Spectrum Technology Platform

Version 9.0

Geocoding Guide for France

Pitney Bowes Software

Contents

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Geocode Address Global

Geocode Address Global provides street-level geocoding for many countries. It can also determine city or locality centroids, as well as postal code centroids. Geocode Address Global handles street addresses in the native language and format. For example, a typical French formatted address might have a street name of Rue des Remparts. A typical German formatted address could have a street name Bahnhofstrasse.

Note: Geocode Address Global does not support U.S. or U.K. addresses. To geocode U.S. addresses, use Geocode US Address. To geocode U.K. addresses, use Geocode Address GBR.

The countries available to you depends on which country databases you have installed. For example, if you have databases for Canada, Italy, and Australia installed, Geocode Address Global would be able to geocode addresses in these countries in a single stage. Before you can work with Geocode Address Global, you must define a global database resource containing a database for one or more countries. Once you create the database resource, a Geocode Address Global will become available in the Management Console, Enterprise Designer, and Interactive Driver.

Geocode Address Global is an optional component of the Enterprise Geocoding Module.

In this section:

Input

Geocode Address Global takes an address or intersection as input. To obtain the best performance and the most possible matches, your input address lists should be as complete as possible, free of misspellings and incomplete addresses, and as close to postal authority standards as possible. Most postal authorities have websites that contain information about address standards for their particular country.

Input Fields

For France, Geocode Address Global takes an address or intersection as input. To obtain the best performance and the most possible matches, your input address lists should be as complete as possible, free of misspellings and incomplete addresses, and as close to postal authority standards as possible. Most postal authorities have websites that contain information about address standards for their particular country.

The following table lists the input fields used for geocoding locations in France.

Note: If you are using the API, specify input using the DataTable class. The fields described below are the valid column names in the DataTable class. For information on the DataTable class, see the "API Fundamentals" section of the *Spectrum™ Technology Platform API Guide*.

Table 1: Input Fields

Field Name	Description
AddressLine1	One of the following: • The address line containing the street name and building number. For example: **9, rue Paul Lafayette** 93217 ST DENIS CEDEX • This field can also contain the full address. For more information, see **Single Line Input** on page 11 • For all countries except Argentina, Great Britain, and Japan, this field can contain a street intersection. To specify a street intersection, use double ampersand (&&) to separate the streets. For more information, see **Street Intersection Input** on page 12. For France, an input street address can include a numbered range. For example, consider an input address of 104-106 rue de Charenton. The returned candidate includes two address ranges, and the 104 close match is from the 100-106 range. Alphanumeric ranged addresses are also handled (for example, you could input a alphanumeric ranged address like 2A-4B. If the geocoding database has alphabetic values for the input house number, the geocoder returns the house number as it exists in the database (with or without the alphabetic character). If the geocoder cannot confirm alphabetic values for the input house number, it returns the alphabetic value that was provided on input (as long as the house number matched).
AddressLine2	This field is not used in this country.

Field Name	Description
City	The city or town name. Your input address should use the official city name. Some areas in France are generally recognized as cities even though they are not truly administrative cities. These areas represent Artificial City Areas, or Virtual Towns. For a listing of supported virtual towns, see **Address Guidelines for France** on page 8.
County	The meaning of county varies by country. • FRA (France)—Department The department name.
FirmName	Company or place name. For example: **Pitney Bowes** Immeuble Le Triangle 9, rue Paul Lafargue 93217 ST DENIS CEDEX
HouseNumber	The building number. You may get better parsing results for some countries if you put the house number in this field instead of AddressLine1. Not every country includes house number data. **Note:** The house number specified in the HouseNumber field takes precedence over any house number specified in the AddressLine1 field.
LastLine	The last line of the address. • 9, rue Paul Lafayette **93217 ST DENIS CEDEX**
Locality	The meaning of locality varies by country: • FRA (France)—Not used
PostalCode	The postal code in the appropriate format for the country. France uses a five-digit postal code. You must enter a complete postcode. The first two digits usually represent the department. The digits 00 represent military addresses and there are also special digit for overseas territories. The last three digits represent the local delivery area. In the larger cities (Paris, Lyon Marseille), the last two digits represent the arrondissement. For example, in the postcode: 33380, 33 is the department 380 is the delivery area.
StateProvince	The meaning of State/Province varies by country. • FRA (France)—Region

Address Input Guidelines

Follow these suggestions to ensure that your street input data is in the best format possible for optimal geocoding.

Address Guidelines for France

Follow these guidelines to provide input that Geocode Address Global can successfully geocode. For additional information about the French postal system, see the La Poste website: **www.laposte.com**.

- **Required fields**—Addresses must contain either a city or a postal code.
- **Virtual town names**—Some areas are generally recognized as cities even though they are not truly administrative cities. These areas represent Artificial City Areas, or Virtual Towns. Since these virtual town names are commonly used by the public, they are supported and treated as aliases for any of the encompassed towns. Returned candidates have the correct real town in place of the input virtual town.

  Note: Virtual town names are supported in TomTom database only. The NAVTEQ databases (streets or points) do not support virtual town names.

Table 2: Virtual Towns in France

Virtual Town Name	Encompassed Real Towns
Défense (La)	Part of: Nanterre, Puteaux, Courbevoie
Sophia Antipolis	Part of: Valbonne, Mougins, Vallauris, Antibes, Biot
Cergy-Pontoise	Menucourt, Courdimanche, Puiseux-Pontoise, Osny, Pontoise, Cergy, Vauréal, Neuville-sur-Oise, Saint-Ouenl'Aumône, Jouy-le-Moutier, Eragny
Marne-la-Vallée	Bry-sur-Marne, Villiers-sur-Marne, Noisy-le-Grand, Champs-sur-Marne, Emerainville, Noisiel, Lognes, Croissy-Beaubourg, Torcy, Collégien, Ferrières, Bussy- Saint-Georges, Bussy-Saint-Martin, Saint-Thibault-des-Vignes, Gouvernes, Conches, Guermantes, Jossigny, Lagny-sur-Marne, Montévrain, Chanteloup-en-Brie, Serris, Chessy, Coupvray, Magny-le-Hongre, Bailly- Romainvilliers
Saint-Quentin-en-Yvelines	Elancourt, Verrière (La), Trappes, Montigny-le-Bretonneux, Guyancourt, Voisins-le-Bretonneux, Magnyle- Hameau
Sénart	Tigery, Combs-la-Ville, Lieusaint, Moissy-Cramayel, Saint-Pierre-du-Perray, Savigny-le-Temple, Réau, Nandy, Cesson, Vert-Saint-Denis
Evry	Evry, Bondoufle, Courcouronnes, Lisses
Etang de Berre	Fos-sur-Mer, Miramas, Vitrolles, Istres
Isle-d'Abeau	Four, Isle d'Abeau (L'), Saint-Quentin-Fallavier, Vaulx-le- Milieu, Villefontaine

- **Common words and abbreviations**—The geocoder handles common abbreviations that are used in French addresses. It supports all the official French street type abbreviations plus a number of unofficial street types to help improve geocoding efficiency. A partial list is:

Table 3: Common French Address Abbreviations

Street Type or Name	Abbreviation
Hauts	No abbreviation.
appartement	APP, APT, APPART
Saint	ST
Sainte	STE
rue	r
Charles de Gaulle	CDG
Regiment D'Infanterie de Marine	RIMA
Division Blindée	DB

- **Directionals in addresses**—Abbreviated street directionals are also handled on input and the returned candidate displays the complete directional.

Table 4: Street Directionals

N	N.	Nord
S	S.	Sud
E	E.	Est
O	O.	Ouest
NE	N.E.	Nord-Est
SE	S.E.	Sud-Est
NO	N.O.	Nord-Ouest
SO	S.O.	Sud-Ouest

- **Ordinals and numbered street names**—Input addresses can include ordinals such as 1er, 2e, 2nd, 2nde, 3e. All subsequent ordinal street names are designated with "e" or "ème". You can also specify numbers in street names or express the numbers as words. For example, the following street names are equivalent and can both be geocoded as part of an input address:

```
Rue du 4 septembre
Rue du quatre septembre
```

- **House numbers with letters**—House numbers can include letters, such as `85B Ave des provinces`.
- **Postal box (BP) addresses**—The geocoder can handle Postal Box (Boite Postale) addresses. For the following input address, a close match candidate is returned with a result code of S5HPNTSC-A.

  AddressLine1: `BP 112 2 Avenue CDG`
  PostalCode: `78150`
  City: `Le Chesnay`

  Note that in this example, the street name `CDG` is returned as `Charles de Gaulle` and the postcode is corrected. The BP itself is not returned.

- **CEDEX addresses**—The geocoder does not use CEDEX for geocoding but CEDEX will not interfere with geocoding. CEDEX can be entered in AddressLine1, City, or PostalCode fields. The CEDEX itself is not returned but the complete postcode is returned. For the following input address, a close match candidate is returned with a result code of S5HPNTS--A.

  AddressLine1: `17 Rue Louise Michel`
  PostalCode: `92301 CEDEX`
  City: `Levallois-Perret`

  The postcode is returned but not a postal centroid (there is no Z in the ninth position of the return code). The CEDEX itself is not returned.
- **Paris address formats and arrondissements**—Paris addresses typically have a different input format. The house number appears after the street name rather than before the street name. The geocoder handles this input format and geocodes correctly. Arrondissements (the last two digits of the postcode) can be entered and the complete locality and postcode information is returned. For the following input address, a close match candidate is returned with a result code of S5HPNTSCZA.

  AddressLine1: `7 Rue Beranger`
  PostalCode: `75003`
  City: `Paris`

  The returned Locality field includes the arrondissement (district) information. The Paris region includes 20 arrondissements, which are represented by the last two digit of the postcode (the first three digits are 750). A Paris address may be written with the last two digits only. For the following input address, a close match candidate is returned with a result code of S5HPNTSC-A

  AddressLine1: `51 Rue Lafitte`
  PostalCode: `09`
  City: `Paris`

  The complete postcode (75009) is returned even though 09 (representing the ninth arrondissement) was entered.
- **Military addresses**—Military addresses (including typical military address abbreviations) are handled. The first two digits usually represent the department. The digits 00 represent military addresses.
- **Monaco addresses**—The geocoder handles Monaco addresses. You can specify Monaco (or the MCO or MC country codes) in the StateProvince input field. If you input a Monaco address as France, the geocoder attempts to identify this and returns the Monaco candidate if possible. All Monaco postcodes begin with the number 98.
- **Overseas Territories addresses**—The geocoder covers several French overseas territories. The geocoder recognizes the unique French territorial ISO codes, and you can use these codes with input addresses. The territories use the French 5 digit postal code system, but each territorial postal code starts with 3 unique digits. The accompanying table summarizes the ISO codes, data vintages, and unique postal codes of the covered French territories.

Table 5: French Overseas Territories

Territory Name	ISO 3116-1 Alpha-2	ISO 3116-1 Alpha-3	First 3 Digits of Postal Code
Guadeloupe	GLP	GP	971
Martinique	MTQ	MQ	972
French Guiana	GUF	GF	973
Réunion	REU	RE	974
Mayotte	MYT	MY	976

You can also use the country code for France (FRA or FR). In that case, you can get candidates from France, Monaco, and the territories if that city/town name occurs in both France and in one or more

of the territories. However if you explicitly specify MCO or a territorial country code, you will get candidates from the specified country only, and not from France.

- **Placename Support for User Dictionaries**—If your user dictionary includes placenames, you can geocode these placenames and that information is returned with candidates.
- **Additional Fields for Address Range and User Dictionaries**—Additional fields can be created and returned for both Address Range and Point user dictionaries. These additional fields can contain any special information associated with an address. You cannot geocode using additional fields, but additional field content is returned with each candidate

Single Line Input

Instead of entering each address element in separate fields, you may enter the entire address in the AddressLine1 input field.

You can enter addresses in these single-line formats.

For all countries except Japan, you can enter addresses in one or more of these single-line formats.

Note: Not all formats work may work for every country.

```
StreetAddress;PostalCode;City
```

```
StreetAddress;City;PostalCode
```

```
StreetAddress;City
```

```
StreetAddress;City;StateProvince;PostalCode
```

```
StreetAddress;Locality
```

```
StreetAddress;County;City
```

```
PostalCode;StreetAddress
```

```
PostalCode;StreetAddress;City
```

```
City;PostalCode;StreetAddress
```

Where:

- *StreetAddress* can be house number and street name in either order (with street type immediately before or after the street name).
- *City* is the city or town.
- *PostalCode* is the complete postcode. For Brazil,

Other single-line formats may also be acceptable for many countries.

The matching accuracy for single line input is comparable to that of structured address input. The performance of single line input addresses may be slightly slower than that of structured address input.

For best results, use delimiters (comma, semicolon, or colon) between each component of the address. For example,

```
131 rue de la République;La Défense
```

If the input address is missing delimiters, spaces are recognized as separators and internal parsing rules identify address components. In the example above, the address would still successfully geocode even if some or all of the delimiters were missing in the input.

Note: Non-delimited or partially-delimited single line addresses may take longer to geocode and may not produce the same results as delimited single line input. This is especially true for addresses with multi-word street names or cities. To optimize single line geocoding, use delimiters between address components (particularly between street name and city).

Punctuation is ignored for geocoding purposes.

Guidelines for Single Line Input

- For Germany, France, and New Zealand, yYou must specify a value in either the PostalCode field or the City field in order for single line input to successfully geocode.
- Punctuation is generally ignored, however you may improve results and performance by using separators (commas, semicolons, etc.) between different address elements.
- The country is not required. Each country geocoder assumes that the address is in its country.
- Firm information (placename, building name, or government building) is returned if available.

Street Intersection Input

If you enter a street intersection as input, the geocoder will provide the coordinates of the intersection.

To enter an intersection, specify the two street names separated by a double ampersand (&&) in AddressLine1. For some countries, the word AND can also be used to delimit intersections. The && delimiter can be used for all countries. For example:

AddressLine1: `Chemin du Prieuré && Rue de la Montcient`
City: `Seraincourt`

Note: The double ampersand (&&) can always be used as an street intersection separator. For some countries, you can use additional symbols or words to delimit street intersections.

All close match criteria are enforced for intersection geocoding, just as for any street level geocoding.

Options

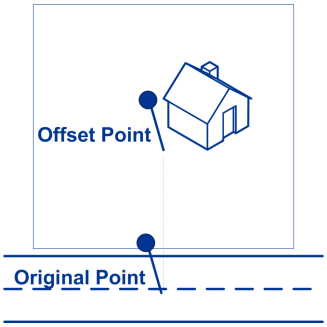
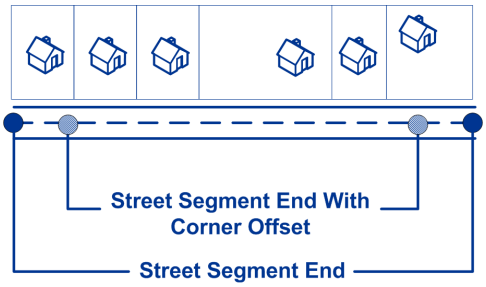
Geocoding Options

The following table lists the options that control how a location's coordinates are determined.

Table 6: Default Geocoding Options

Option Name	Description	
Geocode level	Specifies how precisely you want to geocode addresses. One of the following:	
	Street address	The geocoder attempts to geocode addresses to a street address, but some matches may end up at a less precise location such as a postal code centroid, intersection, or shape path.
	Postal centroid	If postal code data is available, the geocoder attempts to geocode addresses to the most precise postal code it finds. The advantage of postal code centroid matching is the speed of the operation. The disadvantage of postal code matching is that the geocoder only examines the PostalCode field. If you use street address precision, the geocoder looks at both the street name and the PostalCode field and attempts to return street-level coordinates and optionally fall back to postal code coordinates.

Option Name	Description
	Geographic centroid The geocoder attempts to geocode addresses to the geographic centroid of a city or state. This option is not available for the United Kingdom (GBR).
Address point interpolation	Specifies whether to perform address point interpolation. This option only works if you have a point database, installed. This option is available for selected countries only. Address point interpolation uses point data to refine geocode results. By default, the geocoding process estimates the location of an address based on the street numbers at either end of street segment. For example, if a street segment runs from 100 Main St. to 200 Main St., then a request for 150 Main St. will return a location in the middle of the segment. With interpolation, the geocoder finds the position of 180 Main St. in the point data, and it is about two-thirds of the way down the street. Using this information, the geocoder can estimate the position of 150 Main St. based on 100 and 180 Main St. In this case, the geocoder estimates the location of the address slightly away from the center of the segment.
Geographic centroid	Specifies whether to attempt to determine a geographic region centroid when an address-level geocode cannot be determined. This option is not available for the United Kingdom (GBR).
Postal centroid	Specifies whether to attempt to determine a postal code centroid when an address-level geocode cannot be determined.
Offset from street	Indicates the offset distance from the street segments to use in street-level geocoding. The distance is specified in the units you specify in the **Units** field. The default value varies by country. For most countries, the default is 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. Since the building represented by an address is not on the street itself, you do not want the geocode for an address to be a point on the street. Instead, you want the geocode to represent the location of the building which sits next to the street. 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. The following diagram shows an offset point in relation to the original point.

Option Name	Description
	 Street coordinates are accurate to 1/10,000 of a degree and interpolated points are accurate to the millionths of a degree.
Offset from corner	Specifies the distance to offset the street end points in street-level matching. The distance is specified in the units you specify in the **Units** field.This value is used to prevent addresses at street corners from being given the same geocode as the intersection. **Note:** Offset is not supported for the United Kingdom (GBR) or Japan (JPN). The default value varies by country: • 12 meters—Australia (AUS), Austria (AUT), Germany (DEU) • 7 meters—For other supported countries, the default offset is 7 meters. The following diagram compares the end points of a street to offset end points. 
Units	Specifies the unit of measurement for the street offset and corner offset options. One of the following: **Note:** Offset is not supported for the United Kingdom (GBR) or Japan (JPN). • Feet • Miles • Meters • Kilometers The default is Meters.
Coordinate system	A coordinate system is a reference system for the unique location of a point in space. Cartesian (planar) and Geodetic (geographical) coordinates are examples of reference systems based on Euclidean

Option Name	Description
	geometry. Spectrum™ Technology Platform supports systems recognized by the European Petroleum Survey Group (EPSG). Each country supports different coordinate systems. Depending on the country, you have one or more of the following options: **EPSG:4326** Also known as the WGS84 coordinate system. **EPSG:27200** Also known as the NZGD49 coordinate system.

Matching Options

Matching options let you set match restrictions, fallback, and multiple match settings so that the matching can be as strict or relaxed as you need. The strictest matching conditions require an exact match on house number, street name, postal code and no fallback to postal code centroids. The geocoder looks for an exact street address match within the postal code in the input address. Relaxing the conditions broadens the area in which it searches for a match. For example, by relaxing the postal code, the geocoder searches for candidates outside the postal code but within the city of your input address.

Table 7: Default Matching Options

Option Name	Description
Keep multiple matches	Specifies whether to return results when the address matches to multiple candidates in the database. If this option is not selected, an address that results in multiple candidates will fail to geocode. If you select this option, specify the maximum number of candidates to return next to the check box. Specify -1 (minus one) to return all possible candidates.
Return ranges	Specifies whether to return address range information. If you enable this option, the output field `Ranges` will be included in the output. 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.
Maximum ranges per candidate	If you choose to return ranges, 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.
Maximum units per range	If you choose to return ranges, 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.

Option Name	Description
Close matches only	Specifies whether to return only those geocoded results that are close match candidates. For example, if there are 10 candidates and two of them are close candidates, and you enable this option, only the two close matching candidates would be returned instead of all 10. To specify what is considered a close match, use the **Close match criteria** options. Address candidates are ranked according to how closely the input address matches these preferences.
Match mode	Specifies how to determine whether a candidate is a close match. One of the following: **Custom** This option allows you to specify which parts of a candidate address must match the input address to be considered a close match. Use the **Close match criteria** check boxes to specify the address elements you want. This is the default value for most countries. **Relaxed** All candidate addresses are considered a close match.
All input	Specifies whether candidates must match all non-blank input fields to be considered a close match. For example, if an input address contains a city and postal code, then candidates for this address must match the city and postal code to be considered a close match.
House number	Specifies whether candidates must match the house number to be considered a close match. If you select this option you should also require an exact match on street name. This option does not significantly affect performance. It does, however, affect the type of match if the candidate address corresponds to a segment that does not contain any ranges. The type of match can also be affected when the house number range for a candidate does not contain the input house number. If you relax the house number, you should set the maximum ranges to be returned to a value higher than 0.
Street	Specifies whether candidates must match the street name to be considered a close match. If a close match is found, the geocoder attempts expanded street name manipulation, which looks for candidates with names that sound like the input address or that are spelled improperly. This slows down performance but increases the match rate . If the geocoding database is indexed, the performance impact is reduced.
Locality	Specifies whether candidates must match the locality (or equivalent) to be considered a close match. The meaning of Locality varies for different countries. If you do not require exact matches on locality, the geocoder searches on the street address matched to the particular postal code, and considers other localities that do not match the name, but do match the postal code. • FRA (France)—Not used
City	Specifies whether candidates must match the city to be considered a close match. For Japan, this field specifies whether the candidate must match the municipality subdivision (oaza). If you do not require exact matches on city, the geocoder searches on the street address matched

Option Name	Description
	to the particular postal code, and considers other cities that do not match the name, but do match the postal code.
County	Specifies whether candidates must match the county (or equivalent) to be considered a close match. The meaning of county varies for different countries. • FRA (France)—Department
State/Province	Specifies whether candidates must match the state or province (or equivalent) to be considered a close match. • FRA (France)—Region
Postal code	Specifies whether candidates must match the postal code to be considered a close match. If you do not require exact match on postal codes, the geocoder searches a wider area for a match. While this results in slower performance, the match rate is higher because the request does not need to match exactly when it compares match candidates.

You may want to use a balanced strategy between match rate and geographic precision. That is, you may want to geocode as many records as possible automatically, but at the same time want to minimize the number of weaker matches (false positives). For example, false positives can occur when the geocoder:

- finds a street that sounds like the input street.
- finds the same street in another city (if postal code match is not required).
- finds the street but with a different house number (if house number is not required).

The following settings may achieve a good balance between match rate and precision:

- **Close matches only**—Select this option.
- **Close match criteria**—Select **House number** and **Street** only.
- **Postal centroid**—Do not select this fallback level.

Data Options

The Data tab allows you to specify which databases to use in geocoding. Databases contain the address and geocode data necessary to determine the geocode for a given address. There are two kinds of databases: standard databases and custom databases. Standard databases are those supplied by Pitney Bowes Software and based on address and geocoding data from postal authorities and suppliers of geographical data. Custom databases are databases you create to enhance or augment standard databases for your particular needs.

The following table lists the options available for specifying which databases to use and the search order of databases.

Table 8: Default Data Options

Option Name	Description
Database	Specifies the database to be used for geocoding. Only databases that have been defined in the Databases Resources panel in the Management Console are available.

Option Name	Description
Database preference	Specifies which geocoding databases to use. One of the following: **Prefer custom database** — Use both standard databases and custom databases, but give preference to candidates from custom databases. Use this option if you feel your custom database is superior to the standard database. **Prefer standard database** — Use both standard databases and custom databases, but give preference to candidates from standard databases. **Use custom databases only** — Use only custom databases. Ignore standard databases. **Use standard databases only** — Use only standard databases. Ignore custom databases. **Use both custom and standard databases** — Use both standard databases and custom databases. In cases where candidates are returned from both, the standard database is preferred. Default. The results from a custom database have a "U" at the end of the result code. Results from an address database have an "A" at the end of the match score. For example: S5HPNTSCZA is a match score that comes from an address database, while S5HPNTSCZU comes from a custom database. For more information, see **Result Codes for International Geocoding** on page 35.
Override the default database search list	Specifies whether to use the database search list specified in the Management Console under the database resources tools (**Modules** > **Enterprise Geocoding** > **Tools**). If you choose to override the default database search list you may change the search order of the databases in the **Database search list** field. You may also remove databases from the search list. If you override the default database search list, changes to the database resources will not be reflected in the database search list, which may cause geocoding to fail. However, if you do not override the default database search order, any changes to the database resources will be automatically reflected by the geocoder. For example, if a database resource is moved from one directory to another and you update the database resources accordingly (**Modules** > **Enterprise Geocoding** > **Tools**) the database location will be automatically updated in the geocoder.
Database search list	The name of one or more database resources to use in the search process. Use the database name specified in the Management Console's Database Resources tool. You can specify multiple database resources. If you specify more than one database, list them in order of preference. The order of the databases has an effect when there are close match candidates from different databases. The close matches that are returned come from the database that is first in the search list. Close matches from lower ranked databases are demoted to non-close matches.

Option Name	Description
	You can also use the order of the databases to perform fallback processing if you have an both an address point database and a street-level database installed for the country. List the address point database first and the street database second. If the address cannot be geocoded to the address point level, the geocoder will attempt to geocode it to the street level.

Related Links

Geocode Address Global on page 5

Output Data Options

The following table lists the options that control which data is returned in the output.

Table 9: Output Data Options

Option Name	Description
Return only similar firm names	This option applies to the U.K. only. Specifies whether to return firm names only when the input firm name is similar to the firm name in the geocoding database. For example, if the input firm name is "Pitney Bowes Business Insight" but the geocoding database returns "Pitney Bowes Software, Inc.", these two firm names are not similar. In most cases the input firm name must match the firm name in the database exactly. Some differences in abbreviations are considered similar enough to result in the firm name being returned.

Output

The geocoder returns the latitude/longitude, standardized address, and result indicators. Result indicators describe how well the geocoder matched the input address to a known address and assigned a location; they also describe the overall status of a match attempt. If you are using the API, t of the *Spectrum™ Technology Platform API Guide*

Address Output

The address may be identical to the input address if the input address was accurate, or it may be a standardized version of the input address, or it may be a candidate address when multiple matches are found.

Table 10: Address Output

Field Name	Description
AddressLine1	First line of the address.
AddressLine2	Second line of the address.

Field Name	Description
ApartmentLabel	The type of unit, such as apartment, suite, or lot.
ApartmentNumber	Unit number.
City	The municipality name.
Country	The three-letter ISO 3166-1 Alpha 3 country code.
County	The meaning of county varies by country. • FRA (France)—Department The department name.
FirmName	Name of the company or a place name.
HouseNumber	The building number for the matched location.
HouseNumberHigh	The highest house number of the range in which the address resides.
HouseNumberLow	The lowest house number of the range in which the address resides.
HouseNumberParity	Indicates if the house number range contains even or odd numbers or both. **E** Even **O** Odd **B** Both **U** Unknown
Language	For reverse geocoded candidates, the two-character language code is returned.
LastLine	Complete last address line (city, state/province, and postal code).
LeadingDirectional	Street directional that precedes the street name. For example, the N in 138 N Main Street.
Locality	The meaning of locality varies by country: • FRA (France)—Not used
NumberOfCandidateRanges	Indicates the number of ranges of which the candidate is a member. A candidate may be a part of multiple ranges if the candidate is a street instead of a building. To specify the number of ranges to return for each candidate, use the **Maximum ranges per candidate** option.
NumberOfRangeUnits	Indicates the number of units included in the range. A unit is an address within a building, such as an apartment or office suite. To specify the number of units to return for each range, use the **Maximum units per range** option.
PostalCode	The postcode for the address. The format of the postcode varies by country. Postcode data is not available for every country.
PostalCode.Addon	The second part of a postcode. This field is not used by most countries.
PreAddress	Miscellaneous information that appears before the street name.

Field Name	Description
PrivateMailbox	This field is not currently used.
Ranges	This is a list field containing the address ranges that exist on the street segment where the candidate address is located. 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. The Ranges field contains the following sub-fields: **Address** — This is a list filed that contains sub-fields for any address elements (AddressLine1, City, and so on) that are different from the candidate's address. **AdditionalFields** — A listing of country-specific information related to the address. The information contained in AdditionalFields varies by country. **HouseNumberHigh** — The highest address number for the range. **HouseNumberLow** — The lowest address number for the range. **SegmentParity** — Indicates the side of the street where the range is located. One of the following: **0** It is not known which side of the street the range is located on. **1** The range is on the left side of the street. **2** The range is on the right side of the street. **HouseNumberParity** — Indicates whether the range contains odd or even address numbers. One of the following: **0** The range contains both odd and even address numbers. **1** The range contains odd address numbers **2** The range contains even address numbers. **-1** It is not known whether the range contains odd or even house numbers. **TotalRangeUnitsReturned** — The number of unit ranges returned for the address. A unit is an address within a building, such as an apartment or suite.

Field Name	Description
	RangeUnits A list of the ranges of units within the building. An example of units are apartments or suites. **Address** This is a list filed that contains sub-fields for any address elements (AddressLine1, City, and so on) that are different from the candidate's address. **UnitNumberHigh** The highest unit number. **UnitNumberLow** The lowest unit number.
SegmentCode	A unique ID that identifies a street segment.
SegmentParity	Indicates which side of the street has odd numbers. **L** Left side of the street **R** Right side of the street **B** Both sides of the street **U** Undetermined
StateProvince	The meaning of State/Province varies by country. • FRA (France)—Region
StreetDataType	The default search order rank of the database used to geocode the address. A value of "1" indicates that the database is first in the default search order, "2" indicates that the database is second in the default search order, and so on. The default database search order is specified in the Management Console with the Database Resources tool.
StreetName	For most countries, this contains the street name.
StreetPrefix	The type of street when the street type appears before the base street name.
StreetSuffix	The street type of the matched location. For example, AVE for Avenue.
TrailingDirectional	Street directional that follows the street name.
UnitNumberHigh	The highest unit number of the range in which the unit resides.
UnitNumberLow	The lowest unit number of the range in which the unit resides.

Geocode Output

Table 11: Geocode Output

Field Name	Description
CoordinateSystem	The coordinate system used to determine the latitude and longitude coordinates. A coordinate system specifies a map projection, coordinate units, etc. An example is EPSG:4326. EPSG stands for European Petroleum Survey Group.
Latitude	Seven-digit number in degrees and calculated to four decimal places (in the format specified).
Longitude	Seven-digit number in degrees and calculated to four decimal places (in the format specified).

Result Codes

Result codes contain information about the success or failure of the geocoding attempt, as well as information about the accuracy of the geocode.

Table 12: Result Code Output

Field Name	Description
Geocoder.MatchCode	Indicates how closely the input address matches the candidate address. For more information, see **Result Codes for International Geocoding** on page 35.
IsCloseMatch	Indicates whether or not the address is considered a close match. An address is considered close based on the "Close match criteria" options on the Matching tab. **Y** Yes, the address is a close match. **N** No, the address is not a close match.
MultiMatchCount	For street address geocoding, the number of matching address positions found for the specified address. For intersection geocoding, the number of matching street intersection positions found for the specified addresses.
Status	Reports the success or failure of the match attempt **null** Success **F** Failure
Status.Code	If the geocoder could not process the address, this field will show the reason. • Internal System Error • No Geocode Found • Insufficient Input Data • Multiple Matches Found

Field Name	Description
	• Exception occurred • Unable to initialize Geocoder • No Match Found
Status.Description	If the geocoder could not process the address, this field will show a description of the failure. **Problem + explanation** — Returned when Status.Code = Internal System Error. **Geocoding Failed** — Returned when Status.code = No Geocode Found. **No location returned** — Returned when Status.code = No Geocode Found. **No Candidates Returned** — The geocoder could not identify any candidate matches for the address. **Multiple Candidates Returned and Keep Multiple Matches not selected** — The address resulted in multiple candidates. In order for the candidate address to be returned, you must select the **Keep multiple matches** option.
LocationPrecision	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. **8** — State/province centroid. **9** — County centroid. **10** — City centroid. **11** — Locality centroid. **12 - 15 (LocationPrecision codes)** — For most countries, LocationPrecision codes 12 through 15 are reserved for unspecified custom items. **13** — Additional point precision for unspecified custom item. **14** — Additional point precision for unspecified custom item. **15** — Additional point precision for unspecified custom item. **16** — The result is an Address Point.

Field Name	Description	
	17	The result was generated by using address point data to modify the candidates segment data.
StreetDataType	The default search order rank of the database used to geocode the address. A value of "1" indicates that the database is first in the default search order, "2" indicates that the database is second in the default search order, and so on. The default database search order is specified in the Management Console with the Database Resources tool.	

2

Reverse Geocode Address Global

Reverse Geocode Address Global determines the address for a given latitude/longitude point. Reverse Geocode Address Global can determine addresses in many countries. The countries available to you depends on which country databases you have installed. For example, if you have databases for Canada, Italy, and Australia installed, Reverse Geocode Address Global would be able to geocode addresses in these countries in a single stage.

Note: Reverse Geocode Address Global does not support U.S. addresses. To geocode U.S. addresses, use Reverse Geocode US Location.

Before you can work with Reverse Geocode Address Global, you must define a global database resource containing a database for one or more countries. Once you create the database resource, a Reverse Geocode Address Global will become available in the Management Console, Enterprise Designer, and Interactive Driver.

Reverse Geocode Address Global is an optional component of the Enterprise Geocoding Module.

In this section:

Input

Reverse Geocode Address Global takes longitude and latitude as input.

Table 13: Reverse Geocode Global Input

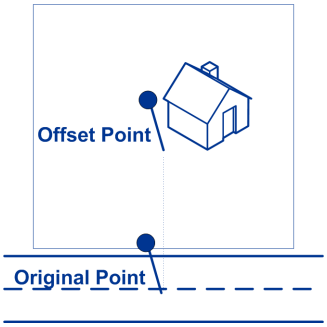
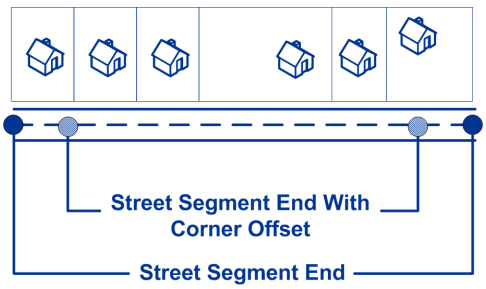
Field Name	Format	Description
Latitude	String	The latitude of the point for which you want address information.
Longitude	String	The longitude of the point for which you want address information.
Country	String	One of the following: • The name of the country in English. • The two-character ISO 3116-1 alpha-2 country code. • The three-character ISO 3116-1 alpha-3 country code.

Options

Geocoding Options

Table 14: Default Geocoding Options

Option Name	Description
Search distance	The radius from the input coordinates in which to search for an address. Street segments and points within the radius are considered. The default search radius is 150 meters and the maximum search radius is 1600 meters.
Units	The units in which the search distance is specified. One of the following: • Feet • Miles • Meters • Kilometers
Offset from street	Indicates the offset distance from the street segments to use in street-level geocoding. The distance is specified in the units you specify in the **Units** field. The default value varies by country. For most countries, the default is 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

Option Name	Description
	fact that street-level geocoding returns a latitude and longitude point in the center of the street where the address is located. Since the building represented by an address is not on the street itself, you do not want the geocode for an address to be a point on the street. Instead, you want the geocode to represent the location of the building which sits next to the street. 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. The following diagram shows an offset point in relation to the original point.  Street coordinates are accurate to 1/10,000 of a degree and interpolated points are accurate to the millionths of a degree.
Offset from corner	Specifies the distance to offset the street end points in street-level matching. The distance is specified in the units you specify in the **Units** field.This value is used to prevent addresses at street corners from being given the same geocode as the intersection. **Note:** Offset is not supported for the United Kingdom (GBR) or Japan (JPN). The default value varies by country: • 12 meters—Australia (AUS), Austria (AUT), Germany (DEU) • 7 meters—For other supported countries, the default offset is 7 meters. The following diagram compares the end points of a street to offset end points. 
Units	Specifies the unit of measurement for the street offset and corner offset options. One of the following: **Note:** Offset is not supported for the United Kingdom (GBR) or Japan (JPN).

Option Name	Description
	• Feet • Miles • Meters • Kilometers The default is Meters.
Coordinate system	A coordinate system is a reference system for the unique location of a point in space. Cartesian (planar) and Geodetic (geographical) coordinates are examples of reference systems based on Euclidean geometry. Spectrum™ Technology Platform supports systems recognized by the European Petroleum Survey Group (EPSG). Each country supports different coordinate systems. Depending on the country, you have one or more of the following options: **EPSG:4326** Also known as the WGS84 coordinate system. **EPSG:27200** Also known as the NZGD49 coordinate system.

Matching Options

Table 15: Default Matching Options

Option Name	Description
Keep multiple matches	Specifies whether to return results when the coordinates match to multiple candidate addresses in the database. If this option is not selected, coordinates that results in multiple address candidates will fail to geocode. If you select this option, specify the maximum number of candidates to return next to the check box.

Data Options

The Data tab allows you to specify which databases to use in reverse geocoding. Databases contain the address and geocode data necessary to determine the address for a given point. The following table lists the options available for specifying the search order of databases.

Table 16: Default Data Options

Option Name	Description
Override the default database search list	Specifies whether to use the database search list specified in the Management Console under the database resources tools (**Modules** > **Enterprise Geocoding** > **Tools**). If you choose to override the default database search list you may change the search order of the databases in the **Database search list** field. You may also remove databases from the search list.

Option Name	Description
	If you override the default database search list, changes to the database resources will not be reflected in the database search list, which may cause geocoding to fail. However, if you do not override the default database search order, any changes to the database resources will be automatically reflected by the geocoder. For example, if a database resource is moved from one directory to another and you update the database resources accordingly (**Modules** > **Enterprise Geocoding** > **Tools**) the database location will be automatically updated in the geocoder.
Database search list	The name of one or more database resources to use in the search process. Use the database name specified in the Management Console's Database Resources tool. You can specify multiple database resources. If you specify more than one database, list them in order of preference. The order of the databases has an effect when there are close match candidates from different databases. The close matches that are returned come from the database that is first in the search list. Close matches from lower ranked databases are demoted to non-close matches. You can also use the order of the databases to perform fallback processing if you have an both an address point database and a street-level database installed for the country. List the address point database first and the street database second. If the address cannot be geocoded to the address point level, the geocoder will attempt to geocode it to the street level.

Output

Table 17: Reverse Geocode Address Global Output Fields

Field Name	Description
AddressLine1	First line of the address.
AddressLine2	Second line of the address.
ApartmentLabel	The type of unit, such as apartment, suite, or lot.
ApartmentNumber	Unit number.
City	The municipality name.
County	The meaning of county varies by country. • FRA (France)—Department The department name.
Distance	The distance from input location in meters. If the input coordinates are an exact match for the address, the value is 0.

Field Name	Description
FirmName	Name of the company or a place name.
Geocoder.MatchCode	Indicates how closely the input coordinates match the candidate address. For more information, see **Reverse Geocoding Codes (R Codes)** on page 38.
HouseNumber	The building number for the matched location.
HouseNumberHigh	The highest house number of the range in which the address resides.
HouseNumberLow	The lowest house number of the range in which the address resides.
HouseNumberParity	Indicates if the house number range contains even or odd numbers or both. **E** Even **O** Odd **B** Both **U** Unknown
Language	For reverse geocoded candidates, the two-character language code is returned.
LastLine	Complete last address line (city, state/province, and postal code).
LeadingDirectional	Street directional that precedes the street name. For example, the N in 138 N Main Street.
Locality	The meaning of locality varies by country: • FRA (France)—Not used
NumberOfCandidateRanges	Indicates the number of ranges of which the candidate is a member. A candidate may be a part of multiple ranges if the candidate is a street instead of a building. To specify the number of ranges to return for each candidate, use the **Maximum ranges per candidate** option.
NumberOfRangeUnits	Indicates the number of units included in the range. A unit is an address within a building, such as an apartment or office suite. To specify the number of units to return for each range, use the **Maximum units per range** option.
PostalCode	The postcode for the address. The format of the postcode varies by country. Postcode data is not available for every country.
PostalCode.Addon	The second part of a postcode. This field is not used by most countries.
PreAddress	Miscellaneous information that appears before the street name.
PrivateMailbox	This field is not currently used.
SegmentCode	A unique ID that identifies a street segment.
SegmentParity	Indicates which side of the street has odd numbers. **L** Left side of the street **R** Right side of the street **B** Both sides of the street

Field Name	Description
	U Undetermined
StateProvince	The meaning of State/Province varies by country. • FRA (France)—Region
StreetDataType	The default search order rank of the database used to geocode the address. A value of "1" indicates that the database is first in the default search order, "2" indicates that the database is second in the default search order, and so on. The default database search order is specified in the Management Console with the Database Resources tool.
StreetName	For most countries, this contains the street name.
StreetPrefix	The type of street when the street type appears before the base street name.
StreetSuffix	The street type of the matched location. For example, AVE for Avenue.
TrailingDirectional	Street directional that follows the street name.
UnitNumberHigh	The highest unit number of the range in which the unit resides.
UnitNumberLow	The lowest unit number of the range in which the unit resides.
	The exact latitude / longitude coordinates of the candidate, which may be different than the input coordinates.

3

Result Codes for International Geocoding

Candidates returned by Spectrum geocoders return another class of return codes that are referred to as International Geocoding Result Codes. Each attempted match returns a result code in the Geocoder.MatchCode output field.

In this section:

International Street Geocoding Result Codes (S Codes)

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.

Table 18: Street (S) Result Codes

S Result Code	Description
S1	Single close match with the point located at postal code centroid.
S3	Single close match with the point located at postal code centroid.
S4	Single close match with the point located at the street centroid. The S4 code is followed by letters and dashes indicating match precision. see **Interpreting S Result Codes** on page 36
S5	Single close match with the point located at a street address position. The S5 code is followed by letters and dashes indicating match precision. For information about these letters, see **Interpreting S Result Codes** on page 36.
S6	Single close match with the point located at centroid of geometry postal code. (For example, large buildings having their own codes.)
S7	Single match with the point 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. The point is interpolated according to the next highest or lowest address point candidate that both intersects the segment and whose house number is contained within the range of houses of the original candidate. By using known address reference points on the street segment, the S7 point can be adjusted to a more accurate position.
S8	Single close 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.
SX	Single close match with the point located at street intersection.

Interpreting S Result Codes

For S (street geocoded) international 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 close match that matched the street name, street suffix direction, 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.

Category	Description	Example
H	House number	18
P	Street prefix direction	North

Category	Description	Example
	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	Merivale
T	Street type	St
S	Street suffix direction	W
	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	City name	South Brisbane
Z	Postal code	4101
A, G, or U	Database type used to obtain the match. • A—Street Range Address database. • U—Customer (user-defined) database.	A

International Postal Geocoding Result Codes (Z Codes)

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 close match and you specified to fall back to postal code centroid.

Table 19: Postal (Z) Result Codes

Z Result Code	Description
Z1	Postal Code centroid match.
Z3	Full postal code centroid match. For Canada, this is an FSALDU centroid.

Postal level geocoded candidates return a result code beginning with the letter Z. France can generate a Z1 result code. Country-specific geocoders can often generate more accurate postcode results (with Z2 or Z3 result codes).

International Geographic Geocoding Result Codes (G Codes)

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.

Table 20: Geographic (G) Result Codes

G Result Code	Description
G1	State or province centroid. match.
G2	County (district or region) centroid match.
G3	City or town (municipality) centroid match.
G4	Locality (village, suburb, or neighborhood) centroid match.

Reverse Geocoding Codes (R Codes)

Matches in the R category indicate that the record was matched by reverse geocoding. The second two 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.

Example reverse geocoding codes:

Table 21: Reverse Geocoding (R) Result Codes

Reverse Geocoding Code	Description
RS8A	Point/parcel level precision for reverse geocoding. Candidate returned from address dictionary.
RS5A	Interpolated street candidate for reverse geocoding. Candidate returned from address dictionary.
RS4A	Street centroid candidate for reverse geocoding. Candidate returned from address dictionary.

Non-match Codes

The following result codes indicate no match was made:

- **N**—No close match.
- **NX**—No close match for street intersections.

- **ND**—Spectrum™ Technology Platform could not find the geocoding database for the given postal code or municipality/state/province.

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