

**precisely**

# Spectrum Technology Platform

## Spectrum Global Geocoding Guide

Version 2020.1.0



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# 1 - Getting Started

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# Introduction

This guide provides information on using the Spectrum Global Geocoding. The Spectrum Global Geocoding integrates geocoding support for over 150 countries and includes the following stages:

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

The Spectrum Global Geocoding is delivered as a Spectrum Technology Platform module and can be built into stages just like any other component. Spectrum Technology Platform must already be installed.

These stages provide options that allow control of the geocoding dataset resources, searching and matching criteria, and other preferences in a graphical interface.

After installing and deploying the Spectrum Global Geocoding, you can use Management Console to explore all the capabilities and see candidate results. You can also include GGM stages in your dataflow in Enterprise Designer.

You can use additional features and preferences through the REST API. See [Introduction to the Global Geocoding APIs](#).

## Spectrum Global Geocoding Workflow

The following procedure gives a general high-level workflow for installing, setting up and implementing the Spectrum Global Geocoding in the Spectrum Technology Platform. Use Management Console to add and configure datasets and create default settings and overrides that apply to your global geocoding dataflows. Use Enterprise Designer to create and edit the actual dataflows.

Make sure that you have reviewed the release notes provided with your installation.

1. You should have already installed the Spectrum Technology Platform and the Spectrum Global Geocoding. For instructions, refer to the *Spectrum Technology Platform Installation Guide* for your platform.
2. To access Management Console, in a web browser go to:

`http://server:port/managementconsole`

Where *server* is the server name or IP address of your Spectrum Technology Platform server and *port* is the HTTP port used by Spectrum Technology Platform. By default, the HTTP port is 8080.

3. Enter a valid user name and password.

The administrative user name is "admin" and it has a default password of "admin".

**Important:** You should change the admin password immediately after installing Spectrum Technology Platform to prevent unauthorized administrative access to your system. Note that passwords, including those for the Web utilities, must contain one of the following special characters:

name	symbol
ampersand	&
asterisk	*
at	@
circumflex	^
dollar	\$
double quote	"
hash/pound	#
percent	%
splat	!

4. Install the Enterprise Designer client tool. This is a Windows application.
  - a) To download Enterprise Designer, in your browser, enter your Spectrum server and port number, and then login. For example: `myserver:8080`.  
The Spectrum Technology Platform home page opens.
  - b) For the Enterprise Designer installer, select **Platform Client Tools > Desktop**. Follow the instructions provided on this page to download and install the tool.

There are also optional command line tools, such as the Job Executor, Process Executor and Administration Utility that are useful for creating scripts and automating tasks. To download the

command line tools, from the Spectrum Technology Platform home page, select **Platform Client Tools > Command Line**.

5. Download and install your geocoding datasets. For instructions, refer to the *Spectrum Technology Platform Installation Guide* for your platform.
6. Add your geocoding datasets as a database resource using the Spectrum Databases resource in Management Console. For the procedure, see [Adding a Spectrum Global Geocoding Database Resource](#) on page 12.
7. Enter your global default values, overrides and dataset options for any of the Global Geocode stages in Management Console.

The global default values, overrides and dataset configuration options allow you to customize each dataflow as needed. These settings and overrides from Management Console apply to all global geocoding dataflows you create in Enterprise Designer. You can override these settings in Enterprise Designer as well.

For users who are transitioning from the deprecated GeoComplete Module to Spectrum Global Geocoding see [Enterprise Designer Mappings for GCM and GGM](#).

8. Create the input records you want to use in your stage. Input fields and input record formatting requirements are covered under each stage.
9. Create your geocoding dataflow in Enterprise Designer. A dataflow is a series of operations that takes data from a source, processes that data, then writes the output to a destination. Detailed information on using the Enterprise Designer and setting up dataflows is located in the *Spectrum Technology Platform Dataflow Designer's Guide*.
10. Each Spectrum Global Geocoding stage has options in Enterprise Designer for searching, matching and geocoding, and for setting return values that will supercede the default settings and overrides you created in Management Console. For detailed descriptions, see the sections for each stage.
11. Save and run your dataflow.
  - For information on inputs, preferences and outputs for each stage, see [Geocoding: Input, Preferences and Output Fields](#) on page 20, [Reverse Geocoding: Input, Preferences, and Output Fields](#) on page 42, [Interactive: Inputs, Preferences and Output Fields](#) on page 52, and [Global Key Lookup: Input, Preferences and Output Fields](#) on page 58

# Enterprise Designer Mappings for Spectrum Global Geocoding

The GeoComplete Module has been deprecated and removed from the product. The same functionality is available in Spectrum Global Geocoding. If you have dataflows for GeoComplete, see the input address and preferences tables below to transition them to Spectrum Global Geocoding.

**Table 1: Input Address Mappings**

GeoComplete Module	Spectrum Global Geocoding	Description
AddressLine1	MainAddressLine	Single line input address
StateProvince	AreaName1	State or province
City	AreaName3	City to search. Combine with AddressLine1 to return candidates in your targeted area.
PostalCode	PostCode1	Postal code
Country	Country	ISO 3-character country code or name of country. No direct mapping in GGM to search for all countries.
OriginLatitude	OriginX	X coordinate of origin.
OriginLongitude	OriginY	Y coordinate of origin.

**Table 2: Preference Mappings**

GeoComplete Module	Spectrum Global Geocoding	Description
<b>Fuzzy Match Settings</b>	<b>Match Mode</b>	Type of match to perform.
<ul style="list-style-type: none"> <li>• Hard_Match</li> <li>• Soft_Match</li> <li>• None (default)</li> </ul>	<ul style="list-style-type: none"> <li>• Standard (default)</li> <li>• Close</li> <li>• Relaxed</li> </ul>	



GeoComplete Module	Spectrum Global Geocoding	Description
<b>Search Type</b> <ul style="list-style-type: none"> <li>GeoComplete Address</li> <li>GeoComplete POI</li> <li>GeoComplete Category</li> <li>GeoComplete All (default)</li> <li>FindNearest POI</li> </ul>	<b>Search Type</b> <ul style="list-style-type: none"> <li>Address (default)</li> <li>ALL</li> <li>Point of Interest</li> <li>Point of Interest Category</li> </ul>	<p>The type of search to perform. You must have licensed and installed POI data to search for and return candidates.</p> <p>FindNearest POI is not supported in GGM.</p>
Not supported	<b>Administrative Area Search</b>	A search-limiting administrative boundary, such as a postal code area. Optional.
<b>Match On Address Number</b>	<b>Match on Address Number</b>	Match to an address number. Optional.
<b>Search Distance</b>	<b>Search Distance</b>	Specifies the distance (radius) to search for candidates from the given origin. This distance is also used as a search distance restriction.
<b>Distance from Origin</b>	Search Distance text box	The extent of the search area as the maximum distance from the X/Y origin.
<b>Distance Unit</b> <ul style="list-style-type: none"> <li>KILOMETERS</li> <li>MILES</li> <li>METERS</li> <li>FEET</li> </ul>	Distance units pick list <ul style="list-style-type: none"> <li>Feet</li> <li>Kilometers</li> <li>Meters</li> <li>Miles</li> </ul>	Distance units for the search distance.
<b>Coordinate System</b>	<b>Coordinate System</b>	Coordinate system to use. Currently supported EPSG:4326.
<b>No Restrictions</b> (search)	<b>Add/User database restriction</b> <ul style="list-style-type: none"> <li>Search all datasets (default)</li> <li>Search address datasets</li> <li>Search user datasets only</li> </ul>	Dataset search.

GeoComplete Module	Spectrum Global Geocoding	Description
<b>Database preference</b> <ul style="list-style-type: none"> <li>• Use Both Dictionaries (default)</li> <li>• Use User Dictionary Only</li> <li>• Use Standard Dictionary Only</li> <li>• Prefer User Dictionary</li> <li>• Prefer Standard Dictionary</li> </ul>	<b>Dataset match preference</b> <ul style="list-style-type: none"> <li>• No Preference (default)</li> <li>• Prefer address dictionary match</li> <li>• Prefer user dictionary match</li> </ul>	When <b>Add/user database restriction</b> is set to Search all datasets, you can then set a preference for a country's standard address dictionary or user dictionary.
<b>Order Installed Database Resources</b>	Not supported	Order in which datasets are searched. Default is the order in which they were loaded.
Not supported	<b>Return all available information</b>	Return all available information available information for a candidate. Optional.
<b>Max Candidates</b>	<b>Max results to be returned</b> Default is 5.	Maximum number of candidates to return (1 - 100). Or specify -1 to return the maximum allowable number of candidates (100).
Within Bounding Box	Not supported as a preference. See <b>OriginX, OriginY</b> as input fields.	Limits the search to the coordinates of the bounding box
Upper right longitude field	Not supported as a preference. See <b>OriginX, OriginY</b> as input fields.	The coordinate defining the eastern boundary of the bounding box.
Lower left longitude field	Not supported as a preference. See <b>OriginX, OriginY</b> as input fields.	The coordinate defining the northern boundary of the bounding box.
Upper right latitude field	Not supported as a preference. See <b>OriginX, OriginY</b> as input fields.	The coordinate defining the southern boundary of the bounding box.
Lower left latitude field	Not supported as a preference. See <b>OriginX, OriginY</b> as input fields.	The coordinate defining the western boundary of the bounding box.
Locale	Not supported	Enabled for GCM FindNearest POI, which GGM does not support.

# 2 - Adding the Geocoding Datasets

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# Adding a Spectrum Global Geocoding Database Resource

Whenever you install a new database resource or modify an existing database resource you must define it in the Management Console in order for it to become available on your system. This procedure describes how to add or modify a Spectrum Global Geocoding database resource.

- Before configuring multiple database resources, confirm if there are any applications using the REST API from Spectrum Global Geocoding. REST API calls will need to be modified to include the database name so it does not conflict with any new database resources.
- If you want to use this capability and you have existing data flows, review and update any data flow database resources. Otherwise, no changes to data flow database resources are necessary.

**Note:** In terms of backwards compatibility, when older flows are imported, they will default to the latest database created on 2019.1.

1. If you haven't already done so, install the dataset files on your system, using the command line interface (CLI) commands. For instructions on installing databases, see the Spectrum Technology Platform Installation Guide.
2. In Management Console, under **Resources**, choose **Spectrum Databases**.
3. To create a new database resource, click the Add button . To make changes to an existing database resource, select it, then click the Edit button . To delete a database resource, select it, then click the Delete button .

**Note:** You can copy a Global Geocoding database resource to use for another installed module; however, a copy of a database resource cannot be made for the Spectrum Global Geocoding since it can only have one database resource.


4. If you are creating a new database resource, on the **Add Database** page, enter a name for the database resource in the **Name** field.
5. In the **Pool size** field, specify the maximum number of concurrent requests you want this database to handle.

The optimal pool size varies by module. You will generally see the best results by setting the pool size between one-half to twice the number of CPUs on the server, with the optimal pool size for most modules being the same as the number of CPUs. For example, if your server has four CPUs you may want to experiment with a pool size between 2 (one-half the number of CPUs) and 8 (twice the number of CPUs) with the optimal size possibly being 4 (the number of CPUs).

**Tip:** You should conduct performance tests with various settings to identify the optimal pool size and runtime instance settings for your environment.

6. In the **Module** field, select `GlobalGeocode`. In the **Type** field, use the default shown, `Global Geocode Dataset`.

If you had extracted your `.SPD` files and placed them in the `\server\app\dataimport` folder, Spectrum would automatically add them to the `\repository\datastorage` folder. You will see a list of datasets in the Add Database screen.

7. Select the dataset(s) you want to add to the database as a resource. Use the Filter text box to search for a dataset when you have a long list.
8. Save the database.
9. If you have a custom dictionary you wish to geocode against, click the Add button  and provide a name, country and path to the dictionary. Do not use the Add button to add datasets to the standard database.

A custom database is a user-defined database that contains addresses and latitude/longitude coordinates that you can use for geocoding.

**Note:** You must have a licensed standard database on your system in order to configure and geocode to a custom dictionary.

10. If there are any open Enterprise Designer sessions, click the refresh button to see the new stage.

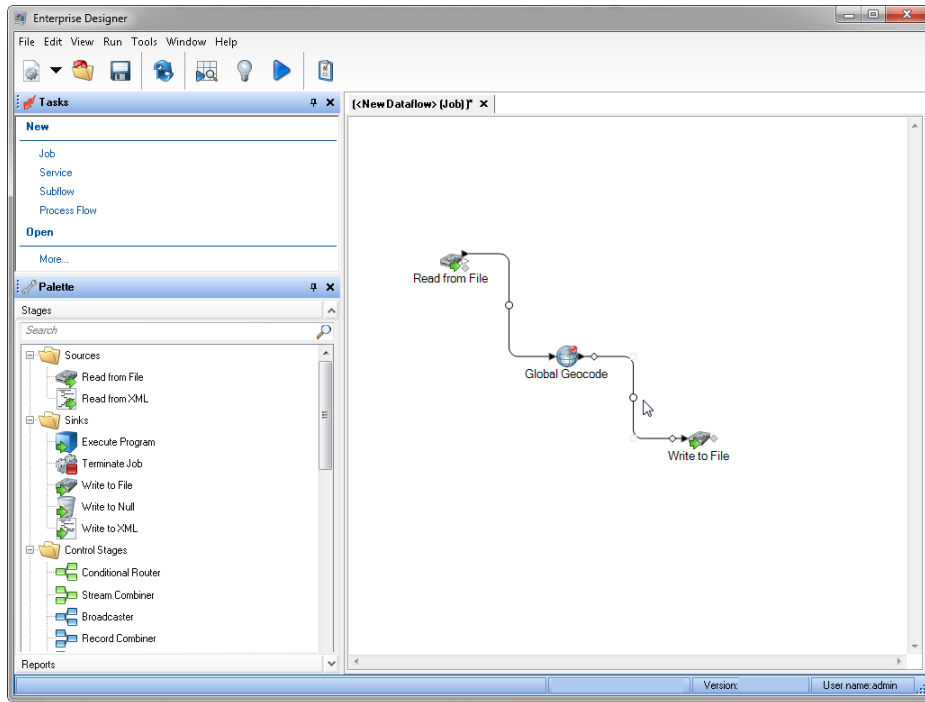
**Note:** If the database fails to configure due to insufficient resources, you may need to increase the Java Virtual Machine (JVM) initial heap size (`Xms`) and/or add the max heap size (`Xmx`) in the `java.vargs` file. This file is located in the

`SpectrumDirectory\server\modules\GlobalGeocode` folder, where *SpectrumDirectory* is your Spectrum installation directory.

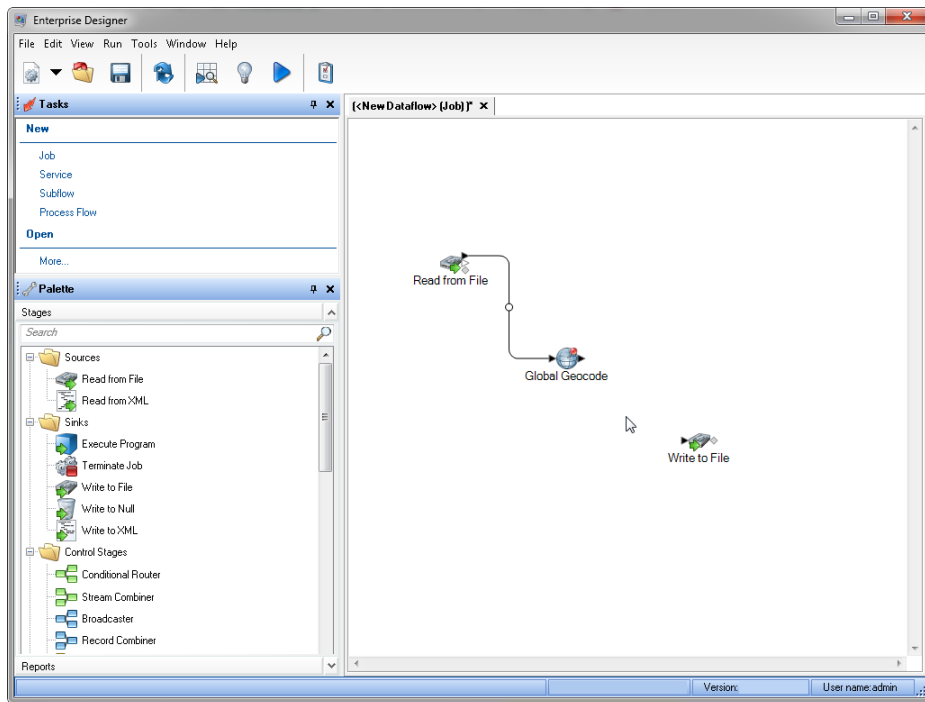
## Resetting the Geocoding Dataflow after Modifying a Database Resource

If you have an established dataflow, and subsequently you modify your database resource by adding or deleting geocoding datasets, you must either exit, then re-start the Enterprise Designer or execute the following procedure to reset your dataflow.

1. In Enterprise Designer, in your geocoding dataflow, select the output port channel between the Global Geocode or Global Reverse Geocode stage and the output stage. In the following example, this is the **Write to File** stage.



2. Delete the channel.



3. Reconnect the output port on the Global Geocode or Global Reverse Geocode stage to the output stage.
4. Save your dataflow.  
The dataflow is reset and is ready to be configured and run.

# 3 - Creating your Input Records

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# Input Address Fields

The input address may contain some or all of the following address elements.

Field Name	Type	Description
PlaceName	String	Specifies the building name, place name, Point of Interest (POI), company or firm name associated with the input address. Optional.
MainAddressLine	String	<p><b>Single Line Input</b>—If no other address field is populated, then the <code>MainAddressLine</code> entry will be treated as a single line input. Single line input can consist of multiple input address fields ; these should be entered in the typical address order for the country. For more details, refer to the section "Single Line Input" below.</p> <p><b>Street Address</b>—If the post address components (city, postalCode, etc.) are provided separately or in the lastLine field, then the contents of <code>MainAddressLine</code> will be treated as the street address part and can include company name, house number, building names and street names. Optional.</p> <p><b>Street Intersection Input</b>—To enter an intersection, specify the two street names separated by a double ampersand (&amp;&amp;).</p>
lastLine	String	The last line of the address. Optional.
areaName1	String	State or Province
areaName2	String	District
areaName3	String	City or Town
areaName4	String	Locality
PostCodepostalCode	String	Postcode for the address.
Countrycountry	String	Can be the ISO 3166-1 Alpha-3 country code or a standard way to refer to the country



# Input Record Format

The Enterprise Designer specifies the allowable input file formats for the type of dataflow in use. Typically, the dataflow would read the input record as either a text, database or XML file. Each of these input file types have specific format requirements which are covered in detail in the *Spectrum Technology Platform Dataflow Designer's Guide*. For instance, for an input text file, the guide covers the permitted record types, character encoding, field separators, etc.

The following are a couple of example input record text files. These example input records contain an optional header line, as well as optional input fields.

## Example Geocoding Input Record

The following is an example text input record file with USA addresses.

```
mainAddress;areaName3;areaName1;postalCode;country
26 EDISON DR;NISKAYUNA;NY;12309;USA
92 MCCRACKEN RD;MILLBURY;MA;01527;USA
22 CARRIAGE LN;NEWARK;DE;19711;USA
8 HARBOR VIEW RD; S BURLINGTON;VT;05403;USA
124 VERNON RD;GREENVILLE;PA;16125;USA
31 FORD ST;MAUMEE;OH;43537;USA
155 WINTER ST;S WALPOLE;MA;02071;USA
```

## Example Reverse Geocoding Input Record

The following is an example text input record file with input coordinates.

```
X|Y|Country
-72.672229|42.076406|USA
-82.436915|34.870463|USA
-95.7849|42.1603|USA
-113.532|53.5421|CAN
-71.2577|46.8461|CAN
-115.423|32.6561|MEX
```

## Example Interactive Geocoding Input Record

The following is an example text input record file.

```
MainAddressLine;AreaName1;AreaName3;PostCode1;County;Country;OriginX;OriginY
ABBOTSFIELD;;;Toronto;;;;;
札幌市中央;;;;;;
Broadway;;;;;; -74.00218;40.719025
```

### *Example KeyLookup Input Record*

The following is an example text input record file.

```
Key;KeyType;Country  
P0000GL5UVYI; PB_KEY;USA  
P0000GL41OME;PB_KEY;USA  
GASA_422263850;_GNAF_PID;AUS  
GANSW705177946;GNAF_PID;AUS
```

# 4 - Global Geocode

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Input, Preferences and Output Fields.....20



# Input, Preferences and Output Fields

Spectrum Global Geocoding takes an input address and returns location data and other information. Preferences are available that allow control of matching and geocoding criteria, return values and more.

## Geocoding Features

Spectrum Global Geocoding provides the following capabilities when built into your Spectrum Technology Platform application. The following capabilities are supported.

- Single and multiple line input search for street addresses
- Match mode is one of Standard, Close, or Relaxed
- Preference for geocoding to PO Box or Streets
- Candidates returned in order based on distance from X/Y origin
- Search points of interest (POI)
- Search All to include both street addresses and POI
- Search POI<sup>1</sup> categories and subcategories
- Localized categories and subcategories for countries with localized data
- Search for brand (such as a specific hotel chain) in categories and subcategories
- Search within a bounding box
- Country-specific features; see [ISO 3166-1 Country Codes](#) on page 183
- Matched fields reported with returned candidates

After installing and deploying the Spectrum Global Geocoding module, you can use the Management Console to explore all the capabilities and see candidate results. You can also include Spectrum Global Geocoding as a stage in your dataflow in Enterprise Designer.

You can use additional features and preferences through the REST API. See [Introduction to the Global Geocoding APIs](#).

---

<sup>1</sup> POI and category/subcategory features are available only if you have licensed and installed POI data.

## Geocode Request Fields

The input address may contain some or all of the following address parameters.

Field	Description
MainAddressLine	Candidate address line
AddressLastLine	Candidate last address line
PlaceName	Name of a building, place, firm or company name, point of interest associated with the address
AreaName1	State, province or region
AreaName2	County or district
AreaName3	City, town or suburb
AreaName4	Locality
PostCode1	Main postal code
PostCode2	Secondary postal code
Country	Country
AddressNumber	House or building number
StreetName	Street name
UnitType	Type of unit, such as Apt., Ste. and Bldg
UnitValue	Unit value/number, such as "3B"

## Global Default Values in Geocoding

You can set global default values for the Global Geocode stage in both Management Console and Enterprise Designer. When you set the options in Management Console, the settings you save are applied to all dataflows that use the stage. If you set the options in Enterprise Designer, the settings are applied to that specific instance of the stage.

### *Setting Global Defaults in Management Console*

#### *Entering global default values*

The following instructions explain how to enter global default values in Management Console. In many cases, entering the global default values is a matter of accepting the existing default values.

1. In the **Services** tab, select **GlobalGeocode**.
2. Select the **Global Geocode** stage from the list.
3. In the **Country Filter** dropdown, select **Global Defaults**.
4. Click the tab in which you want to enter a global default.

Depending on the tab you choose, there are several settings you can select and enable. You can select the multiple choice options in the dropdown controls and you can enable other options by using the checkboxes. There are also some fields for which you can manually enter a value. You can also create country-specific overrides for a number of options. For more information, see [Setting Country Overrides](#) on page 23.

5. Click **Save**.

### *Setting Global Defaults in Enterprise Designer*



#### *Entering global default values*

The following instructions explain how to enter global default values in Enterprise Designer. In many cases, entering the global default values is a matter of accepting the existing default values. Remember that any options you set in Enterprise Designer are specific to that one instance of the Global Geocoding stage and override the settings made in Management Console.

1. Start Enterprise Designer.
2. In the **Tasks** panel, select the new type of dataflow you want to create. You can also open an existing dataflow to make changes.
3. From the **Stages** listing in the **Palette** panel, select the **Global Geocode** stage icon and drag it into the New Dataflow panel.
4. Double click the stage icon to open the **Global Geocode Options** window.
5. In the **Filters** panel, click **Global Defaults**.

- Click the arrow to open the category in which you want to enter a global default.

Depending on the category you choose, there are several settings you can select and enable. You can select the multiple choice options in the dropdown controls and you can enable other options by using the checkboxes. There are also some fields for which you can manually enter a value.

- When you are finished making your choices, click the **OK**  button and then click the **Save**  button to save your dataflow.

## Setting Country Overrides

When you set the values for global geocoding, you can override several of the global default values on a per-country basis. Any overrides made through the Management Console are base settings that apply to all data flows that use Global Geocoding stages in Enterprise Designer.

**Note:** This override functionality is available only through the Management Console. It is not supported in Enterprise Designer.

### Setting Country Overrides in Management Console

#### Entering country overrides

The following instructions explain how to enter, view, and remove country-specific overrides.

- In the **Services** tab, select **Global Geocode**.
- In the **Global Geocode** module, select the **Global Geocode** stage from the list.
- In the **Country Filter** dropdown, select **Global Defaults**.
- Click the tab in which you want to create a country override.
- Click the **Add +** icon next to the option for which you want to create the override.

The **Override Value** popup appears.

- In the popup, click the **Add +** icon to add the override.

The dropdown appears and the **Add +** icon in the **Country** column for the option changes to a highlighted number **1** icon. This indicates that there is one override for that option. You can create an override for any country that is available in your datasets. The number icon increments as you add more overrides.

- In the dropdown, select the country for which you want to create the override.
- Click the checkbox to enable the override.
- To close the popup, click the gray **Close X** icon.

10. Click **Save**.

### *Viewing all country overrides*

1. In the **Country Filter** dropdown, select **Overrides**.
2. Click the tab for which you want to view the overrides.

All of the overrides for the options in that tab appear in addition to the initial global setting. The initial global setting has a value of **ALL** in the **Country** column and a highlighted number **1** icon showing the number of overrides associated with that option. Each override is listed below the default global setting with its corresponding country code in the **Country** column. A red **Delete** **X** icon also appears next to the **Country** column. The checkbox for each override appears in the **Setting** column, showing whether the override is enabled.

### *Viewing country overrides by country*

1. In the **Country Filter** dropdown, select the country for which you want to view the overrides.
2. Click the tab for which you want to view the overrides.

In addition to the initial global setting, any overrides specific to the country chosen appear. The initial global setting has a value of **ALL** in the **Country** column and a highlighted number **2** icon showing the total number of overrides associated with that option. The country-specific override is listed below the default global setting with its corresponding country code in the **Country** column. A red **Delete** **X** icon also appears next to the **Country** column. The checkbox for each override appears in the **Setting** column, showing whether the override is enabled.

### *Removing country overrides*

1. In the **Country Filter** dropdown, select the country for which you want to remove an override.
2. Click the tab in which you want to remove an override.

The country-specific overrides appear with a red **Delete** **X** icon next to it.

3. Click the delete icon for the override you want to remove.

The override disappears from the list and the highlighted number decrements.

4. Click **Save**.

## Filters

Filters control the display of options and settings.



## Filters in Management Console

The options in the **Country Filter** dropdown filter the display of options and settings in the tabs.

### Global Defaults

When you select **Global Defaults** in the **Country Filter** dropdown, the tabs display the common set of options for all countries. If you modify a global defaults option, then that selection is applied to all countries unless you enter an override for a specific country.

You can set up overrides for specific countries that have geocoding datasets installed and have custom options and return values. Most countries are covered by the global defaults.

### Overrides

When you select **Overrides** in the **Country Filter** dropdown, you can see all of the overrides you have entered.

### Country listings

This is the list of the countries that have geocoding datasets installed and that have additional country-specific matching options and return values. When you select a country, the tabs display any country-specific options and return values for the selected country. Most countries are covered by the global defaults.

## Filters in Enterprise Designer

The options in the **Filters** panel filter the display of options and settings in the right-side panel.

### Global Defaults

When you click on **Global Defaults** in the **Filters** panel, the right-side panel displays the common set of options for all countries.

If you modify a global defaults option, then that selection is applied to all countries and cannot be changed on a per-country basis. Subsequently, if you select a country and view its options, the modified global defaults option will be inactive in the GUI.

The exception to this case is for the **Match Mode** setting for USA. You can set a match mode as the global default which will be applied to all countries. Then, for USA, the global default match mode can be either used or there are two additional match mode options for USA that can be selected - **CASS** and **Interactive** match modes. For more information on these match modes, see [USA Match Modes](#).

### *Country listing*

Lists the countries that have geocoding datasets installed and have custom options and return values. When you click on a country, the right-side panel displays the custom options and return values for the selected country. Most countries are covered by the global defaults.

## Matching Preferences

Use the preferences to set match criteria and restrictions so that the matching can be as strict or relaxed as you need. The following sections cover the matching **global defaults** options which are available for all countries. For country-specific preferences see **Custom Preferences and Fields** which apply to a subset of countries.

For instructions on setting global default values in Management Console, see **Setting Global Defaults in Management Console** on page 22.

For instructions on setting global default values in Enterprise Designer, see **Setting Global Defaults in Enterprise Designer** on page 22.

In Management Console, you can add overrides to global defaults for matching on a country-specific basis. Once the overrides are set and enabled, they apply to all data flows that use the Global Geocoding stage. This functionality is not supported in Enterprise Designer. For more information see **Setting Country Overrides** on page 23.

## Matching Preferences

Preference	Description
Match Mode	<p>Match modes determine the leniency used to make a match between the input address and the reference data. Select a match mode based on the quality of your input and your desired output. The following match modes are available:</p> <p><b>Standard</b> Requires a close match and generates a moderate number of match candidates. Default.</p> <p><b>Exact</b> Requires a very tight match. This restrictive mode generates the fewest match candidates, which decreases the processing time. When using this mode, ensure that your input is very clean; free of misspellings and incomplete addresses.</p> <p><b>Relaxed</b> Allows a loose match and generates the most match candidates, which increases the processing time and results in more multiple matches. Use this mode if you are not confident that your input is clean; free of misspellings and incomplete addresses.</p> <p><b>Custom</b> Allows you to define the matching criteria by setting <b>Custom Mode Must Match Fields</b>.</p> <hr/> <p>The USA has the following additional match modes. These are available as options even when the global defaults option is set to one of the match modes listed above.</p> <p><b>Interactive</b> Available in single-line address matching only. This mode is designed to better handle the specific matching challenges presented by interactive matching. Interactive mode permits for more flexible matching patterns and may, in some cases, return additional possible matches than relaxed match mode.</p> <p><b>CASS</b> Imposes additional rules to ensure compliance with the USPS CASS regulations. The purpose of this match mode is to create mailable addresses for USPS mailing discounts. Use this mode to standardize your input for mailing. This mode generates a large number of match candidates.</p>

Preference	Description																		
Custom Mode Must Match Fields	<p>These options set the match criteria for determining match candidates. To enable these options, you must set the <b>Match Mode</b> to <code>Custom</code>. By default, these options are disabled.</p> <p><b>Note:</b> For USA, the Custom Mode Must Match fields are not supported in single-line processing.</p> <p>In Management Console, you can create country-specific overrides for these options only for those countries that have Match Mode overrides that are set to Custom.</p> <table border="0"> <tr> <td><b>Address Number</b></td> <td>A match must be made to the input address number.</td> </tr> <tr> <td><b>Street</b></td> <td>A match must be made to the input street name, type and directional fields.</td> </tr> <tr> <td><b>Postcode</b></td> <td>A match must be made to the input address postcode.</td> </tr> <tr> <td><b>City/Town Subdivision</b></td> <td>A match must be made to the input address city/town subdivision.</td> </tr> <tr> <td></td> <td><b>Note:</b> This option is not supported by USA.</td> </tr> <tr> <td><b>City/Town</b></td> <td>A match must be made to the input address city/town.</td> </tr> <tr> <td><b>State/Province Subdivision</b></td> <td>A match must be made to the input address state/province subdivision.</td> </tr> <tr> <td></td> <td><b>Note:</b> This option is not supported by USA.</td> </tr> <tr> <td><b>State/Province</b></td> <td>A match must be made to the input address state/province.</td> </tr> </table>	<b>Address Number</b>	A match must be made to the input address number.	<b>Street</b>	A match must be made to the input street name, type and directional fields.	<b>Postcode</b>	A match must be made to the input address postcode.	<b>City/Town Subdivision</b>	A match must be made to the input address city/town subdivision.		<b>Note:</b> This option is not supported by USA.	<b>City/Town</b>	A match must be made to the input address city/town.	<b>State/Province Subdivision</b>	A match must be made to the input address state/province subdivision.		<b>Note:</b> This option is not supported by USA.	<b>State/Province</b>	A match must be made to the input address state/province.
<b>Address Number</b>	A match must be made to the input address number.																		
<b>Street</b>	A match must be made to the input street name, type and directional fields.																		
<b>Postcode</b>	A match must be made to the input address postcode.																		
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	<b>Note:</b> This option is not supported by USA.																		
<b>City/Town</b>	A match must be made to the input address city/town.																		
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	<b>Note:</b> This option is not supported by USA.																		
<b>State/Province</b>	A match must be made to the input address state/province.																		

## Geocoding Preferences

The preferences in the **Geocoding** category enable you to control how a location's coordinates are determined. The following sections cover the geocoding **global defaults** preferences, which are available for all countries, and the **country-specific geocoding options**, which apply to a subset of countries.

### *Global Defaults in Management Console*

You can create overrides for some of the global default options on a per-country basis. These options have a **+** next to the Country column value. For more information about how to create overrides, see **Setting Country Overrides** on page 23.

### Global Defaults in Enterprise Designer

If you modify a global defaults option, then that selection is applied to all countries and cannot be changed on a per-country basis. Subsequently, if you select a country and view its options, the modified global defaults option will be inactive in the GUI.

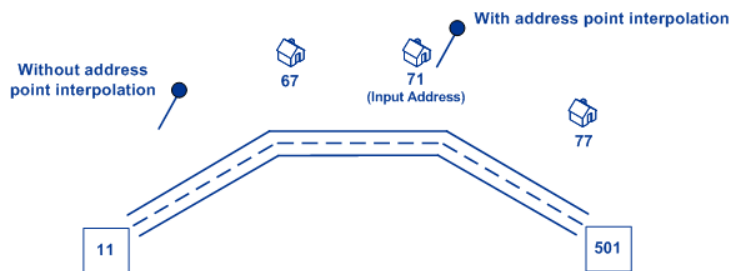
Preference	Description
Type of Geocode	<p>There are different ways that an address can be geocoded. The following lists the geocoding types from the most accurate to least accurate.</p> <p>The support for these geocode types depends on the type of data available in your configured geocoding dataset(s). Refer to your country's section to locate geocoding level support information.</p> <p><b>Address</b>      The geocode is the street address. Depending on data and match quality, it can be a street centroid, interpolated house address, or a point address. Default.</p> <p><b>Postal</b>        The geocode is the centroid of a postal code area.</p> <p><b>Geographic</b>    The geocode is the centroid of a geographic area; for example, a city, suburb or village.</p>

**Use Address Point Interpolation**      Address point interpolation is a patented process that results in a more accurate interpolated point. It improves upon regular street segment interpolation by using point data in the interpolation process, as opposed to using street segments alone. Default = disabled.

**Note:** Address point interpolation requires both a street-level and a point-level geocoding dataset.

**Note:** For USA - This feature is not supported with point addresses in Auxiliary files.

The following illustration shows how address point interpolation works. In the example, the input house number is 71. The geocoding database contains address points for 67 and 77. The street segment has a range of 11 to 501. With address point interpolation, the input house number 71 is interpolated using the points of 67 and 77. Without address point interpolation, the interpolation is performed with the street segment end points of 11 and 501, resulting in a far less accurate result.



Preference	Description
Fallback to postal centroid	<p>When an address-level geocode cannot be determined, attempt to return a ZIP Code centroid. Default = enabled.</p> <p><b>Note:</b> For USA - This option is ignored if you set <b>Match Mode</b> to CASS.</p>
Fallback to geographic centroid	<p>When an address-level geocode cannot be determined, attempt to return a centroid of a geographic area. The geocoder returns the most precise geographic centroid that it can based on the input. For example, if the input contains a valid city and state, a city centroid would be returned. Default = enabled.</p>
Fallback to world geocoder	<p>When an address-level geocode for a country-specific geocoder cannot be determined, the search falls back to World Places if world geocoding data is configured. Typically used for countries that do not have geocoders or if that country's data is not present. Default = disabled.</p>
World Geocoder Only	<p>Geocodes against World geocoder only. This is useful since you can only configure one database for GGM, add all of your data in GGM, then use this preference to run World data without having to configure it separately. This preference is available for forward geocoding only.</p>

Preference

Description

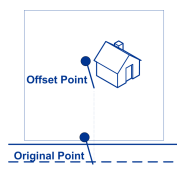
Point Positioning

**Street Offset**

Specifies the offset distance from the street segments to use in street-level geocoding. 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. Default value = 7 meters.

The following diagram shows an offset point in relation to the original point.

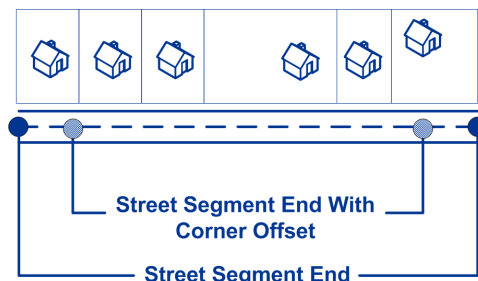


You can select either Feet or Meters for your unit of measurement.

**Corner Offset**

Specifies the distance to offset the street end points in street-level matching. This value is used to prevent addresses at street corners from being given the same geocode as the intersection. Defines the offset position of the geocoded point with respect to the corner. Default value = 7 meters.

The following diagram compares the end points of a street to offset end points.



You can select either Feet or Meters for your unit of measurement.

## Dataset Preferences

Preference	Description
Address/User dataset restriction	For countries that support both custom user datasets and standard address datasets, you can specify which datasets to use for matching.
	<p><b>Search all datasets</b> Search all installed user and standard address datasets. Default.</p>
	<p><b>Search address datasets only</b> If both custom user and standard datasets are installed, only search in the standard address datasets. If there are no standard address datasets installed, this setting is ignored.</p>
	<p><b>Search user datasets only</b> If both custom user and standard datasets are installed, only search in the custom user datasets. If there are no custom user datasets installed, this setting is ignored.</p>
Dataset match preference	When equivalent candidates are found in both types of datasets, you can specify which dataset should be given higher preference for candidate match results.
	<p><b>No preference</b> Return the best quality match from any type of dataset match. Default.</p>
	<p><b>Prefer address dataset match</b> When equivalent candidates are found in both user and standard datasets, prefer the candidates from the standard address datasets. Note that the best quality match candidate will be returned, even if the match is from a non-preferred dataset.</p>
	<p><b>Prefer user dataset match</b> When equivalent candidates are found in both user and standard datasets, prefer the candidates from the user datasets. Note that the best quality match candidate will be returned, even if the match is from a non-preferred dataset.</p>



## Return Values Preferences

Preference	Description
Return all available information	When enabled, returns all available return fields and all available options, including any country-specific options are enabled. When disabled, allows you to selectively choose the return fields listed below. Default = disabled.
	<p><b>Quality Descriptors</b> Returns the result codes. The result codes indicate how well the input address matched to a known address and assigned a location. They also describe the overall status of a match attempt. For all countries, see <a href="#">Global Result Codes</a>. The USA has additional result codes. For details, see <a href="#">Match and Location Codes for USA</a>.</p> <p><b>Parsed Address</b> Returns the separate address fields, such as mainAddressLine, areaName&lt;1-4&gt;, postcodes and country. The meaning of some of these fields may vary by country.</p> <p><b>Point</b> Returns the latitude/longitude coordinates of the input address.</p>
Max results to be returned	Select a number. The default is 10 and maximum is 100.


## Dataset Configuration for Geocoding



**Dataset Configuration** allows you to view information about the geocoding datasets that are installed for each of the listed countries. You can choose which datasets to include or exclude when matching as well as setting the preferred search order.


Dataset configuration works differently in Management Console and Enterprise Designer. See the following sections for information about these differences.

### Configuring Datasets in Management Console

To set the dataset configuration for a country, select the country in the **Country Filter** field, click the **Dataset Configuration** tab, and make the desired configuration changes.




**Country** The three-letter ISO country code. You can sort the countries by ascending or descending alphabetical order with the ordering control  at the top of the column.

<b>Data Source</b>	The geocoding dataset vendor. You can limit your display by vendor by using the sort control  at the top of the column. Use the <code>Clear all</code> value to redisplay all vendor datasets.
<b>Include</b>	Allows you to include or exclude the dataset when matching.
<b>Type</b>	The type of dataset: either geocoding dataset (AD) or custom user dictionary (UD).
<b>Vintage</b>	The release date of the geocoding dataset.
<b>Region</b>	The global area in which a country appears. For example, Europe, Americas, and so forth. You can limit your display by region by using the sort control  at the top of the column. Use the <code>Clear all</code> value to redisplay all datasets.

There are two additional hidden informational fields you can display by clicking the arrow control  in the left-hand column next to a dataset.

<b>Description</b>	A brief description of the geocoding dataset.
<b>Path</b>	The path to the installation location of the geocoding dataset.

#### *To set the geocoding dataset search order:*

The initial search order is determined by the order in which the geocoding datasets were installed. Click on the country you want to set the search order. Then, select a dataset by clicking the checkbox in the right-hand column. If you have more than one dataset, the **Refresh**  and **Move Up**  and **Move Down**  buttons appear. Then use the **Move Up** and **Move Down** buttons to move its position. The dataset in the top row will be the first one that will be used for searching and matching and the one located in the bottom row, the last. Use the **Refresh** button to reset the order to the original search order.

### *Configuring Datasets in Enterprise Designer*

To set the dataset configuration for a country, select the country in the Countries panel and make the desired configuration changes in the **Search Order** panel.

<b>DataSource</b>	The geocoding dataset vendor.
<b>Include</b>	Allows you to include or exclude the dataset when matching.
<b>Type</b>	The type of dataset: either geocoding dataset (AD) or custom user dictionary (UD).
<b>Vintage</b>	The release date of the geocoding dataset.
<b>Description</b>	A brief description of the geocoding dataset.

*To set the geocoding dataset search order:*

The initial search order is determined by the order in which the geocoding datasets were installed.

Click on the country you want to set the search order. Then, click on a dataset in the table and use the up/down arrows to move its position. The dataset in the top row will be the first one that will be used for searching and matching and the one located in the bottom row, the last. Use the **Refresh**



button to reset the order to the original search order.

## Output Fields

The following table lists the fields that are returned by default.

Output Field Name	Description
MainAddressLine	Candidate address line.
AddressLastLine	Candidate last address line
PlaceName	Firm, company, organization, business or building name.
AreaName1	State, province or region.
AreaName2	County or district.
AreaName3	City, town or suburb.
AreaName4	Locality
PostCode1	Main postal code.
PostCode2	Secondary postal code
Country	Country
AddressNumber	House or building number.
StreetName	Street name.
UnitType	Indicates the unit type (APT, STE, etc.).
UnitValue	The number of the unit.
X	Longitude of the candidate
Y	Latitude of the candidate.

Output Field Name	Description
CoordinateSystemName	Coordinate system name for the candidate.
FormattedStreetAddress	The formatted main address line.
FormattedLocationAddress	The formatted last address line.
FeatureID	ID for the candidate.
PrecisionLevel	<p>A code describing the precision of the geocode. One of the following:</p> <ul style="list-style-type: none"> <li><b>0</b> No coordinate information is available for this candidate address.</li> <li><b>1</b> Interpolated street address.</li> <li><b>2</b> Street segment midpoint.</li> <li><b>3</b> Postal code 1 centroid.</li> <li><b>4</b> Partial postal code 2 centroid.</li> <li><b>5</b> Postal code 2 centroid.</li> <li><b>6</b> Intersection.</li> <li><b>7</b> Point of interest. (If database contains POI data.)</li> <li><b>8</b> State/province centroid.</li> <li><b>9</b> County centroid.</li> <li><b>10</b> City centroid.</li> <li><b>11</b> Locality centroid.</li> <li><b>12-15</b> Reserved for unspecified custom items.</li> <li><b>16</b> The result is an address point.</li> <li><b>17</b> The result was generated by using address point data to modify the candidate's segment data.</li> <li><b>18</b> 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.</li> </ul> <p><b>Note:</b> This field is not returned for USA. For geocode precision information for USA, see <a href="#">Location Codes</a> on page 156.</p>

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

**Note:** For more detailed information including country-specific

Output Field Name	Description						
	meanings and values, see <a href="#">Global Result Codes</a> on page 172.						
Identifier	For street- or point-level candidates, this is usually the segment ID.						
SourceDictionary	Identifies the dictionary that is the source for the candidate information and data. The source dictionary is a 0-based integer value that indicates which configured dictionary the candidate came from. If you only have a single dictionary this will always be "0".						
Point	The candidate's geocode, specified as X (longitude) and Y (latitude) coordinates.						
Status	Reports the success or failure of the match attempt: <table border="0"> <tr> <td><b>null</b></td> <td>Success</td> </tr> <tr> <td><b>F</b></td> <td>Failure</td> </tr> </table>	<b>null</b>	Success	<b>F</b>	Failure		
<b>null</b>	Success						
<b>F</b>	Failure						
Status.Code	If the address could not be processed, this field will indicate the reason. <ul style="list-style-type: none"> <li>• Internal System Error</li> <li>• No Geocode Found</li> <li>• Insufficient Input Data</li> </ul>						
Status.Description	If the address could not be processed, this field will provide a description of the failure. <table border="0"> <tr> <td><b>Problem + explanation</b></td> <td>Returned when Status.Code = Internal System Error.</td> </tr> <tr> <td><b>Geocoding Failed</b></td> <td>Returned when Status.code = No Geocode Found.</td> </tr> <tr> <td><b>No location returned</b></td> <td>Returned when Status.code = No Geocode Found.</td> </tr> </table>	<b>Problem + explanation</b>	Returned when Status.Code = Internal System Error.	<b>Geocoding Failed</b>	Returned when Status.code = No Geocode Found.	<b>No location returned</b>	Returned when Status.code = No Geocode Found.
<b>Problem + explanation</b>	Returned when Status.Code = Internal System Error.						
<b>Geocoding Failed</b>	Returned when Status.code = No Geocode Found.						
<b>No location returned</b>	Returned when Status.code = No Geocode Found.						



# 5 - Global Reverse Geocode

## In this section

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Input, Preferences, and Output Fields.....42



# Input, Preferences, and Output Fields

The Reverse Geocode Service stage takes latitude/longitude coordinates as input and returns address information that is the best match for that point.

## Reverse Geocode Request Fields

Field Name	Type	Description
x	Double	Longitude in degrees. Required. For example: -79.391165
y	Double	Latitude in degrees. Required. For example: 43.643469
country	String	Three-letter ISO country code, for example: CAN. Optional. For a list of ISO codes, see <a href="#">ISO 3166-1 Country Codes</a> on page 183.

## Global Default Values in Reverse Geocoding

You can set global default values in both Management Console and Enterprise Designer. When you set the options in Management Console, the settings you save are applied to all procedures that use the Global Reverse Geocode stage. If you set the options in Enterprise Designer, the settings are applied to that specific instance.

### *Setting Global Defaults in Management Console*

#### *Entering global default values*

The following instructions explain how to enter global default values in Management Console. In many cases, entering the global default values is a matter of accepting the existing default values.

1. In the **Services** tab, select **Spectrum Global Geocoding**.
2. In Spectrum Global Geocoding, select the **Global Reverse Geocode** stage from the list.
3. In the **Country Filter** dropdown, select **Global Defaults**.

4. Click the tab in which you want to enter a global default.

Depending on the tab you choose, there are several settings you can select and enable. You can select the multiple choice options in the dropdown controls and you can enable other options by using the checkboxes. There are also some fields for which you can manually enter a value. For more information, see [Setting Country Overrides](#) on page 43.

5. Click **Save** .


## Setting Global Defaults in Enterprise Designer

### Entering global default values

The following instructions explain how to enter global default values in Enterprise Designer. In many cases, entering the global default values is a matter of accepting the existing default values. Remember that any options you set in Enterprise Designer are specific to that one instance of the Global Reverse Geocoding stage and override the settings made in Management Console.

1. Start Enterprise Designer.
2. In the **Tasks** panel, select the new type of dataflow you want to create. You can also open an existing dataflow to make changes.
3. From the **Stages** listing in the **Palette** panel, select the **Global Reverse Geocode** stage icon and drag it into the New Dataflow panel.
4. Double click the stage icon to open the **Global Reverse Geocode Options** window.
5. In the **Filters** panel, click **Global Defaults**.
6. Click the arrow to open the category in which you want to enter a global default.

Depending on the category you choose, there are several settings you can select and enable. You can select the multiple choice options in the dropdown controls and you can enable other options by using the checkboxes. There are also some fields for which you can manually enter a value.

7. When you are finished making your choices, click **OK** and then click the **Save**  button to save your dataflow.

## Setting Country Overrides

When you set the values for global geocoding, you can override several of the global default values on a per-country basis. Any overrides made through the Management Console are base settings that apply to all data flows that use Global Geocoding stages in Enterprise Designer.

**Note:** This override functionality is available only through the Management Console. It is not supported in Enterprise Designer.

## Setting Country Overrides for Reverse Geocoding

### Entering country overrides

The following instructions explain how to enter, view, and remove country-specific overrides.

1. In the **Services** tab, select **Global Geocode**.
2. In the **Global Geocode** module, select the **Global Reverse Geocode** stage from the list.
3. In the **Country Filter** dropdown, select **Global Defaults**.
4. Click the tab in which you want to create a country override.
5. Click the **Add +** icon next to the option for which you want to create the override.

The **Override Value** popup appears.

6. In the popup, click the **Add +** icon to add the override.

The dropdown appears and the **Add +** icon in the **Country** column for the option changes to a highlighted number **1** icon. This indicates that there is one override for that option. You can create an override for any country that is available in your datasets. The number icon increments as you add more overrides.

7. In the dropdown, select the country for which you want to create the override.
8. Click the checkbox to enable the override.
9. To close the popup, click the gray **Close X** icon.
10. Click **Save**.

### Viewing all country overrides

1. In the **Country Filter** dropdown, select **Overrides**.
2. Click the tab for which you want to view the overrides.

All of the overrides for the options in that tab appear in addition to the initial global setting. The initial global setting has a value of **ALL** in the **Country** column and a highlighted number **1** icon showing the number of overrides associated with that option. Each override is listed below the default global setting with its corresponding country code in the **Country** column. A red **Delete X** icon also appears next to the **Country** column. The checkbox for each override appears in the **Setting** column, showing whether the override is enabled.

### Viewing country overrides by country

1. In the **Country Filter** dropdown, select the country for which you want to view the overrides.
2. Click the tab for which you want to view the overrides.

In addition to the initial global setting, any overrides specific to the country chosen appear. The initial global setting has a value of **ALL** in the **Country** column and a highlighted number **2** icon showing the total number of overrides associated with that option. The country-specific override is listed below the default global setting with its corresponding country code in the **Country** column. A red **Delete** **X** icon also appears next to the **Country** column. The checkbox for each override appears in the **Setting** column, showing whether the override is enabled.

### *Removing country overrides*

1. In the **Country Filter** dropdown, select the country for which you want to remove an override.
2. Click the tab in which you want to remove an override.

The country-specific overrides appear with a red **Delete** **X** icon next to it.

3. Click the delete icon for the override you want to remove.

The override disappears from the list and the highlighted number decrements.

4. Click **Save**.

## Filters

Filters control the display of options and settings.

### *Filters in Management Console*

The options in the **Country Filter** dropdown filter the display of options and settings in the tabs.

### *Global Defaults*

When you select **Global Defaults** in the **Country Filter** dropdown, the tabs display the common set of options for all countries. If you modify a global defaults option, then that selection is applied to all countries unless you enter an override for a specific country.

You can set up overrides for specific countries that have geocoding datasets installed and have custom options and return values. Most countries are covered by the global defaults.

### *Overrides*

When you select **Overrides** in the **Country Filter** dropdown, you can see all of the overrides you have entered.

### *Country listings*

This is the list of the countries that have geocoding datasets installed and that have additional country-specific matching options and return values. When you select a country, the tabs display any country-specific options and return values for the selected country. Most countries are covered by the global defaults.

### *Filters in Enterprise Designer*

The options in the Filters panel determine the display of options and settings in the right-side panel.

### *Global Defaults*

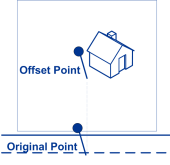
When you click on **Global Defaults** in the Filters panel, the right-side panel displays the common set of options for all countries.

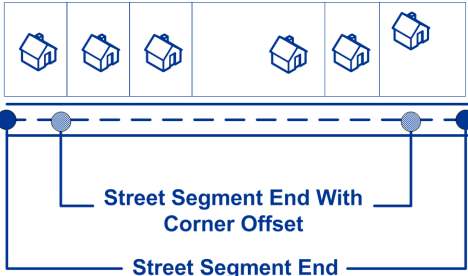
If you modify a global defaults option, then that selection is applied to all countries and cannot be changed on a per-country basis. Subsequently, if you select a country and view its options, the modified global defaults option will be inactive in the GUI.

### *Country listing*

Lists the countries that have geocoding datasets installed and have custom options and return values. When you click on a country, the right-side panel displays the custom options and return values for the selected country. Most countries are covered by the global defaults.

## Reverse Geocoding Preferences

Preference	Description
Search Distance	Sets the distance of the radius in which to search for a match to the input coordinates. This value can be specified in either feet or meters. Default = 150 meters. Maximum value = 5280 feet (1 mile) or 1609 meters.
Street Offset	<p><b>Street Offset</b></p> <p>Specifies the offset distance from the street segments to use in street-level geocoding. 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.</p> <p>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. Default value = 7 meters.</p> <p>The following diagram shows an offset point in relation to the original point.</p>  <p>You can select either Feet or Meters for your unit of measurement.</p>

Preference	Description
Corner Offset	<p><b>Corner Offset</b></p> <p>Specifies the distance to offset the street end points in street-level matching. This value is used to prevent addresses at street corners from being given the same geocode as the intersection. Defines the offset position of the geocoded point with respect to the corner. Default value = 7 meters.</p> <p>The following diagram compares the end points of a street to offset end points.</p>  <p>You can select either Feet or Meters for your unit of measurement.</p>
Coordinate System	<p>Specifies the coordinate system that you want to convert the geometry to. The format must be the European Petroleum Survey Group (EPSG) code or the SRID code. Default = epsg:4326.</p>

## Return Value Preference

Preference	Description
Return all available information	<p>When enabled, returns all available return fields and all available options, including any country-specific options are enabled. When disabled, allows you to selectively choose the return fields listed below. Default = disabled.</p> <p><b>Parsed Address</b></p> <p>Returns the separate address fields, such as mainAddressLine, areaName&lt;1-4&gt;, postcodes and country. The meaning of some of these fields may vary by country.</p>






## Dataset Configuration for Reverse Geocoding


**Dataset Configuration** allows you to view information about the geocoding datasets that are installed for each of the listed countries. You can choose which datasets to include or exclude when matching as well as setting the preferred search order.

Dataset configuration works differently in Management Console and Enterprise Designer. See the following sections for information about these differences.

### Configuring Datasets in Management Console




To set the dataset configuration for a country, select the country in the **Country Filter** field, click the **Dataset Configuration** tab, and make the desired configuration changes.

<b>Country</b>	The three-letter ISO country code. You can sort the countries by ascending or descending alphabetical order with the ordering control  at the top of the column.
<b>Data Source</b>	The geocoding dataset vendor. You can limit your display by vendor by using the sort control  at the top of the column. Use the <code>Clear all</code> value to redisplay all vendor datasets.
<b>Include</b>	Allows you to include or exclude the dataset when matching.
<b>Type</b>	The type of dataset: either geocoding dataset (AD) or custom user dictionary (UD).
<b>Vintage</b>	The release date of the geocoding dataset.
<b>Region</b>	The global area in which a country appears. For example, Europe, Americas, and so forth. You can limit your display by region by using the sort control  at the top of the column. Use the <code>Clear all</code> value to redisplay all datasets.

There are two additional hidden informational fields you can display by clicking the arrow control  in the left-hand column next to a dataset.

<b>Description</b>	A brief description of the geocoding dataset.
<b>Path</b>	The path to the installation location of the geocoding dataset.

#### *To set the geocoding dataset search order:*

The initial search order is determined by the order in which the geocoding datasets were installed. Click on the country you want to set the search order. Then, select a dataset by clicking the checkbox in the right-hand column. If you have more than one dataset, the **Refresh**  and **Move Up**  and **Move Down**  buttons appear. Then use the **Move Up** and **Move Down** buttons to move its position.

The dataset in the top row will be the first one that will be used for searching and matching and the one located in the bottom row, the last. Use the **Refresh** button to reset the order to the original search order.

## Configuring Datasets in Enterprise Designer

To set the dataset configuration for a country, select the country in the Countries panel and make the desired configuration changes in the **Search Order** panel.

<b>DataSource</b>	The geocoding dataset vendor.
<b>Include</b>	Allows you to include or exclude the dataset when matching.
<b>Type</b>	The type of dataset: either geocoding dataset (AD) or custom user dictionary (UD).
<b>Vintage</b>	The release date of the geocoding dataset.
<b>Description</b>	A brief description of the geocoding dataset.

### *To set the geocoding dataset search order:*

The initial search order is determined by the order in which the geocoding datasets were installed.

Click on the country you want to set the search order. Then, click on a dataset in the table and use the up/down arrows to move its position. The dataset in the top row will be the first one that will be used for searching and matching and the one located in the bottom row, the last. Use the **Refresh**



button to reset the order to the original search order.

## Output Fields

See the output fields under the Geocode Service **Output Fields**.

# 6 - Global Interactive Geocode

In this section

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# Inputs, Preferences and Output Fields

The Interactive Geocode Service stage takes as input character by character typing to return suggested candidates as soon as they match the partial information.

## Global Interactive Geocode Features

Spectrum Global Geocoding provides the following capabilities when built into your Spectrum Technology Platform application.

- Single street address or placename matching as you type. Multiline support allows you to add more fields to restrict the search and return more accurate candidates.
- Match Modes: Standard (default), Close and Relaxed.
- Filter searches by distance from a given X/Y origin, administrative area or other limiting input value, data type (streets or place names).
- Candidates returned in order based on distance from X/Y origin
- Matched fields returned with candidates

For both address searches and placename searches, a web application with interactive geocoding can display candidates as the user types. With additional typing, more specific information is revealed and the results are refined to display more relevant candidates. Candidates include the full address, placename category and subcategory, and indicate the distance from the origin if the distance is provided in the input.

## Interactive Request Fields

In the **Preview** tab, you can enter test records in Management Console either manually or by importing from a file. The MainAddressLine is the only required field. Use the other fields to limit the scope of the matching.

Field Name	Description
MainAddressLine	The primary address information, typically the street address or intersection. This field is required. All other fields are optional.

Field Name	Description
AreaName1	Specifies the largest geographic area, typically a state or province. Check the appendix entry for the country-specific use of this field.
AreaName3	Specifies a city or town name.
PostCode1	The primary postal code in the appropriate format for the country.
Country	Code or standardized name for the country. This field is required for all records.
Category	Group containing like points of interest. Requires POI data (not included).
OriginX	X coordinate of origin. Supported coordinate system is epsg:4326.
OriginY	Y coordinate of origin. Supported coordinate system is epsg:4326

## Matching Preferences

You can use the options in **Matching** to set match criteria and restrictions so that the matching can be as strict or relaxed as you need.

Options	Description
Match Mode	<p>Standard - Provides the best balance of accurate geocoding, few false matches, and high performance. This requires a close (not necessarily exact) street name match.</p> <p>Close - Uses the strictest matching rules and requires an exact street name match.</p> <p>Relaxed - Allows a loose match and generates the most match candidates. Use this mode if you are not confident that your input is clean; free of misspellings and incomplete addresses.</p>
Search Type	Search on addresses, points of interest and categories, world places or choose All.
Administrative Area Search	Limit the search area by an administrative boundary, such as city, town or postal code. Specify the administrative area on input.
Match on Address Number	Candidates must match the input address number.

## Interactive Geocoding Preferences

### Preferences

Preference	Type	Description
Search Distance	Integer	The distance from the origin. Default distance unit is miles.
Coordinate System	String	The coordinate system to use for all point data, in epsg:nnnn format. Default is epsg:4326 (WGS 84).

## Dataset Preferences

Preference Name	Description
Address/User dataset restriction	Specify which datasets to use for matching.
	<p><b>Search all datasets</b> Search all installed user and standard address datasets. Default.</p>
	<p><b>Search address datasets only</b> If both custom user and standard datasets are installed, only search in the standard address datasets. If there are no standard address datasets installed, this setting is ignored.</p>
	<p><b>Search user datasets only</b> If both custom user and standard datasets are installed, only search in the custom user datasets. If there are no custom user datasets installed, this setting is ignored.</p>
Dataset match preference	When equivalent candidates are found in both types of datasets, you can specify which dataset should be given higher preference for candidate match results.
	<p><b>No preference</b> Return the best quality match from any type of dataset match. Default.</p>
	<p><b>Prefer address dataset match</b> When equivalent candidates are found in both user and standard datasets, prefer the candidates from the standard address datasets. Note that the best quality match candidate will be returned, even if the match is from a non-preferred dataset.</p>
	<p><b>Prefer user dataset match</b> When equivalent candidates are found in both user and standard datasets, prefer the candidates from the user datasets. Note that the best quality match candidate will be returned, even if the match is from a non-preferred dataset.</p>

## Return Value Preferences

Option	Description
Return all available information	When enabled, returns all available return fields and options.
Max results to be returned	Default is 1.

## Output Fields

See the output fields under the Geocode Service [Output Fields](#).



# 7 - Global Key Lookup

## In this section

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Input, Preferences and Output Fields.....58



# Input, Preferences and Output Fields

Global Key Lookup returns geocoded candidates when given a unique key. It is a more efficient method than matching with an address, as the key is unique to that address.

## Global Key Lookup Features

The Key Lookup Service provides the following capabilities:

- Takes a unique key for an address.
- Supported keys come from USA or AUS GNAF data (for example, P0000GL638OL or GAACT715000223).
- Supported key types are PB\_KEY or GNAF\_PID
- Returns a geocoded point along with information about that point.

## Key Lookup Request Fields

Parameter	Description
country	Code or standardized name for the country.
key	A unique identifier for the address.
type	The type of key for a lookup. PB_KEY for USA data, GNAF_PID for AUS G-NAF data

To create a key lookup in your application, follow this snippet.

```
{
  "keys": [
    {
      "value": "P0000GL638OL",
      "country": "USA"
    }
  ]
}
```

```
    }  
  ],  
  "type": "PB_KEY",  
  "preferences": {  
    "returnAllCandidateInfo": true  
  }  
}
```

## Key Lookup Preferences

Field Name	Description
Coordinate System	The coordinate system for the geometry of the returned candidate. The format must be the European Petroleum Survey Group (EPSG) code or the SRID code. Default = epsg:4326.

## Return Value Preferences

Option	Description
Return all available information	When enabled, returns all available return fields and options.
Max results to be returned	Default is 1.

## Output Fields

See the output fields under the Geocode Service [Output Fields](#).

# A - Country-Specific Preferences and Fields

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# Australia (AUS)

## Custom Preferences

Australia supports the following **custom preferences** and **output fields**.

Preference	Description
Calculate Centerline Projection of Point	<p>Computes the closest point on the street from the parcel point. Default = disabled.</p> <p><b>Note:</b> This feature requires that a point-level geocoding dataset is installed.</p>
Centerline Offset Units	<p>When <code>Use Centerline Offset</code> is enabled, this specifies the unit type for the centerline offset. Valid values = feet, meters. Default = meters. Supported only in forward geocoding.</p>
Street frontage	<p>Returns the GNAF street frontage points. Default = disabled.</p> <p>You can locate this option on the <b>Global Geocode</b> and <b>Global Reverse Geocode</b> windows:</p> <p><b>Return Values</b> &gt; <b>Street frontage</b> checkbox.</p>
Force postal match	<p>Results in a match when the postal code matches even though the city/suburb does not match. Default = disabled.&gt;</p>
Use abbreviated types	<p>Returns the abbreviation for the street type, which is spelled out by default.</p>

## Custom Output Fields

Output Field	Description
StreetTypeAbbreviation	<p>The abbreviation for the street type, which is spelled out by default.</p> <p>To include this field in the output, select</p> <p><b>Return Values</b> &gt; <b>Use abbreviated types</b> checkbox</p>

Output Field	Description
OriginalLatitude	<p>The original GNAF latitude.</p> <p>To include this field in the output, select: <b>Return Values &gt; Original Point</b> checkbox.</p>
OriginalLongitude	<p>The original GNAF longitude.</p> <p>To include this field in the output, select: <b>Return Values &gt; Original Point</b> checkbox.</p>
UDOriginalLatitude	<p>The original latitude returned from a point-based user dictionary.</p> <p>To include this field in the output, select: <b>Return Values &gt; Original Point</b> checkbox.</p>
UDOriginalLongitude	<p>The original longitude returned from a point-based user dictionary.</p> <p>To include this field in the output, select: <b>Return Values &gt; Original Point</b> checkbox.</p>
GNAFParcelIdentifier	<p>The GNAF parcel identifier.</p> <p>To include this field in the output, select: <b>Return Values &gt; GNAF Identifiers</b> checkbox.</p>
GNAFPersistentPID	<p>The GNAF Persistent Identifier (GNAF PID) is a 14-character alphanumeric string that uniquely identifies each GNAF address. The PID is constructed from a combination of the major address fields of the GNAF Dictionary. An example of a GNAF PID is:</p> <p>GAACT718519668</p> <p>To include this field in the output, select: <b>Return Values &gt; GNAF Identifiers</b> checkbox.</p>
GNAFPrincipalPID	<p>The Persistent Identifier of the principal address.</p> <p>To include this field in the output, select: <b>Return Values &gt; GNAF Identifiers</b> checkbox.</p>

Output Field	Description
Geocontainment	<p>This specifies whether the returned coordinates are inside or outside the address boundary. Values are YES for coordinates within, or NO for coordinates outside the boundary.</p> <p>To include this field in the output, select: <b>Return Values &gt; GNAF Identifiers</b> checkbox.</p>
GeoFeature	<p>This field returns a geocode feature type if that was not provided in other GNAF fields. GEOFEATURE corresponds to Geocode Types (GEOCODE_TYPE_AUT Codes) that are described in the PSMA Data Product Description Version 2.7 (Aug. 2012).</p> <p>To include this field in the output, select: <b>Return Values &gt; GNAF Identifiers</b> checkbox.</p>
GNAFAddressClass	<p>The GNAF address classification.</p> <p>To include this field in the output, select: <b>Return Values &gt; GNAF Identifiers</b> checkbox.</p>
GNAFSA1	<p>The GNAF Statistical Area Level 1 (SA1) identifier.</p> <p>To include this field in the output, select: <b>Return Values &gt; GNAF Identifiers</b> checkbox.</p>
LevelNumber	<p>The number of a floor or level in a multistory building. For example, <b>Floor 2</b>, 17 Jones Street</p> <p>The GNAF database includes level information for some Australian states. Level information may be associated with unit information, but not necessarily. If the GNAF database contains multiple records with the same level, the level information is returned only if the input address contains unique content (such as a unit number). If the GNAF dictionary has level information for an address, that information is returned with the matched candidate.</p> <p>The correct level information is returned (when available) even if the input address did not include level information, or if the input had the wrong level information. If the input address has level information but the GNAF database does not include level information for the matching address, then the input level information is discarded since it is not validated in the GNAF data.</p> <p>To include this field in the output, select: <b>Return Values &gt; Level and Lot</b> checkbox.</p>



Output Field	Description
LevelType	<p>The label used for a floor of a multistory building. For example, "Level" or "Floor". In this example, the level type is "Level":</p> <p>Suite 3 <b>Level 7</b>, 17 Jones Street</p> <p>In this example, Suite 3 is a unit.</p> <p>To include this field in the output, select:</p> <p><b>Return Values &gt; Level and Lot</b> checkbox.</p>
LotNumber	<p>Lot numbers are returned for GNAF candidates because some rural addresses do not have adequate physical or house number information.</p> <p>To include this field in the output, select:</p> <p><b>Return Values &gt; Level and Lot</b> checkbox.</p>
MeshblockIdentifier	<p>A Meshblock is the smallest geographic unit for which statistical data is collected by the Australian Bureau of Statistics (ABS). Meshblocks usually contain a minimum of 20 to 50 households. This is about one fifth the size of a Collection District (CD). You can use the Meshblock ID to do additional attributions against your own data.</p> <p>To include this field in the output, select:</p> <p><b>Return Values &gt; GNAF Identifiers</b> checkbox.</p>

## Key Lookup Service

The Key Lookup Service provides the following capabilities:

- Takes a unique key for an address.
- Supported keys come from USA or AUS GNAF data (for example, P0000GL638OL for USA data and GAACT715000223 for AUS).
- Supported key types are PB\_KEY or GNAF\_PID
- Returns a geocoded matched candidate

# Canada (CAN)

## Custom Preferences

Canada supports the following **custom preferences** and **output fields**.

Preference	Description
FORCELDUDEF	<p>Last 3 digits of the postal code defined the Local Delivery Unit.</p> <p><b>Note:</b> Supported only in forward geocoding.</p> <p>You can locate this option on the <b>Global Geocode</b> window:  <b>Matching &gt; Force LDU match</b> checkbox.</p>
Calculate Centerline Projection of Point	<p>Computes the closest point on the street from the parcel point. Default = disabled. Use this with Centerline Offset to set a new point along the centerline that may be more appropriate for some use cases, such as routing where you want the geocoded point closer to the edge of the parcel.</p> <p><b>Note:</b> This feature requires that a point-level geocoding dataset is installed.</p> <p><b>Note:</b> The result code for centerline matches is <b>SC</b>.</p>
Centerline offset	<p>Centerline matching is used with point-level matching to tie a point-level geocode with its parent street segment. This functionality is useful for routing applications.</p> <p>The centerline offset specifies the distance to move the point from the street centerline toward the parcel point. Default = 0 meters.</p> <p>You can select either Feet or Meters for your unit of measurement.</p> <p><b>Note:</b> Centerline matching requires that a point-level geocoding dataset is installed.</p> <p><b>Note:</b> Supported only in forward geocoding.</p>

Preference	Description
Calculate Centerline Projection of Point	<p>Computes the closest point on the street from the parcel point. Default = disabled.</p> <p><b>Note:</b> This feature requires that a point-level geocoding dataset is installed.</p>
USE_CENTERLINE_OFFSET	<p>When set to true, calculates the centerline offset for point addresses. Default = false. Supported only in forward geocoding.</p> <p><b>Note:</b> The centerline feature requires that you have a point-level geocoding dataset installed.</p> <p>A centerline point match is indicated by a result code beginning with <b>SC</b>.</p>
CENTERLINE_OFFSET	<p>When USE_CENTERLINE_OFFSET is enabled, this specifies the distance to offset the point from centerline. Default = 0. Supported in forward geocoding only.</p>
CENTERLINE_OFFSET_UNIT	<p>When USE_CENTERLINE_OFFSET is enabled, this specifies the unit type for the centerline offset. Valid values = feet, meters. Default = meters. Supported only in forward geocoding.</p>

### Custom Output Fields

Field Name	Description
Census CD	<p>The Census Division (CD) in which the address is located.</p> <p>To include this field in the output, select <b>Return Values &gt; Census</b> checkbox.</p>
Census CMA	<p>The Census Metropolitan Area (CMA) in which the address is located.</p> <p>To include this field in the output, select <b>Return Values &gt; Census</b> checkbox.</p>
Census CSD	<p>The Census Subdivision (CSD) in which the address is located.</p> <p>To include this field in the output, select <b>Return Values &gt; Census</b> checkbox.</p>

Field Name	Description
Census CT	<p>The Census Tract (CT) in which the address is located.</p> <p>To include this field in the output, select <b>Return Values &gt; Census</b> checkbox.</p>
Census DA	<p>The Dissemination Area (DA) in which the address is located.</p> <p>To include this field in the output, select <b>Return Values &gt; Census</b> checkbox.</p>
Formatted Street Range	<p>The formatted range data for the address. This field is only returned for postal centroid candidates.</p> <p>To include this field in the output, select <b>Return Values &gt; Formatted range</b> checkbox.</p>

# France (FRA)

## Custom Preferences

France supports the following custom preferences.

Preference	Description
Use Address Point Interpolation	<p>When set to true, enables address point interpolation. Default = false. Supported only in forward geocoding.</p> <p><b>Note:</b> The address point interpolation feature requires that you have a point-level geocoding dataset installed.</p>
Calculate Centerline Projection of Point	<p>Computes the closest point on the street from the parcel point. Default = disabled.</p> <p><b>Note:</b> This feature requires that a point-level geocoding dataset is installed.</p>
Use Centerline Offset	<p>When set to true, calculates the centerline offset for point addresses. Default = false. Supported only in forward geocoding.</p> <p><b>Note:</b> The centerline feature requires that you have a point-level geocoding dataset installed.</p> <p>A centerline point match is indicated by a result code beginning with <b>SC</b>.</p>
Centerline Offset	<p>When <code>Use Centerline Offset</code> is enabled, this specifies the distance to offset the point from centerline. Default = 0. Supported in forward geocoding only.</p>
Centerline Offset Units	<p>When <code>Use Centerline Offset</code> is enabled, this specifies the unit type for the centerline offset. Valid values = feet, meters. Default = meters. Supported only in forward geocoding.</p>

# Germany (DEU)

## Custom Preferences

Germany supports the following custom preferences.

Preference	Description
Use Address Point Interpolation	<p>When set to true, enables address point interpolation. Default = false. Supported only in forward geocoding.</p> <p><b>Note:</b> The address point interpolation feature requires that you have a point-level geocoding dataset installed.</p>
Calculate Centerline Projection of Point	<p>Computes the closest point on the street from the parcel point. Default = disabled.</p> <p><b>Note:</b> This feature requires that a point-level geocoding dataset is installed.</p>
Use Centerline Offset	<p>When set to true, calculates the centerline offset for point addresses. Default = false. Supported only in forward geocoding.</p> <p><b>Note:</b> The centerline feature requires that you have a point-level geocoding dataset installed.</p> <p>A centerline point match is indicated by a result code beginning with <b>SC</b>.</p>
Centerline Offset	<p>When <code>Use Centerline Offset</code> is enabled, this specifies the distance to offset the point from centerline. Default = 0. Supported in forward geocoding only.</p>
Centerline Offset Units	<p>When <code>Use Centerline Offset</code> is enabled, this specifies the unit type for the centerline offset. Valid values = feet, meters. Default = meters. Supported only in forward geocoding.</p>

# Great Britain (GBR)

## Custom Preferences

Great Britain supports the following custom preferences.

Preference	Description
Use Address Point Interpolation	<p>When set to true, enables address point interpolation. Default = false. Supported only in forward geocoding.</p> <p><b>Note:</b> The address point interpolation feature requires that you have a point-level geocoding dataset installed.</p>
Calculate Centerline Projection of Point	<p>Computes the closest point on the street from the parcel point. Default = disabled.</p> <p><b>Note:</b> This feature requires that a point-level geocoding dataset is installed.</p>
Use Centerline Offset	<p>When set to true, calculates the centerline offset for point addresses. Default = false. Supported only in forward geocoding.</p> <p><b>Note:</b> The centerline feature requires that you have a point-level geocoding dataset installed.</p> <p>A centerline point match is indicated by a result code beginning with <b>SC</b>.</p>
Centerline Offset	<p>When <code>Use Centerline Offset</code> is enabled, this specifies the distance to offset the point from centerline. Default = 0. Supported in forward geocoding only.</p>
Centerline Offset Units	<p>When <code>Use Centerline Offset</code> is enabled, this specifies the unit type for the centerline offset. Valid values = feet, meters. Default = meters. Supported only in forward geocoding.</p>



# New Zealand (NZL)

## Custom Preferences

New Zealand supports the following custom preferences and output fields.

## Custom Output Fields

Field	Description
AliasedSuburb	<p>New Zealand Aliased suburb. An alternative to the officially-recognized suburb name.</p> <p>To include this field in the output, select: <b>Return Values &gt; Aliased suburb</b> checkbox.</p>
KEYUFI	<p>New Zealand UFI. The Unique Identifier (UFI) identifies the street segment that the geocoded address belongs to. UFIs are up to 7-digit numbers, assigned by New Zealand Post, that uniquely identify each postal delivery point. The UFI is always returned if available, but you cannot use the UFI for input.</p> <p>To include this field in the output, select: <b>Return Values &gt; UFI</b> checkbox.</p>
MeshBlockID	<p>New Zealand Meshblock identifier. A Meshblock is the smallest geographic unit for which statistical data is collected by Statistics New Zealand. Meshblocks vary in size from part of a city block to large areas of rural land.</p> <p>To include this field in the output, select: <b>Return Values &gt; Mesh block</b> checkbox.</p>
OriginalLatitude	<p>The original latitude value.</p> <p>To include this field in the output, select: <b>Return Values &gt; Original Point</b> checkbox.</p>
OriginalLongitude	<p>The original longitude value.</p> <p><b>Return Values &gt; Original Point</b> checkbox.</p>

# Portugal (PRT)

## Custom Preferences

Portugal supports the following custom preferences.

Preference	Description
Calculate Centerline Projection of Point	<p>Computes the closest point on the street from the parcel point. Default = disabled.</p> <p><b>Note:</b> This feature requires that a point-level geocoding dataset is installed.</p>
Use Centerline Offset	<p>When set to true, calculates the centerline offset for point addresses. Default = false. Supported only in forward geocoding.</p> <p><b>Note:</b> The centerline feature requires that you have a point-level geocoding dataset installed.</p> <p>A centerline point match is indicated by a result code beginning with <b>SC</b>.</p>
Centerline Offset Units	<p>When <code>Use Centerline Offset</code> is enabled, this specifies the unit type for the centerline offset. Valid values = feet, meters. Default = meters. Supported only in forward geocoding.</p>

# Singapore (SGP)

## Custom Preferences

Singapore supports the following custom preferences.

Preference	Description
Use Address Point Interpolation	<p>When set to true, enables address point interpolation. Default = false. Supported only in forward geocoding.</p> <p><b>Note:</b> The address point interpolation feature requires that you have a point-level geocoding dataset installed.</p>
Calculate Centerline Projection of Point	<p>Computes the closest point on the street from the parcel point. Default = disabled.</p> <p><b>Note:</b> This feature requires that a point-level geocoding dataset is installed.</p>
Use Centerline Offset	<p>When set to true, calculates the centerline offset for point addresses. Default = false. Supported only in forward geocoding.</p> <p><b>Note:</b> The centerline feature requires that you have a point-level geocoding dataset installed.</p> <p>A centerline point match is indicated by a result code beginning with <b>SC</b>.</p>
Centerline Offset	<p>When <code>Use Centerline Offset</code> is enabled, this specifies the distance to offset the point from centerline. Default = 0. Supported in forward geocoding only.</p>
Centerline Offset Units	<p>When <code>Use Centerline Offset</code> is enabled, this specifies the unit type for the centerline offset. Valid values = feet, meters. Default = meters. Supported only in forward geocoding.</p>

# Sweden (SWE)

## Custom Preferences

Sweden supports the following custom preferences.

Preference	Description
Use Address Point Interpolation	<p>When set to true, enables address point interpolation. Default = false. Supported only in forward geocoding.</p> <p><b>Note:</b> The address point interpolation feature requires that you have a point-level geocoding dataset installed.</p>
Calculate Centerline Projection of Point	<p>Computes the closest point on the street from the parcel point. Default = disabled.</p> <p><b>Note:</b> This feature requires that a point-level geocoding dataset is installed.</p>
Use Centerline Offset	<p>When set to true, calculates the centerline offset for point addresses. Default = false. Supported only in forward geocoding.</p> <p><b>Note:</b> The centerline feature requires that you have a point-level geocoding dataset installed.</p> <p>A centerline point match is indicated by a result code beginning with <b>SC</b>.</p>
Centerline Offset	<p>When <code>Use Centerline Offset</code> is enabled, this specifies the distance to offset the point from centerline. Default = 0. Supported in forward geocoding only.</p>
Centerline Offset Units	<p>When <code>Use Centerline Offset</code> is enabled, this specifies the unit type for the centerline offset. Valid values = feet, meters. Default = meters. Supported only in forward geocoding.</p>

# United States (USA)

## Custom Preferences

USA supports **custom preferences** and **custom output fields**.

**Additional topics** for USA geocoding are included following the custom tables.

**Table 3: Custom Preferences**

Preference	Description
Use Address Point Interpolation	<p>When set to true, enables address point interpolation. Default = false. Supported only in forward geocoding.</p> <p><b>Note:</b> The address point interpolation feature requires that you have a point-level geocoding dataset installed.</p>
Calculate Centerline Projection of Point	<p>Computes the closest point on the street from the parcel point. Default = disabled.</p> <p><b>Note:</b> This feature requires that a point-level geocoding dataset is installed.</p>
Use Centerline Offset	<p>When set to true, calculates the centerline offset for point addresses. Default = false. Supported only in forward geocoding.</p> <p><b>Note:</b> The centerline feature requires that you have a point-level geocoding dataset installed.</p> <p>A centerline point match is indicated by a result code beginning with <b>SC</b>.</p>
Centerline Offset	<p>When <code>Use Centerline Offset</code> is enabled, this specifies the distance to offset the point from centerline. Default = 0. Supported in forward geocoding only.</p>
Centerline Offset Units	<p>When <code>Use Centerline Offset</code> is enabled, this specifies the unit type for the centerline offset. Valid values = feet, meters. Default = meters. Supported only in forward geocoding.</p>

## Custom Output Fields

This section lists the unique output fields for USA. Unless otherwise noted, these fields can be returned for both forward and reverse geocoding.

The following categories of output fields are defined:

- **Quality Descriptors**
- **Parsed Address**
- **Point**
- **Centerline**
- **Intersection**
- **Census**
- **Postal**
- **DPV**
- **Residential Delivery Indicator (RDI)**
- **LACS**<sup>Link</sup>
- **Suite**<sup>Link</sup>
- **Short Address**
- **Segment**
- **Other**

To include one or more of these categories in the output:

- In Management Console: Use the **Country Filter** dropdown menu and select **United States**. Then, on the **Return Values** tab, select the desired output category checkboxes.

To return all category output fields:

- In Management Console: Use the **Country Filter** dropdown menu and select **United States**. Then, on the **Return Values** tab, select the **Return all available information** checkbox.

### *Quality Descriptors Output Fields*

The Quality Descriptors output fields provide information about the results of the matching and geocoding processes.

Field Name	Description
Confidence	The Confidence value for USA candidates is available as a custom output field on the candidate. The key is "CONFIDENCE".

Field Name	Description
LocationCode	Location codes indicate the accuracy of the assigned geocode. For descriptions of location codes, see <a href="#">Address Location Codes</a> on page 156 in the appendix.
MatchCode	Match codes indicate the portions of the address that matched or did not match to the reference file. For descriptions of match codes, see <a href="#">Match Codes</a> on page 144 in the appendix.
PostalFallback	USA fallback candidates returns the correct MatchCode and LocationCode indicating a postal fallback, rather than codes indicating a postal level geocode.
MMResultCode	The MapMarker result code for this candidate. See result codes in <a href="#">Global Result Codes</a> on page 172 in the appendix.

### *Parsed Address Output Fields*

The Parsed Address output fields provide the components of a matched address which have been parsed and standardized by the geocoder.

Field Name	Description
ParsedAddressLine	The address line for single line input addresses.
ParsedCity	The abbreviated city name from the last line of the input or output address; the value from <code>ParsedCityName</code> or <code>ParsedPreferredCity</code> .
ParsedCountyName	The county name.
ParsedFirmName	The name of firm from the USPS data or the input firm name. Not applicable to street intersection matches.
ParsedHouseNumber	The house number of input or output address. Not applicable to street intersection matches.
ParsedLastLine	The complete last line of the address.
ParsedMainAddress	The complete first line of the address.
Parsed Name	The street name.

Field Name	Description
ParsedCityName	The city name for the matched address from the City-State record.
ParsedPreferredCity	The preferred city name for the output ZIP Code of the matched address.
ParsedState	The state abbreviation.
ParsedUnitNumber	The unit number. Not applicable to street intersection matches.
ParsedUnitType	The unit type (APT, STE, etc.). Not applicable to street intersection matches.
ParsedZip	5-digit ZIP Code. Not applicable to street intersection matches.
ParsedZip4	4-digit ZIP Code extension.
ParsedZip9	9-digit ZIP Code (ZIP + 4).
ParsedZip10	10-digit ZIP Code (ZIP + 4) with dash separator.

### Point Output Fields

The Point output fields provide additional information about the geocode resulting from a match using point-level data.

**Note:** Except where noted, supported only in forward geocoding.

Field Name	Description
APN ID	The Assessor's Parcel Number Identifier. Not applicable to street intersection matches.
NearestDistance	Gives the distance, in feet, from the input location to the matched street segment, point address, or intersection. <b>Note:</b> For reverse geocoding only.
Parcen Elevation	The elevation of the geocode at the parcel centroid. Not applicable to street intersection matches.



Field Name	Description
PBKey	<p>A unique address identifier that is returned when an address match is made using the Master Location Dataset. The pbKey™ unique identifier is used as a lookup key to a GeoEnrichment dataset, in order to return attribute data for the match.</p> <p><b>Note:</b> For forward and reverse geocoding.</p> <p><b>Note:</b> To return this field, select the <b>Return all available information</b> checkbox.</p>
Point ID	<p>The unique point ID of the matched record when matched to point-level data. Blank if the matched record is not from point-level data. Not applicable to street intersection matches.</p>

### Centerline Output Fields

Centerline matching is used with point-level matching to tie a point-level geocode with its parent street segment. This type of match provides you with additional data about the parent street segment that is not available with only a point-level match. The output information also includes the bearing and distance from the point data geocode to the centerline match.

**Note:** Supported only in forward geocoding.

Field Name	Description
CenterlineBearing	<p>For centerline candidates, provides the compass direction, in decimal degrees, from the point data match to the centerline match. Measured clockwise from 0 degrees north.</p>
CenterlineLeftBlock	<p>For centerline candidates, the Census block ID from the left side of the street. Not applicable to street intersection matches.</p>
CenterlineRightBlock	<p>For centerline candidates, the Census block ID from the right side of the street. Not applicable to street intersection matches.</p>
CenterlineLeftSFXBlock	<p>For centerline candidates, the current left block suffix for Census 2010 geography. This field will be blank if the matched record is from point-level data.</p>

Field Name	Description
CenterlineRightSFXBlock	For centerline candidates, the current right block suffix for Census 2010 geography. This field will be blank if the matched record is from point-level data.
CenterLineDatatype	For centerline candidates, the data type used to make the centerline match. <b>0</b> USPS <b>1</b> TIGER <b>2</b> TomTom Streets geocoding dataset <b>6</b> NAVTEQ Streets geocoding dataset <b>7</b> TomTom Points geocoding dataset <b>8</b> Centrus Points geocoding dataset <b>9</b> Auxiliary file <b>10</b> User Dictionary <b>11</b> HERE Points geocoding dataset <b>12</b> Master Location Data

Field Name	Description
CenterlineAlias	<p>Three characters indicating that a centerline match was located by an index alias.</p> <p>The first character:</p> <p><b>N</b> Normal street match</p> <p><b>A</b> Alias match (including buildings, aliases, firms, etc.)</p> <p>The next 2 characters:</p> <p><b>01</b> Basic index, normal address match</p> <p><b>02</b> USPS street name alias index</p> <p><b>03</b> USPS building index</p> <p><b>05</b> Statewide intersection alias (when using the Usw.gsi, Use.gsi, or Us.gsi file)</p> <p><b>06</b> Spatial data street name alias (when using the Us_pw.gsi, Usw.gsi, Us_pe.gsi, Use.gsi, Us_ps.gsi, Usp.gsi, Us_psw.gsi, or Us_pse.gsi file is required.)</p> <p><b>07</b> Alternate index (when using ZIP9.gsu, ZIP9E.gsu, and ZIP9W.gsu)</p> <p><b>08</b> LACS<sup>Link</sup></p> <p><b>09</b> Unused</p> <p><b>09</b> Auxiliary file match</p> <p><b>10</b> Centrus Alias index (when using usca.gsi)</p> <p><b>11</b> POI index (when using poi.gsi)</p> <p><b>12</b> USPS Preferred Alias</p> <p><b>13</b> ZIPMove match (when using us.gsz).</p> <p>The us.gsz data file contains ZIP+4 codes that have been realigned and a change in city name and/or finance number has occurred. Specifically, ZIPMove allows a change in finance area because CASS searching does not allow a change of finance area unless the input city occurs in more than one finance area, or ZIPMove data contains the old address.</p> <p><b>14</b> Expanded Centroids match (when using us_cent.gsc or bldgcent.gsc)</p>
CenterLineLatitude	For centerline candidates, the latitude as integer value in millionths of degrees.
CenterLineLongitude	For centerline candidates, the longitude as integer value in millionths of degrees.
CenterlineName	For centerline candidates, the primary street name.

Field Name	Description
CenterlineNearestDistance	For centerline candidates, gives the distance, in feet, from the point-level match to the centerline match.
CenterlinePostDirectional	For centerline candidates, the street postfix directional. Can be blank, N, S, E, W, NE, NW, SW, or SE.
CenterlinePreDirectional	For centerline candidates, the street prefix directional. Can be blank, N, S, E, W, NE, NW, SW, or SE.
CenterlineQCCity	For centerline candidates, the state, city, or finance numbers.
CenterlineRoadClass	For centerline candidates, the road class code: <ul style="list-style-type: none"> <li><b>0</b>            Minor road, main data file</li> <li><b>1</b>            Major road, main data file</li> <li><b>10</b>          Minor road, supplemental file</li> <li><b>11</b>          Major road, supplemental data file</li> </ul>
CenterlineSegmentHiRange	For centerline candidates, provides the high house number in the segment.
CenterlineSegmentLoRange	For centerline candidates, provides the low house number in the segment.
CenterlineSegmentDirection	For centerline candidates, gives the direction of the segment: <ul style="list-style-type: none"> <li><b>F</b>            Numbers are forward.</li> <li><b>R</b>            Numbers are reversed.</li> </ul>
CenterlineSegmentID	For centerline candidates, the unique segment ID from data vendors.
CenterlineSegmentParity	For centerline candidates, provides the segment parity. The parity indicates which side of the street the odd numbers in the segment are located: <ul style="list-style-type: none"> <li><b>L</b>            Left side of the street</li> <li><b>R</b>            Right side of the street</li> <li><b>B</b>            Both sides of the street</li> <li><b>U</b>            Unknown</li> </ul>
CenterlineType	For centerline candidates, provides the street type.

### Intersection Output Fields

The Intersection output fields provide data about the second segment in an intersection match.

Field Name	Description
BlockLeft2	For intersection matches, the Census block ID from the left side of the street for the second segment in an intersection.
BlockRight2	For intersection matches, the Census block ID from the right side of the street for the second segment in the intersection.
BlockSFXLeft2	For intersection matches, the current left block suffix for Census 2010 geography for the second segment in the intersection.
BlockSFXRight2	For intersection matches, the current right block suffix for Census 2010 geography for the second segment in the intersection.
CBSADivisionName2	For intersection matches, the Core Based Statistical Area (CBSA) division name for the second segment in the intersection.
CBSADivisionNumber2	For intersection matches, the Core Based Statistical Area (CBSA) division number for the second segment in the intersection.
CBSAName2	For intersection matches, the name of the Core Based Statistical Area (CBSA) for the second segment in the intersection.
CBSANumber2	For intersection matches, the Core Based Statistical Area (CBSA) number for the second segment in the intersection.
CountyName2	For intersection matches, the County name for the second segment in the intersection.
County2	For intersection matches, the county FIPS code for the second segment in the intersection.
CSAName2	For intersections matches, the Combined Statistical Area (CSA) name for the second segment in the intersection.
CSANumber2	For intersection matches, the Combined Statistical Area (CSA) number for the second segment in the intersection.

Field Name	Description
DataType2	<p>For intersection matches, the type of data used to make the match for the second segment in the intersection.</p> <p><b>0</b> USPS</p> <p><b>1</b> TIGER</p> <p><b>2</b> TomTom Streets geocoding dataset</p> <p><b>6</b> HERE Streets geocoding dataset</p> <p><b>7</b> TomTom Points geocoding dataset</p> <p><b>8</b> Centrus Points geocoding dataset</p> <p><b>9</b> Auxiliary file</p> <p><b>10</b> User Dictionary</p> <p><b>11</b> HERE Points geocoding dataset</p> <p><b>12</b> Master Location Data</p>
MetroFlag2	<p>Indicates whether the Core Based Statistical Area (CBSA) in which the address is located is a metropolitan area or a micropolitan area. One of the following:</p> <p><b>Y</b> The address is located in a Metropolitan Statistical Area. Metropolitan areas have a population greater than 50,000.</p> <p><b>N</b> The address is not located in a Metropolitan Statistical Area. It is located in a micropolitan area. Micropolitan areas have a population between 10,000 and 49,999.</p> <p><b>Blank</b> Is blank (the county does not contain a CBSA).</p>
Name2	For intersection matches, the street name for the second segment of the intersection.
PostDirectional2	For intersection matches, the postfix direction of the second street in the intersection. Can be blank, N, S, E, W, NE, NW, SW, or SE.
PreDirectional2	For intersection matches, the prefix direction of the second street in the intersection. Can be blank, N, S, E, W, NE, NW, SW, or SE.
RoadClass2	<p>For intersection matches, the road class code of the second segment in the intersection:</p> <p><b>0</b> Minor road, main data file</p> <p><b>1</b> Major road, main data file</p> <p><b>10</b> Minor road, supplemental file</p> <p><b>11</b> Major road, supplemental data file</p>

Field Name	Description
SegHiRange2	For intersection matches, provides the high house number of the second segment in the intersection.
SegLoRange2	For intersection matches, provides the low house number of the second segment in the intersection.
SegmentDirection2	For intersection matches, gives the direction of the second segment in the intersection: <b>F</b> Numbers are forward. <b>R</b> Numbers are reversed.
SegmentID2	For intersection matches, the Segment ID (TLID) or unique ID from premium data vendors for the second segment in the intersection.
SegmentParity2	For intersection matches, provides the segment parity for the second segment in the intersection. The parity indicates which side of the street the odd numbers in the segment are located: <b>L</b> Left side of the street <b>R</b> Right side of the street <b>B</b> Both sides of the street <b>U</b> Unknown
Type2	For intersection matches, the street type for the second segment in the intersection.

### *Census Output Fields*

Census output fields contain U.S. Census information about the address.

Field Name	Description
Block	<p>15-digit census block ID/census FIPS code, using the syntax <code>ssccccttttttgbbbb</code> where:</p> <ul style="list-style-type: none"> <li>• <b>ss</b>—2-digit State FIPS Code</li> <li>• <b>ccc</b>—3-digit County FIPS Code</li> <li>• <b>tttttt</b>—6-digit Census Tract FIPS Code (without period)</li> <li>• <b>g</b>—Single-digit Block FIPS Code</li> <li>• <b>bbb</b>—Block FIPS Code</li> </ul> <p>Not applicable to street intersection matches.</p>
County	The county FIPS code.
StateFIPS	The state FIPS code.

### Postal Output Fields

The Postal output fields contain detailed postal information for the address.

**Note:** Supported only in forward geocoding.

Field Name	Description				
AltFlag	<p>Alternate/base record indicator:</p> <table> <tr> <td><b>A</b></td> <td>Alternate</td> </tr> <tr> <td><b>B</b></td> <td>Base</td> </tr> </table>	<b>A</b>	Alternate	<b>B</b>	Base
<b>A</b>	Alternate				
<b>B</b>	Base				
CART	Carrier route ID. Not applicable to street intersection matches.				
CheckDigit	A one-digit code at the end of a mailing label barcode.				
CountyStateKey	USPS city state key (an alphanumeric value that uniquely identifies a locale in the USPS city state product).				
DFLT	<p>Indicates the return status of <code>Highrise DFLT</code> or <code>Rural Routes</code>:</p> <table> <tr> <td><b>Y</b></td> <td>Either <code>Highrise DFLT</code> and <code>Rural Routes</code> returned <b>Y</b>.</td> </tr> <tr> <td><b>Blank</b></td> <td>Both <code>Highrise DFLT</code> and <code>Rural Routes</code> returned <b>N</b> or <b>Blank</b>.</td> </tr> </table>	<b>Y</b>	Either <code>Highrise DFLT</code> and <code>Rural Routes</code> returned <b>Y</b> .	<b>Blank</b>	Both <code>Highrise DFLT</code> and <code>Rural Routes</code> returned <b>N</b> or <b>Blank</b> .
<b>Y</b>	Either <code>Highrise DFLT</code> and <code>Rural Routes</code> returned <b>Y</b> .				
<b>Blank</b>	Both <code>Highrise DFLT</code> and <code>Rural Routes</code> returned <b>N</b> or <b>Blank</b> .				



Field Name	Description
DPBCCode	Delivery Point Barcode.
EWSMatch	<p>Indicates if an EWS match was made:</p> <p><b>Y</b> Match denied because it matched to EWS data.</p> <p><b>Blank</b> Input record did not match to EWS data.</p>
Govt Flag	<p>The government building indicator:</p> <p><b>A</b> City government building</p> <p><b>B</b> Federal government building</p> <p><b>C</b> State government building</p> <p><b>D</b> Firm only</p> <p><b>E</b> City government building and firm only</p> <p><b>F</b> Federal government building and firm only</p> <p><b>G</b> State government building and firm only</p> <p>A, B, C, E, F, and G are valid for alternate records only (ALT_FLAG=A). D is valid for both base and alternate records.</p>
HighriseDFLT	<p>Indicates if the match was made to a highrise.</p> <p><b>N</b> Matched to an exact highrise record or a street record.</p> <p><b>Y</b> Did not match to an exact record. Matched to the USPS default highrise record or a street record. Check the input address for accuracy and completeness.</p> <p><b>Blank</b> Does not apply to the input address (for example, PO Boxes and General Delivery addresses) or did not find a match.</p>
LotCode	<p>Lot ascending and descending value. Only available for addresses that can be standardized. Blank if running in CASS mode and you have not initialized DPV or the output address does not DPV confirm.</p> <p><b>A</b> Ascending</p> <p><b>D</b> Descending</p>
LotNumber	<p>4-digit eLot number. Requires an input address that can be standardized. Blank if running in CASS mode and you have not initialized DPV or the output address does not DPV confirm.</p>

Field Name	Description
MailStop	Returns address information appearing after mail stop designator words: MSC, MS, MAILSTOP, MAIL STOP, ATTN, ATTENTION.
PMBDesignator	PMB designator.
PMBNumber	PMB number.
RuralRoutes	Match indicator for rural routes. <b>N</b> Matched to an exact rural route record. <b>Y</b> Did not find an exact record. Matched to the USPS default rural route record. Check the input address for accuracy and completeness. <b>Blank</b> Does not apply to the input address (for example, street addresses, P.O. Boxes, and General Delivery addresses) or no match found.
URBName	The urbanization name for Puerto Rico.
ZipCarrtSort	Indicates the type of cart sort allowed: <b>A</b> Automation cart allowed, optional cart merging allowed. <b>B</b> Automation cart allowed, optional cart merging not allowed. <b>C</b> Automation cart not allowed, optional cart merging allowed. <b>D</b> Automation cart not allowed, optional cart merging not allowed.
ZipClass	ZIP Classification Code: <b>Blank</b> Standard ZIP Code <b>M</b> Military ZIP Code <b>P</b> ZIP Code has P.O. Boxes only <b>U</b> Unique ZIP Code. (A unique ZIP Code is a ZIP Code assigned to a company, agency, or entity with sufficient mail volume to receive its own ZIP Code.)

Field Name	Description
ZipFacility	Returns the USPS City State Name Facility Code:
<b>A</b>	Airport Mail Facility (AMF)
<b>B</b>	Branch
<b>C</b>	Community Post Office (CPO)
<b>D</b>	Area Distribution Center (ADC)
<b>E</b>	Sectional Center Facility (SCF)
<b>F</b>	Delivery Distribution Center (DDC)
<b>G</b>	General Mail Facility (GMF)
<b>K</b>	Bulk Mail Center (BMC)
<b>M</b>	Money Order Unit
<b>N</b>	Non-Postal Community Name, Former Postal Facility, or Place Name
<b>P</b>	Post Office
<b>S</b>	Station
<b>U</b>	Urbanization

### DPV Output Fields

DPV data output fields contain information about a match made using DPV data.

**Note:** Supported only in forward geocoding.

Field Name	Description
DPVCMRA	Delivery Point Validation CMRA indicator.
<b>Y</b>	Address found in CMRA table.
<b>N</b>	Address not found in CMRA table.
<b>Blank</b>	DPV not loaded.

Field Name	Description
DPVConfirm	<p>Indicates if a match occurred for DPV data.</p> <p><b>N</b> Nothing confirmed.</p> <p><b>Y</b> Everything confirmed (ZIP+4, primary and secondary)</p> <p><b>S</b> ZIP+4 and primary (house number) confirmed.</p> <p><b>D</b> ZIP+4 and primary (house number) confirmed and a default match (<code>HI_RISE_DFLT = Y</code>, secondary did not confirm).</p> <p><b>Blank</b> Non-matched input address to USPS ZIP+4 data, or DPV data not loaded.</p>
DPVFalsePOS	<p>DPV false-positive indicator.</p> <p><b>Y</b> False-positive match found.</p> <p><b>Blank</b> False-positive match not found.</p>
DPVFootNote1	<p>Information about the matched DPV records.</p> <p><b>AA</b> ZIP+4 matched.</p> <p><b>A1</b> Failure to match a ZIP+4.</p> <p><b>Blank</b> Address not presented to hash table or DPV data not loaded.</p>

Field Name	Description
DPVFootNote2	<p>Information about the matched DPV records.</p> <p><b>BB</b> All DPV categories matched.</p> <p><b>CC</b> DPV matched primary/house number, where the secondary/unit number did not match (present but invalid).</p> <p><b>M1</b> Missing primary/house number.</p> <p><b>M3</b> Invalid primary/house number.</p> <p><b>N1</b> DPV matched primary/house number, with a missing secondary number.</p> <p><b>P1</b> Missing PS, RR, or HC Box number.</p> <p><b>P3</b> Invalid PS, RR or HC Box number.</p> <p><b>F1</b> All military addresses.</p> <p><b>G1</b> All general delivery addresses.</p> <p><b>U1</b> All unique ZIP Code addresses.</p> <p><b>Blank</b> Address not presented to hash table or DPV data not loaded.</p> <p><b>Note:</b> A unique ZIP Code is a ZIP Code assigned to a company, agency, or entity with sufficient mail volume to receive its own ZIP Code.</p>
DPVFootNote3	<p>Information about the matched DPV records.</p> <p><b>R1</b> Matched to CMRA but PMB designator not present.</p> <p><b>R2</b> Matched to CMRA and PMB designator present (PMB 123 or #123).</p> <p><b>Blank</b> Address not presented to hash table or DPV data not loaded.</p>
DPVNoSTAT	<p><b>Y</b> The address is valid for CDS pre-processing.</p> <p><b>N</b> The address is not valid for CDS pre-processing.</p> <p><b>Blank</b> DPV is not loaded or DPV did not confirm.</p>
DPVShutdown	<p><b>Y</b> Address was found in false-positive table.</p> <p><b>N</b> Address was not found in false-positive table.</p> <p><b>Blank</b> Address was not presented to hash table or DPV data not loaded.</p>

Field Name	Description	
DPVVacant	<b>Y</b>	The address is vacant.
	<b>N</b>	The address is not vacant.
	<b>Blank</b>	DPV is not loaded or DPV did not confirm (so vacancy is irrelevant).

### Residential Delivery Indicator (RDI) Output Fields

The Residential Delivery Indicator (RDI™) is a United States Postal Service (USPS®) data product that identifies whether a delivery type is classified as residential or business. If you are shipping to residences, you may lower costs by shipping with the Postal Service™ and avoid residential delivery surcharges typically charged by other shipping companies.

**Note:** To use RDI, Delivery Point Validation (DPV) must also be enabled and a US Streets dataset loaded.

Field Name	Description
RDIRetCode	USPS Residential Delivery Indicator (RDI) return codes: <ul style="list-style-type: none"> <li>• Y = Residence</li> <li>• N = Business</li> <li>• Blank = Not processed through RDI.</li> </ul>

### LACS<sup>Link</sup> Output Fields

LACS<sup>Link</sup> data output fields contain information about a match made using the LACS<sup>Link</sup> dataset.

**Note:** Supported only in forward geocoding.

Field Name	Description	
LACSLinkFlag	<b>L</b>	Address marked for LACS conversion.
	<b>Blank</b>	Address not marked for LACS conversion.

Field Name	Description
LACSLinkIND	LACS <sup>Link</sup> indicator. <b>Y</b> Matched LACS <sup>Link</sup> record. <b>N</b> LACS <sup>Link</sup> match NOT found. <b>F</b> False-positive LACS <sup>Link</sup> record. <b>S</b> Secondary information (unit number) removed to make a LACS <sup>Link</sup> match. <b>Blank</b> Not processed through LACS <sup>Link</sup> .
LACSLinkRetCode	LACS <sup>Link</sup> return code. <b>A</b> Matched LACS <sup>Link</sup> record. <b>00</b> LACS <sup>Link</sup> match NOT found. <b>09</b> Matched to highrise default, but no LACS <sup>Link</sup> conversion. <b>14</b> Found LACS <sup>Link</sup> match, but no LACS <sup>Link</sup> conversion. <b>92</b> Secondary information (unit number) removed to make a LACS <sup>Link</sup> match. <b>Blank</b> Not processed through LACS <sup>Link</sup> .
LACSLinkShutdown	<b>Y</b> False-positive occurred and LACSLink library shutdown. <b>N</b> LACSLink library has not shutdown or not loaded.

### Suite<sup>Link</sup> Output Fields

The Suite<sup>Link</sup> output fields contain information about a match made using the Suite<sup>Link</sup> dataset.

**Note:** Supported only in forward geocoding.

Field Name	Description
SuiteLink_Ret_Code	<b>A</b> Suite <sup>Link</sup> record match. <b>00</b> No Suite <sup>Link</sup> match. <b>Blank</b> This address was not processed through Suite <sup>Link</sup> .

### Short Address Output Fields

The short address output fields contain abbreviated elements of the matched address.

**Note:** Supported only in forward geocoding.

Field Name	Description
ShortAddressline	Shortest possible address line that can be constructed from available short street name and other address line components.
ShortCityName	<p>The output city name that appears in <code>LASTLINE_SHORT</code>. This value is determined by logic similar to <code>CITY</code>. Whenever possible, this city name is 13 characters or less.</p> <p>This output city name is determined by CASS rules. This can be either City State Name, City State Name Abbreviation, or Preferred Last Line City State Name.</p>
ShortLastline	<p>The address last line. Whenever possible, this field is 29 characters or less:</p> <ul style="list-style-type: none"> <li>• 13-character city name</li> <li>• 2 (comma and space)</li> <li>• 2-character state abbreviation</li> <li>• 2 spaces</li> <li>• 10-digit ZIP Code</li> </ul>
ShortStreetName	<p>The short street name used to construct the short address line.</p> <p>All attempts are made to abbreviate this name according to the process specified by the USPS in the 30 Character Abbreviation - Cycle M Flow Chart. If an abbreviated address cannot be constructed that is 30 characters or less, this field then contains the same street name value as the <code>NAME</code> field return.</p>
ShortPostDirectional	Postdir from the <code>ADDRLINE_SHORT</code> field.
ShortPreDirectional	Predir from the <code>ADDRLINE_SHORT</code> field.
ShortStreetType	Street type from the <code>ADDRLINE_SHORT</code> field.

### Segment Output Fields

Segment output fields contain information on the street segment identified by the data provider.



Field Name	Description
LeftBlockID	Census block ID from the left side of the street. Not applicable to street intersection matches.
RightBlockID	Census block ID from the right side of the street. Not applicable to street intersection matches.
LeftSFXBlock	The current left block suffix for Census 2010 geography. This field will be blank if the matched record is from point-level data.
RightSFXBlock	The current right block suffix for Census 2010 geography. This field will be blank if the matched record is from point-level data.
DataType	The type of data used to make the match. <ul style="list-style-type: none"> <li><b>0</b> USPS</li> <li><b>1</b> TIGER</li> <li><b>2</b> TomTom Streets geocoding dataset</li> <li><b>6</b> HERE Streets geocoding dataset</li> <li><b>7</b> TomTom Points geocoding dataset</li> <li><b>8</b> Centrus Points geocoding dataset</li> <li><b>9</b> Auxiliary file</li> <li><b>10</b> User Dictionary</li> <li><b>11</b> HERE Points geocoding dataset</li> <li><b>12</b> Master Location Data</li> </ul>
DataTypeName	The source data vendor for the candidate match.
HiRange	House number at the high end of the range. Not applicable to street intersection matches.
HighUnit	High unit number for the range. Not applicable to street intersection matches.
HiZip4	High ZIP+4 for the range. Not applicable to street intersection matches.

Field Name	Description
IsStreetAlias	<p>The first character:</p> <p><b>N</b> Normal street match</p> <p><b>A</b> Alias match (including buildings, aliases, firms, etc.)</p> <p>The next 2 characters:</p> <p><b>01</b> Basic index, normal address match</p> <p><b>02</b> USPS street name alias index</p> <p><b>03</b> USPS building index</p> <p><b>05</b> Statewide intersection alias (when using the Usw.gsi, Use.gsi, or Us.gsi file)</p> <p><b>06</b> Spatial data street name alias (when using the Us_pw.gsi, Usw.gsi, Us_pe.gsi, Use.gsi, Us_ps.gsi, Usp.gsi, Us_psw.gsi, or Us_pse.gsi file is required.)</p> <p><b>07</b> Alternate index (when using ZIP9.gsu, ZIP9E.gsu, and ZIP9W.gsu)</p> <p><b>08</b> LACS<sup>Link</sup></p> <p><b>09</b> Unused</p> <p><b>09</b> Auxiliary file match</p> <p><b>10</b> Centrus Alias index (when using usca.gsi)</p> <p><b>11</b> POI index (when using poi.gsi)</p> <p><b>12</b> USPS Preferred Alias</p> <p><b>13</b> ZIPMove match (when using us.gsz). The us.gsz data file contains ZIP+4 codes that have been realigned and a change in city name and/or finance number has occurred. Specifically, ZIPMove allows a change in finance area because CASS searching does not allow a change of finance area unless the input city occurs in more than one finance area, or ZIPMove data contains the old address.</p> <p><b>14</b> Expanded Centroids match (when using us_cent.gsc or bldgcent.gsc)</p>
LoRange	House number at the low end of the range. Not applicable to street intersection matches.
LowUnit	Low unit number. Not applicable to street intersection matches.
LoZip4	Low ZIP+4 for this range. Not applicable to street intersection matches.

Field Name	Description																		
NearestDistance	<p>Gives the distance, in feet, from the input location to the matched street segment, point address, or intersection.</p> <p><b>Note:</b> For reverse geocoding only.</p>																		
StreetPostDirectional	Postfix direction. Can be blank, N, S, E, W, NE, NW, SW, or SE.																		
StreetPreDirectional	Prefix direction. Can be blank, N, S, E, W, NE, NW, SW, or SE.																		
QCity	State, city, or finance numbers.																		
RangeParity	<p>Indicates the parity of the house number in the range:</p> <table> <tr> <td><b>E</b></td> <td>Even</td> </tr> <tr> <td><b>O</b></td> <td>Odd</td> </tr> <tr> <td><b>B</b></td> <td>Both</td> </tr> </table>	<b>E</b>	Even	<b>O</b>	Odd	<b>B</b>	Both												
<b>E</b>	Even																		
<b>O</b>	Odd																		
<b>B</b>	Both																		
RecType	<p>The range record type:</p> <table> <tr> <td><b>A</b></td> <td>Auxiliary file</td> </tr> <tr> <td><b>F</b></td> <td>Firm</td> </tr> <tr> <td><b>G</b></td> <td>General Delivery</td> </tr> <tr> <td><b>H</b></td> <td>Highrise</td> </tr> <tr> <td><b>P</b></td> <td>Post Office/PO Box</td> </tr> <tr> <td><b>R</b></td> <td>Rural Route</td> </tr> <tr> <td><b>S</b></td> <td>Street</td> </tr> <tr> <td><b>T</b></td> <td>TIGER record match</td> </tr> <tr> <td><b>U</b></td> <td>User Dictionary</td> </tr> </table> <p>Not applicable to street intersection matches.</p>	<b>A</b>	Auxiliary file	<b>F</b>	Firm	<b>G</b>	General Delivery	<b>H</b>	Highrise	<b>P</b>	Post Office/PO Box	<b>R</b>	Rural Route	<b>S</b>	Street	<b>T</b>	TIGER record match	<b>U</b>	User Dictionary
<b>A</b>	Auxiliary file																		
<b>F</b>	Firm																		
<b>G</b>	General Delivery																		
<b>H</b>	Highrise																		
<b>P</b>	Post Office/PO Box																		
<b>R</b>	Rural Route																		
<b>S</b>	Street																		
<b>T</b>	TIGER record match																		
<b>U</b>	User Dictionary																		
RoadClass	<p>The road class code:</p> <table> <tr> <td><b>0</b></td> <td>Minor road, main data file</td> </tr> <tr> <td><b>1</b></td> <td>Major road, main data file</td> </tr> <tr> <td><b>10</b></td> <td>Minor road, supplemental file</td> </tr> <tr> <td><b>11</b></td> <td>Major road, supplemental data file</td> </tr> </table> <p>Not applicable to street intersection matches.</p>	<b>0</b>	Minor road, main data file	<b>1</b>	Major road, main data file	<b>10</b>	Minor road, supplemental file	<b>11</b>	Major road, supplemental data file										
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<b>1</b>	Major road, main data file																		
<b>10</b>	Minor road, supplemental file																		
<b>11</b>	Major road, supplemental data file																		

Field Name	Description
SegmentHighRange	Provides the high house number in the segment.
SegmentLowRange	Provides the low house number in the segment.
SegmentDirection	Gives the direction of the segment: <b>F</b> Numbers are forward. <b>R</b> Numbers are reversed.
SegmentID	Segment ID (TLID) or unique ID from premium data vendors. Not applicable to street intersection matches.
SegmentParity	Provides the segment parity. The parity indicates which side of the street the odd numbers in the segment are located: <b>L</b> Left side of the street <b>R</b> Right side of the street <b>B</b> Both sides of the street <b>U</b> Unknown
StreetSide	The matched address is on the following side of the street: <b>L</b> Left side of the street. <b>R</b> Right side of the street. <b>B</b> Both sides of the street. <b>U</b> Unknown side of the street.  This is relative to the segment end points and the segment direction (SEGMENT_DIRECTION).
ThoroughfareType	Street type.

### Other Output Fields

The Other output fields contain additional information about the match.

Field Name	Description
AUXUserData	User data from an auxiliary file. Blank if no auxiliary file.

Field Name	Description
CBSADivisionName	Core Based Statistical Area (CBSA) division name.
CBSADivisionNumber	Core Based Statistical Area (CBSA) division number.
CBSAName	<p>The name of the Core Based Statistical Area (CBSA) in which the address is located.</p> <p>A CBSA is a collective term that refers to both metropolitan and micropolitan areas. A metropolitan area has a population of more than 50,000, and a micropolitan area has a population between 10,000 and 49,999. For more information, see <i>Metropolitan and Micropolitan Statistical Areas</i> section of the U.S. Census Bureau website: <a href="http://www.census.gov/population/www/metroareas/metroarea.html">http://www.census.gov/population/www/metroareas/metroarea.html</a></p>
CBSANumber	Core Based Statistical Area (CBSA) number.
CSAName	Combined Statistical Area (CSA) name.
CSANumber	Combined Statistical Area (CSA) number.
LAT	The latitude of the address.
LON	The longitude of the address.
MatchedDB	Index of geocoding dataset for matched record.
MCDName	Minor Civil Division name from the auxiliary file. Blank if no auxiliary file match.
MCDNumber	Minor Civil Division number from the auxiliary file. Blank if no auxiliary file match.
MetroFlag	<p>Indicates whether the Core Based Statistical Area (CBSA) in which the address is located is a metropolitan area or a micropolitan area. One of the following:</p> <p><b>Y</b> The address is located in a Metropolitan Statistical Area. Metropolitan areas have a population greater than 50,000.</p> <p><b>N</b> The address is not located in a Metropolitan Statistical Area. It is located in a micropolitan area. Micropolitan areas have a population between 10,000 and 49,999.</p> <p><b>Blank</b> Is blank (the county does not contain a CBSA).</p>
ResolvedLine	Indicates which line in a 2-line address was used to resolve the address.

## Additional Topics for USA Geocoding

### *MLD Extended Attributes including APN and Elevation*

**(USA)** This feature provides access to extended attributes associated with an addressable location that has a PreciselyID. When matching addresses with Master Location Data (MLD), Spectrum Global Geocoding returns additional property information associated with the address, such as Assessor's Parcel Number (APN), Elevation, Address Type, and Lot Size. APN can be used to identify the parcel so the parcel ID can be linked to additional information for the insurance industry, such as property and insurance risk attributes. For more detail, see the full list of output fields below.

### *Requirements*

The following are required to return MLD Extended Attributes:

- Master Location Data dataset.
- Streets dataset.
- MLD Extended Attributes dataset.
- Recommendation: the vintages of the MLD and MLD Extended Attributes datasets be within 4 months of each other.

### *Settings*

- To use MLD Extended Attributes in Spectrum:
  - EGM-USA: In the Management Console, review the **Output** or **Output Data** tab and select the **MLD Extended Attributes** option. Output fields will display on the Preview tab or be returned from stages via Spectrum Enterprise Designer.

*MLD Extended Attributes Output Fields (optional)*

<b>Field</b>	<b>Description</b>
<b>AddressType</b>	Address Type regarding number of units: S – Single unit M – Multiple units P – Post Office box X – Unknown
<b>APN</b>	Assessor's parcel number.
<b>IncorpPlaceInd</b>	Incorporated Place Indicator. I – Incorporated place N – Not an incorporated place X – Unknown
<b>LotSize</b>	Lot size of the parcel expressed in square feet; 0 if none.
<b>LotSizeMeters</b>	Lot size of the parcel expressed in square meters; 0 if none.
<b>MECLatitude</b>	Latitude of Minimum Enclosing Circle expressed with an implied 6 digits of decimal precision; 0 if none.
<b>MECLongitude</b>	Longitude of Minimum Enclosing Circle expressed with an implied 6 digits of decimal precision; 0 if none.
<b>MECRadius</b>	Radius of Minimum Enclosing Circle (in square feet) expressed as a whole number. For example: 1234 means 1,234 feet.
<b>MECRadiusMeters</b>	Radius of Minimum Enclosing Circle (in meters) expressed with 1 digit of decimal precision.
<b>Elevation</b>	Elevation above sea level (in feet) expressed with 1 digit of decimal precision. For example: 12.5 feet.

Field	Description
<b>ResidentialBusiness</b>	Usage Indicator: R – Residential use B – Business use M – Mixed use – residential and business X – Unknown use
<b>TigerFaceID</b>	TIGER Face Identifier. This field can be used to match to all Census geocodes using external data; 0 if none.
<b>TigerPlace</b>	TIGER Place code; 0 if none.
<b>UrbanAreaID</b>	TIGER Urban Area Identifier. Defines the urban area if any; 0 if none.
<b>UrbanAreaPop</b>	Census population of the urban area; 0 if none.
<b>Urbanicity</b>	Urbanicity Indicator. An indicator that defines, according to the Census, the Urbanicity of the Address using TIGER UACE codes for categorization.

### *PreciselyID ZIP Centroid Locations*

The default behavior of the geocoder is to return matches from Master Location Data for addressable locations that have an address-level geocode. The PreciselyID ZIP Centroid feature enables returning ZIP centroids when matching to MLD. For addresses that don't have a high-quality location, this provides access to the PreciselyID unique identifier, which can be used to unlock additional information about an address using GeoEnrichment data, as well as to realize operational processing efficiencies. This allows maximum address coverage and integrity in geocoding. The inclusion of these addresses enables providing a higher match rate, lower false-positive match rate, and access to the PreciselyID unique identifier for all known addresses in the US. By default, it is disabled. To enable, use the appropriate CLI command. For more information, see [setting Command](#).

**Note:** This feature is only available with Master Location Data.

### *Point of Interest Matching*

The optional Point Of Interest (POI) Index file (*poi.gsi*) included with the Master Location Data and HERE Point Addresses datasets provides expanded support in alias name matching.



To enable POI matching:

1. Add the MLD or HERE Point Addresses data as a Database Resource.
2. Ensure **Building Search on Address Line** is checked. The POI Index file will automatically be searched when this option is enabled and a firm, building or POI name is specified in the `mainAddress` input field.
3. If an alias match is made to the POI Index file, the `IsStreetAlias` output field, or, in the case of a centerline match, `CenterlineIsAlias` field, returns `All`. To enable the return of these fields, select the **Segment** and **Centerline** Return Values options.

## Expanded Centroids

In some cases, more than one point-level geocode is available for an address matched in Master Location Data (MLD). For more information about the different types of point-level geocodes, see the "APnn" definitions in [Address Location Codes](#) on page 156. When more than one point-level geocode is available from MLD data, only the highest quality geocode is returned with the matched address data.

The Expanded Centroids feature is available with MLD and the optional Master Location Structure Centroid Data Set (MLDB). If an address match is found in MLD, and the MLDB data set is added as a database resource, the MLDB data set is searched for additional geocodes for the matched address. If additional geocodes are found for the matched address, these are returned.

The returned location code for an Expanded Centroids match will have an "APnn" value with a data type of "MASTER LOCATION".

An Expanded Centroids match is indicated by an "A14" value for the `IsAlias` return field. The returned location code for an Expanded Centroids match will have an "APnn" value with a data type of "MASTER LOCATION".

## Extended Match Codes

Extended Match Codes return additional information about any changes in the house number, unit number and unit type fields. In addition, it can indicate whether there was address information that was ignored. The Extended Match Code is only returned for address-level matches (match codes that begin with A, G, H, J, Q, R, S, T or U), in which case a 3rd hex digit is appended to the match code (see [Match Codes](#) on page 144).

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

For information about the 3rd hex digit values for:

- Intersection matches, see [Definitions for 1st-3rd hex digit match code values](#) on page 147
- Extended Match Codes, see [Definitions for Extended Match Code \(3rd hex digit values\)](#) on page 149

The return of the Extended Match Code is enabled by default and cannot be modified.

### Extended Match Code return values

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

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

The table below provides descriptions of the Extended Match Code 3rd hex digit return values.

Input Addressline	Output Addressline	Extended Code	Description
4750 WALNUT ST STE 200	4750 WALNUT ST STE 200	0	Matched on all address information on line, including Unit Number and Unit Type if included.
4750 WALNUT ST C/O JOE SMITH	4750 WALNUT ST	1	Matched on Unit Number and Unit Type if included. Extra information on address line ignored. Extra information not considered for matching is not returned.
4750 WALNUT ST UNIT 200	4750 WALNUT ST STE 200	2	Matched on Unit Number. Unit Type changed.
4750 WALNUT ST UNIT 200 C/O JOE SMITH	4750 WALNUT ST STE 200	3	Matched on Unit Number. Unit Type changed. Extra information on address line ignored. Extra information not considered for matching is not returned.
4750 WALNUT ST STE 2-00	4750 WALNUT ST STE 200	4	Unit Number changed or ignored.
4750 WALNUT ST STE 2-00 C/O JOE SMITH	4750 WALNUT ST STE 200	5	Unit Number changed or ignored. Extra information on address line ignored. Extra information not considered for matching is not returned.
4750 WALNUT ST STE 400	4750 WALNUT ST STE 400	6	Unit Number changed or ignored. Unit Type changed or ignored. In this example, Suite 400 is not valid for the input address, but the address match is not prevented because of an invalid unit number.

Input Addressline	Output Addressline	Extended Code	Description
4750 WALNUT ST UNIT 2-00 C/O JOE SMITH	4750 WALNUT ST STE 200	7	Unit Number changed or ignored. Unit Type changed or ignored. Extra information on address line ignored. Extra information not considered for matching is not returned.
47-50 WALNUT ST STE 200	4750 WALNUT ST STE 200	8	Matched on Unit Number and Unit Type if included. House number changed or ignored.
47-50 WALNUT ST STE 200 C/O JOE SMITH	4750 WALNUT ST STE 200	9	Matched on Unit Number and Unit Type if included. House number changed or ignored. Extra information not considered for matching is not returned.
47-50 WALNUT ST UNIT 200	4750 WALNUT ST STE 200	A	Matched on Unit Number. Unit Type changed. House Number changed or ignored.
47-50 WALNUT ST UNIT 200 C/O JOE SMITH	4750 WALNUT ST STE 200	B	Matched on Unit Number. Unit Type changed. House Number changed or ignored. Extra information on address line ignored. Extra information not considered for matching is not returned.
47-50 WALNUT ST STE 20-0	4750 WALNUT ST STE 200	C	House Number changed or ignored. Unit Number changed or ignored.
47-50 WALNUT ST STE 20-0 C/O JOE SMITH	4750 WALNUT ST STE 200	D	House Number changed or ignored. Unit Number changed or ignored. Extra information on address line ignored. Extra information not considered for matching is not returned.
47-50 WALNUT ST UNIT 20-0	4750 WALNUT ST STE 200	E	House Number changed or ignored. Unit Number changed or ignored. Unit Type changed or ignored.
47-50 WALNUT ST UNIT 2-00 C/O JOE SMITH	4750 WALNUT ST STE 200	F	House Number changed or ignored. Unit Number changed or ignored. Unit Type changed or ignored. Extra information on address line ignored. Extra information not considered for matching is not returned.

## City-only Lastline Matching

City-only lastline matching permits address matching with only a city in the input lastline. The city should be provided using either the `mainAddress` (using single-line address input), `LastLine` or `areaName3` input fields.

With city-only lastline input, all of the states are searched in which the input city exists. Therefore, there is the possibility of an increase in multimatches (return of E023 or E030 Match Codes) when matching with city-only input instead of city+state input.

### Restrictions:

- City-only lastline input matching is not supported in CASS mode.
- City-only lastline is not supported when matching to User Dictionaries.
- When matching using city-only lastline, the Matching option **Prefer Zip over City** setting is ignored.
- It is strongly recommended to not use city-only lastline matching in Relaxed match mode to avoid the return of false-positive matches.

## Correct Lastline

When **Output corrected last line** is enabled, the elements of the output lastline are corrected, providing a good ZIP Code or close match on the soundex even if the address did not match or was non-existent. This feature is disabled by default.

When Correct Lastline is enabled, the following elements are corrected:

- **City correction** - The city correction is based on input ZIP Code unless a match to city and state exists in which case both search areas are retained. The input state must be correct or spelled out correctly when no ZIP Code is input. The returned location code and coordinates are based on the output ZIP Code.

- Input city is incorrect:

HAUDENVILLE MA 01039

Returns LASTLINE=HAYDENVILLE, MA 01039 LAT= 42396500 LON= -72689100

- **State correction** - State is abbreviated when spelled out correctly or corrected when a ZIP Code is present. There are some variations of the input state which are recognized, ILL, ILLI, CAL, but not MASS. The US geocoder does not consider the abbreviation of the variation a change, so ILL to IL is not identified as a change in the match code. In addition, the output of the ZIP Code for a single ZIP Code city is not considered a change.

- Input city exists:

Bronx NT, 10451

Returns LASTLINE= BRONX, NY 10451

Bronx NT  
Returns LASTLINE= BRONX NT  
*No ZIP Code for correction.*

- Input city does not exist - preferred city for ZIP Code returned:

60515  
Returns LASTLINE=DOWNERS GROVE, IL 60515  
MATCH\_CODE=E622

ILLINOIS 60515 (or ILL 60515 or IL 60515 or ILLI 60515)  
Returns LASTLINE=DOWNERS GROVE, IL 60515  
MATCH\_CODE=E222

- **ZIP Code correction** - The ZIP Code is corrected only when a valid city/state is identified and has only one ZIP Code.

- Exists on input:

HAUDENVILLE MA 01039  
Returns LASTLINE=HAYDENVILLE, MA 01039

- Incorrect on input - ZIP Code correction is not performed, both search areas are retained:

HAUDENVILLE MA 01030  
Returns LASTLINE=HAYDENVILLE, MA 01030  
*City and ZIP Code do not correspond.*

- Does not exist on input:

DOWNRS GROVE, IL  
Returns LASTLINE=DOWNERS GROVE, IL  
*City with multiple ZIP Codes.*

LILSE IL  
Returns LASTLINE=LISLE, IL 60532  
*City with a single ZIP Code.*

DOWNERS GROVE LL  
Returns LASTLINE=DOWNERS GROVE LL,  
*No ZIP Code for correction.*

DOWNRS GROVE, LL  
Returns LASTLINE=DOWNRS GROVE, LL  
*No ZIP Code for correction.*

LILSE ILLINOIS  
Returns LASTLINE= LISLE, IL 60532  
*Correct spelled out state.*

LISLE ILLINOS

Returns LASTLINE= LISLE ILLINOS

*Incorrect spelled out state, no ZIP Code for correction.*

**Note:** For information about the returned match codes, see [Correct Lastline Match Codes](#) on page 152.

## Address Range Matching

Some business locations are identified by address ranges. For example, a shopping plaza could be addressed as 10-12 Front St. This is how business mail is typically addressed to such a business location. These address ranges can be geocoded to the interpolated mid-point of the range.

Address ranges are different from hyphenated (dashed) addresses that occur in some metropolitan areas. For example, a hyphenated address in Queens County (New York City) could be 243-20 147 Ave. This represents a single residence (rather than an address range) and is geocoded as a single address. If a hyphenated address returns as an exact match, Spectrum Technology Platform does not attempt to obtain an address range match.

Address range matching is not available in Exact or CASS modes, since an address range is not an actual, mailable USPS® address. The following fields are not returned by address range geocoding:

- ZIP + 4® (in multiple segment cases)
- Delivery point
- Check digit
- Carrier route
- Record type
- Multi-unit
- Default flag

Address range matching works within the following guidelines:

- There must be two numbers separated by a hyphen.
- The first number must be lower than the second number.
- Both numbers must be of the same parity (odd or even) unless the address range itself has mixed odd and even addresses.
- Numbers can be on the same street segment or can be on two different segments. The segments do not have to be contiguous.
- If both numbers are on the same street segment, the geocoded point is interpolated to the approximate mid-point of the range.
- If the numbers are on two different segments, the geocoded point is based on the last valid house number of the first segment. The ZIP Code and FIPS Code are based on the first segment.
- In all cases, odd/even parity is evaluated to place the point on the correct side of the street.

## Unsupported Preferences

- When matching using the **Custom Mode Must Match Fields** settings, the **City/Town Subdivision** and **State/Province Subdivision** preferences are not supported.

# B - Custom Dataset Builder

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# Custom Dataset Builder

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

## *Custom Dataset Builder Workflow*

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

## Features

The Custom Dataset Builder supports:

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

### **Related reference**

[Source Data Requirements](#) on page 114

## Limitations

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

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

## Source Data Requirements

Source data must conform to the following requirements:

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

## Getting Started with Custom Dataset Builder

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

# Custom Dataset Builder Commands

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

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

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

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

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

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

Parameters for the findCountryWithLanguage command:

- **engine:** optional parameter [Typeahead/Geocoding] defines which type of supported countries and languages will be fetched.
  - engine=Typeahead will fetch Typeahead-supported countries and languages.
  - engine=Geocoding will fetch Geocoding-supported countries and languages.
 If a parameter is not provided, it will fetch geocoding-supported countries and languages by default .
- **folderLocation:** value will be parent folder location where all the SPD's are placed in extracted format
- **usePackagedLib:** optional parameter [required for USA] that uses the libraries bundled with the Custom Dataset Builder tool instead of using the library from the SPD.
- **createConfig:** This command enables the user to create a country-specific configuration, which is a JSON file, which contains the step-by-step mapping of the user data information to onboard their data.

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

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

#### Parameters for the createConfig command

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

-engine=Typeahead will generate Typeahead-specific JSON.

-engine=Geocoding will generate Geocoding-specific JSON.

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

- **folderLocation:** value will be parent folder location where all the SPD's are placed in extracted format
- **country:** mandatory information, which is required for generating any of the configuration which user needs to provide and country for which the configuration file needs to be created. Country information is passed as a 3-letter ISO code only.
- **language:** optional field, which provides the user to specify the language of the data user wants to onboard. In addition, this field needs to match with the current offering by Precisely geocoding software. By default the value of this field is set to "en" – which is Latin or plain English.
- **datatype:** optional parameter which specifies the type of data being intended to onboard – Ranged data maps to "Street" while the point data maps to "AP". Example: datatype=Street
- **userProfile:** optional parameter. Based upon the technical aspect of the user, the configuration can be basic or advanced. Basic being default. Basic creates default JSON without having any advanced configuration in it.

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

Advanced persona of the user profile has the entire configuration as offered by the basic, but also offers some additional config elements and is not supported for DEU, CAN and USA.

- **usePackagedLib:** optional parameter [required for USA] that uses the libraries bundled with the Custom Dataset Builder instead of using the library from the SPD.
- **buildAll:** Similar to the createConfig command, the buildAll command enables the user to create a configuration of all the supported countries and languages at once.

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

#### Parameters for the buildAll command

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

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

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

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

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

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

Advanced persona of the user profile has the entire configuration as offered by the basic, but also offers some additional config elements and is not supported for DEU, CAN and USA.

- usePackagedLib: optional parameter [required for USA] that uses the libraries bundled with the Custom Dataset Builder tool instead of using the library from the SPD.
- **createDictionary**: Once the user is done with all the relevant configuration as described in the createConfig command, the command lets the user initiate the build process of onboarding the user data into the Precisely geocoding software consumable format.

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

#### Parameters for the createDictionary command

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

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

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

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

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

**Related reference**

[Creating a Configuration File for a Single Country](#) on page 118

[Creating a Configuration File for All Supported Countries](#) on page 121

## Building a Custom Dataset for Geocoding and Typeahead

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

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

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

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

## Integration with Spectrum

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

## Creating a Configuration File for a Single Country

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

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

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

Refer to [Custom Dataset Builder Commands](#) for details about individual parameters.

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

## FRA Geocoding Configuration

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

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

### Requirements:

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

### Result:

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

### Limits:

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

### Related reference

[Custom Dataset Builder Commands](#) on page 115

[Creating a Configuration File for a Single Country](#) on page 118

[Creating a Configuration File for All Supported Countries](#) on page 121

## USA Geocoding Configuration

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

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

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

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

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

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

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

### Requirements:

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

### Result:

- When using custom datasets for street geocoding, the result code contains a "U" for user datasets to distinguish it from "A" when candidates are from the standard address datasets. For example: `S5HPNTSCZU` instead of `S5HPNTSCZA`.

### Limits:

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

### Related reference

[Custom Dataset Builder Commands](#) on page 115

[Creating a Configuration File for a Single Country](#) on page 118

[Creating a Configuration File for All Supported Countries](#) on page 121



# Creating a Configuration File for All Supported Countries

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

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

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

## Customizing a Geocoding Configuration

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

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

**Note:** A custom geocoding configuration only applies to a specific dataset. It does not affect the geocoding behavior of other datasets. If you haven't created a configuration yet (JSON file), see `createConfig` in the [Custom Dataset Builder Commands](#) on page 115.

To customize a geocoding configuration:

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

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

### configuration

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

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

### Example

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

**Note:** Both properties and values are in quotation marks.

## field

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

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

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

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

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

The following properties are subordinate to the properties above.

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

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

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

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

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

For address points the value and altValue are postcode2, postcode4

For street data: l\_postcode2/l\_postcode4/r\_postcode2/r\_postcode4

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

### Example

```
"field": {
  "StreetName": {
"Comments" : "Mapping for Street Name and Street Name Alias from source
data.",
  "keys" : "StreetName",
  "values" : "STRASSE",
  "altValues" : ""
  },
  "PostCode" : {
"Comments" : "Mapping for Post Code and Extended Post Code from source
data.",
  "keys" : [ "LeftPostCode", "RightPostCode" ],
  "values" : [ "PLZ", "PLZ" ],
```

```

    "altValues" : [ "", "" ]
  },
  "AreaName3" : {
    "keys" : [ "LeftAreaName3", "RightAreaName3" ],
    "values" : [ "ORT", "ORT" ],
    "altValues" : [ "", "" ]
  },
  "AreaName4" : {
    "keys" : [ "LeftAreaName4", "RightAreaName4" ],
    "values" : [ "ORTSTEIL", "ORTSTEIL" ],
    "altValues" : [ "", "" ]
  },
  "StreetSideIndicator" : {
    "Comments" : "Mapping for Street Side Indicator from source data.",
    "keys" : [ "LeftStreetSideIndicator", "RightStreetSideIndicator"
  ],
    "values" : [ "", "" ]
  },
  "StartingAddressNumber" : {
    "Comments" : "Mapping for Starting Address Number from source data.",
    "keys" : [ "FromLeftStartingAddressNumber",
"FromRightStartingAddressNumber" ],
    "values" : [ "HAUSNR_VON", "HAUSNR_VON" ]
  },
  "EndingAddressNumber" : {
    "Comments" : "Mapping for Ending Address Number from source data.",
    "keys" : [ "ToLeftEndingAddressNumber", "ToRightEndingAddressNumber"
  ],
    "values" : [ "HAUSNR_VON", "HAUSNR_VON" ]
  },
  "StreetAdditionalFields" : {
    "Comments" : "Mapping for Additional Fields at Street level from
source data.",
    "keys" : [ "sub_locality", "sub_town" ],
    "values" : [ "ORTSTEIL", "ORT" ]
  },
  "RangeAdditionalFields" : {
    "Comments" : "Mapping for Additional Fields at Range level from source
data.",
    "keys" : [ "RangeIdentifier" ],
    "values" : [ "ORTSTEIL" ]
  },
  "UnitAdditionalFields" : {
    "Comments" : "Mapping for Additional Fields at Unit level from source
data.",
    "keys" : [ "UnitIdentifier" ],
    "values" : [ "ORTSTEIL" ]
  },
  "PostalAdditionalFields" : {
    "Comments" : "Mapping for Additional Fields at Postal level from
source data.",
    "keys" : [ "PostalIdentifier" ],

```

```

    "values" : [ "ORTSTEIL" ]
  },
  "geometry_name" : {
    "Comments" : "Mapping for Geometry from source data.",
    "keys" : "GeometryName",
    "values" : ""
  }
}

```

## dataReader

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

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

The following properties are subordinate to the property above.

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

### Example

```

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

```

## output

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

### Example

```

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

```

## errata

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

### Example

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

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

## advancedConfigs

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

This configuration is only available with userProfile="Advance".

### Abbreviations

This property allows configuring country-specific abbreviations.

### Example

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

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

### Post\_StreetType

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

### Example

```
"Post_StreetTypes" : [
  "CHAUSEE:chaussee,CHAUSSEE,CHAUSSEE.,CHAUSSE,CHAUSSE.,CHAUSE,CH.,CHAUSS.,CHAUS.,CHAUS,CHAUSS",
  "PROM:PROM,promenade,Prom.", "WEG:WEG,weg,Weg.", "DAMM:DAM,damm,Damm.",
```

```
"RING:RNG,ring,Ring.", "BOULEVARD:BD,boulevard,boulevard.,BD.",
"GASSE:GA,gasse,Gasse.,g.", "PLATZ:PL,platz,platz.,PL.",
"PROMENADE:PROM,promenade",
"STRASSE:STR,STRASSE,STRASSE,STRASS,STRASSE,STRASSE,STREET" ]
```

## Pre\_StreetTypes

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

### Example

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

The following shows the `advancedConfigs` properties:

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

# Customizing a Typeahead Configuration

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

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

**Note:** A custom typeahead configuration only applies to a specific dataset. It does not affect the typeahead behavior of other datasets. If you haven't created a configuration yet (JSON file), see `createConfig` in the [Custom Dataset Builder Commands](#) on page 115.

To customize a typeahead configuration:

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



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

## configuration

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

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

### Example

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

**Note:** Both properties and values are in quotation marks.

## field

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

- `StreetName`: Indicates the street column

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

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

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

The following properties are subordinate to the properties above.

- **Comments:** Description about the property

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

## Example

```

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

```

```

    "altValues" : [ "locality_alias", "locality_alias" ]
  },
  "StreetSideIndicator" : {
    "Comments" : "Mapping for Street Side Indicator from source data.",
    "keys" : [ "LeftStreetSideIndicator", "RightStreetSideIndicator"
  ],
    "values" : [ "", "" ]
  },
  "StartingAddressNumber" : {
    "Comments" : "Mapping for Starting Address Number from source
data.",
    "keys" : [ "FromLeftStartingAddressNumber",
"FromRightStartingAddressNumber" ],
    "values" : [ "hnr", "hnr" ]
  },
  "EndingAddressNumber" : {
    "Comments" : "Mapping for Ending Address Number from source data.",
    "keys" : [ "ToLeftEndingAddressNumber", "ToRightEndingAddressNumber"
  ],
    "values" : [ "hnr", "hnr" ]
  },
  "StreetAdditionalFields" : {
    "Comments" : "Mapping for Additional Fields at Street level from
source data.",
    "keys" : [ "language", "rank" ],
    "values" : [ "language", "rank" ]
  },
  "RangeAdditionalFields" : {
    "Comments" : "Mapping for Additional Fields at Range level from
source data.",
    "keys" : [ "adrcd","featureId" ],
    "values" : [ "adrcd","pac" ]
  },
  "UnitAdditionalFields" : {
    "Comments" : "Mapping for Additional Fields at Unit level from
source data.",
    "keys" : [ "UnitIdentifier" ],
    "values" : [ "" ]
  },
  "PostalAdditionalFields" : {
    "Comments" : "Mapping for Additional Fields at Postal level from
source data.",
    "keys" : [ "PostalIdentifier" ],
    "values" : [ "" ]
  },
  "geometry_name" : {
    "Comments" : "Mapping for Geometry from source data.",
    "keys" : "GeometryName",
    "values" : ""
  }
}

```

## dataReader

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

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

The following properties are subordinate to the property above.

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

### Example

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

## output

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

### Example

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

## errata

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

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

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

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

## Properties

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

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

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

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

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

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

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

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

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

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

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

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

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

- Enable search on PlaceName:

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

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

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

- Enable search on an address number:

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

## How to Access User-defined Fields

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

To access user-defined fields:

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

## Supported Countries for Custom Dataset Builder

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

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



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

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

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

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

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

Country	ISO Country Code
Zimbabwe	ZWE

# C - Result Codes

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# Match and Location Codes for USA

## Match Codes

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

If the geocoder cannot make a match, the match code begins with "E" and the remaining digits indicate why the address did not match. For a description of the "Ennn" codes, see ["Ennn" Match Codes for No Match](#) on page 151. The digits do not specifically refer to which address elements did not match, but rather why the address did not match.

The following table contains the match code values. For a description of the hex digits for the match codes, see [Definitions for 1st-3rd hex digit match code values](#) on page 147.

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



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

Code	Description
<sup>2</sup> Z	No address given, but verified the provided ZIP Code .

---

<sup>2</sup> Zh may be returned if **Output corrected last line** is enabled.

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

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

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

- For intersection matches, use the table below for the 3rd hex digit definitions.
- For Extended Match Code, see [Definitions for Extended Match Code \(3rd hex digit values\)](#) on page 149.

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

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

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

Extended Match Codes return additional information about any changes in the house number, unit number and unit type fields in the matched address, as well as whether there was address information that was ignored. This additional information is provided in a 3rd hex digit that is appended to match codes for address-level matches only - A, G, H, J, Q, R, S, T or U (see [Match Codes](#) on page 144).

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

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

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

For more information, see [Extended Match Codes](#) on page 105.

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

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

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

## "Ennn" Match Codes for No Match

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

Code	"nnn" Value	Description
Ennn <sup>3</sup>		Indicates an error, or no match. This can occur when the address entered does not exist in the database, or the address is badly formed and cannot be parsed correctly. The last three digits of an error code indicate which parts of an address the application could not match to the database.
	nnn = 000	No match made.
	nnn = 001	Low level error.
	nnn = 002	Could not find data file.
	nnn = 003	Incorrect GSD file signature or version ID.
	nnn = 004	GSD file out of date. Only occurs in CASS mode.
	nnn = 010	No city and state or ZIP Code found.
	nnn = 011	Input ZIP not in the directory.
	nnn = 012	Input city not in the directory.
	nnn = 013	Input city not unique in the directory.
	nnn = 014	Out of licensed area. Only occurs if using Group1 licensing technology.
	nnn = 015	Record count is depleted and license has expired.
	nnn = 020	No matching streets found in directory.
	nnn = 021	No matching cross streets for an intersection match.
	nnn = 022	No matching segments.

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

### Correct Lastline Match Codes

As mentioned in [Correct Lastline](#) on page 108, when enabled, **Output corrected last line** corrects elements of the output lastline, providing a good ZIP Code or close match on the soundex even if the address would not match or was non-existent.

Code	Value	Description
zh		No address given, but verified the provided ZIP Code.
	h = 0	No change in lastline.
	h = 1	ZIP Code changed.
	h = 2	City changed.
	h = 3	City and ZIP Code changed.

<sup>3</sup> Ennn may be returned if **Output corrected last line** is enabled. For more information, see [Correct Lastline Match Codes](#) on page 152.



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

Code	Value	Description
	h = 5	State and ZIP Code changed.
	h = 6	State and City changed.
	h = 7	State, City, and ZIP Code changed.
	h = 8	ZIP + 4 changed.
	h = 9	ZIP and ZIP + 4 changed.
	h = A	City and ZIP + 4 changed.
	h = B	City, ZIP, and ZIP + 4 changed.
	h = C	State and ZIP + 4 changed.
	h = D	State, ZIP, and ZIP + 4 changed.
	h = E	State, City, and ZIP + 4 changed.
	nn = 00	No match made.
	nn = 01	Low level error.
	nn = 02	Could not find data file.
	nn = 03	Incorrect GSD file signature or version ID.
	nn = 04	GSD file out of date. Only occurs in CASS mode.
	nn = 10	No city and state or ZIP Code found.
	nn = 11	Input ZIP Code not in the directory.
	nn = 12	Input city not in the directory.
	nn = 13	Input city not unique in the directory.

Code	Value	Description
	nn = 14	Out of licensed area. Only occurs if using Group1 licensing technology.
	nn = 15	Record count is depleted and license has expired.
	nn = 20	No matching streets found in directory.
	nn = 21	No matching cross streets for an intersection match.
	nn = 22	No matching segments.
	nn = 23	Unresolved match.
	nn = 24	No matching segments. (Same as 022.)
	nn = 25	Too many possible cross streets for intersection matching.
	nn = 26	No address found when attempting a multiline match.
	nn = 27	Invalid directional attempted.
	nn = 28	Record also matched EWS data, therefore the application denied the match.
	nn = 29	No matching range, single street segment found
	nn = 30	No matching range, multiple street segments found

## Location Codes

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

### Address Location Codes

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

An address location code has the following characters.

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

## Address Location Code Descriptions

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

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

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

Code	Description
n = 1	Street side is unknown. The Census FIPS Block ID is assigned from the left side; however, there is no assigned offset and the point is placed directly on the street.
n = 2	Indicates one or both of the following: <ul style="list-style-type: none"> <li>The address is interpolated onto a TIGER segment that did not initially contain address ranges.</li> <li>The original segment name changed to match the USPS spelling. This specifically refers to street type, predirectional, and postdirectional.</li> </ul> <p><b>Note:</b> Only the second case is valid for non-TIGER data because segment range interpolation is only completed for TIGER data.</p>
n = 3	Both 1 and 2.
n = 7	Placeholder. Used when starting and ending points of segments contain the same value and shape data is not available.
ACnh	Indicates a point-level geocode that is interpolated between 2 parcel centroids (points), a parcel centroid and a street segment endpoint, or 2 street segment endpoints.
The ACnh 4 <sup>th</sup> character "h" values are as follows:	
h = 0	Represents the interpolation between two points, both coming from User Dictionaries.
h = 1	Represents the interpolation between two points. The low boundary came from a User Dictionary and the high boundary, from a non-User Dictionary.
h = 2	Represents the interpolation between one point and one street segment end point, both coming from User Dictionaries.



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

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

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

## Street Centroid Location Codes

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

A street centroid location code has the following characters.

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

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

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

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

## ZIP + 4 Centroid Location Codes

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

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

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

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

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

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



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

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

## Geographic Centroid Location Codes

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

A geographic centroid location code has the following characters.

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

# Global Result Codes

## Forward Geocoding Result Codes

### *Result Code General Descriptions*

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

Result Code	Description
S8	Single match with the point located at either the single point associated with an address point candidate or at an address point candidate that shares the same house number. No interpolation is required.
S7	Single match with the point located at an interpolated point along a street segment. Both a point dictionary and a street segment dictionary must be available. Because known point data is available, the S7 interpolation is more accurate than an S5 result.
S6	Single match, point located at point ZIP centroid.
S5	Single match with the point located at a street address position. Because only street segment data is available, the interpolation is not as accurate as an S7 return. The S5 code is followed by letters and dashes indicating match precision.
S4	Single match with the point located at a street centroid.
S3	Single match with the point located at a ZIP + 4® centroid. This is the same quality match as a Z3 result.
S2	Single match with the point located at a ZIP + 2 centroid. This is the same quality match as a Z2 result.

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

Result Code	Description
-------------	-------------

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

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

H	House number match.
P	Street prefix (pre-directional). P is present if any of these conditions are satisfied: <ul style="list-style-type: none"> <li>• The candidate pre-directional matches the input pre-directional.</li> <li>• The candidate post-directional matches the input pre-directional after pre- and post-directionals are swapped.</li> <li>• The input does not have a pre-directional.</li> </ul>
N	Street name match.
T	Street/thoroughfare type match.

Result Code	Description
S	<p>Street post-directional</p> <p>S in result code is present if any of these conditions are satisfied:</p> <ul style="list-style-type: none"> <li>• The candidate post-directional matches the input post-directional.</li> <li>• The candidate pre-directional matches the input post-directional after pre- and post-directionals are swapped.</li> <li>• The input does not have a post-directional.</li> </ul>
C	areaName3 match (this is usually the city or town).
Z	Postal code match.
A or U	Match to Address Dictionary or User Dictionary.

Result Code	Description
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Matches in the **z** category indicate that a match was made at the postcode level. A postcode match is returned in either of these cases:

- You specified to match to postal code centroids. The resulting point is located at the postal code centroid with the following possible accuracy levels.
- There is no street level match and you specified to fall back to postal code centroid.

**Note:** Refer to the section covering your country to locate the specific meanings of `postCode1` & `2`.

Z6	Z6 results are matched to a point ZIP centroid. Point ZIPs are 5-digit The Z6 code indicates that these special ZIPs are actual point locations, not an area. Point ZIPs include unique single sites, buildings, or organizations.
Z3	Z3 results are matched to ZIP + 4 or <code>postCode2</code> centroid locations.
Z2	Z2 results are matched to ZIP + 2 or partial <code>postCode2</code> centroid locations.
Z1	Z1 results are matched to ZIP Code or ( <code>postCode1</code> ) centroid locations.

Geographic level geocoded candidates return a result code beginning with the letter **G**. The numbers following the G in the result code provides more detailed information on the accuracy of the candidate.

**Note:** Refer to the section covering your country to locate the specific meanings of `areaName1-4`.

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

## Single Match 'S' Result Codes

The following table shows the support for the S category result codes by country. For detailed descriptions of the 's' result codes, see [Forward Geocoding Result Codes](#) on page 172. These descriptions apply to the vast majority of the countries. The exceptions are listed and described in the sections below the following table for:

- [Australia](#)
- [Canada](#)
- [United States](#)

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

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



## United States — 'S' Precision Code Descriptions

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

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

## Australia — 'S' Result Code Descriptions

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

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

## Canada — 'S' Result Code Descriptions

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

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

## Reverse Geocoding 'R' Result Codes

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

### Reverse Geocoding 'R' Result Code Descriptions

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

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

# D - ISO 3166-1 Country Codes

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# ISO 3166-1 Country Codes

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

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



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

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

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

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

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

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



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