Spectrum Technology Platform

Version 12.0

Geocode Africa - API

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1 - GeocodeAddressGlobal for Africa

The GeocodeAddressGlobal with the Africa database provides street-level geocoding for many African countries. It can also determine city or locality centroids, as well as postal code centroids for selected countries.

These African countries are available and licensed as one bundle. Enterprise Geocoding Module Data Release Announcements will list and describe the countries included with the Africa database.

> **Note:**
>
> South Africa is licensed as a separate database and is not part of the Africa bundle. Also Egypt is included with the Middle East bundle, not the Africa bundle.

The Africa database is an optional part of the Enterprise Geocoding Module. For more information about Enterprise Geocoding Module, see **Enterprise Geocoding Module**.

In this section

Input

GeocodeAddressGlobal with the Africa database takes an address as input.

Input Fields

GeocodeAddressAfrica takes an address or intersection as input. For Africa, GeocodeAddressGlobal 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 Africa.

Table 1: Input Fields for Africa

columnName	Description
AddressLine1	

columnName	Description

One of the following:

- The address line containing the street name and building number. For example:

Rua Jose Anchieta
Luanda

Boulevard Du 28 Novembre
Bujumbura

Rue 1823
Cotonou

Rue 28.263
Ouagadougou

Kushimbara Road
Gaborone

Avenue du Docteur Jamot
Douala

Boulevard Patrice Lumumba
Kinshasa

Avenue Coutassi
Brazzaville

Ruta 125 40405 Santo Domingo

Avenue Gabriel Lendoye
Libreville

Mamleshie Road
Accra

Taratibu Street
Mombasa

Mpilo Road
Maseru

Avenue Moukhtar Soussi
28630 Ain Harrouda

Rue 97
Bamako

Avenida 24 De Julho
Maputo

Rue Ely ould Mohamed
Nouakchott

Victor Hugo Street
Beau Bassin

Presidential Way

columnName	Description

Lilongwe

Katanga Street
Swakopmund

Avenue de l'Afrique
Niamey

Limpopo Street
Abuja

Avenue De La Gendarmerie
Kigali

Rue GY 501
Dakar

Mbangweni Street
Mbabane

De La Marina Boulevard
Lomé

Rue Aflatoun
Ben Arous

Kiyungi Street
Dar es Salaam

Rubaga Road
Kampala

Freedom Way
Kitwe

Skirwith Road
Bulawayo

- This field can also contain the full address. For more information, see **Single Line Input** on page 15

AddressLine2	This field is not used with countries included with the Africa bundle (Product Code XA1), Middle East bundle (Product Code XM1), or Latin America bundle (Product Code XL1). These databases generally have less comprehensive address coverage.

City	The city or town name. For most countries, your input address should use the official city name.

columnName	Description
County	The meaning of county varies by country. The majority of countries in the Africa database (XA1) do not use a county or equivalent as part of an address. • AGO (Angola)—Not used • BDI (Burundi)—Not used • BEN (Benin)—Not used • BFA (Burkina Faso)—Not used • BWA (Botswana)—Not used • CMR (Cameroon)—Not used • COD (Congo, Democratic Republic of)—Not used • COG (Congo)—Not used • GAB (Gabon)—Not used • GHA (Ghana)—Not used • KEN (Kenya)—Not used • LSO (Lesotho)—Not used • MAR (Morocco)—Not used • MLI (Mali)—Not used • MOZ (Mozambique)—Not used • MRT (Mauritania)—Not used • MUS (Mauritius)—Not used • MWI (Malawi)—Not used • NAM (Namibia)—Not used • NER (Niger)—Not used • NGA (Nigeria)—Not used • RWA (Rwanda)—Not used • SEN (Senegal)—Not used • TGO (Togo)—Not used • TUN (Tunisia)—Not used • TZA (Tanzania)—Not used • UGA (Uganda)—Not used • VNM (Vietnam)—District • ZMB (Zambia)—Not used • ZWE (Zimbabwe)—Not used This field is not used with countries included with the Africa bundle (Product Code XA1). These African countries generally have less comprehensive address coverage.
FirmName	This field is not used with countries included with the Africa bundle (Product Code XA1). These countries generally have less comprehensive address coverage.

columnName	Description
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. The Africa and Middle East countries do not generally have house numbers in the data source. **Note:** The house number specified in the HouseNumber field takes precedence over any house number specified in the AddressLine1 field.

columnName	Description
LastLine	

columnName	Description

The last line of the address.

- Rua Jose Anchieta
  Luanda

  Boulevard Du 28 Novembre
  Bujumbura

  Rue 1823
  Cotonou

  Rue 28.263
  Ouagadougou

  Kushimbara Road
  Gaborone

  Avenue du Docteur Jamot
  Douala

  Boulevard Patrice Lumumba
  Kinshasa

  Avenue Coutassi
  Brazzaville

  Avenue Gabriel Lendoye
  Libreville

  Mamleshie Road
  Accra

  Taratibu Street
  Mombasa

  Avenue Moukhtar Soussi
  28630 Ain Harrouda

  Rue 97
  Bamako

  Avenida 24 De Julho
  Maputo

  Rue Ely ould Mohamed
  Nouakchott

  Victor Hugo Street
  Beau Bassin

  Presidential Way
  Lilongwe

  Katanga Street
  Swakopmund

  Avenue de l'Afrique

columnName	Description
	Niamey
	Limpopo Street **Abuja**
	Avenue De La Gendarmerie **Kigali**
	Rue GY 501 **Dakar**
	Mbangweni Street **Mbabane**
	De La Marina Boulevard **Lomé**
	Rue Aflatoun **Ben Arous**
	Kiyungi Street **Dar es Salaam**
	Rubaga Road **Kampala**
	Freedom Way **Kitwe**
	Kirwith Road **Bulawayo**

columnName	Description
Locality	The meaning of locality varies by country. Generally a locality is a village in rural areas or it may be a suburb in urban areas. When used, a locality typically appears on the last line of the address with the postcode.
	African and Middle East countries do not use a locality or equivalent as part of an address. However there is no penalty if state/province is used in input address.
	• AGO (Angola)—Not used • BEN (Benin)—Not used • BFA (Burkina Faso)—Not used • BWA (Botswana)—Not used • CMR (Cameroon)—Not used • COD (Congo, Democratic Republic of)—Not used • COG (Congo)—Not used • GAB (Gabon)—Not used • GHA (Ghana)—Not used • KEN (Kenya)—Not used • LSO (Lesotho)—Not used • MAR (Morocco)—Not used • MLI (Mali)—Not used • MOZ (Mozambique)—Not used • MRT (Mauritania)—Not used • MUS (Mauritius)—Not used • MWI (Malawi)—Not used • NAM (Namibia)—Not used • NER (Niger)—Not used • NGA (Nigeria)—Not used • RWA (Rwanda)—Not used • SEN (Senegal)—Not used • SWZ (Swaziland)—Not used • TGO (Togo)—Not used • TUN (Tunisia)—Not used • UGA (Uganda)—Not used • VNM (Vietnam)—Not used. • ZMB (Zambia)—Not used • ZWE (Zimbabwe)—Not used
PostalCode	The postal code in the appropriate format for the country. The Africa and Middle East databases generally do not have postal code data.

columnName	Description
StateProvince	The meaning of State/Province varies by country.

Countries in the Africa, Middle East, and Latin America databases do not use a state/province or equivalent as part of an address. However there is no penalty if state/province is used in input address.

- AGO (Angola)—Not used
- BEN (Benin)—Not used
- BWA (Botswana)—Not used
- CMR (Cameroon)—Not used
- COD (Congo, Democratic Republic of)—Not used
- COG (Congo)—Not used
- GAB (Gabon)—Not used
- KEN (Kenya)—Not used
- LSO (Lesotho)—Not used
- MAR (Morocco)—Not used
- MLI (Mali)—Not used
- MOZ (Mozambique)—Not used
- MRT (Mauritania)—Not used
- MUS (Mauritius)—Not used
- MWI (Malawi)—Not used
- NAM (Namibia)—Not used
- NER (Niger)—Not used
- NGA (Nigeria)—Not used
- RWA (Rwanda)—Not used
- SEN (Senegal)—Not used
- SWZ (Swaziland)—Not used
- TGO (Togo)—Not used
- TUN (Tunisia)—Not used
- TZA (Tanzania)—Not used
- UGA (Uganda)—Not used
- ZMB (Zambia)—Not used
- ZWE (Zimbabwe)—Not used

Address Guidelines for Africa

GeocodeAddressGlobal with the Africa database provides street-level, city, or geographic geocoding for many African countries. These countries are bundled as the Africa database (Product Code XA1).

Follow these guidelines to provide input that GeocodeAddressGlobal can successfully geocode African addresses.

- **Required fields**—Addresses must contain a city.
- **Thoroughfare types**—Thoroughfare types and their common abbreviations are recognized and fully supported on input and output.
- **Common words and abbreviations**—The geocoder recognizes common words, directionals, house number indicators, and abbreviations used in addresses and can geocode these addresses successfully.

> **Note:** Postal geocoding is generally not available with the African database. Morocco (MAR) is the only country in the XA1 Africa database that has postal code data, and therefore the only country in this database that supports postal geocoding.

If the input includes a state/province or locality and that input is matched, it does contribute to a higher candidate ranking. However, there is no penalty if state/province or locality is omitted or unmatched.

Single Line Input

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

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 town.

> **Note:** Not all of these address elements are used in every country.

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 address element. For example,

```
Rua JOSE Anchieta;Luanda

Boulevard Du 28 Novembre;Bujumbura

Rue 1823; Cotonou

Rue 28.263 Ouagadougou

Kushimbara Road;Gaborone

Avenue du Docteur Jamot;Douala

Boulevard Patrice Lumumba;Kinshasa

Avenue Coutassi;Brazzaville

Avenue Gabriel Lendoye;Libreville

Taratibu Street;Mombasa

Mpilo Road; Maseru

Avenue Moukhtar Soussi; 28630 Ain Harrouda

Rue 97;Bamako

Avenida 24 De Julho;Maputo

Rue Ely ould Mohamed;Nouakchott

Victor Hugo Street Beau;Bassin

Presidential Way;Lilongwe

Katanga Street;Swakopmund

Avenue de I'Afrique;Niamey

Limpopo Street;Abuja

Avenue De La Gendarmerie;Kigali

Rue GY 501; Dakar

Mbangweni Street; Mbabane

De La Marina Boulevard;Lomé

Rue Aflatoun Ben;Arous
```

```
Kiyungi Street;Dar es Salaam

Rubaga Road; Kampala

Freedom Way, Kitwe

Kirwith Road, Bulawayo
```

Punctuation is ignored for geocoding purposes.

Guidelines for Single Line Input

- 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.

Options

GeocodeAddressGlobal allows you to set default processing options through the Management Console. You can override certain settings for individual calls to GeocodeAddressGlobal using the API or Spectrum™ Technology Platform client tools, such as Enterprise Designer.

Geocoding Options

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

> **Note:** As the EGM Module transitions its administrative tasks to a web-based Management Console, labels for the options may use different wording than what you see in Enterprise Designer. There is no difference in behavior.

Table 2: Geocoding Options for Africa

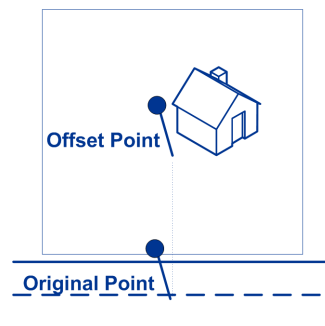| optionName	Description	
GeocodeLevel	Specifies how precisely you want to geocode addresses. One of the following:	
	StreetAddress	The geocoder attempts to geocode addresses to a street address, but some matches may end up at a less precise location such as a postal code centroid, intersection, or shape path.
	PostalCentroid	The majority of African countries and Middle Eastern countries do not include postal code data, and therefore do not support postal centroid geocoding.
	GeographicCentroid	The geocoder attempts to geocode addresses to the geographic centroid of a city or state.
Interpolation	**Y**	Yes, perform address point interpolation.
	N	No, do not perform address point interpolation.
FallbackToGeographic	Specifies whether to attempt to determine a geographic region centroid when an address-level geocode cannot be determined.	
	Y	Yes, determine a geographic centroid when an address-level centroid cannot be determined. Default.
	N	No, do not determine a geographic centroid when an address-level centroid cannot be determined.
FallbackToPostal FallbackToPostal	**Y**	Yes, determine a postal code centroid when an address-level centroid cannot be determined. Default.
	N	No, do not determine a postal code centroid when an address-level centroid cannot be determined.

optionName	Description
OffsetFromStreet	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 OffsetUnits option.

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.

Street coordinates are accurate to 1/10,000 of a degree and interpolated points are accurate to the millionths of a degree.

optionName	Description
OffsetFromCorner	Specifies the distance to offset the street end points in street-level matching. The distance is specified in the units you specify in the OffsetUnits option.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.

Street Segment End With Corner Offset

Street Segment End

OffsetUnits	Specifies the unit of measurement for the street offset and corner offset options. One of the following:

- Feet
- Miles
- Meters
- Kilometers

The default is Meters.

CoordinateSystem	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:

optionName	Description
IncludeInputs	Specifies whether to return the formatted input street address and each input address element in a separate field. This feature can help you understand how the input address was parsed and identify specific input elements that could not be geocoded. For example, a returned HouseNumber.Input could contain an invalid house number in your input address.

You can specify parsed input returns for a specific country. For example, a REST API example for Canada is:

```
Option.CAN.IncludeInputs=Y
```

> **Note:** Data vintage must be 2014 Q4 or newer to get Parsed Address Input returns. Also note that Parsed Address Input elements are not returned for every country.

Parsed Address Input elements are returned in separately labeled fields names with a .Input extension. For example:

- FormattedInputStreet.Input
- City.Input
- Country.Input
- HouseNumber.Input
- Locality.Input
- PostalCode.Base.Input
- StreetName.Input
- StreetSuffix.Input

Other labeled fields are possible depending on the input address, country, and data source.

> **Note:** Parsed Address Input elements are not returned for every country. Also, because Geocode Address World geocodes to the geographic or postal level only (not street address), this does not return Parsed Address Input

For many countries, if part of the input address could not be recognized as a specific address element, this content is returned in UnparsedWords.Input.

For intersection addresses, the first entered street is returned in StreetName.Input and the second entered street name is returned in IntersectionIdStreet2.Input.

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.

> **Note:** As the EGM Module transitions its administrative tasks to a web-based Management Console, labels for the options may use different wording than what you see in Enterprise Designer. There is no difference in behavior.

Table 3: Matching Options for Africa

optionName	Description
KeepMultimatch	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 using the MaxCandidates option (see below). **Y** — Yes, return candidates when multiple candidates are found. Default. **N** — No, do not return candidates. Addresses that result in multiple candidates will fail to geocode.
MaxCandidates	If you specify KeepMultimatch=Y, this option specifies the maximum number of results to return. The default is 1. Specify -1 (minus one) to return all possible candidates.
ReturnRanges	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. **Y** — Yes, return address range information. **N** — No, do not return address range information. Default.
MaxRanges	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.

optionName	Description
MaxRangeUnits	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.
CloseMatchesOnly	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 **MustMatch** options. Address candidates are ranked according to how closely the input address matches these preferences. **Y** Yes, return only close matches. **N** No, do not return only close matches. Default.
MatchMode	Specifies how to determine whether a candidate is a close match. One of the following: **CustomMode** 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 **MustMatch<Element>** options to specify the address elements you want. This is the default value for most countries. **RelaxedMode** All candidate addresses are considered a close match.
MustMatchInput	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. **Y** Yes, a candidate must match all input to be considered a close match. **N** No, a candidate does not have to match all input to be considered a close match. Default.
MustMatchHouseNumber	The Africa and Middle East countries do not generally have house numbers in the data source. **Y** Yes, a candidate must match the house number to be considered a close match. **N** No, a candidate does not have to match the house number to be considered a close match.

optionName	Description		
MustMatchStreet	**Y**	Yes, a candidate must match the street name to be considered a close match.	
	N	No, a candidate does not have to match the street name to be considered a close match.	
MustMatchLocality	The majority of African and Middle East countries do not use locality or equivalent as part of an address. If a locality is matched it can contribute to a higher candidate ranking, but there is no penalty if locality is omitted or unmatched.		

• AGO (Angola)—Not used
• BEN (Benin)—Not used
• BFA (Burkina Faso)—Not used
• BWA (Botswana)—Not used
• CMR (Cameroon)—Not used
• COD (Congo, Democratic Republic of)—Not used
• COG (Congo)—Not used
• GAB (Gabon)—Not used
• GHA (Ghana)—Not used
• KEN (Kenya)—Not used
• LSO (Lesotho)—Not used
• MAR (Morocco)—Not used
• MLI (Mali)—Not used
• MOZ (Mozambique)—Not used
• MRT (Mauritania)—Not used
• MUS (Mauritius)—Not used
• MWI (Malawi)—Not used
• NAM (Namibia)—Not used
• NER (Niger)—Not used
• NGA (Nigeria)—Not used
• RWA (Rwanda)—Not used
• SEN (Senegal)—Not used
• SWZ (Swaziland)—Not used
• TGO (Togo)—Not used
• TUN (Tunisia)—Not used
• UGA (Uganda)—Not used
• ZMB (Zambia)—Not used
• ZWE (Zimbabwe)—Not used

	Y	Yes, a candidate must match the locality to be considered a close match.	
	N	No, a candidate does not have to match the locality to be considered a close match.	

optionName	Description
MustMatchCity	**Y** Yes, a candidate must match the city to be considered a close match.
	N No, a candidate does not have to match the city to be considered a close match.
MustMatchCounty	Specifies whether candidates must match the county (or equivalent) to be considered a close match. The meaning of county varies for different countries.

The majority of countries in the Africa database (XA1) do not use a county or equivalent as part of an address.

- AGO (Angola)—Not used
- BDI (Burundi)—Not used
- BEN (Benin)—Not used
- BFA (Burkina Faso)—Not used
- BWA (Botswana)—Not used
- CMR (Cameroon)—Not used
- COD (Congo, Democratic Republic of)—Not used
- COG (Congo)—Not used
- GAB (Gabon)—Not used
- GHA (Ghana)—Not used
- KEN (Kenya)—Not used
- LSO (Lesotho)—Not used
- MAR (Morocco)—Not used
- MLI (Mali)—Not used
- MOZ (Mozambique)—Not used
- MRT (Mauritania)—Not used
- MUS (Mauritius)—Not used
- MWI (Malawi)—Not used
- NAM (Namibia)—Not used
- NER (Niger)—Not used
- NGA (Nigeria)—Not used
- RWA (Rwanda)—Not used
- SEN (Senegal)—Not used
- TGO (Togo)—Not used
- TUN (Tunisia)—Not used
- TZA (Tanzania)—Not used
- UGA (Uganda)—Not used
- ZMB (Zambia)—Not used
- ZWE (Zimbabwe)—Not used

One of the following:

Y Yes, a candidate must match the county to be considered a close match.

N No, a candidate does not have to match the county to be considered a close match.

optionName	Description
MustMatchStateProvince	Specifies whether candidates must match the state or province (or equivalent) to be considered a close match.

The majority of African and Middle East countries do not use a state/province or equivalent as part of an address. If a state/province is matched it can contribute to a higher candidate ranking, but there is no penalty if state/province is omitted or unmatched.

- AGO (Angola)—Not used
- BEN (Benin)—Not used
- BWA (Botswana)—Not used
- CMR (Cameroon)—Not used
- COD (Congo, Democratic Republic of)—Not used
- COG (Congo)—Not used
- GAB (Gabon)—Not used
- KEN (Kenya)—Not used
- LSO (Lesotho)—Not used
- MAR (Morocco)—Not used
- MLI (Mali)—Not used
- MOZ (Mozambique)—Not used
- MRT (Mauritania)—Not used
- MUS (Mauritius)—Not used
- MWI (Malawi)—Not used
- NAM (Namibia)—Not used
- NER (Niger)—Not used
- NGA (Nigeria)—Not used
- RWA (Rwanda)—Not used
- SEN (Senegal)—Not used
- SWZ (Swaziland)—Not used
- TGO (Togo)—Not used
- TUN (Tunisia)—Not used
- TZA (Tanzania)—Not used
- UGA (Uganda)—Not used
- ZMB (Zambia)—Not used
- ZWE (Zimbabwe)—Not used

One of the following:

Y   Yes, a candidate must match the state or province to be considered a close match.

N   No, a candidate does not have to match the state or province to be considered a close match.

optionName	Description
MustMatchPostalCode	The majority of African countries and Middle Eastern countries do not include postal code data, and therefore do not support postal centroid geocoding.
	Y Yes, a candidate must match the postal code to be considered a close match.
	N No, a candidate does not have to match the postal code to be considered a close match.
SortCandidatesUsingLocale	This is a Reverse geocoding option that applies to Greece, Russia, Ukraine, and any other country that supports dual character sets (such as the Middle East countries).
	Specifies whether candidates are sorted and returned based on the input language. That is, if the input was in Russian, the Russian character candidate is returned first followed by the English language candidate. This will override the dictionary order.
	Y Yes, candidates are sorted and returned based on input language.
	N No, candidates are returned in the order that the dictionary was added to the database, regardless of input language.

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:

- **CloseMatchesOnly**—Specify "Y".
- **MustMatchHouseNumber**—Specify "Y".
- **MustMatchStreet**—Specify "Y".
- **FallbackToPostal**—Specify "N".

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 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 4: Data Options for Africa

optionName	Description
Database	Specifies the database to be used for geocoding. Only databases that have been defined in the Management Console are available.
DatabasePreference	Specifies which geocoding databases to use. One of the following:

Specifies which geocoding databases to use. One of the following:

PreferCustom	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.
PreferStandard	Use both standard databases and custom databases, but give preference to candidates from standard databases.
CustomOnly	Use only custom databases. Ignore standard databases.
StandardOnly	Use only standard databases. Ignore custom databases.
Both	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 59.

optionName	Description
DatabaseSearchOrder	The name of one or more database resources to use in the search process. Use the database name specified in the Management Console.
	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

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. The information is returned in upper case.

If you are using the API, the output returned is in the `DataTable` class. For more information, see 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.

> **Note:** The output casing for fields for Great Britain has changed to upper case, as of the Q1 2016 Data update.

Table 5: Address Output for Africa

columnName	Description
AddressLine1	First line of the address.
AddressLine2	Second line of the address.
ApartmentLabel	The type of unit, such as apartment, suite, or lot.
ApartmentLabel.Input	The type of unit, such as apartment, suite, or lot as it was input.
ApartmentNumber	Unit number.
ApartmentNumber.Input	Unit number as it was input
City	The name.
City.Input	The name as it was input. For Japan, the municipality subdivision (sub-city)

columnName	Description
Country	The three-letter ISO 3166-1 Alpha 3 country code.
	For Angola, the country code is AGO.
	For Burundi, the country code is BDI.
	For Benin, the country code is BEN.
	For Burkina Faso, the country code is BFA.
	For Botswana, the country code is BWA.
	For Cameroon, the country code is CMR.
	For Democratic Republic of Congo, the country code is COD.
	For Congo, the country code is COG.
	For Gabon, the country code is GAB.
	For Ghana, the country code is GHA.
	For Kenya, the country code is KEN.
	For Lesotho, the country code is LSO.
	For Morocco, the country code is MAR.
	For Mali, the country code is MLI.
	For Mozambique, the country code is MOZ.
	For Mauritania, the country code is MRT.
	For Mauritius, the country code is MUS.
	For Malawi, the country code is MWI.
	For Namibia, the country code is NAM.
	For Niger, the country code is NER.
	For Nigeria, the country code is NGA.
	For Rwanda, the country code is RWA.
	For Senegal, the country code is SEN.
	For Swaziland, the country code is SWZ.
	For Togo, the country code is TGO.
	For Tunisia, the country code is TUN.
	For Tanzania, the country code is TZA.
	For Zambia the country code is ZMB.
	For Zimbabwe the country code is ZWE.
	Addresses for countries that do not have a dedicated geocoding stage return the country code associated with the input address. For example, Vatican City addresses return VAT in the Country field, regardless of whether VAT or ITA (Italy) was passed as the country code. Similarly, addresses in Martinique return MTQ (rather than FRA) in the Country field.

columnName	Description
Country.Input	The three-letter ISO 3166-1 Alpha 3 country code as it was input.
	For Angola, the country code is AGO.
	For Burundi, the country code is BDI.
	For Benin, the country code is BEN.
	For Burkina Faso, the country code is BFA.
	For Botswana, the country code is BWA.
	For Cameroon, the country code is CMR.
	For Democratic Republic of Congo, the country code is COD.
	For Congo, the country code is COG.
	For Gabon, the country code is GAB.
	For Ghana, the country code is GHA.
	For Kenya, the country code is KEN.
	For Lesotho, the country code is LSO.
	For Morocco, the country code is MAR.
	For Mali, the country code is MLI.
	For Mozambique, the country code is MOZ.
	For Mauritania, the country code is MRT.
	For Mauritius, the country code is MUS.
	For Malawi, the country code is MWI.
	For Namibia, the country code is NAM.
	For Niger, the country code is NER.
	For Nigeria, the country code is NGA.
	For Rwanda, the country code is RWA.
	For Senegal, the country code is SEN.
	For Swaziland, the country code is SWZ.
	For Togo, the country code is TGO.
	For Tunisia, the country code is TUN.
	For Tanzania, the country code is TZA.
	For Zambia the country code is ZMB.
	For Zimbabwe the country code is ZWE.
	Addresses for countries that do not have a dedicated geocoding stage return the country code associated with the input address. For example, Vatican City addresses return VAT in the Country field, regardless of whether VAT or ITA (Italy) was passed as the country code. Similarly, addresses in Martinique return MTQ (rather than FRA) in the Country field.

columnName	Description
County	The meaning of county varies by country. The majority of countries in the Africa database (XA1) do not use a county or equivalent as part of an address. • AGO (Angola)—Not used • BDI (Burundi)—Not used • BEN (Benin)—Not used • BFA (Burkina Faso)—Not used • BWA (Botswana)—Not used • CMR (Cameroon)—Not used • COD (Congo, Democratic Republic of)—Not used • COG (Congo)—Not used • GAB (Gabon)—Not used • GHA (Ghana)—Not used • KEN (Kenya)—Not used • LSO (Lesotho)—Not used • MAR (Morocco)—Not used • MLI (Mali)—Not used • MOZ (Mozambique)—Not used • MRT (Mauritania)—Not used • MUS (Mauritius)—Not used • MWI (Malawi)—Not used • NAM (Namibia)—Not used • NER (Niger)—Not used • NGA (Nigeria)—Not used • RWA (Rwanda)—Not used • SEN (Senegal)—Not used • TGO (Togo)—Not used • TUN (Tunisia)—Not used • TZA (Tanzania)—Not used • UGA (Uganda)—Not used • VNM (Vietnam)—District • ZMB (Zambia)—Not used • ZWE (Zimbabwe)—Not used This field is not used with countries included with the Africa bundle (Product Code XA1). These African countries generally have less comprehensive address coverage.
FirmName	Name of the company or a place name.
FirmName.Input	Name of the company or a place name as it was input.

columnName	Description
FormattedInputStreet.Input	The street as it was input.
Geocoder.MatchCode	
HouseNumber	The number for the matched location.
HouseNumber.Input	The number for the matched location as it was input
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
IntersectionIdStreet2.Input	The second street in an intersection address as it was input.
IsCloseMatch	Indicates whether candidate is a close match.
Language	For reverse geocoded candidates, the two-character language code is returned.
LastLine	Complete last address line (city, state/province, and postal code).
Latitude	Latitude of the candidate.

columnName	Description
LeadingDirectional	Street directional that precedes the street name. For example, the N in 138 N Main Street.
LeadingDirectional.Input	Street directional that precedes the street name as it was input.
Locality	The meaning of locality varies by country. Generally a locality is a village in rural areas or it may be a suburb in urban areas. When used, a locality typically appears on the last line of the address with the postcode. African and Middle East countries do not use a locality or equivalent as part of an address. However there is no penalty if state/province is used in input address. - AGO (Angola)—Not used - BEN (Benin)—Not used - BFA (Burkina Faso)—Not used - BWA (Botswana)—Not used - CMR (Cameroon)—Not used - COD (Congo, Democratic Republic of)—Not used - COG (Congo)—Not used - GAB (Gabon)—Not used - GHA (Ghana)—Not used - KEN (Kenya)—Not used - LSO (Lesotho)—Not used - MAR (Morocco)—Not used - MLI (Mali)—Not used - MOZ (Mozambique)—Not used - MRT (Mauritania)—Not used - MUS (Mauritius)—Not used - MWI (Malawi)—Not used - NAM (Namibia)—Not used - NER (Niger)—Not used - NGA (Nigeria)—Not used - RWA (Rwanda)—Not used - SEN (Senegal)—Not used - SWZ (Swaziland)—Not used - TGO (Togo)—Not used - TUN (Tunisia)—Not used - UGA (Uganda)—Not used - VNM (Vietnam)—Not used. - ZMB (Zambia)—Not used - ZWE (Zimbabwe)—Not used

columnName	Description
Locality.Input	The locality as it was input.
	• AGO (Angola)—Not used
	• BEN (Benin)—Not used
	• BFA (Burkina Faso)—Not used
	• BWA (Botswana)—Not used
	• CMR (Cameroon)—Not used
	• COD (Congo, Democratic Republic of)—Not used
	• COG (Congo)—Not used
	• GAB (Gabon)—Not used
	• GHA (Ghana)—Not used
	• KEN (Kenya)—Not used
	• LSO (Lesotho)—Not used
	• MAR (Morocco)—Not used
	• MLI (Mali)—Not used
	• MOZ (Mozambique)—Not used
	• MRT (Mauritania)—Not used
	• MUS (Mauritius)—Not used
	• MWI (Malawi)—Not used
	• NAM (Namibia)—Not used
	• NER (Niger)—Not used
	• NGA (Nigeria)—Not used
	• RWA (Rwanda)—Not used
	• SEN (Senegal)—Not used
	• SWZ (Swaziland)—Not used
	• TGO (Togo)—Not used
	• TUN (Tunisia)—Not used
	• UGA (Uganda)—Not used
	• ZMB (Zambia)—Not used
	• ZWE (Zimbabwe)—Not used
Longitude	Longitude of the candidate.
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 `MaxRanges` 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 `MaxRangeUnits` option.

columnName	Description
PostalCode	The postal code 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.
PostalCode.Addon.Input	The second part of a postcode as it was input. This field is not used by most countries.
PostalCode.Base	The first part of a postcode. This field is not used by most countries.
PostalCode.Base.Input	The first 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.

columnName	Description

Ranges

columnName	Description

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.
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,

columnName	Description

	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 .

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

columnName	Description
StateProvince	The meaning of State/Province varies by country.
	Countries in the Africa, Middle East, and Latin America databases do not use a state/province or equivalent as part of an address. However there is no penalty if state/province is used in input address.
	• AGO (Angola)—Not used • BEN (Benin)—Not used • BWA (Botswana)—Not used • CMR (Cameroon)—Not used • COD (Congo, Democratic Republic of)—Not used • COG (Congo)—Not used • GAB (Gabon)—Not used • KEN (Kenya)—Not used • LSO (Lesotho)—Not used • MAR (Morocco)—Not used • MLI (Mali)—Not used • MOZ (Mozambique)—Not used • MRT (Mauritania)—Not used • MUS (Mauritius)—Not used • MWI (Malawi)—Not used • NAM (Namibia)—Not used • NER (Niger)—Not used • NGA (Nigeria)—Not used • RWA (Rwanda)—Not used • SEN (Senegal)—Not used • SWZ (Swaziland)—Not used • TGO (Togo)—Not used • TUN (Tunisia)—Not used • TZA (Tanzania)—Not used • UGA (Uganda)—Not used • ZMB (Zambia)—Not used • ZWE (Zimbabwe)—Not used
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.
StreetName	For most countries, this contains the street name.
StreetPrefix	The type of street when the street type appears before the base street name.

columnName	Description
StreetSuffix	The type of street when the street type appears after the base street name.
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.
Return Parsed Address	The formatted input address can be returned along with a separate returned field for each input address element. Parsed Address Input elements are returned in separately labeled fields names with a .Input extension. See **Result Codes** on page 43

Geocode Output

Table 6: Geocode Output for Africa

columnName	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).

Output Data Options

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

Table 7: Output Data Options

optionName	Description
ReturnOnlySimilarFirmNames	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" 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.
	Y Yes, return only firm names that are similar to the input firm name.
	N No, return firm names regardless of whether they are close to the input firm name. Default.

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.

Note: As the EGM Module transitions its administrative tasks to a web-based Management Console, labels for the options may use different wording than what you see in Enterprise Designer. There is no difference in behavior.

Table 8: Result Code Output for Africa

columnName	Description
Geocoder.MatchCode	Indicates how closely the input address matches the candidate address.

columnName	Description
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 • 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 specify `KeepMultimatch=Y`.

columnName	Description

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. This is a placeholder value. Spectrum databases do not have POI data, so it is not possible to get this return.
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.
17	The result was generated by using address point data to modify the candidates 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, and thereby return LocationPrecision 18.

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.

2 -
ReverseGeocodeAddressGlobal

ReverseGeocodeAddressGlobal determines the address for a given latitude/longitude point. ReverseGeocodeAddressGlobal 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, ReverseGeocodeAddressGlobal would be able to geocode addresses in these countries in a single stage.

> **Note:** ReverseGeocodeAddressGlobal does not support U.S. addresses. To geocode U.S. addresses, you must use ReverseGeocodeUSLocation. That performs reverese geocoding specifically for USA addresses.

Before you can work with ReverseGeocodeAddressGlobal, you must define a global database resource containing a database for one or more countries. Once you create the database resource, ReverseGeocodeAddressGlobal will be available.

In this section

Input

ReverseGeocodeAddressGlobal takes longitude and latitude as input.

For GRC, RUS, and JPN, the user's locale determines the language of the returned candidates for reverse geocoding. This can be Greek, Russian, or Japanese for GRC, RUS, and JPN respectively. English is the default locale.

> **Note:** Specify input using the `DataTable` class. For more information, see the Spectrum™ Technology Platform API Guide.
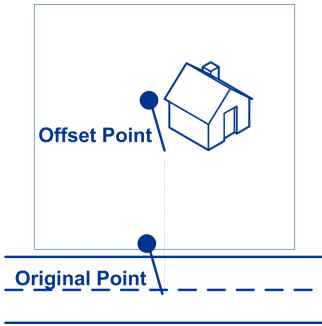
Table 9: ReverseGeocodeGlobal Input

columnName	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 10: Geocoding Options for Africa

optionName	Description
SearchDistance	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

optionName	Description
OffsetFromStreet	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 OffsetUnits option.

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.

Street coordinates are accurate to 1/10,000 of a degree and interpolated points are accurate to the millionths of a degree.

optionName	Description
OffsetFromCorner	Specifies the distance to offset the street end points in street-level matching. The distance is specified in the units you specify in the OffsetUnits option.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.
OffsetUnits	Specifies the unit of measurement for the street offset and corner offset options. One of the following: • Feet • Miles • Meters • Kilometers The default is Meters.
CoordinateSystem	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:

Matching Options

Table 11: Matching Options for Africa

optionName	Description
KeepMultimatch	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 using the MaxCandidates option (see below). **Y** Yes, return candidates when multiple candidates are found. Default. **N** No, do not return candidates. Addresses that result in multiple candidates will fail to geocode.
MaxCandidates	If you specify KeepMultimatch=Y, this option specifies the maximum number of results to return. The default is 1. Specify -1 (minus one) to return all possible candidates.
SortCandidatesUsingLocale	This is a Reverse geocoding option that applies to Greece, Russia, Ukraine, and any other country that supports dual character sets (such as the Middle East countries). Specifies whether candidates are sorted and returned based on the input language. That is, if the input was in Russian, the Russian character candidate is returned first followed by the English language candidate. This will override the dictionary order. **Y** Yes, candidates are sorted and returned based on input language. **N** No, candidates are returned in the order that the dictionary was added to the database, regardless of input language.

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 12: Data Options for Africa

optionName	Description
DatabaseSearchOrder	The name of one or more database resources to use in the search process. Use the database name specified in the Management Console.
	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 13: Reverse Geocode Address Global Output Fields

columnName	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 name.

columnName	Description
County	The meaning of county varies by country. The majority of countries in the Africa database (XA1) do not use a county or equivalent as part of an address. • AGO (Angola)—Not used • BDI (Burundi)—Not used • BEN (Benin)—Not used • BFA (Burkina Faso)—Not used • BWA (Botswana)—Not used • CMR (Cameroon)—Not used • COD (Congo, Democratic Republic of)—Not used • COG (Congo)—Not used • GAB (Gabon)—Not used • GHA (Ghana)—Not used • KEN (Kenya)—Not used • LSO (Lesotho)—Not used • MAR (Morocco)—Not used • MLI (Mali)—Not used • MOZ (Mozambique)—Not used • MRT (Mauritania)—Not used • MUS (Mauritius)—Not used • MWI (Malawi)—Not used • NAM (Namibia)—Not used • NER (Niger)—Not used • NGA (Nigeria)—Not used • RWA (Rwanda)—Not used • SEN (Senegal)—Not used • TGO (Togo)—Not used • TUN (Tunisia)—Not used • TZA (Tanzania)—Not used • UGA (Uganda)—Not used • VNM (Vietnam)—District • ZMB (Zambia)—Not used • ZWE (Zimbabwe)—Not used This field is not used with countries included with the Africa bundle (Product Code XA1). These African countries generally have less comprehensive address coverage.
Distance	The distance from input location in meters. If the input coordinates are an exact match for the address, the value is 0.

columnName	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 64.
HouseNumber	The 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.

columnName	Description
Locality	The meaning of locality varies by country. Generally a locality is a village in rural areas or it may be a suburb in urban areas. When used, a locality typically appears on the last line of the address with the postcode.
	African and Middle East countries do not use a locality or equivalent as part of an address. However there is no penalty if state/province is used in input address. • AGO (Angola)—Not used • BEN (Benin)—Not used • BFA (Burkina Faso)—Not used • BWA (Botswana)—Not used • CMR (Cameroon)—Not used • COD (Congo, Democratic Republic of)—Not used • COG (Congo)—Not used • GAB (Gabon)—Not used • GHA (Ghana)—Not used • KEN (Kenya)—Not used • LSO (Lesotho)—Not used • MAR (Morocco)—Not used • MLI (Mali)—Not used • MOZ (Mozambique)—Not used • MRT (Mauritania)—Not used • MUS (Mauritius)—Not used • MWI (Malawi)—Not used • NAM (Namibia)—Not used • NER (Niger)—Not used • NGA (Nigeria)—Not used • RWA (Rwanda)—Not used • SEN (Senegal)—Not used • SWZ (Swaziland)—Not used • TGO (Togo)—Not used • TUN (Tunisia)—Not used • UGA (Uganda)—Not used • VNM (Vietnam)—Not used. • ZMB (Zambia)—Not used • ZWE (Zimbabwe)—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 `MaxRanges` option.

columnName	Description
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 `MaxRangeUnits` option.
PostalCode	The postal code 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 .
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

columnName	Description
StateProvince	The meaning of State/Province varies by country.
	Countries in the Africa, Middle East, and Latin America databases do not use a state/province or equivalent as part of an address. However there is no penalty if state/province is used in input address. • AGO (Angola)—Not used • BEN (Benin)—Not used • BWA (Botswana)—Not used • CMR (Cameroon)—Not used • COD (Congo, Democratic Republic of)—Not used • COG (Congo)—Not used • GAB (Gabon)—Not used • KEN (Kenya)—Not used • LSO (Lesotho)—Not used • MAR (Morocco)—Not used • MLI (Mali)—Not used • MOZ (Mozambique)—Not used • MRT (Mauritania)—Not used • MUS (Mauritius)—Not used • MWI (Malawi)—Not used • NAM (Namibia)—Not used • NER (Niger)—Not used • NGA (Nigeria)—Not used • RWA (Rwanda)—Not used • SEN (Senegal)—Not used • SWZ (Swaziland)—Not used • TGO (Togo)—Not used • TUN (Tunisia)—Not used • TZA (Tanzania)—Not used • UGA (Uganda)—Not used • ZMB (Zambia)—Not used • ZWE (Zimbabwe)—Not used
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.
StreetName	For most countries, this contains the street name.

columnName	Description
StreetPrefix	The type of street when the street type appears before the base street name.
StreetSuffix	The type of street when the street type appears after the base street name.
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.

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 14: 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. For databases vintage 2014 Q4 or newer, the input house number is returned with the candidate even if no such house number was found. The S4 code is followed by letters and dashes indicating match precision. See **Interpreting S Result Codes** on page 61
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 61.
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. S8 returns are possible with point databases only.
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 address elements 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 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.	North
N	Street name	Merivale
T	Street type	St

Category	Description	Example
S	Street suffix direction 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.	W
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 15: Postal (Z) Result Codes

Z Result Code	Description
Z1	Postal Code centroid match.

Z Result Code	Description
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. Africa can generate a Z1 result code. Country-specific geocoders can often generate more accurate postcode results (with Z2 or Z3 result codes).

If the postal candidate comes from a user dictionary, the letter U is appended to the result. For example, Z1U indicates a postal centroid match from a custom user dictionary.

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 about the accuracy of the candidate.

Table 16: 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.

If the geographic candidate comes from a user dictionary, the letter U is appended to the result code. For example, G4U indicates a locality centroid match from a custom user dictionary.

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 17: 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.

If the reverse geocoded candidate comes from a user dictionary, the letter U is appended to the result. For example, RS8U indicates a point/parcel level reverse geocode match from a custom user 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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