



# Address Risk API 4.1

## Source Development Guide

### Document History

| Date             | Changes                                                                                                                                                                                                                                                     |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 8 September 2024 | <b>Update:</b> Included disclaimer for usage of Identity Risk Model                                                                                                                                                                                         |
| 30 December 2024 | <b>Update:</b> Branding update to remove Ekata and reflect Mastercard. Broke up "zip+4" into "postal_code" and "zip4" response signals with definitions. Updated Response Sample with US address to reflect what customers would see when querying US data. |

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## Source Development Guide Overview

To establish best practices of API requests, this document should be used with the associated Integration Guide. The Integration Guide provides additional accepted formats for the following:

- Street line 1
- Street line 2
- City
- Postal code
- State code
- Country code

The Address Risk API validates global addresses and provides fraud risk signals in fractions of a second.



## Address Risk API 4.1

### Query Parameters

All parameters are string unless noted.

| Query Parameters                         | Description                                                                                                                                                                                               |
|------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>transaction_id</b><br><i>required</i> | <b>Desc:</b> The identifier associated with the event                                                                                                                                                     |
| <b>street_line_1</b>                     | <b>Example:</b> street_line_1=100 Syrws St<br><b>Desc:</b> The first line of the street part in the primary structured address.<br><b>Limit:</b> Cannot exceed 1000 characters.                           |
| <b>street_line_2</b>                     | <b>Example:</b> street_line_2=Ste 1<br><b>Desc:</b> The second line of the street part in the structured.<br><b>Limit:</b> Cannot exceed 1000 characters.                                                 |
| <b>city</b>                              | <b>Example:</b> city=London<br><b>Desc:</b> The name of the city in the structured address.<br><b>Limit:</b> Cannot exceed 500 characters.                                                                |
| <b>postal_code</b>                       | <b>Example:</b> postal_code=N7 8XG<br><b>Desc:</b> The postal code of the structured address.<br><b>Limit:</b> Cannot exceed 100 characters.                                                              |
| <b>state_code</b>                        | <b>Example:</b> state_code=JS<br><b>Desc:</b> The state code of the structured address.<br><b>Limit:</b> Cannot exceed 100 characters.                                                                    |
| <b>country_code</b>                      | <b>Example:</b> country_code=GB<br><b>Desc:</b> The <a href="#">ISO-3166</a> alpha-2 country code associated with the phone number.<br><b>Note:</b> See the Integration Guide for additional information. |



## Responses

[200]

Response Schema: application/json

| Signals        | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| id             | <p><i>string or null</i></p> <p>The unique ID of the address.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| validity_level | <p><i>string or null</i></p> <p>Enum: "valid_to_house_number" "missing_address" "invalid" "valid" "valid_to_street" "valid_to_country" "valid_to_city" "valid_to_house_number_missing_apt"</p> <p>The most granular level to which the address could be validated. Ex. If the address was only valid to the city level (but not to the house level), it would return "valid_to_city".</p> <ul style="list-style-type: none"><li>• <b>missing_address</b> – An input address was not provided.</li><li>• <b>invalid</b> – The input address is not valid.</li><li>• <b>valid</b> – The input address is valid.</li><li>• <b>valid_to_country</b> – The input address could only be validated to the country level. This means the country of the input address is valid, but the other elements of the input address were unable to be confirmed as valid or invalid.</li><li>• <b>valid_to_city</b> – The input address was validated to the city level. This means the country, state, city, and postal code of the input address are valid, but the street, house number, and subpremise of the input address were unable to be confirmed as valid or invalid.</li><li>• <b>valid_to_street</b> – The input address was validated to the street level. This means the country, state, city, postal code, and street of the input address are valid, but the house number and subpremise of the input address were unable to be confirmed as valid or invalid.</li><li>• <b>valid_to_house_number</b> – The input address was validated to the street and house number level. This means the country, state, city, postal code, street, and house number of the input address are valid, but the subpremise of the input address was unable to be confirmed as valid or invalid.</li><li>• <b>valid_to_house_number_missing_apt</b> – The input address was validated to the street and house number level. This means the country, state, city, postal code, street, and house number of the input address are valid, but the subpremise of the input address was missing and thus unable to be confirmed as valid or invalid.</li></ul> |



| Signals               | Description                                                                                                                                                                                   |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>street_line_1</b>  | <i>string or null</i><br>The first line of the street part in the structured address.                                                                                                         |
| <b>street_line_2</b>  | <i>string or null</i><br>The second line of the street part in the structured address.                                                                                                        |
| <b>city</b>           | <i>string or null</i><br>The name of the city in the structured address.                                                                                                                      |
| <b>postal_code</b>    | <i>string or null</i><br>The postal code of the structured address.                                                                                                                           |
| <b>zip4</b>           | <i>string or null</i><br>Additional four digits (aka "plus-four codes") used to specify a more specific mailing location. (United States only)                                                |
| <b>state_code</b>     | <i>string or null</i><br>The state code of the structured address.                                                                                                                            |
| <b>country_code</b>   | <i>string or null</i><br>The unique ID of the address.                                                                                                                                        |
| <b>lat_long</b>       | Object (LatLng)<br>The coordinates of the geographical location of the address.                                                                                                               |
| <b>latitude</b>       | <i>number or null</i><br>The latitude coordinate of the location.                                                                                                                             |
| <b>longitude</b>      | <i>number or null</i><br>The longitude coordinate of the location.                                                                                                                            |
| <b>accuracy</b>       | <i>string or null</i><br>Enum: "Neighborhood" "Country" "PostalCode" "Street" "City" "State" "RoofTop"<br>The accuracy of the geographical location.                                          |
| <b>last_seen_days</b> | <i>integer &lt;int64&gt; or null</i><br>Count of days since the address was last observed in Ekata's Identity Network. If the address has not been observed before, last_seen_days will be 0. |



| Signals                   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>first_seen_days</b>    | <i>integer &lt;int64&gt; or null</i><br>Count of days since the address was first observed in Ekata's Identity Network. If the address has not been observed before, first_seen_days will be 0.                                                                                                                                                                                                                                                       |
| <b>popularity</b>         | <i>integer &lt;int64&gt; or null</i><br>Greatest number of observed merchants an address has transacted with over the past 90 days; calculated from Ekata's Identity Network. If the address has not been observed in the network in the past 90 days, popularity will be 0.                                                                                                                                                                          |
| <b>velocity</b>           | <i>integer &lt;int64&gt; or null</i><br>Count of times an address has been observed in Ekata's Identity Network over the past 90 days. If the address has not been observed in the network in the past 90 days, velocity will be 0.                                                                                                                                                                                                                   |
| <b>volatility</b>         | <i>integer &lt;int64&gt; or null</i><br>The greatest number of observed pairings with an address in Ekata's Identity Network over the past 90 days. If the address has not been observed in the network in the past 90 days, volatility will be 0.                                                                                                                                                                                                    |
| <b>input completeness</b> | <i>string or null</i><br>Enum: "Empty" "Partial" "Missing" "Complete"<br>Returns an indicator of input completeness for the address entity.                                                                                                                                                                                                                                                                                                           |
| <b>address_risk_score</b> | <i>Number or null [ 0 .. 1 ] &lt;double&gt; ^0\.[0-9]{1,3}/1\.</i><br>Score between 0 and 1 rounded to three decimal places. Returns a holistic risk assessment of an address where a higher score indicates a riskier transaction. Is null when the address could not be validated to at least street level or does not return network features.<br><b>Note:</b> address_risk_score is returned in Address Risk 4.1 and not returned in version 4.0. |
| <b>error</b>              | PartialError (object) or InternationalPhoneDisabledErrorSearchV30 (object) nullable                                                                                                                                                                                                                                                                                                                                                                   |



| Signals         | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Warnings</b> | <p><i>array of strings</i></p> <p>Items Enum</p> <p>Address: "Both parsed and postal address parameters provided, postal address parameters ignored."</p> <p>Address: "Country Validated"</p> <p>Address: "Historical resident matched"</p> <p>Address: "Input postal code was corrected"</p> <p>Address: "Input postal code was corrected. Potential impact to AVS code."</p> <p>Address: "Input state corrected"</p> <p>Address: "Invalid house/building number"</p> <p>Address: "Missing country_code"</p> <p>Address: "Missing Input"</p> <p>Address: "Partial Address"</p> <p>Address: "Resident not found at address"</p> <p>Address: "State, Country Validated"</p> <p>Address: "Street, Postcode, City, Country Validated. Premise not validated"</p> |





## Request

Get

/4.1/location\_intel

## Request Samples: cURL

```
curl --get -H "Authorization: Bearer <API_KEY>"
'https://api.ekata.com/4.1/location_intel' \
--data-urlencode 'street_line_1= 1301 5th Ave Ste 1600' \
--data-urlencode 'street_line_2=' \
--data-urlencode 'city= Seattle' \
--data-urlencode 'state_code= WA' \
--data-urlencode 'postal_code= 98101' \
--data-urlencode 'country_code= US'
```

## Response Samples

```
{
  "id": "Location.ab4a96f3-fe4e-3532-868b-8f8509e5700c",
  "validity_level": "valid",
  "street_line_1": "1301 5th Ave Ste 1600",
  "street_line_2": null,
  "city": "Seattle",
  "postal_code": "98101",
  "zip4": "2625",
  "state_code": "Seattle",
  "country_code": "US",
  "lat_long": {
    "latitude": 47.60869,
    "longitude": -122.33375,
    "accuracy": "RoofTop"
  },
  "last_seen_days": 8,
  "first_seen_days": 23,
  "popularity": 34,
  "velocity": 234,
  "volatility": 24,
  "input_completeness": "Complete",
  "address_risk_score": 0.388,
  "error": null,
  "warnings": "Input postal code was corrected"
}
```



## Error Handling

Ekata uses conventional HTTP response codes to indicate success or failure of a request. Codes in the 2xx range indicate a successful response. Codes in the 4xx range indicate an error that resulted from the API request. Codes in the 5xx range indicate an error within Ekata's system. Contact [support@ekata.com](mailto:support@ekata.com) for help on errors that can't be resolved.

| HTTP Code                 | Error Name         | Error Message(s)                                                                              | Likely Cause                                                            |
|---------------------------|--------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| 400 Bad Request           | MissingInput       | account_signup_id_required<br>account_signup_time_required<br>phone_or_email_address_required | API request is missing one or both required inputs.                     |
| 401 Unauthorized          | AuthError          | invalid-auth-token                                                                            | API key is not provided in the API request.                             |
| 402 Payment Required      | QuotaExceededError | quota-exceeded                                                                                | API key has exceeded its lifetime quota of requests.                    |
| 403 Forbidden             | AuthError          | action-unauthorized                                                                           | Configuration issue on Ekata's end or invalid input sent.               |
| 403 Forbidden             | AuthError          | invalid-auth-token                                                                            | API key provided is invalid.                                            |
| 403 Forbidden             | AuthError          | ip-blocked                                                                                    | API request is from an IP address that isn't on the permitted IPs list. |
| 403 Forbidden             | AuthError          | token-archived                                                                                | API key has been archived.                                              |
| 403 Forbidden             | AuthError          | token-disabled                                                                                | API key is not valid yet.                                               |
| 403 Forbidden             | AuthError          | token-expired                                                                                 | API key has expired.                                                    |
| 404 Not Found             | InvalidResourceURI | Invalid resource URI                                                                          | API request has been made to an invalid URI/endpoint                    |
| 429 Too Many Requests     | -                  | -                                                                                             | API key has exceeded its rate limit.                                    |
| 500 Internal Server Error | InternalError      | internal-error                                                                                | Internal error on Ekata's end.                                          |



## How To Respond to Error Codes

- 4xx error code is returned, review and correct the input.
- 429 error code is returned, the call will *not* automatically retry the query. Retry requests once the rate of 429 responses has returned to normal.

For Account Opening API, it is recommended to configure timeouts at 1000ms.



## Disclaimers

This model is designed to be an informational tool only. This model is provided as a rough estimate of authentication-based risk decisioning performance. The analysis performed by this model is a series of general estimates which are based upon the underlying information and assumptions now available. That information may change over time, and the analysis would need to be updated to reflect those changes for the analysis to be useful. The assumptions regarding authorization rates are hypothetical and there can be no guarantee that they will be achieved. Actual results may vary substantially from the figures shown. Mastercard accepts no responsibility for any losses arising from any use of or reliance upon any calculations or conclusions reached using this Model.

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