Locye

WEB SERVICES FOR THIRD PARTY APPLICATION DEVELOPERS

VERSION 1.0
LAST UDPATED ON JUNE 27, 2018

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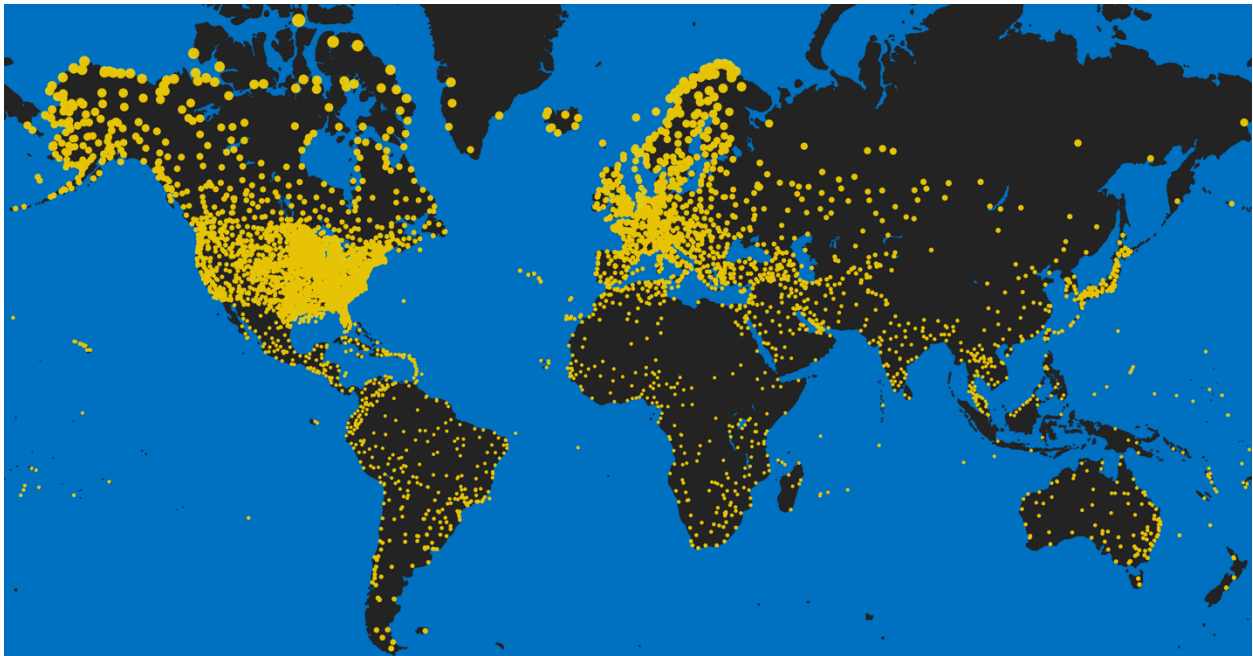
GLOBAL PRECISION ALTIMETER SERVICE

PURPOSE

As location-enabled, connected devices become ubiquitous; advancements in technologies such as AR, AI, Mobile, Wearables, and IoT are being continuously leveraged to create new location-based applications that tackle use cases across a wide range of industries. This has led to an ever-greater need for precise location information.

While technologies such as GPS, low-energy Bluetooth, Wi-Fi, and cellular have led to vast improvements in horizontal accuracy of location information; there's a significant room for improvement in vertical accuracy. Locye's Global Precision Altimeter Service is a step in that direction.

It is a location-based, technology-agnostic, planet-scale web-service that, within its coverage area, can translate air pressure data captured by digital barometers - such as those already prevalent in most modern smartphones - into true altitude above mean sea level. It is available to third party developers and can be integrated using only a few lines of code.

COVERAGE

This service is supported by a network of stations that are located across the globe. The map below visualizes coverage area of these stations:

It is possible that certain stations may not be online at all times or data provided by them may not be usable for other reasons. In those cases, the service will return appropriate error messages as described in the "Results" section below.

UPDATES

Depending on application requirements, clients may refresh their altitude value by calling the service as early as once every 30-seconds or each time the device's physical location changes by as little as 100 meters.

REQUESTS

This service accepts standard GET requests over HTTPS and returns a JSON containing the results. Seven parameters are required to be sent with this request. These are described below:

1. **token**   Value is provided by Locye and must be URL Encoded.
2. **user_name**   Value is provided by Locye and must be URL Encoded.
3. **app_version**   Currently this should be set to 1.
4. **latitude**   Latitude in decimal degrees of the location of interest.
5. **longitude**   Longitude in decimal degrees of the location of interest.
6. **user_baro_mb**   Atmospheric pressure observed by the device in millibars.
7. **altitude_model**   Currently this should be set to 1.

A sample request is shown below:

https://services.locye.com/LocyeAppServer/rest/locye/wx/get altitude/?token=<my_token>&user_name=<my_username>&app_vers ion=1&latitude=33.69&longitude=-117.83&user_baro_mb=1006.56 1508178711&altitude_model=1

The values for token and user_name should be URL Encoded such that the output should match the output generated by encoding them using JavaScript's encodeURI() function. The encoded value can be tested using a tool similar to the one at https://meyerweb.com/eric/tools/dencoder/.

RESPONSES

The service returns a JSON containing metadata for the results as well as the results themselves. The returned fields are described as follows:

1. **success** — Value is a nested JSON object that contains values associated with a successful response.
2. **failure** — Value is a nested JSON object that contains values associated with an unsuccessful response.

3. **user_name** — Same value that was provided for this parameter in the original request.
4. **reason** — Reason why the request was unsuccessful.
5. **remarks** — Remarks associated with a successful response. Possible values include:
   "*ok*" indicates that at least some valid results were returned;
   "*out_of_coverage*" indicates that the latitude and longitude provided in the original request are out of the service's area of coverage;
   "*all_area_stations_expired*" indicates that while the latitude and longitude are within the service's area of coverage, no recent reports are available for stations in that area;
   "*out_of_range*" indicates that while the latitude and longitude are within the service's area of coverage and that valid reports might be available for some stations in the area, the provided latitude and longitude fall beyond the maximum permitted distance for stations with valid reports.

6. **area_station_count** — Total number of stations in the area.
7. **expired_reports_count** — Total number of stations in the area without any recent weather reports.
8. **valid_and_in_range_station_count** — Total number of stations in the area with recent reports which are also close to the provided latitude and longitude.

9. **fused_altitude_meters** — Fused true altitude above mean sea level in meters that has been computed using Locye's proprietary algorithms.
10. **fused_altitude_model** — Locye model # that was used to compute the fused true altitude above mean sea level.

Sample response JSONs are as follows:

```
{
  "success" : {
    "valid_and_in_range_altitude_report_count" : "12",
    "user_name" : "test123",
    "fused_altitude_meters" : "22.321703065729842",
    "expired_reports_count" : "3",
    "area_station_count" : "19",
    "remarks" : "ok",
    "fused_altitude_model" : "1"
  }
}


{
  "success" : {
    "valid_and_in_range_altitude_report_count" : "0",
    "user_name" : "test123",
    "expired_reports_count" : "0",
    "area_station_count" : "0",
    "remarks" : "out_of_coverage",
    "fused_altitude_model" : "1"
  }
}


{
  "failure" : {
    "user_name" : "web",
    "reason" : "bad_token"
  }
}
```

PRICING

Since Locye's web services for third party developers are currently in public beta, their pricing is yet to be announced. However, there will be a free tier as well as discounted pricing on reserved capacity purchases.

PUBLIC BETA DEVELOPER SIGN UP

Download the Locye App on iOS or Android, complete the sign up and activation process. Once logged in, go to the "Settings" screen and select the "About" tab. You can request your developer credentials by contacting us via the "Send Feedback" button at the screen's bottom.

THIRD PARTY DEVELOPER AND END-USER AGREEMENT

1. **Hold Harmless.** Exachain, Inc. holds no liability for the products and services described in this document. The developer and their end users shall fully defend, indemnify, and hold harmless from any and all claims, lawsuits, demands, causes and related costs or expenses, and any reimbursements to Exachain, Inc. for all legal fees, expenses, and costs incurred by it.

2. **Additional Terms of Use**. In addition to the terms of this agreement, the use of the products and services described in this document by the developer and their end users is subject to Locye's "Terms of Use" that are available at www.locye.com/terms/.

3. **Amendment. Modification**. No supplement, modification, or amendment of this Agreement shall be binding unless executed in writing and signed by both Parties.

4. **Waiver.** No waiver of any default shall constitute a waiver of any other default or breach, whether of the same or other covenant or condition. No waiver, benefit, privilege, or service voluntarily given or performed by a Party shall give the other Party any contractual right by custom, estoppel, or otherwise.

5. **Attorneys' Fees and Costs.** If any legal action or other proceeding is brought in connection with this Agreement, the successful or prevailing Party, if any, shall be entitled to recover reasonable attorneys' fees and other related costs, in addition to any other relief to which that Party is entitled. In the event that it is the subject of dispute, the court or trier of fact who presides over such legal action or proceeding is empowered to determine which Party, if any, is the prevailing party in accordance with this provision.

6. **Entire Agreement.** This Agreement contains the entire agreement between the Parties related to the matters specified herein and supersedes any prior oral or written statements or agreements between the Parties related to such matters.

7. **Enforceability, Severability, and Reformation.** If any provision of this Agreement shall be held to be invalid or unenforceable for any reason, the remaining provisions shall continue to be valid and enforceable. If a court finds that any provision of this Agreement is invalid or unenforceable, but that by limiting such provision it would become valid and enforceable, then such provision shall be deemed to be written, construed, and enforced as so limited. The intent of the Parties is to provide as broad an indemnification as possible under Indiana law. In the event that any aspect of this Agreement is deemed unenforceable, the court is empowered to modify this Agreement to give the broadest possible interpretation permitted under Indiana law.

8. **Applicable Law.** This Agreement shall be governed exclusively by the laws of Indiana, without regard to conflict of law provisions.

9. **Exclusive Venue and Jurisdiction.** Any lawsuit or legal proceeding arising out of or relating to this Agreement in any way whatsoever shall be exclusively brought and litigated in the federal and state courts of Indiana. Each Party expressly consents and submits to this exclusive jurisdiction and exclusive venue. Each Party expressly waives the right to challenge this jurisdiction and/or venue as improper or inconvenient. Each Party consents to the dismissal of any lawsuit that they bring in any other jurisdiction or venue.

10. **Intellectual Property.** Exachain Inc. is offering the developer, a limited license to use the products and services described in this document – subject only to the scope of the usage described in this document. Intellectual property belongs in entirely to Exachain Inc. The agreement does not include any right to modify, own, and/or resell the

technology or have any other rights to this intellectual property beyond the scope of the usage described in this document.

11. **Identification of Relationship.** By using any products or services described in this document, you hereby grant the authority to use your name and logo in connection with Locye marketing activities, including, without limitation, identification of you as a user and/or project participant on its website and other digital and printed marketing materials and publications.