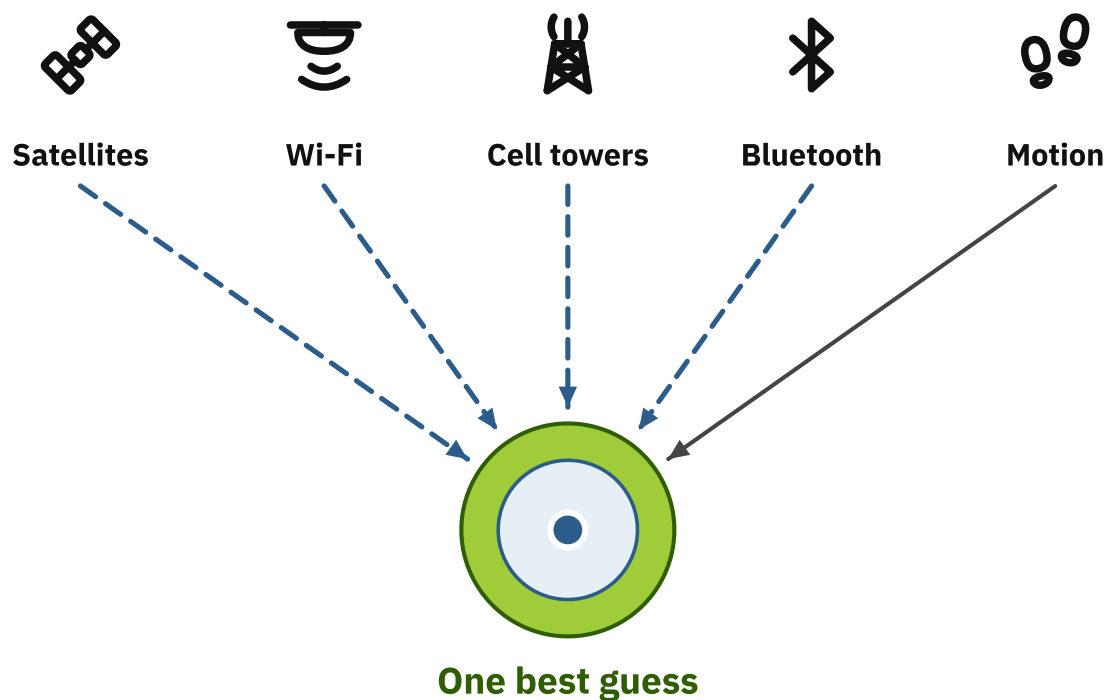


How Your Phone Knows Where It Is, Explained

How your phone finds itself indoors and out, and which switches are yours.



The short answer

Your phone has more than one way to find itself. It listens for several kinds of clues and blends them into one best guess. Outdoors, satellites do much of the work. Indoors, Wi-Fi usually does.

This guide answers three questions. How does your phone know where it is? Why does it matter to you? And which switches can you change?

A word on the words

An **access point** is the box that sends out a Wi-Fi signal. Your home router has one built in. **GPS** is the set of satellites your phone listens to outdoors. It has its own guide: *How GPS Works, Explained*.

What's inside

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Five kinds of clues

Your phone listens for five kinds of clues. No single one works everywhere. That's why it uses them all.

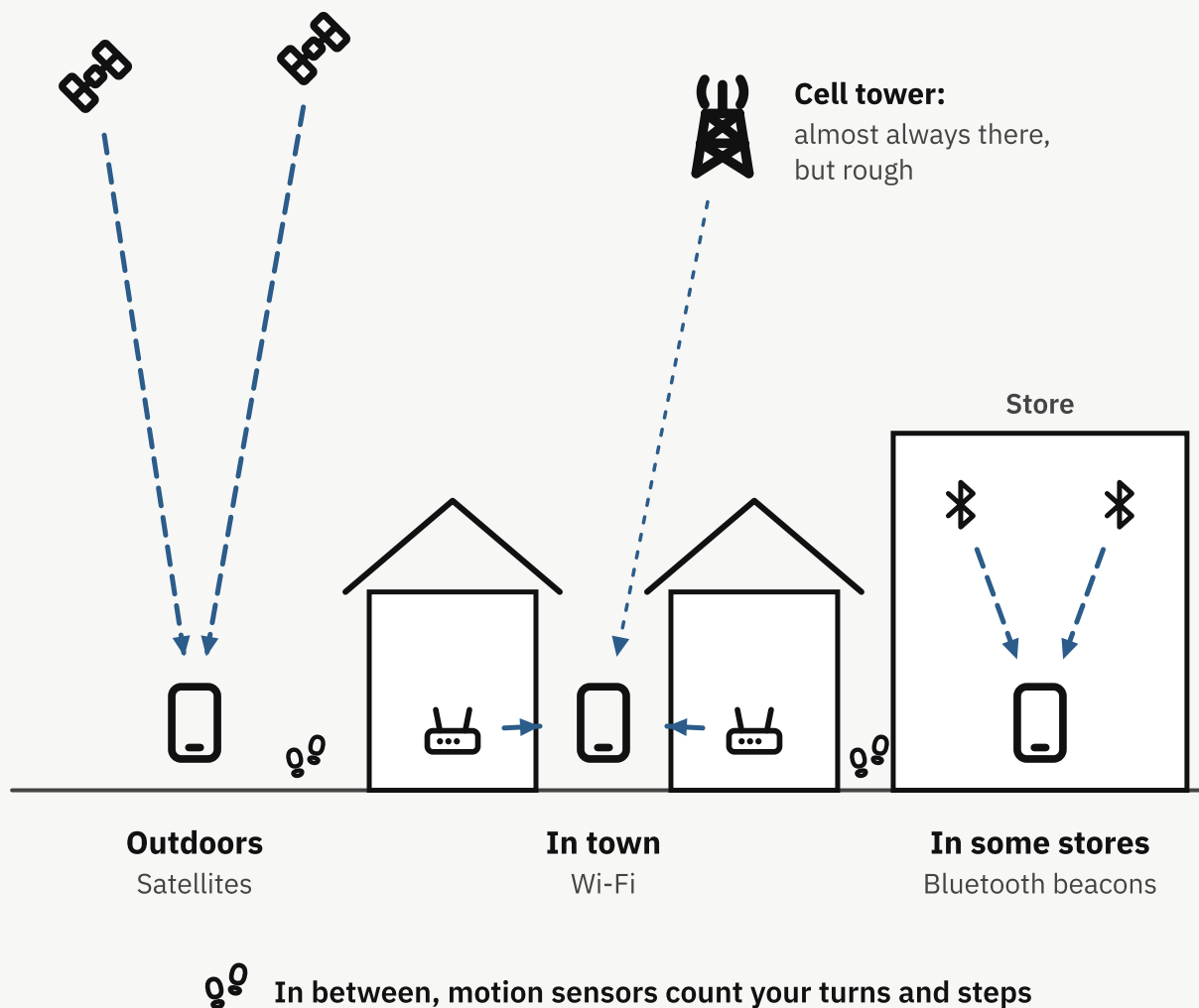


Figure 1. Where each clue works. Satellites outdoors, Wi-Fi in town, beacons in some stores, cell towers almost everywhere, and motion sensors in between. Not to scale.

WHAT IT HEARS

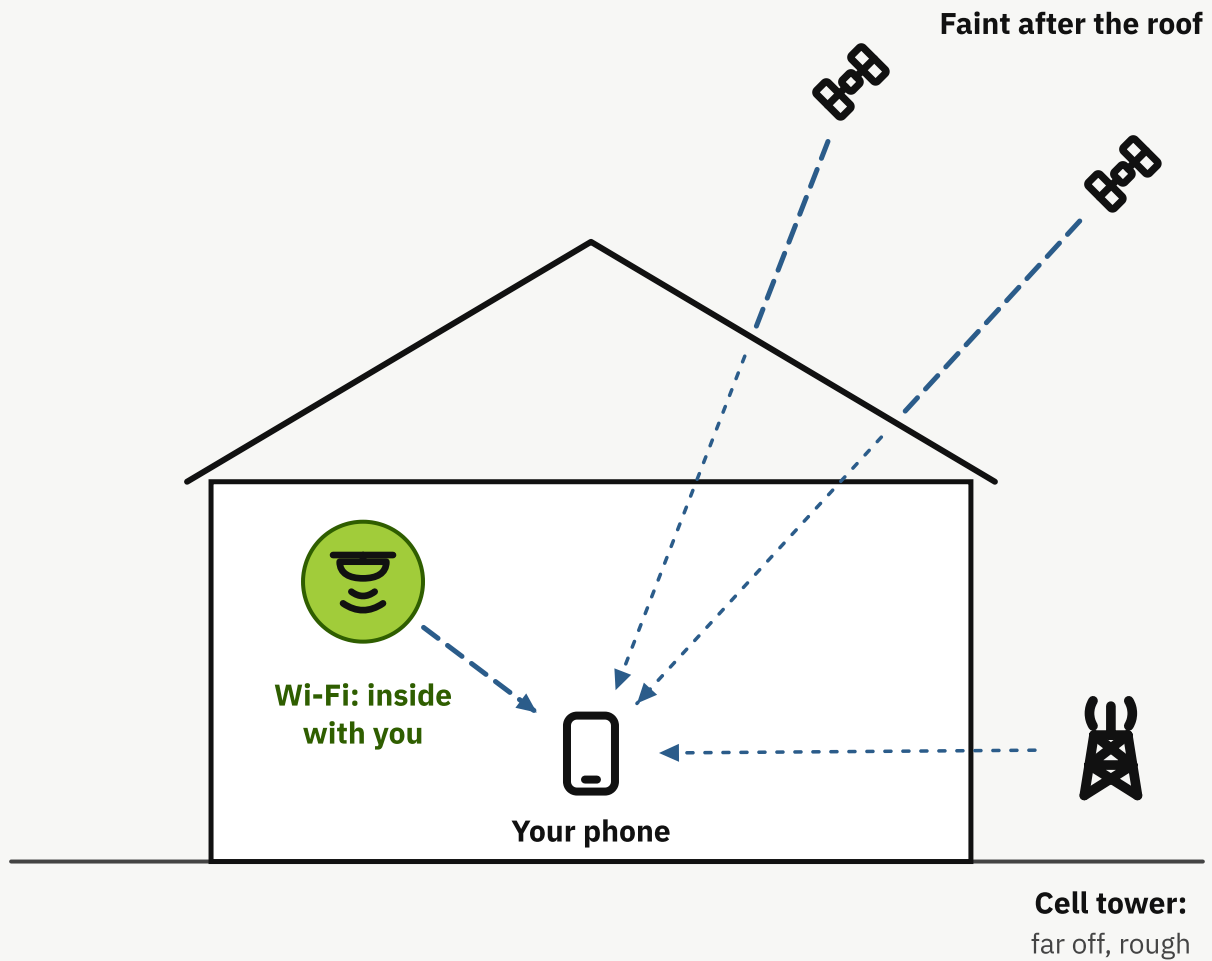


Figure 2. Why indoors is different. Satellite signals are faint by the time they reach a roof. The Wi-Fi is inside with you. Not to scale.

KEITH'S NOTE

"Wi-Fi has no such problem inside a building, for the least glamorous reason available. The transmitters are in the building with you."

Keith Parsons, LinkedIn, 2026-08-10

A map of Wi-Fi

My friend David Coleman explains Wi-Fi location in two steps: building the map, then using the map.

Building the map. Phones that already know where they are notice the Wi-Fi around them. They send those notes to Apple or Google. Over time, the notes add up to a map of where Wi-Fi access points sit.

Using the map. Later, a phone indoors hears some of the same access points. It looks them up on the map and works out its own spot.

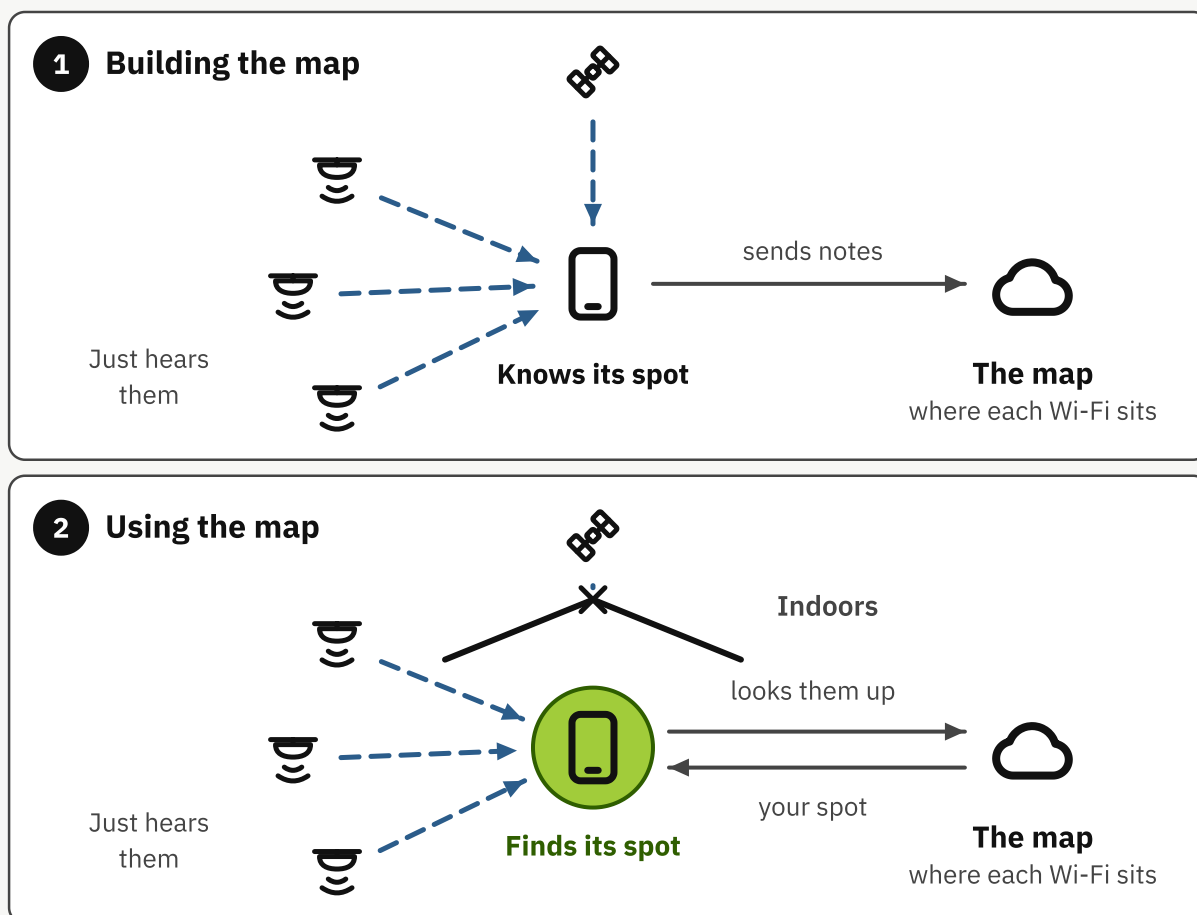


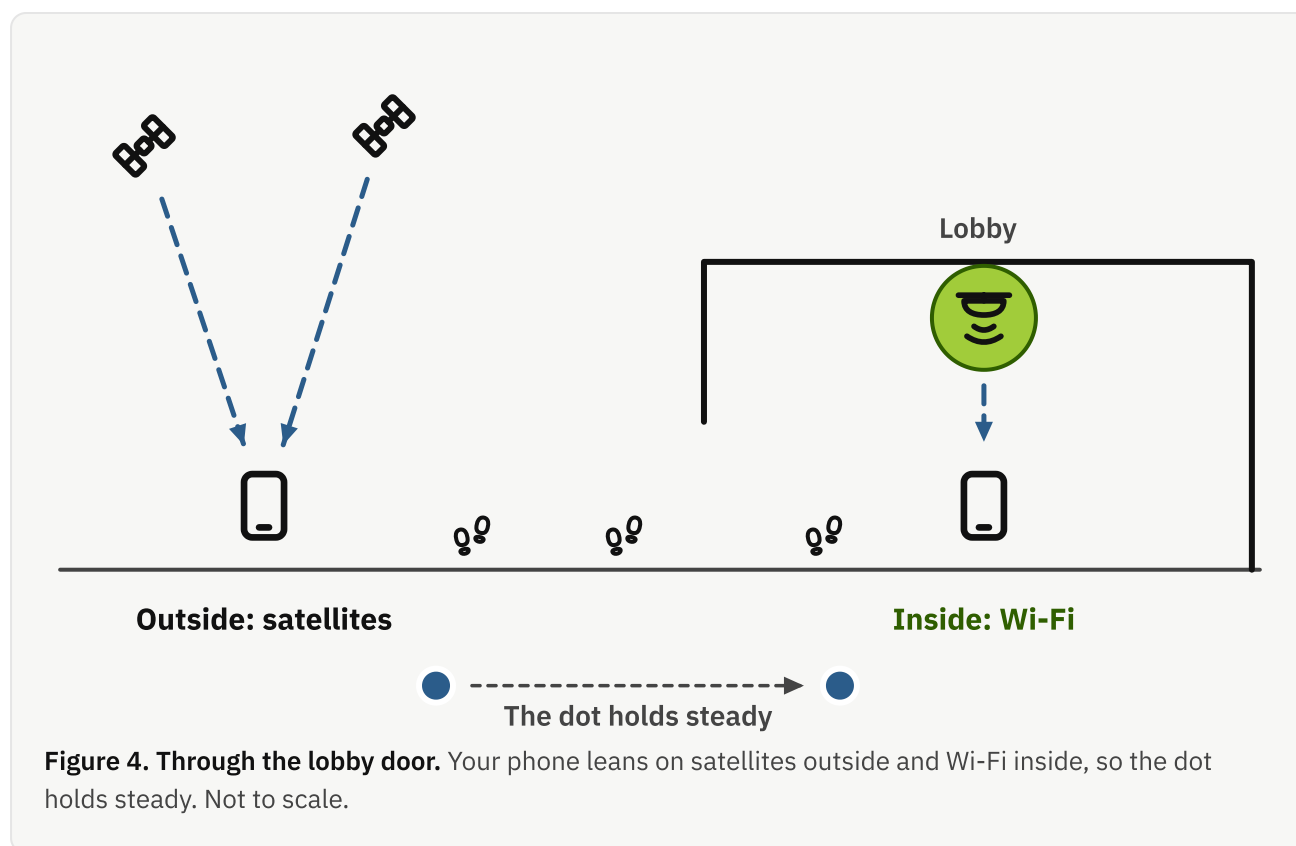
Figure 3. Building the map, using the map. The phone never joins these networks. It only hears them. Two-step idea after David Coleman. Not to scale.

PUTTING IT TOGETHER

Blending it all

Your phone doesn't pick one clue and ignore the rest. It blends them all into one best guess.

David Coleman calls this blending **Fused Location Positioning**. That's a mouthful, so from here on we'll call it **FLP**. FLP leans on whichever clue is working best right now. Walk through a lobby door, and it quietly swaps satellites for Wi-Fi.



KEITH'S NOTE

"The blue dot you watch hold steady as you walk through a lobby door is a Wi-Fi answer far more often than a satellite one, and it holds because the access points around you have already been mapped by somebody."

Keith Parsons, LinkedIn, 2026-08-10

PUTTING IT TOGETHER

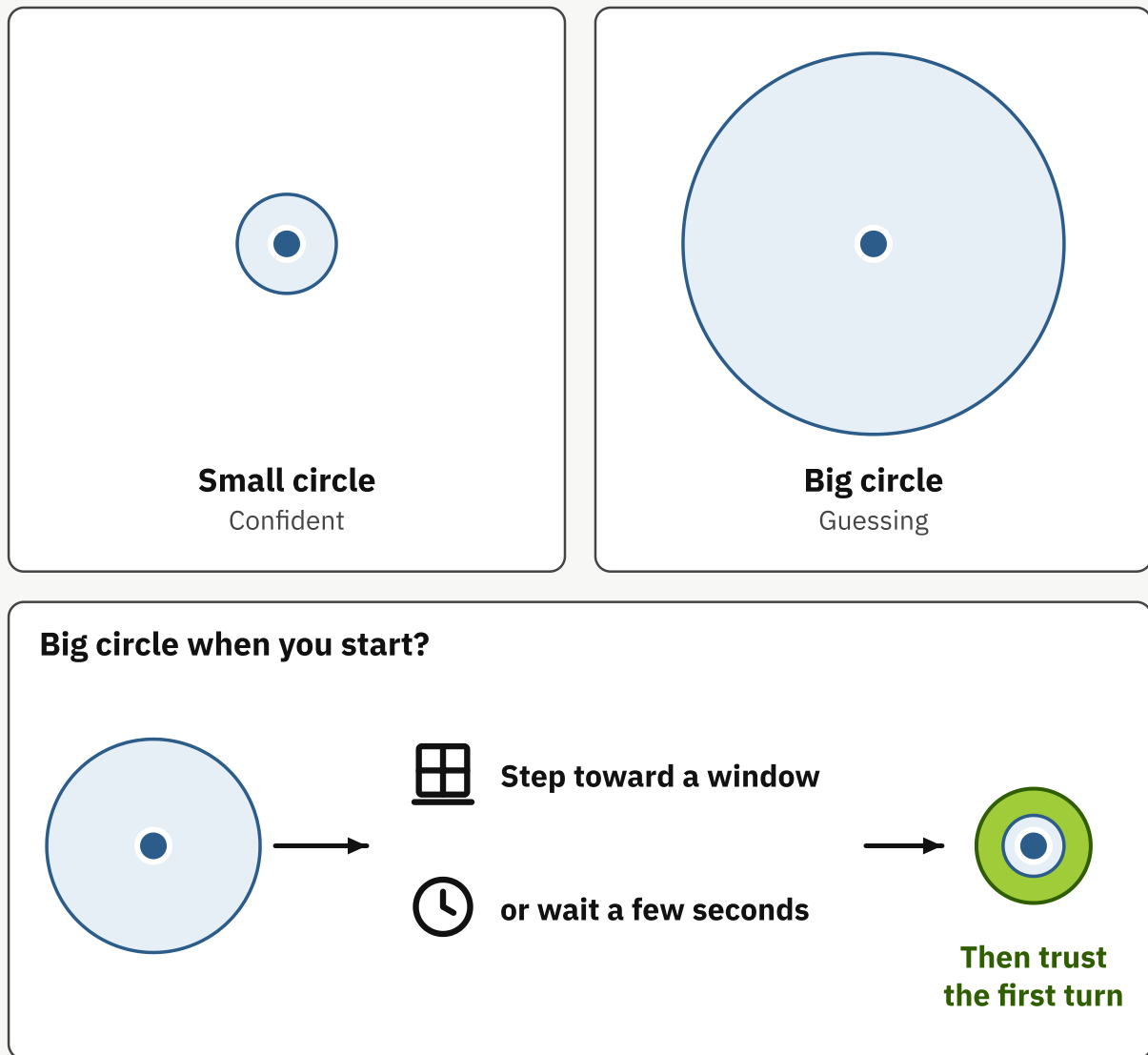


Figure 5. The circle around the dot. The circle shows how sure your phone is. A small circle means it's confident. A big circle means it's guessing. Not to scale.

Your switches

You decide which apps get your location, and how exact it is. These are the main switches. Menus can differ a little from phone to phone.

On iPhone

Choose what each app gets

- 1 Open **Settings**.
- 2 Tap **Privacy & Security** > **Location Services**.
- 3 Tap an app and choose **While Using the App** or **Never**.
- 4 Turn off **Precise Location** if the app only needs a rough idea.

On Android

Choose what each app gets

- 1 Touch and hold the app's icon, then tap **App info**.
- 2 Tap **Permissions** > **Location**.
- 3 Choose **Allow only while using the app** or **Don't allow**.
- 4 Turn off **Use precise location** if the app only needs a rough idea.

WHAT YOU CONTROL

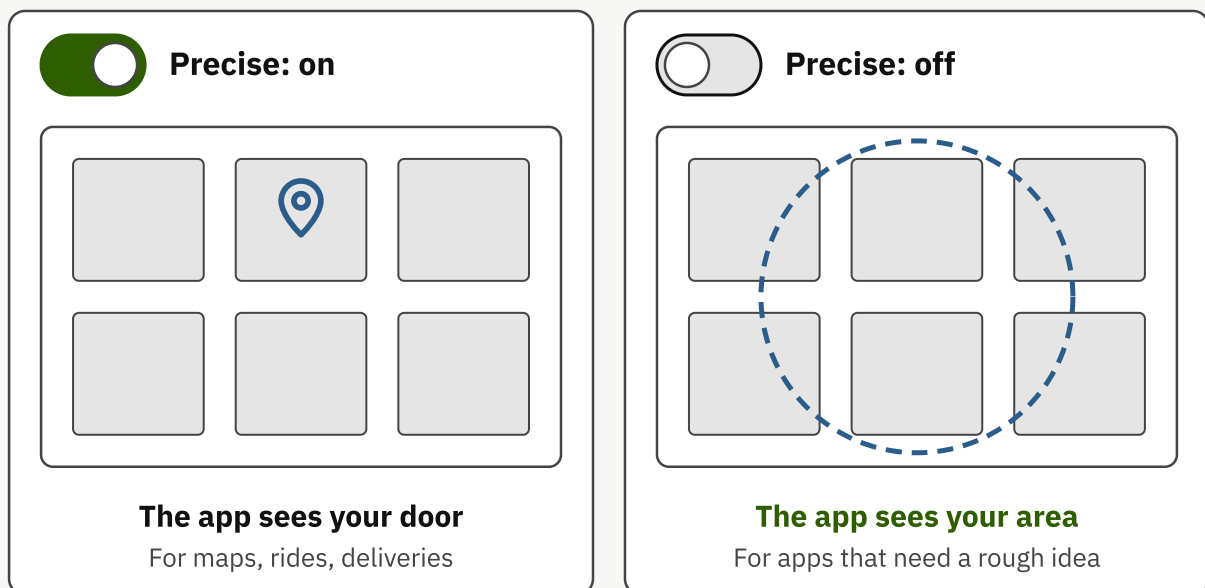


Figure 6. Precise location, on and off. With it off, an app still knows your area, but not your door. Not to scale.

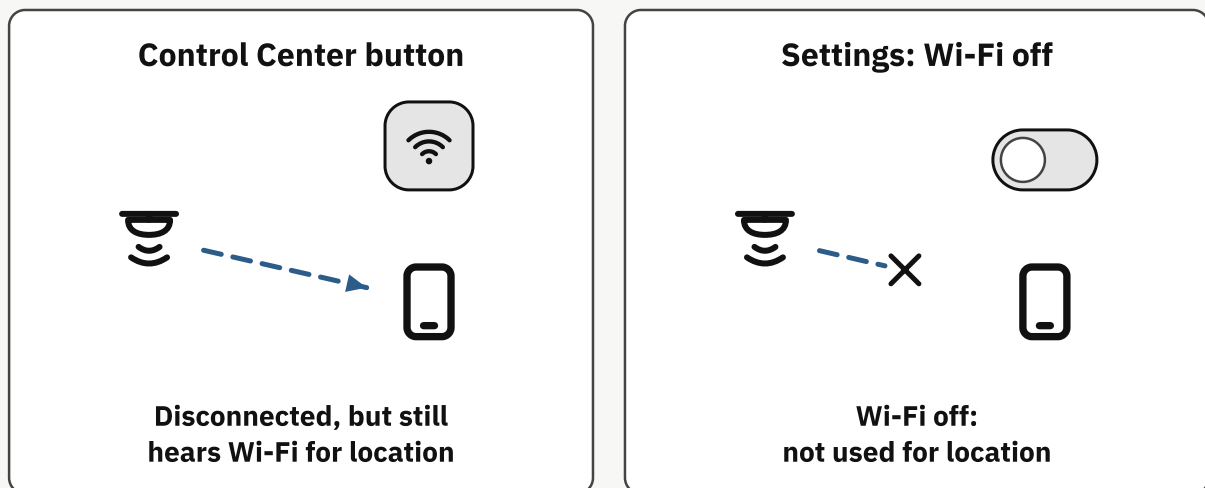


Figure 7. The Wi-Fi button in Control Center doesn't turn Wi-Fi off. To turn Wi-Fi all the way off, go to **Settings** > **Wi-Fi**.

Keep your router off the maps

A phone walking past your house can add your Wi-Fi to Apple's and Google's maps. If you'd rather it didn't, there's a simple fix.

Add `_nomap` to the end of your Wi-Fi name. Both companies say they'll leave it off their maps. It doesn't work for a hidden network.

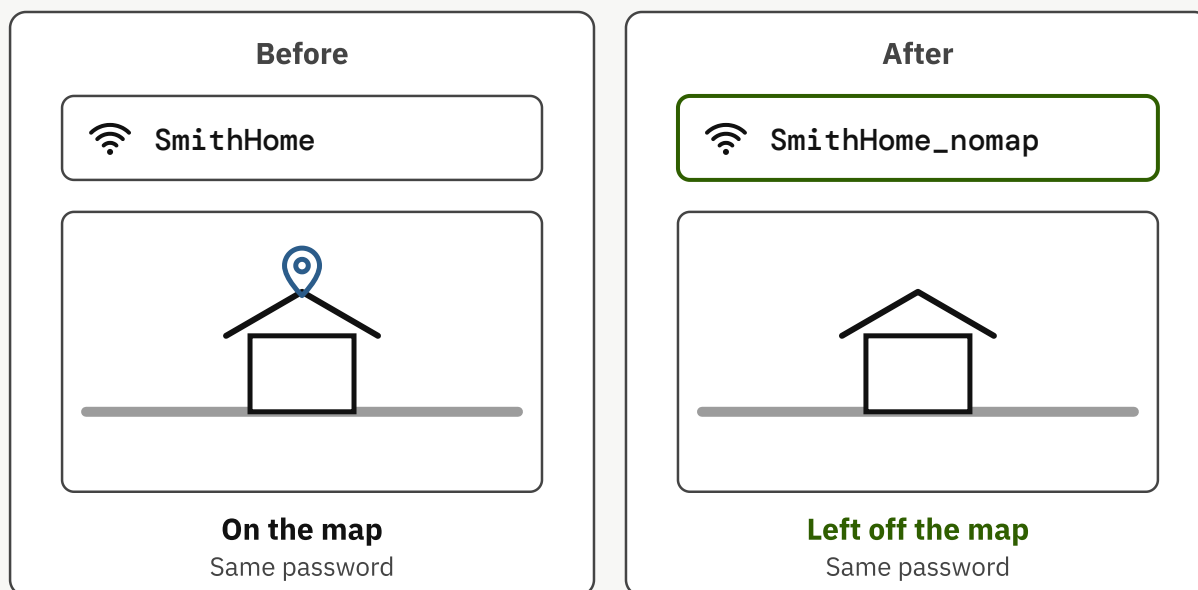


Figure 8. One change to the name. The password stays the same. Only the end of the name changes.

Add `_nomap` to your Wi-Fi name

- 1 Open your router's app or settings page.
- 2 Change the Wi-Fi name so it ends with `_nomap`.
- 3 Rejoin each of your devices to the new name. The password is the same.

CAUTION

Renaming means rejoining everything

Every device in the house forgets the old name. Plan some time to rejoin them all.

Your location on a 911 call

Turning off location doesn't hide you from 911. Your phone sends its location on an emergency call anyway.

On iPhone, Apple says it shares your location on an emergency call even with Location Services off. On Android, the phone turns location on just for the call, then turns it back off.

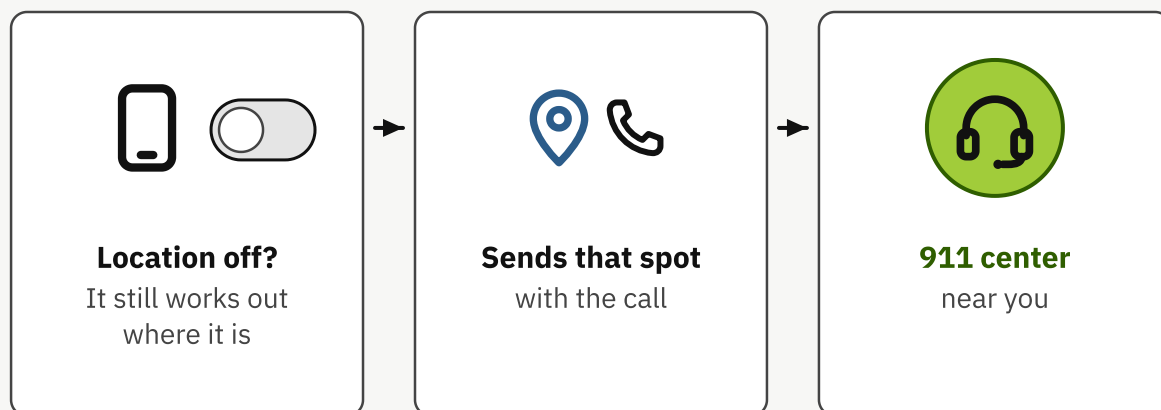


Figure 9. A 911 call, in the US. Your phone works out where it is, sends that spot with the call, and the call goes to the 911 center near you.

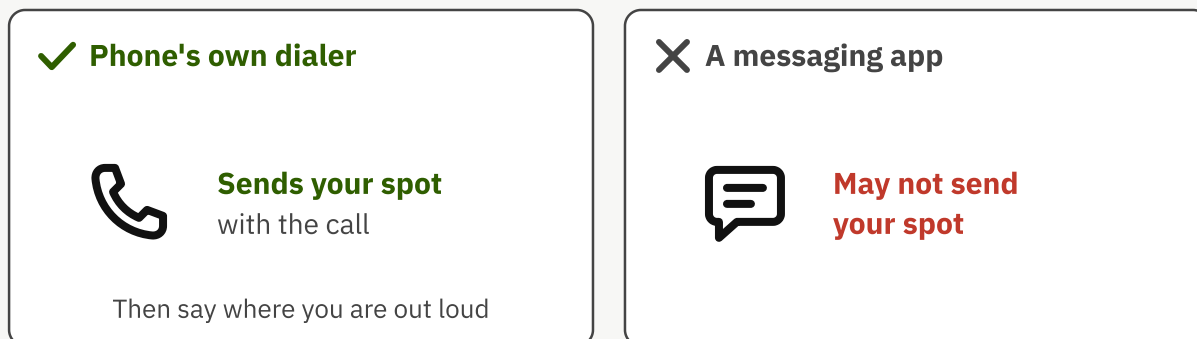


Figure 10. Which way to call. The phone's own dialer sends your spot with the call.

⚠ STOP

Call 911 from the phone's own dialer, and say your address

A call from a messaging app may not send your location. Use the built-in phone app, and say where you are out loud.

STRAIGHT FACTS

Four things people get wrong

MYTH My phone has to join a Wi-Fi network to use it for location.

FACT It only has to hear it. No connection and no password.

MYTH The Wi-Fi button in Control Center turns Wi-Fi off.

FACT It only disconnects you. Location still uses Wi-Fi. Use Settings to turn it off.

MYTH With location off, 911 can't find me.

FACT iPhone and Android both send your location on an emergency call anyway.

MYTH Only my own devices can put my router on the map.

FACT Any phone walking past can, including your neighbor's.



Figure 11. Anyone walking by. A passing phone can add your router to the map. Not to scale.

Habits worth keeping

- Indoors, leave Wi-Fi on if you want a steady blue dot.
- Give precise location only to apps that need it, like maps, rides and deliveries.
- Choose While Using the App instead of Always.
- Call 911 from the built-in phone app, and say your address.

SOURCES

Where these facts come from

Checked on 28 September 2026. Apple and Google update their help pages often, and phone makers move menus, so check the steps on your own phone.

- Apple 102647, Location Services (14 January 2026); Apple 102515, Location Services and privacy, including _nomap (20 May 2026); Apple 102412, Wi-Fi in Control Center (28 September 2026)
- Apple Legal, Location Services and Privacy (emergency calls)
- Google Android Help 3467281 (location settings) and 6179507 (app permissions); Google Maps Help 1725632 (_nomap)
- Android Developers, Location.getAccuracy (the accuracy circle)
- android.com, Emergency Location Service
- David Coleman, LinkedIn post on Wi-Fi positioning (the building-the-map, using-the-map idea and the term Fused Location Positioning)
- Keith Parsons, LinkedIn, 2026-08-10 (the two Keith's notes)

About this guide

Written for people who aren't technical and want to know how their phone finds them, and what they can switch off. Apple, iPhone, Google and Android are trademarks of their owners. This guide is independent and isn't endorsed by them.

About the author

Keith Parsons, CWNE #3, has designed, installed and troubleshoot Wi-Fi for over 25 years. He runs Wireless LAN Professionals and the WLPC conferences.