precisely

Spectrum Technology Platform

Spectrum Global Geocoding REST Web Services Guide

Version 2020.1.0

Table of Contents

1 - Using the Global Geocoding REST API

In this section

Introduction to the Global Geocoding APIs

The Global Geocoding REST API allows you to develop and deploy geocoding desktop, mobile or Web applications that are capable of delivering location information for over 250 countries and territories.

This guide contains information on using the Global Geocoding REST API which provides the following web services:

- **Geocode Service**: performs forward geocoding using input addresses and returning location data and other information.
- **Reverse Geocode Service**: performs reverse geocoding using input coordinates and returns address information that is the best match for that point.
- **Interactive Geocode Service**: suggests addresses and place names as you type.
- **Key Lookup Service**: returns geocoded candidates when given a unique key. It is a more efficient method than matching with an address, as the key is unique to that address. Spectrum Global Geocoding supports the PreciselyID unique identifier for US data and the G-NAF key for AUS data.

Each service has options that allow you to control matching and geocoding criteria, dataset resource configuration and more.

Getting Started

Review one of these topics for next steps:

- **Getting Started with the REST API**
- **Getting Started with the Java API**

2 - REST Web Services

In this section

Introduction to Spectrum Global Geocoding Services

The Spectrum Global Geocoding REST API provides the following services:

- `Geocode`—Takes a single input address or multiple input addresses and returns standardized US or international address and geocoding information.
- `Interactive`—Takes a partial address and other address elements to restrict the search area and return match candidates. Interactive data is used to match against the input.
- `KeyLookup`—Takes a key and key type to geocode an address and return additional information. The key is a unique identifier to that address.
- `ReverseGeocode`—Takes a single input latitude and longitude coordinates or multiple input coordinates and returns address information for the location(s).
- `Capabilities`—Returns the capabilities of the geocode service, such as the supported operations, the available country geocoding engines and the country-specific custom fields.
- `Dictionaries`—Returns information about the installed address dictionaries.

Related Topics

Getting Started with the REST API

Making Requests using HTTP

WADL URL

The `WADL` for the Global Geocoding REST API web services is:

```
http://<server>:<port>/rest/GlobalGeocode/?_wadl
```

Supported Payload Formats

The supported message payload formats for the requests and responses are `JSON` and `XML`. The message exchange format is negotiated between the client and the service via information specified in the `HTTP` headers.

HTTP Headers

To negotiate the content type being sent between the client and service, the request includes an `Accept` header to indicate the acceptable media type. Optionally, it can also indicate the `MIME Content-Type` being sent in the request.

The response from the server will return a status code and the `Content-Type` of the response.

The following are example `HTTP` content negotiation headers for `JSON` and `XML`:

JSON

```
Accept: application/json; charset=utf-8
Content-Type: application/json; charset=utf-8
```

XML

```
Accept: application/xml; charset=utf-8
Content-Type: application/xml; charset=utf-8
```

The following table defines the type of response to expect based on the header information specified in the request.

Request	Header Information	Response Content Type
service_name.json	No special header information.	json
service_name.json	Content-Type: application/xml; charset=utf-8 Accept: application/xml; charset=utf-8	xml
service_name.json	Content-Type: application/json; charset=utf-8 Accept: application/json; charset=utf-8	json

Request	Header Information	Response Content Type
service_name	Content-Type: application/json; charset=utf-8 Accept: application/json; charset=utf-8	json
service_name	Content-Type: application/xml; charset=utf-8 Accept: application/xml; charset=utf-8	xml
service_name	No special header information.	json
service_name.xml	Content-Type: application/json; charset=utf-8 Accept: application/json; charset=utf-8	json
service_name.xml	Content-Type: application/xml; charset=utf-8 Accept: application/xml; charset=utf-8	xml
service_name.xml	No special header information.	xml

Supported HTTP Methods

A complete REST request is formed by combining an HTTP method with the full URI to the service you are addressing.

To create a complete request, combine the operation with the appropriate **HTTP headers** and any required **payload**.

Each Global Geocoding service (**Geocode**, **Reverse Geocode**, **Interactive Geocode**, **Key Lookup**, **Capabilities**, **Dictionaries**) supports `GET` and `POST` requests. A `GET` request uses a subset of the preferences while a `POST` request can specify the complete set.

HTTP Status Codes

Each response to a request contains an HTTP status code. The HTTP status code reports on the outcome of the HTTP request to a service. The following table provides the most common status codes that are returned by the services.

Status Code	Short Description	Description
200	OK	The request is successful. Typically returned by a `GET` or a `POST` returning information.
400	Bad Request	The request contained an error. This status is returned by various methods when the data provided by the client - either as part of the URI, query parameters or the body - does not meet the server requirements.
404	Not Found	The requested resource was not found.
405	Method Not Allowed	The method requested is not allowed for the resource in the URI.
406	Not Acceptable	The requested media type specified in the Accept header is not supported. The supported media types include `application/JSON` and `application/xml`.
500	Internal Server Error	An internal error was encountered that prevents the server from processing the request and providing a valid response.

Geocoding Requests

The POST request enables you to submit a single input address or a list of addresses for batch processing. Matching and/or geocoding preferences can optionally be specified to the Geocode service and receive the associated latitude/longitude coordinates and location information. The preference options for a POST request are the complete set of available options.

The GET request enables you to submit an input address and matching and/or geocoding preferences to the Geocode service and receive a response that provides the candidates object which contains the associated latitude/longitude coordinates and other matching and location information about each candidate. The preferences for a GET request are a subset of the total available with the POST request. Each key/value pair is separated by an ampersand (&).

Base URI

```
http://<server>:<port>/rest/GlobalGeocode/geocode[.content type]
```

For supported parameters for the Geocode Service see **Request Fields**, **Preferences**, and **Output Fields**.

Geocode Service Request

Geocode GET Request

The GET request enables you to submit an input address and matching and/or geocoding preferences to the Geocode service and receive a response that provides the candidates object which contains the associated latitude/longitude coordinates and other matching and location information about each candidate. The preferences for a GET request are a subset of the total available with the POST request. Each key/value pair is separated by an ampersand (&).

Base URI

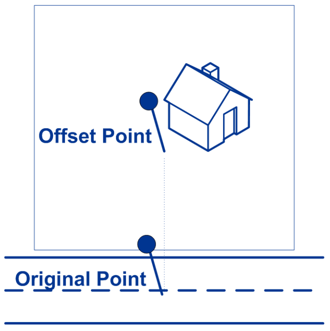
```
http://<server>:<port>/rest/GlobalGeocode/geocode[.content type]
```

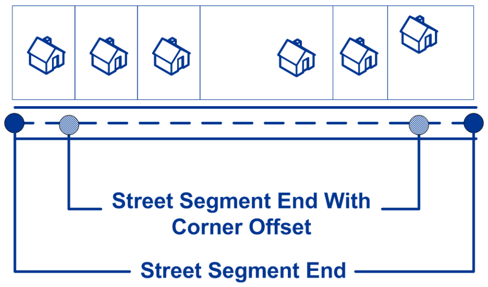
Query Parameters

The following table defines the GET query parameters for the Geocode service. For information on the response, see **GeocodeServiceResponse Object** on page 21.

Parameter	Type	Description
POST: mainAddressLine **GET**: mainAddress	String	**Single Line input**—If no other field is populated, then the `mainAddress` entry will be treated as a single line input and can be a collection of address field elements. The input order of the address fields should reflect the normal address formatting for your country. Optional. For example: **4750 Walnut St., Boulder CO, 80301** **Multiline Input** If the address fields (placeName, lastLine, postalCode, etc.) are provided separately, then the content of this field will be treated as the street address part and can include company name, house number, building names and street names. Optional. **Street Intersection Input**—To enter an intersection, specify the two street names separated by a double ampersand (&&).
country	String	ISO 3166-1 alpha-3 country code. Required. For country codes, see **ISO 3166-1 Country Codes** on page 161.
areaName1	String	Specifies the largest geographic area, typically a state or province. Optional.
areaName2	String	Specifies the secondary geographic area, typically a county or district. Optional.
areaName3	String	Specifies a city or town name. Optional.
areaName4	String	Specifies a city subdivision or locality. Optional.
POST: postCode1 **GET**: postalCode	String	The postal code in the appropriate format for the country. Optional.
POST: postCode2	String	The postal code in the appropriate format for the country. Optional.
placeName	String	Building name, place name, Point of Interest (POI), company or firm name associated with the input address. Optional. For example: **Precisely** 4750 Walnut St. Boulder, CO 80301

Parameter	Type	Description
POST: addressLastLine **GET**: lastLine	String	The last line of the address. Optional.
matchMode	String	Match modes determine the leniency used to make a match between the input address and the reference data. Select a match mode based on the quality of your input and your desired output. The following match modes are available: **EXACT** Requires a very tight match. This restrictive mode generates the fewest match candidates, which decreases the processing time. **STANDARD** Requires a close match and generates a moderate number of match candidates. Default. **RELAXED** Allows a loose match and generates the most match candidates, which increases the processing time and results in more multiple matches. **CUSTOM** Provides the capability for you to define the matching criteria by setting `MustMatch` fields; however, you can only set the `MustMatch` fields using a `POST` request. For a `GET` request, the `MustMatch` default values are used.
fallbackGeo	Boolean	Specifies whether to attempt to determine a geographic region centroid when an address-level geocode cannot be determined. Optional. **true** Return a geographic centroid when an address-level centroid cannot be determined. Default. **false** Do not return a geographic centroid when an address-level centroid cannot be determined.
fallbackPostal	Boolean	Specifies whether to attempt to determine a post code centroid when an address-level geocode cannot be determined. Optional. **true** Return a post code centroid when an address-level centroid cannot be determined. Default. **false** Do not return a post code centroid when an address-level centroid cannot be determined.
maxCands	Integer	The maximum number of candidates to return. Optional. Must be an integer value. Default = 1.

Parameter	Type	Description
maxRanges	Integer	A range is a series of addresses along a street segment. For example, 5400-5499 Main St. irepresents an address range in the 5400 block of Main St. A range may represent just odd or even addresses within a segment, or both. A range may also represent a single building with multiple units, such as an apartment building. This option specifies the maximum number of ranges to return for each candidate. Since the geocoder returns one candidate per segment, and since a segment may contain multiple ranges, this option allows you to see the other ranges in a candidate's segment. Must be an integer value. Default = 0.
maxRangeUnits	Integer	This option specifies the maximum number of units (for example, apartments or suites) to return for each range. For example, if you were to geocode an office building at 65 Main St. containing four suites, there would be a maximum of four units returned for the building's range: 65 Suite 1, 65 Suite 2, 65 Suite 3, and 65 Suite 4. If you were to specify a maximum number of units as 2, then only two units would be returned instead of all four. Must be an integer value. Default = 0.
streetOffset	Double	The offset distance from the street segments. The distance is in the units you specify in the `streetOffsetUnits` preference. Default value = 7 meters. The offset distance is used in street-level geocoding to prevent the geocode from being in the middle of a street. It compensates for the fact that street-level geocoding returns a latitude and longitude point in the center of the street where the address is located. For example, an offset of 50 feet means that the geocode will represent a point 50 feet back from the center of the street. The distance is calculated perpendicular to the portion of the street segment for the address. Offset is also used to prevent addresses across the street from each other from being given the same point. 

Parameter	Type	Description
streetOffsetUnits	String	Unit of measurement for the street offset. One of the following: **Feet**, **Meters** (default).
cornerOffset	Double	Distance to offset the street end points in street-level matching. The distance is in the units you specify in the `cornerOffsetUnits` preference. This value is used to prevent addresses at street corners from being given the same geocode as the intersection. Defines the offset position of the geocoded point with respect to the corner. Default value = 7 meters. The following diagram compares the end points of a street to offset end points. 
cornerOffsetUnits	String	Unit of measurement for the street offset. One of the following: **Feet**, **Meters** (default).

Geocode POST Request

The `POST` request enables you to submit a single input address or a list of addresses for batch processing. Matching and/or geocoding preferences can optionally be specified to the `Geocode` service and receive the associated latitude/longitude coordinates and location information. The preference options for a `POST` request are the complete set of available options.

Base URI

```
http://<server>:<port>/rest/GlobalGeocode/geocode[.content type]
```

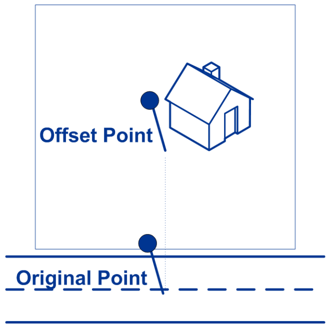
Request Parameters

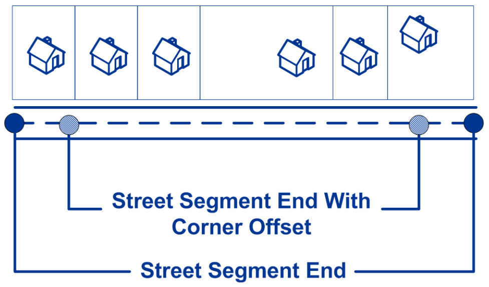
The `POST` request comprises the following input parameters:

- `addresses` - The address or addresses to be geocoded. The addresses array of Address objects. The addresses array may contain one or more input addresses. Required.
- `type` - The type of geocode. Optional. The type parameter is optional.
- `preferences` - The matching and geocoding options. Optional.
- `mustMatchMode` - The match criteria for determining match candidates Optional.
- `returnFieldsDescriptor` - Controls the return of additional data on a candidate. Optional.

These objects and their elements are defined in the following table.

Parameter	Type	Description
POST: type **GET**: geocodeType	String	Indicates the geocode type to be performed. Optional. **ADDRESS** Geocode to a street address. Default. **GEOGRAPHIC** Geocode to the geographic centroid of a city or state. **POSTAL** Geocode to a postal code.
POST: returnAllCandidateInfo	Boolean	Specifies whether to return all available information for each candidate. **true** Return all available information for each candidate. **false** Do not return all available information for each candidate. Default.

Parameter	Type	Description
POST: fallbackToGeographic **GET**: fallbackGeo	Boolean	Specifies whether to attempt to determine a geographic region centroid when an address-level geocode cannot be determined. Optional. **true** Return a geographic centroid when an address-level centroid cannot be determined. Default. **false** Do not return a geographic centroid when an address-level centroid cannot be determined.
POST: fallbackToPostal **GET**: fallbackPostal	Boolean	Specifies whether to attempt to determine a post code centroid when an address-level geocode cannot be determined. Optional. **true** Return a post code centroid when an address-level centroid cannot be determined. Default. **false** Do not return a post code centroid when an address-level centroid cannot be determined.
POST: maxReturnedCandidates **GET**: maxCands	Integer	The maximum number of candidates to return. Optional. Must be an integer value. Default = 1.
streetOffset	Double	The offset distance from the street segments. The distance is in the units you specify in the `streetOffsetUnits` preference. Default value = 7 meters. The offset distance is used in street-level geocoding to prevent the geocode from being in the middle of a street. It compensates for the fact that street-level geocoding returns a latitude and longitude point in the center of the street where the address is located. For example, an offset of 50 feet means that the geocode will represent a point 50 feet back from the center of the street. The distance is calculated perpendicular to the portion of the street segment for the address. Offset is also used to prevent addresses across the street from each other from being given the same point. 

Parameter	Type	Description
streetOffsetUnits	String	Unit of measurement for the street offset. One of the following: **Feet**, **Meters** (default).
cornerOffset	Double	Distance to offset the street end points in street-level matching. The distance is in the units you specify in the `cornerOffsetUnits` preference. This value is used to prevent addresses at street corners from being given the same geocode as the intersection. Defines the offset position of the geocoded point with respect to the corner. Default value = 7 meters. The following diagram compares the end points of a street to offset end points. 
cornerOffsetUnits	String	Unit of measurement for the street offset. One of the following: **Feet**, **Meters** (default).
matchMode	String	Match modes determine the leniency used to make a match between the input address and the reference data. Select a match mode based on the quality of your input and your desired output. The following match modes are available: **EXACT** Requires a very tight match. This restrictive mode generates the fewest match candidates, which decreases the processing time. **STANDARD** Requires a close match and generates a moderate number of match candidates. Default. **RELAXED** Allows a loose match and generates the most match candidates, which increases the processing time and results in more multiple matches. **CUSTOM** Provides the capability for you to define the matching criteria by setting `MustMatch` fields; however, you can only set the `MustMatch` fields using a `POST` request. For a `GET` request, the `MustMatch` default values are used.

Parameter	Type	Description
maxRanges	Integer	A range is a series of addresses along a street segment. For example, 5400-5499 Main St. is an address range representing addresses in the 5400 block of Main St. A range may represent just odd or even addresses within a segment, or both odd and even addresses. A range may also represent a single building with multiple units, such as an apartment building. This option specifies the maximum number of ranges to return for each candidate. Since the geocoder returns one candidate per segment, and since a segment may contain multiple ranges, this option allows you to see the other ranges in a candidate's segment. Must be an integer value. Default = 0.
maxRangeUnits	Integer	This option specifies the maximum number of units (for example, apartments or suites) to return for each range. For example, if you were to geocode an office building at 65 Main St. containing four suites, there would be a maximum of four units returned for the building's range: 65 Suite 1, 65 Suite 2, 65 Suite 3, and 65 Suite 4. If you were to specify a maximum number of units as 2, then only two units would be returned instead of all four. Must be an integer value. Default = 0.
POST: clientCoordSysName	String	Specifies the coordinate system that you want to convert the geometry to. The format must be the European Petroleum Survey Group (EPSG) code or the SRID code. Default = `EPSG:4326`. Specify the coordinate reference system in the format `codespace:code`.
POST: matchOnAddressNumber	Boolean	**true** A match must be made to the input address number. **false** A match does not need to be made to the input address number. Default.
POST: matchOnPostCode1	Boolean	**true** A match must be made to the input `PostCode1` field. **false** A match does not need to be made to the input `PostCode1` field. Default.

Parameter	Type	Description	
POST: matchOnPostCode2	Boolean	**true**	A match must be made to the input `PostCode2` field.
		false	A match does not need to be made to the input `PostCode2` field. Default.
POST: matchOnAreaName1	Boolean	**true**	A match must be made to the input `AreaName1` field.
		false	A match does not need to be made to the input `AreaName1` field. Default.
POST: matchOnAreaName2	Boolean	**true**	A match must be made to the input `AreaName2` field.
		false	A match does not need to be made to the input `AreaName2` field. Default.
			Note: This option is not supported by USA.
POST: matchOnAreaName3	Boolean	**true**	A match must be made to the input `AreaName3` field.
		false	A match does not need to be made to the input `AreaName3` field. Default.
POST: matchOnAreaName4	Boolean	**true**	A match must be made to the input `AreaName4` field.
		false	A match does not need to be made to the input `AreaName4` field. Default.
POST: matchOnAllStreetFields	Boolean	**true**	A match must be made to the input street name, type and directional fields.
		false	A match does not need to be made to the input street name, type and directional fields. Default.
POST: returnAllCustomFields	Boolean	**true**	Return all of the custom fields for the candidate.
		false	Return only the standard set of fields for the candidate. Default.

Parameter	Type	Description
POST: returnedCustomFieldKeys	List<String>	Specifies a list of keys that represent the custom fields to be returned in the candidate's `customFields` output. To specify multiple key/value pairs for a country, use spaces to separate the names of the custom fields to be returned. Custom fields vary by country. For example: "`CTYST_KEY`" or "`DATATYPE`". Default: empty.
POST: returnMatchDescriptor	Boolean	**true** Return the match descriptor object, which indicates the parts of the candidate that matched the input address. **false** Do not return the match descriptor object. Default.
POST: returnStreetAddressFields	Boolean	**true** Return all of the individual street fields that make up the `formattedStreetAddress` field separately, as follows: • `MAIN_ADDRESS` • `THOROUGHFARE_TYPE` • `ADDRESS_ID` • `PRE_ADDRESS` • `POST_ADDRESS` • `PRE_DIRECTIONAL` • `POST_DIRECTIONAL` **false** Do not return the individual street fields separately; return these values in the `formattedStreetAddress` field. Default.
POST: returnUnitInformation	Boolean	**true** Where available, return unit type and unit value information separately in the `unitType` and `unitValue` fields, as well as in the `formattedStreetAddress` field. **false** Where available, return unit type and unit value information only in the `formattedStreetAddress` field. Default.

Geocode Service Response

GeocodeServiceResponse Object

A request to the `Geocode` service returns a `GeocodeServiceResponse` object that contains:

- `totalPossibleCandidates`— the total number of possible candidates.
- `totalMatches`— the total number of matches.
- `candidates` — lists one or more candidates that matched to your input address/addresses. Matching and location information is returned for each match candidate.

Name	Type	Description
totalPossibleCandidates	Integer	Indicates the total number of possible candidates.
totalMatches	Integer	Indicates the total number of matches.
`candidates` object of type `Candidate`, consisting of an array with one or more match candidates and associated address, matching and location information. Contains the following elements:		

Name	Type	Description
precisionLevel	Integer	A code describing the precision of the geocode. One of the following: **0** No coordinate information is available for this candidate address. **1** Interpolated street address. **2** Street segment midpoint. **3** Postal code 1 centroid. **4** Partial postal code 2 centroid. **5** Postal code 2 centroid. **6** Intersection. **7** Point of interest. (If database contains POI data.) **8** State/province centroid. **9** County centroid. **10** City centroid. **11** Locality centroid. **12-15** Reserved for unspecified custom items. **16** The result is an address point. **17** The result was generated by using address point data to modify the candidate's segment data. **18** The result is an address point that was projected using the centerline offset feature. You must have both a point and a street range database to use the centerline offset feature. **Note:** This field is not returned for USA. For geocode precision information for USA, see **Location Codes** on page 134.
formattedStreetAddress	String	The formatted main address line.
formattedLocationAddress	String	The formatted last address line.
identifier	String	For street- or point-level candidates, this is usually the segment ID.

Name	Type	Description
precisionCode	String	

Name	Type	Description
		A code describing the precision of the geocode. The format of the geocode result string is `match_category[additional_match_information].` The possible match categories are as follows: **Z1** Postal match with post code 1 centroid. **Z2** Postal match with partial post code 2 centroid. **Z3** Postal match with post code 2 centroid. **G1** Geographic match with area name 1 centroid. **G2** Geographic match with area name 2 centroid. **G3** Geographic match with area name 3 centroid. **G4** Geographic match with area name 4 centroid. The matches in the 'S' category indicate that the record was matched to a single address candidate. **SX** Point located at a street intersection. **SC** Match point located at the house level that has been projected from the nearest segment. **S0** No coordinates are available, but parts of the address may have matched the source data. **S4** The geocode is located at a street centroid **S5** The geocode is located at a street address. **S7** The geocode is located at a street address that has been interpolated between point house locations. **S8** Match point located at the house location. Additional match information is of the format `HPNTSCSZA`. If a match result was not made for the specified component, a dash (-) will appear in place of a letter **H** House number. **P** Street prefix direction. **N** Street name. **T** Street type. **S** Street suffix direction. **C** City name. **Z** Post code. **A** Geocoding dataset.

Name	Type	Description
		U Custom user dataset. **Note:** For more detailed information including country-specific meanings and values, see **Global Result Codes** on page 150.
sourceDictionary	String	Identifies the dictionary that is the source for the candidate information and data. The source dictionary is a 0-based integer value that indicates which configured dictionary the candidate came from. If you only have a single dictionary this will always be "0".
`matching` object. Indicates what parts of the input matched; consisting of the following elements:		
matchOnAddressNumber	Boolean	Indicates if the input address number matched the candidate's address number. **True** The input address number matched the candidate's address number. **False** The input address number did not match the candidate's address number.
matchOnPostCode1	Boolean	Indicates if the input `postCode1` field matched the candidate's `postCode1` field. **True** The input `postCode1` matched the candidate's `postCode1`. **False** The input `postCode1` did not match the candidate's `postCode1`.
matchOnPostCode2	Boolean	Indicates if the input `postCode2` field (post code extension) matched the candidate's `postCode2` field. **True** The input postCode2 matched the candidate's postCode2. **False** The input `postCode2` did not match candidate's postCode2
matchOnAreaName1	Boolean	Indicates if the input `areaName1` field matched the candidate's `areaName1` field. **True** The input `areaName1` matched the candidate's `areaName1`. **False** The input `areaName1` did not match the candidate's `areaName1`.

Name	Type	Description
matchOnAreaName2	Boolean	Indicates if the input `areaName2` field matched the candidate's `areaName2` field. **True** The input `areaName2` matched the candidate's `areaName2`. **False** The input `areaName2` did not match the candidate's `areaName2`.
matchOnAreaName3	Boolean	Indicates if the input `areaName3` field matched the candidate's `areaName3` field. **True** The input `areaName3` matched the candidate's `areaName3`. **False** The input `areaName3` did not match the candidate's `areaName3`.
matchOnAreaName4	Boolean	Indicates if the input `areaName4` field matched the candidate's `areaName4` field. **True** The input `areaName4` matched the candidate's `areaName4`. **False** The input `areaName4` did not match the candidate's `areaName4`.
matchOnCountry	Boolean	Indicates if the candidate country matches the input country. **True** The candidate country matches the input country. **False** The candidate country does not match the input country.
matchOnAllStreetFields	Boolean	Indicates if the all of the input street fields matched all of the candidate's street fields. **True** All of the input street fields matched all of the candidate's street fields. **False** One or more of the input street fields do not match the candidate's street fields.
matchOnStreetName	Boolean	Indicates if the input street name matched the candidate's street name. **True** The input street name matched the candidate's street name. **False** The input street name did not match the candidate's street name.

Name	Type	Description
matchOnStreetType	Boolean	Indicates if the input street type matched the candidate's street type. **True** The input street type matched the candidate's street type. **False** The input street type did not match the candidate's street type.
matchOnStreetDirectional	Boolean	Indicates if the input street directional matched the candidate's street directional. **True** The input street directional matched the candidate's street directional. **False** The input street directional did not match the candidate's street directional.
matchOnPlaceName	Boolean	Indicates if the input place name matched the candidate's place name. **True** The input place name matched the candidate's place name. **False** The input place name did not match the candidate's place name.
`geometry` object. Returned geocode consisting of the following elements:		
coordinates	Double	The candidate's geocode, specified as x (longitude) and y (latitiude) coordinates separated by a comma.
crs	String	The coordinate reference system used for the candidate's geocode.
type	String	Geometry type. The return value is always `Point`.
`address` object. Returned candidate address which may contain some of the following elements:		
mainAddressLine	String	Candidate address line.
addressLastLine	String	Candidate last address line.
placeName	String	Firm, company, organization, business or building name.
areaName1	String	State, province or region.
areaName2	String	County or district.

Name	Type	Description
areaName3	String	City, town or suburb.
areaName4	String	Locality
postCode1	String	Main postal code.
postCode2	String	Secondary postal code, where one exists.
country	String	Country
addressNumber	String	House or building number.
streetName	String	Street name.
unitType	String	The type of unit, such as Apt., Ste. and Bldg.
unitValue	String	The unit value/number, such as "3B".
customFields	Object	The fields and corresponding values returned are country-specific.
`ranges`: `CandidateRange` object. Contains information about a candidate's ranges, consisting of the following elements:		
placeName	String	If applicable, indicates the name of the candidate's place or building.
lowHouse	String	Indicates the low house number in the candidate's street range.
highHouse	String	Indicates the high house number in the candidate's street range.
side	String	Provides information on the side of street that the candidate's range is located. **LEFT** The range is on the left side of the street. **RIGHT** The range is on the right side of the street. **BOTH** The range is on both the left and right side of the street. **UNKNOWN** No information is available on the side of the street this range is located.

Name	Type	Description
oddEvenIndicator	String	Provides information on the house numbering of the candidate's range. **ODD** The range contains odd house numbers. **EVEN** The range contains even house numbers. **BOTH** The range contains both odd and even house numbers. **IRREGULAR** The range contains both even and odd numbers in an irregular order. **UNKNOWN** No information is available on the odd/even house numbering on this range.
customValues	Map	A map of local values associated with the candidate's range.
`units`: `CandidateRangeUnit` object. Contains information about a candidate range's units, consisting of the following elements:		
placeName	String	If applicable, indicates the name of the candidate's place or building.
unitType	String	Indicates the unit type (APT, STE, etc.).
highUnitValue	String	Indicates the high unit number for this range unit.
lowUnitValue	String	Indicates the low unit number for this range unit.
customValues	Map	A map of local values associated with the unit.
totalPossibleCandidates	Integer	Indicates how many match candidates were found.

Examples

Example: JSON GET Request & Response

The following is an example of a `JSON GET` request for the Geocode service. Note that the query parameters are separated by an ampersand.

```
GET http://myserver:8080/rest/GlobalGeocode/geocode.json?
mainAddress=SANTA ANA&country=Mex&areaName1=DISTRITO FEDERAL
&postalCode=44910 HTTP/1.1
```

The following shows the `JSON` response returned by the previous request.

```
{
   "totalPossibleCandidates": 3,
   "totalMatches": 3,
   "candidates": [
      {
         "precisionLevel": 3,
         "formattedStreetAddress": "",
         "formattedLocationAddress": "44910 GUADALAJARA, JALISCO",
         "identifier": null,
         "precisionCode": "Z1",
         "sourceDictionary": "0",
         "matching": null,
         "geometry": {
            "type": "Point",
            "coordinates": [
               -103.356,
               20.64732
            ],
            "crs": {
               "type": "name",
               "properties": {
                  "name": "epsg:4326"
               }
            }
         },
         "address": {
            "mainAddressLine": "",
            "addressLastLine": "44910 GUADALAJARA, JALISCO",
            "placeName": "",
            "areaName1": "JALISCO",
            "areaName2": "GUADALAJARA",
            "areaName3": "GUADALAJARA",
            "areaName4": "8 DE JULIO 1RA SECC",
            "postCode1": "44910",
            "postCode2": "",
                "country": "MEX",
                "addressNumber": "",
                "streetName": "",
                "unitType": null,
                "unitValue": null,
                "customFields": {}
            },
            "ranges": []
        }
    ]
}
```

Example: XML GET Request & Response

The following is an example of an `XML` request for the Geocode service.

```
GET http://myserver:8080/rest/GlobalGeocode/geocode.xml?
mainAddress=18 Merivales St&country=AUS&areaName1=QLD&postalCode=4101
HTTP/1.1
```

The following shows the `XML` response returned by the previous request.

```
<?xml version="1.0" encoding="UTF-8"?>
<GeocodeServiceResponse>
   <totalPossibleCandidates>1</totalPossibleCandidates>
   <totalMatches>1</totalMatches>
   <candidates>
      <precisionLevel>1</precisionLevel>
      <formattedStreetAddress>
             18 MERIVALE STREET</formattedStreetAddress>
      <formattedLocationAddress>
             SOUTH BRISBANE QLD 4101</formattedLocationAddress>
      <identifier>300211549</identifier>
      <precisionCode>S5HP-TSCZA</precisionCode>
      <sourceDictionary>0</sourceDictionary>
      <geometry>
         <type>Point</type>
         <coordinates>153.01511420131578</coordinates>
         <coordinates>-27.47292827752508</coordinates>
         <crs>
            <type>name</type>
            <properties>
               <name>epsg:4326</name>
            </properties>
         </crs>
      </geometry>
      <address>
         <mainAddressLine>18 MERIVALE STREET</mainAddressLine>
         <addressLastLine>SOUTH BRISBANE QLD 4101</addressLastLine>
         <placeName />
         <areaName1>QLD</areaName1>
         <areaName2>BRISBANE CITY</areaName2>
         <areaName3>SOUTH BRISBANE</areaName3>
         <areaName4 />
         <postCode1>4101</postCode1>
         <postCode2 />
         <country>AUS</country>
         <addressNumber>18</addressNumber>
         <streetName>MERIVALE</streetName>
         <customFields />
      </address>
      <ranges>
         <lowHouse>6</lowHouse>
         <highHouse>18</highHouse>
         <side>RIGHT</side>
         <oddEvenIndicator>BOTH</oddEvenIndicator>
         <customValues />
      </ranges>
   </candidates>
</GeocodeServiceResponse>
```

Example: JSON POST Request & Response

The following is an example of a `JSON POST` request for the Geocode service. In this example the address point interpolation feature is enabled in `customPreferences`.

```
POST http://myserver:8080/rest/GlobalGeocode/geocode.json HTTP/1.1
{
   "type": "ADDRESS",
   "preferences": {
      "returnAllCandidateInfo": null,
      "fallbackToGeographic": null,
      "fallbackToPostal": null,
      "maxReturnedCandidates": null,
      "distance": null,
      "streetOffset": null,
      "cornerOffset": null,
      "matchMode": null,
      "clientLocale": null,
      "clientCoordSysName": null,
      "distanceUnits": null,
      "streetOffsetUnits": null,
      "cornerOffsetUnits": null,
      "mustMatchFields": {
         "matchOnAddressNumber": false,
         "matchOnPostCode1": false,
         "matchOnPostCode2": false,
         "matchOnAreaName1": false,
         "matchOnAreaName2": false,
         "matchOnAreaName3": false,
         "matchOnAreaName4": false,
            "matchOnAllStreetFields": false,
            "matchOnStreetName": false,
            "matchOnStreetType": false,
            "matchOnStreetDirectional": false,
            "matchOnPlaceName": false,
            "matchOnInputFields": false
        },
        "returnFieldsDescriptor": null,
        "customPreferences": {
            "USE_ADDRESS_POINT_INTERPOLATION": "true"
        },
        "preferredDictionaryOrders": null
    },
    "addresses": [
        {
            "mainAddressLine": "21 Byng Ave, toronto ON M9W 2M5",
            "addressLastLine": null,
            "placeName": null,
            "areaName1": null,
            "areaName2": null,
            "areaName3": null,
            "areaName4": null,
            "postCode1": null,
            "postCode2": null,
            "country": "CAN",
            "addressNumber": null,
            "streetName": null,
            "unitType": null,
            "unitValue": null,
            "customFields": null
        }
    ]
}
```

The following shows the `JSON` response returned by the previous request.

```
{
    "responses": [
        {
            "totalPossibleCandidates": 1,
            "totalMatches": 1,
            "candidates": [
                {
                    "precisionLevel": 16,
                    "formattedStreetAddress": "21 BYNG AVE",
                    "formattedLocationAddress": "TORONTO ON M9W 2M5",
                    "identifier": "29566199",
                    "precisionCode": "S8HPNTSCZA",
                    "sourceDictionary": "1",
                    "matching": null,
                    "geometry": {
                        "type": "Point",
                        "coordinates": [
                           -79.54916,
                           43.72659
                        ],
                        "crs": {
                           "type": "name",
                           "properties": {
                              "name": "epsg:4326"
                           }
                        }
                    },
                    "address": {
                        "mainAddressLine": "21 BYNG AVE",
                        "addressLastLine": "TORONTO ON M9W 2M5",
                        "placeName": "",
                        "areaName1": "ON",
                        "areaName2": "TORONTO",
                        "areaName3": "TORONTO",
                        "areaName4": "",
                        "postCode1": "M9W",
                        "postCode2": "2M5",
                        "country": "CAN",
                        "addressNumber": "21",
                        "streetName": "BYNG",
                        "unitType": null,
                        "unitValue": null,
                        "customFields": {}
                    },
                    "ranges": [
                        {
                           "placeName": null,
                           "lowHouse": "21",
                           "highHouse": "21",
                           "side": "LEFT",
                           "oddEvenIndicator": "ODD",
                           "units": [],
                           "customValues": {
                              "AREA_NAME_1": "ON",
                              "POST_CODE_1": "M9W",
                              "POST_CODE_2": "2M5",
                              "AREA_NAME_3": "ETOBICOKE"
                           }
                        }
                    ]
                }
            ]
}
```

Example: XML POST Request & Response

The following is an example of an `XML POST` request to the Geocode service. This example illustrates enabling the centerline offset feature in `customPreferences`, as well as setting the matchOnAddressNumber and matchOnStreetName fields in the mustMatchFields object. To enable the mustMatchFields settings, the matchMode field is set to CUSTOM.

```
POST http://myserver:8080/rest/GlobalGeocode/geocode.xml HTTP/1.1
<?xml version="1.0" encoding="UTF-8"?>
<geocodeRequest>
   <type>ADDRESS</type>
   <preferences>
      <returnAllCandidateInfo
             xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
             xsi:nil="true" />
      <fallbackToGeographic
             xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
             xsi:nil="true" />
      <fallbackToPostal
             xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
             xsi:nil="true" />
      <maxReturnedCandidates
             xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
             xsi:nil="true" />
      <distance
             xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
             xsi:nil="true" />
      <streetOffset
             xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
             xsi:nil="true" />
      <cornerOffset
             xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
             xsi:nil="true" />
      <matchMode>CUSTOM</matchMode>
      <mustMatchFields>
         <matchOnAddressNumber>true</matchOnAddressNumber>
         <matchOnPostCode1>false</matchOnPostCode1>
         <matchOnPostCode2>false</matchOnPostCode2>
         <matchOnAreaName1>false</matchOnAreaName1>
         <matchOnAreaName2>false</matchOnAreaName2>
         <matchOnAreaName3>false</matchOnAreaName3>
         <matchOnAreaName4>false</matchOnAreaName4>
         <matchOnAllStreetFields>false</matchOnAllStreetFields>
         <matchOnStreetName>true</matchOnStreetName>
         <matchOnStreetType>false</matchOnStreetType>
         <matchOnStreetDirectional>false</matchOnStreetDirectional>
         <matchOnPlaceName>false</matchOnPlaceName>
         <matchOnInputFields>false</matchOnInputFields>
      </mustMatchFields>
      <customPreferences>
         <entry>
            <key
                xmlns:xs="http://www.w3.org/2001/XMLSchema"
                xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
                xsi:type="xs:string">CENTERLINE_OFFSET_UNIT</key>
            <value
                xmlns:xs="http://www.w3.org/2001/XMLSchema"
```

```
                 xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
                 xsi:type="xs:string">FEET</value>
         </entry>
         <entry>
            <key
                 xmlns:xs="http://www.w3.org/2001/XMLSchema"
                 xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
                 xsi:type="xs:string">CENTERLINE_OFFSET</key>
            <value xmlns:xs="http://www.w3.org/2001/XMLSchema"
                 xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
                 xsi:type="xs:string">30.0</value>
         </entry>
         <entry>
            <key
                 xmlns:xs="http://www.w3.org/2001/XMLSchema"
                 xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
                 xsi:type="xs:string">USE_CENTERLINE_OFFSET</key>
            <value
                 xmlns:xs="http://www.w3.org/2001/XMLSchema"
                 xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
                 xsi:type="xs:string">true</value>
         </entry>
      </customPreferences>
   </preferences>
   <addresses>
      <mainAddressLine>
            36 Rue de la Haute Moline Champagne-Ardenne 10800
      </mainAddressLine>
      <country>FRA</country>
   </addresses>
</geocodeRequest>
```

The following shows the `XML` response returned by the previous request.

```
<?xml version="1.0" encoding="UTF-8"?>
<GeocodeServiceResponseList>
   <responses>
      <totalPossibleCandidates>1</totalPossibleCandidates>
      <totalMatches>1</totalMatches>
      <candidates>
         <precisionLevel>1</precisionLevel>
         <formattedStreetAddress>
                36 rue de la Haute Moline
         </formattedStreetAddress>
         <formattedLocationAddress>
                10800 Saint-Julien-les-Villas
         </formattedLocationAddress>
         <identifier>65277882</identifier>
         <precisionCode>S5HPNTS-ZA</precisionCode>
         <sourceDictionary>0</sourceDictionary>
         <geometry>
            <type>Point</type>
            <coordinates>4.10284503209829</coordinates>
            <coordinates>48.28588205764661</coordinates>
            <crs>
               <type>name</type>
               <properties>
                  <name>epsg:4326</name>
               </properties>
            </crs>
         </geometry>
         <address>
           <mainAddressLine>36 rue de la Haute Moline</mainAddressLine>

            <addressLastLine>
                   10800 Saint-Julien-les-Villas
            </addressLastLine>
            <placeName />
            <areaName1>Champagne-Ardenne</areaName1>
            <areaName2>Aube</areaName2>
            <areaName3>Saint-Julien-les-Villas</areaName3>
            <areaName4 />
            <postCode1>10800</postCode1>
            <postCode2 />
            <country>FRA</country>
            <addressNumber>36</addressNumber>
            <streetName>de la Haute Moline</streetName>
            <customFields />
         </address>
         <ranges>
            <lowHouse>34</lowHouse>
            <highHouse>38</highHouse>
            <side>RIGHT</side>
            <oddEvenIndicator>EVEN</oddEvenIndicator>
            <customValues />
         </ranges>
      </candidates>
   </responses>
</GeocodeServiceResponseList>
```

Reverse Geocode Requests

For information on GET and POST requests and responses, see the Geocode Service **Geocoding Requests** on page 10.

Reverse Geocode Service Request

GET POST

Reverse Geocode GET Request

The `GET` request enables you to submit an input coordinate and a coordinate reference system, and optionally specify a search distance and country code to use for matching. The associated address data is returned. The preference options for a `GET` request are a subset of the total available with the `POST` request.

Base URI

```
http://<server>:<port>/rest/GlobalGeocode/reverseGeocode[,content
type]?[query parameters]
```

where:

[.content type] indicates that the specified content type will be used by default. Optional.

json

Default content type is `JSON`, unless superseded by `HTTP` content negotiation

xml

Default content type is `XML`, unless superseded by `HTTP` content negotiation

[query parameters] are described in the following section.

Query Parameters

The following table defines the `GET` query parameters for the Reverse Geocode service. For information on the response, see **ReverseGeocodeServiceResponse Object** on page 44.

Name	Type	Description
x	Double	Longitude in degrees. Required. For example: -79.391165
y	Double	Latitude in degrees. Required. For example: 43.643469
country	String	Three-letter ISO country code, for example: CAN. Optional. For a list of ISO codes, see **ISO 3166-1 Country Codes** on page 161.
coordSysName	String (URL-encoded)	Specifies the coordinate system that you want to convert the geometry to. The format must be the European Petroleum Survey Group (EPSG) code or the SRID code. Default = `EPSG:4326`. Specify the coordinate reference system in the format `codespace:code`.
distance	Double	Sets the radius in which the Reverse Geocode service searches for a match to the input coordinates. The unit of measurement is specified using `distanceUnits`. Default = 150 meters. Maximum value = 5280 feet (1 mile) or 1609 meters.
distanceUnits	String	Specifies the unit of measurement for the search distance. One of the following: • Feet • Meters - Default

Reverse Geocode POST Request

The `POST` request enables you to submit a single input coordinate or a list of coordinates for batch processing. A country code, coordinate reference system and matching preferences can optionally be specified. A response containing a list of candidates with associated address data and matching information is returned. The preference options for a `POST` request are the complete set of available options.

Base URI

```
http://<server>:<port>/rest/GlobalGeocode/reverseGeocode[.content type]
```

where:

[.content type] indicates that the specified content type will be used by default. Optional.

json

Default content type is `JSON`, unless superseded by `HTTP` content negotiation

xml

Default content type is `XML`, unless superseded by `HTTP` content negotiation

Request Parameters

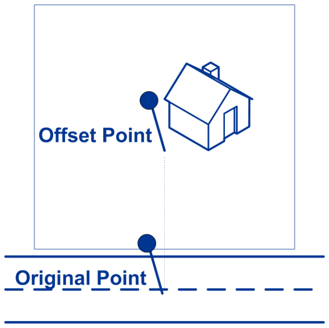
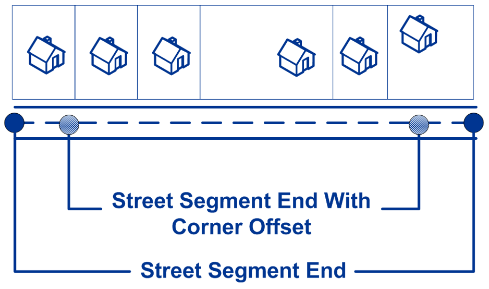
The `POST` request comprises the following input parameters:

- `points` — The input coordinates or multiple input coordinates to be reverse geocoded. Required.
- `preferences` — The matching options. Optional.

These objects and their elements are defined in the following table.

Name	Type	Description
`points` an array object containing both a geometry object and a country code string:		
country	String	Indicates the country to search for the reverse geocode result, specified using a 3-letter ISO country code. Optional. For country codes, see **ISO 3166-1 Country Codes** on page 161.
`geometry` object, consisting of the following elements:		
coordinates	Double	Specifies the x, y input coordinates, where x=longitude and y=latitude. For example: [-105.25175, 40.024494]
type	String	Indicates the type of geographic entity the input coordinates represent. **point** The input coordinates represent a point location.
crs	String	Indicates the coordinate reference system used for the input coordinates. The format must be the European Petroleum Survey Group (EPSG) code or the SRID code. Default = `EPSG:4326`. Specify the coordinate reference system in the format codespace:code.
`preferences` object, consisting of the following elements. **Note:** Only the following elements in the `preferences` object are applicable to the Reverse Geocode service. **Note:** To override the default value of a `preferences` element for a specific country, specify the key/value pair in the `customPreferences` object, with the key constant preceded by the ISO-3166 3-character country code plus period. For example: `DEU.streetOffset`.		

Name	Type	Description
distance	Double	Sets the radius in which the Reverse Geocode service searches for a match to the input coordinates. The unit of measurement is specified using `distanceUnits`. Default = 150 meters. Maximum value = 5280 feet (1 mile) or 1609 meters.
distanceUnits	String	Specifies the unit of measurement for the search distance. One of the following: • Feet • Meters - Default
clientLocale	String	This field is used for a country that has multiple languages to determine the preferred order of language candidates. The locale must be specified in the format "cc_CC", where "cc" is the language and "CC" is the ISO 3166-1 Alpha-2 code, such as: en-US, fr_CA or fr_FR. For example, Egypt supports both english and arabic. The clientLocale field could be set to either english-first (en-EN) or arabic-first (ar-EG). **Note:** For a listing of ISO Alpha-2 country codes, see **ISO 3166-1 Country Codes** on page 161.
POST: clientCoordSysName	String	Specifies the coordinate system that you want to convert the geometry to. The format must be the European Petroleum Survey Group (EPSG) code or the SRID code. Default = `EPSG:4326`. Specify the coordinate reference system in the format `codespace:code`.

Name	Type	Description
streetOffset	Double	The offset distance from the street segments. The distance is in the units you specify in the `streetOffsetUnits` preference. Default value = 7 meters. The offset distance is used in street-level geocoding to prevent the geocode from being in the middle of a street. It compensates for the fact that street-level geocoding returns a latitude and longitude point in the center of the street where the address is located. For example, an offset of 50 feet means that the geocode will represent a point 50 feet back from the center of the street. The distance is calculated perpendicular to the portion of the street segment for the address. Offset is also used to prevent addresses across the street from each other from being given the same point. 
streetOffsetUnits	String	Unit of measurement for the street offset. One of the following: **Feet**, **Meters** (default).
cornerOffset	Double	Distance to offset the street end points in street-level matching. The distance is in the units you specify in the `cornerOffsetUnits` preference. This value is used to prevent addresses at street corners from being given the same geocode as the intersection. Defines the offset position of the geocoded point with respect to the corner. Default value = 7 meters. The following diagram compares the end points of a street to offset end points. 

Name	Type	Description
cornerOffsetUnits	String	Unit of measurement for the street offset. One of the following: **Feet**, **Meters** (default).

customPreferences	Map<String key, String value>	Specifies the country-specific input preferences. This object can be used to specify:
		• A country override to a default value of one or more elements in the `preferences` or `returnFieldsDescriptor` objects.
		• A custom country input option.
		
		To override the default value for a specific country, precede the key constant with the ISO-3 country code plus period, and then specify the value. For example, in an XML request, an entry for a country override would look as follows:
		
		`<customPreferences>`
		`   <entry>`
		`      <key>CAN.distance</key>`
		`      <value>300</value>`
		`   </entry>`
		`</customPreferences>`
		
		Custom country input options are available for the following countries:
		• **Australia (AUS)**
		• **Canada (CAN)**
		• **France (FRA)**
		• **Germany (DEU)**
		• **Great Britain (GBR)**
		• **New Zealand (NZL)**
		• **Portugal (PRT)**
		• **Singapore (SGP)**
		• **Sweden (SWE)**
		• **United States (USA)**
		
		In addition, for countries that support both custom user dictionaries and standard geocoding datasets, you can set a custom preference with the key `KEY_CUSTOM_DICTIONARY_USAGE` that will define the searching and matching preferences when both custom and standard dictionaries are available in the geocoding engine. This option is only available with forward geocoding. For more information, see **Setting Searching and Matching Preferences When Using Standard and Custom Dictionaries**. To locate information on whether your country supports custom user dictionaries, refer to the "Supported Geocoding Datasets" section in the country's write-up.

Reverse Geocode Service Response

ReverseGeocodeServiceResponse Object

A request to the Reverse Geocode service returns a `GeocodeServiceResponse` object that contains:

- `totalPossibleCandidates`— the total number of possible candidates.
- `totalMatches`— the total number of matches.
- `candidates` object — lists one or more candidates that matched to your input coordinate(s). Matching and address information is returned for each candidate.

Table 1: GeocodeServiceResponse Elements Definitions

Name	Type	Description
totalPossibleCandidates	Integer	Indicates the total number of possible candidates.
totalMatches	Integer	Indicates the total number of matches.
`candidates` object of type `Candidate`, consisting of an array with one or more match candidates and associated address, matching and location information. Contains the following elements:		

Name	Type	Description
precisionLevel	Integer	A code describing the precision of the geocode. One of the following: **0** No coordinate information is available for this candidate address. **1** Interpolated street address. **2** Street segment midpoint. **3** Postal code 1 centroid. **4** Partial postal code 2 centroid. **5** Postal code 2 centroid. **6** Intersection. **7** Point of interest. (If database contains POI data.) **8** State/province centroid. **9** County centroid. **10** City centroid. **11** Locality centroid. **12-15** Reserved for unspecified custom items. **16** The result is an address point. **17** The result was generated by using address point data to modify the candidate's segment data. **18** The result is an address point that was projected using the centerline offset feature. You must have both a point and a street range database to use the centerline offset feature. **Note:** This field is not returned for USA. For geocode precision information for USA, see **Location Codes** on page 134.
formattedStreetAddress	String	The formatted main address line.
formattedLocationAddress	String	The formatted last address line.
precisionCode	String	The returned reverse geocoding result code. The definitions are provided in the appendix:. For US, see **Address Location Codes** on page 134; for all other countries, see **Reverse Geocoding 'R' Result Codes** on page 158.

Name	Type	Description
sourceDictionary	String	Identifies the dictionary that is the source for the candidate information and data. The source dictionary is a 0-based integer value that indicates which configured dictionary the candidate came from. If you only have a single dictionary this will always be "0".
`geometry` object. Returned geocode consisting of the following elements:		
coordinates	Double	The candidate's geocode, specified as x (longitude) and y (latitiude) coordinates separated by a comma.
crs	String	The coordinate reference system used for the candidate's geocode.
type	String	Geometry type. The return value is always `Point`.
`address` object. Returned candidate address which may contain some of the following elements:		
mainAddressLine	String	Candidate address line.
addressLastLine	String	Candidate last address line.
placeName	String	Firm, company, organization, business or building name.
areaName1	String	State, province or region.
areaName2	String	County or district.
areaName3	String	City, town or suburb.
areaName4	String	Locality
postCode1	String	Main postal code.
postCode2	String	Secondary postal code, where one exists.
country	String	Country
addressNumber	String	House or building number.
streetName	String	Street name.

Name	Type	Description
unitType	String	The type of unit, such as Apt., Ste. and Bldg.
unitValue	String	The unit value/number, such as "3B".
customFields	Object	The fields and corresponding values returned are country-specific.
`ranges`: `CandidateRange` object. Contains information about a candidate's ranges, consisting of the following elements:		
placeName	String	If applicable, indicates the name of the candidate's place or building.
lowHouse	String	Indicates the low house number in the candidate's street range.
highHouse	String	Indicates the high house number in the candidate's street range.
side	String	Provides information on the side of street that the candidate's range is located. **LEFT** The range is on the left side of the street. **RIGHT** The range is on the right side of the street. **BOTH** The range is on both the left and right side of the street. **UNKNOWN** No information is available on the side of the street this range is located.
oddEvenIndicator	String	Provides information on the house numbering of the candidate's range. **ODD** The range contains odd house numbers. **EVEN** The range contains even house numbers. **BOTH** The range contains both odd and even house numbers. **IRREGULAR** The range contains both even and odd numbers in an irregular order. **UNKNOWN** No information is available on the odd/even house numbering on this range.
customValues	Map	A map of local values associated with the candidate's range.

Examples

Example: JSON GET Request & Response

The following is an example of a `JSON GET` request for the Reverse Geocode service. Note that a value that is associated with more than one key query parameter can be assigned to the parameters by using the following syntax: `parameter1&parameter2=value`.

```
GET http://myserver:8080/rest/GlobalGeocode/reverseGeocode.json?
x=57.70716&y=12.025594&coordSysName=EPSG:4326&
distance=1&distanceUnits=METERS HTTP/1.1
```

The following shows the `JSON` response returned by the previous request.

```
{
   "totalPossibleCandidates": 1,
   "totalMatches": 1,
   "candidates": [
      {
         "precisionLevel": 1,
         "formattedStreetAddress": "KALLKÄLLEGATAN 34",
         "formattedLocationAddress": "416 54 GÖTEBORG",
         "identifier": null,
         "precisionCode": "RS5A",
         "sourceDictionary": "0",
         "matching": null,
         "geometry": {
            "type": "Point",
            "coordinates": [
               57.712566, 12.025625
            ],
            "crs": {
               "type": "name",
               "properties": {
                  "name": "epsg:4326"
               }
            }
         },
         "address": {
            "mainAddressLine": "KALLKÄLLEGATAN 34",
            "addressLastLine": "416 54 GÖTEBORG",
            "placeName": "",
            "areaName1": "VÄSTRA GÖTALANDS LÄN",
            "areaName2": "GÖTEBORG",
            "areaName3": "GÖTEBORG",
            "areaName4": "",
            "postCode1": "416 54",
            "postCode2": "",
            "country": "SWE",
            "addressNumber": "34",
            "streetName": "KALLKÄLLE",
            "unitType": null,
            "unitValue": null,
            "customFields": {
               "REVERSE_GEOCODE_DISTANCE_UNIT": "METER",
               "REVERSE_GEOCODE_DISTANCE": "0.9420000000000001"
            }
         },
         "ranges": [
            {
               "placeName": null,
               "lowHouse": "34",
               "highHouse": "34",
               "side": "UNKNOWN",
               "oddEvenIndicator": "EVEN",
               "units": [],
               "customValues": {}
            }
         ]
      }
   ]
}
```

Example: XML GET Request & Response

The following is an example of an `XML` request for the Reverse Geocode service.

```
GET http://myserver:8080/rest/GlobalGeocode/reverseGeocode.xml?
distanceUnits=METER&distance=100&coordSysName=EPSG:4326&y=51.543396
&x=13.419194 HTTP/1.1
```

The following shows the `XML` response returned by the previous request.

```
<?xml version="1.0" encoding="UTF-8"?>
<GeocodeServiceResponse>
   <totalPossibleCandidates>1</totalPossibleCandidates>
   <totalMatches>1</totalMatches>
   <candidates>
      <precisionLevel>1</precisionLevel>
      <formattedStreetAddress>Am Weinberg 4</formattedStreetAddress>
      <formattedLocationAddress>
             04924 Uebigau-Wahrenbrück
      </formattedLocationAddress>
      <precisionCode>RS5A</precisionCode>
      <sourceDictionary>0</sourceDictionary>
      <geometry>
         <type>Point</type>
         <coordinates>13.41906511750789</coordinates>
         <coordinates>51.54321229045565</coordinates>
         <crs>
            <type>name</type>
            <properties>
               <name>epsg:4326</name>
            </properties>
         </crs>
      </geometry>
      <address>
         <mainAddressLine>Am Weinberg 4</mainAddressLine>
         <addressLastLine>04924 Uebigau-Wahrenbrück</addressLastLine>
         <placeName />
         <areaName1>Brandenburg</areaName1>
         <areaName2>Elbe-Elster</areaName2>
         <areaName3>Uebigau-Wahrenbrück</areaName3>
         <areaName4>Prestewitz</areaName4>
         <postCode1>04924</postCode1>
         <postCode2 />
         <country>DEU</country>
         <addressNumber>4</addressNumber>
         <streetName>Am Wein</streetName>
         <customFields>
            <entry>
               <key
                   xmlns:xs="http:...
                   xmlns:xsi="http:...
```

```
xsi:type="xs:string">REVERSE_GEOCODE_DISTANCE_UNIT</key>
               <value
                    xmlns:xs="http:...
                    xmlns:xsi="http:...
                    xsi:type="xs:string">METERS</value>
            </entry>
            <entry>
               <key
                   xmlns:xs="http:...
                   xmlns:xsi="http:...
                   xsi:type="xs:string">REVERSE_GEOCODE_DISTANCE</key>
               <value
                   xmlns:xs="http:...
                   xmlns:xsi="http:...
                   xsi:type="xs:string">0.983</value>
            </entry>
         </customFields>
      </address>
      <ranges>
         <lowHouse>4</lowHouse>
         <highHouse>6</highHouse>
         <side>UNKNOWN</side>
         <oddEvenIndicator>EVEN</oddEvenIndicator>
         <customValues />
      </ranges>
   </candidates>
</GeocodeServiceResponse>
```

Example: JSON POST Request & Response

The following is an example of a `JSON POST` request for the Reverse Geocode service.

```
POST http://myserver:8080/rest/GlobalGeocode/reverseGeocode.json?
{
   "preferences": {
      "returnAllCandidateInfo": false,
      "fallbackToGeographic": true,
      "fallbackToPostal": true,
      "maxReturnedCandidates": 1,
      "distance": 100,
      "streetOffset": 7,
      "cornerOffset": 7,
      "matchMode": "UNSPECIFIED",
      "clientLocale": "en-US",
      "clientCoordSysName": "epsg:4326",
      "distanceUnits": "METER",
      "streetOffsetUnits": "METER",
      "cornerOffsetUnits": "METER",
      "mustMatchFields": {
         "matchOnAddressNumber": false,
         "matchOnPostCode1": false,
         ...

         "matchOnStreetName": false,
         "matchOnStreetType": false,
         "matchOnStreetDirectional": false,
         "matchOnPlaceName": false,
         "matchOnInputFields": false
      },
      "returnFieldsDescriptor": {
         "returnAllCustomFields": false,
         "returnMatchDescriptor": false,
         "returnStreetAddressFields": false,
         "returnUnitInformation": false,
         "returnedCustomFieldKeys": []
      },
      "customPreferences": {},
      "preferredDictionaryOrders": []
   },
   "points": [
      {
         "country": "FRA",
         "geometry": {
            "type": "point",
            "coordinates": [
               2.294449,
               48.85838
            ],
            "crs": {
               "type": "name",
               "properties": {
                  "name": "EPSG:4326"
               }
            }
         }
      }
   ]
}
```

The following shows the `JSON` response returned by the previous request.

```
{
    "responses": [
       {
          "totalPossibleCandidates": 2,
          "totalMatches": 2,
          "candidates": [
             {
                "precisionLevel": 2,
                "formattedStreetAddress": "avenue Anatole France",
                "formattedLocationAddress": "75007 Paris",
                "identifier": null,
                "precisionCode": "RS4A",
                "sourceDictionary": "1",
                "matching": null,
                "geometry": {
                   "type": "Point",
                   "coordinates": [
                      2.2948623,
                      48.858486
                   ],
                   "crs": {
                      "type": "name",
                      "properties": {
                         "name": "epsg:4326"
                      }
                   }
                },
                "address": {
                   "mainAddressLine": "avenue Anatole France",
                   "addressLastLine": "75007 Paris",
                   "placeName": "",
                   "areaName1": "Ile-de-France",
                   "areaName2": "Paris",
                   "areaName3": "Paris",
                   "areaName4": "7e Arrondissement Paris",
                   "postCode1": "75007",
                   "postCode2": "",
                   "country": "FRA",
                   "addressNumber": "",
                   "streetName": "Anatole France",
                   "unitType": null,
                   "unitValue": null,
                   "customFields": {
                      "REVERSE_GEOCODE_DISTANCE_UNIT": "METER",
                      "REVERSE_GEOCODE_DISTANCE": "23.3"
                   }
                },
                "ranges": []
             },
             {
                "precisionLevel": 2,
                "formattedStreetAddress": "parc du Champ de Mars",
                "formattedLocationAddress": "75007 Paris",
                "identifier": null,
                "precisionCode": "RS4A",
                "sourceDictionary": "1",
                "matching": null,
                "geometry": {
                   "type": "Point",
                   "coordinates": [
                      2.2948623,
                      48.858486
                   ],
                   "crs": {
                      "type": "name",
                      "properties": {
                         "name": "epsg:4326"
                      }
                   }
                },
                "address": {
                   "mainAddressLine": "parc du Champ de Mars",
                   "addressLastLine": "75007 Paris",
                   "placeName": "",
                   "areaName1": "Ile-de-France",
                   "areaName2": "Paris",
                   "areaName3": "Paris",
                   "areaName4": "7e Arrondissement Paris",
                   "postCode1": "75007",
                   "postCode2": "",
                   "country": "FRA",
                   "addressNumber": "",
                   "streetName": "du Champ de Mars",
                   "unitType": null,
                   "unitValue": null,
                   "customFields": {
                      "REVERSE_GEOCODE_DISTANCE_UNIT": "METER",
                      "REVERSE_GEOCODE_DISTANCE": "23.3"
                   }
                },
                "ranges": []
             }
          ]
       }
    ]
 }
```

Example: XML POST Request & Response

The following is an example of a `XML POST` request for the Reverse Geocode service.

```
POST http://myserver:8080/rest/GlobalGeocode/reverseGeocode.xml?
<?xml version="1.0" encoding="UTF-8"?>
<reverseGeocodeRequest>
   <preferences>
      <returnAllCandidateInfo>false</returnAllCandidateInfo>
      <fallbackToGeographic>true</fallbackToGeographic>
      <fallbackToPostal>true</fallbackToPostal>
      <maxReturnedCandidates>1</maxReturnedCandidates>
      <distance>150.0</distance>
      <streetOffset>7.0</streetOffset>
      <cornerOffset>7.0</cornerOffset>
      <matchMode>UNSPECIFIED</matchMode>
      <clientLocale>en-US</clientLocale>
      <clientCoordSysName>epsg:4326</clientCoordSysName>
      <distanceUnits>Meter</distanceUnits>
      <streetOffsetUnits>Meter</streetOffsetUnits>
      <cornerOffsetUnits>Meter</cornerOffsetUnits>
      <mustMatchFields>
         <matchOnAddressNumber>false</matchOnAddressNumber>
         <matchOnPostCode1>false</matchOnPostCode1>
         <matchOnPostCode2>false</matchOnPostCode2>
         <matchOnAreaName1>false</matchOnAreaName1>
         <matchOnAreaName2>false</matchOnAreaName2>
         <matchOnAreaName3>false</matchOnAreaName3>
         <matchOnAreaName4>false</matchOnAreaName4>
         <matchOnAllStreetFields>false</matchOnAllStreetFields>
         <matchOnStreetName>false</matchOnStreetName>
         <matchOnStreetType>false</matchOnStreetType>
         <matchOnStreetDirectional>false</matchOnStreetDirectional>
         <matchOnPlaceName>false</matchOnPlaceName>
         <matchOnInputFields>false</matchOnInputFields>
      </mustMatchFields>
      <returnFieldsDescriptor>
         <returnAllCustomFields>false</returnAllCustomFields>
         <returnMatchDescriptor>false</returnMatchDescriptor>
         <returnStreetAddressFields>false</returnStreetAddressFields>
         <returnUnitInformation>false</returnUnitInformation>
      </returnFieldsDescriptor>
      <customPreferences />
   </preferences>
   <points>
      <country>AUS</country>
      <geometry>
         <type>point</type>
         <coordinates>151.196036</coordinates>
         <coordinates>-33.879637</coordinates>
         <crs>
            <type>name</type>
            <properties>
               <name>EPSG:4326</name>
            </properties>
         </crs>
      </geometry>
   </points>
</reverseGeocodeRequest>
```

The following shows the `XML` response returned by the previous request.

```
<?xml version="1.0" encoding="UTF-8"?>
<GeocodeServiceResponseList>
   <responses>
      <totalPossibleCandidates>2</totalPossibleCandidates>
      <totalMatches>2</totalMatches>
      <candidates>
         <precisionLevel>1</precisionLevel>
         <formattedStreetAddress>
                344 WATTLE CRESCENT
         </formattedStreetAddress>
         <formattedLocationAddress>
                ULTIMO NSW 2007
         </formattedLocationAddress>
         <precisionCode>RS5A</precisionCode>
         <sourceDictionary>0</sourceDictionary>
         <geometry>
            <type>Point</type>
            <coordinates>151.19599158560163</coordinates>
            <coordinates>-33.87967421977337</coordinates>
            <crs>
               <type>name</type>
               <properties>
                  <name>epsg:4326</name>
               </properties>
            </crs>
         </geometry>
         <address>
            <mainAddressLine>344 WATTLE CRESCENT</mainAddressLine>
            <addressLastLine>ULTIMO NSW 2007</addressLastLine>
            <placeName />
            <areaName1>NSW</areaName1>
            <areaName2>COUNCIL OF THE CITY OF SYDNEY</areaName2>
            <areaName3>ULTIMO</areaName3>
            <areaName4 />
            <postCode1>2007</postCode1>
            <postCode2 />
            <country>AUS</country>
            <addressNumber>344</addressNumber>
            <streetName>WATTLE</streetName>
            <customFields>
              <entry>
                 <key
```

```
                      xmlns:xs="http:...
                      xmlns:xsi="http:...

xsi:type="xs:string">REVERSE_GEOCODE_DISTANCE_UNIT</key>
                  <value
                      xmlns:xs="http:...
                      xmlns:xsi="http:...
                      xsi:type="xs:string">METERS</value>
                </entry>
                <entry>
                  <key
                      xmlns:xs="http:...
                      xmlns:xsi="http:...
                     xsi:type="xs:string">REVERSE_GEOCODE_DISTANCE</key>

                  <value
                      xmlns:xs="http:...
                      xmlns:xsi="http:...
                      xsi:type="xs:string">1.49</value>
                </entry>
             </customFields>
          </address>
          <ranges>
             <lowHouse>329</lowHouse>
             <highHouse>367</highHouse>
             <side>UNKNOWN</side>
             <oddEvenIndicator>BOTH</oddEvenIndicator>
             <customValues />
          </ranges>
       </candidates>
       <candidates>
          <precisionLevel>1</precisionLevel>
          <formattedStreetAddress>
                 344 WATTLE STREET
          </formattedStreetAddress>
          <formattedLocationAddress>
                 ULTIMO NSW 2007
          </formattedLocationAddress>
          <precisionCode>RS5A</precisionCode>
          <sourceDictionary>0</sourceDictionary>
          <geometry>
             <type>Point</type>
             <coordinates>151.19599158560163</coordinates>
             <coordinates>-33.87967421977337</coordinates>
             <crs>
                <type>name</type>
                <properties>
                   <name>epsg:4326</name>
                </properties>
             </crs>
          </geometry>
          <address>
             <mainAddressLine>
```

```
                  344 WATTLE STREET
              </mainAddressLine>
             <addressLastLine>
                 ULTIMO NSW 2007
             </addressLastLine>
             <placeName />
             <areaName1>NSW</areaName1>
             <areaName2>COUNCIL OF THE CITY OF SYDNEY</areaName2>
             <areaName3>ULTIMO</areaName3>
             <areaName4 />
             <postCode1>2007</postCode1>
             <postCode2 />
             <country>AUS</country>
             <addressNumber>344</addressNumber>
             <streetName>WATTLE</streetName>
             <customFields>
               <entry>
                 <key
                     xmlns:xs="http:...
                     xmlns:xsi="http:...

xsi:type="xs:string">REVERSE_GEOCODE_DISTANCE_UNIT</key>
                 <value
                     xmlns:xs="http:...
                     xmlns:xsi="http:...
                     xsi:type="xs:string">METERS</value>
               </entry>
               <entry>
                 <key
                     xmlns:xs="http:...
                     xmlns:xsi="http:...
                     xsi:type="xs:string">REVERSE_GEOCODE_DISTANCE</key>

                 <value
                      xmlns:xs="http:...
                      xmlns:xsi="http:...
                      xsi:type="xs:string">1.49</value>
                lt;/entry>
             </customFields>
          </address>
          <ranges>
             <lowHouse>329</lowHouse>
             <highHouse>367</highHouse>
             <side>UNKNOWN</side>
             <oddEvenIndicator>BOTH</oddEvenIndicator>
             <customValues />
          </ranges>
       </candidates>
    </responses>
</GeocodeServiceResponseList>
```

Interactive Geocoding Requests

For information on GET and POST requests and responses, see the Geocode Service **Geocoding Requests** on page 10

Interactive Geocode Service Request

Global Interactive Geocode GET Request

A `GET` request to the Global Interactive Geocode service enables you to enter an address and get immediate feedback as it tries to find match candidates. The returned point is a postal centroid. The preference options for a `GET` request are a subset of the total available with the `POST` request.

Base URI

```
http://<server>:<port>/Geocode/rest/GlobalGeocode/interactive[.content
type]
```

where:

[.content type] indicates that the specified content type will be used by default. Optional.

json

Default content type is `JSON`, unless superseded by `HTTP` content negotiation

xml

Default content type is `XML`, unless superseded by `HTTP` content negotiation

[parameters] are described in the following section. Each key/value pair entered in the request is separated by an ampersand.

Parameters

The following table defines the `GET` parameters for the Global Interactive Geocode service. For information on the response, see **InteractiveGeocodeServiceResponse Object** on page 63.

Parameter	Type	Description
areaName1	string	Name of state or province

Parameter	Type	Description
areaName2	string	Name of district or subdivision
areaName3	string	Name of city or town
areaName4	string	Name of locality
coordSysName	string	Coordinate system for the data.
country	string	Name of country
distance	double	Distance from origin to candidate
distanceUnits		FEET,METERS,MILES,KILOMETERS, FOOT,METER,MILE,KILOMETER
lastLine	string	Last line of the address
mainAddress	string	Address to be matched. Can include the entire address or some portion.
maxCands	integer	Number of candidates to return. Default is 10. Maximum is 100.
originXY	List (Double)	comma separated double values for XY. For Example, originXY=-73.70252500000001,42.68323
placeName	string	Name of the point of interest (POI data not included)
postalCode	string	Address postcode

Interactive Geocode Service POST Request

A `POST` request to the Interactive Geocode Service service enables you to enter an address and get immediate feedback as it tries to find match candidates. The returned point is a postal centroid. All the preferences in interactive geocoding can be included in a `POST` request.

Base URI

```
http://<server>:<port>/Geocode/rest/GlobalGeocode/interactive[.content
type]
```

Where:

[.content type] indicates that the specified content type will be used by default. Optional.

json

Default content type is `JSON`, unless superseded by `HTTP` content negotiation

xml

Default content type is `XML`, unless superseded by `HTTP` content negotiation

Preferences

The format for using these preferences is `preferences.CustomPreferences.[<name of preference>]` or `preferences.[<name of preference>]`.

Parameter	Type	Description
SEARCH_TYPE	string	Custom preference to control search type of interactive requests. default: ADDRESS_COMPLETION possible values: ADDRESS_COMPLETION, POINT_OF_INTEREST_COMPLETION, POINT_OF_INTEREST_NAME_COMPLETION, POINT_OF_INTEREST_CATEGORY_COMPLETION, ALL
COMPRESSED_AREA_RESULT	boolean	default: false COMPRESSED_AREA_RESULT
KEY_CUSTOM_DICTIONARY_USAGE	string	possible values: PREFER_CUSTOM_DICTIONARIES, PREFER_STANDARD_DICTIONARIES, USE_CUSTOM_DICTIONARIES_ONLY, USE_STANDARD_DICTIONARIES_ONLY

Parameter	Type	Description
		USE_STANDARD_DICTIONARIES_ONLY
matchMode	string	default: STANDARD, possible values: RELAXED STANDARD, CLOSE

originXY	List Double	`{`
		`"preferences" :`
		`  {`
		`  "originXY" : [-73.70252500000001,`
		`42.68323]`
		`    },`
		`  "address" :`
		`  {`
		`  "mainAddressLine" : "350 Jordan Rd"`
		`  }`
		`}`

restrictedSearch	Bounds	`{`
		`"preferences":`
		`     {`
		`     "restrictedSearch":`
		` {"northEastXY":`
		`[-73.70252500000001,42.68323],`
		` "southWestXY":`
		`[-73.70252500000001,42.68323]`
		` }`
		`  },`
		` "address":`
		`     {`
		`     "mainAddressLine":`
		` "350 Jordan Rd"`
		` }`
		`}`

Global Interactive Service Response

InteractiveGeocodeServiceResponse Object

For a list of response elemets from the Interactive Geocode service, see **GeocodeServiceResponse Object** on page 21.

Examples

Example: JSON POST Request & Response

Interactive Request

```
{
  "address": {
    "mainAddressLine": "13-15 Quai André Citroën",
    "country": null
  },
  "preferences": {
    "maxReturnedCandidates": 10,
    "distanceUnits": "MILES",
    "distance": null,
    "customPreferences": {
      "COMPRESSED_AREA_RESULT": "false",
      "SEARCH_TYPE": "ADDRESS_COMPLETION"
    },
    "returnAllCandidateInfo": true,
    "originXY": []
  }
}
}
```

Interactive Response

```
{
  "totalPossibleCandidates": 1,
  "totalMatches": 1,
  "candidates": [
    {
      "precisionLevel": 0,
      "formattedStreetAddress": "13-15 Quai André Citroën",
      "formattedLocationAddress": "75015 Paris",
      "matching": {
        "matchOnAddressNumber": true,
        "matchOnPostCode1": false,

        ...

        "matchOnStreetType": false,
        "matchOnStreetDirectional": false,
        "matchOnPlaceName": false,
        "matchOnInputFields": false
      },
      "geometry": {
        "type": "Point",
        "coordinates": [
          2.275675,
48.844045
        ],
        "crs": {
          "type": "name",
          "properties": {
            "name": "epsg:4326"
          }
        }
      },
      "address": {
        "mainAddressLine": "",
        "addressLastLine": "",
        "areaName1": "Île-de-France",
        "areaName2": "Paris",
        "areaName3": "Paris",
        "areaName4": "15e Arrondissement",
        "postCode1": "75015",
        "postCode2": "",
        "country": "FRA",
        "addressNumber": "13-15",
        "streetName": "Quai André Citroën",
        "unitType": "",
        "unitValue": "",
        "customFields": {
          "FORMATTED_ADDRESS": "13-15 Quai André Citroën, 75015 Paris",
          "DISTANCE": "-0.0",
          "FEATUREID": "12500001640586",
          "FROM_CUSTOM_DATASET": "false",
          "MATCHED_FROM_ADDRESSNUMBER": "13 15",
          "MATCHED_FROM_STREETNAME": "QI ANDRE CITROEN",
          "DISTANCE_UNIT": "MILES"
        }
      },
      "ranges": []
    }
  ],
  "customValues": {}
}
```

KeyLookup Requests

For information on GET and POST requests and responses, see the Geocode Service **Geocoding Requests** on page 10.

Global Key Lookup Service Request

Global Key Lookup GET Request

The GET request enables you to submit a key to geocode against and get back additional information that enhances your records.

Base URI

```
http://<server>:<port>/rest/GlobalGeocode/keyLookup[.content type]
```

where:

[.content type] indicates that the specified content type will be used by default. Optional.

json

Default content type is JSON, unless superseded by HTTP content negotiation

xml

Default content type is XML, unless superseded by HTTP content negotiation

Parameters

The following table defines the GET parameters for the Key Lookup Service service. For information on the response, see **GeocodeServiceResponse Object**.

Parameter	Type	Description
key	string	Key that is being used to geocode.
type	string	Type of key supported, currently PB_KEY and GNAF-PID
country	string	3-letter ISO code that represents the country for which the lookup is being performed. Currently AUS and USA is supported.

Global KeyLookup POST Request

The POST request enables you to submit a key to geocode against and get back additional information that enhanced your records.

Base URI

```
http://<server>:<port>/rest/GlobalGeocode/keyLookup.[content type]
```

Where:

[.content type] indicates that the specified content type will be used by default. Optional.

json

Default content type is `JSON`, unless superseded by `HTTP` content negotiation

xml

Default content type is `XML`, unless superseded by `HTTP` content negotiation

Sample JSON Request

```
{
  "type" : "PB_KEY",
  "preferences": {
    "maxReturnedCandidates": 10
  },
  "keys": [
    {
      "country" : "USA",
      "value" : "PB12345678"
    }
    ]
}
```

Global Key Lookup Service Response

GlobalKeyLookupGeocodeServiceResponse Object

For a list of response elemets from the Key Lookup service, see **GeocodeServiceResponse Object** on page 21.

Examples

Example: JSON POST Request & Response

Key Lookup Request

```
{
  "keys": [
    {
      "value": "P0000GL638OL",
      "country": "USA"
    }
  ],
  "type": "PB_KEY",
  "preferences": {
    "returnAllCandidateInfo": true
  }
}
```

Key Lookup Response

```
{
  "responses": [
    {
      "totalPossibleCandidates": 1,
      "totalMatches": 1,
      "candidates": [
        {
          "precisionLevel": 16,
          "formattedStreetAddress": "350 JORDAN RD",
          "formattedLocationAddress": "TROY, NY  12180-8352",
          "identifier": "869200424",
          "precisionCode": "S8H--A",
          "sourceDictionary": "2",
          "matching": {
            "matchOnAddressNumber": false,
            "matchOnPostCode1": true,
            "matchOnPostCode2": true,
            "matchOnAreaName1": true,
            "matchOnAreaName2": false,
            "matchOnAreaName3": true,
            "matchOnAreaName4": false,
            "matchOnAllStreetFields": false,
            "matchOnStreetName": true,
            "matchOnStreetType": true,
            "matchOnStreetDirectional": true,
            "matchOnPlaceName": false,
            "matchOnInputFields": false
          },
          "geometry": {
            "type": "Point",
            "coordinates": [
              -73.700257,
              42.678161
            ],
            "crs": {
              "type": "name",
              "properties": {
                "name": "epsg:4326"
              }
            }
          },
          "address": {
            "mainAddressLine": "350 JORDAN RD",
            "addressLastLine": "TROY, NY  12180-8352",
            "placeName": "",
            "areaName1": "NY",
            "areaName2": "RENSSELAER COUNTY",
            "areaName3": "TROY",
            "areaName4": "",
            "postCode1": "12180",
            "postCode2": "8352",
            "country": "USA",
            "addressNumber": "350",
            "streetName": "JORDAN",
            "unitType": "",
            "unitValue": "",
            "customFields": {
              "ZIP": "12180",
              "CSA_NUMBER": "104",
              "TYPE_SHORT": "RD",
              "THOROUGHFARE_TYPE": "RD",
              "ROAD_CLASS": "01",
              "MATCH_CODE": "V001",
              "DFLT": "Y",
              "COUNTY": "36083",
              "LANGUAGE": "en",
              "PB_KEY": "P0000GL638OL",
              "POINT_ID": "108535989",
              "LAST_LINE": "TROY, NY  12180-8352",
              "CHECK_DIGIT": "2",
              "MM_RESULT_CODE": "S8H--A",
              "METRO_FLAG": "Y",
              "BLOCK": "360830523011022",
              "QCITY": "361305000",
              "ZIP_FACILITY": "P",
              "LON": "-73.700257",
              "LOT_CODE": "A",
              "LOT_NUM": "0063",
              "CTYST_KEY": "V16572",
              "ZIP_CARRTSORT": "D",
              "LORANGE": "350",
              "STREET_SIDE": "L",
              "DATATYPE": "12",
              "SEG_LORANGE": "350",
              ...

              "LASTLINE_SHORT": "TROY, NY  12180-8352",
              "DPBC": "99",
              "MAIN_ADDRESS": "JORDAN",
              "NAME_SHORT": "JORDAN",
              "CITY_SHORT": "TROY",
              "ZIP9": "121808352",
              "CITY": "TROY",
              "IS_ALIAS": "N01",
              "ZIP10": "12180-8352",
              "ZIP4": "8352",
              "CBSA_NAME": "ALBANY-SCHENECTADY-TROY, NY METROPOLITAN
STATISTICAL AREA",
              "MATCHED_DB": "2",
              "RANGE_PARITY": "E",
              "LAT": "42.678161"
            }
          },
          "ranges": [
            {
              "placeName": "",
              "lowHouse": "350",
              "highHouse": "350",
              "side": "LEFT",
              "oddEvenIndicator": "EVEN",
              "units": [
                {
                  "placeName": "",
                  "unitType": "",
                  "highUnitValue": "",
                  "lowUnitValue": "",
                  "customValues": {}
                }
              ],
              "customValues": {}
            }
          ]
        }
      ],
      "customValues": {}
    }
  ]
}
```

Capabilities Service

Capabilities Service Request

Capabilities GET Request

A `GET` request to the `Capabilities` service returns information:

- supported services
- available geocoding engines
- supported countries
- supported operations and associated required and optional inputs
- custom fields

Base URI

```
http://<server>:<port>/rest/GlobalGeocode/capabilities.[content
type]?[query parameters]
```

where:

.[content type] indicates that the specified content type will be used by default. Optional.

JSON Default content type is `JSON`, unless superseded by `HTTP` content negotiation

XML Default content type is `XML`, unless superseded by `HTTP` content negotiation

[query parameters] are described in the following section.

Query Parameters

There are several options for the type of information returned based on the query parameters:

- Include a country code to get the capabilities for the specified country;
- Include a country code and an operation to get the description of that operation; or,
- Exclude all query parameters to get the capabilities for all countries.

The query parameters for the `Capabilities` service are defined in the following table.

Name	Description
country	Name of country in **ISO 3166-1** Alpha-2 or Alpha-3 format, or a common name of the country, such as United States of America.
operation	Type of geocoding service operation. One of the following: • `geocode` • `reverseGeocode` • `interactive` • `keyLookup`

Capabilities Service Response

GeocodeCapabilitiesResponse Object

The following table defines the response elements returned from the `Capabilities` service.

Name	Type	Description
serviceName	String	The name of a supported service.
serviceDescription	String	A description of the service.
coreVersion	String	The core version of Spectrum Technology Platform.
geocodingEngines	String	The installed country geocode engine(s).
supportedCountries	String	The countries supported by each installed country geocoder engine.
geocoderVersions	Map	The version number of the geocode engine.
`supported Operations` `Operation` object. An array that defines the supported operations for the specified input country or for all countries consisting of the following fields:		
name	String	Name of the operation.

Name	Type	Description
requiredInputs	InputParameter	Lists the required input fields for the operation. Includes the following elements: • `name` (String) • `description` (String) • `type` (String) • `defaultValue` (String) • `lowBoundary` (String) • `highBoundary` (String) • `allowedValuesWithDescriptions` (Map)
optionalInputs	InputParameter	Lists the optional input fields for the operation. Includes the following elements: • `name` (String) • `description` (String) • `type` (String) • `defaultValue` (String) • `lowBoundary` (String) • `highBoundary` (String) • `allowedValuesWithDescriptions` (Map)
outputs	OutputParameter	Lists the operation's output fields. Includes the following elements: • `name` (String) • `description` (String) • `type` (String)

Name	Type	Description
supportLevels	SupportLevel	Lists the support levels for the operation. Includes the following elements: • `supportedDataLevel` (Integer) **`Data Postal Centroid=1`** — Postcode centroids are present in dictionaries (does not distinguish post code 2). **`Data Geographic Centroid=2`** — Geographic centroids are present in dictionaries (does not distinguish the type of geographic centroid). **`Data Street Segment=4`** — Street segment information present in dictionaries. **`Data Address Point=8`** — Point level data present in dictionaries. The data level will contain the sum of all available data keys. For example, **Value — Type of data** `15` — all (postal + geographic + segment + point) `14` — all but postal `13` — all but geographic `12` — point + segment `11` — point + geographic + postal `10` — point + geographic `9` — point + postal `8` — point only `7` — all but point `6` — segment + geographic `5` — segment + postal `4` — segment only `3` — postal + geographic `2` — geographic only `1` — postal only • `countries` — (String) Countries • `updatedRequiredInputs` — (InputParameter) Country-specific required input fields • `updatedOptionalInputs` — (InputParameter) Country-specific optional input fields • `updatedOptionalOutputs` — (OutputParameter) Country-specific output fields

`customObjects` list of type `CustomObject`.

Name	Type	Description
name	String	The name(s)s of the custom object fields that were user-specified in Preferences.
description	String	The description of the user-specified custom object fields.
properties	list of type CustomObjectMember	Where `CustomObjectMember` contains the following elements: • `name` — (String) Indicates name of parameter. • `input` — (InputParameter) Indicates the property is an input parameter. • `output` —(OutputParameter) Indicates the property is an output parameter.

Examples

Capabilities JSON Request & Response

JSON Request

The following is an example of a `JSON` request for the `Capabilities` service. In this example, the request is for the capabilities for Great Britain.

```
GET http://myserver:8080/rest/GlobalGeocode/capabilities.json?
country=GBR HTTP/1.1
```

JSON Response

The following shows the `JSON` response returned by the previous request. This response is an abbreviated view.

```
{
   "serviceName": "GeocodeService",
   "serviceDescription": "Provides a method to geocode and reverse
geocode",
   "coreVersion": "5.1.0.59",
   "geocodingEngines": [
      "World"
   ],
   "supportedCountries": [
      "XWG"
   ],
   "supportedOperations": [
      {
         "name": "geocode",
         "requiredInputs": [
            {
               "name": "address",
               "description": "The input address",
               "type": "Address",
               "defaultValue": null,
               "lowBoundary": null,
               "highBoundary": null,
               "allowedValuesWithDescriptions": {}
            }
         ],
         "optionalInputs": [
            {
               "name": "type",
               "description": "Indicates what kind of geocode
                               to perform",
               "type": "ONEOF",
               "defaultValue": "address",
               "lowBoundary": null,
               "highBoundary": null,
               "allowedValuesWithDescriptions": {
                  "geographic": "geographic",
                  "postal": "postal",
                  "address": "address",
                  "custom": "custom"
               }
            },
            {
               "name": "preferences",
               "description": "Contains preferences and constraints",
               "type": "Preferences",
               "defaultValue": null,
               "lowBoundary": null,
               "highBoundary": null,
               "allowedValuesWithDescriptions": {}
            }
         ],
         "outputs": [
            {
               "name": "responses",
               "description": "The geocoded address information",
               "type": "Response"
            }
         ],
         "supportLevels": [
            {
               "supportedDataLevel": 3,
               "countries": [
                  "XWG"
               ],
               "updatedRequiredInputs": [],
               "updatedOptionalInputs": [],
               "updatedOptionalOutputs": [
                  {
                     "name": "CITYRANK",
                     "description": "City ranking from 1 (highest)
                       to 10 (lowest).  0 means no rank available",
                     "type": "KEY"
                  }
               ]
            }
         ]
      },
.
.
.
```

```
      {
         "name": "responses",
         "description": "Holds results from a geocode
                        or reverse geocode operation",
         "properties": [
            {
               "name": "totalPossibleCandidates",
               "input": null,
               "output": {
                  "name": "totalPossibleCandidates",
                  "description": "Number of candidate that could
                             have been returned from this query",
                  "type": "int"
               }
            },
            {
               "name": "totalMatches",
               "input": null,
               "output": {
                  "name": "totalMatches",
                  "description": "Number of candidates that could
                              have been returned from this query",
                  "type": "int"
               }
            },
            {
               "name": "candidates",
               "input": null,
               "output": {
                  "name": "candidates",
                  "description": "ordered list of matching candidates",
                  "type": "LIST<Candidate>"
               }
            }
         ]
      }
   ],
   "geocoderVersions": {
      "World": "4.5"
   }
}
```

Dictionaries Service

Dictionaries Service Request

Dictionaries GET Request

A `GET` request to the `Dictionaries` service returns information on the configured dictionaries.

Base URI

```
http://<server>:<port>/rest/GlobalGeocode/dictionaries.[content
type]?[query parameters]
```

where:

.[content type] indicates that the specified content type will be used by default. Optional.

JSON Default content type is `JSON`, unless superseded by `HTTP` content negotiation

XML Default content type is `XML`, unless superseded by `HTTP` content negotiation

[query parameters] are described in the following section.

Query Parameters

There are a couple of options for the type of information returned based on the input query parameters:

- Include a country code to get the dictionaries for the specified country; or
- Exclude all query parameters to get a list of all the configured dictionaries.

The query parameters for the `Dictionaries` service are defined in the following table.

Name	Description
country	Name of country in **ISO 3166-1** Alpha-2 or Alpha-3 format, or a common name of the country, such as United States of America.

Dictionaries Service Response

ConfiguredDictionaryResponse Object

The following table defines the response elements returned from the `Dictionaries` service.

Name	Type	Description
customDictionary	Boolean	Indicates if the dictionary is a user-defined dictionary. **true** The dictionary is a custom, user-defined dictionary. **False** The dictionary is not a custom dictionary.
repositoryName	String	The file name of the dictionary.
path	String	The location of the dictionary on the server.
vintage	String	The data vintage from the vendor.
source	String	The data vendor.
description	String	The name of the dictionary.
`countrySupportInfos`, a collection of `CountrySupport` objects. Each comprising the following elements:		
supportedCountries	List <String>	A list of countries supported by the specified dictionary.
supportedDataTypes	List <DataType>	Type of data in dictionary. One of the following: • POINT • STREET • POST_CODE_1 • POST_CODE_2 • AREA_NAME_1 • AREA_NAME_2 • AREA_NAME_3 • AREA_NAME_4

Examples

Dictionaries JSON Request & Response

JSON Request

The following is an example of a `JSON` request for the `Dictionaries` service. In this example, the request is for a list of configured geocoding datasets for France.

```
GET http://myserver:8080/rest/GlobalGeocode/dictionaries.json?
country=FRA HTTP/1.1
```

JSON Response

The following shows the `JSON` response returned by the previous request.

```
{
   "dictionaries": [
      {
         "customDictionary": false,
         "repositoryName": "MAPMARKER_FR_Navteq_2013_Q4",
         "path": null,
         "vintage": "2013.Q4",
         "source": "Navteq",
         "description": "MAPMARKER_FR_Navteq_2013_Q4",
         "countrySupportInfos": [
            {
               "supportedCountries": [
                  "MYT",
                  "REU",
                  "GUF",
                  "GLP",
                  "MTQ",
                  "FRA",
                  "MCO"
               ],
               "supportedDataTypes": [
                  "POST_CODE_1",
                  "AREA_NAME_3",
                  "STREET"
               ]
            }
         ]
      },
      {
         "customDictionary": false,
         "repositoryName": "MAPMARKER_FR_TomTom_2013_12",
         "path": null,
         "vintage": "2013.12",
         "source": "TomTom",
         "description": "MAPMARKER_FR_TomTom_2013_12",
         "countrySupportInfos": [
            {
               "supportedCountries": [
                  "MYT",
                  "REU",
                  "GUF",
                  "GLP",
                  "MTQ",
                  "FRA",
                  "MCO"
               ],
               "supportedDataTypes": [
                  "POST_CODE_1",
                  "AREA_NAME_3",
                  "STREET"
               ]
            }
         ]
      }
   ]
}
```

Precisely Geocoding Connector

Introduction

The Precisely Geocoding Connector allows customers to integrate Spectrum Geocoding within third-party systems such as ArcGIS™Online or ArcGIS™ Pro Desktop.

You'll need one of these Precisely geocoding solutions to generate our geocodes:

- Spectrum Global Geocoding Software Developer Kit (SDK)
- Spectrum Global Geocoding
- Location Intelligence GeoCode API (available at developer.precisely.com)

To download:

1. Go to **https://developer.precisely.com/apis/geocode/gis** and scroll down to **Quick Setup**.
2. In the ArcGIS Pro section, click **Download**.

Geocoding Operations

The Precisely Geocoding Connector supports the following operations:

- `findAddressCandidates`: Geocode one location or address at a time.
- `geocodeAddresses`: Geocode a list of addresses as a batch with a single request.
- `reverseGeocode`: Returns address or place candidates when given an XY location.
- `suggest`: Provides suggested candidates based on user input character-by-character typing

Example URL

The following is a URL example using the Geocoding Connector. The default URL will be the following if deployed at the root of server.

http://localhost:8080/rest/GeocodeService/arcgis/rest/services/PBLocator/GeocodeServer/findAddressCandidates

findAddressCandidates

`findAddressCandidates` geocodes one location/address per request. The input can be a single line or multiline, along with mandatory and optional parameters. It supports following types of location:

- Street Address
- Street Intersection
- Point of Interest
- Administrative Place Names
- Postal codes

Coordinates, as a type of ESRI location, is not supported by Precisely Geocoding Connector.

Parameters

`findAddressCandidates` uses required and optional parameters in a GET request to geocode a single address.

Parameter	Details
f	Required: The response format in json, html or kmz. For the Gecoding Connector, the supported format is json.
addressField	Required: The address of the location to be geocoded.
countryCode	Required: Defines the source country for the address.
singleLine	Optional: An address as a single string to be geocoded.
neighborhood	Optional: Neighborhood the address is in.
city	Optional: City the address is in.
subregion	Optional: Subregion the address is in.
region	Optional: Region the address is in.
postal	Optional: Postcode for the address.
postalExt	Optional: Additional postcode for the address.
maxLocations	Optional: The maximum number of locations to be returned.
outFields	Optional: The list of fields to be returned.
outSR	Optional: The well-known ID (WKID) of the spatial reference or a spatial reference JSON object for the returned address candidates.

Parameter	Details
addressField2	Not supported.
addressField3	Not supported.
location	Not supported.
category	Not supported.
matchOutofRange	Not supported.
magicKey	Not supported.
locationType	Not supported.
searchExtent	Not supported.
forStorage	Not supported.

geocodeAddresses

Geocode an entire list of addresses in one request using the `geocodeAddresses` operation. Geocoding many addresses at once is also known as batch or bulk geocoding.

- Street Address
- Street Intersection
- Point of Interest
- Administrative Place Names
- Postal codes

Coordinates, as a type of ESRI location, is not supported by the Precisely Geocoding Connector.

Parameters

`geocodeAddresses` uses required and optional parameters in a POST request to batch geocode multiple addresses.

Parameter	Details
f	Required: The response format in json, html or kmz. For the Geocoding Connector, the supported format is json.
addresses	Required: Addresses for batch geocoding. SingleLine and multiline addresses are supported.
outFields	Optional: The list of fields to be returned.
outSR	Optional: The well-known ID (WKID) of the spatial reference or a spatial reference JSON object for the returned address candidates.
maxLocations	Optional: The maximum number of locations to be returned.
MaxBatchSize	Optional: Defines the limit of addresses that can be geocoded in a single request. We recommend a batch size of 100-200 addresses.
SuggestedBatchSize	Optional: Specifies the optimal number of addresses to include in a single batch request given the power of the server and the bandwidth.
sourceCountry	Optional: Defines the source country for the addresses.
matchOutofRange	Not supported.
locationType	Not supported.

Example

This is an example for the addresses parameter.

```
{
    "records": [
        {
            "attributes": {
                "OBJECTID": 1,
                "Address": "10 greenhill rd",
                "Neighborhood": "",
                "City": "wayville",
                "Subregion": "",
                "Region": "SA",
                "countryCode": "AUS"
               }
           },
           {
                "attributes": {
                "OBJECTID": 2,
                "singleLine": "10 downing street London SW1A 2AA",
                "countryCode": "GBR"
               }
            },
            {
                "attributes": {
                "OBJECTID": 3,
                "Address": "1600 PENNSYLVANIA AVE NW",
                "Neighborhood": "",
                "City": "Washington",
                "Subregion": "",
                "Region": "D",
                "countryCode": "USA"
                }
            }
       ]
  }
```

reverseGeocode

The `reverseGeocode` operation determines the address at a particular x/y location. You pass the coordinates of a point location to the geocoding service, and the service returns the address or place that is closest to the location.

It supports following types of location:

- Street Address
- Street Intersection
- Point of Interest
- Administrative Place Names
- Postal codes

Parameters

`reverseGeocode` uses required and optional parameters in a GET request to retrieve an address from a point location.

Parameter	Details
f	Required: The response format in json, html or kmz. For the Geocoding Connector, the supported format is json.
location	Required: Location of the point to be matched.
distance	Optional: The distance in meters from the location to include in the search area.
outSR	Optional: The well-known ID (WKID) of the spatial reference or a spatial reference JSON object for the returned address candidates.
featureTypes	Not supported.
returnIntersection	Not supported.
locationType	Not supported.

suggest

The method `suggest` allows character-by-character autocomplete suggestions to be generated for user input in a client application. This capability facilitates the interactive search user experience by reducing the number of typed characters before a suggested match is obtained.

- Street Address
- Street Intersection
- Point of Interest
- Administrative Place Names
- Postal codes

Parameters

`suggest` uses required and optional parameters in a GET request to return suggested results from character by character input.

Parameter	Details
f	Required: The response format. The supported format is JSON.
text	Required: The input text to be used to find suggested candidates.
countryCode	Required: Defines the source country for the address.
searchExtent	Optional: Confine the search results to a specified area. Use as a starting point to expand as needed.
location	Optional: Confine the search results to a specified area. Use as a starting point to expand as needed.
maxSuggestions	Optional: Maximum number of suggestions to be returned. in a response.
matchOutofRange	Not supported.
locationType	Not supported.

A - Custom Dataset Builder

In this section

Custom Dataset Builder

The Custom Dataset Builder is a stand-alone command line utility that allows customers to create custom datasets and integrate address data with Spectrum Global Geocoding. Custom datasets can complement the Global Geocoding's standard datasets. In addition, the utility allows enhancing and optimizing geocoding behaviors to accommodate features unique to a particular dataset.

Custom Dataset Builder Workflow

- Unpack the package. Confirm source data meet requirements.
- Determine supported countries and languages. Create a sample geocoding or typeahead configuration for one or all supported countries. Customize the configuration.
- Build a custom dataset. Integrate datasets with Spectrum.

Features

The Custom Dataset Builder supports:

- Forward geocoding of street and address points for supported countries, including data unique to a particular dataset
- Reverse geocoding for all supported countries with the exception of the United States
- Typeahead user dictionary creation for all supported countries
- Data integration for more than 100 countries and languages supported by the Spectrum Global Geocoding. See **Custom Dataset Builder Supported Countries**
- MapInfo TAB source file input format (Native and NativeX)

Related reference
Source Data Requirements on page 92

Limitations

Before you begin using the Custom Dataset Builder, please consider the following:

- The Custom Dataset Builder does not support TAB file names that contain special characters, □, #, $, or %, for example. If a TAB file you intend to use with the Custom Dataset Builder contains special characters, you need to rename it.
- The Custom Dataset Builder does not support the byte order mark (BOM) Unicode character. Some editors, Notepad, for instance, add a BOM when you save text as UTF-8; therefore, when editing a JSON file, you should use an editor that does not add a BOM, Notepad++ for example.
- Data creation for a country using multiple Tab files is not supported.
- The optional parameter `-usePackagedLib` will only work with Spectrum version 2019.1 or higher and SPD bundles OCT2019 or higher.
- The optional parameter `-engine="Typeahead/Geocoding"` will only work with Spectrum version 2020.1 or higher and SPD bundles OCT2020 or higher.

Source Data Requirements

Source data must conform to the following requirements:

- The source file must be a MapInfo Tab (Native or NativeX).
- The data's source records should contain either point geometries or line geometries (segmented data). In case latitude and longitude are available in tabular format (separate columns) in the tab file, you will need to generate geometries using these columns.
- The data has to be in a schema that contains all required fields, which are mapped during the dataset building process. If a value of a required field is empty for a particular record, then that record will not be imported into the dataset.
- The search area code (SAC) field should preferably be mapped to the postcode, as this serves the most logical grouping for most of the cases – not required for United States, Germany and Canada.
- Spectrum 2019.1 or higher is required and the vintage of the SPD bundles must be OCT2019 or later.
- For Typeahead support, Spectrum 2020.1 or higher is required and the vintage of the SPD bundles must be OCT2020 or later.

Getting Started with Custom Dataset Builder

The Custom Dataset Builder is available when you install Spectrum Technology Platform and Spectrum Global Geocoding. It is located in `server\modules\GlobalGeocode\customdatasetbuilder`. A link to this documentation is located in the directory.

Custom Dataset Builder Commands

Note: Before using the Custom Dataset Builder commands, identify the paths to all installed Spectrum Global Geocoding datasets.

Custom Dataset Builder commands are executed from the command line from the root of the installed location of the tool. Each command has a leading – (hyphen). The available commands are:

- **help**: Provides the user a list of commands which Custom Dataset Builder offers to the customer, and educates them on how to utilize those to onboard their data effectively

```
java -Xmx512m -jar cdb-<version>.jar -help
```

- **findCountryWithLanguage**: This command enables you to understand what countries are supported by the Custom Dataset Builder to create custom data. In addition, it provides information about the language of the data. Both are being written to a text file (placed parallel to the cdb-<version>.jar) the user can use later to generate the initial configuration per country per supported language.

```
java -Xmx512m -jar cdb<version>.jar
-engine="Typeahead/Geocoding"
-findCountryWithLanguage-folderLocation="$folderLocation" -usePackagedLib
```

  Parameters for the findCountryWithLanguage command:

  - engine: optional parameter [Typeahead/Geocoding] defines which type of supported countries and languages will be fetched.

    -engine=Typeahead will fetch Typeahead-supported countries and languages.

    -engine=Geocoding will fetch Geocoding-supported countries and languages.

    If a parameter is not provided, it will fetch geocoding-supported countries and languages by default .

  - folderLocation: value will be parent folder location where all the SPD's are placed in extracted format
  - usePackagedLib: optional parameter [required for USA] that uses the libraries bundled with the Custom Dataset Builder tool instead of using the library from the SPD.

- **createConfig**: This command enables the user to create a country-specific configuration, which is a JSON file, which contains the step-by-step mapping of the user data information to onboard their data.

```
java -Xmx512m -jar cdb<version>.jar -createConfig
-engine="Typeahead/Geocoding" -folderLocation="$folderLocation"
```

```
-country="$country_code"-dataType="$data_type" -language="$language_code"
-userProfile="basic/advance" -usePackagedLib
```

Parameters for the createConfig command

- engine: optional parameter [Typeahead/Geocoding] defines which type of JSON file the Custom Dataset Builder will generate.

  -engine=Typeahead will generate Typeahead-specific JSON.

  -engine=Geocoding will generate Geocoding-specific JSON.

  If a parameter is not provided, it will generate Geocoding-specific JSON by default.
- folderLocation: value will be parent folder location where all the SPD's are placed in extracted format
- country: mandatory information, which is required for generating any of the configuration which user needs to provide and country for which the configuration file needs to be created. Country information is passed as a 3-letter ISO code only.
- language: optional field, which provides the user to specify the language of the data user wants to onboard. In addition, this field needs to match with the current offering by Precisely geocoding software. By default the value of this field is set to "en" – which is Latin or plain English.
- datatype: optional parameter which specifies the type of data being intended to onboard – Ranged data maps to "Street" while the point data maps to "AP". Example: datatype=Street
- userProfile: optional parameter. Based upon the technical aspect of the user, the configuration can be basic or advanced. Basic being default. Basic creates default JSON without having any advanced configuration in it.

  This option only applies when the -engine=Geocoding argument is provided or no -engine is provided. It does not apply for -engine=Typeahead because there will be no advanceConfig element in the Typeahead JSON file.

  Advanced persona of the user profile has the entire configuration as offered by the basic, but also offers some additional config elements and is not supported for DEU, CAN and USA.
- usePackagedLib: optional parameter [required for USA] that uses the libraries bundled with the Custom Dataset Builder instead of using the library from the SPD.

- **buildAll**: Similar to the createConfig command, the buildAll command enables the user to create a configuration of all the supported countries and languages at once.

```
java -Xmx512m -jar cdb-<version>.jar -buildAll
-engine="Typeahead/Geocoding" -folderLocation=
"$folderLocation" -userProfile="basic/advance" -usePackagedLib
```

Parameters for the buildAll command

- engine: optional parameter [Typeahead/Geocoding] defines which type of JSON file the Custom Dataset Builder will generate.

-engine=Typeahead will generate Typeahead-specific JSON for all supported countries and languages.

-engine=Geocoding will generate Geocoding-specific JSON for all supported countries and languages.

If a parameter is not provided, it will generate Geocoding-specific JSON by default.

- folderLocation: value will be parent folder location where all the SPD's are placed in extracted format
- userProfile: optional parameter. Based upon the technical aspect of the user, the configuration can be basic or advanced. Basic being default. Basic creates default JSON without having any advanced configuration in it.

  This option only applies when the -engine=Geocoding argument is provided or no -engine is provided. It does not apply for -engine=Typeahead because there will be no advanceConfig element in the Typeahead JSON file.

  Advanced persona of the user profile has the entire configuration as offered by the basic, but also offers some additional config elements and is not supported for DEU, CAN and USA.
- usePackagedLib: optional parameter [required for USA] that uses the libraries bundled with the Custom Dataset Builder tool instead of using the library from the SPD.

- **createDictionary**: Once the user is done with all the relevant configuration as described in the createConfig command, the command lets the user initiate the build process of onboarding the user data into the Precisely geocoding software consumable format.

```
java -Xmx512m -jar cdb<version>.jar -engine="Typeahead/Geocoding"
-createDictionary
-folderLocation="$folderLocation"
-configFilePath="$configFilePath" -usePackagedLib
```

Parameters for the createDictionary command

- engine: optional parameter [Typeahead/Geocoding] defines which type of user data the Custom Dataset Builder will create.

  -engine=Typeahead will create Typeahead-specific user data.

  -engine=Geocoding will generate Geocoding-specific user data.

  If a parameter is not provided, it will generate Geocoding-specific user data by default.
- configFilePath: argument is the absolute path of the JSON file.
- folderLocation: value will be parent folder location where all the SPD's are placed in extracted format
- usePackagedLib: optional parameter [required for USA] that uses the libraries bundled with the Custom Dataset Builder tool instead of using the library from the SPD.

Related reference
Creating a Configuration File for a Single Country on page 96
Creating a Configuration File for All Supported Countries on page 99

Building a Custom Dataset for Geocoding and Typeahead

Building a custom dataset involves using customized JSON files as input and executing the build command that creates the binary files that compose the dataset as output.

To build a custom dataset execute the following command from the command prompt.

```
java -Xmx512m -jar cdb<version>.jar -engine="Typeahead/Geocoding"
-createDictionary
-folderLocation="$folderLocation"
-configFilePath="$configFilePath" -usePackagedLib
```

The Custom Dataset Builder builds the dataset and places it in the folder you specified.

Integration with Spectrum

After building a custom dataset and putting it in the destination folder for the country to which it applies, you can select it for use in the Spectrum Management Console.

Creating a Configuration File for a Single Country

Creating a sample configuration file for a single country establishes a default JSON file you can use to modify and build a custom dataset.

To create a sample configuration file for a country, execute the following command at the command prompt.

```
java -Xmx512m -jar cdb<version>.jar -createConfig
-engine="Typeahead/Geocoding" -folderLocation="$folderLocation"
-country="$country_code"-dataType="$data_type" -language="$language_code"
-userProfile="basic/advance"-usePackagedLib
```

Refer to **Custom Dataset Builder Commands** for details about individual parameters.

The Custom Dataset Builder creates the JSON file for that country.

FRA Geocoding Configuration

Custom Dataset Builder supports data creation for France, the French-administered territories of Guadeloupe (GLP), French Guiana (GUF), Martinique (MTQ), Mayotte (MYT), Réunion (REU), and the country of Monaco (MCO) using the similar command as used for other countries.

When geocoding any address from the territories, provide all the relevant settings as you would for France (including the country code FRA, not the territory code). Matching candidates are returned from those territories along with the country code of its parent (i.e., FRA).

Requirements:

- Data must be in TAB format (native or nativeX).

Result:

- When using custom datasets for street geocoding, the result code contains a "U" for user datasets to distinguish it from "A" when candidates are from the standard address datasets. For example: S5HPNTSCZ**U** instead of S5HPNTSCZ**A**.

Limits:

- Data created with Custom Dataset Builder does not support interactive geocoding at this time.

Related reference
Custom Dataset Builder Commands on page 93
Creating a Configuration File for a Single Country on page 96
Creating a Configuration File for All Supported Countries on page 99

USA Geocoding Configuration

You need to provide certain values in `USA_DataManagerSettings.properties` for creating custom datasets with USA data. The properties file is located alongside the cdb-<version>.jar.

```
java -Xmx512m -jar cdb-<version>.jar -createDictionary
-folderLocation="$folderLocation" -configFilePath="$configFilePath"
-usePackagedLib
```

Note: USA data creation requires a streets dataset is installed. Additionally, you must use the -usePackagedLib parameter with Spectrum 2019.1 or higher is required and the vintage of the SPD bundles must be OCT2019 or later.

DICTIONARY_PATH1: value will be the path of the folder where the USA address dictionaries are present in extracted format.

LIB_PATH: value will be the path of the OS-specific DLL's available in the GlobalGeocode bin.

Example: LIB_PATH="..\Spectrum\server\modules\GlobalGeocode\bin"

usePackagedLib: this parameter is required for USA data creation. It uses the libraries bundled with the Custom Dataset Builder tool instead of using the library from the SPD.

Requirements:

- Spectrum 2019.1 or higher.
- The vintage of the SPD bundles must be OCT2019 or later.
- A streets dataset must be installed.
- Data must be in TAB format (native or nativeX).

Result:

- When using custom datasets for street geocoding, the result code contains a "U" for user datasets to distinguish it from "A" when candidates are from the standard address datasets. For example: S5HPNTSCZ**U** instead of S5HPNTSCZ**A**.

Limits:

- Data created with Custom Dataset Builder does not support interactive geocoding at this time.

Related reference

Custom Dataset Builder Commands on page 93
Creating a Configuration File for a Single Country on page 96
Creating a Configuration File for All Supported Countries on page 99

Creating a Configuration File for All Supported Countries

Creating a sample configuration file for all countries establishes default JSON files which can be modified and used to build custom datasets.

To create sample configuration files for all supported countries, execute the following command at the command prompt.

```
java -Xmx512m -jar cdb-^<version>.jar -buildAll
-engine="Typeahead/Geocoding" -folderLocation=
"$folderLocation" -userProfile="basic/advance" -usePackagedLib
```

Customizing a Geocoding Configuration

Customizing a geocoding configuration involves modifying the configuration's properties in the sample JSON files. The JSON files utilize two property types:

- Build-time properties are used during both data creation and geocoding.
- Run-time properties are applicable only during geocoding.

> **Note:** A custom geocoding configuration only applies to a specific dataset. It does not affect the geocoding behavior of other datasets. If you haven't created a configuration yet (JSON file), see `createConfig` in the **Custom Dataset Builder Commands** on page 93.

To customize a geocoding configuration:

1. Open the JSON file you want to edit in a text file editor.
2. Modify the necessary property key values.
3. Close the file.

Review the following sets of properties for potential customization in a dataset's JSON file.

configuration

This set of build time properties defines the dataset's configuration. The properties are:

- `country` – This property identifies the country to which the dataset applies. The value is a three-letter ISO country code in all capital letters. For example: AUT.
- `dataName` – This property indicates the dataset's name. Possible values are AP and STREET in uppercase. AP represents address points. STREET represents street data.
- `dataProviderName` – This property identifies the vendor that is the source of the data. Recommended not to change this property
- `dataReader` – This property identifies the data reader. The value is Tab. Recommended not to change this property
- `dictionaryType` – This property identifies the dataset type. Values is Street. Recommended not to change this property.
- `dataLanguage` – This property indicates the language the dataset uses. The value is a two-letter abbreviation. For example: en. Recommended not to change this value.

Example

```
"Configuration": {
        "country": "AUT",
        "dataName": "STREET",
        "dataProviderName": "TA",
        "dataReader": "Tab",
        "dictionaryType": "Street",
        "dataLanguage": "en"
        }
```

Note: Both properties and values are in quotation marks.

field

This set of build time properties defines the dataset's field formats. The properties are:

- `StreetName`: Indicates the street column
- `PostCode`: Indicates the postcode column
- `AreaName1`: This property indicates the stateprovince column
- `AreaName1` (USA specific): Mapped to a column which is a state abbreviation
- `AreaName2`: This property indicates the county column
- `AreaName3` : This property indicates the city column
- `AreaName4`: This property indicates the locality column
- `StartingAddressNumber` :This property indicates the starting number for address number ranges for the left and right sides of a road.
- `EndingAddressNumber`: This property indicates the ending number for address number ranges for the left and right sides of a road.

- `StreetSideIndicator`: This property indicates even and/or odd address number structures for the left and right sides of the road. The column being mapped should have one of the following values as supplied in the table below. Any other value being mapped may result in a data creation error.

Column Value	Description	Example
0 or 1	No address number range	
2	Even Ranges From Left – To Left (2-10)	2,4,6,8,10
3	Odd ranges From Left – To Left (1-9)	1,3,5,7,9
4	Mixed From Left – To Left (1-10)	1,2,3,4,5,6,7,8,9,10

- `geometry_name`: This property pairs the key GeometryName with the value “GEOM.”
- `StreetAdditionalFields`: This property indicates whether or not additional street candidate information is necessary
- `RangeAdditionalFields`: This property indicates whether or not additional range information is necessary.
- `UnitAdditionalFields`: This property identifies an additional field at the unit level.
- `PostalAdditionalFields`: This property identifies an additional field at the administrative boundary level.

  The following properties are subordinate to the properties above.

  - `Comments`: Description about the property
  - `keys`: This property identifies single or multiple keys for a particular field. It nests under any of the above properties. Recommended not to change existing keys as generated. Addition is allowed for the additional fields at different levels.
  - `values` : This property indicates the name of the column to which the field is mapped in the custom data source. It nests under any of the above properties.
  - `altValues`: An optional field, and indicates alternate value to the key being mapped.

Canada-specific `altValue`: The postal code in Canada comprises 6 digits. Of these 6 digits, the 1st three digits are mapped to `values`, the last three digits are mapped to `altValues`.

```
"PostCode" : {
   "keys": ["LeftPostCode", "RightPostCode"],
   "values": ["PostalCode", "PostalCode"],
   "altValues”: ["PostalCode_AddOn", PostalCode_AddOn"]
   }
"PostCode" : {
   "keys": ["LeftPostCode", "RightPostCode"],
   "values": ["PostalCode", "PostalCode"],
   "altValues”: ["PostalCode_AddOn", PostalCode_AddOn"]
   }
 "PostCode" : {
      "Comments" : "Mapping for Post Code and Extended Post Code from
source data.",
      "keys" : [ "LeftPostCode", "RightPostCode" ],
      "values" : [ "Left_postalcode_5", "Right_postalcode_5" ],

      "altValues" : [ "Left_postalcode_3", "Right_postalcode_3" ]
    },
```

Singapore: Postal codes are mapped in 2 columns. The first column contains the initial 2 digit postcode. The second column contains the last 4 digits.

For address points the `value` and `altValue` are postcode2, postcode4

For street data: l_postcode2/l_postcode4/r_postcode2/r_postcode4

```
"PostCode" : {
      "Comments" : "Mapping for Post Code and Extended Post Code from
source data.",
      "keys" : [ "LeftPostCode", "RightPostCode" ],
      "values" : ["l_postcode2", "r_postcode2"],
      "altValues" : ["l_postcode4", "r_postcode4"]
    },
```

Example

```
"field": {
    "StreetName": {
"Comments" : "Mapping for Street Name and Street Name Alias from source
 data.",
     "keys" : "StreetName",
     "values" : "STRASSE",
 "altValues" : ""
    },
    "PostCode" : {
"Comments" : "Mapping for Post Code and Extended Post Code from source
data.",
      "keys" : [ "LeftPostCode", "RightPostCode" ],
      "values" : [ "PLZ", "PLZ" ],
      "altValues" : [ "", "" ]
    },
    "AreaName3" : {
      "keys" : [ "LeftAreaName3", "RightAreaName3" ],
      "values" : [ "ORT", "ORT" ],
      "altValues" : [ "", "" ]
    },
    "AreaName4" : {
      "keys" : [ "LeftAreaName4", "RightAreaName4" ],
      "values" : [ "ORTSTEIL", "ORTSTEIL" ],
      "altValues" : [ "", "" ]
    },
    "StreetSideIndicator" : {
   "Comments" : "Mapping for Street Side Indicator from source data.",
      "keys" : [ "LeftStreetSideIndicator", "RightStreetSideIndicator"
],
      "values" : [ "", "" ]
    },
    "StartingAddressNumber" : {
   "Comments" : "Mapping for Starting Address Number from source data.",

      "keys" : [ "FromLeftStartingAddressNumber",
"FromRightStartingAddressNumber" ],
      "values" : [ "HAUSNR_VON", "HAUSNR_VON" ]
    },
    "EndingAddressNumber" : {
   "Comments" : "Mapping for Ending Address Number from source data.",
     "keys" : [ "ToLeftEndingAddressNumber", "ToRightEndingAddressNumber"
 ],
      "values" : [ "HAUSNR_VON", "HAUSNR_VON" ]
    },
 "StreetAdditionalFields" : {
   "Comments" : "Mapping for Additional Fields at Street level from
source data.",
      "keys" : [ "sub_locality", "sub_town" ],
      "values" : [ "ORTSTEIL", "ORT" ]
    },
    "RangeAdditionalFields" : {
   "Comments" : "Mapping for Additional Fields at Range level from source
 data.",
      "keys" : [ "RangeIdentifier" ],
      "values" : [ "ORTSTEIL" ]
    },
 "UnitAdditionalFields" : {
   "Comments" : "Mapping for Additional Fields at Unit level from source
 data.",
      "keys" : [ "UnitIdentifier" ],
      "values" : [ "ORTSTEIL" ]
    },
 "PostalAdditionalFields" : {
   "Comments" : "Mapping for Additional Fields at Postal level from
source data.",
      "keys" : [ "PostalIdentifier" ],
      "values" : [ "ORTSTEIL" ]
    },
    "geometry_name" : {
   "Comments" : "Mapping for Geometry from source data.",
      "keys" : "GeometryName",
      "values" : ""
    }
  }
```

dataReader

This set of build time properties defines the dataset's data reader property. The properties are:

- `tab`: This property indicates the reader is a TAB file reader.

  The following properties are subordinate to the property above.

  - `TABFile`: This property identifies the TAB file. It nests under the tab property.
  - `inputPath`: This property indicates the path to the custom source data. For the tab property, this is the complete file path.

Example

```
"dataReader": {
 "Comments": "Mapping for input file path and TAB file name."
    "tab" : {
      "inputPath" : "<InputTabFileFolder>/AUT_TAB",
      "TABFile" : "AT_scheme_dummy_sample1"
    }
  }
```

output

This build time property defines the output path for the custom dataset.

Example

```
"output" : {
    "outputPath" : "<FolderLocation>/AUT_UD"
  }
```

errata

This build time property defines the field mapping for creating the search area code (Sac).

Example

```
"errata" : {
"SacFromFile" : [ "PostalCode", "PostalCode" ]
}
```

`SacFromFile` in the JSON must be numeric. Postal codes are numeric for most countries and can be used to define the SacFromFile. For those countries where postal codes are not numeric, the Custom Dataset Builder requires a field that can provide a logical grouping.

advancedConfigs

This set of run time properties defines custom configuration values. It includes the subsets Abbreviations, Post_StreetTypes, and Pre_StreetTypes, which in turn, contain keys and editable values.

This configuration is a only available with `userProfile`=”`Advance`”.

Abbreviations

This property allows configuring country-specific abbreviations.

Example

```
"Abbreviations" : [ "Wien:Wien", "Freih:Frh", "LIMITED:LTD",
"INDUSTRIES:IND", "FOOTBALL:F", "OÖ:Oberösterreich", "haus:hs",
"Hauptbahnhof:Hbf", "Sankt%:St", "European+Economic+Interest+Group:EEIG",
 "Dekan:Dek", "BUILDING:BLD", "NÖ:Niederösterreich"]
```

`SacFromFile` in the JSON must be numeric. Postal codes are numeric for most countries and can be used to define the SacFromFile. For those countries where postal codes are not numeric, the Custom Dataset Builder requires a field that can provide a logical grouping.

Post_StreetType

This property allows configuring country-specific street types which are often written after the street names.

Example

```
"Post_StreetTypes" : [
"CHAUSEE:chaussee,CHAUSSEE,CHAUSSEE.,CHAUSSE,CHAUSSE.,CHAUSE,CH.,CHAUSS.,CHAUS.,CHAUS,CHAUSS",
 "PROM:PROM,promenade,Prom.", "WEG:WEG,weg,Weg.", "DAMM:DAM,damm,Damm.",
 "RING:RNG,ring,Ring.", "BOULEVARD:BD,boulevard,boulevard.,BD.",
"GASSE:GA,gasse,Gasse.,g.", "PLATZ:PL,platz,platz.,PL.",
"PROMENADE:PROM,promenade",
"STRAßE:STR,STRAßE,STRASSE,STRASS,STRASE,STRABE,STREET" ]
```

Pre_StreetTypes

This property allows configuring country-specific street types which often are written before the street names.

Example

```
"Pre_StreetTypes" : [ "Rue:R." ]
```

The following shows the `advancedConfigs` properties:

```
"advancedConfigs" : {
          "Post_StreetTypes" : [
"CHAUSEE:chaussee,CHAUSSEE,CHAUSSEE.,CHAUSSE,CHAUSSE.,CHAUSE,CH.,CHAUSS.,CHAUS.,CHAUS,CHAUSS",
 "PROM:PROM,promenade,Prom.", "WEG:WEG,weg,Weg.", "DAMM:DAM,damm,Damm.",
 "RING:RNG,ring,Ring.", "BOULEVARD:BD,boulevard,boulevard.,BD.",
"GASSE:GA,gasse,Gasse.,g.", "PLATZ:PL,platz,platz.,PL.",
"PROMENADE:PROM,promenade",
"STRAßE:STR,STRAßE,STRASSE,STRASS,STRASE,STRABE,STREET" ],
          "Abbreviations" : [ "Wien:Wien", "Freih:Frh", "LIMITED:LTD",
"INDUSTRIES:IND", "FOOTBALL:F", "OÖ:Oberösterreich", "haus:hs",
"Hauptbahnhof:Hbf", "Sankt%:St", "European+Economic+Interest+Group:EEIG",
 "Dekan:Dek", "BUILDING:BLD", "NÖ:Niederösterreich" ],
          "Pre_StreetTypes" : [ "Rue:R." ]
```

Customizing a Typeahead Configuration

Customizing a typeahead configuration involves modifying the configuration's properties in the sample JSON files. The JSON files utilize two property types:

- Build-time properties are used during both data creation and performing typeahead search.
- Run-time properties are applicable only during typeahead search.

Note: A custom typeahead configuration only applies to a specific dataset. It does not affect the typeahead behavior of other datasets. If you haven't created a configuration yet (JSON file), see `createConfig` in the **Custom Dataset Builder Commands** on page 93.

To customize a typeahead configuration:

1. Open the JSON file you want to edit in a text file editor.

2. Modify the necessary property key values.
3. Close the file.

configuration

This set of build time properties defines the dataset's configuration. The properties are:

- `country` – This property identifies the country to which the dataset applies. The value is a three-letter ISO country code in all capital letters. For example: AUT.
- `dataName` – This property indicates the dataset's name. Possible values are AP and STREET in uppercase. AP represents address points. STREET represents street data.
- `dataProviderName` – This property identifies the vendor that is the source of the data. Recommended not to change this property
- `dataReader` – This property identifies the data reader. The value is Tab. Recommended not to change this property
- `dictionaryType` – This property identifies the dataset type. Values is Street. Recommended not to change this property.
- `dataLanguage` – This property indicates the language the dataset uses. The value is a two-letter abbreviation. For example: en. Recommended not to change this value.
- `engine` – This property indicates which type of user data will be created using this JSON file. Recommended not to change this property.

Example

```
"Configuration": {
"country": "AUT",
"dataName": "STREET",
"dataProviderName": "TA",
"dataReader": "Tab",
"dictionaryType": "Street",
"dataLanguage" : "en",
"engine" : "Typeahead"
}
```

Note: Both properties and values are in quotation marks.

field

This set of build-time properties defines the dataset's field formats. The properties are:

- `StreetName`: Indicates the street column

- `PostCode`: Indicates the postcode column
- `AreaName1`: This property indicates the stateprovince column
- `AreaName1` (USA specific): Mapped to a column which is a state abbreviation
- `AreaName2`: This property indicates the county column
- `AreaName3` : This property indicates the city column
- `AreaName4`: This property indicates the locality column
- `StartingAddressNumber` :This property indicates the starting number for address number ranges for the left and right sides of a road.
- `EndingAddressNumber`: This property indicates the ending number for address number ranges for the left and right sides of a road.
- `StreetSideIndicator`: This property indicates even and/or odd address number structures for the left and right sides of the road. The column being mapped should have one of the following values as supplied in the table below. Any other value being mapped may result in a data creation error.

Column Value	Description	Example
0 or 1	No address number range	
2	Even Ranges From Left – To Left (2-10)	2,4,6,8,10
3	Odd ranges From Left – To Left (1-9)	1,3,5,7,9
4	Mixed From Left – To Left (1-10)	1,2,3,4,5,6,7,8,9,10

- `geometry_name`: This property pairs the key GeometryName with the value “GEOM.”
- `StreetAdditionalFields`: This property indicates whether or not additional street candidate information is necessary
- `RangeAdditionalFields`: This property indicates whether or not additional range information is necessary.
- `UnitAdditionalFields`: This property identifies an additional field at the unit level.
- `PostalAdditionalFields`: This property identifies an additional field at the administrative boundary level.

  The following properties are subordinate to the properties above.

  - `Comments`: Description about the property

- `keys`: This property identifies single or multiple keys for a particular field. It nests under any of the above properties. Recommended not to change existing keys as generated. Addition is allowed for the additional fields at different levels.
- `values` : This property indicates the name of the column to which the field is mapped in the custom data source. It nests under any of the above properties.
- `altValues`: An optional field, and indicates alternate value to the key being mapped.

Example

```
"field" : {
    "StreetName" : {
      "Comments" : "Mapping for Street Name and Street Name Alias from
source data.",
      "keys" : "StreetName",
      "values" : "StreetName",
      "altValues" : ""
    },
    "PlaceName" : {
      "Comments" : "Mapping for Place Name from source data.",
      "keys" : "PlaceName",
      "values" : ""
    },
    "PostCode" : {
      "Comments" : "Mapping for Post Code and Extended Post Code from
source data.",
      "keys" : [ "LeftPostCode", "RightPostCode" ],
      "values" : [ "postalcode", "postalcode" ],
      "altValues" : [ "", "" ]
    },
    "AreaName1" : {
      "Comments" : "Mapping for State from source data.",
      "keys" : [ "LeftAreaName1", "RightAreaName1" ],
      "values" : [ "state", "state" ],
      "altValues" : [ "state_abrv", "state_abrv" ]
    },
    "AreaName2" : {
      "Comments" : "Mapping for District from source data.",
      "keys" : [ "LeftAreaName2", "RightAreaName2" ],
      "values" : [ "district", "district" ],
      "altValues" : [ "", "" ]
    },
    "AreaName3" : {
      "Comments" : "Mapping for Town from source data.",
      "keys" : [ "LeftAreaName3", "RightAreaName3" ],
      "values" : [ "town", "town" ],
      "altValues" : [ "town_alias", "town_alias" ]
    },
    "AreaName4" : {
      "Comments" : "Mapping for Locality from source data.",
      "keys" : [ "LeftAreaName4", "RightAreaName4" ],
      "values" : [ "locality", "locality" ],
      "altValues" : [ "locality_alias", "locality_alias" ]
    },
    "StreetSideIndicator" : {
     "Comments" : "Mapping for Street Side Indicator from source data.",

      "keys" : [ "LeftStreetSideIndicator", "RightStreetSideIndicator"
],
      "values" : [ "", "" ]
    },
    "StartingAddressNumber" : {
      "Comments" : "Mapping for Starting Address Number from source
data.",
      "keys" : [ "FromLeftStartingAddressNumber",
"FromRightStartingAddressNumber" ],
      "values" : [ "hnr", "hnr" ]
    },
    "EndingAddressNumber" : {
     "Comments" : "Mapping for Ending Address Number from source data.",

     "keys" : [ "ToLeftEndingAddressNumber", "ToRightEndingAddressNumber"
 ],
      "values" : [ "hnr", "hnr" ]
    },
    "StreetAdditionalFields" : {
      "Comments" : "Mapping for Additional Fields at Street level from
source data.",
      "keys" : [ "language", "rank" ],
      "values" : [ "language", "rank" ]
    },
    "RangeAdditionalFields" : {
      "Comments" : "Mapping for Additional Fields at Range level from
source data.",
      "keys" : [ "adrcd","featureId" ],
      "values" : [ "adrcd","pac" ]
    },
    "UnitAdditionalFields" : {
      "Comments" : "Mapping for Additional Fields at Unit level from
source data.",
      "keys" : [ "UnitIdentifier" ],
      "values" : [ "" ]
    },
    "PostalAdditionalFields" : {
      "Comments" : "Mapping for Additional Fields at Postal level from
source data.",
      "keys" : [ "PostalIdentifier" ],
      "values" : [ "" ]
    },
    "geometry_name" : {
      "Comments" : "Mapping for Geometry from source data.",
      "keys" : "GeometryName",
      "values" : ""
    }
  }
```

dataReader

This set of build-time properties defines the dataset's data reader property. The properties are:

- `tab`: This property indicates the reader is a TAB file reader.

  The following properties are subordinate to the property above.

  - `TABFile`: This property identifies the TAB file. It nests under the tab property.
  - `inputPath`: This property indicates the path to the custom source data. For the tab property, this is the complete file path.

Example

```
"dataReader": {
 "Comments": "Mapping for input file path and TAB file name."
    "tab" : {
      "inputPath" : "<InputTabFileFolder>/AUT_TAB",
      "TABFile" : "AT_scheme_dummy_sample1"
    }
  }
```

output

This build time property defines the output path for the custom dataset.

Example

```
"output" : {
    "outputPath" : "<FolderLocation>/AUT_UD"
  }
```

errata

These build time properties define the pattern of Formatted Street, Formatted Location and SearchFields.

Use the following convention for defining fields, placing a space or comma between fields. Add or remove field names as needed in each property to meet a country's standard address format.

- Adding field names: use square brackets; for example [StreetName]
- Adding a space between fields: use curly brackets around the space; for example [Field1]{ }[Field2]

- Adding a comma between fields: use curly brackets around the comma; for example [Field1]{,}[Field2]

Properties

- `Formatted Street`: Use this property to define the pattern of Formatted Street in the output address. By default, the pattern is:

```
"Formatted Street" : "[HouseNumber]{ }[StreetName]"
```

  In output, this displays as "123 XYZ Street".

  - If PlaceName is required in the output, the pattern is:

```
"Formatted Street" : "[PlaceName]{ }[HouseNumber]{ }[StreetName]"
```

  - If an additional field (StreetAdditionalFields or RangeAdditionalFields) is required in the output, add the field's Key to the pattern. For example, adding the case-sensitive key [Language] from the StreetAdditionalFields section :

```
"Formatted Street" : "[Language]{ }[HouseNumber]{ }[StreetName]"
```

- `Formatted Location`: Use this property to define the Formatted Location pattern in the output address. By default, the pattern is:

```
"Formatted Location" : "[AreaName3]{, }[AreaName1]{, }[PostCode]"
```

  In output, this displays as "Town, State, PostCode".

- `SearchFields`: Use this comma-separated property to define which fields display typeahead search results. By default, the pattern is:

```
"SearchFields" : "StreetName,AreaName4,AreaName3,PostCode"
```

  To enable search on a specific field, add the field name to the list of fields.

  - Enable search on PlaceName:

```
"SearchFields": "PlaceName,StreetName,AreaName4,AreaName3,PostCode"
```

  - Enable search on an additional field (StreetAdditionalFields or RangeAdditionalFields), add the field's Key to the pattern. For example, this will enable search on the additional field mapped with a "language" key:

```
"SearchFields": " Language,StreetName,AreaName4,AreaName3,PostCode"
```

  - Enable search on an address number:

```
"SearchFields": "HouseNumber,StreetName,AreaName4,AreaName3,PostCode"
```

How to Access User-defined Fields

Additional fields can be mapped in the configuration JSON and made available while geocoding through Spectrum Global Geocoding.

To access user-defined fields:

1. In Enterprise Designer, create a dataflow using the GlobalGeocode stage.
2. In the Write to File Options under the Fields tab, add the field using the Add button. Be sure to use the same name as defined in the JSON.
3. Save the dataflow and geocode the address. You will see the user-defined field in the output.

Supported Countries for Custom Dataset Builder

Country	ISO Country Code
Albania	ALB
Algeria	DZA
Angola	AGO
Argentina	ARG
Aruba	ABW
Australia	AUS
Austria	AUT
Bahamas	BHS
Bahrain	BHR
Barbados	BRB

Country	ISO Country Code
Belarus	BLR
Belgium, Luxembourg	BEL
Belize	BLZ
Benin	BEN
Bermuda	BMU
Bolivia	BOL
Bosnia and Herzegovina	BIH
Botswana	BWA
Brazil	BRA
Brunei Darussalam	BRN
Bulgaria	BGR
Burkina Faso	BFA
Burundi	BDI
Cameroon	CMR
Canada	CAN
Chile	CHL
China	CHN
Colombia	COL
Congo-Brazzaville	COG
Congo-Kinshasa	COD

Country	ISO Country Code
Costa-Rica	CRI
Croatia	HRV
Cuba	CUB
Cyprus	CYP
Czech Republic	CZE
Denmark	DNK
Dominican Republic	DOM
Ecuador	ECU
Egypt	EGY
El Salvador	SLV
Estonia	EST
Finland	FIN
France, French Guiana, Guadeloupe, Martinique, Mayotte, Monaco, Réunion	FRA, GLP, GUF, MCO, MTQ, MYT, REU
Gabon	GAB
Germany	DEU
Ghana	GHA
Greece	GRC
Guatemala	GTM
Guyana	GUY

Country	ISO Country Code
Honduras	HND
Hong Kong	HKG
Hungary	HUN
Iceland	ISL
India	IND
Indonesia	IDN
Iraq	IRQ
Ireland	IRL
Italy, Vatican City, San Marino	ITA, VAT, SMR
Jamaica	JAM
Japan	JPN
Jordan	JOR
Kenya	KEN
Korea	KOR
Kosovo	XKX
Kuwait	KWT
Latvia	LVA
Lebanon	LBN
Lesotho	LSO
Lithuania	LTU

Country	ISO Country Code
Macau	MAC
Macedonia	MKD
Malawi	MWI
Malaysia	MYS
Mali	MLI
Malta	MLT
Mauritania	MRT
Mauritius	MUS
Mexico	MEX
Montenegro	MNE
Morocco	MAR
Mozambique	MOZ
Namibia	NAM
Netherlands	NLD
New Zealand	NZL
Nicaragua	NIC
Niger	NER
Nigeria	NGA
Norway	NOR
Oman	OMN

Country	ISO Country Code
Panama	PAN
Paraguay	PRY
Peru	PER
Philippines	PHL
Poland	POL
Portugal	PRT
Qatar	QAT
Romania	ROU
Russia	RUS
Rwanda	RWA
Saint Kitts and Nevis	KNA
Saudi Arabia	SAU
Senegal	SEN
Serbia	SRB
Singapore	SGP
Slovakia	SVK
Slovenia	SVN
South Africa	ZAF
Spain, Andorra, Gibraltor	ESP AND GIB
Suriname	SUR

Country	ISO Country Code
Swaziland	SWZ
Sweden	SWE
Switzerland, Liechtenstein	CHE LIE
Taiwan	TWN
Tanzania	TZA
Thailand	THA
Togo	TGO
Trinidad and Tobago	TTO
Tunisia	TUN
Turkey	TUR
Uganda	UGA
Ukraine	UKR
United Arab Emirates	ARE
United Kingdom	GBR
United States	USA
Uruguay	URY
Venezuela	VEN
Viet Nam	VNM
Yemen	YEM
Zambia	ZMB

Country	ISO Country Code
Zimbabwe	ZWE

B - Result Codes

In this section

Match and Location Codes for USA

Match Codes

The geocoder returns match codes indicating the address portions that matched or did not match to the database.

If the geocoder cannot make a match, the match code begins with "E" and the remaining digits indicate why the address did not match. For a description of the "`Ennn`" codes, see **"Ennn" Match Codes for No Match** on page 129. The digits do not specifically refer to which address elements did not match, but rather why the address did not match.

The following table contains the match code values. For a description of the hex digits for the match codes, see **Definitions for 1st-3rd hex digit match code values** on page 125.

Code	Description
`Ahhh`	Same as `Shhh`, but indicates match to an alias name record or an alternate record.
`Chh`	The street address did not match, but the geocoder located a street segment based on the input ZIP Code or city.
`D00`	Matched to a small town with P.O. Box or General Delivery only.
`Ghhh`	Matched to an auxiliary file.
`Hhhh`	The house number was changed.
`Jhhh`	Matched to a user-defined dictionary.

Code	Description
`Nxx`	Matched to the nearest address. Used with reverse geocoding. The following are the only values for `N`: **NS0** Nearest street center match (nearest street segment interpolated) **NS1** Nearest unranged street segment **NP0** Nearest point address **NX0** Nearest intersection
`P`	Successful reverse APN lookup.
`Qhhh`	Matched to USPS range records with unique ZIP Codes. CASS rules prohibit altering an input ZIP if it matches a unique ZIP Code value.
`Rhhh`	Matched to a ranged address.
`Shhh`	Matched to USPS data. This is considered the best address match, because it matched directly against the USPS list of addresses. S is returned for a small number of addresses when the matched address has a blank ZIP + 4.
`Thhh`	Matched to a street segment record.
`Uhhh`	Matched to USPS data but cannot resolve the ZIP + 4 code without the firm name or other information. CASS mode returns an `E023` (multiple match) error code.
`Vhhh`	Matched to MLD and MLDR using Key Lookup.
`Xhhh`	Matched to an intersection of two streets, for example, "Clay St & Michigan Ave." The first hex digit refers to the last line information, the second hex digit refers to the first street in the intersection, and the third hex digit refers to the second street in the intersection. **Note:** The USPS does not allow intersections as a valid deliverable address.
`Yhhh`	Same as Xhhh, but an alias name record was used for one or both streets.

Code	Description
`Z`[1]	No address given, but verified the provided ZIP Code .

[1] Zh may be returned if `FIND_CORRECT_LASTLINE` is set to `true`.

Definitions for 1st-3rd hex digit match code values

The table below contains the description of the hex digits for the match code values.

Note: A typical match code contains up to 4 characters: a beginning alpha character followed by 2 or 3 hex digits. The third hex digit is only populated for intersection matches or as part of the Extended Match Code.

- For intersection matches, use the table below for the 3rd hex digit definitions.
- For Extended Match Code, see **Definitions for Extended Match Code (3rd hex digit values)** on page 127.

Code	In first hex position means:	In second and third hex position means:
0	No change in last line.	No change in address line.
1	ZIP Code changed.	Street type changed.
2	City changed.	Predirectional changed.
3	City and ZIP Code changed.	Street type and predirectional changed.
4	State changed.	Postdirectional changed.
5	State and ZIP Code changed.	Street type and postdirectional changed.
6	State and City changed.	Predirectional and postdirectional changed.
7	State, City, and ZIP Code changed.	Street type, predirectional, and postdirectional changed.
8	ZIP + 4 changed.	Street name changed.
9	ZIP and ZIP + 4 changed.	Street name and street type changed.

Code	In first hex position means:	In second and third hex position means:
`A`	City and ZIP + 4 changed.	Street name and predirectional changed.
`B`	City, ZIP, and ZIP + 4 changed.	Street name, street type, and predirectional changed.
`C`	State and ZIP + 4 changed.	Street name and postdirectional changed.
`D`	State, ZIP, and ZIP + 4 changed.	Street name, street type, and postdirectional changed.
`E`	State, City, and ZIP + 4 changed.	Street name, predirectional, and postdirectional changed.
`F`	State, City, ZIP, and ZIP + 4 changed.	Street name, street type, predirectional, and postdirectional changed.

Definitions for Extended Match Code (3rd hex digit values)

Extended Match Codes return additional information about any changes in the house number, unit number and unit type fields in the matched address, as well as whether there was address information that was ignored. This additional information is provided in a 3rd hex digit that is appended to match codes for address-level matches only - A, G, H, J, Q, R, S, T or U (see **Match Codes** on page 122).

> **Note:** A typical match code contains up to 4 characters: a beginning alpha character followed by 2 or 3 hex digits. The third hex digit is only populated for intersection matches or as part of the Extended Match Code.

"Address information ignored" is specified when any of these conditions apply:

- The input address is a dual address (two complete addresses in the input address). For example, "4750 Walnut St. P.O Box 50".
- The input last line has extra information that is not a city, state or ZIP Code, and is ignored. For example, "Boulder, CO 80301 USA", where "USA" is ignored when matching.

For more information, see **Extended Match Codes**.

The table below provides the descriptions for the Extended Match Code 3rd hex digit return values:

Code	In 3rd hex position means:
`0`	Matched on all address information on line, including Unit Number and Unit Type if included.
`1`	Matched on Unit Number and Unit Type if included. Extra information on address line ignored. Extra information not considered for matching is not returned.
`2`	Matched on Unit Number. Unit Type changed.
`3`	Matched on Unit Number. Unit Type changed. Extra information on address line ignored. Extra information not considered for matching is not returned.
`4`	Unit Number changed or ignored.
`5`	Unit Number changed or ignored. Extra information on address line ignored. Extra information not considered for matching is not returned.
`6`	Unit Number changed or ignored. Unit Type changed or ignored.
`7`	Unit Number changed or ignored. Unit Type changed or ignored. Extra information on address line ignored. Extra information not considered for matching is not returned.

Code	In 3rd hex position means:
`8`	Matched on Unit Number and Unit Type if included. House Number changed or ignored.
`9`	Matched on Unit Number and Unit Type if included. House Number changed or ignored. Extra information on address line ignored. Extra information not considered for matching is not returned.
`A`	Matched on Unit Number. Unit Type changed. House Number changed or ignored.
`B`	Matched on Unit Number. Unit Type changed. House Number changed or ignored. Extra information on address line ignored. Extra information not considered for matching is not returned.
`C`	House Number changed or ignored. Unit Number changed or ignored.
`D`	House Number changed or ignored. Unit Number changed or ignored. Extra information on address line ignored. Extra information not considered for matching is not returned.
`E`	House Number changed or ignored. Unit Number changed or ignored. Unit Type changed or ignored.
`F`	House Number changed or ignored. Unit Number changed or ignored. Unit Type changed or ignored. Extra information on address line ignored. Extra information not considered for matching is not returned.

"Ennn" Match Codes for No Match

The following table describes the values returned when the application cannot find a match or an error occurs.

Code	"nnn" Value	Description
`Ennn`[2]		Indicates an error, or no match. This can occur when the address entered does not exist in the database, or the address is badly formed and cannot be parsed correctly. The last three digits of an error code indicate which parts of an address the application could not match to the database.
	`nnn = 000`	No match made.
	`nnn = 001`	Low level error.
	`nnn = 002`	Could not find data file.
	`nnn = 003`	Incorrect GSD file signature or version ID.
	`nnn = 004`	GSD file out of date. Only occurs in CASS mode.
	`nnn = 010`	No city and state or ZIP Code found.
	`nnn = 011`	Input ZIP not in the directory.
	`nnn = 012`	Input city not in the directory.
	`nnn = 013`	Input city not unique in the directory.
	`nnn = 014`	Out of licensed area. Only occurs if using Group1 licensing technology.
	`nnn = 015`	Record count is depleted and license has expired.
	`nnn = 020`	No matching streets found in directory.
	`nnn = 021`	No matching cross streets for an intersection match.
	`nnn = 022`	No matching segments.

Code	"nnn" Value	Description
	`nnn = 023`	Unresolved match.
	`nnn = 024`	No matching segments. (Same as 022.)
	`nnn = 025`	Too many possible cross streets for intersection matching.
	`nnn = 026`	No address found when attempting a multiline match.
	`nnn = 027`	Invalid directional attempted.
	`nnn = 028`	Record also matched EWS data, therefore the application denied the match.
	`nnn = 029`	No matching range, single street segment found.
	`nnn = 030`	No matching range, multiple street segments found.

Correct Lastline Match Codes

As mentioned in **Correct Lastline**, when set to `true`, `FIND_CORRECT_LASTLINE` corrects elements of the output lastline, providing a good ZIP Code or close match on the soundex even if the address would not match or was non-existent.

The feature works when `FIND_ADDRCODE` is `true` and the address does not match a candidate or when `FIND_Z_CODE` is `true` and only lastline information is input.

Code	Value	Description
`Zh`		No address given, but verified the provided ZIP Code.
	`h = 0`	No change in lastline.
	`h = 1`	ZIP Code changed.
	`h = 2`	City changed.

[2] Ennn may be returned if FIND_CORRECT_LASTLINE is set to `true`. For more information, see **Correct Lastline Match Codes** on page 130.

Code	Value	Description
	`h = 3`	City and ZIP Code changed.
	`h = 4`	State changed.
	`h = 5`	State and ZIP Code changed.
	`h = 6`	State and City changed.
	`h = 7`	State, City, and ZIP Code changed.
	`h = 8`	ZIP + 4 changed.
	`h = 9`	ZIP and ZIP + 4 changed.
	`h = A`	City and ZIP + 4 changed.
	`h = B`	City, ZIP, and ZIP + 4 changed.
	`h = C`	State and ZIP + 4 changed.
	`h = D`	State, ZIP, and ZIP + 4 changed.
	`h = E`	State, City, and ZIP + 4 changed.
`Ehnn`		Indicates an error, or no match. This can occur when the address entered does not exist in the database, or the address is badly formed and cannot be parsed correctly. The second digit of the error code is a hex digit which details the changes that were made to the last line information to correct the lastline. The last two digits of an error code indicate which parts of an address the application could not match to the database.
	`h = 0`	No change in lastline.
	`h = 1`	ZIP Code changed.
	`h = 2`	City changed.
	`h = 3`	Record also matched EWS data, therefore the application denied the match.

Code	Value	Description
	`h = 4`	State changed.
	`h = 5`	State and ZIP Code changed.
	`h = 6`	State and City changed.
	`h = 7`	State, City, and ZIP Code changed.
	`h = 8`	ZIP + 4 changed.
	`h = 9`	ZIP and ZIP + 4 changed.
	`h = A`	City and ZIP + 4 changed.
	`h = B`	City, ZIP, and ZIP + 4 changed.
	`h = C`	State and ZIP + 4 changed.
	`h = D`	State, ZIP, and ZIP + 4 changed.
	`h = E`	State, City, and ZIP + 4 changed.
	`nn = 00`	No match made.
	`nn = 01`	Low level error.
	`nn = 02`	Could not find data file.
	`nn = 03`	Incorrect GSD file signature or version ID.
	`nn = 04`	GSD file out of date. Only occurs in CASS mode.
	`nn = 10`	No city and state or ZIP Code found.
	`nn = 11`	Input ZIP Code not in the directory.
	`nn = 12`	Input city not in the directory.

Code	Value	Description
	`nn = 13`	Input city not unique in the directory.
	`nn = 14`	Out of licensed area. Only occurs if using Group1 licensing technology.
	`nn = 15`	Record count is depleted and license has expired.
	`nn = 20`	No matching streets found in directory.
	`nn = 21`	No matching cross streets for an intersection match.
	`nn = 22`	No matching segments.
	`nn = 23`	Unresolved match.
	`nn = 24`	No matching segments. (Same as 022.)
	`nn = 25`	Too many possible cross streets for intersection matching.
	`nn = 26`	No address found when attempting a multiline match.
	`nn = 27`	Invalid directional attempted.
	`nn = 28`	Record also matched EWS data, therefore the application denied the match.
	`nn = 29`	No matching range, single street segment found
	`nn = 30`	No matching range, multiple street segments found

Location Codes

Location codes indicate the locational accuracy of the assigned geocode. Note that an accurately placed candidate is not necessarily an ideal candidate. Examine the match codes and/or result codes in addition to location codes to best evaluate the overall quality of the candidate.

Address Location Codes

Location codes that begin with an "A" are address location codes. Address location codes indicate a geocode made directly to a street network segment (or two segments, in the case of an intersection).

An address location code has the following characters.

1st character	Always an "A" indicating an address location.	
2nd character	May be one of the following	
	`C`	Interpolated address point location
	`G`	Auxiliary file data location
	`I`	Application infers the correct segment from the candidate records
	`P`	Point-level data location
	`R`	Location represents a ranged address
	`S`	Location on a street range
	`X`	Location on an intersection of two streets
3rd and 4th character	Digit indicating other qualities about the location.	

Address Location Code Descriptions

Code		Description
`AGn`		Indicates an auxiliary file for a geocode match where "n" is one of the following values:
	`n = 0`	The geocode represents the center of a parcel or building.
	`n = 1`	The geocode is an interpolated address along a segment.
	`n = 2`	The geocode is an interpolated address along a segment, and the side of the street cannot be determined from the data provided in the auxiliary file record.
	`n = 3`	The geocode is the midpoint of the street segment.
`APnn`		Indicates a point-level geocode match representing the center of a parcel or building, where "nn" is one of the following values:
	`nn = 00`	User Dictionary centroid. Geocode returned by a User Dictionary.
	`nn = 02`	Parcel centroid Indicates the center of an accessor's parcel (tract or lot) polygon. When the center of an irregularly shaped parcel falls outside of its polygon, the centroid is manually repositioned to fall inside the polygon as closely as possible to the actual center.
	`nn = 04`	Address points Represents field-collected GPS points with field-collected address data.

Code	Description
`nn = 05`	Structure point Indicates a location within a building footprint polygon that is associated with the matched address. Usually, residential addresses consist of a single building. For houses with outbuildings (detached garages, sheds, barns, etc.), the structure point will typically fall on the primary structure. Condominiums and duplexes have multiple, individual addresses and may have multiple structure points for each building. Multi-unit buildings are typically represented by a single structure point associated with the primary/base address, rather than discrete structure points for each unit. Shopping malls, industrial complexes, and academic or medical center campuses are commonly represented by a single structure point associated with the primary/base address for the entire complex. When multiple addresses are assigned to multiple buildings within one complex, multiple structure points may be represented within the same complex.
`nn = 07`	Manually placed Address points are manually placed to coincide with the midpoint of a parcel's street frontage at a distance from the center line.
`nn = 08`	Front door point Represents the designated primary entrance to a building. If a building has multiple entrances and there is no designated primary entrance or the primary entrance cannot readily be determined, the primary entrance is chosen based on proximity to the main access street and availability of parking.
`nn = 09`	Driveway offset point Represents a point located on the primary access road (most commonly a driveway) at a perpendicular distance of between 33-98 feet (10-30 meters) from the main roadway.

Code	Description
`nn = 10`	Street access point Represents the primary point of access from the street network. This address point type is located where the driveway or other access road intersects the main roadway.
`nn = 21`	Base parcel point When unable to match to an input unit number, or when the unit number is missing from an address location with multiple units, the "base" parcel information is returned, the address is not standardized to a unit number, and additional information, such as an Assessor's Parcel Number, is not returned.
`nn = 22`	Backfill address point The precise parcel centroid is unknown. The address location assigned is based on two known parcel centroids.
`nn = 23`	Virtual address point The precise parcel centroid is unknown. The address location assigned is relative to a known parcel centroid and a street segment end point.
`nn = 24`	Interpolated address point The precise parcel centroid is unknown. The address location assigned is based on street segment end points.
`AIn`	The correct segment is inferred from the candidate records at match time.
`ASn`	House range address geocode. This is the most accurate geocode available.
`AIn` and `ASn`, and `ACnh` share the same values for the 3rd character "n" as follows:	
`n = 0`	Best location.

Code		Description
	`n = 1`	Street side is unknown. The Census FIPS Block ID is assigned from the left side; however, there is no assigned offset and the point is placed directly on the street.
	`n = 2`	Indicates one or both of the following: • The address is interpolated onto a TIGER segment that did not initially contain address ranges. • The original segment name changed to match the USPS spelling. This specifically refers to street type, predirectional, and postdirectional. **Note:** Only the second case is valid for non-TIGER data because segment range interpolation is only completed for TIGER data.
	`n = 3`	Both 1 and 2.
	`n = 7`	Placeholder. Used when starting and ending points of segments contain the same value and shape data is not available.
`ACnh`		Indicates a point-level geocode that is interpolated between 2 parcel centroids (points), a parcel centroid and a street segment endpoint, or 2 street segment endpoints.
	The `ACnh` 4th character "h" values are as follows:	
	`h = 0`	Represents the interpolation between two points, both coming from User Dictionaries.
	`h = 1`	Represents the interpolation between two points. The low boundary came from a User Dictionary and the high boundary, from a non-User Dictionary.
	`h = 2`	Represents the interpolation between one point and one street segment end point, both coming from User Dictionaries.

Code	Description
`h = 3`	Represents the interpolation between one point (low boundary) and one street segment end point (high boundary). The low boundary came from a User Dictionary and the high boundary from a non-User Dictionary.
`h = 4`	Represents the interpolation between two points. The low boundary came from a non-User Dictionary and the high boundary from a User Dictionary.
`h = 5`	Represents the interpolation between two points, both coming from non-User Dictionaries.
`h = 6`	Represents the interpolation between one point (low boundary) and one street segment end point (high boundary). The low boundary came from a non-User Dictionary and the high boundary from a User Dictionary.
`h = 7`	Represents the interpolation between one point and one street segment end point and both came from non-User Dictionaries.
`h = 8`	Represents the interpolation between one street segment end point andone point, both coming from User Dictionaries.
`h = 9`	Represents the interpolation between one street segment end point (low boundary) andone point (high boundary). The low boundary came from a User Dictionary and the high boundary from a non-User Dictionary.
`h = A`	Represents the interpolation between two street segment end points, both coming from User Dictionaries.
`h = B`	Represents the interpolation between two street segment end points. The low boundary came from a User Dictionary and the high boundary from a non-User Dictionary.

Code		Description
	`h = C`	Represents the interpolation between one street segment end point (low boundary) and one point (high boundary). The low boundary came from a non-User Dictionary and the high boundary from a User Dictionary.
	`h = D`	Represents the interpolation between one street segment end point and one point, both coming from non-User Dictionary.
	`h = E`	Represents the interpolation between two street segment end points. The low boundary came from a non-User Dictionary and the high boundary from a User Dictionary.
	`h = F`	Represents the interpolation between two street segment end points, both coming from non-User Dictionaries.
`ARn`		Ranged address geocode, where "n" is one of the following:
	`n = 1`	The geocode is placed along a single street segment, midway between the interpolated location of the first and second input house numbers in the range.
	`n = 2`	The geocode is placed along a single street segment, midway between the interpolated location of the first and second input house numbers in the range, and the side of the street is unknown. The Census FIPS Block ID is assigned from the left side; however, there is no assigned offset and the point is placed directly on the street.
	`n = 4`	The input range spans multiple USPS segments. The geocode is placed on the endpoint of the segment which corresponds to the first input house number, closest to the end nearest the second input house number.
	`n = 7`	Placeholder. Used when the starting and ending points of the matched segment contain the same value and shape data is not available.

Code		Description
`AXn`		Intersection geocode, where "n" is one of the following:
	`n = 3`	Standard single-point intersection computed from the center lines of street segments.
	`n = 8`	Interpolated (divided-road) intersection geocode. Attempts to return a centroid for the intersection.

Street Centroid Location Codes

Location codes that begin with "C" are street centroid location codes. Street centroid location codes indicate the Census ID accuracy and the position of the geocode on the returned street segment. Street centroids may be returned if the street centroid fallback option is enabled and an address-level geocode could not be determined.

A street centroid location code has the following characters.

1st character	Always "C" indicating a location derived from a street segment.
2nd character	Census ID accuracy based on the search area used to obtain matching Street Segment.
3rd character	Location of geocode on the returned street segment.

The following table contains the values and descriptions for the location codes.

Character position	Code	Description
2nd Character		
	`B`	Block Group accuracy (most accurate). Based on input ZIP Code.
	`T`	Census Tract accuracy. Based on input ZIP Code.
	`C`	Unclassified Census accuracy. Normally accurate to at least the County level. Based on input ZIP Code.
	`F`	Unknown Census accuracy. Based on Finance area.
	`P`	Unknown Census accuracy. Based on input City.
3rd Character		

Character position	Code	Description
	`C`	Segment Centroid.
	`L`	Segment low-range end point.
	`H`	Segment high-range end point.

ZIP + 4 Centroid Location Codes

Location codes that begin with a "Z" are ZIP + 4 centroid location codes. ZIP + 4 centroids indicate a geocode could not be determined for the address, so the location of the center of the address's ZIP + 4 was returned instead. ZIP + 4 centroid location codes indicate the quality of two location attributes: Census ID accuracy and positional accuracy.

A ZIP + 4 centroid location code has the following characters.

1st character	Always "Z" indicating a location derived from a ZIP centroid.
2nd character	Census ID accuracy.
3rd character	Location type.
4th character	How the location and Census ID was defined. Provided for completeness, but may not be useful for most applications.

Character Position	Code	Description
2nd Character		
	`B`	Block Group accuracy (most accurate).
	`T`	Census Tract accuracy.
	`C`	Unclassified Census accuracy. Normally accurate to at least the County level.
3rd Character		
	`5`	Location of the Post Office that delivers mail to the address, a 5-digit ZIP Code centroid, or a location based upon locale (city). See the 4th character for a precise indication of locational accuracy.
	`7`	Location based upon a ZIP + 2 centroid. These locations can represent a multiple block area in urban locations, or a slightly larger area in rural settings.

Character Position	Code	Description
	`9`	Location based upon a ZIP + 4 centroid. These are the most accurate centroids and normally place the location on the correct block face. For a small number of records, the location may be the middle of the entire street on which the ZIP + 4 falls. See the 4th character for a precise indication of locational accuracy.
4th Character		
	`A`	Address matched to a single segment. Location assigned in the middle of the matched street segment, offset to the proper side of the street.
	`a`	Address matched to a single segment, but the correct side of the street is unknown. Location assigned in the middle of the matched street segment, offset to the left side of the street, as address ranges increase.
	`B`	Address matched to multiple segments, all segments have the same Block Group. Location assigned to the middle of the matched street segment with the most house number ranges within this ZIP + 4. Location offset to the proper side of the street.
	`b`	Same as methodology "B" except the correct side of the street is unknown. Location assigned in the middle of the matched street segment, offset to the left side of the street, as address ranges increase.

Character Position	Code	Description
	`C`	Address matched to multiple segments, with all segments having the same Census Tract. Returns the Block Group representing the most households in this ZIP + 4. Location assigned to t he middle of the matched street segment with the most house number ranges within this ZIP + 4. Location offset to the proper side of the street.
	`c`	Same as methodology "C" except the correct side of the street is unknown. Location assigned in the middle of the matched street segment, offset to the left side of the street, as address ranges increase.
	`D`	Address matched to multiple segments, with all segments having the same County. Returns the Block Group representing the most households in this ZIP + 4. Location assigned to the middle of the matched street segment with the most house number ranges within this ZIP + 4. Location offset to the proper side of the street.
	`d`	Same as methodology "D" except the correct side of the street is unknown. Location assigned in the middle of the matched street segment, offset to the left side of the street, as address ranges increase.
	`E`	Street name matched; no house ranges available. All matched segments have the same Block Group. Location placed on the segment closest to the center of the matched segments. In most cases, this is on the mid-point of the entire street.

Character Position	Code	Description
	`F`	Street name matched; no house ranges available. All matched segments have the same Census Tract. Location placed on the segment closest to the center of the matched segments. In most cases, this is on the mid-point of the entire street.
	`G`	Street name matched (no house ranges available). All matched segments have the same County. Location placed on the segment closest to the center of the matched segments. In most cases, this is on the mid-point of the entire street.
	`H`	Same as methodology "G", but some segments are not in the same County. Used for less than .05% of the centroids.
	`I`	Created ZIP + 2 cluster centroid as defined by methodologies "A", "a", "B", and "b". All centroids in this ZIP + 2 cluster have the same Block Group. Location assigned to the ZIP + 2 centroid.
	`J`	Created ZIP + 2 cluster centroid as defined by methodologies "A", "a", "B", "b", "C", and "c". All centroids in this ZIP + 2 cluster have the same Census Tract. Location assigned to the ZIP + 2 centroid.
	`K`	Created ZIP + 2 cluster centroid as defined by methodologies "A", "a", "B", "b", "C", "c", "D", and "d". Location assigned to the ZIP + 2 centroid.
	`L`	Created ZIP + 2 cluster centroid as defined by methodology "E". All centroids in this ZIP + 2 cluster have the same Block Group. Location assigned to the ZIP + 2 centroid.

Character Position	Code	Description
	`M`	Created ZIP+2 cluster centroid as defined by methodologies "E" and "F". All centroids in this ZIP + 2 cluster have the same Census Tract. Location assigned to the ZIP + 2 centroid.
	`N`	Created ZIP + 2 cluster centroid as defined by methodologies "E", "F", "G", and "H". Location assigned to the ZIP + 2 centroid.
	`O`	ZIP Code is obsolete and not currently used by the USPS. Historic location assigned.
	`V`	Over 95% of addresses in this ZIP Code are in a single Census Tract. Location assigned to the ZIP Code centroid.
	`W`	Over 80% of addresses in this ZIP Code are in a single Census Tract. Reasonable Census Tract accuracy. Location assigned to the ZIP Code centroid.
	`X`	Less than 80% of addresses in this ZIP Code are in a single Census Tract. Census ID is uncertain. Location assigned to the ZIP Code centroid.
	`Y`	Rural or sparsely populated area. Census code is uncertain. Location based upon the USGS places file.
	`Z`	P.O. Box or General Delivery addresses. Census code is uncertain. Location based upon the Post Office location that delivers the mail to that address.

Geographic Centroid Location Codes

Location codes that begin with "G" are geographic centroid location codes. Geographic centroids may be returned if the street centroid fallback option is enabled and an address-level geocode could not be determined. Geographic centroid location codes indicate the quality a city, county, or state centroid.

A geographic centroid location code has the following characters.

1st character	Always "G" indicating a location derived from a geographic centroid.
2nd character	Geographic area type. One of the following: **M** Municipality (for example, a city) **C** County **S** State

Global Result Codes

Forward Geocoding Result Codes

Result Code General Descriptions

The following table provides general descriptions for the returned result codes.

Result Code	Description
Street level geocoded candidates return a result code beginning with the letter **S**. The second character in the code indicates the positional accuracy of the resulting point for the geocoded record. For information on the specific S result codes supported for your country, see **Single Match 'S' Result Codes** on page 154.	
`S8`	Single match with the point located at either the single point associated with an address point candidate or at an address point candidate that shares the same house number. No interpolation is required.
`S7`	Single match with the point located at an interpolated point along a street segment. Both a point dictionary and a street segment dictionary must be available. Because known point data is available, the `S7` interpolation is more accurate than an `S5` result.
`S6`	Single match, point located at point ZIP centroid.
`S5`	Single match with the point located at a street address position. Because only street segment data is available, the interpolation is not as accurate as an `S7` return The `S5` code is followed by letters and dashes indicating match precision.
`S4`	Single match with the point located at a street centroid.
`S3`	Single match with the point located at a ZIP + 4® centroid. This is the same quality match as a `Z3` result.
`S2`	Single match with the point located at a ZIP + 2 centroid. This is the same quality match as a `Z2` result.

Result Code	Description
`S1`	Single match with the point located at a ZIP Code centroid. This is the same quality match as a `Z1` result.
`S0`	Single match, however, no coordinates are available (this is a very rare occurrence).
`SX`	Single match with the point located at street intersection.
`SC`	Single match where the original point has been moved a specified distance (usually along a perpendicular line) toward or away from the associated street segment. This result code can be returned only when both a point dictionary and a street segment dictionary are available and when the centerline offset feature is used.
`SL`	India only. A street level match at the sublocality (block or sector) level. ublocality. An SL result code also requires a match on other geographic input fields (city, district, or state).

Result Code	Description

For **S** (street geocoded) result codes, eight additional characters describe how closely the address matches an address in the database. The characters appear in the order listed in the following table. Any non-matched components are represented by a dash.

For example, the result code `S5--N-SCZA` represents a single match that matched the street name, street post directional, town and postcode. The dashes indicate that there was no match on house number, street prefix direction, or thoroughfare type. The match came from the Street Range Address database. This record would be geocoded at the street address position of the match candidate.

`H`	House number match.
`P`	Street prefix (pre-directional). `P` is present if any of these conditions are satisfied: • The candidate pre-directional matches the input pre-directional. • The candidate post-directional matches the input pre-directional after pre- and post-directionals are swapped. • The input does not have a pre-directional.
`N`	Street name match.
`T`	Street/thoroughfare type match.

Result Code	Description
`S`	Street post-directional `S` in result code is present if any of these conditions are satisfied: • The candidate post-directional matches the input post-directional. • The candidate pre-directional matches the input post-directional after pre- and post-directionals are swapped. • The input does not have a post-directional.
`C`	`areaName3` match (this is usually the city or town).
`Z`	Postal code match.
`A` or `U`	Match to Address Dictionary or User Dictionary.

Result Code	Description
Matches in the **Z** category indicate that a match was made at the postcode level. A postcode match is returned in either of these cases: • You specified to match to postal code centroids. The resulting point is located at the postal code centroid with the following possible accuracy levels. • There is no street level match and you specified to fall back to postal code centroid. **Note:** Refer to the section covering your country to locate the specific meanings of `postCode1 & 2`.	
`Z6`	`Z6` results are matched to a point ZIP centroid. Point ZIPs are 5-digit The `Z6` code indicates that these special ZIPs are actual point locations, not an area. Point ZIPs include unique single sites, buildings, or organizations.
`Z3`	`Z3` results are matched to ZIP + 4 or `postCode2` centroid locations.
`Z2`	`Z2` results are matched to ZIP + 2 or partial `postCode2` centroid locations.
`Z1`	`Z1` results are matched to ZIP Code or (`postCode1`) centroid locations.
Geographic level geocoded candidates return a result code beginning with the letter **G**. The numbers following the G in the result code provides more detailed information on the accuracy of the candidate. **Note:** Refer to the section covering your country to locate the specific meanings of `areaName1-4`.	

Result Code	Description
`G1`	State/Province (`areaName1`) match with the point located at the state centroid.
`G2`	County/Region (`areaName2`) match with the point located at the county centroid.
`G3`	City/Town (`areaName3`) match with the point located at the city centroid.
`G4`	Suburb/village (`areaName4`) match with the point located at the suburb/village centroid.

Single Match 'S' Result Codes

The following table shows the support for the `S` category result codes by country. For detailed descriptions of the '`S`' result codes, see **Forward Geocoding Result Codes** on page 150. These descriptions apply to the vast majority of the countries. The exceptions are listed and described in the sections below the following table for:

- **Australia**
- **Canada**
- **United States**

A bullet "•" indicates the `S` code is supported. A blank cell indicates the `S` code is not supported.

Country Name	S8	S7	S6	S5	S4	S3	S2	S1	S0	SX	SC	SG
Australia (AUS)	•	•		•	•				•		•	•
Canada (CAN)	•	•		•	•	•		•	•		•	
Denmark (DNK)	•	•		•	•					•		
Germany (DEU)	•	•		•	•					•		
Great Britain (GBR)	•	•		•	•				•	•		
New Zealand (NZL)	•	•		•	•					•		
United States (USA)	•	•	•	•	•	•	•	•	•	•	•	
All other countries	•	•		•	•				•	•	•	

United States — 'S' Precision Code Descriptions

The following table provides '`S`' precision code descriptions for the USA.

Precision Code	Description
	Street level geocoded candidates return a Precision Code beginning with the letter S. The second character in the code indicates the positional accuracy of the resulting point for the geocoded record.
`S8`	Single match, point located at either the single point associated with an address point candidate or at an address point candidate that shares the same house number. No interpolation is required.
`S7`	Single match, located at an interpolated point along a street segment. Both a point/parcel dictionary and a street segment dictionary must be available. Because known point data is available, the `S7` interpolation is more accurate than an `S5` result.
`S6`	Single match, point located at point ZIP centroid.
`S5`	Single match, point located at a street address position. Because only street segment data is available, the interpolation is not as accurate as an `S7` return.
`S4`	Single match, point located at a street centroid.
`S3`	Single match, point located at ZIP + 4®. This is the same quality match as a `Z3` result.
`S2`	Single match, point located at ZIP + 2 centroid. single match, point located at ZIP + 2 centroid. This is the same quality match as a `Z2` result.
`S1`	Single match, point located at ZIP Code centroid. This is the same quality match as a `Z1` result.
`S0`	Single match, however, no coordinates are available (this is a very rare occurrence).
`SX`	Single match, point located at street intersection.
`SC`	Single match where the original point has been moved a specified distance (usually along a perpendicular line) toward or away from the associated street segment. This result code can be returned only when both a point geocoding dataset and a street segment geocoding dataset are available and when the centerline offset feature is used.

Australia — 'S' Result Code Descriptions

The following table provides 'S' result code descriptions for Australia.

Result Code	Description
Street level geocoded candidates return a result code beginning with the letter S. The second character in the code indicates the positional accuracy of the resulting point for the geocoded record.	
S8	Single match, point located at either the single point associated with an address point candidate or at an address point candidate that shares the same house number. No interpolation is required.
S8.......G	The S8.......G result code is used for single matches with GNAF Reliability levels of 1or 2 (the highest level of GNAF Reliability.
S7	Single match, located at an interpolated point along the candidate's street segment. When the potential candidate is not an address point candidate and there are no exact house number matches among other address point candidates, the S7 result is returned using address point interpolation.
S7.......G	The S7.......G result code is used for single matches with GNAF Reliability level of 3.
S5	Single match, point located at a street address position.
S4	Single match, point located at the center of a shape point path (shape points define the shape of the street polyline).
S4.......G	The S4.......G result code is used for single matches with a GNAF Reliability level of 4 (associated with a unique road feature.)
S0	Single match, however, no coordinates are available (this is a very rare occurrence).
SX	Single match with the point located at street intersection.
SC	Single match where the original point has been moved a specified distance (usually along a perpendicular line) toward or away from the associated street segment. This result code can be returned only when both a point geocoding dataset and a street segment geocoding dataset are available and when the centerline offset feature is used.
SG	Single match with point at the centre of a locality (areaName3) or Locality level geocode derived from topographic feature. An SG result code is associated with GNAF Reliability Level 5 (locality or neighbourhood) or with Level 6 (unique region.)

Canada — 'S' Result Code Descriptions

The following table provides '`S`' result code descriptions for Canada.

Result Code	Description
Street level geocoded candidates return a result code beginning with the letter S. The second character in the code indicates the positional accuracy of the resulting point for the geocoded record.	
`S8`	Single match, point located at either the single point associated with an address point candidate or at an address point candidate that shares the same house number. No interpolation is required.
`S7`	Single match, located at an interpolated point along the candidate's street segment. When the potential candidate is not an address point candidate and there are no exact house number matches among other address point candidates, the `S7` result is returned using address point interpolation.
`S5`	Single match, point located at a street address position.
`S4`	Single match, point located at the center of a shape point path (shape points define the shape of the street polyline).
`S3`	Single match, point located at postal centroid of FSALDU
`S1`	Single match, point located at postal centroid of FSA
`S0`	Single match, however, no coordinates are available (this is a very rare occurrence).
`SC`	Single match where the original point has been moved a specified distance (usually along a perpendicular line) toward or away from the associated street segment. This result code can be returned only when both a point geocoding dataset and a street segment geocoding dataset are available and when the centerline offset feature is used.

Reverse Geocoding 'R' Result Codes

Matches in the `R` category indicate that the record was matched by reverse geocoding. The first three characters of the `R` result code indicate the type of match found. `R` geocode results include an additional letter to indicate the dictionary from which the match was made. This is always an `A`, indicating address dictionary; reverse geocoding is supported by the address dictionary only (not user dictionaries.)

Reverse Geocoding 'R' Result Code Descriptions

Reverse Geocoding Code	Description
`RG0`	Geographic level: Country level (typically only used for small island countries where no other administrative divisions are in the data).
`RG1`	Geographic level: State or province level. Corresponds to G1 in forward geocoding.
`RG2`	Geographic level: District (state or province subdivision) level. Corresponds to G2 in forward geocoding.
`RG3`	Geographic level: City or town level. Corresponds to G3 in forward geocoding.
`RG4`	Geographic level: Locality (city/town subdivision). Corresponds to G4 in forward geocoding.
`RG5`	Geographic level: Locality subdivision.
`RS4A`	Street centroid candidate for reverse geocoding. Candidate returned from address dictionary.
`RS5A`	Interpolated street candidate for reverse geocoding. Candidate returned from address dictionary.

Reverse Geocoding Code	Description
`RS7G`	For Australia only: Candidate returned from Australia GNAF dictionary with GNAF Reliability level of 3.
`RS8A`	Point/parcel level precision for reverse geocoding. Candidate returned from address dictionary.
`RS8G`	For Australia only: Point/parcel level precision. Candidate returned from Australia GNAF dictionary with GNAF Reliability level of 1 or 2.
`RZ`	Postal level: A postal level reverse geocode in World Boundary Reverse returns a precision code of “RZ”.

C - ISO 3166-1 Country Codes

In this section

ISO 3166-1 Country Codes

Country Name	ISO 3166-1 Alpha-2 Country Code	ISO 3166-1 Alpha-3 Country Code
ALBANIA	AL	ALB
ALGERIA	DZ	DZA
AMERICAN SAMOA	US	USA
ANDORRA	AD	AND
ANGOLA	AO	AGO
ARGENTINA	AR	ARG
ARUBA	AW	ABW
AUSTRALIA	AU	AUS
AUSTRIA	AT	AUT
BAHAMAS	BS	BHS
BAHRAIN	BH	BHR
BARBADOS	BB	BRB
BELARUS	BY	BLR
BELGIUM	BE	BEL
BELIZE	BZ	BLZ
BENIN	BJ	BEN
BERMUDA	BM	BMU

Country Name	ISO 3166-1 Alpha-2 Country Code	ISO 3166-1 Alpha-3 Country Code
BOLIVIA	BO	BOL
BOSNIA AND HERZEGOVINA	BA	BIH
BOTSWANA	BW	BWA
BRAZIL	BR	BRA
BRUNEI DARUSSALAM	BN	BRN
BULGARIA	BG	BGR
BURKINA FASO	BF	BFA
BURUNDI	BI	BDI
CAMEROON	CM	CMR
CANADA	CA	CAN
CHILE	CL	CHL
CHINA	CN	CHN
COLOMBIA	CO	COL
CONGO	CG	COG
CONGO, DEMOCRATIC REPUBLIC OF THE	CD	COD
COSTA RICA	CR	CRI
CROATIA (LOCAL NAME: HRVATSKA)	HR	HRV
CUBA	CU	CUB
CYPRUS	CY	CYP
CZECH REPUBLIC	CZ	CZE

Country Name	ISO 3166-1 Alpha-2 Country Code	ISO 3166-1 Alpha-3 Country Code
DENMARK	DK	DNK
DOMINICAN REPUBLIC	DO	DOM
ECUADOR	EC	ECU
EGYPT	EG	EGY
EL SALVADOR	SV	SLV
ESTONIA	EE	EST
FINLAND	FI	FIN
FRANCE	FR	FRA
FRENCH GUYANA	GF	GUF
GABON	GA	GAB
GERMANY	DE	DEU
GHANA	GH	GHA
GREAT BRITAIN	GB	GBR
GREECE	GR	GRC
GUADELOUPE	GP	GLP
GUAM	US	USA
GUATEMALA	GT	GTM
GUYANA	GY	GUY
HONDURAS	HN	HND
HONG KONG	HK	HKG

Country Name	ISO 3166-1 Alpha-2 Country Code	ISO 3166-1 Alpha-3 Country Code
HUNGARY	HU	HUN
ICELAND	IS	ISL
INDIA	IN	IND
INDONESIA	ID	IDN
IRAQ	IQ	IRQ
IRELAND	IE	IRL
ITALY	IT	ITA
JAMAICA	JM	JAM
JAPAN	JP	JPN
JORDAN	JO	JOR
KENYA	KE	KEN
KOREA, SOUTH	KR	KOR
KOSOVO	XK	XKX
KUWAIT	KW	KWT
LATVIA	LV	LVA
LEBANON	LB	LBN
LESOTHO	LS	LSO
LIECHTENSTEIN	LI	LIE
LITHUANIA	LT	LTU
LUXEMBOURG	LU	LUX

Country Name	ISO 3166-1 Alpha-2 Country Code	ISO 3166-1 Alpha-3 Country Code
MACAO	MO	MAC
MACEDONIA, REPUBLIC OF	MKD	MKD
MALAWI	MW	MWI
MALAYSIA	MY	MYS
MALI	ML	MLI
MALTA	ML	MLT
MARTINIQUE	MQ	MTQ
MAURITANIA	MR	MRT
MAURITIUS	MU	MUS
MAYOTTE	YT	MYT
MEXICO	MX	MEX
MONACO	MC	MCO
MONTENEGRO	ME	MNE
MOROCCO	MA	MAR
MOZAMBIQUE	MZ	MOZ
NAMIBIA	NA	NAM
NETHERLANDS	NL	NLD
NEW ZEALAND	NZ	NZL
NICARAGUA	NI	NIC
NIGER	NE	NER

Country Name	ISO 3166-1 Alpha-2 Country Code	ISO 3166-1 Alpha-3 Country Code
NIGERIA	NG	NGA
NORTH MARIANA ISLANDS	US	USA
NORWAY	NO	NOR
OMAN	OM	OMN
PALAU	US	USA
PANAMA	PA	PAN
PARAGUAY	PY	PRY
PERU	PE	PER
PHILIPPINES	PH	PHL
POLAND	PL	POL
PORTUGAL	PT	PRT
PUERTO RICO	US	USA
QATAR	QA	QAT
REUNION	RE	REU
ROMANIA	RO	ROU
RUSSIAN FEDERATION	RU	RUS
RWANDA	RW	RWA
SAINT KITTS AND NEVIS	KN	KNA
SAUDI ARABIA	SA	SAU
SENEGAL	SN	SEN

Country Name	ISO 3166-1 Alpha-2 Country Code	ISO 3166-1 Alpha-3 Country Code
SERBIA	RS	SRB
SINGAPORE	SG	SGP
SLOVAKIA (SLOVAK REPUBLIC)	SK	SVK
SLOVENIA	SI	SVN
SOUTH AFRICA	ZA	ZAF
SPAIN	ES	ESP
SURINAME	SR	SUR
SWAZILAND	SZ	SWZ
SWEDEN	SE	SWE
SWITZERLAND	CH	CHE
TAIWAN	TW	TWN
TANZANIA	TZ	TZA
THAILAND	TH	THA
TOGO	TG	TGO
TRINIDAD AND TOBAGO	TT	TTO
TUNISIA	TN	TUN
TURKEY	TR	TUR
UGANDA	UG	UGA
UKRAINE	UA	UKR
UNITED ARAB EMIRATES	AE	ARE

Country Name	ISO 3166-1 Alpha-2 Country Code	ISO 3166-1 Alpha-3 Country Code
UNITED KINGDOM	GB	GBR
UNITED STATES	US	USA
URUGUAY	UY	URY
VENEZUELA	VE	VEN
VIETNAM	VN	VNM
VIRGIN ISLANDS	US	USA
WORLD GEOCODER	XW	XWG
YEMEN	YE	YEM
ZAMBIA	ZM	ZMB
ZIMBABWE	ZW	ZWE

D - Error Codes

In this section

Exception Codes

If the server throws an exception, the `REST` web service will return the exception code and an accompanying exception message over the network to the client. The exception code provides a general error description; the exception message provides a more specific indication of the cause of the exception.

In the following example a `GET` request to the Geocode service contains an incorrect geocodeType "a".

```
GET http://10.24.48.217:8082/Geocode/rest
/GeocodeService/geocode.json?mainAddress=
330%20Front%20St.%20W%20TORONTO%20ON%20M5V%203B7
&country=can&geocodeType=a HTTP/1.1
```

The server returns the following error:

```
HTTP/1.1 400 Bad Request
            Server: Apache-Coyote/1.1
            exceptionCode: INVALID_CLIENT_INPUT
            exceptionMsg: Invalid geocodeType value: A
            Date: Wed, 20 Sep 2017 14:33:03 GMT
            Content-Type: application/json
            Content-Length: 99
            Connection: close


{"errors":[{"errorCode":"INVALID_CLIENT_INPUT","errorDescription":"Invalid
 geocodeType value: A"}]}
```

Exception Codes (datatype = String)	Description
REQUIRED_PARAMETER_MISSING	A required parameter is missing.
DATA_NOT_LICENSED	The license file for an address dictionary is not installed.
INTERNAL_ERROR	A general error occurred with the geocoding engine.
MAPMARKER_EXCEPTION	A general exception occurred in the MapMarker geocoding engine.
MAPMARKER_FATAL_EXCEPTION	A fatal exception occurred in the MapMarker geocoding engine.

Exception Codes (datatype = String)	Description
INVALID_CLIENT_INPUT	An invalid input was encountered in the request.
NO_COUNTRY_SPECIFIED	The country field is missing from the request.
COUNTRY_NOT_SUPPORTED	The requested operation is not supported for the specified country.
GEOSTAN_FATAL_EXCEPTION	A fatal exception occurred in the GeoStan geocoding engine.