

# Combain Location API

A cloud-based API for locating connected things.  
Outdoor. Indoor. Globally.

## Cloud Service

Combain Location API helps you locate wireless connected devices. By submitting the serving cell-id of a cellular connected device to this API, it will respond with the geographical location for that device. In this way, it complements or replaces GPS in the devices. The API also supports indoor positioning for improved accuracy.

- Based on a crowd sourced global database
- Accessed over internet with HTTPS
- Secure & Private

The database is continuously updated by our algorithms processing millions of positions from global crowd-sourcing. Your use of the API is private and not shared with any third party.

The geolocation service can also be offered as an on-premises service, called Combain On-Prem Location Server. The location server is hosted in your own infrastructure and updated with data from Combain.

The Combain global database includes many millions of cell-ids and MAC addresses from all around the world.

- 195 countries (thus every country in the world)
- >170 million cell-ids (GSM, WCDMA, LTE, NR)

Combain Location API is being used by customers globally from various industry segments. IoT companies use the API for seamless indoor and outdoor tracking of everything from stationary refrigerators and smart meters to constantly moving medical equipment in hospitals. Thanks to the security and privacy the API provides, it is also used by police and security agencies that track smartphones and vehicles.

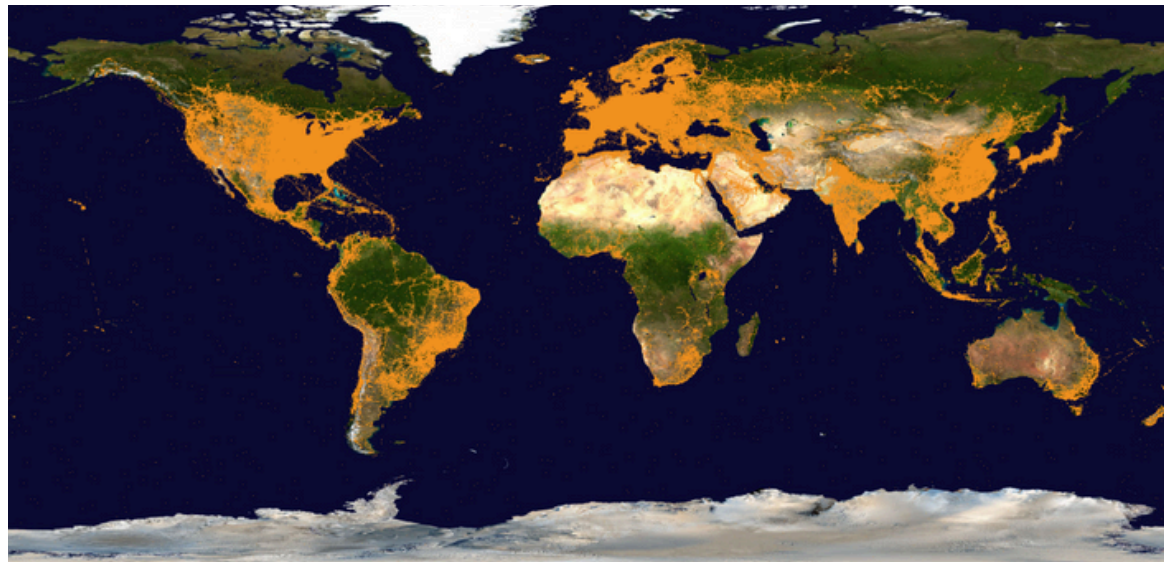
In a typical IoT asset tracking use case, the IoT device scans for radio signals. The list of scan results, cell-ids and/or indoor Wi-Fi and Bluetooth MAC addresses, and their signal strength, are sent to Combain Location API.

Combain algorithms will look up these cell-ids and MAC addresses in the global database, perform positioning magic based on probability and signal strength, and then return a geographical coordinate (latitude, longitude) of the most likely position as a response to the API request. An accuracy figure in meters is also returned based on the uncertainty in the position. The uncertainty and actual error depends on the proximity, density and range of the found radio networks.

The API is a HTTPS RESTful API. The full specification and sandbox for testing can be found here: <https://combain.com/api>

## About us

Combain provides a range of global positioning solutions. One of the core assets is the huge crowdsourced global location database.



Combain provides access to this database through

- Combain Location API
- Combain OnPrem
- Combain OnPrem Offline
- Combain Crowd Indoor

Combain improves indoor positioning accuracy with these add-on services:

- Combain Manual Indoor
- Combain AI Indoor
- Combain 5G Positioning Engine

### Seamless Indoor & Outdoor

Combain products and services help you to locate devices or people carrying a device, either indoor or outdoor. GNSS has no or poor indoor coverage. Combain has crowdsourced indoor positioning data and created accurate indoor positioning in millions of buildings. Combain also has the Combain Indoor tools to enhance indoor accuracy.

### Global Coverage

Combain's products and services help you locate devices globally. Combain has coverage in all 195 countries in the world. One world - one API. Combain works with customers and crowdsourcing partners that help collect data from millions of devices. The data continuously helps to improve the coverage and accuracy of the Combain Location API service.

### Private & Secure

By using Combain's products and services, your positioning usage will not be shared with any third party. Your data will not be used for any type of profiling or advertising. Your positioning results, the location of your devices or personnel are your personal data.

TOTAL NUMBERS	
GSM	> 34 000 000
WCDMA	> 77 000 000
CDMA	> 2 000 000
LTE	> 63 000 000

REGION	NUMBER OF CELLS
EUROPE	59 000 000
USA	16 000 000
NORTH AMERICA	23 000 000
ASIA	56 000 000
PACIFIC	17 000 000
AFRICA	10 000 000
SOUTH AMERICA	11 000 000

STATISTICS PER JUNE 2024. SEE [WWW.COMBAIN.COM](http://WWW.COMBAIN.COM) FOR LATEST STATS.

### World-class accuracy

Since the beginning, Combain has focused strongly on building an accurate location service. Combain began researching and developing proprietary and patented algorithms to process incoming crowd-sourced data and provide accurate locations.

Combain usually provides a better median error than any other geolocation service. The typical median error seen in urban areas with cell ID is about 100 meters. For indoor environments using Wi-Fi and/or Bluetooth, you can get 2-5 meters and the correct floor after some optimizations with Combain AI Indoor or 10-20 meters "out-of-the-box."

### Contact Combain

Visit us at [www.combain.com](http://www.combain.com) and sign-up for a free trial. Please send an email to [sales@combain.com](mailto:sales@combain.com) for commercial inquiries.

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