

Spectrum Technology Platform

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Geocoding Guide for Australia



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1 - Geocode Address Global

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

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

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

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




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Adding an Enterprise Geocoding Module Database Resource for Australia

Adding an Enterprise Geocoding Module Database Resource for Australia

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

To create a Geocode Address AUS database resource:

1. If you haven't already done so, install the database files on your system. For instructions on installing databases, see the *Spectrum™ Technology Platform Installation Guide*.
2. In Management Console, under **Resources**, choose **Spectrum Databases**.
3. Click the Add button  to create a new database or select an existing database resource then click the Edit button  to change it. You can also create a new database resource by copying an existing one, by clicking the Copy button .
4. If you are creating a new database, enter a name for the database resource in the **Name** field. The name can be anything you choose. If you are creating a new database by copying an existing one, rename the default name as needed. You cannot modify the name of an existing database resource, because any services or jobs that reference the database resource by its original name would fail.
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).

6. In the **Module** field, select International Geocode Australia.
7. In the **Type** field, select Geocode Address Global.
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.
8. 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.
9. Save the database.

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

2 - Input

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

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Input Fields

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

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

AddressLine1

For most countries, the AddressLine1 field should contain the address line that has the street name and building number in it.

This field can also contain the full address. For more information, see [Single Line Input](#) on page 11.

For all countries except Argentina, Great Britain, and Japan, this field can contain a street intersection. To specify a street intersection, use double ampersand (&&) to separate the streets. For more information, see [Street Intersection Input](#) on page 12.

Table 1: Input Fields for Australia

Field Name	Description
AddressLine1	<p>One of the following:</p> <ul style="list-style-type: none"> The address line containing the street name and building number. For example: 4360 DUKES RD KALGOORLIE WA 6430 This field can also contain the full address. For more information, see Single Line Input on page 11 For all countries except Argentina, Great Britain, and Japan, this field can contain a street intersection. To specify a street intersection, use double ampersand (&&) to separate the streets. For more information, see Street Intersection Input on page 12.
AddressLine2	This field is not used in this country.

Field Name	Description
City	The city or town name. For most countries, your input address should use the official city name or alias.
County	The meaning of county varies by country. The Local Government Authority (LGA) name. <ul style="list-style-type: none"> AUS (Australia)—The Local Government Authority (LGA)
FirmName	Company or place name. For example: Pitney Bowes 4360 Dukes Rd Kalgoorlie WA 6430
HouseNumber	The building number. You may get better parsing results for some countries if you put the house number in this field instead of AddressLine1. Not every country includes house number data. Note: The house number specified in the HouseNumber field takes precedence over any house number specified in the AddressLine1 field.
LastLine	The last line of the address. <ul style="list-style-type: none"> 4360 DUKES RD KALGOORLIE WA 6430
Locality	The meaning of locality varies by country. Generally a locality is a village in rural areas or it may be a suburb in urban areas. When used, a locality typically appears on the last line of the address with the postcode. <ul style="list-style-type: none"> AUS (Australia)—Not used
PostalCode	The postal code in the appropriate format for the country. Australia has a four-digit postal code system. In general, the first digit represents a state or territory, the second digit represents a region with a state, and digits three and four representing towns. For more information, see Address Guidelines for Australia on page 9.

Field Name	Description
StateProvince	The meaning of State/Province varies by country. <ul style="list-style-type: none"> AUS (Australia)—State

Address Input Guidelines

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

Address Guidelines for Australia

The Enterprise Geocoding Module offers several AUS databases including the PSMA street G-NAF point databases. Contact your sales representative for more information about licensing these databases. Your Enterprise Geocoding Module database release notes identify the current database vintages.

Follow these guidelines to provide input that Geocode Address Global can successfully geocode. For additional information about Australia addresses, see the Australia Post website:

www.auspost.com.au.

- **Required fields**—Addresses must contain either a city or a postal code.
- **House numbers and unit information**—The house number pinpoints the location of the address. Unit input can be in one of two formats, as shown in the following examples:
 - Flat 2, 17 Jones St.
 - Apt 19, 123 Main St., where Apt is the unit type and 99 is the unit number. In this format, you must specify a valid unit type, otherwise the address will not be geocoded correctly. For a listing of valid unit types, see www.auspost.com.au.
 - 99-123 Main St. For an address derived from the G-NAF database, this address is a unique house number and is geocoded as a single delivery point, not as a range.
- **Directional suffixes**—Use directional suffixes wherever possible. This is especially true in towns and cities that consist mainly of numbered streets. These streets can only be distinguished by their directional suffixes and street types. They also distinguish addresses on streets that change direction. For example: 123 Queen St W and 123 Queen St E would have very different coordinates.

- **Street types**—These distinguish different streets of the same name. For example, Main Avenue and Main Street are two entirely different entities. Using types is not essential, but it adds precision to your data. For a listing of street types, see www.auspost.com.au.
- **City/suburb name**—Enter the city/suburb name in the City field. Note that all input addresses must contain either a city or a postal code. If the geocoder does not make a close match on the street in the specified suburb, it can make a close match on the Local Government Area (LGA). Local Government Area (LGAs) do not encompass all of Australia. For example, LGAs do not cover extensive northern parts of South Australia, a large part of the Northern Territory, and the Australian Capital Territory. An LGA can include a number of official suburbs. It is best to use the suburb name for geocoding purposes, but it is possible to get a match on the LGA (or to return LGA information) in geocoded results.
- **Postal code**—All postcodes consist of four digits. While there are exceptions, the general format of postcodes is as follows:

Note: These are general guidelines, and there are exceptions to these postcode number ranges.

- Digit 1 represents the state or territory, within the following general conventions:

2	NSW
---	-----

2600 and 2900	ACT
---------------	-----

3	VIC
---	-----

4	QLD
---	-----

5	SA
---	----

6	WA
---	----

7	TAS
---	-----

0	NT
---	----

- Digit 2 represents a region within the state. State or territorial capitals usually have a 0 or 1 as the second digit.

- Digits 3 and 4 represent towns. Major towns usually have a 0 as the last digit (or sometimes as the last two digits).

Single Line Input

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

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

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

`StreetAddress;PostalCode;City`

`StreetAddress;City;PostalCode`

`StreetAddress;City`

`StreetAddress;City;StateProvince;PostalCode`

`StreetAddress;Locality`

`StreetAddress;County;City`

`PostalCode;StreetAddress`

`PostalCode;StreetAddress;City`

`City;PostalCode;StreetAddress`

Where:

- *StreetAddress* can be house number and street name in either order (with street type immediately before or after the street name).
- *City* is the town.
- *County* is the county or local administrative name.
- *StateProvince* is the postal abbreviation for the state or province.
- *PostalCode* is the complete postcode. For Brazil,

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

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

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

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

```
18 Merivale St, South Brisbane, QLD, 4101
```

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

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

Punctuation is ignored for geocoding purposes.

Guidelines for Single Line Input

- Punctuation is generally ignored, however you may improve results and performance by using separators (commas, semicolons, etc.) between different address elements.
- The country is not required. Each country geocoder assumes that the address is in its country.
- Firm information (placename, building name, or government building) is returned if available.

Street Intersection Input

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

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

```
AddressLine1: Ocean Ave && New South Head Rd  
City: Woollahra
```

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

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

3 - Options

Geocode Address Global includes geocoding, matching, and data options.

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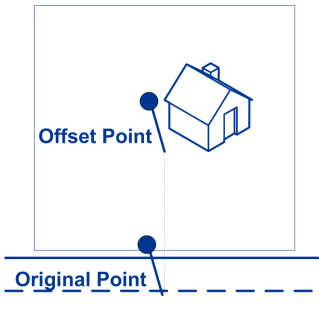
Geocoding Options


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

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

Table 2: Geocoding Options for Australia

Option Name	Description
Geocode level	<p>Specifies how precisely you want to geocode addresses. One of the following:</p> <p>Street address The geocoder attempts to geocode addresses to a street address, but some matches may end up at a less precise location such as a postal code centroid, intersection, or shape path.</p> <p>Postal centroid If postal code data is available, the geocoder attempts to geocode addresses to the most precise postal code it finds. The advantage of postal code centroid matching is the speed of the operation. The disadvantage of postal code matching is that the geocoder only examines the PostalCode field. If you use street address precision, the geocoder looks at both the street name and the PostalCode field and attempts to return street-level coordinates and optionally fall back to postal code coordinates.</p> <p>Geographic centroid The geocoder attempts to geocode addresses to the geographic centroid of a city or state.</p>
Address point interpolation	<p>Specifies whether to perform address point interpolation. This option only works if you have a point database installed. This option is available for selected countries only.</p> <p>Address point interpolation uses point data to refine geocode results. By default, the geocoding process estimates the location of an address based on the street numbers at either end of street segment. For example, if a street segment runs from 100 Main St. to 200 Main St., then a request for 150 Main St. will return a location in the middle of the segment. With interpolation, the geocoder finds the position of 180 Main St. in the point data, and it is about two-thirds of the way down the street. Using this information, the geocoder can estimate the position of 150 Main St. based on 100 and 180 Main St. In this case, the geocoder estimates the location of the address slightly away from the center of the segment.</p>

Option Name	Description
Geographic centroid	Specifies whether to attempt to determine a geographic region centroid when an address-level geocode cannot be determined.
Postal centroid	Specifies whether to attempt to determine a postal code centroid when an address-level geocode cannot be determined.
Offset from street	<p>Indicates the offset distance from the street segments to use in street-level geocoding. The distance is specified in the units you specify in the Units field.</p> <p>The default value varies by country. For most countries, the default is 7 meters. For Austria, Germany, and Australia the default is 10 meters.</p> <p>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 40 feet means that the geocode will represent a point 40 feet back from the center of the street. The distance is calculated perpendicular to the portion of the street segment for the address. Offset is also used to prevent addresses across the street from each other from being given the same point. The diagram below shows an offset point in relation to the original point.</p>  <p>Street coordinates are accurate to 1/10,000 of a degree and interpolated points are accurate to the millionths of a degree.</p>

Option Name	Description
Offset from corner	<p data-bbox="552 373 1438 493">Specifies the distance to offset the street end points in street-level matching. The distance is specified in the units you specify in the Units field. This value is used to prevent addresses at street corners from being given the same geocode as the intersection.</p> <p data-bbox="552 504 1438 577">Note: Offset is not supported for the United Kingdom (GBR) or Japan (JPN).</p> <p data-bbox="552 588 1438 630">The default value varies by country:</p> <ul data-bbox="552 640 1438 714" style="list-style-type: none"> • 12 meters—Australia (AUS), Austria (AUT), Germany (DEU) • 7 meters—For other supported countries, the default offset is 7 meters. <p data-bbox="552 724 1438 766">The following diagram compares the end points of a street to offset end points.</p>  <p>The diagram shows a horizontal street segment with a dashed line representing the 'Street Segment End With Corner Offset' and a solid line representing the 'Street Segment End'. Above the street, there are six house icons. The dashed line ends at the first and last house, while the solid line ends at the second and fifth houses, illustrating the offset from the street corners.</p>
Units	<p data-bbox="552 1123 1438 1186">Specifies the unit of measurement for the street offset and corner offset options. One of the following:</p> <ul data-bbox="552 1197 1438 1344" style="list-style-type: none"> • Feet • Miles • Meters • Kilometers <p data-bbox="552 1354 1438 1396">The default is Meters.</p>

Option Name	Description
Point type	<p>This option is available for Australia only.</p> <p>For street address matching, specifies whether to return the parcel latitude/longitude or the street frontage latitude/longitude. This option is available only if you have the G-NAF database installed, and the database selected in the Database list on the Data tab includes the G-NAF database. This option only affects addresses matched to the G-NAF database.</p> <p>One of the following:</p> <p>Parcel In a street address match, return the exact location of the parcel. This is the standard G-NAF point which is the exact authoritative point returned by the G-NAF database. Default.</p> <p>Street frontage In a street address match, return the street frontage point for the parcel. The street frontage point is 12.5 meters from the front boundary of the parcel. Street frontage points are more suitable for routing applications.</p>
Return 8 decimal places of parcel latitude/longitude	<p>This option is available for Australia only.</p> <p>Specifies whether to return the original latitude and longitude, precise up to eight digits after the decimal. This is the latitude/longitude that the candidate matched to in the G-NAF database. These are the original coordinates directly from the G-NAF data prior to truncation or rounding. This option is available only if you have the G-NAF database installed, and the database selected in the Database list on the Data tab includes the G-NAF database. This option only affects addresses matched to the G-NAF database.</p>
Coordinate system	<p>A coordinate system is a reference system for the unique location of a point in space. Cartesian (planar) and Geodetic (geographical) coordinates are examples of reference systems based on Euclidean geometry. Spectrum™ Technology Platform supports systems recognized by the European Petroleum Survey Group (EPSG).</p> <p>Each country supports different coordinate systems. Depending on the country, you have one or more of the following options:</p> <p>EPSG:4283 Also known as the GDA94 coordinate system.</p> <p>EPSG:4326 Also known as the WGS84 coordinate system.</p> <p>EPSG:27200 Also known as the NZGD49 coordinate system.</p>

Option Name	Description
Return Parsed Address	<p data-bbox="552 367 1438 525">Specifies whether to return the formatted input street address and each input address element in a separate field. This feature can help you understand how the input address was parsed and identify specific input elements that could not be geocoded. For example, a returned HouseNumber.Input could contain an invalid house number in your input address.</p> <p data-bbox="552 535 1438 598">You can specify parsed input returns for a specific country. For example, a REST API example for Canada is:</p> <pre data-bbox="552 619 1438 682" style="background-color: #f0f0f0; padding: 5px;"><code>Option.CAN.IncludeInputs=Y</code></pre> <p data-bbox="552 693 1438 787">Note: Data vintage must be 2014 Q4 or newer to get Parsed Address Input returns. Also note that Parsed Address Input elements are not returned for every country.</p> <p data-bbox="552 808 1438 871">Parsed Address Input elements are returned in separately labeled fields names with a .Input extension. For example:</p> <ul data-bbox="552 892 1438 1155" style="list-style-type: none"> • FormattedInputStreet.Input • City.Input • Country.Input • HouseNumber.Input • Locality.Input • PostalCode.Base.Input • StreetName.Input • StreetSuffix.Input <p data-bbox="552 1165 1438 1228">Other labeled fields are possible depending on the input address, country, and data source.</p> <p data-bbox="552 1249 1438 1365">Note: Parsed Address Input elements are not returned for every country. Also, because Geocode Address World geocodes to the geographic or postal level only (not street address), this does not return Parsed Address Input</p> <p data-bbox="552 1386 1438 1449">For many countries, if part of the input address could not be recognized as a specific address element, this content is returned in UnparsedWords.Input.</p> <p data-bbox="552 1470 1438 1522">For intersection addresses, the first entered street is returned in StreetName.Input and the second entered street name is returned in IntersectionIdStreet2.Input.</p>

Matching Options

Matching options let you set match restrictions, fallback, and multiple match settings so that the matching can be as strict or relaxed as you need. The strictest matching conditions require an exact

match on house number, street name, postal code and no fallback to postal code centroids. The geocoder looks for an exact street address match within the postal code in the input address. Relaxing the conditions broadens the area in which it searches for a match. For example, by relaxing the postal code, the geocoder searches for candidates outside the postal code but within the city of your input address.

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

Table 3: Matching Options for Australia

Option Name	Description
Keep multiple matches	<p>Specifies whether to return results when the address matches to multiple candidates in the database. If this option is not selected, an address that results in multiple candidates will fail to geocode.</p> <p>If you select this option, specify the maximum number of candidates to return next to the check box. Specify -1 (minus one) to return all possible candidates.</p>
Return ranges	<p>Specifies whether to return address range information. If you enable this option, the output field <code>Ranges</code> will be included in the output.</p> <p>A range is a series of addresses along a street segment. For example, 5400-5499 Main St. is an address range representing addresses in the 5400 block of Main St. A range may represent just odd or even addresses within a segment, or both odd and even addresses. A range may also represent a single building with multiple units, such as an apartment building.</p>
Maximum ranges per candidate	<p>If you choose to return ranges, this option specifies the maximum number of ranges to return for each candidate. Since the geocoder returns one candidate per segment, and since a segment may contain multiple ranges, this option allows you to see the other ranges in a candidate's segment.</p>
Maximum units per range	<p>If you choose to return ranges, this option specifies the maximum number of units (for example, apartments or suites) to return for each range.</p> <p>For example, if you were to geocode an office building at 65 Main St. containing four suites, there would be a maximum of four units returned for the building's range (65 Suite 1, 65 Suite 2, 65 Suite 3, and 65 Suite 4). If you were to specify a maximum number of units as 2, then only two units would be returned instead of all four.</p>

Option Name	Description
Close matches only	<p>Specifies whether to return only those geocoded results that are close match candidates. For example, if there are 10 candidates and two of them are close candidates, and you enable this option, only the two close matching candidates would be returned instead of all 10. To specify what is considered a close match, use the Close match criteria options. Address candidates are ranked according to how closely the input address matches these preferences.</p>
Match mode	<p>Specifies how to determine whether a candidate is a close match. One of the following:</p> <p>Custom This option allows you to specify which parts of a candidate address must match the input address to be considered a close match. Use the Close match criteria check boxes to specify the address elements you want. This is the default value for most countries.</p> <p>Relaxed All candidate addresses are considered a close match.</p>
All input	<p>Specifies whether candidates must match all non-blank input fields to be considered a close match. For example, if an input address contains a city and postal code, then candidates for this address must match the city and postal code to be considered a close match.</p>
House number	<p>Specifies whether candidates must match the house number to be considered a close match.</p> <p>If you select this option you should also require an exact match on street name. This option does not significantly affect performance. It does, however, affect the type of match if the candidate address corresponds to a segment that does not contain any ranges. The type of match can also be affected when the house number range for a candidate does not contain the input house number. If you relax the house number, you should set the maximum ranges to be returned to a value higher than 0.</p>
Street	<p>Specifies whether candidates must match the street name to be considered a close match.</p> <p>If a close match is found, the geocoder attempts expanded street name manipulation, which looks for candidates with names that sound like the input address or that are spelled improperly. This slows down performance but increases the match rate . If the geocoding database is indexed, the performance impact is reduced.</p>
Locality	<ul style="list-style-type: none"> • AUS (Australia)—Not used

Option Name	Description
City	<p>Specifies whether candidates must match the city to be considered a close match. If you do not require exact matches on city, the geocoder searches on the street address matched to the particular postal code, and considers other cities that do not match the name, but do match the postal code.</p>
County	<p>Specifies whether candidates must match the county (or equivalent) to be considered a close match. The meaning of county varies for different countries.</p> <ul style="list-style-type: none"> • AUS (Australia)—The Local Government Authority (LGA)
State/Province	<p>Specifies whether candidates must match the state or province (or equivalent) to be considered a close match.</p> <ul style="list-style-type: none"> • AUS (Australia)—State
Postal code	<p>Specifies whether candidates must match the postal code to be considered a close match. If you do not require exact match on postal codes, the geocoder searches a wider area for a match. While this results in slower performance, the match rate is higher because the request does not need to match exactly when it compares match candidates.</p> <p>Specifies whether candidates must match the postal code to be considered a close match. If you do not require exact match on postal codes, the geocoder searches a wider area for a match. While this results in slower performance, the match rate is higher because the request does not need to match exactly when it compares match candidates.</p>
Prefer postal code over city	<p>Specifies whether to return a close match when the postal code and street match exactly but the city does not. If you enable this option, the City input field is ignored if the postal code and street address are an exact match. If you do not enable this option, there may be situations where street address and postal code input are an exact match but the city name is not, and close matches are not returned.</p> <p>For example, without this option enabled, the following input address would return no close matches:</p> <pre data-bbox="537 1583 821 1646">5 East St GLENROY VIC 3046</pre> <p>With this option enabled, this same input address would return the following close match:</p> <pre data-bbox="537 1749 837 1812">5 EAST ST HADFIELD VIC 3046</pre>

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

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

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

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

Data Options

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

For Australian geocoding, to achieve the best geocoding spatial precision use the G-NAF database. This provides point-level geocoding that places points within the land parcel boundary for a given address. The G-NAF database requires an additional license. Contact your sales representative for more information.

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

Table 4: Data Options for Australia

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

Option Name	Description
Database preference	<p data-bbox="553 373 1258 407">Specifies which geocoding databases to use. One of the following:</p> <p data-bbox="553 420 1421 546">Prefer custom database Use both standard databases and custom databases, but give preference to candidates from custom databases. Use this option if you feel your custom database is superior to the standard database.</p> <p data-bbox="553 558 1421 655">Prefer standard database Use both standard databases and custom databases, but give preference to candidates from standard databases.</p> <p data-bbox="553 667 1339 739">Use custom databases only Use only custom databases. Ignore standard databases.</p> <p data-bbox="553 751 1339 823">Use standard databases only Use only standard databases. Ignore custom databases.</p> <p data-bbox="553 835 1421 932">Use both custom and standard databases Use both standard databases and custom databases. In cases where candidates are returned from both, the standard database is preferred. Default.</p> <p data-bbox="553 945 1421 1100">The results from a custom database have a "U" at the end of the result code. Results from an address database have an "A" at the end of the match score. For example: S5HPNTSCZA is a match score that comes from an address database, while S5HPNTSCZU comes from a custom database. For more information, see Result Codes for International Geocoding on page 43.</p>
Override the default database search list	<p data-bbox="553 1176 1421 1293">Specifies whether to use the database search list specified in the Management Console. If you choose to override the default database search list you may change the search order of the databases in the Database search list field. You may also remove databases from the search list.</p> <p data-bbox="553 1306 1421 1428">If you override the default database search list, changes to the database resources will not be reflected in the database search list, which may cause geocoding to fail. However, if you do not override the default database search order, any changes to the database resources will be automatically reflected by the geocoder.</p>

Option Name	Description
Database search list	<p>The name of one or more database resources to use in the search process. Use the database name specified in the Management Console.</p> <p>You can specify multiple database resources. If you specify more than one database, list them in order of preference.</p> <p>The order of the databases has an effect when there are close match candidates from different databases. The close matches that are returned come from the database that is first in the search list. Close matches from lower ranked databases are demoted to non-close matches.</p> <p>You can also use the order of the databases to perform fallback processing if you have an both an address point database and a street-level database installed for the country. List the address point database first and the street database second. If the address cannot be geocoded to the address point level, the geocoder will attempt to geocode it to the street level.</p>

4 - Output

The geocoder returns the latitude/longitude, standardized address, and result indicators. Result indicators describe how well the geocoder matched the input address to a known address and assigned a location; they also describe the overall status of a match attempt. The information is returned in upper case.

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Address Output

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

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

Table 5: Address Output for Australia

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

Field Name	Description
Country	<p>The three-letter ISO 3166-1 Alpha 3 country code.</p> <p>For Australia, the country code is AUS.</p> <p>Addresses for countries that do not have a dedicated geocoding stage return the country code associated with the input address. For example, Vatican City addresses return VAT in the Country field, regardless of whether VAT or ITA (Italy) was passed as the country code. Similarly, addresses in Martinique return MTQ (rather than FRA) in the Country field.</p>
Country.Input	<p>The three-letter ISO 3166-1 Alpha 3 country code as it was input.</p> <p>For Australia, the country code is AUS.</p> <p>Addresses for countries that do not have a dedicated geocoding stage return the country code associated with the input address. For example, Vatican City addresses return VAT in the Country field, regardless of whether VAT or ITA (Italy) was passed as the country code. Similarly, addresses in Martinique return MTQ (rather than FRA) in the Country field.</p>
County	<p>The meaning of county varies by country.</p> <p>The Local Government Authority (LGA) name.</p> <ul style="list-style-type: none"> • AUS (Australia)—The Local Government Authority (LGA)
FirmName	Name of the company or a place name.
FirmName.Input	Name of the company or a place name as it was input.
FormattedInputStreet.Input	The street as it was input.
Geocoder.MatchCode	
HouseNumber	The building number for the matched location.
HouseNumber.Input	The building number for the matched location as it was input
HouseNumberHigh	The highest house number of the range in which the address resides.

Field Name	Description
HouseNumberLow	The lowest house number of the range in which the address resides.
HouseNumberParity	Indicates if the house number range contains even or odd numbers or both. <ul style="list-style-type: none"> E Even O Odd B Both U Unknown
IntersectionIdStreet2.Input	The second street in an intersection address as it was input.
IsCloseMatch	Indicates whether candidate is a close match.
Language	For reverse geocoded candidates, the two-character language code is returned.
LastLine	Complete last address line (city, state/province, and postal code).
Latitude	Latitude of the candidate.
LeadingDirectional	Street directional that precedes the street name. For example, the N in 138 N Main Street.
LeadingDirectional.Input	Street directional that precedes the street name as it was input.
Locality	The meaning of locality varies by country. Generally a locality is a village in rural areas or it may be a suburb in urban areas. When used, a locality typically appears on the last line of the address with the postcode. <ul style="list-style-type: none"> • AUS (Australia)—Not used
Locality.Input	The locality as it was input. <ul style="list-style-type: none"> • AUS (Australia)—Not used

Field Name	Description
Longitude	Longitude of the candidate.
NumberOfCandidateRanges	Indicates the number of ranges of which the candidate is a member. A candidate may be a part of multiple ranges if the candidate is a street instead of a building. To specify the number of ranges to return for each candidate, use the Maximum ranges per candidate option.
NumberOfRangeUnits	Indicates the number of units included in the range. A unit is an address within a building, such as an apartment or office suite. To specify the number of units to return for each range, use the Maximum units per range option.
PostalCode	The postal code for the address. The format of the postcode varies by country. Postcode data is not available for every country.
PostalCode.Addon	The second part of a postcode. This field is not used by most countries.
PostalCode.Addon.Input	The second part of a postcode as it was input. This field is not used by most countries.
PostalCode.Base	The first part of a postcode. This field is not used by most countries.
PostalCode.Base.Input	The first part of a postcode. This field is not used by most countries.
PreAddress	Miscellaneous information that appears before the street name.
PrivateMailbox	This field is not currently used.

Field Name

Description

Ranges

Field Name

Description

This is a list field containing the address ranges that exist on the street segment where the candidate address is located.

A range is a series of addresses along a street segment. For example, 5400-5499 Main St. is an address range representing addresses in the 5400 block of Main St. A range may represent just odd or even addresses within a segment, or both odd and even addresses. A range may also represent a single building with multiple units, such as an apartment building.

The Ranges field contains the following sub-fields:

Address	This is a list field that contains sub-fields for any address elements (AddressLine1, City, and so on) that are different from the candidate's address.
AdditionalFields	A listing of country-specific information related to the address. The information contained in AdditionalFields varies by country.
HouseNumberHigh	The highest address number for the range.
HouseNumberLow	The lowest address number for the range.
SegmentParity	Indicates the side of the street where the range is located. One of the following: <ul style="list-style-type: none"> 0 It is not known which side of the street the range is located on. 1 The range is on the left side of the street. 2 The range is on the right side of the street.
HouseNumberParity	Indicates whether the range contains odd or even address numbers. One of the following: <ul style="list-style-type: none"> 0 The range contains both odd and even address numbers. 1 The range contains odd address numbers 2 The range contains even address numbers. -1 It is not known whether the range contains odd or even house numbers.
TotalRangeUnitsReturned	The number of unit ranges returned for the address. A unit is an address within a building, such as an apartment or suite.
RangeUnits	A list of the ranges of units within the building. An example of units are apartments or suites. <ul style="list-style-type: none"> Address This is a list field that contains sub-fields for any address elements (AddressLine1, City,

Field Name	Description
	and so on) that are different from the candidate's address.
	UnitNumberHigh The highest unit number.
	UnitNumberLow The lowest unit number.
SegmentCode	A unique ID that identifies a street segment.
SegmentParity	Indicates which side of the street has odd numbers. <ul style="list-style-type: none"> L Left side of the street R Right side of the street B Both sides of the street U Undetermined
StateProvince	The meaning of State/Province varies by country. <ul style="list-style-type: none"> • AUS (Australia)—State
StreetDataType	The default search order rank of the database used to geocode the address. A value of "1" indicates that the database is first in the default search order, "2" indicates that the database is second in the default search order, and so on. The default database search order is specified in the Management Console.
StreetName	For most countries, this contains the street name.
StreetPrefix	The type of street when the street type appears before the base street name.
StreetSuffix	The type of street when the street type appears after the base street name.
TrailingDirectional	Street directional that follows the street name.
UnitNumberHigh	The highest unit number of the range in which the unit resides.

Field Name	Description
UnitNumberLow	The lowest unit number of the range in which the unit resides.
Return Parsed Address	The formatted input address can be returned along with a separate returned field for each input address element. Parsed Address Input elements are returned in separately labeled fields names with a .Input extension. See Result Codes on page 40

Geocode Output

Table 6: Geocode Output for Australia

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

Country-Specific Output

The following topics describe output that's unique to specific countries.

Australia G-NAF Database Output

The following table lists output fields that are unique to the Australian Geocoded National Address File (G-NAF[®]) database. G-NAF is an optional database that is available for all six states and two territories. G-NAF is the only authoritative Australian national index of locality, street and number, validated with geographic coordinates.

Table 7: Australia G-NAF Output

Field Name	Description
AUS.GNAF_ADDRESS_CLASS	<p>The Address_Class is constructed using a combination of elements from the G-NAF Data Dictionary source tables. The components of the Address_Class field are:</p> <ul style="list-style-type: none"> A Alias address record P Principal address record PP Principal primary address record PS Principal secondary address record AP Alias primary address record AS Alias secondary address record
AUS.GNAF_CONFIDENCE	<p>A number indicating how many G-NAF datasets the address is found in. A higher confidence level means that the same address was found in more data contributor sources. One of the following:</p> <ul style="list-style-type: none"> <number> The number of datasets the address was found in, minus 1. For example, a value of 0 indicates that the address was found in one contributor's dataset, a value of 1 indicates that the address was found in two contributors' datasets, a value of 2 indicates that the address was found in three contributors' datasets, and so forth. -1 The address could not be found in any G-NAF dataset.

Field Name	Description
AUS.GNAF_EIGHT_DECIMAL_PLACE_LATITUDE	<p>The parcel latitude, precise to eight digits after the decimal. This is the latitude that the candidate matched to in the G-NAF database. These are the original coordinates directly from the G-NAF data prior to truncation or rounding.</p> <p>This field is only returned if you check the Return eight decimal places for parcel latitude/longitude box on the Geocoding tab.</p>
AUS.GNAF_EIGHT_DECIMAL_PLACE_LONGITUDE	<p>The parcel longitude, precise to eight digits after the decimal. This is the longitude that the candidate matched to in the G-NAF database. These are the original coordinates directly from the G-NAF data prior to truncation or rounding.</p> <p>This field is only returned if you check the Return eight decimal places for parcel latitude/longitude box on the Geocoding tab.</p>
AUS.GNAF_GEOCODE_LEVEL	<p>A number indicating the level of geocode for the address. Every principal address within the G-NAF database has at least a locality level geocode. They may also have a street level geocode and a point level geocode.</p> <p>One of the following:</p> <ul style="list-style-type: none"> 0 No geocode. 1 Parcel level geocode only (no locality or street level geocode). 2 Street level geocode only (no locality or parcel level geocode). 3 Street and parcel level geocodes (no locality geocode). 4 Locality level geocode only (no street or parcel level geocode). 5 Locality and parcel level geocodes (no street level geocode). 6 Locality and street level geocodes (no parcel level geocodes). 7 Locality, street and parcel level geocodes.

Field Name	Description
AUS_GNAF_PARCEL_ID	<p>The Parcel ID field is the generic parcel id field provided by custodial data, and represents a Lot on Plan description that is useful for government agencies. The exact format varies. G-NAF source data has over 7 million records with a Parcel_ID. The Australia geocoder supplements this to populate over 12,730,000 G-NAF records with a Parcel_ID field.</p>
AUS.GNAF_PID	<p>The G-NAF Persistent Identifier (G-NAF PID) is a 14-character alphanumeric string that uniquely identifies each G-NAF address. The PID is constructed from a combination of the major address fields of the G-NAF database. An example of a G-NAF PID is: GAACT718519668</p>

Field Name	Description
AUS.GNAF_RELIABILITY	<p data-bbox="808 373 1433 583">A number indicating the geocode precision. Reliability is related to the dictionary used to determine the geocode. Data with geocoded reliability levels 1, 2, and 3 is contained in the GNAF123 Dictionary. This is point (parcel) level geocoded data. Data with geocoded reliability levels 4, 5, and 6 is contained in the GNAF456 Dictionary. This contains non-parcel centroid geocoded data.</p> <ol data-bbox="808 604 1433 1598" style="list-style-type: none"><li data-bbox="808 604 1433 758">1 Geocode accuracy recorded to appropriate surveying standard. For example, this could apply to an address level geocode that was manually geocoded. Geocode resolution is sufficient to place the centroid within address site boundary with a GPS.<li data-bbox="808 779 1433 932">2 Geocode accuracy sufficient to place centroid within address site boundary. For example, this could apply to an address level geocode that was automatically calculated as the centroid of the corresponding cadastre parcel.<li data-bbox="808 953 1433 1142">3 Geocode accuracy sufficient to place centroid near (or possibly within) address site boundary. For example, this could apply to an address level geocode that was automatically calculated by calculating where on the road the address was likely to appear based upon other bounding geocoded addresses.<li data-bbox="808 1163 1433 1283">4 Geocode accuracy sufficient to associate address site with a unique road feature. For example, this could apply to a street level geocode that was automatically calculated by using the road centerline reference data.<li data-bbox="808 1304 1433 1457">5 Geocode resolution sufficient to associate address site with a unique locality or neighborhood. For example, this could apply to a locality level geocode that was automatically calculated as the centroid of the locality.<li data-bbox="808 1478 1433 1598">6 Geocode resolution sufficient to associate address site with a unique region. For example, this could apply to a locality level geocode that was derived from topographic feature.

Field Name	Description
AUS.GNAF_SA1	<p>The Statistical Area Level 1 (SA1) field as the second smallest geographic area defined in the Australian Statistical Geography Standard (ASGS). Mesh Block is the smallest unit. The SA1 is designed for use in the Census of Population and Housing as the smallest unit for the processing and release of Census data. An SA1 is represented by a unique seven digit code.</p>
AUS.LEVEL_NUMBER	<p>The number of a floor or level in a multistory building. For example,</p> <p>Floor 2, 17 Jones Street</p> <p>The G-NAF database includes level information for some Australian states. Level information may be associated with unit information, but not necessarily. If the G-NAF 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 G-NAF database 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 G-NAF database does not include level information for the matching address, then the input level information is discarded since it is not validated in the G-NAF data.</p>

Field Name	Description
AUS.LEVEL_TYPE	<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 Level 7, 17 Jones Street</p> <p>In this example, Suite 3 is a unit.</p> <p>The G-NAF database includes level information for some Australian states. Level information may be associated with unit information, but not necessarily. If the G-NAF 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 G-NAF database 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 G-NAF database does not include level information for the matching address, then the input level information is discarded since it is not validated in the G-NAF data.</p>
AUS.MESH_BLOCK_ID	<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>
AUS.LOT_NUMBER	<p>Lot numbers are returned for G-NAF candidates because some rural addresses do not have adequate physical or house number information.</p>
AUS.STREET_TYPE_ABB	<p>This is an abbreviation for the street type. For example, EX is an abbreviation for Extension and FTRL is an abbreviation for Firetrail.</p>

Result Codes

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

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

Table 8: Result Code Output for Australia

Field Name	Description
Geocoder.MatchCode	Indicates how closely the input address matches the candidate address. For more information, see Result Codes for International Geocoding on page 43.
IsCloseMatch	Indicates whether or not the address is considered a close match. An address is considered close based on the "Close match criteria" options on the Matching tab. Y Yes, the address is a close match. N No, the address is not a close match.
MultiMatchCount	For street address geocoding, the number of matching address positions found for the specified address. For intersection geocoding, the number of matching street intersection positions found for the specified addresses.
Status	Reports the success or failure of the match attempt null Success F Failure

Field Name	Description										
Status.Code	<p>If the geocoder could not process the address, this field will show the reason.</p> <ul style="list-style-type: none"> • Internal System Error • No Geocode Found • Insufficient Input Data • Multiple Matches Found • Exception occurred • Unable to initialize Geocoder • No Match Found 										
Status.Description	<p>If the geocoder could not process the address, this field will show a description of the failure.</p> <table border="0"> <tr> <td>Problem + explanation</td> <td>Returned when Status.Code = Internal System Error.</td> </tr> <tr> <td>Geocoding Failed</td> <td>Returned when Status.Code = No Geocode Found.</td> </tr> <tr> <td>No location returned</td> <td>Returned when Status.Code = No Geocode Found.</td> </tr> <tr> <td>No Candidates Returned</td> <td>The geocoder could not identify any candidate matches for the address.</td> </tr> <tr> <td>Multiple Candidates Returned and Keep Multiple Matches not selected</td> <td>The address resulted in multiple candidates. In order for the candidate address to be returned, you must select the Keep multiple matches option.</td> </tr> </table>	Problem + explanation	Returned when Status.Code = Internal System Error.	Geocoding Failed	Returned when Status.Code = No Geocode Found.	No location returned	Returned when Status.Code = No Geocode Found.	No Candidates Returned	The geocoder could not identify any candidate matches for the address.	Multiple Candidates Returned and Keep Multiple Matches not selected	The address resulted in multiple candidates. In order for the candidate address to be returned, you must select the Keep multiple matches option.
Problem + explanation	Returned when Status.Code = Internal System Error.										
Geocoding Failed	Returned when Status.Code = No Geocode Found.										
No location returned	Returned when Status.Code = No Geocode Found.										
No Candidates Returned	The geocoder could not identify any candidate matches for the address.										
Multiple Candidates Returned and Keep Multiple Matches not selected	The address resulted in multiple candidates. In order for the candidate address to be returned, you must select the Keep multiple matches option.										

Field Name	Description
LocationPrecision	<p>A code describing the precision of the geocode. One of the following:</p> <p>0 No coordinate information is available for this candidate address.</p> <p>1 Interpolated street address.</p> <p>2 Street segment midpoint.</p> <p>3 Postal code 1 centroid.</p> <p>4 Partial postal code 2 centroid.</p> <p>5 Postal code 2 centroid.</p> <p>6 Intersection.</p> <p>7 Point of interest. This is a placeholder value. Spectrum databases do not have POI data, so it is not possible to get this return.</p> <p>8 State/province centroid.</p> <p>9 County centroid.</p> <p>10 City centroid.</p> <p>11 Locality centroid.</p> <p>12 - 15 (LocationPrecision codes) For AUS, 12 indicates a single close match to a postal (PO Box) location. This can be generated from the standard Street Range database only (not the G-NAF database). For most countries, LocationPrecision codes 12 through 15 are reserved for unspecified custom items.</p> <p>12 Single close match to a postal (PO Box) location. This can be generated from the standard street range database only (not the G-NAF database).</p> <p>13 Additional point precision for unspecified custom item.</p> <p>14 Additional point precision for unspecified custom item.</p> <p>15 Additional point precision for unspecified custom item.</p> <p>16 The result is an address point.</p> <p>17 The result was generated by using address point data to modify the candidates segment data.</p> <p>18 The result is an address point that was projected using the centerline offset feature. You must have both a point and a street range database to use the centerline offset feature, and thereby return LocationPrecision 18.</p>

Field Name	Description
StreetDataType	The default search order rank of the database used to geocode the address. A value of "1" indicates that the database is first in the default search order, "2" indicates that the database is second in the default search order, and so on.

Result Codes for International Geocoding

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

International Street Geocoding Result Codes (S Codes)

Street level geocoded candidates return a result code beginning with the letter S. The second character in the code indicates the positional accuracy of the resulting point for the geocoded record.

Table 9: Street (S) Result Codes

S Result Code	Description
S1	Single close match with the point located at postal code centroid.
S3	Single close match with the point located at postal code centroid.
S4	Single close match with the point located at the street centroid. For databases vintage 2014 Q4 or newer, the input house number is returned with the candidate even if no such house number was found. The S4 code is followed by letters and dashes indicating match precision. See Interpreting S Result Codes on page 44
S5	Single close match with the point located at a street address position. The S5 code is followed by letters and dashes indicating match precision. For information about these letters, see Interpreting S Result Codes on page 44.

S Result Code	Description
S7	<p>Single match with the point located at an interpolated point along the candidate's street segment. When the potential candidate is not an address point candidate and there are no exact house number matches among other address point candidates, the S7 result is returned using address point interpolation. The point is interpolated according to the next highest or lowest address point candidate that both intersects the segment and whose house number is contained within the range of houses of the original candidate. By using known address reference points on the street segment, the S7 point can be adjusted to a more accurate position. For Australia, the S7-----G result code is also used for single matches with G-NAF Reliability level of 3. The reliability level is returned in the output field AUS.GNAF_Reliability. For more information, see Australia G-NAF Database Output on page 34</p>
S8	<p>Single close match with the point located at either the single point associated with an address point candidate or at an address point candidate that shares the same house number. No interpolation is required. S8 returns are possible with point databases only.</p> <p>For Australia, the S8-----G result code is also used for single matches with G-NAF Reliability levels of 1 or 2 (the highest level of G-NAF Reliability). The reliability level is returned in the output field AUS.GNAF_Reliability.</p>
SG	<p>For Australia, single close match with the point at the center of a locality, or Locality level geocode derived from topographic feature. An SG-----G result code is associated with G-NAF Reliability Level 5 (locality or neighborhood) or with Level 6 (unique region). The reliability level is returned in the output field AUS.GNAF_Reliability. For more information, see Australia G-NAF Database Output on page 34.</p>
SP	<p>For Australia, single close match to a postal (PO Box) location. This can be generated from the Street Range Address database only (not the G-NAF database).</p>
SX	<p>Single close match with the point located at street intersection.</p>

Interpreting S Result Codes

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

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

Category	Description	Example
H	House number	18
P	<p>Street prefix direction</p> <p>P is present if any of these conditions are satisfied:</p> <ul style="list-style-type: none"> • The candidate pre-directional matches the input pre-directional. • The candidate post-directional matches the input pre-directional after pre- and post-directionals are swapped. • The input does not have a pre-directional. 	North
N	Street name	Merivale
T	Street type	St
S	<p>Street suffix direction</p> <p>S in result code is present if any of these conditions are satisfied:</p> <ul style="list-style-type: none"> • The candidate post-directional matches the input post-directional. • The candidate pre-directional matches the input post-directional after pre- and post-directionals are swapped. • The input does not have a post-directional. 	W
C	City name	South Brisbane
Z	Postal code	4101
A, G, or U	<p>Database type used to obtain the match.</p> <ul style="list-style-type: none"> • A—Street Range Address database. • G—G-NAF Point Address Dictionary (Australia only). • U—Customer (user-defined) database. 	A

International PO Box Geocoding Result Codes (B Codes)

Geocoding AUS data with PO Box or GPO Box as input returns candidates with a new code B1. This means that a match to a post office lookup table was successful. Geocode AUS does not know if the exact PO Box is valid. It returns a post office location with a standardized version of the input PO Box information. The lookup process previously returned a result code of SP. This result code is returned in the additionalFields under the CandidateAddress.LEGACY_RESULT_CODE key.

Table 10: PO Box (B) Result Codes

B Result Code	Description
B1	Match to a lookup table of post office box locations given the post code and/or city. It does not match to the actual PO Box or GPO box.

International Postal Geocoding Result Codes (Z Codes)

Matches in the Z category indicate that a match was made at the postcode level. A postcode match is returned in either of these cases:

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

Table 11: Postal (Z) Result Codes

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

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

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

International Geographic Geocoding Result Codes (G Codes)

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

Table 12: Geographic (G) Result Codes

G Result Code	Description
G1	State or province centroid. match.
G2	County (district or region) centroid match.
G3	City or town (municipality) centroid match. For Australia, Local Government Authority (LGA) information can be returned from the Street Range Address Database only (not the G-NAF database).
G4	Locality (village, suburb, or neighborhood) centroid match.

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

Reverse Geocoding Codes (R Codes)

Matches in the R category indicate that the record was matched by reverse geocoding. The second two characters of the R result code indicate the type of match found. R geocode results include an additional letter to indicate the dictionary from which the match was made.

Example reverse geocoding codes:

Table 13: Reverse Geocoding (R) Result Codes

Reverse Geocoding Code	Description
RS8A	Point/parcel level precision for reverse geocoding. Candidate returned from address dictionary.

Reverse Geocoding Code	Description
RS8G	Point/parcel level precision. Candidate returned from Australia G-NAF database with G-NAF Reliability level of 1 or 2.
RS7G	Candidate returned from Australia G-NAF database with G-NAF Reliability level of 3.
RS5A	Interpolated street candidate for reverse geocoding. Candidate returned from address dictionary.
RS4A	Street centroid candidate for reverse geocoding. Candidate returned from address dictionary.
RS4G	Candidate returned from Australia G-NAF database with a G-NAF Reliability level of 4 (associated with a unique road feature)
RSGG	Candidate returned from Australia G-NAF database with G-NAF Reliability Level 5 (locality or neighbourhood) or with Level 6 (unique region.)

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

Non-match Codes

The following result codes indicate no match was made:

- **N**—No close match.
- **NX**—No close match for street intersections.
- **ND**—Spectrum™ Technology Platform could not find the geocoding database for the given postal code or municipality/state/province.

5 - Reverse Geocode Address Global

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

Note: Reverse Geocode Address Global does not support U.S. addresses. To geocode U.S. addresses, you must use Reverse Geocode US Location. That performs reverse geocoding specifically for USA addresses.

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

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Input

Reverse Geocode Address Global takes longitude and latitude as input.

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

Table 14: Reverse Geocode Global Input

Field Name	Format	Description
Latitude	String	The latitude of the point for which you want address information.
Longitude	String	The longitude of the point for which you want address information.
Country	String	One of the following: <ul style="list-style-type: none">• The name of the country in English.• The two-character ISO 3116-1 alpha-2 country code.• The three-character ISO 3116-1 alpha-3 country code.

Options

Geocoding Options

Table 15: Geocoding Options for Australia

Option Name	Description
Search distance	The radius from the input coordinates in which to search for an address. Street segments and points within the radius are considered. The default search radius is 150 meters and the maximum search radius is 1600 meters.
Units	The units in which the search distance is specified. One of the following: <ul style="list-style-type: none">• Feet• Miles• Meters• Kilometers

Option Name

Description

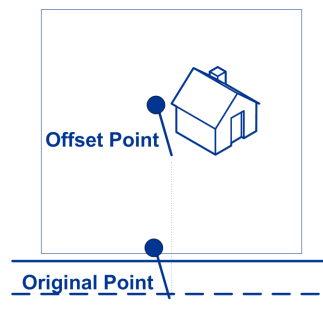
Offset from street

Indicates the offset distance from the street segments to use in street-level geocoding. The distance is specified in the units you specify in the **Units** field.


The default value varies by country. For most countries, the default is 7 meters.

For Austria, Germany, and Australia the default is 10 meters.

The offset distance is used in street-level geocoding to prevent the geocode from being in the middle of a street. It compensates for the fact that street-level geocoding returns a latitude and longitude point in the center of the street where the address is located. Since the building represented by an address is not on the street itself, you do not want the geocode for an address to be a point on the street. Instead, you want the geocode to represent the location of the building which sits next to the street. For example, an offset of 40 feet means that the geocode will represent a point 40 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 being given the same point. The diagram below shows an offset point in relation to the original point.



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

Option Name	Description						
Offset from corner	<p>Specifies the distance to offset the street end points in street-level matching. The distance is specified in the units you specify in the Units field. This value is used to prevent addresses at street corners from being given the same geocode as the intersection.</p> <p>Note: Offset is not supported for the United Kingdom (GBR) or Japan (JPN).</p> <p>The default value varies by country:</p> <ul style="list-style-type: none"> • 12 meters—Australia (AUS), Austria (AUT), Germany (DEU) • 7 meters—For other supported countries, the default offset is 7 meters. <p>The following diagram compares the end points of a street to offset end points.</p> 						
Units	<p>Specifies the unit of measurement for the street offset and corner offset options. One of the following:</p> <ul style="list-style-type: none"> • Feet • Miles • Meters • Kilometers <p>The default is Meters.</p>						
Coordinate system	<p>A coordinate system is a reference system for the unique location of a point in space. Cartesian (planar) and Geodetic (geographical) coordinates are examples of reference systems based on Euclidean geometry. Spectrum™ Technology Platform supports systems recognized by the European Petroleum Survey Group (EPSG).</p> <p>Each country supports different coordinate systems. Depending on the country, you have one or more of the following options:</p> <table border="0"> <tr> <td data-bbox="565 1675 695 1707">EPSG:4283</td> <td data-bbox="857 1675 1344 1707">Also known as the GDA94 coordinate system.</td> </tr> <tr> <td data-bbox="565 1724 695 1755">EPSG:4326</td> <td data-bbox="857 1724 1344 1755">Also known as the WGS84 coordinate system.</td> </tr> <tr> <td data-bbox="565 1772 708 1803">EPSG:27200</td> <td data-bbox="857 1772 1360 1803">Also known as the NZGD49 coordinate system.</td> </tr> </table>	EPSG:4283	Also known as the GDA94 coordinate system.	EPSG:4326	Also known as the WGS84 coordinate system.	EPSG:27200	Also known as the NZGD49 coordinate system.
EPSG:4283	Also known as the GDA94 coordinate system.						
EPSG:4326	Also known as the WGS84 coordinate system.						
EPSG:27200	Also known as the NZGD49 coordinate system.						

Matching Options

Table 16: Matching Options for Australia

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

Data Options

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

Table 17: Data Options for Australia

Option Name	Description
Override the default database search list	<p>Specifies whether to use the database search list specified in the Management Console. If you choose to override the default database search list you may change the search order of the databases in the Database search list field. You may also remove databases from the search list.</p> <p>If you override the default database search list, changes to the database resources will not be reflected in the database search list, which may cause geocoding to fail. However, if you do not override the default database search order, any changes to the database resources will be automatically reflected by the geocoder.</p>

Option Name	Description
Database search list	<p>The name of one or more database resources to use in the search process. Use the database name specified in the Management Console.</p> <p>You can specify multiple database resources. If you specify more than one database, list them in order of preference.</p> <p>The order of the databases has an effect when there are close match candidates from different databases. The close matches that are returned come from the database that is first in the search list. Close matches from lower ranked databases are demoted to non-close matches.</p> <p>You can also use the order of the databases to perform fallback processing if you have an both an address point database and a street-level database installed for the country. List the address point database first and the street database second. If the address cannot be geocoded to the address point level, the geocoder will attempt to geocode it to the street level.</p>

Output

Table 18: Reverse Geocode Address Global Output Fields

Field Name	Description
AddressLine1	First line of the address.
AddressLine2	Second line of the address.
ApartmentLabel	The type of unit, such as apartment, suite, or lot.
ApartmentNumber	Unit number.
City	The municipality name.

Field Name	Description								
County	<p>The meaning of county varies by country.</p> <p>The Local Government Authority (LGA) name.</p> <ul style="list-style-type: none"> • AUS (Australia)—The Local Government Authority (LGA) 								
Distance	The distance from input location in meters. If the input coordinates are an exact match for the address, the value is 0.								
FirmName	Name of the company or a place name.								
Geocoder.MatchCode	Indicates how closely the input coordinates match the candidate address. For more information, see Reverse Geocoding Codes (R Codes) on page 47.								
HouseNumber	The building number for the matched location.								
HouseNumberHigh	The highest house number of the range in which the address resides.								
HouseNumberLow	The lowest house number of the range in which the address resides.								
HouseNumberParity	<p>Indicates if the house number range contains even or odd numbers or both.</p> <table> <tbody> <tr> <td>E</td> <td>Even</td> </tr> <tr> <td>O</td> <td>Odd</td> </tr> <tr> <td>B</td> <td>Both</td> </tr> <tr> <td>U</td> <td>Unknown</td> </tr> </tbody> </table>	E	Even	O	Odd	B	Both	U	Unknown
E	Even								
O	Odd								
B	Both								
U	Unknown								
Language	For reverse geocoded candidates, the two-character language code is returned.								

Field Name	Description
LastLine	Complete last address line (city, state/province, and postal code).
LeadingDirectional	Street directional that precedes the street name. For example, the N in 138 N Main Street.
Locality	<p>The meaning of locality varies by country. Generally a locality is a village in rural areas or it may be a suburb in urban areas. When used, a locality typically appears on the last line of the address with the postcode.</p> <ul style="list-style-type: none"> AUS (Australia)—Not used
NumberOfCandidateRanges	Indicates the number of ranges of which the candidate is a member. A candidate may be a part of multiple ranges if the candidate is a street instead of a building. To specify the number of ranges to return for each candidate, use the Maximum ranges per candidate option.
NumberOfRangeUnits	Indicates the number of units included in the range. A unit is an address within a building, such as an apartment or office suite. To specify the number of units to return for each range, use the Maximum units per range option.
PostalCode	The postal code for the address. The format of the postcode varies by country. Postcode data is not available for every country.
PostalCode.Addon	The second part of a postcode. This field is not used by most countries.
PreAddress	Miscellaneous information that appears before the street name.
PrivateMailbox	This field is not currently used.

Field Name	Description
SegmentCode	A unique ID that identifies a street segment.
SegmentParity	<p>Indicates which side of the street has odd numbers.</p> <p>L Left side of the street</p> <p>R Right side of the street</p> <p>B Both sides of the street</p> <p>U Undetermined</p>
StateProvince	<p>The meaning of State/Province varies by country.</p> <ul style="list-style-type: none"> • AUS (Australia)—State
StreetDataType	<p>The default search order rank of the database used to geocode the address. A value of "1" indicates that the database is first in the default search order, "2" indicates that the database is second in the default search order, and so on.</p> <p>The default database search order is specified in the Management Console.</p>
StreetName	For most countries, this contains the street name.
StreetPrefix	The type of street when the street type appears before the base street name.
StreetSuffix	The type of street when the street type appears after the base street name.
TrailingDirectional	Street directional that follows the street name.
UnitNumberHigh	The highest unit number of the range in which the unit resides.

Field Name	Description
UnitNumberLow	The lowest unit number of the range in which the unit resides.

6 - GNAF PID Location Search

GNAF PID Location Search identifies the address and latitude/longitude coordinates for a Geocoded National Address File Persistent Identifier (G-NAF PID). The G-NAF PID is a 14-character alphanumeric string that uniquely identifies each G-NAF address in the G-NAF database (a database of Australian locations). The PID is constructed from a combination of the major address fields of the G-NAF database. An example of a G-NAF PID is:

GAACT718519668

Note: You must have the G-NAF database installed to use GNAF PID Location Search.

GNAF PID Location Search is part of the Geocoding Address AUS component.

For more information about the Enterprise Geocoding Module, see [Enterprise Geocoding Module](#).

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G-NAF PID Input

GNAF PID Location Search takes a G-NAF PID as input and returns the address and latitude/longitude coordinates for a Geocoded National Address File Persistent Identifier (G-NAF PID).

Note: GNAF PID Location Search functionality is not supported by the Geocode Address Global component. You must use the Geocode Address AUS component for this functionality.

Table 19: GNAF PID Location Search Input

Field Name	Format	Description
GNAFPID	String	The 14-character G-NAF persistent identifier you want to look up. For example: GAACT718519668

G-NAF PID Location Search Options

GNAF PID Location Search includes an option to select the G-NAF database for the PID search.

G-NAF Geocoding Options

Table 20: GNAF PID Location Search Geocoding Options

Option Name	Description
Point type	<p>Specifies whether to return the parcel latitude/longitude or the street frontage latitude/longitude. This option is only available if you have the G-NAF database installed. This option only affects addresses matched to the G-NAF database.</p> <p>One of the following:</p> <p>Parcel In a street address match, return the exact location of the parcel. This is the standard G-NAF point which is the exact authoritative point returned by the G-NAF database. Default.</p> <p>Street frontage In a street address match, return the street frontage point for the parcel. The street frontage point is 12.5 metres from the front boundary of the parcel. Street frontage points are more suitable for routing applications.</p>
Return 8 decimal places of parcel latitude/longitude	<p>Specifies whether to return the original latitude and longitude, precise up to eight digits after the decimal. This is the latitude/longitude that the candidate matched to in the G-NAF database. These are the original coordinates directly from the G-NAF data prior to truncation or rounding. This option is only available if you have the G-NAF database installed. This option only affects addresses matched to the G-NAF database.</p>

G-NAF PID Data Options

Table 21: GNAF PID Location Search Data Options

Option Name	Description
Database	<p>Specifies the database to use to look up the parcel. Use the database name specified in the Management Console. For more information, see the <i>Spectrum™ Technology Platform Administration Guide</i>.</p> <p>Note: Only database resources that contain G-NAF databases are available in this list.</p>

Output

G-NAF Output

The following table lists output fields that are unique to the Australian Geocoded National Address File (G-NAF®) database. G-NAF is an optional database that is available for all six states and two territories. G-NAF is the only authoritative Australian national index of locality, street and number, validated with geographic coordinates.

Table 22: Australia G-NAF Output

Field Name	Description
AUS.GNAF_ADDRESS_CLASS	<p>The Address_Class is constructed using a combination of elements from the G-NAF Data Dictionary source tables. The components of the Address_Class field are:</p> <p>A Alias address record</p> <p>P Principal address record</p> <p>PP Principal primary address record</p> <p>PS Principal secondary address record</p> <p>AP Alias primary address record</p> <p>AS Alias secondary address record</p>
AUS.GNAF_CONFIDENCE	<p>A number indicating how many G-NAF datasets the address is found in. A higher confidence level means that the same address was found in more data contributor sources. One of the following:</p> <p><number> The number of datasets the address was found in, minus 1. For example, a value of 0 indicates that the address was found in one contributor's dataset, a value of 1 indicates that the address was found in two contributors' datasets, a value of 2 indicates that the address was found in three contributors' datasets, and so forth.</p> <p>-1 The address could not be found in any G-NAF dataset.</p>
AUS.GNAF_EIGHT_DECIMAL_PLACE_LATITUDE	<p>The parcel latitude, precise to eight digits after the decimal. This is the latitude that the candidate matched to in the G-NAF database. These are the original coordinates directly from the G-NAF data prior to truncation or rounding.</p> <p>This field is only returned if you check the Return eight decimal places for parcel latitude/longitude box on the Geocoding tab.</p>

Field Name	Description
AUS.GNAF_EIGHT_DECIMAL_PLACE_LONGITUDE	<p>The parcel longitude, precise to eight digits after the decimal. This is the longitude that the candidate matched to in the G-NAF database. These are the original coordinates directly from the G-NAF data prior to truncation or rounding.</p> <p>This field is only returned if you check the Return eight decimal places for parcel latitude/longitude box on the Geocoding tab.</p>
AUS.GNAF_GEOCODE_LEVEL	<p>A number indicating the level of geocode for the address. Every principal address within the G-NAF database has at least a locality level geocode. They may also have a street level geocode and a point level geocode.</p> <p>One of the following:</p> <ul style="list-style-type: none"> 0 No geocode. 1 Parcel level geocode only (no locality or street level geocode). 2 Street level geocode only (no locality or parcel level geocode). 3 Street and parcel level geocodes (no locality geocode). 4 Locality level geocode only (no street or parcel level geocode). 5 Locality and parcel level geocodes (no street level geocode). 6 Locality and street level geocodes (no parcel level geocodes). 7 Locality, street and parcel level geocodes.
AUS_GNAF_PARCEL_ID	<p>The Parcel ID field is the generic parcel id field provided by custodial data, and represents a Lot on Plan description that is useful for government agencies. The exact format varies. G-NAF source data has over 7 million records with a Parcel_ID. The Australia geocoder supplements this to populate over 12,730,000 G-NAF records with a Parcel_ID field.</p>

Field Name	Description
AUS.GNAF_PID	<p>The G-NAF Persistent Identifier (G-NAF PID) is a 14-character alphanumeric string that uniquely identifies each G-NAF address. The PID is constructed from a combination of the major address fields of the G-NAF database. An example of a G-NAF PID is:</p> <p>GAACT718519668</p>
AUS.GNAF_RELIABILITY	<p>A number indicating the geocode precision. Reliability is related to the dictionary used to determine the geocode. Data with geocoded reliability levels 1, 2, and 3 is contained in the GNAF123 Dictionary. This is point (parcel) level geocoded data. Data with geocoded reliability levels 4, 5, and 6 is contained in the GNAF456 Dictionary. This contains non-parcel centroid geocoded data.</p> <ol style="list-style-type: none"> <li data-bbox="816 871 1417 1024">1 Geocode accuracy recorded to appropriate surveying standard. For example, this could apply to an address level geocode that was manually geocoded. Geocode resolution is sufficient to place the centroid within address site boundary with a GPS. <li data-bbox="816 1045 1417 1199">2 Geocode accuracy sufficient to place centroid within address site boundary. For example, this could apply to an address level geocode that was automatically calculated as the centroid of the corresponding cadastre parcel. <li data-bbox="816 1220 1417 1409">3 Geocode accuracy sufficient to place centroid near (or possibly within) address site boundary. For example, this could apply to an address level geocode that was automatically calculated by calculating where on the road the address was likely to appear based upon other bounding geocoded addresses. <li data-bbox="816 1430 1417 1556">4 Geocode accuracy sufficient to associate address site with a unique road feature. For example, this could apply to a street level geocode that was automatically calculated by using the road centerline reference data. <li data-bbox="816 1577 1417 1730">5 Geocode resolution sufficient to associate address site with a unique locality or neighborhood. For example, this could apply to a locality level geocode that was automatically calculated as the centroid of the locality. <li data-bbox="816 1751 1417 1869">6 Geocode resolution sufficient to associate address site with a unique region. For example, this could apply to a locality level geocode that was derived from topographic feature.

Field Name	Description
AUS.GNAF_SA1	<p>The Statistical Area Level 1 (SA1) field as the second smallest geographic area defined in the Australian Statistical Geography Standard (ASGS). Mesh Block is the smallest unit. The SA1 is designed for use in the Census of Population and Housing as the smallest unit for the processing and release of Census data. An SA1 is represented by a unique seven digit code.</p>
AUS.LEVEL_NUMBER	<p>The number of a floor or level in a multistory building. For example,</p> <p>Floor 2, 17 Jones Street</p> <p>The G-NAF database includes level information for some Australian states. Level information may be associated with unit information, but not necessarily. If the G-NAF 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 G-NAF database 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 G-NAF database does not include level information for the matching address, then the input level information is discarded since it is not validated in the G-NAF data.</p>

Field Name	Description
AUS.LEVEL_TYPE	<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 Level 7, 17 Jones Street</p> <p>In this example, Suite 3 is a unit.</p> <p>The G-NAF database includes level information for some Australian states. Level information may be associated with unit information, but not necessarily. If the G-NAF 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 G-NAF database 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 G-NAF database does not include level information for the matching address, then the input level information is discarded since it is not validated in the G-NAF data.</p>
AUS.MESH_BLOCK_ID	<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>
AUS.LOT_NUMBER	<p>Lot numbers are returned for G-NAF candidates because some rural addresses do not have adequate physical or house number information.</p>
AUS.STREET_TYPE_ABB	<p>This is an abbreviation for the street type. For example, EX is an abbreviation for Extension and FTRL is an abbreviation for Firetrail.</p>

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