report). Any other information about the contact will not be shared.

In keeping with our privacy guidelines, Apple and Google will not receive identifying information about the user, device location data, or information about any other devices the user has been in proximity of.

8. Will my data be monetized by Google or Apple?

No, there will be no monetization from this project by Apple or Google. Consistent with well-established privacy principles, both companies are minimizing data used by the system and relying on users' devices to process information.

9. Who will create the apps and where do I find them?

Public health authorities will update or create apps which users may install if they choose to participate. Google and Apple will make available, as normal, the public health authority apps for each region in the Play Store and App Store. In some regions, Exposure Notifications will be available without an app created by the public health authority. If this is available in your region, you'll receive a notification when it becomes available, and you can decide whether you want to participate.

10. How will apps get approval to use this system?

Apps will receive approval based on a specific set of criteria designed to ensure they are only administered in conjunction with public health authorities, meet our privacy requirements, and protect user data.

The criteria are detailed separately in agreements that developers enter into to use the API, and are organized around the principles of functionality and user privacy. There will be restrictions on the data that apps can collect when using the API, including not being able to request access to location services, and restrictions on how data can be used.

11. What public health authority can users contact about Exposure Notifications for their region?

Google and Apple are currently in discussions with various public health authorities globally to provide them with this technology. Both companies will highlight public health authority apps that use this technology where they are available.

12. How do users report themselves as positive for COVID-19?

The mechanism for allowing users to report themselves as positive will be determined by the relevant public health authority and may vary across regions. Some public health authorities may allow users to verify a test result using a pin code, while others may provide different mechanisms for verification.

13. How does the system know when I have been exposed?

The public health authority sets parameters to determine if someone has been exposed. For example, by defining the risk parameters based on estimated time the user has been in contact

with someone who has been diagnosed as positive for COVID-19 and the approximate distance between the users. Public health authorities will set a minimum threshold for time spent together.

To approximate distance, the system compares the Bluetooth signal strength between the two devices in contact. The closer the devices are, the higher the signal strength recorded. This signal strength can vary significantly based on factors like how the device is being held and as such this only provides an estimate of distance.

Conclusion

There are many responses to COVID-19 including protecting the vulnerable, building new protocols for daily life to reduce transmission, and containing inevitable local outbreaks of coronavirus. Testing and contact tracing will be critical to this last strategy, especially, in light of the high transmission rate of COVID-19 and exposure notification can be a key addition to the toolbox of public health authorities. As the response to the pandemic evolves, technological solutions will need to continue to adapt as well so the efforts of public health authorities can be amplified.

The technical details of the system are described in more detail in the technical white papers available here:

https://www.google.com/covid19/exposurenotifications/

https://www.apple.com/covid19/contacttracing/