pitney bowes

Spectrum™ Technology Platform

Version 12.0 SP1

Addressing Guide

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1 - Getting Started

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Introduction to Address Quality

The Addressing Solution ensures quality addressing by providing tools that verify and standardize addresses in over 220 countries. Spectrum™ Technology Platform supports address quality initiatives by adhering to postal guidelines, which enables the timely delivery of mail at a discounted rate.

2 - Addressing Concepts

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U.S. Addressing Concepts

The USPS has established guidelines for what it calls quality addressing. Quality addressing ensures standardized addresses to help the USPS provide timely mail delivery. This goal becomes even more critical as mailers attempt to qualify for postal discounts based on ZIP Codes, ZIP + 4 Codes, and others. A standardized address is an address that has been matched against the U.S. Postal Database and formatted based on USPS addressing conventions.

A U.S. address can be a street address, a rural route address, a highway contract address, a P.O. box address, or a private mailbox address.

A street address contains these elements:

4235	**N**	**MAIN**	**ST**	**NW**	**APT**	**100**
House Number	Leading Directional	Street Name	Suffix	Trailing Directional	Apartment Label	Apartment Number

A rural route, highway contract, or P.O. box address has these elements:

RR	**123**	**BOX**	**19**
Rural Route or Highway Contract Type	Rural Route or Highway Contract Number		Rural Route, Highway Contract, or PO Box Number

A private mailbox address contains these elements:

PMB	**345**
Private Mailbox Type	Private Mailbox Number

Address elements and city/state/ZIP Code information combine to make address lines. These lines are defined as shown in the figure below:

For complete information on U.S. address standards, see the U.S. Postal Service® (USPS®) publication *Postal Addressing Standards, USPS Publication 28*, available on the USPS website.

Coding Accuracy Support System (CASS)

The Coding Accuracy Support System (CASS™) is a United States Postal Service® (USPS®) program that certifies the accuracy of address validation software. To qualify for certain postal discounts you must use software that is CASS Certified™ to assign ZIP Code™, ZIP + 4® codes, and delivery point barcodes to mail.

Makers of address validation software must pass a test designed by the USPS in order to have their software designated as CASS Certified™. CASS Certified™ software must pass tests of accuracy in the following areas:

- Five-digit coding
- ZIP + 4®/delivery point (DP) coding
- Carrier route coding
- Delivery Point Validation (DPV®)
- Locatable Address Conversion System (LACS^{Link}®)
- Enhanced Line of Travel (eLOT®)
- Residential Delivery Indicator (RDI™)

When you use a CASS Certified™ product, you are assured of the following minimum levels of accuracy:

Table 1: CASS Certification Levels

Certification Level	Required Accuracy Level
ZIP	98.5%
Carrier Route	98.5%
ZIP+4	98.5%

Certification Level	Required Accuracy Level
Delivery Point Barcode	100%
eLOT	100%
Perfect Addresses	100%

Commercial Mail Receiving Agency (CMRA)

A Commercial Mail Receiving Agency (CMRA) is a private company that rents out mailboxes. A CMRA, also known as a mail drop, typically operates as a Private Mail Box Operator. Addresses at a CMRA are therefore given the designation "PMB" (private mail box) instead of "POB" (Post Office box).

A customer of a CMRA can receive mail and other deliveries at the street address of the CMRA rather than the customer's own street address. Depending on the agreement between the customer and the CMRA, the CMRA can forward the mail to the customer or hold it for pickup.

A customer may wish to use the services of a CMRA for privacy. For example, a person running a home-based business may not wish to divulge the home address. Alternatively, a customer in one community may contract with a CMRA in another community with a better known or more prestigious address.

Delivery Point Validation

Delivery Point Validation (DPV®) is a United States Postal Service® (USPS®) technology that validates the accuracy of address information down to the individual mailing address. By using DPV® to validate addresses, you can reduce undeliverable-as-addressed (UAA) mail, thereby reducing postage costs and other business costs associated with inaccurate address information.

Note: DPV® is only available for U.S. addresses.

Without DPV®, the address validation process only verifies that an individual address is within a range of valid addresses for the given street. For example, the USPS data indicates that the range of addresses on Maple Lane is 500 to 1000. You attempt to validate an address of 610 Maple Ln. Without DPV®, this address would appear to be valid because it is in the range of 500 to 1000. However, in reality the address 610 Maple Ln does not exist: the house numbers in this section of

the street are 608, 609, 613, and 616. With DPV® processing, you would be alerted to the fact that 610 Maple Ln does not exist and you could take action to correct the address.

DPV® also provides unique address attributes to help produce more targeted mailing lists. For example, DPV® can indicate if a location is vacant and can identify commercial mail receiving agencies (CMRAs) and private mail boxes.

Although DPV® can validate the accuracy of an existing address, you cannot use DPV® to create address lists. For example, you can validate that 123 Elm Street Apartment 6 exists, but you cannot ask if there is an Apartment 7 at the same street address. To prevent the generation of address lists, the DPV® database contains false positive records. False positive records are artificially manufactured addresses that reside in a false positive table. For each negative response that occurs in a DPV® query, a query is made to the false positive table. A match to this table will stop DPV® processing.

Early Warning System (EWS)

The Early Warning System (EWS) provides up-to-date address information for new and recently changed addresses that have not yet been updated in the monthly USPS database. EWS prevents address records from miscoding due to a delay in postal data reaching the USPS® databases.

The older the U.S. Postal Database, the higher potential you have for miscoding addresses. When a valid address is miscoded because the address it matches to in the U.S. Postal Database is inexact, it will result in a broken address.

EWS data consists of partial address information limited to the ZIP Code™, street name, predirectional, postdirectional, and a suffix. For an address record to be EWS-eligible, it must be an address not present on the most recent monthly production U.S. Postal Database.

The USPS® refreshes the EWS file on a weekly basis. You can download the EWS file from the USPS® website at **https://ribbs.usps.gov/cassmass/documents/tech_guides/**.

Enhanced Line of Travel (eLot)

eLOT ensures that Enhanced Carrier Route mailings are sorted as close as possible to the actual delivery sequence. eLOT sequence is not an exact walk sequence but a sequence of ZIP + 4® Codes arranged in the order that the route is served by a carrier. First the ZIP + 4® groups are sequenced. Then the addresses within each group are identified as being in ascending or descending order.

eLOT can be used by mailers who prepare carrier route mailings other than high-density/125-piece or saturation mailings. eLOT sequencing is required for Basic Enhanced Carrier Route Standard Mail except automation-compatible, letter-size pieces.

Note: You must install the U.S. Postal database and eLOT database from the same month (i.e., September eLOT data must be processed with a September U.S. Postal database). If the U.S. Postal database and the eLOT database are not from the same month, there may be ZIP + 4® Codes for which eLOT numbers cannot be assigned. The ZIP Code™, ZIP + 4® Code, carrier route code, and the delivery point of an address must be provided to assign a eLOT code.

Locatable Address Conversion System (LACS)

The USPS® Locatable Address Conversion System (LACS) corrects addresses that have changed as a result of a rural route address converting to street-style address, a PO Box renumbering, or a street-style address changing. The following are examples of LACS^{Link} conversions:

- Rural Route Converted to Street-Style Address: Old Address: RR 3 Box 45 New Address: 1292 North Ridgeland Drive
- Street Renamed and Renumbered: Old Address: 23 Main Street New Address: 45 West First Avenue
- PO Box Renumbered: Old Address: PO Box 453 New Address: PO Box 10435

LACS^{Link} is required for CASS processing.

Residential Delivery Indicator (RDI)

For U.S. addresses only, Residential Delivery Indicator (RDI™) processing can help you determine the best cost for shipping your packages. RDI™ processing identifies whether an address is a business or a residential address. This difference is important because some delivery services charge a higher price for delivery to a residential address than they do to a business address.

Street Name Aliases

Street name aliases in the United States are alternative names given to sections of a street. There are four types of street name aliases:

- **Preferred**—A preferred alias is the street name preferred locally. It typically applies only to a specific range of addresses on the street.
- **Abbreviated**—An abbreviated alias is a variation of the street name that can be used in cases where the length of AddressLine1 is longer than 31 characters. For example, the street name 1234 BERKSHIRE VALLEY RD APT 312A could be abbreviated to 1234 BERKSHIRE VLLY RD APT 312A.

- **Changed**—There has been an official street name change and the alias reflects the new name. For example if SHINGLE BROOK RD is changed to CANNING DR, then CANNING DR would be a changed alias type.
- **Other**—The street alias is made up of other names for the street or common abbreviations of the street.

The non-alias version of the street name is called the base street name.

SuiteLink

SuiteLink corrects secondary address information for U.S. business addresses whose secondary address information could not be validated. If SuiteLink processing is enabled, the firm name is matched to a database of known firm names and their secondary address information.

For example,

Firm Name: Pitney Bowes
Address Line 1: 4200 Parliament Place
Address Line 2: STE 1
Postal Code: 20706

In this case, SuiteLink processing would change the suite number to the correct suite number:

Firm Name: Pitney Bowes
Address Line 1: 4200 Parliament Place
Address Line 2: **STE 600**
Postal Code: 20706-1844

Canadian Addressing Concepts

Canada Post Corporation (CPC) collects, processes, and delivers mail across the second-largest geographic area in the world (second only to the area covered by the former Soviet Union). To ensure that each piece of mail arrives at its destination promptly, CPC has developed address-labeling standards to facilitate mail processing and timely delivery.

The CPC requires that all mail items must contain the following address components for delivery of the mail piece:

- Addressee
- Delivery address
- Community/municipality
- Provinces

- Postal code

Your mail is most efficiently processed when it follows the optimum address format, which uses symbols, capital letters, and no delimiters (such as commas or periods). The CPC addressing conventions include guidelines for format, punctuation, and address components.

Address Format

Canada Post defines a mailing address as the information required to identify a point of call and/or delivery point. The CPC sequence of components of an address block for mail originating in and addressed to a destination within Canada is:

1. Non-address data and addressee information
2. Delivery address information
3. Municipality, province, postal code.

Canadian addresses should follow these guidelines:

- Use the symbol for an address element rather than the full name.
- Use upper-case letters on all lines of the address block.
- Do not use the number sign (#) or the French equivalent (nº) in an address.
- Do not use punctuation, such as a comma, as a delimiter between address elements or components unless otherwise noted.
- Format all lines of the address with a flush-left margin.
- The bottom three lines of the address block must be: Addressee information, delivery address information, municipality, province, and postal code.

Non-Address Data

If there is any data that is extraneous, such as "Attention" or "Address Correction Required," this type of non-address data must always appear above the top line of the address block, above the delivery address information line.

Non-address data includes any additional information a mailer wishes to put on the mail piece. This includes words such as "Attention" and "Confidential" or account numbers and customer identification numbers.

Addressee Information

Addressee information identifies the intended person(s), firm, or establishment to which the piece of mail is addressed. Addressee information, with multiple lines of information, may include the following elements in the listed order:

- Name or in-care-of information
- Title
- Department or division name
- Company or establishment name.

The above order also applies for Large Volume Receivers (LVRs) and government departments or agencies. For departments with branches, branch names appear above the department name.

Delivery Address Information: Civic Address

Civic addressing generally applies to customers who receive door-to-door delivery or who receive their mail at a community mail box or "superbox." Unless otherwise noted, address components and elements on the same line should be separated from each other by one space.

Civic addresses may include the following elements:

- **Civic Number**—The official number that has been assigned to that address by the municipality.
- **Civic Number Suffix**—An alpha character or fraction appearing after the civic number that must be included in the address, such as 11D JESSOME ST, or 91 1/2 KING ST.
- **Street Name**—The official street name as it is recognized by the municipality, with no translation. If the street name is a number followed by an ordinal such as "ST", "ND", "TH", or "E", as in "1ST", "2ND", "3RD", "4TH" or "1E", "2E," there will be no space between the number and the ordinal. If the street name is alphanumeric, there will be no space between the numeric and the alpha portion (14B ST instead of 14 B ST).
- **Street Type**—When an address is presented in English, the street type always follows the street name. When an address is presented in French, the street type appears before the street name (RUE RENE-LEVESQUE) unless the street name is an ordinal. In this case, the street type follows the street name (2061 36E RUE). The street type is always identified by CPC symbols.
- **Street Direction**—Where required, it should be identified by a one- or two-character symbol (such as N, S, NE, NW, O, NO) and located as the last element of street information.
- **Unit Designator**—The unit designator identifies the specific unit as assigned by the building. The value can be alpha, alphanumeric, or numeric. Where the unit identifier is a number, it is presented in numeric format ("2" instead of the word two). If the unit designator is not used in the address, the unit designator is placed before the street information separated by a hyphen (317-10228 148 ST). Valid examples for placement of the unit designator include: 1 MAIN ST APT 1 or APT 1 1 MAIN ST or 1-1 MAIN ST.

Delivery Address Information: Non-Civic Address

Non-civic addresses are used when the service provided to a customer is a lock box, general delivery, or route service where civic address information is not available.

Mode of Delivery Information

Mode of delivery information is to be placed on the same line as delivery installation information. Mode of delivery information may consist of the following elements:

- **Mode of Delivery Designator**—The official CPC symbol for Postal Box (PO BOX), Rural Route (RR), Suburban Service (SS), Mobile Route (MR), or General Delivery (GD).
- **Mode of Delivery Identifier**—Numeric identifier separated from the mode of delivery designator by one space. Do not use the number sign (#) or the French abbreviation (nº) before the mode of delivery identifier (PO BOX 123, not PO BOX #123).

Australian Addressing

In Australia, Australia Post sets addressing standards. For a list of Australia Post publications that describe these standards and the Address Matching Approval System (AMAS) program, visit the Australia Post web site at **www.auspost.com.au**.

International Addressing

Addressing products from Pitney Bowes classify addresses outside the U.S. and Canada as "international" addresses. The standards for international addresses vary from country to country. Pitney Bowes has compiled these standards into an international address coding system that can validate and correct address elements for approximately 86 countries and validate postal code formats for 141 countries.

Information about the postal standards of Universal Postal Union member countries can be found online at the Universal Postal Union website **www.upu.int**.

3 - Validating Addresses

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Validating US Addresses

The Validate Address service in Spectrum Technology Platform's Universal Addressing Module matches input addresses to addresses in the USPS database in order to correct postal information. It also adds additional postal information that can potentially earn you postal discounts (such as ZIP + 4 Codes).

During address matching and standardization, address lines are separated into components and compared to the contents of the USPS database. Any address information not used as part of matching is referred to as dropped address information. If a match is found, the input address is standardized according to the contents of the database. If your data contains addresses for which no database match is determined, you can elect to normalize input addresses. The normalization process attempts to format the address lines according to conventions outlined in USPS Publication 28. When the normalization option is invoked and no database match is found for a particular address, Validate Address attempts to recognize the individual elements and formats them according to USPS conventions.

Validating Canadian Addresses

The Validate Address service in Spectrum Technology Platform's Universal Addressing Module matches input addresses to addresses in the Canadian Postal Database in order to correct postal information. It also adds additional postal information that can potentially earn you postal discounts.

During address validation and correction, address lines are extracted from the input record, separated into components (parsed), and compared to the contents of the Canadian Postal. Database. If a match is found, the input address is corrected according to the contents of the database. If no database match is determined, Validate Address provides the option to normalize input addresses. The normalization process attempts to format the address lines according to conventions outlined in the Canada Post publication, Delivery Needs Accuracy: Canadian Addressing Standards. When the normalization option is invoked and no database match is found for a particular address, Validate Address attempts to recognize the individual elements and formats them according to Canada Post conventions.

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Address Now Module

Address Now Module

The Address Now Module is an address standardization and validation tool that provides comprehensive coverage for addresses outside the U.S. and Canada. Address Now is one of two address standardization and validation modules available for Spectrum™ Technology Platform. The other module is the Universal Addressing Module. The Address Now Module provides the following benefits over the Universal Addressing Module for addresses outside the U.S. and Canada:

- **Better data**—The database used by the Address Now Module is more up to date and complete in many countries than the database used by the Universal Addressing Module. This is because the Universal Addressing Module relies on data from Universal Postal Union (UPU), a body of the United Nations, for its international data and while the data coverage is extensive, the updates and the level of address details are not proactively managed by the UPU. Address Now, on the other hand, relies on data directly from the postal authorities (in most countries), plus other third-party data providers. This means that the data is more current with postal changes and is more detailed.
- **Drill-down feature**—The Address Now Module also offers drill-down capabilities to address data from any country, allowing users to rapidly enter address information without having to worry about the structure or making data entry mistakes.
- **Double-byte support**—The Address Now Module is Unicode enabled, recognizing Kanji and other double-byte characters.

Address Now Components

Address Now consists of the following components. These components can work with U.S., Canadian, and international addresses.

- **BuildGlobalAddresses**—Allows you to interactively build an address by searching for individual address elements.
- **GetGlobalCandidateAddresses**—Returns a list of addresses that are considered matches for a given address.
- **ValidateGlobalAddress**—Standardizes addresses using international postal data. ValidateGlobalAddress can also validate addresses in the U.S. and Canada but its strength is validation of addresses in other countries. If you have a significant amount of non-U.S. and non-Canadian address data, you should consider using ValidateGlobalAddress.

In cases where ValidateGlobalAddress returns multiple address matches for a given input address, you can use GetGlobalCandidateAddresses to return the address stack.

GetGlobalCandidateAddresses is designed to return additional information from the postal databases to help you determine which of the returned addresses is the best match.

Address Now Database

The Address Now database contains postal data from all supported countries. You can install the entire database or the data for specific countries only. The database is installed on the server. This database is available by subscription from Pitney Bowes and is updated monthly.

Build Global Address

Build Global Address allows you to build a valid address starting with just a single address element or a few address elements. Build Global Address is part of the Address Now Module.

Using Build Global Address

Building an address is an interactive process that requires you to select address elements at each step of the address building process. This means that building an address requires a sequence of calls to Build Global Address, not a single call. To start, you make an initialization call to Build Global Address. This call returns a session ID. You then use this session ID in subsequent calls. With each call, Build Global Address presents a list of alternative values for an address element. You select the value you want, then move on to the next address element until the complete address is built. With some exceptions, you need to make a separate call for each address element.

The overall process works like this:

- First, you make an initialization call to open a session and receive a system-assigned session ID.
- Make a search call to find possible values for a given address element.
- When you have selected the value you want, you make a commit call to indicate the value you want for the given address element.
- Continue to make search/commit calls until all address elements are committed.
- Finally, you make a close call to end the session.

To familiarize yourself with how the process works, use the Management Console's Preview tab to step through the following procedure.

1. Open the Management Console.
2. Under the Services tab, select **Address Now**.
3. From the list of services on the left side of the pane, select **Build Global Address**.
4. On the **Options** tab, specify the options you want. For information on the options, see **Options** on page 27.
5. Click the **Preview** tab.
6. In the **Action** field type `init`.
7. In the **Country** field enter the country of the address you want to build.

8. Click **Run Preview**.
9. In the Preview Output, find the **SessionId** field, highlight and right-click the value, and select `Copy` from the pop-up menu.
10. In the Preview Input, highlight and right-click the **SessionId** field and select `Paste`.
11. Enter the following values in the input fields:
    - Action—Type search.
    - Country—Keep this field the same.
    - FieldIndex—Type the index value of the first field you want to search. For example, if you know you want to search for an address in Chicago, you would type "1" because for U.S. addresses, field index 1 corresponds to the City field.
    - SearchValue—Type the value you want to search for. For example, if you want to build an address in Chicago, you would type "chicago".
    - SessionId—Keep the same value.

      Note: The values in the other input fields are ignored.

12. Click **Run Preview** again.
13. The results of the search are placed in up to two output fields: **Alternatives.InContext** and **AlternativesOutContext**. For an explanation of the difference between in context results and out of context results, see **What Is Context?** on page 33.
14. When you have found the value you want, enter the following values in the input fields:
    - **Action**—Type **commit**.
    - **AlternativeIndex**—Type the index number for the alternative you choose. Index values start with 0, not 1. For example, if you search for Chicago, the alternatives returned by Build Global Address would be indexed as follows. If you want to commit the value "CHICAGO" you would type "0" in the AlternativeIndex field.
      - 0—CHICAGO
      - 1—CHICAGO HTS
      - 2—CHICAGO PARK
      - 3—CHICAGO RIDGE
      - 4—EAST CHICAGO
      - 5—NORTH CHICAGO
      - 6—WEST CHICAGO
    - **AlternativeContext**—Type `in` or `out` to indicate whether the index value you specified in **AlternativeIndex** is for the list of alternatives in the **Alternatives.InContext** field or the **Alternatives.OutContext** field.
    - **SessionId**—Keep this value the same.

      Note: The values in the other input fields are ignored.

15. Click **Run Preview** again. The value you specified will now be in the Field.n.Value field for the appropriate address element.
16. Repeat the search and commit steps as often as needed until you have built the address.
17. Close the session by entering the following values in the input fields:
    - **Action**—Type **close**.
    - **SessionId**—Keep this value the same.

    Note: The values in the other input fields are ignored.

Input

Table 2: Build Global Address Input

Field Name Parameter	Format	Description
Action	String	Specifies the action to take. One of the following: **init** Initialization. This action opens a session and returns a session ID which is required for all other actions. The init action requires the Country input field. **search** Searches for values for a specific address element and returns a list of alternative values for you to choose. The search action requires the following input fields: • FieldIndex • SearchValue • SessionId **commit** Assigns one of the values returned by the search action to the field. The commit action requires the following input fields: • AlternativeIndex • AlternativeContext • SessionId **clear** Un-commits the field specified in the FieldIndex field. The clear action requires the following input fields: • FieldIndex • SessionID **close** Ends a session. The close action requires the SessionId input field.

Field Name Parameter	Format	Description
AlternativeContext	String	For the commit action, indicates whether you are choosing a value from the **Alternatives.InContext** field or the **Alternatives.OutContext** field. This field is ignored for other actions. One of the following: **in** You are committing a value from the **Alternatives.InContext** field. This means that the value you specify in the **AlternativeIndex** input field corresponds to a value in the **Alternatives.InContext** output field. **out** You are committing a value from the **Alternatives.OutContext** field. This means that the value you specify in the **AlternativeIndex** input field corresponds to a value in the **Alternatives.OutContext** output field.
AlternativeIndex	String [79]	For the commit action, specifies the value you want to use in the address you are building. For example, if you searched for a city and Build Global Address returns a list of three cities, you would indicate the city you want by specifying the index value for your choice. Index values for the alternatives presented by Build Global Address are zero-based, meaning that the first alternative has an index of 0, the second alternative has a value of 1, and so on. The input field is ignored for actions other than commit.
Country	String [79]	For the init action, specifies the country in which you want to build an address. Specify the country using the format you chose for input country format (English name two-character ISO 3116-1 Alpha-2 code, or three-character ISO 3116-1 Alpha-3 code). For a list of ISO codes, see **ISO Country Codes and Module Support**. This input field is ignored for actions other than init.

Field Name Parameter	Format	Description
FieldIndex	String [79]	For the search action, specifies the address element that you want to search on. For the clear action, specifies the address element you want to un-commit. One of the following: **all** performs the "clear" action on all address elements. This option applies to the "clear" action only. **<IndexNumber>** Performs the action on a specific address element. To determine the index of an address element, first look at the Field.n.Name fields and locate the field you want. The value n indicates the field's index. For example, you want to look up ZIP Codes for U.S. addresses. After the init call you see that Field.0.Name is "Zip" indicating that the ZIP Code has a field index of "0". This input field is ignored for actions other than search and clear.
SearchValue	String [79]	For the search action, specifies the value you want to search for. This value must be appropriate for the field you specified in FieldIndex. For example, if you specified the ZIP Code field in FieldIndex, then you would enter a ZIP Code or partial ZIP Code in this field. Likewise if you chose the city field in FieldIndex you would specify a city name or partial city name in this field. if you leave the field blank the search will return all values that are in context. For more information about in context and out of context values, see **What Is Context?** on page 33. This input field is ignored for actions other than search.
SessionId	String [79]	Specifies the session ID you want to use for this call. To obtain a session ID use the init action. If a session is inactive for 5 minutes it will expire and you will need to perform a new init call to start a new session. This field is required for all actions except init.

Options

Table 3: Build Global Address Options

Option	Description
Home country	Specifies the default country. You should specify the country where most of the addresses in your data are located. For example, if most of your addresses are in Canada, specify Canada. Build Global Address uses the country you specify to attempt validation when it cannot determine the country from the StateProvince, PostalCode, and Country address fields.
Country format	Specifies the format to use for the country name in the output. One of the following: **English names** The country in the output in English (default). **ISO codes** The country in the output as the two-character ISO code. **UPU codes** The country in the output as the three-character UPU code.
Show extra address line	Specifies whether or not to include the city, state/province, and postal code in one of the AddressLine output fields. Regardless of what you specify with this option, the output fields City, State/Province, and PostalCode will always contain the city, state/province, and postal code.
Insert postal code separation character	Specifies whether or not to use separators (spaces or hyphens) in ZIP Codes or Canadian postal codes. For example, a ZIP + 4® Code with the separator would be 20706-1844 and without the separator it would be 207061844. A Canadian postal code with the separator would be P5E"1S7 and without the separator it would be P5E1S7. **Note:** Spaces are used in Canadian postal codes and hyphens in U.S. ZIP + 4® Codes.
Maximum records to return	Allows you to set the default value for this option to any value from 1 to 10000; it has a default value of 50 records. Note that values set in Enterprise Designer override those set in Management Console

Output

Build Global Address returns address data and return codes for each input address.

Address Data

Table 4: Build Global Address Output

Field Name	Format	Description
Action	String [79]	Shows the value specified in the Action input field for this call. For more information on this input field see **Input** on page 24.
AddressLine1	String [79]	The formatted first address line.
AddressLine2	String [79]	The formatted second address line.
AddressLine3	String [79]	The formatted third address line.
AddressLine4	String [79]	The formatted fourth address line.
AddressLine5	String [79]	The formatted fifth address line.
AddressLine6	String [79]	The formatted sixth address line.
AddressLine7	String [79]	The formatted seventh address line.
AddressLine8	String [79]	The formatted eighth address line.
AlternativeContext	String [79]	Shows the value specified in the AlternativeContext input field for this call. For more information, see **Input** on page 24.
AlternativeIndex	String [79]	Shows the value specified in the AlternativeIndex input field for this call. For more information on this input field see **Input** on page 24.

Field Name	Format	Description
Alternatives.InContext	String [79]	A comma-delimited list of the possible values for the field you searched on which fit the context of fields you have already committed. For information on context see **What Is Context?** on page 33.
Alternatives.InContext.Count	String [79]	The number of "in context" results returned by your search. For information on context see **What Is Context?** on page 33.
Alternatives.OutContext	String [79]	A comma-delimited list of the possible values for the field you searched on which do not fit the context of fields you have already committed. For information on context see **What Is Context?** on page 33.
Alternatives.OutContext.Count	String [79]	The number of "out of context" results returned by your search. For information about context, see **What Is Context?** on page 33.
ApartmentLabel	String [79]	Apartment designator (such as STE or APT). For example: 123 E Main St. APT 3
ApartmentNumber	String [79]	Apartment number. For example: 123 E Main St. APT **3**
Building	String [79]	The name of a building.
City	String [79]	The city name.
Country	String [79]	Shows the value specified in the Country input field for this call. For more information about this input field, see **Input** on page 24.
Country	String [79]	The two- or three-character ISO code, or English name of the country. For a list of ISO codes, see **ISO Country Codes and Module Support**.

Field Name	Format	Description
Department	String [79]	The name of a distinct part of anything arranged into divisions. For example, the Finance Department in a corporation.
Field.n.CommitFlag	String [79]	Indicates whether you have chosen a value for field n (i.e. "committed" a value). One of the following: **Y** Yes, the value of this field has been committed. **N** No, the value of this field has not been committed.
Field.n.Index	String [79]	An index value used to refer to field n, where n is 0 though 10. For example, for U.S. addresses the index value of the ZIP field is "0".
Field.n.Name	String [79]	The name of the address element contained in field n, where n is 0 through 10. For example, for U.S. addresses Field.0.Name is ZIP.
Field.n.Value	String [79]	The value that has been committed to field n, where n is 0 through 10. This field is blank on the init call.
FieldIndex	String [79]	Shows the value specified in the FieldIndex input field for this call. For more information on this input field see **Input** on page 24.
FirmName	String [79]	The name of a company. For example: **Pitney Bowes** 4200 PARLIAMENT PL STE 600 LANHAM MD 20706-1844 USA
HouseNumber	String [79]	House number. For example: **123** E Main St. Apt 3

Field Name	Format	Description
POBox	String [79]	The post office box number. If the address is a rural route address, the rural route box number will appear here.
PostalCode	String [79]	The postal code. In the U.S. this is the ZIP Code™.
PostalCode.AddOn	String [79]	The 4-digit add-on part of the ZIP + 4® Code. For example, in the ZIP Code™ 60655-1844, 1844 is the 4-digit add-on. (U.S. addresses only.)
PostalCode.Base	String [79]	The 5-digit ZIP Code™. For example 20706 (U.S. addresses only.)
Principality	String [79]	An area within a country. For example, England, Scotland, and Wales are principalities. This field will normally be blank.
SearchFieldIndex	String [79]	The index value of the field searched in the previous search action.
SearchValue	String [79]	Shows the value specified in the SearchValue input field for this call. For more information on this input field see **Input** on page 24.
SessionId	String [79]	Shows the value specified in the SessionId input field for this call. For more information on this input field see **Input** on page 24.
StateProvince	String [79]	The state or province abbreviation.
StreetName	String [79]	Street name. For example: 123 E **Main** St. Apt 3
StreetSuffix	String [79]	Street suffix. For example: 123 E Main **St**. Apt 3

Field Name	Format	Description
SubCity	String [79]	A district or suburb. The subcity is used in countries where it is common to include the district or suburb within the address. For example, 27 Crystal Way **Bradley Stoke** Bristol BS32 8GA In this case, "Bradley Stoke" is the subcity.
SubStreet	String [79]	The second street address used to identify an address. Substreets are used in countries where it is common to give two street names in the address. For example, 12 The Mews **High Street** In this example, "High Street" is the substreet. Substreets can be used to precisely identify the delivery location. In the example, "The Mews" may be a small street that needs another street identification to properly locate the address, so "High Street" is included. In this case, "High Street" is the main or known street.
USCountyName	String [79]	For U.S. addresses, the name of the county where the address is located.

Return Codes

Table 5: Build Global Address Return Codes

Field Name	Format	Description
Status	String [79]	Reports the success or failure of the match attempt. **null** Success **F** Failure

Field Name	Format	Description
Status.Code	String [79]	Reason for failure, if there is one. • SessionError • SeverError • CountryNotFound
Status.Description	String [79]	Description of the problem, if there is one. **Please initialize new session** This value will appear if Status.Code=SessionError. **Null or empty action** This value will appear if Status.Code=SessionError. **Unknown action** This value will appear if Status.Code=SessionError. **Invalid session** This value will appear if Status.Code=SessionError. **Invalid value for** This value will appear if Status.Code=SessionError. **Cannot Search Committed Field** This value will appear if Status.Code=SessionError. **Module not licensed** This value will appear if Status.Code=ServerError. **Could Not Identify Country** This value will appear if Status.Code=CountryNotFound

What Is Context?

When you perform a search for an address element, Build Global Address looks at the address elements that you have already committed and splits up the values it returns based on whether or not the returned values exist within the context of the address elements you have already committed. For example, in the U.S. the following cities exist:

In Illinois:

- CHICAGO
- CHICAGO HTS
- CHICAGO RIDGE
- NORTH CHICAGO
- WEST CHICAGO

In Indiana:

- EAST CHICAGO

In Nevada:

- CHICAGO PARK

If you have already committed a value of "IN" (Indiana) for the state and then searched for the city "chicago", Build Global Address would return EAST CHICAGO as an "in context" result because it exists in Indiana, and it would return all the other matches for "chicago" as out-of-context results. Likewise, if you committed a value of "IL" (Illinois) for the state, Build Global Address would return EAST CHICAGO and CHICAGO PARK as out of context, and CHICAGO, CHICAGO HTS, CHICAGO RIDGE, NORTH CHICAGO, and WEST CHICAGO as "in context."

Get Global Candidate Addresses

Get Global Candidate Addresses returns a list of addresses that are considered matches for a given input address. If the input address matches multiple addresses in the Address Now database, the possible matches are returned. If the input address matches only one address in the Address Now database, no address data is returned.

Get Global Candidate Addresses is part of the Address Now Module.

Input

Get Global Candidate Addresses takes a standard address as input. All addresses use this format no matter what country the address is from. AddressLine1 and Country are required input fields. The other fields are optional.

Table 6: Get Global Candidate Addresses Input

Field Name	Format	Description
AddressLine1	String [79]	First address line. This is a required field.
AddressLine2	String [79]	Second address line
AddressLine3	String [79]	Third address line
AddressLine4	String [79]	Fourth address line
AddressLine5	String [79]	Fifth address line

Field Name	Format	Description
AddressLine6	String [79]	Sixth address line
AddressLine7	String [79]	Seventh address line
AddressLine8	String [79]	Eighth address line
City	String [79]	City name
StateProvince	String [79]	State or province.
PostalCode	String [10]	The postal code for the address in one of these formats: 99999 99999-9999 A9A9A9 A9A 9A9 9999 999
Country	String	The country. Specify the country using the format you chose for input country format (English name or ISO code). For a list of ISO codes, see **ISO Country Codes and Module Support**.
FirmName	String [79]	The company or firm name.

Options

Table 7: Get Global Candidate Addresses Options

Option	Description
Home country	Specifies the default country. Specify the country that is the destination of most of your mailpieces. For example, if most of your mailpieces are going to Canada, specify Canada. Get Global Candidate Addresses uses the country you specify to attempt validation when it cannot determine the country from the StateProvince, PostalCode, and Country address fields.
Casing	Specifies the casing of the output data. One of the following: **Mixed** — The output in mixed case (default). For example: 123 Main St Mytown FL 12345 **Upper** — The output in upper case. For example: 123 MAIN ST MYTOWN FL 12345
Country format	Specifies the format to use for the country name in the output. One of the following: **English names** — The country in the output in English (default). **ISO codes** — The country in the output in the two-character ISO code. **UPU codes** — The country in the output in the three-character UPU code.
Show extra address line	Specifies whether or not to include the city, state/province, and postal code in one of the AddressLine output fields. Regardless of what you specify with this option, the output fields City, State/Province, and PostalCode will always contain the city, state/province, and postal code.
Insert postal code separation character	Specifies whether or not to use separators (spaces or hyphens) in ZIP™ Codes or Canadian postal codes. For example, a ZIP + 4® Code with the separator would be 20706-1844 and without the separator it would be 207061844. A Canadian postal code with the separator would be P5E"1S7 and without the separator it would be P5E1S7. **Note:** Spaces are used in Canadian postal codes and hyphens in U.S. ZIP + 4® Codes.

Option	Description
Maximum records to return	The maximum number of candidate addresses to output. The default is 50. The maximum value is 100.
Return non-validated input data	Specifies whether or not to include in the output data from the input address that could not be validated.

Output

Get Global Candidate Addresses returns address data and return codes for each address.

Address Data

Table 8: Get Global Candidate Addresses Address Data Output

Field Name	Format	Description
AddressLine1	String [79]	The formatted first address line.
AddressLine2	String [79]	The formatted second address line.
AddressLine3	String [79]	The formatted third address line.
AddressLine4	String [79]	The formatted fourth address line.
AddressLine5	String [79]	The formatted fifth address line.
AddressLine6	String [79]	The formatted sixth address line.
AddressLine7	String [79]	The formatted seventh address line.
AddressLine8	String [79]	The formatted eighth address line.

Field Name	Format	Description
ApartmentLabel	String [79]	Apartment designator (such as STE or APT). For example: 123 E Main St. **APT** 3
ApartmentNumber	String [79]	Apartment number. For example: 123 E Main St. APT **3**
Building	String [79]	The name of a building.
City	String [79]	The city name.
Country	String [79]	The ISO code or English name of the country. For a list of ISO codes, see **ISO Country Codes and Module Support**.
Department	String [79]	The name of a distinct part of anything arranged into divisions. For example, the Finance Department in a corporation.
FirmName	String [79]	The name of a company. For example: **Pitney Bowes** 4200 PARLIAMENT PL STE 600 LANHAM MD 20706-1844 USA
HouseNumber	String [79]	House number. For example: **123** E Main St. Apt 3
POBox	String [79]	Post office box number. If the address is a rural route address, the rural route box number will appear here.
PostalCode	String [79]	The postal code as required by the local postal authority. For example, in the U.S. the postal code is the ZIP Code.

Field Name	Format	Description
PostalCode.AddOn	String [79]	For U.S. addresses, the last four digits of the ZIP + 4® Code.
PostalCode.Base	String [79]	For U.S. addresses, the five-digit ZIP Code.
Principality	String [79]	An area within a country. For example, England, Scotland, and Wales are principalities. This field will normally be blank.
StateProvince	String [79]	The state or province abbreviation.
StreetName	String [79]	Street name. For example: 123 E **Main** St. Apt 3
StreetSuffix	String [79]	Street suffix. For example: 123 E Main **St**. Apt 3
SubCity	String [79]	A district or suburb. The subcity is used in countries where it is common to include the district or suburb within the address. For example, 27 Crystal Way **Bradley Stoke** Bristol BS32 8GA In this case, "Bradley Stoke" is the subcity.
SubStreet	String [79]	The second street address used to identify an address. Substreets are used in countries where it is common to give two street names in the address. For example, 12 The Mews **High Street** In this example, "High Street" is the substreet. Substreets can be used to precisely identify the delivery location. In the example, "The Mews" may be a small street that needs another street identification to properly locate the address, so "High Street" is included. In this case, "High Street" is the main or known street.
USCountyName	String [79]	For U.S. addresses, the name of the county where the address is located.

Return Codes

Table 9: Get Global Candidate Addresses Return Codes

Field Name	Format	Description
ACRCode	String [79]	The Address Correction Result (ACR) code describes what data has been changed in each record. For information on what this code means, see **The ACR Code** on page 58.
Confidence	String [79]	The level of confidence assigned to the address being returned. Range is from zero (0) to 100; zero indicates failure, 100 indicates a very high level of confidence that the match results are correct.
Status	String [79]	Reports the success or failure of the match attempt. **Null** Success **F** Failure
Status.Code	String [79]	Reason for failure, if there is one. • RequestFailed • ServerError • CountryNotFound
Status.Description	String [79]	Description of the problem, if there is one. **Maximum records cannot be set to 0. Minimum value should be 1** This value will appear if Status.Code=RequestFailed. **Address Not Found** This value will appear if Status.Code=RequestFailed. **Module not licensed** This value will appear if Status.Code=ServerError. **Could Not Identify Country** This value will appear if Status.Code=CountryNotFound.

Reports

There is one report available with Get Global Candidate Addresses: the Get Global Candidate Addresses Report. To create the report, in Enterprise Designer drag the **Get Global Candidate Addresses Report** icon to the canvas. You do not need to draw a connector to the report.

Get Global Candidate Addresses Report

The Get Global Candidate Addresses Report contains information about the settings and number of records processed for the job.

General Information

The top of the report shows the date of the report as well as information on these settings:

- **Output Country Format**—The **Country format** setting in effect for this job. For more information about this setting, see **Options** on page 36.
- **Output Text Casing**—The **Casing** setting in effect for this job. For more information about this setting, see **Options** on page 36.
- **Maximum Results**—The **Maximum records to return** setting in effect for this job. For more information about this setting, see **Options** on page 36.

Input Address

This section contains statistics about the input used in the job.

- **Input Record Count**—The total number of input addresses for the job.
- **Address Records Processed**—The number of addresses for which Validate Global Address attempted to validate.
- **Total Records For Which Address Search Attempted**—The number of input records for which a search was attempted.
- **Total Records Successfully Searched**—The number of input addresses that returned candidates. This is the number of input addresses that did not result in a status of "F".
- **Total Unsearched Records**—The number of input addresses that did not return candidates. This is equal to the number of input addresses that resulted in a status of "F".

Output Address

This section contains statistics about the output from the job.

- **Search Results Count**—The total number of addresses, including candidates, that the job returned.

Validate Global Address

Validate Global Address provides enhanced address standardization and validation for addresses outside the U.S. and Canada. Validate Global Address can also validate addresses in the U.S. and

Canada but its strength is validation of addresses in other countries. If you need to validate addresses outside the U.S. and Canada, you should consider using Validate Global Address.

Validate Global Address is part of the Address Now Module.

Input

Validate Global Address takes a standard address as input. All addresses use this format no matter what country the address is from.

Table 10: Validate Global Address Input

Field Name	Format	Description
AddressLine1	String [79]	First address line
AddressLine2	String [79]	Second address line
AddressLine3	String [79]	Third address line
AddressLine4	String [79]	Fourth address line
AddressLine5	String [79]	Fifth address line
AddressLine6	String [79]	Sixth address line
AddressLine7	String [79]	Seventh address line
AddressLine8	String [79]	Eighth address line
City	String [79]	City name
StateProvince	String [79]	State or province.

Field Name	Format	Description
PostalCode	String [79]: 99999 ~~99999-9999~~ A9A9A9 A9A 9A9 9999 999	The postal code for the address. In the U.S. this is the ZIP Code™.
Country	String [79]	Specify the country using the format you chose for input country format (English name or ISO code). For a list of ISO codes, see **ISO Country Codes and Module Support**.
FirmName	String [79]	The company or firm name.

Options

Input Data Options

Table 11: Validate Global Address Input Data Options

Option	Description
Home country	Specifies the default country. You should specify the country where most of the addresses are located. For example, if most of the addresses you process are in Canada, specify Canada. Validate Global Address uses the home country to attempt validation when it cannot determine the country from the StateProvince, PostalCode, and Country address fields. For a list of valid values, see **ISO Country Codes and Module Support**.

Output Data Options

Table 12: Validate Global Address Output Data Options

Option	Description
Casing	Specifies the casing of the output data. One of the these: **Mixed** Returns the output in mixed case (default). For example, 123 Main St Mytown FL 12345 **Upper** Returns the output in upper case. For example,123 MAIN ST MYTOWN FL 12345
Country format	Specifies the format to use for the country name in the output. One of these: **English names** The country in the output is English (default). **ISO codes** The country in the output in the two-character ISO code. **UPU codes** The country in the output in the three-character UPU code.
Return standardized data when no match is found	Specifies whether to return a standardized address when an address cannot be validated. The address is formatted using the preferred address format for the address's country. If this option is not selected, the output address component fields (StreetName, HouseNumber, etc.) are blank when address validation fails.
Show extra address line	Specifies whether to include the city, state/province, and postal code in one of the AddressLine output fields. Regardless of what you specify with this option, the output fields City, State/Province, and PostalCode will always contain the city, state/province, and postal code.
Insert postal code separation character	Specifies whether to use a separator (spaces or hyphens) in ZIP™ Codes or Canadian postal codes. For example, a ZIP + 4® Code with the separator would be 20706-1844 and without the separator it would be 207061844. A Canadian postal code with the separator would be P5E"1S7 and without the separator it would be P5E1S7. **Note:** Spaces are used in Canadian postal codes and hyphens in U.S. ZIP + 4® Codes.

Option	Description
Return formatted data when no match is found	Specifies whether to return a formatted address when an address cannot be validated. The address is formatted using the preferred address format for the address's country.
Enable address validation	Enables address validation. Address validation does the following: • Matches components to the relevant country's reference data • Corrects spelling errors • Adds missing components • Corrects or adds postal codes
Enable address formatting	Formats the address components into the statutory postal or custom formats.

Standardization Options

Table 13: Validate Global Address Standardization Options

Option	Description
Flag vulgar words	Specifies whether or not to mark vulgar words in the output using the format ">VulgarWord<".
Debug output	This option controls whether or not to include troubleshooting information in the output fields Email1, Email2, URL1, and URL2.
Report vulgar words	Specifies whether or not to look for vulgar words. If this option is enabled, Validate Global Address returns a value in the WCRCode output field to indicate the results.
Populate from address lines	These options specify which parts of the address to use to standardize an address. Validate Global Address parses the input address lines into the components you select.

Validation Options

Table 14: Validate Global Address Validation Options

Option	Description
Cautious update	This option, used in conjunction with the "Force Update", ensures that no major changes are made to the data during processing.
Cross component match	Specifies whether or not to correct common address standardization and validation errors by performing cross-component matching. Cross-component matching checks for matches between data found in one field in the input data and another field in the Address Now database.
Use reference diacritics	Specifies whether or not Validate Global Address modifies the address to match the diacritics (accents, umlauts, etc.) in the postal database when the only changes to the address are the diacritics . For example, if **Use reference diacritics** is enabled, the following would occur: Input City: Chalon-Sur-Saône City in the postal database: CHALON SUR SAONE Output City: CHALON SUR SAONE Input City: ARTEMIVS'K City in the postal database: ARTEMIVSK Output City: ARTEMIVSK If **Use reference diacritics** is not enabled, the following would occur: Input City: Chalon-Sur-Saône Reference City: CHALON SUR SAONE Output City: Chalon-Sur-Saône Input City: ARTEMIVS'K Reference City: ARTEMIVSK Output City: ARTEMIVS'K Note that this option has no effect on the **Transliteration** option.
Keep standardization changes in ACR code	Specifies whether or not standardization changes such as changing "ROAD" to "RD" should be reported in the ACR code.

Option	Description
Acceptance level	The Acceptance Level setting specifies the minimum number of address components that must be validated in order for the whole address to be considered validated. The value specified for Acceptance level corresponds to the second character of the ACR code. For more information, see **The ACR Code** on page 58. The acceptance level differs from the **Minimum confidence level for validation** option in that acceptance level measures how many components Validate Global Address validated, regardless of how well the validated components matched to address components in the postal databases, whereas **Minimum confidence level for validation** indicates the probability that the output address is the correct, validated version of the input address. One of the following: • **Country specific**—The acceptance level is automatically set to an appropriate level based on the address's country. For example, U.S. addresses are processed with an acceptance level of 4. • **Level 0**—No components validated (default) • **Level 1**—Country only validated • **Level 2**—City and country validated • **Level 3**—City, postal code and country validated • **Level 4**—Street, city, postal code and country validated • **Level 5**—Premise number, building name, sub-building, PO box, company, street, city, postal code, and country validated
Minimum confidence level for validation	Specifies the minimum confidence level for address validation. Addresses with a value in the Confidence output field greater than or equal to this value is validated, and those that have a lower value will not be validated (the output field Status will contain F.) Specify any value between 0 and 100. The higher the value, the higher the degree of confidence necessary for effective address validation. The default is 60.
Outer match score lines	A value from 0 to 8 indicating the number of address lines to use when calculating the outer match score. The default is 8. For more information on the outer match score, see **The Outer Match Score** on page 55.

Option	Description
Match score weightings	These values specify the relative importance of the similarities or differences between the input data and the Address Now database for the specified fields. This affects the confidence value, and can be used to tailor the confidence to distinguish correct and incorrect updates. For more information, see **The ACR Code** on page 58. For each field, specify a whole number from 0 to 10, indicating the relative importance of this field compared to the others. The default values are: • Firm name—1 • Street—10 • City—8 • Postal Code—8
Populate if possible	These options specify which parts of the address to use to validate an address. The Validate Global Address parses the input address lines into the components referenced in these options.
Force update	These options specify which fields to correct during validation.
Replace alias	These options specify which address components should be overwritten if the input data is an alias in the Address Now database. Aliases may be used when postal codes are changed or for alternative city names. If set to yes, the alias is overwritten with the master version specified in the Address Now database.

Output Format Options

Table 15: Validate Global Address Output Format Options

Option	Description
Transliteration	Specifies how to format diacritics in the output address. One of the following: **Retain diacritics** — No transliteration is performed. Diacritic characters are left as specified in the input and/or postal database. Default. **Strip diacritics** — Diacritic characters are removed and replaced with the equivalent unadorned character. **Transliterate** — Diacritic characters are transliterated to an equivalent unadorned character or character sequence using language-specific transliteration rules. For example, the following shows the effect of each of the three transliteration options on a Swedish address. Note the differences in "Västra Frölunda". **Retain diacritics** Gustaf Wernersgata 12 S-42132 Västra Frölunda **Strip diacritics** Gustaf Wernersgata 12 S-42132 Vastra Frolunda **Transliterate** Gustaf Wernersgata 12 S-42132 Vaestra Froelunda
Include in formatted address output	Specifies which parts of the address to format with the standards of the appropriate country. Validate Global Address parses the input address lines into the components referenced in these options.

Output

Address Data Output

Table 16: Validate Global Address Address Data Output

Field Name	Format	Description
AddressLine1	String [79]	The formatted first address line.

Field Name	Format	Description
AddressLine2	String [79]	The formatted second address line.
AddressLine3	String [79]	The formatted third address line.
AddressLine4	String [79]	The formatted fourth address line.
AddressLine5	String [79]	The formatted fifth address line.
AddressLine6	String [79]	The formatted sixth address line.
AddressLine7	String [79]	The formatted seventh address line.
AddressLine8	String [79]	The formatted eighth address line.
ApartmentLabel	String [79]	Apartment designator (such as STE or APT). For example: 123 E Main St. APT 3
ApartmentNumber	String [79]	Apartment number. For example: 123 E Main St. APT **3**
Building	String [79]	The name of a building.
City	String [79]	The city name.
Country	String [79]	The ISO code or English name of the country. For a list of ISO codes, see **ISO Country Codes and Module Support**.
Department	String [79]	A subdivision of a country used in French and Spanish speaking countries. For example, France is divided into 100 departments.

Field Name	Format	Description
FirmName	String [79]	The name of a company. For example: **Pitney Bowes** 4200 PARLIAMENT PL STE 600 LANHAM MD 20706-1844 USA
HouseNumber	String [79]	House number. For example: **123** E Main St. Apt 3
Latitude	String [79]	The most precise latitude that could be determined for the address. This could be a point level location or a centroid. The level of precision can be determined by looking at the ECRCode output field. For more information, see **The ECR Code** on page 54.
Longitude	String [79]	The most precise longitude that could be determined for the address. This could be a point level location or a centroid. The level of precision can be determined by looking at the ECRCode output field. For more information, see **The ECR Code** on page 54.
POBox	String [79]	The post office box number. If the address is a rural route address, the rural route box number will appear here.
PostalCode	String [79]	The postal code. In the U.S. this is the ZIP Code™.
PostalCode.AddOn	String [79]	The 4-digit add-on part of the ZIP + 4® Code. For example, in the ZIP Code™ 60655-1844, 1844 is the 4-digit add-on. (U.S. addresses only.)
PostalCode.Base	String [79]	The 5-digit ZIP Code™. For example 20706 (U.S. addresses only.)
Principality	String [79]	An area within a country. For example, England, Scotland, and Wales are principalities. This field will normally be blank.
StateProvince	String [79]	The state or province abbreviation.

Field Name	Format	Description
StreetName	String [79]	Street name. For example: 123 E **Main** St. Apt 3
StreetSuffix	String [79]	Street suffix. For example: 123 E Main **St**. Apt 3
SubCity	String [79]	A district or suburb. The subcity is used in countries where it is common to include the district or suburb within the address. For example, 27 Crystal Way **Bradley Stoke** Bristol BS32 8GA In this case, "Bradley Stoke" is the subcity.
SubStreet	String [79]	The second street address used to identify an address. Substreets are used in countries where it is common to give two street names in the address. For example, 12 The Mews **High Street** In this example, "High Street" is the substreet. Substreets can be used to precisely identify the delivery location. In the example, "The Mews" may be a small street that needs another street identification to properly locate the address, so "High Street" is included. In this case, "High Street" is the main or known street.
USCountyName	String [79]	For U.S. addresses, the name of the county where the address is located.

Return Codes

Table 17: Validate Global Address Return Codes

Field Name	Format	Description
ACRCode	String [79]	The Address Correction Result (ACR) code describes what data has been changed in each record. For information on what this code means, see **The ACR Code** on page 58.
Confidence	String [79]	The level of confidence assigned to the address being returned. Range is from zero (0) to 100; zero indicates failure, 100 indicates a very high level of confidence that the match results are correct. This value is the same as the last three digits of the ACR code, referred to as the validation match score. For more information, see **The ACR Code** on page 58.
ECRCode	String [79]	The Enhanced Correction Result (ECR) code describes the level of precision of the latitude and longitude returned for the address. For more information, see **The ECR Code** on page 54.
Email1	String [79]	Extra standardization information.
Email2	String [79]	Extra standardization information.
OuterMatchScore	String [79]	A score that measures changes to each address line. For more information, see **The Outer Match Score** on page 55.
Status	String [79]	Reports the success or failure of the match attempt. • **null**—Success • **F**—Failure
Status.Code	String [79]	Reason for failure, if there is one. • UnableToValidate • ServerError • CountryNotFound

Field Name	Format	Description
Status.Description	String [79]	Description of the problem, if there is one. • **Address Not Found**—This value will appear if Status.Code=UnableToValidate. • **Module not licensed**—This value will appear if Status.Code=ServerError. • **Could Not Identify Country**—This value will appear if Status.Code=CountryNotFound.
URL1	String [79]	Extra standardization information.
URL2	String [79]	Extra standardization information.
WCRCode	String [79]	The Word Correction Result (WCR) code describes vulgar words found in the input address. The code has two components: • **Location code**—One of the following: • **AB**—Indicates a vulgarity was found in the address. • **NB**—Indicates a vulgarity was found in the name. • **Count**—The number of vulgar words found in the location indicated by the location code. For example, AB2 indicates that two vulgar words were found in the input address.

The ECR Code

The Enhanced Correction Result (ECR) code describes the level of precision of the latitude/longitude coordinates returned for the address. The code consists of a prefix followed by a dash then the body of the code.

The prefix always begins with "EL" followed by a number from 1 to 5 indicating the overall level of precision:

- 5—Point geocode
- 4—Street centroid
- 3—Postcode centroid
- 2—City centroid
- 1—Region centroid

The body of the code identifies the components that were used to match the address to a geocode. Note that the body consists of letters and numerals. Here's what they mean:

- P—Premise/house number, building or PO box
- S—Street
- T—City
- R—Region/state
- Z—Postal code
- C—Country

There are only two numeric options in the body: 4 or 0

- 4—The component data was available to make the geocode-address match.
- 0—The component date was not available.

For example: EL4-P0S4T4R4Z4C4

In this example, the 0 following the P tells us that premise/house number data was not available to make this address match; everything from street to country, however, was used in the assignment.

The Outer Match Score

The outer match score indicates how much Validate Global Address changed each address line to validate the address. The score compares the address lines before standardization and after validation and formatting. This score is only generated if you set the option `Outer match score lines` to a value greater than 0.

The outer match score is similar to the validation match score, which is part of the ACR code (see **The ACR Code** on page 58). The difference is that the outer match score measures any change to an address line, including formatting, whereas the validation match score measures only whether or not the data could be validated,

For example, take the following input address lines before processing:

Address Line 1: 5 camden cres
Address Line 2: bath
Address Line 3: uk

After processing the address lines are:

Address Line 1: 5 Camden Crescent
Address Line 2: Bath
Address Line 3: BA1 5HY
Address Line 4: United Kingdom

This has a validation match score of 84% and in outer match score of 23%.

The validation match score is high because the address components were fairly accurate before validation. The street name was valid except for casing and use of an abbreviation. The city and country were both valid. The only thing not correct was the postal code (in this case it was missing). Hence the relatively high validation match score of 84%.

The outer match score is low because after formatting, the address lines are considerably different from the input. In this case, Address Line 3 contained "uk" on input, and contains "BA1 5HY" on

output. Line 4 was empty on input, and in populated on output. Address line 1 has also changed. The outer score is therefore quite low.

Reports

Validate Global Address can produces reports for batch processing. To create the report, in Enterprise Designer drag the report icon you want to the canvas. You do not need to draw a connector to the report.

Address Now Summary Report

Input Name/Address

This section contains high-level counts for the job.

- **Input Record Count**—The total number of input addresses for the job.
- **Address Records Processed**—The total number of input addresses for the job.
- **Total Records For Which Address Validation Attempted**—The number of input records for which validation was attempted.
- **Total Records Successfully Matched**—The number of input addresses that were validated or corrected. This is the number of input addresses that did not result in a status of "F".
- **Total Unmatched Records**—The number of input addresses that could not be validated or corrected. This is equal to the number of input addresses that resulted in a status of "F".
- **Standard Address Returned Successfully**—The number of unmatched (failed) addresses that Validate Global Address standardized. Standardization only happens if the option **Return standardized data when no match is found** is enabled. For more information, see **Output Data Options** on page 44.

Address Standardization Results Component Population Counts

This section shows the number of address elements that Validate Global Address standardized in this job. It includes both the total number for each element and the percentage of the total number that was standardized. For example, if Street Name shows a count of 6 and a percent of 11 and a percent of 92%, it means that there were 11 street names that were standardized in the job, and that represents 92% of the total number of street names in the job.

Address Validation Results

This section lists the validation levels for the job. For more information on validation levels, see **The ACR Code** on page 58.

Address Correction Results

This section lists the component status portion of the Address Correction Result (ACR) codes for this job. The top row of the table lists the component status codes. The body of the table lists the counts for each address element. For example, the number of street names that had an component status code of 0, the number that had a code of 1, and so forth. For more information on the component status portion of the ACR code, see **The ACR Code** on page 58.

Validation/Correction Records

This section lists information about postal code validation and correction.

- **Original Postal Code Confirmed Via Address Match**—The number of addresses whose ACR component status for the postal code is 2.
- **Postal Code Corrected Via Address Match**—The number of input postal codes that were incorrect but were corrected by Validate Global Address.
- **Original Postal Code Retained**—The number of addresses whose ACR component status for the postal code is 1.
- **No Postal Code Available**—The postal data contained no postal code for the address.

Matched Records

This section lists information about input addresses that were matched to known addresses in the Address Now Module database.

- **Total Records Valid On Input**—The number of addresses that were confirmed to be correct.
- **Total Corrected**—The number of addresses that Validate Global Address corrected.
- **Total Records Successfully Matched**—The total number of addresses that were either validated or corrected successfully.

Unmatched Records

This section lists information about input addresses that Validate Global Address was not able to confirm or correct.

- **Street Mismatch**—The number of addresses whose street could not be validated or corrected.
- **House Mismatch**—The number of addresses whose house number that could not be validated or corrected.
- **Total Unmatched Records**—The total number of addresses that could not be validated or corrected.

Records Processed

This section lists the number of records processed for each region.

- **Records Processed By US**—The number of addresses processed by U.S. matching logic.
- **Records Processed By Canada**—The number of addresses processed by Canadian matching logic.
- **Records Processed By International**—The number of addresses processed by international (non-U.S. and non-Canada) matching logic.
- **Total Records Processed**—The total number of records in the job.

Address Now Summary Report By Country

This report lists a summary of the results for each country, including the number of addresses processed for each country and the level of validation obtained.

Address Now Detailed Report By Country

This report lists the validation results for each address element, for each country.

The ACR Code

The Address Correction Result (ACR) code describes what data has been changed in each record. An example of an ACR is:

L5-P0S0A5T1R0Z0C4-098

ACR codes consist of three parts:

- Validation Level
- Component Status
- Validation Match Score

Validation Level

The first two characters of the address correction result state the type and level of validation.

The first character, which is always alphabetic, specifies the type of validation:

- **U**—Unable to standardize address
- **C**—Address is in component form
- **L**—Address has been formatted into address lines
- **R**—Address has been reverted and has not reached acceptable level

The second character, which is always numeric, specifies the level of validation. The higher the level, the better the validation will be. The levels that can be achieved are as follows:

- **0**—No components validated
- **1**—Country only validated
- **2**—City and country validated
- **3**—City, postal code and country validated
- **4**—Street, city, postal code and country validated
- **5**—Premise number, building name, sub-building, PO box, company, street, city, postal code, and country validated.

Component Status

The second part of the ACR code gives the status of the main address components. The address components are identified as follows:

- Character 3-4: P—Premise/house number
- Character 5-6: S—Street
- Character 7-8: A—Subcity (city area)

- Character 9-10: T—City
- Character 11-12: R—Region/state
- Character 13-14: Z—Postal code/ZIP Code®
- Character 15-16: C—Country

A number follows each component and can take one of the these values:

- **0**—Not found/empty
- **1**—Derived using position in input data
- **2**—Recognized using the Address Now Module database
- **3**—Recognized and updated to standard form using the Address Now Module database
- **4**—Validated using Address Now Module database
- **5**—Updated/corrected using Address Now Module database
- **6**—Added using Address Now Module database
- **7**—Correctly empty
- **8**—Partial recognition using Address Now Module database
- **9**—Needs correcting to match Address Now Module database

Validation Match Score

The Validation Match Score comprises characters 17-19, the final three digits of the ACR code. This is a comparison between the standardized data (in component format) and the suggested match returned from the Address Now Module database.

This score is calculated by examining all fields returned from the Address Now Module database and comparing them individually with the existing component data. The overall match score is then calculated by combining these individual values into an average score, taking into account the match score weightings, which can be set from the address validation options dialog box. For example,

Input data:

AddressLine1: 11 High Street
City: Anytown
Country: UK

Standardized data:

Premise: 11
Street: High Street
City: Anytown

When validated, the data returned from the Address Now Module database for this record may be:

Premise: 11
Street: High Street
City: Anytown
Postal Code: ZZ9 9ZZ

Comparing the Address Now Module database to the standardized data we get:

- Premise: 100% match

- Street: 100% match
- City: 100% match
- Postal Code: not used, because empty on input

Combining these percentages gives us a match score of 100%.

Another example may be:

Input data:

AddressLine1: bergerstrasse 12
AddressLine2: munich
AddressLine3: 80124
Country: Germany

Standardized data:

Premise: 12
Street: Bergerstr.
City: München
Postal Code: 80124

Address Now Module database output:

Premise: 12
Street: Burgerstr.
City: München
Postal Code: 80142

Comparing the Address Now Module database output to the standardized data we get:

- Premise: 100% match
- Street: 90% match (the actual figure is determined by a textual comparison of the two values)
- City: 100% match
- Postal Code: 80% match (because the numbers are transposed)

This gives an overall match score of 92% if the match score weightings are all set at 1. Increasing the match score weighting of the postal code will decrease the match score, because the postal code component score (80%) will be made more important in the calculation. Increasing the match score weighting of the city will increase the match score, because the city component score (100%) will be made more important.

For example:

L5-P4S4A5T5R4Z4C4-098

- L shows that formatting has been carried out to create the address lines
- The validation level is 5, meaning that the highest level of matching against the Address Now Module database was attained
- All component codes except subcity (A) and city (T) are set to 4 indicating that they were validated using the Address Now Module database

- The subcity code and city code are set to 5 indicating that these components were corrected using the Address Now Module database

The overall address matched the Address Now Module database at 98%.

> **Note:** You may also receive a value of "SDS" for the Validation Match Score. A return of SDS indicates that the address has not been standardized, possibly as a result of the address being reverted.

Global Addressing Module

Global Addressing Module

The Global Addressing Module for the Spectrum™ Technology Platform provides enhanced address standardization and validation for addresses outside the U.S. The Global Addressing Module provides benefits that include:

- **Better data**—Global Address Validation combines data from multiple data sources into a single Global Addressing Validation database to provide the most extensive and accurate international addressing data possible.
- **Global addressing expertise**—Global Addressing Validation analyzes and compares each input address to the Global Addressing database for the appropriate country. If needed, Global Address Validation corrects and formats the address based on postal standards and user preferences.
- **Automated address suggestion**—Global Type Ahead automatically suggests addresses as you type characters.
- **Address parsing**—Global Address Parser splits address strings into individual address elements with the help of machine learning techniques.

Components

The Global Addressing Module consists of:

- **Global Address Validation**—Analyzes and compares each input address to the Global Addressing database for the appropriate country. If needed, Global Address Validation corrects and formats the address in accordance with the postal standards for that country.
- **Global Type-Ahead**—Automatically suggests addresses as you type and immediately returns candidates based on your input.
- **Global Address Parser**—Splits address strings into individual address elements, such as name of organization, city, locality, district, and postal code, using machine learning techniques.

Installing Global Addressing Module Databases

This procedure describes how to download and install Global Addressing Module databases in the Spectrum™ Product Database (SPD) format from the Pitney Bowes eStore.

Disk Space

The disk space requirements for extracted and non-extracted SPD bundles are:

- Extracted bundles (all SPD) - 50 GB
- Non-extracted bundles (all SPD) - 20 GB

Memory

The following table provides information on the Global Address Module memory requirements for each country database.

Table 18: Global Address Validation Memory Requirements (in Megabytes)

Country Database Name	Global Address Validation	Global Type Ahead	Both
Argentina (ARG)	700	n/a	n/a
Australia (AUS)	700	n/a	n/a
Austria (AUT)	900	700	1900
Belgium (BEL)	900	700	1900
Brazil (BRA)	700	700	700
China (CHN)	700	n/a	n/a
Czech Republic (CHZ)	700	n/a	n/a
Denmark (DNK)	2100	700	3400
Finland (FIN)	900	700	1900
France (FRA)	2800	700	4100
Germany (DEU)	700	700	1900
Greece (GRC)	700	n/a	n/a

Country Database Name	Global Address Validation	Global Type Ahead	Both
India (IND)	700	n/a	n/a
Ireland (IRL)	900	700	1900
Italy (ITA)	700	700	1900
Japan (JPN)	700	n/a	n/a
Malaysia (MYS)	700	n/a	n/a
Mexico (MEX)	700	n/a	n/a
Netherlands (NLD)	700	n/a	n/a
New Zealand (NZL)	700	n/a	n/a
Norway (NOR)	700	700	1900
Poland (POL)	700	n/a	n/a
Russia (RUS)	700	n/a	n/a
Spain (ESP)	1300	700	1900
Sweden (SWE)	900	n/a	n/a
Switzerland (CHE)	700	700	1900
United Kingdom (GBR)	980	700	1900

To download and install a Global Addressing Module database resource in the Spectrum™ Product Database (SPD) format:

1. Make sure no applications are running.
2. Select and download your licensed SPD files (xxx.spd) from the Pitney Bowes eStore using the link provided in the release announcement or welcome email.
3. The database is downloaded as a zip file. Unzip the database before proceeding with the installation.
4. Install the SPD files:

a) Place the SPD files in `<SpectrumLocation>/server/app/dataimport`. This is the default location for SPD files. The Spectrum™ Technology Platform server monitors this folder and looks for new files in two-second intervals.

   You can change the location of the data import directory by altering the **platform** property in the `<SpectrumLocation>/server/app/conf/dataimportdirectories.properties` file.

b) When the server detects new SPD files, the server automatically extracts the SPD files to `<SpectrumLocation>/server/app/repository/datastorage`.

   You can change the location of the data storage folder by altering the **spectrum.data.manager.storage.directory** property in the Data Manager settings section of the `<SpectrumLocation>/server/app/conf/spectrum-container.properties` file.

c) By default, the SPD files are deleted after the files are extracted. However, you can archive SPD files by setting the **spectrum.data.manager.archive.data** property to "true" in the Data Manager settings section of the `<SpectrumLocation>/server/app/conf/spectrum-container.properties` file.

d) At this point the data will become available and you can add it as a Spectrum™ database resource in the **Spectrum™ Databases** section of Management Console.

e) After you install the database files, use either the Database Resource tool in the Management Console or the Global Addressing Administration Utility database commands to define the database as a resource. For more information on the Administration Utility database commands, see the section "Global Addressing Module Databases" in the *Spectrum™ Technology Administration Guide*.

Adding, Modifying, or Deleting a Global Addressing Module Database Resource

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

To create a Global Addressing Module database resource:

1. If you have not already done so, install the database files on your system. For instructions on installing databases, see the section "Installing Global Addressing Module Databases".
2. In Management Console, under **Resources**, choose **Spectrum Databases**.
3. You can use the buttons at the top left to manage your databases:

   To create a new database, click Add .

   To change an existing database, select the database and then click Edit .

   To delete a database, select the database and then click Delete .

To create a new database by copying an existing database, click Copy .

4. If you are creating a new database, on the **Add Database** page, enter a name for the database resource in the **Name** field. 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).

   When modifying the pool size you must also consider the number of runtime instances specified in the dataflow for the stages accessing the database. Consider for example a dataflow that has a Global Address Validation stage that is configured to use one runtime instance. If you set the pool size for the Global Address Validation database to four, you will not see a performance improvement because there would be only one runtime instance and therefore there would only be one request at a time to the database. However, if you were to increase the number of runtime instances of the Global Address Validation stage to four, you might then see an improvement in performance since there would be four instances of the Global Address Validation stage accessing the database simultaneously, therefore using the full pool. For more information about setting runtime instances, see the *Spectrum™ Technology Administration Guide*.

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

6. In the **Module** field, select Global Address Validation Coder.
7. In the **Type** field, select Global Addressing.
8. To select all Global Addressing databases and all countries within those databases, click **Include** at the top of the list of available databases. To select only specific individual databases and all countries within those individual databases, click Include next to the individual databases.

   Tip: To see the countries included in an individual database, click the arrow to the left of a database. You can also click Include at this level to include only specific countries in an individual database.

   > **Note:** For optimum performance, distribute countries across multiple regional Database Resources. For example, group APAC countries into one Database Resource and EMEA countries into another Database Resource.

9. Click **Save** to add and save the selected databases. The Spectrum™ Databases page displays the added or modified databases.

Global Address Validation

Global Addressing Validation provides enhanced address standardization and validation for international addresses outside the U.S. Global Address Validation is part of the Global Addressing Module.

Supported Countries

Global Address Validation provides enhanced address standardization and validation for the following prioritized countries. The three-digit ISO country code is shown for each country. For a complete list of all ISO country codes, see **ISO Country Codes and Module Support** on page 284.

- Argentina (ARG)
- Australia (AUS)
- Austria (AUT)
- Belgium (BEL)
- Brazil (BRA)
- China (CHN)
- Czech Republic (CHZ)
- Denmark (DNK)
- Finland (FIN)
- France (FRA)
- Germany (DEU)
- Greece (GRC)
- India (IND)
- Ireland (IRL)
- Italy (ITA)
- Japan (JPN)
- Malaysia (MYS)
- Mexico (MEX)
- Netherlands (NLD)
- New Zealand (NZL)
- Norway (NOR)
- Poland (POL)
- Russia (RUS)
- Spain (ESP)
- Sweden (SWE)
- Switzerland (CHE)
- United Kingdom (GBR) (Includes POI information)

Global Address Validation provides additional support for 130+ countries worldwide.

Using Global Address Validation

After installing and deploying the Global Addressing Module, you can use Global Address Validation:

- As a service from Management Console
- As a stage from Enterprise Designer

Using Global Address Validation As a Service

To use Global Address Validation as a service from Management Console:

1. Open the Management Console.
2. Under the Services tab, select **Global Addressing**.
3. From the list of services on the left side of the pane, select **Global Address Validation**.
4. On the **Database Resources** tab, select the Global Address Validation database resource to use.
5. Click **Save** to save your database selection.
6. On the **Default Options** tab, specify the options you want. For information on the options, see **Options** on page 69.
7. If you make changes to the global default options, click **Save** to save those changes. Any changes you make to the global default options are also applied to Global Address Validation in Enterprise Designer.
8. Click the **Preview** tab.
9. On the **Preview** tab, enter your input address elements in the appropriate fields. For information on the input fields, see **Input** on page 68.
10. Click **Run Preview**.
11. In Preview **Output Records**, on the right side of the pane, note that the results of the search have been placed in the appropriate output field. For information on the output fields, see **Output** on page 72.
12. In the Preview tab, you can:
    a) Use Add to add additional input records for Run Preview processing.
    b) Use Import to import a number of input records for Run Preview processing.
    c) Use Delete to delete all records from the current Run Preview session.

Using Global Address Validation As a Stage

You can use Global Address Validation as a stage from Enterprise Designer to perform address validation as a batch process. For more information about creating a job using Global Address Validation as a stage, see:

- My First Dataflow (Job) in the Dataflow Designer Guide
- **Input**

- **Options**
- **Output**

Input

Global Address Validation uses an address as input. All addresses use this format regardless of the address's country. To obtain the best performance and address match, 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.

> **Note:** The country name or two- or three- character country ISO code is optional. If you omit the country, Global Address Validation returns the best available candidates for the **Default Country** selected on the **Default Options** tab. For a list of ISO codes, see **ISO Country Codes and Module Support** on page 284.

Table 19: Global Address Validation Input

Field Name	Format	Description
AddressLine1	String	The first address line. For example, **34 GLENVIEW ROAD** MOUNT KURNING-GAI NSW 2080.
LastLine	String	The last line of the address. For example, 34 GLENVIEW ROAD **MOUNT KURNING-GAI NSW 2080**. **Note:** Global Address Validation only considers the LastLine information when individual components such as City and PostalCode are not provided.
City	String	The city or town name. To produce the best match results, your input address should use the official city name.
CitySubdivision	String	The name of one of the following depending on the country: • **Not used**—AUS, AUT, BEL, CHE, DEU, DNK, FIN, FRA, IRL, MYS, NLD, NOR, POL, SWE • **Locality**—BRA, GBR, GRC, ITA, ESP • **Suburb**—NZL

Field Name	Format	Description
StateProvince	String	The name of the state or province depending on the country: • **Not used**—BEL, CHE, DNK, IRL, NLD, NOR • **Bundesland**—DEU • **Province (voivodship)**—POL • **Region**—AUT, ESP, FRA, GBR, GRC, NZL • **Region (län)**—FIN • **Region (lan)**—SWE • **State**—AUS, BRA • **State (negeri)**—MYS
StateProvinceSubdivision	String	The name of the state or province subdivision depending on the country: • **Not used**—AUT, BRA, FIN, GBR, MYS • **Department**—FRA • **District**—GRC • **District (fylke/counties)**—NOR • **District (poviat)**—POL • **Kommun**—SWE • **Kreis**—DEU • **Local Government Authority (LGA)**—AUS • **Province**—BEL, CHE, DNK, ESP, IRL, ITA, NLD • **Region**—NZL
PostalCode	String	The postal code in the appropriate format for the country.
Country	String	The country name of the two- or three-character ISO country code. This field is optional. If you omit the country, Global Address Validation returns the best available candidates for the Default Country selected on the Default Options tab. For a list of ISO codes, see **ISO Country Codes and Module Support** on page 284.
FirmName	String	Company, firm name, or place name. For example, PITNEY BOWES.

Options

Global Address Validation uses the default options settings to define address validation processing.

Table 20: Global Address Validation Options

Option Name	Country Support	Description
Database	All	The database to use for address processing. Only databases that have been defined in the Database Resources panel in the Management Console are available.
Casing	All	The format for the returned address: **Mixed** The output data is returned in a mixed case format. For example, 100 Main Street. **Lower** The output data is returned in an all lower case format. For example, 100 main street. **Upper** The output data is returned in an all upper case format. For example, 100 MAIN STREET. Default.
Default country	All	The default country for address processing. To improve coding performance when your input addresses do not contain country information, set up an additional instance of the Global Address Validation stage as a preliminary stage to process and retrieve the country code for the input addresses. 1. Set up an additional instance of the Global Address Validation stage as a preliminary (first) stage in your dataflow. Give the preliminary stage a unique label. For example, "Identify Country". Specify "World" as the default country for the preliminary stage. The preliminary stage uses the available input address elements with additional data sources (available when you select "World" as the default country) to determine the country code. The "country-coded" output from the preliminary stage becomes the input for the next step in the dataflow. 2. As the next step in the dataflow, the addresses are sent through a second Global Address Validation stage with the proper country code (retrieved in the preliminary stage) to validate the address to the street/house/premise level.
Return multiple addresses	All	The number of match candidates to return. Using a looser Match Mode setting such as "Relaxed" can result in the matching output including multiple match candidates. The specified number of match candidates are presented to the user to select the desired match candidate. If an exact match is found, the single match candidate is returned.
City fallback	All	When a street level match cannot be made, use the input city to determine match candidates.

Option Name	Country Support	Description
Postal fallback	All	When a street level match cannot be made, use the input postal code to determine match candidates.
Prefer postal code over city	AUS	Prefer candidates matching the input postal code over matches to input city. Default = disabled.
Match mode	All	Match modes determine the leniency used to make a match between the input address and the reference data. Select one of the following match modes based on the quality of your input and your desired output. **Exact** A very tight match. This restrictive mode generates the fewest match candidates. When using this mode, ensure that your input is very clean; free of misspellings and incomplete addresses. **Relaxed** A loose match. This mode generates the most match candidates and results in more multiple matches. Use this mode if you are not confident that your input is clean and free of misspellings and incomplete addresses. **Custom** A custom match. Allows you to define the matching criteria by selecting **Custom Match Fields**.
Custom match fields	All	These options set the match criteria for determining match candidates. To enable these options, you must set the **Match Mode** to `Custom`. By default, these options are disabled. **Address number** A match must be made to the input address number. **Street** A match must be made to the input street name, type, and directional fields. **City** A match must be made to the input address city. **City subdivision** A match must be made to the input address city subdivision. **State/province** A match must be made to the input address state or province. **State/province subdivision** A match must be made to the input address state or province subdivision. **Postcode** A match must be made to the input address postal code.

Option Name	Country Support	Description	
Output options	All	The elements to be returned by Global Address Validation processing:	
		Parsed address	The parsed address elements (for example, Address Line 1, postal codes, and country). The meaning of some of these fields may vary by country. Do not select Parsed address when returning G/Z level matches.
		Precision	A code describing the precision of the address match.
		Input address	Returns the original input address.
		Country specific fields	Returns country-specific output information.

Output

Global Address Validation output is determined by the output options you select.

Standard Address Output

Standard address output consists of address lines which correspond to how the address would appear on an address label. City, state or province, postal code, and other data are also included in the standard address output.

Table 21: Standard Address Output

Field Name	Format	Description
AddressBlock1-2	String	The AddressBlock output fields contain a formatted version of the standardized or normalized address as it would be printed on a physical mailpiece. Global Address Validation formats the address into address blocks using postal authority standards. Each line of the address is returned in a separate address block field. There can be up to two address block output fields: AddressBlock1 and AddressBlock2. AddressBlock1 includes: • Firm Name • Unit Number • Unit Type • House Number • Street Name AddressBlock2 includes: • Locality • Town • Postal Code • County • State For example, this input address: AddressLine1: 34 Glenview Road City: Mount Kurning-Gai StateProvince: NSW PostalCode: 2080 Results in this address block output: AddressBlock1: 34 Glenview Road AddressBlock2: Mount Kurning-Gai NSW 2080
AddressLine1	String	The first address line. For example, **34 GLENVIEW ROAD** MOUNT KURNING-GAI NSW 2080.
ApartmentLabel	String	The flat or unit type. For example, 39 Acacia Avenue **Flat** B.
ApartmentNumber	String	The flat or unit number. For example, 39 Acacia Avenue Flat **B**.
Building	String	The name of a building.
City	String	The city or town name. Your input address should use the official city name to produce the best match results.

Field Name	Format	Description
City.Matched	String	The status of the city match. **True** Matched on the city name. **False** Did not match on the city name.
CitySubdivision	String	The name of one of the following depending on the country: • **Not used**—AUS, AUT, BEL, CHE, DEU, DNK, FIN, FRA, IRL, MYS, NLD, NOR, POL, SWE • **Locality**—BRA, GBR, GRC, ITA, ESP • **Suburb**—NZL
CitySubdivision.Matched	String	The status of the match on city subdivision. **True** Matched on the city subdivision. **False** Did not match on the city subdivision.
Confidence	String	The level of confidence assigned to the address being returned. Range is from zero (0) to 100. Zero indicates failure. 100 indicates a very high level of confidence that the match results are correct.
Country	String	The country in the language or code specified in the Country format option. For a list of ISO codes, see **ISO Country Codes and Module Support** on page 284.
Country specific fields	String	The country specific output information. To include the country specific output information in the output, check the **Country specific fields** output option.
FirmName	String	The name of a company.
HouseNumber	String	The house number. For example, **39** Acacia Avenue.
Housenumber.Matched	String	The status of the match on house number. **True** Matched on the house number. **False** Did not match on the house number.
LeadingDirectional	String	The leading directional. For example, 123 **E** Main St Apt 3.

Field Name	Format	Description
MatchOnAllStreetFields	String	The status of the match on all street fields. **True** Matched on all street fields. **False** Did not match on all street fields.
MatchOnStreetDirectional	String	The status of the match on street directional. **True** Matched on the street directional. **False** Did not match on the street directional.
MultimatchCount	String	If the address was matched to multiple candidate addresses in the reference data, this field contains the number of candidate matches found.
PostalCode	String	The postal code for the address. The format of the postal code varies by country.
PostalCode.AddOn	String	The second part of a postal code. This field is not used by most countries.
Postalcode.Matched	String	The status of the match on postal code. **True** Matched on the postal code. **False** Did not match on the postal code.
Principality	String	An area within a country. For example, England, Scotland, and Wales are principalities. This field will normally be blank.
ProcessedBy	String	The Global Addressing Module stage name.
StateProvince	String	The name of one of the state or province depending on the country: • **Not used**—BEL, CHE, DNK, IRL, NLD, NOR • **Bundesland**—DEU • **Province (voivodship)**—POL • **Region**—AUT, ESP, FRA, GBR, GRC, NZL • **Region (län)**—FIN • **Region (lan)**—SWE • **State**—AUS, BRA • **State (negeri)**—MYS

Field Name	Format	Description
StateProvince.Matched	String	The status of the match on state or province. **True** Matched on the state or province. **False** Did not match on the state or province.
StateProvinceSubdivision	String	The name of the state or province subdivision depending on the country. • **Not used**—AUT, BRA, FIN, GBR, MYS • **Department**—FRA • **District**—GRC • **District (fylke/counties)**—NOR • **District (poviat)**—POL • **Kommun**—SWE • **Kreis**—DEU • **Local Government Authority (LGA)**—AUS • **Province**—BEL, CHE, DNK, ESP, IRL, ITA, NLD • **Region**—NZL
StateProvinceSubdivision.Matched	String	The status of the match on state or province subdivision. **True** Matched on the state or province subdivision. **False** Did not match on the state or province subdivision.
StreetName	String	The name of street where the property is located. For example, 123 E **Main** St.
StreetName.Matched	String	The status of the match on street name. **True** Matched on the street name. **False** Did not match on the street name.
StreetType	String	The street type. For example, 123 E Main **St** Apt 3. In another example, 123 E Main **Ave** Apt 3. These are two entirely different entities. Using street types adds precision to your data.
StreetType.Matched	String	The status of the match on street type. **True** Matched on the street type. **False** Did not match on the street type.
TrailingDirectional	String	The trailing directional. For example, 123 Pennsylvania Ave **NW**.

Field Name	Format	Description
Vendor Code	String	The vendor code. This field is only available if you select the output option "**Country specific fields**".

Parsed Input

The output can include the input address in parsed form. This type of output is referred to as "parsed input." Parsed input fields contain the address data that was used as input regardless of whether or not Global Address Validation validated the address. This information is not available when the address is validated at the postal / city level . It is available when an address gets validated at the street level. To include parsed input fields in the output, check the **Parsed address** output option.

Table 22: Parsed Input

Field Name	Format	Description
ParsedAddressLine1.Input	String	The first address line passed on input.
ParsedCity.Input	String	The city/locality/suburb name passed on input.
ParsedCountry.Input	String	The country passed on input.
ParsedHouseNumber.Input	String	The house number passed on input. For example, **123** E Main St Apt 3.
ParsedPostStreetType.Input	String	The street type passed on input. For example, 123 E Main **St** Apt 3.

Precision

The output can include the precision code that describes the precision of the address match for the input address. To include the precision code in the output, check the **Precision** output option.

> **Note:** The "Precision code counts" section on the Match Analysis Report only displays when you check the "Precision" output option.

Table 23: Precision

Field Name	Format	Description
PrecisionCode	String	

Field Name	Format	Description
		A code describing the precision of the address match. The matches in the "Z" category indicate that a match was made at the postal code level. **Z1** Postal match with postal code 1. **Z2** Postal match with partial post code 2. **Z3** Postal match with postal code 2. **G1** Geographic match with area name 1. **G2** Geographic match with area name 2. **G3** Geographic match with area name 3. **G4** Geographic match with area name 4. The matches in the "S" category indicate that the record was matched to a single address candidate. **SX** Validated at a street intersection. **SC** Match at the house-level that has been projected from the nearest segment. **S0** Parts of the address may have matched the source data. **S4** Validated at a street. **S5** Validated at a street address. **S7** Located at a street address that has been interpolated between houses. **S8** Match located at the house. For S (street matched) precision codes, eight additional characters describe how closely the address matches an address in the database. The characters appear in the order shown. For example, the result code `S5--N-SCZA` represents a single match that matched the street name, street suffix direction, town, and postal code. 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 matched at the street address level of the match candidate. **H** House number match. **P** Street prefix (pre-directional). `P` is present if any of these conditions are satisfied: • The candidate pre-directional matches the input pre-directional. • The candidate post-directional matches the input pre-directional after pre- and post-directionals are swapped. • The input does not have a pre-directional.

Field Name	Format	Description
		N Street name match. **T** Street/thoroughfare type match. **S** Street suffix (post-directional). • The candidate post-directional matches the input post-directional. • The candidate pre-directional matches the input post-directional after pre- and post-directionals are swapped. • The input does not have a post-directional. **C** City or town name. **Z** Postal code match. **A** Addressing dataset match. **U** Custom user dictionary match.

Input Address

The output can include the input address. To include the input address, check the **Input address** output option.

Table 24: Input Address

Field Name	Format	Description
AddressLine1.Input	String	The first address line passed on input.
City.Input	String	The city/locality/suburb name passed on input.
CitySubdivision.Input	String	The city/town subdivision passed on input.
StateProvince.Input	String	The state/province passed on input.
StateProvinceSubdivision.Input	String	The state/province subdivision passed on input.
PostalCode.Input	String	The postal code passed on input.
Country.Input	String	The country passed on input.
FirmName.Input	String	The firm name passed on input.

Country Specific Fields

The output can include country specific fields. To include country specific fields in the output, check the **Country specific fields** output option.

Table 25: Australia (AUS) Country Specific Fields

Field Name	Format	Description
AUS.GNAF_PARCEL_ID	String	The GNAF parcel identifier.
AUS.GNAF_PID	String	The GNAF Persistent Identifier (GNAF PID) is a 14-character alphanumeric string that uniquely identifies each GNAF address. The PID is constructed from a combination of the major address fields of the GNAF Dictionary. For example, **GAVIC421397369**.
AUS.GNAF_PRINCIPAL_PID	String	The Persistent Identifier of the principal address.
AUS.GNAF_ADDRESS_CLASS	String	The GNAF address classification.
AUS.GNAF_SA1	String	The GNAF Statistical Area Level 1 (SA1) identifier.
AUS.LEVEL_NUMBER	String	The number of a floor or level in a multi-story building. For example, **Floor 2**, 17 Jones Street.

Table 26: United Kingdom (GBR) Country Specific Fields

Field Name	Format	Description
GBR.DEPENDENT_STREET_NAME	String	The addresses in the United Kingdom may contain two street names: a main street name and dependent street name. Some addresses may not contain a street name at all.
GBR.DEPENDENT_LOCALITY	String	The dependent locality name. A dependent locality is a large village or district. For example, **Wimbledon**.
GBR.DOUBLE_DEPENDENT_LOCALITY	String	The double dependent locality name. A double dependent locality is a small village or subdistrict.
GBR.HISTORIC_POSTCODE	String	If the input address contained an old postal code that has been replaced by a new postal code, this field contains the old postal code.
GBR.ALIASED_LOCALITY	String	A locality that is not part of the postal address.

Field Name	Format	Description
GBR.OSAPR	String	The Ordnance Survey Address Point reference (OSAPR). Each address has a unique OSAPR. OSAPRs are always 18 characters long and must start with the letters AP.
GBR.UPRN	String	The Unique Property Reference Number. The UPRN is a unique identifier that provides a persistent reference to a unique property, regardless of changes in the property name, status, subdivision, use (such as from single occupancy to multiple occupancy), or demolition of the property. All historic, alternative, and provisional addresses are recorded against the same UPRN. The UPRN field is not returned for Northern Ireland addresses.
GBR.RPC	String	The RPC identifies the positional accuracy of the candidate. The RPC describes the accuracy of the coordinates allocated to the address.

Table 27: Ireland (IRL) Country Specific Fields

Field Name	Format	Description
IRL.EIRCODE	String	The Eircode for the address. The Eircode is a seven character alpha-numeric code made up of two parts. **Routing key** — The first three characters define a principal post town span of delivery. **Unique Identifier** — The last four characters uniquely identify each residential and business address.

Table 28: Italy (ITA) Country Specific Fields

Field Name	Format	Description
ITA.HISTORICALPOSTCODE	String	The previous postal code for this address.

Table 29: Netherlands (NLD) Country Specific Fields

Field Name	Format	Description
NLD.EXTENED_POST_CODE	String	This field is both an input and output field that supports a 6-digit postal code. The output contains a candidate's 6-digit postal code if one is available.

Table 30: New Zealand (NZL) Country Specific Fields

Field Name	Format	Description
NZL.ALIASED_SUBURB	String	The New Zealand aliased suburb. An alternative to the officially-recognized suburb name.

Reports

Match Analysis by Country

The Global Address Validation Match Analysis by Country Report provides address matching summary statistics for each country processed in your job. For instructions on how to use reports, see the *Spectrum™ Technology Platform Dataflow Designer's Guide*.

Summary of Matched Elements

This section contains summary information on matched elements for each country.

Total country records	The total number of input records processed for the country listed.
House number matched	The number and the percentage of records that matched on the house number.
Street name matched	The number and the percentage of records that matched on the street name.
City name matched	The number and the percentage of records that matched on the city name.
Postal code matched	The number and the percentage of records that matched on the postal code.
State/Province matched	The number and the percentage of records that matched on the state/province.

Precision Code Counts

This section provides statistics on the number and the percentage of records in your job that matched for each precision code. The precision code describes the level of precision for each record's address match.

> **Note:** The "Precision code counts" section on the Match Analysis Report only displays when you check the **Precision** output option.

Precision Code Z Category

The Z category indicates that a match was made at the postal code level. A postal code match is returned in either of these cases:

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

Precision Code Z1	The number and percentage of records that match to the ZIP Code or postal code 1.
Precision Code Z2	The number and percentage of records that result in a ZIP + 2 or partial match to postal code 2.
Precision Code Z3	The number and percentage of records that match to ZIP + 4 or postal code 2.

Precision Code G Category

Geographic level candidates return a precision code beginning with the letter G. The number following the G in the precision code provides more detailed information on the accuracy of the match.

Precision Code G1	The number and percentage of records that match to state/province (area name 1).
Precision Code G2	The number and percentage of records that match to county/region (area name 2).
Precision Code G3	The number and percentage of records that match to city/town (area name 3).
Precision Code G4	The number and percentage of records that match to suburb/village (area name 4).

Precision Code S Category

Street level candidates return a precision code beginning with the letter S. The character following the S in the precision code provides more detailed information on the accuracy of the match.

Precision Code SX	The number and percentage of records that validated at a street intersection.
Precision Code SC	The number and percentage of records that matched at the house-level that has been projected from the nearest segment.
Precision Code S0	The number and percentage of records where parts of the address may have matched the source data.
Precision Code S4	The number and percentage of records that matched at the street level.
Precision Code S5	The number and percentage of records that matched to the street address.
Precision Code S7	The number and percentage of records that matched to a street address that was interpolated between houses.
Precision Code S8	The number and percentage of records that matched to the street address or house number.

For more information about the S precision code, see the Global Address Validation Output section.

Confidence Levels

This section provides a graphical representation of the percentage of records for each country that matched at different confidence levels. The confidence level assigned to a returned address ranges from zero (0) to 100. Zero indicates failure. 100 indicates a very high level of confidence that the match results are correct.

> **Note:** The confidence levels are calculated as a percentage of matched records. Input records that fail (Status.Code=F) and do not match are not included in the confidence level calculations and are not included in the confidence level graph on the report.

Confidence level less than 40	The percentage of records that match at a confidence level less than 40 (low).
Confidence level 40-85	The percentage of records that match at a confidence level between 40 and 85 (medium).
Confidence level greater than 85	The percentage of records that match at a confidence level greater than 85 (high).

Summary of Matched Elements for: Unknown

This section of the report provides matching statistics on records for which the **input** country code was not recognized **and** the country was not determined via address match.

> **Note:** This section only displays when the output from your job includes records that did not match on country.

Precision Code Counts for: Unknown

This section provides matching precision statistics on records for which the **input** country code was not recognized **and** the country was not determined via address match. The precision code describes the level of precision for each record's address match.

> **Note:** The "Precision code counts" section on the Match Analysis Report only displays when you check the **Precision** output option.

Summary of Matched Elements for: All Countries

This section of the report provides matching statistics for all input addresses that matched on country for all countries combined.

Precision Code Counts for: All Countries

This section provides matching precision statistics for all input addresses that matched on country for all countries combined. The precision code describes the level of precision for each record's address match.

> **Note:** The "Precision code counts" section on the Match Analysis Report only displays when you check the **Precision** output option.

Precision Code Definitions

This section provides a reference for the precision codes that display on the report. For more information on precision codes, see the Global Address Validation Output section.

Report Footer

The footer on each page displays the time the report was generated and the page number.

Address Matching Summary Report

The Address Matching Summary Report provides summary matching statistics for each country processed. For instructions on how to use reports, see the *Spectrum™ Technology Platform Dataflow Designer's Guide*.

Country

This section provides matching statistics for each country processed.

Country	This column lists each country processed in your job.
Matched Records	The number of records that were successfully matched.
Matched Records %	The percentage of records that were successfully matched.
Unmatched Records	The number of records that were not successfully matched.
Unmatched Records %	The percentage of records that were not successfully matched.
Total Records	The total number of records processed for the country.

All Records

This section lists the total matching results for all countries processed.

Matched Records	The total number of records that were successfully matched.
Matched Records %	The percentage of all records in your job that were successfully matched.
Unmatched Records	The total number of records that were not successfully matched.
Unmatched Records %	The percentage of all records in your job that were not successfully matched.
Total Records	The total number of matched and unmatched records processed in your job.

Global Type Ahead

Global Type Ahead automatically suggests addresses as you type and immediately returns candidates based on your input. You can then select your candidate from the presented candidate list. Global Type Ahead is part of the Global Addressing Module.

Global Type Ahead Features

Global Type Ahead provides the following capabilities.

- Select country (optional). See **Supported Countries** on page 87 for a list of available countries.
- Single line input search for street addresses
- Specify the number of candidates to display
- Candidates returned in order based on closest match
- Search Points of Interest (POI)
- Search All to include both street addresses and POI
- Fuzzy Match capabilities

> **Note:** POI and category/subcategory features are accessible only if available and you have licensed and installed POI data.

For both address searches and POI searches, candidates are displayed as you type. As you type more specific information, the results are refined to display more relevant candidates. Candidates include the full address and POI (if the candidate is a Point of Interest).

After installing and deploying Global Type Ahead, you can use the Management Console to explore all the capabilities and see candidate results.

A sample application for Global Type Ahead is available on the Spectrum™ landing page.

Supported Countries

Global Type Ahead covers street addresses and Points of Interest (POIs) for the following countries. The three-digit ISO country code is shown for each country. For a complete list of all ISO country codes, see **ISO Country Codes and Module Support** on page 284.

> **Note:** The POI data must be purchased separately. POI and category/subcategory features are accessible only if available and you have licensed and installed POI data. Street address data is packaged with the Global Addressing Module.

- Andorra (AND)
- Australia (AUS)
- Austria (AUT)
- Bahrain (BHR)
- Belgium (BEL)
- Brazil (BRA)
- Canada (CAN)
- Czech Republic (CZE)
- Denmark (DNK)
- Finland (FIN)
- France (FRA)
- Germany (DEU)

- Greece (GRC) (Does not include POI information)
- Hungary (HUN)
- Ireland (IRL)
- Italy (ITA)
- Japan (JPN)
- Kuwait (KWT)
- Liechtenstein (LIE)
- Luxembourg (LUX)
- Mexico (MEX)
- Netherlands (NLD)
- New Zealand (NZL) (Does not include POI information)
- Norway (NOR)
- Oman (OMN)
- Poland (POL)
- Portugal (PRT)
- Qatar (QAT)
- Russia (RUS)
- Saudi Arabia (SAU)
- Singapore (SGP)
- Slovakia (SVK)
- Slovenia (SVN)
- South Africa (ZAF)
- Spain (ESP)
- Sweden (SWE)
- Switzerland (CHE)
- Thailand (THA)
- Turkey (TUR)
- United Arab Emirates (ARE)
- United Kingdom (GBR)
- United States (USA)

Note:

See the current Database Release Notes for more details of country coverage and data vintages.

Using Global Type Ahead

After installing and deploying the Global Addressing Module, you can use Global Type Ahead:

- As a service from Management Console
- As a stage from Enterprise Designer

Using Global Type Ahead As a Service

To use Global Type Ahead as a service from Management Console:

1. Open the Management Console.
2. Under the Services tab, select **Global Addressing**.
3. From the list of services on the left side of the pane, select **Global Type Ahead**.
4. On the **Database Resources** tab, specify the Global Type Ahead database resource to use.
5. Click **Save** to save your database selection.
6. Click the **Default Options** tab.
7. On the **Default Options** tab, specify the options you want. For information on the options, see **Options** on page 90.
8. If you make changes to the global default options, click **Save** to save those changes. Any changes you make to the global default options are also applied to Global Type Ahead in Enterprise Designer.
9. Click the **Preview** tab.
10. In the **AddressLine1** field, enter the complete first line of the address, typically including street and house number.
11. In the **Country** field, enter the country name or the two or three-character ISO country code. If you omit the country, Global Type Ahead returns the best available candidates for the Default Country selected on the Default Options tab. For a list of ISO codes, see **ISO Country Codes and Module Support** on page 284.
12. Click **Run Preview**.
13. In Preview **Output Records** on the right side of the pane, note that the results of the search have been placed in the appropriate output field. For information on the output fields, see **Output** on page 91.

Using Global Type Ahead As a Stage

You can use Global Type Ahead as a stage from Enterprise Designer to perform address validation as a batch process. For more information about creating a job using Global Type Ahead as a stage, see:

- My First Dataflow (Job) in the Dataflow Designer Guide
- **Input** on page 89
- **Options** on page 90
- **Output** on page 91

Input

Global Type Ahead automatically suggests addresses as you type and immediately returns candidates based on your input. Global Type Ahead can also return Points of Interest (POI).

Note: The POI data must be purchased separately. POI and category/subcategory features are available only if you have licensed and installed POI data. Street address data is packaged with the Global Addressing Module.

Table 31: Global Type Ahead Input

Field Name	Format	Description
AddressLine1	String	The complete first line of the address, typically including street and house number.
Country	String	The country name or the two or three-character ISO country code. If you omit the country, Global Type Ahead returns the best available candidates for the Default Country selected on the Default Options tab. For a list of ISO codes, see **ISO Country Codes and Module Support** on page 284 .

Options

Global Type Ahead uses the default options settings to define address retrieval processing.

Table 32: Global Type Ahead Options

Option Name	Country Support	Description
Database	All	The database to use for Global Type Ahead processing. Only databases that have been defined in the Database Resources panel in the Management Console are available.
Default Country	All	The default country for address match processing.
Search type	All	The Global Type Ahead search options: **Both** — Search all to include both street addresses and points of interest (POI). **Address** — Search for street addresses. **POI** — Search for Points of Interest (POI).
Max candidates	All	The maximum number of search candidates returned. The maximum is 50. The default is 5.

Option Name	Country Support	Description
Fuzzy match	All	Global Type Ahead implements algorithms that optimize the retrieval of addresses and POIs, even when the input spelling is incorrect or incomplete. These capabilities are referred to as Fuzzy Match, and are implemented through match setting constraints. **None** Fuzzy Match is disabled by default. **Hard Match** The hard match allows one character substitution, insertion, deletion, or transposition. **Soft Match** The soft match allows two character substitutions, insertions, deletions, or transpositions.

Output

Global Type Ahead output is determined by the output options you selected.

Returned candidates can be previewed in the Management Console. Candidates include the complete address elements that you expect to see in Spectrum™ Technology Platform candidates, such as AddressLine, City, County, State, and Country.

Table 33: Global Type Ahead Output

Field Name	Format	Description
AddressLine1	String	The complete first line of the address, typically including street and house number.
City	String	The city or town name.
County	String	The county name.
Country	String	The country name.
FirmName	String	The name of a company.
LastLine	String	The last line of the address. For example, 10 DOWNING STREET **LONDON, SW1A 2AA**.
Locality	String	The locality.
PostalCode	String	The postal code for the address. The format of the postal code varies by country.

Field Name	Format	Description
StateProvince	String	The name of one of the state or province depending on the country.
Type	String	Returns 1 for a POI match. Returns 2 for a street address match. POI and category/subcategory features are available only if you have licensed and installed POI data. You must have a license for POI data to include it and be able to return candidates for the dictionary.

Global Address Parser

Global Address Parser splits postal address strings into their constituent elements, such as name of organization, city, locality, district, and post code, using the machine learning techniques. It is a part of the **Global Addressing Module**.

You can feed data to the Global Address Parser in these two ways:

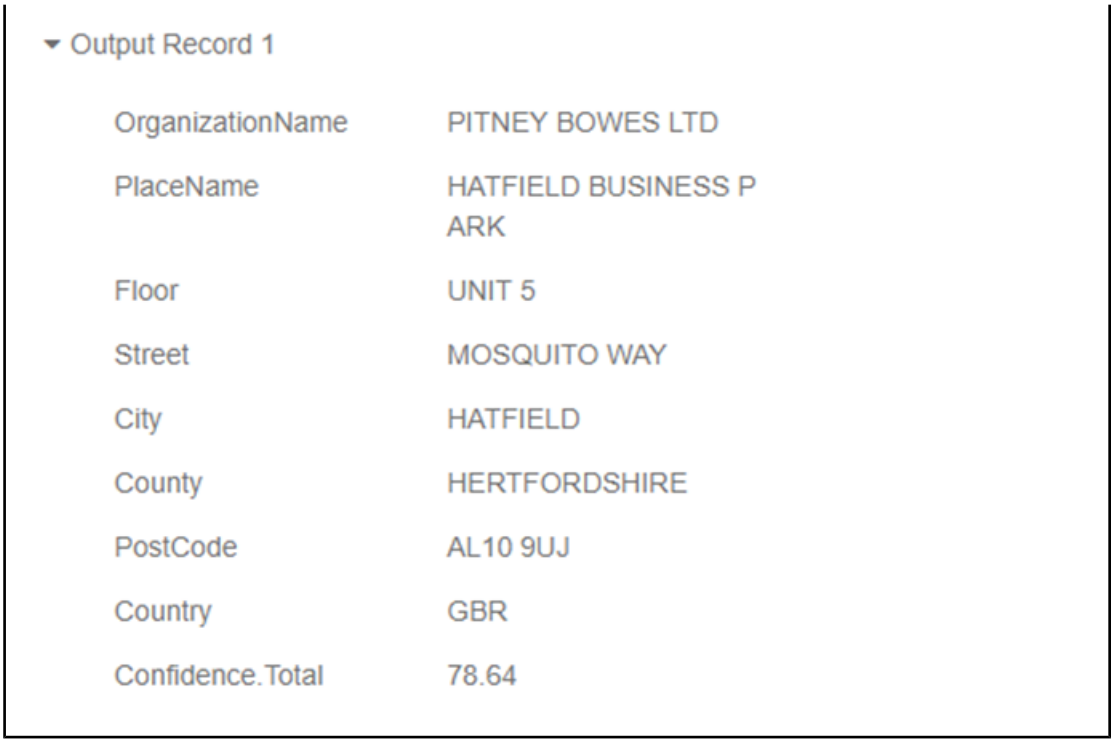
- Enter addresses one at a time using the **Management Console**
- Import a comma-separated file of addresses arranged in a single column and having a header such as *address* in the **Management Console** or alternatively use any data source stage in the **Enterprise Designer**

This example shows an input address string and the corresponding formatted output:

Input address string and formatted output

Input string

```
"Pitney Bowes Ltd Unit 5 Hatfield Business Park Mosquito Way
Hatfield Hertfordshire AL10 9UJ GBR"
```



Features of Global Address Parser

Global Address Parser has these features:

- Splits and formats address strings into its components with the help of models trained through machine learning.
- Parses addresses in Roman script and accepts input addresses in Roman script. Few Greek alphabets are also supported.
- Currently supports parsing for two countries, Germany and United Kingdom.
- Handles country-specific addressing conventions efficiently. Address components of different countries vary in many ways. For example, in German addresses house number usually comes after the street name and the post code comes before the city. Global Address Parser handles all these complexities efficiently and predicts the address components in accordance with the conventions of the specified country.
- Does away with the need of reference address databases for parsing.

Guidelines to Improve Prediction Accuracy

In order to get the most accurate prediction of address components, your input address strings should adhere to these patterns.

Guidelines for United Kingdom Addresses

Avoid non-address components

Presence of non-address components in the input string might lead to wrong prediction. Remove such components before feeding the string for prediction.

Maintain a sequence in address components

The address components should be placed in this order: **OrganizationName** > **Floor** > **PlaceName** > **AddressNumber** > **Street** > **Neighbourhood** > **City/Suburb/County** > **PostCode** > **Country**.

Example:

- ✗ *Pitney Bowes Limited London Milenium street Unit 3 AB10 3DF GBR*
- ✓ *Pitney Bowes Limited Unit 3 Milenium street London AB10 3DF GBR*

Remove redundant address components

The input address string should not have repeated address components, such as two different organization names or repetitive name of an organization in one string.

Example:

- ✗ *Pitney Bowes Limited Pitney Bowes Limited Unit 10 Logix Cyber Park 10 Manor Street London AB10 3DF GBR*

Follow single-token organization names with organization type

A single-token organization name should be followed by the *type* of the organization, such as *Ltd*, *Inc*, and *Reg.* In the example below, *Ardian* is a single-token organization name. In this case, the organization name is not followed by the type "Limited," and the results may be inaccurate.

Example:

- ✗ *Ardian Fourth Floor Channel House St Helier Je2 4UH GBR*
- ✓ *Ardian Limited Fourth Floor Channel House St Helier Je2 4UH GBR*

Limitations in United Kingdom Addresses

An address string of any of these kind is susceptible to getting inaccurately predicted by the address parser. Watch out for these in your address strings.

Presence of another address component as name of the organization

If the name of the organization includes any other address component, such as `Floor`, `Flat`, and `House`, the prediction accuracy may be affected.

Example: ✗ *Flat Seasons 632 Kings Road London Middlesex SW6 2DU GBR*

Organization name having numbers

If an organization name has numbers, it is susceptible to getting erroneously predicted.

Example: ✗ *123 Limited ABC Street AB10 3DF GBR*

Guidelines for German Addresses

Avoid non-address components

Presence of non-address components in the input string might lead to wrong prediction. Remove such components before feeding the string for prediction.

Maintain a sequence in address components

The address components should be placed in this order: **OrganizationName** > **Floor** > **PlaceName** > **AddressNumber** > **Street** > **Neighbourhood** > **City/Suburb/County** > **PostCode** > **Country**.

Example:

- ✗ *3 Weseler Strasse 46514 Schermbeck DEU*
- ✓ *Weseler Strasse 3 46514 Schermbeck DEU*

Remove redundant address components

The input address string should not have repeated address components, such as two different organization names or repetitive name of an organization in one string.

Example: ✗ *Weseler Strasse 3 Weseler Strasse 46514 Schermbeck DEU*

Ensure address number and street name are included

Your address string needs to have address number and street name. Missing out these essential address components will impact the accuracy of the result.

Example:

- ✗ *46514 Schermbeck DEU*
- ✓ *Weseler Strasse 3 46514 Schermbeck DEU*

Do not have merged components in address strings

Merged address components result in incorrect prediction.

Example:

- ✗ *Weseler-Strasse-3 46514 Schermbeck DEU*
- ✓ *Weseler Strasse 3 46514 Schermbeck DEU*

Avoid addressee name in the string

Address name in the string results in incorrect prediction for the German addresses.

Example:

- ✗ *Mr John Doe Weseler Strasse 3 46514 Schermbeck DEU*
- ✓ *Weseler Strasse 3 46514 Schermbeck DEU*

Do not have bracketed *"()"* address component

Including any of your address components inside brackets *"()"* will leave it unparsed.

Example: ✕ *Weseler Strasse 3 46514 (Schermbeck) DEU*

Accessing Global Address Parser

When you install and deploy the Global Addressing Module you will be able to use the Global Address Parser in these two ways:

- As a stage from the **Enterprise Designer**
- As a service from the **Management Console**

Using the **Address Parser** screen you can perform these tasks:

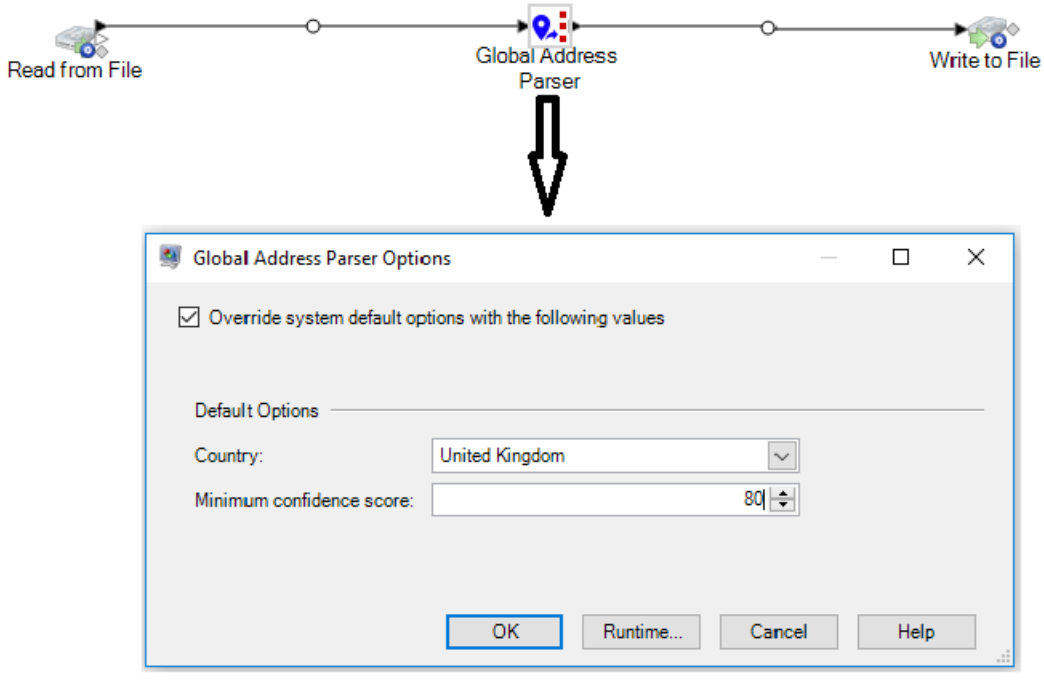
1. **Set the parsing options**: Specify the country to which the addresses belong and the minimum confidence level required for parsing.
2. **Parse addresses**: Feed the address strings and get the parsed output.

Note: For details on how to perform these tasks, see the sections **Using Global Address Parser as Stage** on page 96 and **Using Global Address Parser as Service** on page 97.

Using Global Address Parser as Stage

You can use Global Address Parser as an address parsing stage in your job. In this case, you can only perform batch address parsing.

To parse a batch of input address strings you need to append the Global Address Parser stage with an input and an output stage, as shown in the example below.



Note: For details on creating a job using any stage in the Enterprise Designer, see My First Dataflow (Job) in the Dataflow Designer Guide.

This table displays the Global Address Parser options.

Table 34: Global Address Parser Options

Field Name	Description
Override system default option with the following values	Select this check-box to change the default options.
Default Options	
Country	Select the country to which the addresses to be parsed belong. The options are: `United Kingdom` and `Germany`.
Minimum confidence score	On a scale of 0 to 100, assign the minimum confidence the parser should have on the result to display it. **Note:** Parsing results having a confidence score lesser than specified here are not displayed as output.

Note: For details on the output fields, see **Parsed Address Output** on page 99.

Using Global Address Parser as Service

Global Address Parser needs you to perform these steps for splitting your address strings into their respective components:

- Setting the parsing options
- Feeding input addresses to be parsed

To access the **Global Address Parser** screen and perform address parsing, follow these steps:

1. In a web browser, go to:

   `http://`*`server`*`:`*`port`*`/managementconsole`

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

2. Log in with your credentials.
3. Under the **Services** tab, select **Global Addressing**.
4. From the list of services on the left side of the pane, select **Global Address Parser**.
   The **Global Address Parser** screen is displayed with the **Default Options** tab selected.

5. Select the **Country** to which the addresses you are parsing belong.

   Note: You can parse addresses of `United Kingdom` and `Germany` only.

6. Assign the **Minimum confidence score** you want for this parsing. The parser will not display results that fall below the confidence score you specify here.
7. Click **Save**.
   The options specified are saved for the next operation, which is: Entering the addresses to be parsed.
8. Click the **Preview** tab.
9. Click one of these icons to feed the address that needs to be parsed.

   - To add records one at a time to the parser, perform these tasks:

     1. Click the **Add record** button .
     2. In the **Address** field of the **Input Record <sequence of the address record>** section, enter the address string to be parsed.

        Note: Repeat steps 'a' and 'b' to add multiple address strings. You can add up to 100 address strings.

   - To import multiple addresses from a CSV file, click the **Import records** button . In the **Import Data** pop-up window that is displayed, enter these values:

     1. In the **File name** field, select the file that has the address records.
     2. Select the **Field separator** used in the address file.
     3. Specify the **Maximum number of records to import**.
     4. Click **OK** .

   The entered or selected address records are displayed as input records below the **Run Preview** button.

   Note: The input address string should have more than one token. For example, an input address string with `London` as the only value will not be recognized by the parser. An address need to have at least one more token (or component) to the string, such as city name, place name, or post code.

10. To delete any of the address strings, hover the cursor on the corresponding **Input Record <sequence of the address record>** and click the **Delete this record** icon that is displayed.

    Note: To delete all records, click **Delete all records** icon placed below **Input Records**.

11. To view parsed output, click the **Run Preview** button.
    The parsed address components (Output Record) are displayed adjacent to the corresponding input records. For details on the output fields, see **Parsed Address Output** on page 99.

Parsed Address Output

The parsed output displays a list of all the address components along with their values in the input address strings. The components for United Kingdom and Germany are not identical. The table below gives a description of all the address components, the values the components can take, and if those are applicable for German and UK addresses.

Note: The values of some address components can be interchanged in the output:

- For German addresses: Suburb, City, County and StateProvince can be interchanged.
- For United Kingdom addresses: City, Suburb and Neighbourhood can be interchanged.

Table 35: Address components, definition, and validity

Address components	Valid for German Addresses	Valid for UK Addresses	Accepted and parsed values
OrganizationName	Yes	Yes	Name of organization, hospital, institute, school, and bank
Floor	-	Yes	Apartment number, sub-building information, floor, suite, and flat number
PlaceName	-	Yes	Landmark, building, building name, cluster name, society name, residential and commercial complex, and special economic zone
AddressNumber	Yes	Yes	Building number, address number on streets
Street	Yes	Yes	Name of thoroughfare
Neighbourhood		Yes	Small subdivision of a locality, city, or town
City	Yes	Yes	Name of village, city, district, or suburb, per the geographical division of the country. These elements together constitute location information.
Suburb	Yes	Yes	
County	Yes	Yes	
PostCode	Yes	Yes	Series of letters and/or digits assigned to geographical areas primarily for sorting mails. Post Code sometimes also includes spaces or punctuation.
POBox	Yes	Yes	A lockable box having a unique address. It is located on the premises of a post office station.

Address components	Valid for German Addresses	Valid for UK Addresses	Accepted and parsed values
StateProvince	Yes	-	Largest geographical entity with respect to a country
Country	Yes	Yes	Name of the country

Note: All the components listed in the table may not be displayed for all the input addresses. For a component to display, the input string should have a value for it.

Universal Addressing Module

Universal Addressing Module

The Universal Addressing Module is an address quality module that can standardize and validate addresses, improving the deliverability of mail. The Universal Addressing Module can ensure that your address data adheres to quality standards established by the postal authority. An address that adheres to these standards is more likely to be delivered in a timely manner. In addition, mailers who follow these standards can qualify for significant postage discounts. For information on discounts for U.S. mail, refer to the USPS *Domestic Mail Manual* (*DMM*) available at **www.usps.com**. For information on discounts for Canadian mail, refer to the Canada Post website at **www.canadapost.ca**. For information on discounts for Australian mail, refer to the Australia Post website at **www.auspost.com.au**.

The Universal Addressing Module can be used in batch mode, realtime mode, or as a hosted service, depending on which option you have licensed. The batch version of the Universal Addressing Module is CASS Certified™ by the USPS®. It is also AMAS certified by Australia Post.

The Universal Addressing Module is one of two address quality modules available for Spectrum™ Technology Platform. The other address quality module, the Address Now Module, provides enhanced support for addresses outside the U.S. and Canada, including validation for more countries and double-byte support. If you have a large amount of international address data, you may want to consider using the Address Now Module for address standardization and validation.

Components

The Universal Addressing Module consists of the following components. These components can work with U.S., Canadian, Australian, and international addresses as long as you are licensed for

the appropriate database (if you are running Universal Addressing in your own environment) or hosted service (if you are utilizing Universal Addressing through the Pitney Bowes hosted services).

- **Auto Complete Loqate**—Offers real-time entry of address data and returns instant results based on each character entered into the form, ensuring only accurate data is entered into the database.
- **Get Candidate Addresses**—Returns a list of possible matches for a given address.
- **Get Candidate Addresses Loqate**—Returns a list of possible matches for a given address using a Loqate engine and database.
- **Get City State Province**—Returns the city and state or province for a given postal code.
- **Get City State Province Loqate**—Returns the city and state or province for a given postal code using a Loqate engine and database.
- **Get Postal Codes**—Returns the postal codes for a given city.
- **Get Postal Codes Loqate**—Returns the postal codes for a given city using a Loqate engine and database.
- **Validate Address**—Standardizes and validates addresses using U.S., Canadian, and international postal data.
- **Validate Address AUS**—Standardizes and validates addresses using Australian postal data.
- **Validate Address Global**—Validate Address Global provides enhanced address standardization and validation for addresses outside the U.S. and Canada. Validate Address Global can also validate addresses in the U.S. and Canada but its strength is validation of addresses in other countries. If you process a significant number of addresses outside the U.S. and Canada, you should consider using Validate Address Global.
- **Validate Address Loqate**—Validate Address Loqate standardizes and validates addresses using postal authority address data. Validate Address Loqate can correct information and format the address using the format preferred by the applicable postal authority. It also adds missing postal information, such as postal codes, city names, and state or province names.

Universal Addressing Databases

The Universal Addressing Module uses a number of required and optional databases. The databases are installed on the Spectrum™ Technology Platform server. Some of the databases are available by subscription from Pitney Bowes and are updated monthly or quarterly. Others are licensed from the USPS®. The following table lists the Universal Addressing databases.

Table 36: Universal Addressing Module Databases

Database Name & Description	Required or Optional	Supplier
U.S. Postal Database The U.S. Postal Database is in a Pitney Bowes proprietary format. It contains every house number range in the United States and is updated on a monthly basis. The database files contain the following information: • ZIP + 4® Code • Standardized address elements • City and state information The U.S. Postal Database also contains the data needed to perform Enhanced Street Matching (ESM) and All Street Matching (ASM). ESM and ASM apply extra matching logic to any input address that is not matched through the regular address validation process.	Required for U.S. address processing	Pitney Bowes monthly subscription
Canadian Postal Database The Canadian Postal database is in Pitney Bowes proprietary format. The database files contain the following information: • Postal code • Standardized address elements • Municipality and province information	Required for Canadian address processing	Pitney Bowes monthly subscription
International Postal Database The International Postal Database is a collection of postal address data from around the world. Data from each country is categorized according to the level of data available. The categories are: • **Category A**—Enables the validation and correction of an address's postal code, city name, state/county name, street address elements, and country name. • **Category B**—Enables the validation and correction of an address's postal code, city name, state/county name, and country name. It does not support the validation or correction of street address elements. • **Category C**—Enables the validation and correction of the country name, and the validation of the format of the postal code.	Required for International address processing	Pitney Bowes quarterly subscription

Database Name & Description	Required or Optional	Supplier
DPV® Database The Delivery Point Validation database allows you to check the validity of an individual mailing address in the U.S. The DPV database enhances the U.S. Postal database's ability to validate mailing addresses. **Note:** The DPV database also contains the data required for Commercial Mail Receiving Agency (CMRA) processing. Each time an edition of the U.S. Postal database is released, a corresponding edition of the DPV database is released. Although USPS licensing allows the use of the U.S. Postal database beyond the expiration date (with certain restrictions), DPV lookups may not be performed after the expiration date of the DPV database. USPS licensing prohibits using DPV data for the generation of addresses or address lists. To prevent the generation of address lists, the DPV database contains "false positive records." False positive records are artificially manufactured addresses. For each negative response that occurs in a DPV query, a query is made to the False/Positive table in the DPV database. A match to this table will stop DPV processing. USPS licensing also prohibits exporting the DPV data outside the United States.	Optional, but required for CASS Certified™ processing; U.S. addresses only	Pitney Bowes monthly subscription
eLOT® Database The Enhanced Line of Travel (eLOT) database is a U.S. address database that ensures that Enhanced Carrier Route mailings are sorted as close as possible to the actual delivery sequence. the eLOT database is required for certain types of postal discounts. You will receive monthly updates to your eLOT database on the same media as the U.S. Postal database. You must install the U.S. Postal database and eLOT database from the same month (i.e., September eLOT data must be processed with a September U.S. Postal database). If the U.S. Postal database and the eLOT database are not from the same month, there may be ZIP + 4® Codes for which eLOT numbers cannot be assigned. The ZIP Code™, ZIP + 4 Code, carrier route code, and the delivery point of an address must be provided to assign a eLOT code.	Optional; U.S. addresses only	Pitney Bowes monthly subscription

Database Name & Description	Required or Optional	Supplier
EWS Database The Early Warning System (EWS) database prevents address validation errors that can result due to a delay in postal data reaching the U.S. Postal database. The EWS database consists of partial address information limited to the ZIP Code™, street name, pre- and post-directionals, and a suffix. For an address record to be EWS-eligible, it must be an address not present on the most recent monthly production U.S. Postal database. The USPS® refreshes the EWS file on a weekly basis (Thursdays). You can download the EWS file from the USPS® website at **ribbs.usps.gov**.	Optional; U.S. addresses only	Download for free from USPS® website
LACS^{Link}® Database The LACS^{Link} database allows you to correct addresses that have changed as a result of a rural route address converting to street-style address, a PO Box renumbering, or a street-style address changing. USPS licensing prohibits using LACS^{Link} for the generation of addresses or address lists. To prevent the generation of address lists, the LACS^{Link} database contains "false positive records." False positive records are artificially manufactured addresses. For each negative response that occurs in a LACS^{Link} query, a query is made to the False/Positive table in the LACS^{Link} database. A match to this table will stop LACS^{Link} processing. USPS licensing also prohibits exporting the LACS^{Link} database outside the United States	Optional, but required for CASS Certified™ processing; U.S. addresses only	Pitney Bowes monthly subscription
RDI™ Database The Residential Delivery Indicator (RDI™) file processing determines whether an address is a residential, business, or mixed (residential and/or business) address. RDI is similar to DPV. In RDI, data is supplied as hash tables. However, RDI is a much simpler process than DPV. In DPV, the standard hash algorithm is determined only for the 9-digit and 11-digit ZIP Code™ rather than the entire address.	Optional; U.S. addresses only	Pitney Bowes monthly subscription

Database Name & Description	Required or Optional	Supplier
Suite$^{Link™}$ Database Suite$^{Link™}$ corrects secondary address information for U.S. business addresses whose secondary address information could not be validated. If Suite^{Link} processing is enabled, Validate Address attempts to match the value in the FirmName field to a database of known firm names. Validate Address then supplies the correct secondary address information.	Optional; U.S. addresses only	Pitney Bowes monthly subscription

Auto Complete Loqate

Auto Complete Loqate offers real-time entry of address data for fast, accurate results. Users are returned instant results based on each character entered into the form, ensuring only accurate data is entered into the database. Auto Complete Loqate also includes the Powersearch option, which reduces input time by up to 80% for 238 countries by using data in the form of an index file.

Input

The following table lists the input for Auto Complete Loqate.

Table 37: Input Format

Field Name	Description
AddressLine1	The first address line.
AddressLine2	The second address line.
AddressLine3	The third address line.
AddressLine4	The fourth address line.
City	The city name.

Field Name	Description
Country	The country code or name, in any of the following formats: • 2-digit ISO country code • 3-digit UPU Country code • English country name For a list of ISO codes, see **ISO Country Codes and Module Support**.
FirmName	The company or firm name.
PostalCode	The postal code for the address.
StateProvince	The state or province.

Options

Table 38: Auto Complete Loqate Options

Option Name	Description
Database	Specifies the database to be used for address processing. Only databases that have been defined in the **Database Resources** panel in the Management Console are available.
Casing	Specifies the casing of the output data. One of the following: **Mixed** Returns the output in mixed case (default). For example: 123 Main St Mytown FL 12345 **Upper** Returns the output in upper case. For example: 123 MAIN ST MYTOWN FL 12345

Option Name	Description
Default country	Specifies the default country. You should specify the country where most of your addresses reside. For example, if most of the addresses you process are in Germany, specify Germany.
Country format	Specifies the format to use for the country name returned in the **Country** output field. For example, if you select English, the country name "Deutschland" would be returned as "Germany". **English Names** — Use English country names (default). **ISO Codes** — Use two-letter ISO abbreviation for the countries instead of country names. **UPU Codes** — Use Universal Postal Union abbreviation for the countries instead of country names.
Script/Alphabet	Specifies the alphabet or script in which the output should be returned. This option is bi-directional and generally takes place from Native to Latin and Latin to Native. **Input Script** — Do not perform transliteration and provide output in the same script as the input (default). **Native** — Output in the native script for the selected country wherever possible. **Latin (English)** — Use English values.
Maximum records to return	The maximum number of addresses that Auto Complete Loqate should return. The default is 10.

Option Name	Description
Prefer Powersearch	Reduces input time by up to 80% for 240 countries by using data in the form of an index file. When you conduct a search, the Loqate Engine will first look for the corresponding index. If present, the method will attempt to instantly return a list of candidate addresses. If the index is not present, or if the index does not return any results, the original search process will be triggered. **Note:** Powersearch can be performed when there are two and only two fields in the input file: the Country field and any one of the AddressLine fields. If you select this option and your input file contains additional fields, the original search process will automatically be triggered. To conduct its search, Auto Complete indexes use up to the first 10 characters for searches within the United States and up to the first 15 characters for searches within all other eligible countries. Spaces and punctuation are not factored into this count. Powersearch cannot be used for the following countries: Botswana, Ethiopia, India, Kazakhstan, Malaysia, Mongolia, Saint Kitts and Nevis, and San Marino. **Note:** You must have a valid license for Powersearch processing. If you enable Powersearch processing but are not licensed for this feature, or if your license has expired, your entire job will fail.
Duplicate handling	Enables the duplicate handling mask and specifies how duplicate records are processed and removed. Select one or more of the following options: **Single** — Selected by default. Pre-process the input and remove duplicates that occur in a single field. **Multi** — Selected by default. Pre-process the input and remove duplicates across all fields. **Non-standard** — Pre-process the input and remove duplicates in fields that are not standard address fields. **Output** — Selected by default. Post-process the output from verification and remove duplicates from non-verified fields.
Data license error handling	Specifies how you want Spectrum Technology Platform to respond when a data license error occurs. **Fail the job** — Fail the entire job if a data license error occurs. **Fail the record** — Fail the record(s) for which the data license error occurs and continue processing.

Output

The output from Auto Complete Loqate is optional and corresponds directly to the fields you selected in the Output Fields section of the Auto Complete Loqate Options dialog box.

Table 39: Auto Complete Loqate Output

Field Name	Description
AddressLine1	The first address line.
AddressLine2	The second address line.
AddressLine3	The third address line.
AddressLine4	The fourth address line.
City	The city name.
Country	The three-character ISO 3116-1 Alpha-3 code for the country. For a list of ISO codes, see **ISO Country Codes and Module Support**.
FirmName	The firm name.
HouseNumber	The ending house number for the range in which the candidate address's house number falls.
PostalCode	The postal code.
PostalCode.AddOn	The last four digits of the ZIP + 4® Code.
ProcessedBy	Indicates which address coder processed the address. **LOQATE** The Loqate coder processed the address.

Field Name	Description
StateProvince	The state or province abbreviation.
Status	Reports the success or failure of the match attempt. **null** Success **F** Failure
Status.Code	The reason for failure, if there is one. • DisabledCoder • RequestFailed • NoLookupAddressFound
Status.Description	A description of the problem, if there is one. **Did not return multiples** The input address matched only one address in the database. Auto Complete Loqate returns data only if multiple possible matches were found. **Not able to look up the address pattern** Auto Complete Loqate is not able to process the partial address.

Get Candidate Addresses

Get Candidate Addresses returns a list of addresses that are considered matches for a given input address. Get Candidate Addresses returns candidate addresses only if the input address matches multiple addresses in the postal database. If the input address matches only one address in the postal database, then no address data is returned.

For addresses outside the U.S. and Canada, you may notice inconsistent results between the multiple matches returned by Validate Address and the results for that same address returned by Get Candidate Addresses. If you experience inconsistent results, it is likely because you set the performance tuning setting in Validate Address to a value other than 100. To obtain consistent results between Get Candidate Addresses and Validate Address, set the performance tuning option to 100.

> **Note:** By default, Get Candidate Addresses does not match to individual house numbers. Rather, it uses house number ranges for each street. After Get Candidate Addresses has determined the street name, city name, state/province name, and postal code, it checks to

make sure the input house number falls within one of the ranges of house numbers given for the matched street name. The same type of logic applies to unit numbers. If you want to determine that an individual house number is valid, you should use the Validate Address Delivery Point Validation (DPV) processing option. DPV processing is only available for U.S. addresses.

The Canadian coder contains a reverse lookup routine that takes as input a specific postal code and returns the street information stored in the database for that postal code. To use this function enter nothing but a Canadian postal code in the PostalCode field. See the second example to view the return from a sample postal code.

Get Candidate Addresses is part of the Universal Addressing Module.

U.S. Address Example

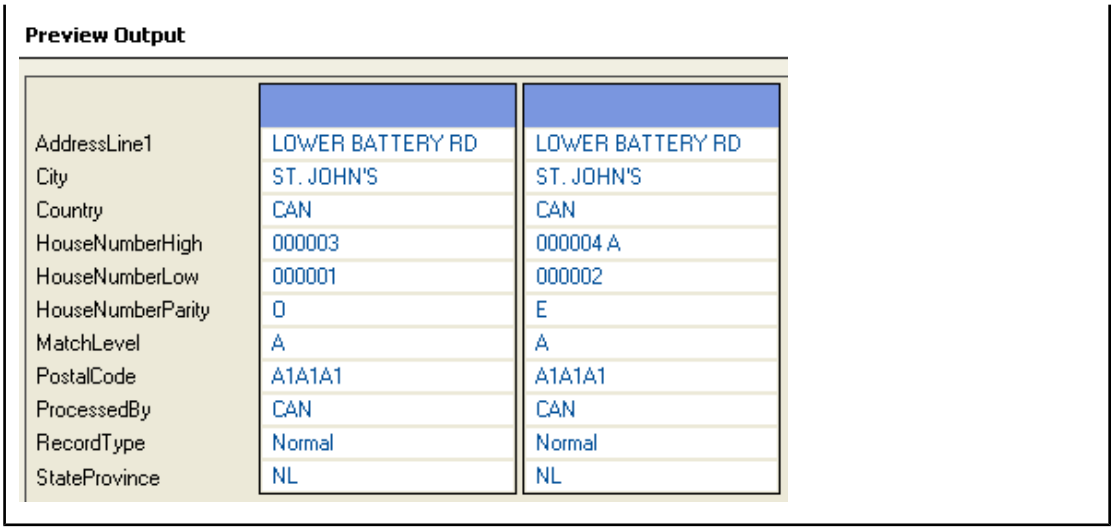
AddressLine1: PO Box 1 City: NY State: NY

Preview Output

AddressLine1	PO Box 1	PO Box 1
City	New York	New York
Country	USA	USA
HouseNumberHigh	60	9
HouseNumberLow	1	1
HouseNumberParity	B	B
MatchLevel	A	A
PostalCode	10002	10008
PostalCode.AddOn	0001	0001
ProcessedBy	USA	USA
RecordType	PostOfficeBox	PostOfficeBox
RecordType.Default		
StateProvince	NY	NY
UnitNumberParity		

Canadian Address Example

PostalCode: A1A1A1



Input

The following table lists the input for Get Candidate Addresses.

Table 40: Input Format

Field Name	Description
AddressLine1	The first address line.
AddressLine2	The second address line.
AddressLine3	The third address line. Does not apply to U.S. and Canadian addresses.
AddressLine4	The fourth address line. Does not apply to U.S. and Canadian addresses.
AddressLine5	The fifth address line. Applies only to U.K. addresses. May contain street name, unit number, building number, and so on.
City	The city name.

Field Name	Description
StateProvince	The state or province. For U.S. addresses only, you may put the state in the City field instead of the StateProvince field.
PostalCode	The postal code for the address. For U.S. addresses this is the ZIP Code™ in one of the following formats: 99999 99999-9999 A9A9A9 A9A 9A9 9999 999 **Note:** For Canadian addresses you can complete just this field and have candidate address data returned. For other countries, AddressLine1 and AddressLine2 must also be completed.
Country	The country code or name, in any of the following formats: • 2-digit ISO country code • 3-digit UPU Country code • English country name • French country name • German country name • Spanish country name For a list of ISO codes, see **ISO Country Codes and Module Support**.
FirmName	The company or firm name.
USUrbanName	U.S. address urbanization name. Used primarily for Puerto Rico addresses.

Options

Table 41: Get Candidate Addresses Options

Option Name	Description
Enable U.S. address processing	Specifies whether or not to process U.S. addresses. If you enable U.S. address processing Get Candidate Addresses will attempt to retrieve candidate addresses for U.S. addresses. If you disable U.S. address processing, U.S. addresses will fail, meaning they are returned with an "F" in the Status output field. The output field Status.Code will say "DisabledCoder." If you are not licensed for U.S. address processing you must disable U.S. address processing in order for your jobs to complete successfully, regardless of whether or not they contain U.S. addresses. **Note:** You must have a valid license for U.S. address processing to successfully process U.S. addresses. If you enable U.S. address processing but are not licensed for this feature, or your license has expired, your entire job will fail.
Database	Specifies the database to be used for U.S. address processing. Only databases that have been defined in the **US Database Resources** panel in the Management Console are available.
Enable Canadian address processing	Specifies whether or not to process Canadian addresses. If you enable Canadian address processing Get Candidate Addresses will attempt to retrieve candidate addresses for Canadian addresses. If you disable Canadian address processing, Canadian addresses will fail, meaning they are returned with an "F" in the Status output field. The output field Status.Code will say "DisabledCoder." If you are not licensed for Canadian address processing you must disable Canadian address processing in order for your jobs to complete successfully, regardless of whether or not they contain Canadian addresses. **Note:** You must have a valid license for Canadian address processing to successfully process Canadian addresses. If you enable Canadian address processing but are not licensed for this feature, or your license has expired, your entire job will fail.
Database	Specifies the database to be used for Canadian address processing. Only databases that have been defined in the **Canadian Database Resources** panel in the Management Console are available.

Option Name	Description
Enable International address processing	Specifies whether or not to process international addresses (addresses outside the U.S. and Canada). If you enable international address processing Get Candidate Addresses will attempt to retrieve candidate addresses for international addresses. If you disable international address processing, international addresses will fail, meaning they are returned with an "F" in the Status output field. The output field Status.Code will say "DisabledCoder." If you are not licensed for international address processing you must disable international address processing in order for your jobs to complete successfully, regardless of whether or not they contain international addresses. **Note:** You must have a valid license for international address processing to successfully process international addresses. If you enable international address processing but are not licensed for this feature, or your license has expired, your entire job will fail.
Database	Specifies the database to be used for international address processing. Only databases that have been defined in the **International Database Resources** panel in the Management Console are available.
Casing	Specifies the casing of the output data. One of the following: **Mixed** Returns the output in mixed case (default). For example: 123 Main St Mytown FL 12345 **Upper** Returns the output in upper case. For example: 123 MAIN ST MYTOWN FL 12345
Maximum records to return	The maximum number of candidate addresses that Get Candidate Addresses should return. The default is 10. The maximum is 10.
Return short city name	For U.S. addresses, specifies whether or not to return the USPS®-approved abbreviation for the city, if there is one. The USPS® provides abbreviations for city names that are 14 characters long or longer. City abbreviations are 13 characters or less and can be used when there is limited space on the mailing label. If there is no short city name for the city, then the full city name is returned.

Option Name	Description
Dual address match logic	(U.S. addresses only). Controls whether Get Candidate Addresses should return a street match or a PO Box/Rural Route/Highway Contract match when the address contains both street and PO Box/Rural Route/Highway Contract information. For more information, see **About Dual Address Logic** on page 149. **Normal Match** — (Default) USPS® CASS™ regulations determine the address returned based on the following order of priority: 1. PO Box 2. Firm 3. Highrise 4. Street 5. Rural Route 6. General Delivery **Street Match** — Return a street match, regardless of the address line. **PO Box Match** — Return a PO Box match, regardless of the address line.
Street matching	The strictness of the street name match (U.S. addresses only). **Exact** — The input street name must match the database exactly. **Tight** — The matching algorithm is "tight." **Medium** — The matching algorithm is "medium" (default). **Loose** — The matching algorithm is "loose."
Firm matching	The strictness of the firm name match (U.S. addresses only). **Exact** — The input firm name must match the database exactly. **Tight** — The matching algorithm is "tight." **Medium** — The matching algorithm is "medium" (default). **Loose** — The matching algorithm is "loose."

Option Name	Description
Directional matching	The strictness of the directional match. **Exact** The input directional must match the database exactly. **Tight** The matching algorithm is "tight." **Medium** The matching algorithm is "medium" (default). **Loose** The matching algorithm is "loose."
Perform enhanced street matching	Specifies whether or not to perform Enhanced Street Matching (ESM). ESM applies extra matching logic with additional data to any input address that is not matched through the regular address validation process. ESM applies to U.S. addresses only.
Search address lines on fail	Specifies whether ValidateAddress will search address lines for the city, state/province, and postal code. This option enables Validate Address to search the AddressLine input fields for the city, state/province, postal code, and country when the address cannot be matched using the values in the City, StateProvince, and PostalCode input fields. Consider enabling this option if your input addresses have the city, state/province, and postal code information in the AddressLine fields. Consider disabling this option if your input addresses use the City, State/Province and PostalCode fields. If you enable this option and these fields are used, there is an increased possibility that Validate Address will fail to correct values in these fields (for example a misspelled city name).

Output

Get Candidate Addresses returns the following output.

Table 42: Get Candidate Addresses Output

Field Name	Description
AddressLine1	The first address line.

Field Name	Description
AddressLine2	The second address line.
AddressLine3	The third address line.
AddressLine4	The fourth address line.
AddressLine5	For U.K. addresses only. If the address was validated, the fifth line of the validated and standardized address. If the address could not be validated, the fifth line of the input address without any changes.
City	The city name.
Country	The three-character ISO 3116-1 Alpha-3 code for the country. For a list of ISO codes, see **ISO Country Codes and Module Support**.
FirmName	The firm name.
HouseNumberHigh	The ending house number for the range in which the candidate address's house number falls.
HouseNumberLow	The beginning house number for the range in which the candidate address's house number falls.
HouseNumberParity	Indicates the numbering scheme for the house numbers between HouseNumberLow and HouseNumberHigh, as follows: **E** Only even values **O** Only odd values **B** Both

Field Name	Description
MatchLevel	For addresses outside the U.S. and Canada, identifies the match level for the candidate address. U.S. and Canadian addresses are always "A." One of the following: **A** The candidate matches the input address at the street level. **B** The candidate matches the input address at the state/province level.
PostalCode	The postal code. In the U.S. this is the ZIP Code™.
PostalCode.AddOn	The last four digits of the ZIP + 4® Code. U.S. addresses only.
RecordType	The type of address record, as defined by U.S. and Canadian postal authorities (U.S. and Canadian addresses only): • FirmRecord • GeneralDelivery • HighRise • PostOfficeBox • RRHighwayContract • Normal
RecordType.Default	Code indicating the "default" match: **Y** The address matches a default record. **null** The address does not match a default record.
StateProvince	The state or province abbreviation.
Status	Reports the success or failure of the match attempt. **null** Success **F** Failure
Status.Code	The reason for failure, if there is one. There is only one possible value: • DisabledCoder • RequestFailed

Field Name	Description
Status.Description	A description of the problem, if there is one. **Did not return multiples** — The input address matched only one address in the database. Get Candidate Addresses only returns data if multiple possible matches were found. **Number of candidates is not greater than 1** — The input address matched more than one address in the database but no addresses were returned. **PerformUSProcessing disabled** — This value will appear if Status.Code=DisabledCoder. **PerformCanadianProcessing disabled** — This value will appear if Status.Code=DisabledCoder. **PerformInternationalProcessing disabled** — This value will appear if Status.Code=DisabledCoder.
UnitNumberHigh	The ending unit number for the range in which the candidate address's unit number falls.
UnitNumberLow	The beginning unit number for the range in which the candidate address's unit number falls.
UnitNumberParity	Indicates the numbering scheme for the unit numbers between UnitNumberLow and UnitNumberHigh, as follows: **E** — Only even values **O** — Only odd values **B** — Both
USUrbanName	The validated city urbanization name. Urbanization names are used primarily for Puerto Rico addresses.

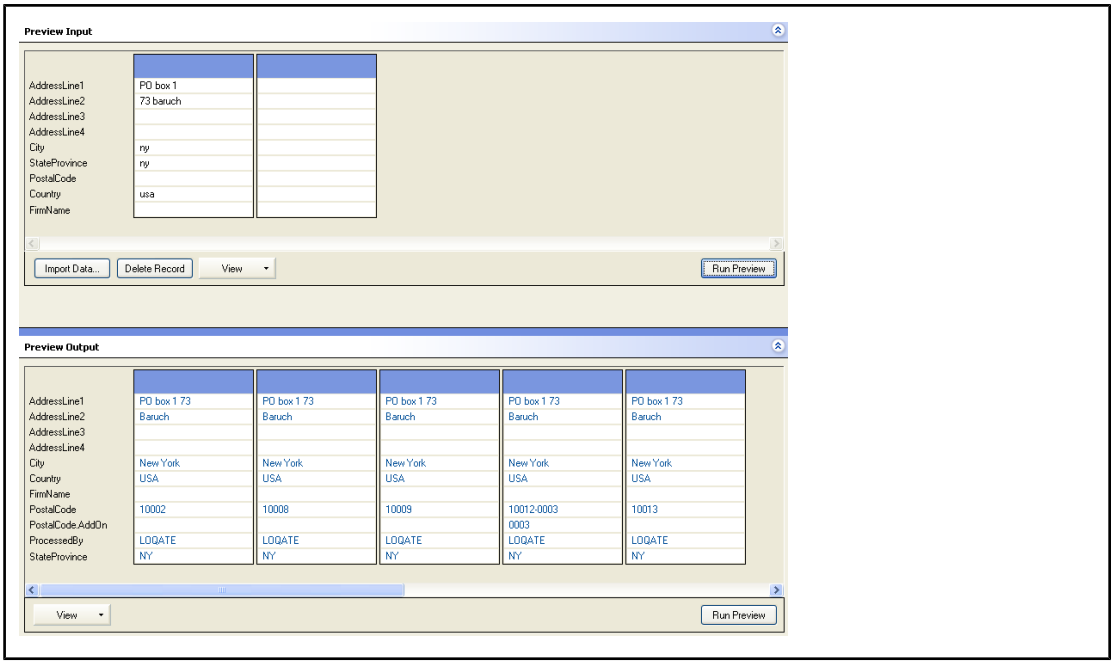
Get Candidate Addresses Loqate

Get Candidate Addresses Loqate returns a list of addresses that are considered matches for a given input address. Get Candidate Addresses Loqate returns candidate addresses only if the input

address matches multiple addresses in the postal database. If the input address matches only one address in the postal database, then no address data is returned. The Country input field is required; if this field is blank, no output will be returned.

> **Note:** By default, Get Candidate Addresses Loqate does not match to individual house numbers. Rather, it uses house number ranges for each street. After Get Candidate Addresses Loqate has determined the street name, city name, state/province name, and postal code, it checks to make sure the input house number falls within one of the ranges of house numbers given for the matched street name. The same type of logic applies to unit numbers.

Get Candidate Addresses Loqate is part of the Universal Addressing Module.



PostalCode: A1A1A1

Preview Output

AddressLine1	LOWER BATTERY RD	LOWER BATTERY RD
City	ST. JOHN'S	ST. JOHN'S
Country	CAN	CAN
HouseNumberHigh	000003	000004 A
HouseNumberLow	000001	000002
HouseNumberParity	O	E
MatchLevel	A	A
PostalCode	A1A1A1	A1A1A1
ProcessedBy	CAN	CAN
RecordType	Normal	Normal
StateProvince	NL	NL

Input

The following table lists the input for Get Candidate Addresses Loqate.

Table 43: Input Format

Field Name	Description
AddressLine1	The first address line.
AddressLine2	The second address line.
AddressLine3	The third address line.
AddressLine4	The fourth address line.
City	The city name.
Country	The country code or name, in any of the following formats: • 2-digit ISO country code • 3-digit UPU Country code • English country name For a list of ISO codes, see **ISO Country Codes and Module Support**. **Note:** This field is required. If this field is blank, no output will be returned.
FirmName	The company or firm name.
PostalCode	The postal code for the address. For U.S. addresses this is the ZIP Code™ in one of the following formats:
StateProvince	The state or province. For U.S. addresses only, you may put the state in the City field instead of the StateProvince field.

Options

Table 44: Get Candidate Addresses Loqate Options

Option Name	Description
Database	Specifies the database to be used for address processing. Only databases that have been defined in the Management Console are available.
Casing	Specifies the casing of the output data. One of the following: **Mixed** Returns the output in mixed case (default). For example: 123 Main St Mytown FL 12345 **Upper** Returns the output in upper case. For example: 123 MAIN ST MYTOWN FL 12345
Address Lookup Process	Specifies the method of searching for candidates. One of the following: **Search** Enter a full or partial address as input and return as output a list of closely matching results (default). **Verify** Enter address information in address lines, address components, or a combination of both as input and return as output results that more closely match the input.
Default Country	Specifies the default country. You should specify the country where most of your addresses reside. For example, if most of the addresses you process are in Germany, specify Germany. Get Candidate Address Loqate uses the country you specify to attempt validation when it cannot determine the country from the StateProvince, PostalCode, and Country address fields.

Option Name	Description
Country format	Specifies the format to use for the country name returned in the **Country** output field. For example, if you select English, the country name "Deutschland" would be returned as "Germany". **English Names** — Use English country names (default). **ISO Codes** — Use two-letter ISO abbreviation for the countries instead of country names. **UPU Codes** — Use Universal Postal Union abbreviation for the countries instead of country names.
Script/Alphabet	Specifies the alphabet or script in which the output should be returned. This option is bi-directional and generally takes place from Native to Latin and Latin to Native. **Input Script** — Do not perform transliteration and provide output in the same script as the input (default). **Native** — Output in the native script for the selected country wherever possible. **Latin (English)** — Use English values.
Maximum records to return	The maximum number of candidate addresses that Get Candidate Addresses Loqate should return. The default is 10. The maximum is 99.

Output

Get Candidate Addresses Loqate returns the following output.

Table 45: Get Candidate Addresses Loqate Output

Field Name	Description
AddressLine1	The first address line.
AddressLine2	The second address line.
AddressLine3	The third address line.

Field Name	Description
AddressLine4	The fourth address line.
City	The city name.
Country	The three-character ISO 3116-1 Alpha-3 code for the country. For a list of ISO codes, see **ISO Country Codes and Module Support**.
FirmName	The firm name.
PostalCode	The postal code. In the U.S. this is the ZIP Code™.
PostalCode.AddOn	The last four digits of the ZIP + 4® Code. U.S. addresses only.
ProcessedBy	Indicates which address coder processed the address. **LOQATE** — The Loqate coder processed the address.
StateProvince	The state or province abbreviation.
Status	Reports the success or failure of the match attempt. **null** — Success **F** — Failure
Status.Code	The reason for failure, if there is one. There is only one possible value: • RequestFailed
Status.Description	A description of the problem, if there is one. There is only one possible value: **Did not return multiples** — The input address matched only one address in the database. Get Candidate Addresses Loqate only returns data if multiple possible matches were found.

Get City State Province

Get City State Province returns a city and state/province for a given input postal code.

Note: Get City State Province works with U.S. and Canadian addresses only.

Get City State Province is part of the Universal Addressing Module.

Input

The following table shows the input fields.

Table 46: Get City State Province Input

Field Name	Description
PostalCode	A U.S. ZIP Code™ or Canadian postal code in one of the following formats: 99999 99999-9999 A9A9A9 A9A 9A9

Options

Table 47: Get City State Province Options

Option Name	Description
Enable U.S. address processing	Specifies whether or not to process U.S. addresses. If you enable U.S. address processing Get City State Province will attempt to return the state for U.S. addresses. If you disable U.S. address processing, U.S. addresses will fail, meaning they are returned with an "F" in the Status output field. The output field Status.Code will say "DisabledCoder." If you are not licensed for U.S. address processing you must disable U.S. address processing in order for your jobs to complete successfully, regardless of whether or not they contain U.S. addresses. **Note:** You must have a valid license for U.S. address processing to successfully process U.S. addresses.

Option Name	Description
Database	Specifies the database to be used for U.S. address processing. Only databases that have been defined in the **US Database Resources** panel in the Management Console are available.
Enable Canadian address processing	Specifies whether or not to process Canadian addresses. If you enable Canadian address processing Get City State Province will attempt to return the province for Canadian addresses. If you disable Canadian address processing, Canadian addresses will fail, meaning they are returned with an "F" in the Status output field. The output field Status.Code will say "DisabledCoder." If you are not licensed for Canadian address processing you must disable Canadian address processing in order for your jobs to complete successfully, regardless of whether or not they contain Canadian addresses. **Note:** You must have a valid license for Canadian address processing to successfully process Canadian addresses.
Database	Specifies the database to be used for Canadian address processing. Only databases that have been defined in the **Canadian Database Resources** panel in the Management Console are available.
Include non-mailing city	Specifies whether or not to include non-mailing city names in the output. A non-mailing city name is an alternate name for the primary city name. For example, Hollywood is a non-mailing city name for Los Angeles.
Maximum records to return	Specifies the maximum number of city-state/province pairs to return. The default value is 10.

Output

Get City State Province returns the matching city and state/province for the input postal code as well as a code to indicate the success or failure of the match attempt. If more than one city/state or city/province matches the input postal code, multiple output records are returned.

Table 48: Get City State Province Output

Field Name	Description
City	The matched city name.

Field Name	Description
City.Type	The USPS® standardized city name type (U.S. addresses only). **V** Vanity (non-mailing) city name. **P** Primary. The city name is the primary mailing city name. **S** Secondary. The city name is an alternate city name but is acceptable. A city can have multiple secondary city names.
PostalCode	The input postal code.
ProcessedBy	Indicates which address coder processed the address. One of the following: **USA** The U.S. address coder processed the address. **CAN** The Canadian address coder processed the address.
StateProvince	The state or province abbreviation.
Status	Reports the success or failure of the match attempt. **null** Success **F** Failure
Status.Code	The reason for failure, if there is one. The only valid value is: • DisabledCoder • UnrecognizedPostalCode
Status.Description	The description of the failure. The valid values are: **Postal code not found** This value will appear if Status.Code=UnrecognizedPostalCode. **PerformUSProcessing disabled** This value will appear if Status.Code=DisabledCoder. **PerformCanadianProcessing disabled** This value will appear if Status.Code=DisabledCoder.

Get City State Province Loqate

Get City State Province Loqate returns a city and state/province for a given input postal code.

This stage is part of the Universal Addressing Module.

Input

The following table shows the input fields.

Table 49: Get City State Province Loqate Input

Field Name	Description
Country	The country code or name, in any of the following formats: • 2-digit ISO country code • 3-digit UPU Country code • English country name For a list of ISO codes, see **ISO Country Codes and Module Support**.
PostalCode	The postal code for the address.

Options

Table 50: Get City State Province Loqate Options

Field Name	Description / Valid Values
Database	Specifies the database to be used for address processing. Only databases that have been defined in the **Database Resources** panel in the Management Console are available.
Maximum records to return	The maximum number of addresses that Get City State Province Loqate should return. The default is 10.

Field Name	Description / Valid Values
Script/Alphabet	Specifies the alphabet or script in which the output should be returned. This option is bi-directional and generally takes place from Native to Latin and Latin to Native. **Input Script** — Do not perform transliteration and provide output in the same script as the input (default). **Native** — Output in the native script for the selected country wherever possible. **Latin (English)** — Use English values.
Data license error handling	Specifies how you want Spectrum Technology Platform to respond when a data license error occurs. **Fail the job** — Fail the entire job if a data license error occurs. **Fail the record** — Fail the record(s) for which the data license error occurs and continue processing.

Output

Get City State Province Loqate returns the matching city and state/province for the input postal code as well as a code to indicate the success or failure of the match attempt. If more than one city/state or city/province matches the input postal code, multiple output records are returned.

Table 51: Get City State Province Loqate Output

Field Name	Description
City	The matched city name.
Country	The country in the format determined by what you selected in Country format: • ISO Code • UPU Code • English
PostalCode	The input postal code.

Field Name	Description
ProcessedBy	Indicates which address coder processed the address. **LOQATE** The Loqate coder processed the address.
StateProvince	The state or province abbreviation.
Status	Reports the success or failure of the match attempt. **null** Success **F** Failure
Status.Code	The reason for failure, if there is one. The only valid value is: • UnrecognizedPostalCode
Status.Description	The description of the failure. The only valid value is: **Postal code not found** This value will appear if Status.Code=UnrecognizedPostalCode.

Get Postal Codes

Get Postal Codes allows you to look up the postal codes for a particular city. The service takes a city, state, and country as input and returns the postal codes for that city. The input must be exactly correct in order to return postal codes.

Note: Get Postal Codes only works with U.S. addresses.

Get Postal Codes is part of the Universal Addressing Module.

Input

Get Postal Codes takes a city, state/province, and country as input.

Table 52: Get Postal Codes Input

Field Name	Description
City	The city whose postal codes you want to look up. You may put the city and state in the City field. If you do this, you must leave the StateProvince field blank. The total length of the City and StateProvince fields cannot exceed 100 characters.
StateProvince	The state or province of the city whose postal codes you want to look up. You may also put the state in the City field instead of the StateProvince field. The total length of the City and StateProvince fields cannot exceed 100 characters.
Country	The country code or name of the city whose postal codes you want to look up. The only valid value is US.

Options

Table 53: Get Postal Codes Options

Option	Description
Database	Specifies the database to be used for postal code look-ups. Only databases that have been defined in the US Database Resources panel in the Management Console are available.
Include non-mailing city	Specifies whether or not to include postal codes for the city's non-mailing city names. A non-mailing city name is an alternate name for the primary city name. For example, Hollywood is a non-mailing city name for Los Angeles.
Include city type	Specifies whether or not to return the city type in the output. If enabled, the city type is returned in the City.Type field.

Output

Get Postal Codes returns the postal codes for a specified city. Each postal code is returned in a separate record along with the data listed in the following table.

Table 54: Get Postal Codes Output

Field Name	Description
City.Type	The USPS® city type (U.S. addresses only). The city type is determined by looking at the ZIP Code and the city name. For example, the city Lanham MD has the postal codes 20703, 20706, and 20784. Lanham is the primary city in 20703 and 20706 but is a vanity city in 20784. This field column is only populated if **Include city type** is checked. The possible values are: **V** Vanity (non-mailing) city name. **P** Primary. The city name is the primary mailing city name. **S** Secondary. The city name is an alternate city name but is acceptable. A city can have multiple secondary city names.
PostalCode	A postal code in the specified city.
ProcessedBy	Because this service only works for U.S. addresses, ProcessedBy will always contain one value: USA.
Status	Reports the success or failure of the match attempt. **null** Success **F** Failure
Status.Code	Reason for failure, if there is one. One of the following: • CountryNotSupported • UnableToLookup

Field Name	Description
Status.Description	Description of failure. • Input country is not supported • Input city was blank • Input city & state / province was blank, or no match found • City-state mismatch (different spelling found, or city-state was a vanity name and vanity matching was not allowed, or city-state did not match ZIP Code)

Get Postal Codes Loqate

Get Postal Codes Loqate allows you to look up the postal codes for a particular city. The service takes a city, state, and country as input and returns the postal codes for that city. The input must be exactly correct in order to return postal codes.

Get Postal Codes Loqate is part of the Universal Addressing Module.

Input

Get Postal Codes Loqate takes a city, state/province, and country as input.

Table 55: Get Postal Codes Loqate Input

Field Name	Description / Valid Values
City	The city whose postal codes you want to look up. You may put the city and state in the City field. If you do this, you must leave the StateProvince field blank.
Country	The country code or name, in any of the following formats: • 2-digit ISO country code • 3-digit UPU Country code • English country name For a list of ISO codes, see **ISO Country Codes and Module Support**.

Field Name	Description / Valid Values
StateProvince	The state or province of the city whose postal codes you want to look up. You may also put the state in the City field instead of the StateProvince field.

Options

Table 56: Get Postal Codes Loqate Options

Option	Description
Database	Specifies the database to be used for postal code look-ups. Only databases that have been defined in the Management Console are available.
Data license error handling	Specifies how you want Spectrum Technology Platform to respond when a data license error occurs. **Fail the job** — Fail the entire job if a data license error occurs. **Fail the record** — Fail the record(s) for which the data license error occurs and continue processing.

Output

Get Postal Codes Loqate returns the postal codes for a specified city. Each postal code is returned in a separate record along with the data listed in the following table.

Table 57: Get Postal Codes Loqate Output

Field Name	Description / Valid Values
PostalCode	A postal code in the specified city.
ProcessedBy	Indicates which address coder processed the address. **LOQATE** — The Loqate coder processed the address.

Field Name	Description / Valid Values
Status	Reports the success or failure of the match attempt. **null** Success **F** Failure
Status.Code	Reason for failure, if there is one. One of the following: • InvalidCountry • UnableToLookup
Status.Description	Description of failure. • Input country is not supported • Input city was blank • Input city & state / province was blank, or no match found

Validate Address

Validate Address standardizes and validates addresses using postal authority address data. Validate Address can correct information and format the address using the format preferred by the applicable postal authority. It also adds missing postal information, such as postal codes, city names, state/province names, and more.

Validate Address also returns result indicators about validation attempts, such as whether or not Validate Address validated the address, the level of confidence in the returned address, the reason for failure if the address could not be validated, and more.

During address matching and standardization, Validate Address separates address lines into components and compares them to the contents of the Universal Addressing Module databases. If a match is found, the input address is *standardized* to the database information. If no database match is found, Validate Address optionally *formats* the input addresses. The formatting process attempts to structure the address lines according to the conventions of the appropriate postal authority.

Validate Address is part of the Universal Addressing Module.

Input

Validate Address takes an address as input. All addresses use this format regardless of the address's country. See **Address Line Processing for U.S. Addresses** on page 139 for important information about how address line data is processed for U.S. addresses.

Table 58: Input Format

Field Name	Format	Description
AddressLine1	String [50]	The first address line.
AddressLine2	String [50]	The second address line.
AddressLine3	String [50]	The third address line. Does not apply to Canadian addresses.
AddressLine4	String [50]	The fourth address line. Does not apply to Canadian addresses.
AddressLine5	String [50]	The fifth address line. Applies only to U.K. addresses. May contain street name, unit number, building number, and so on.
City	String [50]	The city name. For U.S. addresses only, you may put the city, state, and ZIP Code™ in the City field. If you do this, you must leave the StateProvince and PostalCode fields blank.
StateProvince	String [50]	The state or province. For U.S. addresses only, you may put the state in the City field instead of the StateProvince field.

Field Name	Format	Description
PostalCode	String [10]	The postal code for the address in one of the following formats: 99999 99999-9999 A9A9A9 A9A 9A9 9999 999 For U.S. addresses only, you may put the ZIP Code™ in the City field. For U.S. addresses only, if the city/state/ZIP Code™ is in the PostalCode field, Validate Address may parse the data and successfully process the address. For best results, put this data in the appropriate fields (City, StateProvince, and PostalCode).
Country	String [50]	The country code or name, in any of the following formats: • Two-character ISO 3116-1 Alpha-2 country code • Three-character ISO 3116-1 Alpha-3 country code • English country name • French country name • German country name • Spanish country name For a list of ISO codes, see **ISO Country Codes and Module Support**.
FirmName	String [50]	The company or firm name.
USUrbanName	String [50]	The U.S. address urbanization name. This is used primarily for Puerto Rico addresses.
CustomerID	String [9]	If this mailpiece uses a generic barcode, specify your USPS®-assigned customer ID in this field. The Validate Address generic barcode is used for mailpieces that use the OneCode ACS® service.

Field Name	Format	Description
CanLanguage	String	For Canadian addresses only, indicates whether the address is in English or French, if the option the **Determine language using** field on the **Canadian Address Options** tab is set to `CanLanguage input field`. If this field is blank, the address is formatted in English. If the field contains any non-blank value, the address is formatted in French. Note that addresses in Quebec are always formatted in French regardless of the value in this field.

Address Line Processing for U.S. Addresses

The input fields AddressLine1 through AddressLine4 are handled differently for U.S. addresses depending on whether the firm name extraction or urbanization code extraction options are enabled. If either of these options is enabled, Validate Address will look at the data in all four fields to validate the address and extract the requested data (firm name and/or urbanization code). If neither of these options is enabled, Validate Address uses only the first two non-blank address line fields in its validation attempt. The data in the other address line fields is returned in the output field AdditionalInputData. For example,

AddressLine1: A1 Calle A
AddressLine2:
AddressLine3: URB Alamar
AddressLine4: Pitney Bowes

In this address, if either firm name extraction or urbanization code extraction were enabled, Validate Address would examine all four address lines. If neither firm name extraction nor urbanization code extraction were enabled, Validate Address would examine AddressLine1 and AddressLine3 (the first two non-blank address lines) and attempt to validate the address using that data; the data in AddressLine4 would be returned in the output field AdditionalInputData.

Options

Output Data Options

The following table lists the options that control the type of information returned by Validate Address. Some of these options can be overridden for Canadian addresses. For more information, see **Canadian Address Options** on page 162.

Table 59: Output Data Options

Option	Description
Include a standard address	Returns 1 to 4 lines of address data plus city, state, postal code, firm name, and urbanization name information. Each address line represents an actual line of the address as it would appear on an envelope. For more information, see **Output** on page 173. If Validate Address could validate the address, the address lines contain the standardized address. When addresses are standardized, punctuation is removed, directionals are abbreviated, street suffixes are abbreviated, and address elements are corrected. If Validate Address could not validate the address, the address lines contain the address as it appeared in the input ("pass through" data). Non-validated addresses are always included as pass through data in the address line fields even if you uncheck this option.
Include matched address elements	Each part of the address, such as house number, street name, street suffix, directionals, and so on is returned in a separate field. For more information, see **Parsed Address Elements Output** on page 175. Note that if you select this option and also select **Return normalized data when no match is found**, the address elements will contain the input address for addresses that could not be validated.
Include postal information	Output addresses contain various additional data for each validated address. For more information, see **Postal Data Output** on page 180.
Include standardized input address elements	This option returns the input address in parsed form regardless of whether or not Validate Address is able to validate the address. Each part of the input address, such as house number, street name, street suffix, directionals, and so on is returned in a separate field. Selecting this option differs from selecting the combination of **Include matched address elements**/**Return normalized data when no match is found** in that **Return standardized input address elements** returns all input address in parsed form, not just input that could not be validated. For more information, see **Parsed Input** on page 178.
Include result codes for individual fields	Specifies whether to include field-level result indicators. Field-level result indicators describe how each address element was handled. Field-level result indicators are returned in the qualifier "Result". For example, the field-level result indicator for HouseNumber is contained in **HouseNumber.Result**. For a complete listing of result indicator output fields, see **Field-Level Result Indicators** on page 187.

Option	Description
Return normalized data when no match is found	Specifies whether to return a formatted address when an address cannot be validated. The address is formatted using the preferred address format for the address's country. If this option is not selected, the output address fields are blank when the address cannot be validated. **Note:** This option applies only to U.S. and Canadian addresses. Formatted data will not be returned for any other address. Formatted addresses are returned using the format specified by the **Include a standard address**, **Include address line elements**, and **Include postal information** check boxes. Note that if you select **Include address line elements**, the parsed address elements will contain the parsed, validated address for addresses that could be validated. If the address could not be validated the parsed address elements will contain the input address in parsed form. If you always want the output to contain the input address in parsed form, regardless of whether or not Validate Address could validate the address, select **Include standardized input address elements**. If you check this option, you must select **Include a standard address** and/or **Include address line elements**.
Return street name alias	For U.S. addresses only, specifies whether or not to use a street's alias in the output. A street alias is an alternate name for a street and typically applies only to a specific range of addresses on the street. If you do not allow street aliases in the output then the street's "base" name will appear in the output regardless of whether or not there is an alias for the street. The base name is the name that applies to the entire street.

Option	Description
Return street name alias	For U.S. addresses only, specifies how to handle street name aliases used in the input. A street alias is an alternate name for a street and typically applies only to a specific range of addresses on the street. If you enable this option, street name aliases used in the input will appear in the output. If you do not enable this option, street name aliases in the input will be converted to the base street name in the output, with the following exceptions: • If a preferred alias is used in input the preferred alias will always be used in output. • Changed aliases used in input are always converted to the base street name in output. This is one of three options that control how Validate Address handles street name aliases. The other two are **Preferred street name alias processing** and **Abbreviated street name alias processing**. **Note:** If **Abbreviated street name alias processing** is enabled, the abbreviated alias will always appear in the output even if you have **Return street name alias** disabled.
Return address data blocks	Specifies whether to return a formatted version of the address as it would be printed on a physical mailpiece. Each line of the address is returned in a separate address block field. There can be up to nine address block output fields: **AddressBlock1** through **AddressBlock9**. For example, this input address: AddressLine1: 4200 Parliament Place AddressLine2: Suite 600 City: Lanham StateProvince: MD PostalCode: 20706 Results in this address block output: AddressBlock1: 4200 PARLIAMENT PL STE 600 AddressBlock2: LANHAM MD 20706-1882 AddressBlock3: UNITED STATES OF AMERICA Validate Address formats the address into address blocks using postal authority standards. The country name is returned using the Universal Postal Union country name. Note that the option **Country format** does not affect the country name in the address block, it only affects the name returned in the **Country** output field. For addresses outside the U.S. and Canada, if Validate Address is unable to validate the address, no address blocks are returned. For addresses in the U.S. and Canada, address blocks are returned even if validation fails.

Option	Description
Format data using AMAS conventions	Specifies whether to return a formatted version of the address as it would be printed on a physical mailpiece. Each line of the address is returned in a separate address block field. There can be up to nine address block output fields: **AddressBlock1** through **AddressBlock9**. For example, this input address: AddressLine1: 4200 Parliament Place AddressLine2: Suite 600 City: Lanham StateProvince: MD PostalCode: 20706 Results in this address block output: AddressBlock1: 4200 PARLIAMENT PL STE 600 AddressBlock2: LANHAM MD 20706-1882 AddressBlock3: UNITED STATES OF AMERICA Validate Address formats the address into address blocks using postal authority standards. The country name is returned using the Universal Postal Union country name. Note that the option **Country format** does not affect the country name in the address block, it only affects the name returned in the **Country** output field. For addresses outside the U.S. and Canada, if Validate Address is unable to validate the address, no address blocks are returned. For addresses in the U.S. and Canada, address blocks are returned even if validation fails.

Obtaining Congressional Districts

Validate Address can determine the U.S. congressional district for an address.

To obtain congressional districts, select the **Include postal information** check box on the **Output Data Options** tab. This will return a variety of data about the address, including the congressional district. For information on the specific data that this option will return, see **Postal Data Output** on page 180.

Table 60: Congressional District Output

Field Name	Description
USCongressionalDistrict	Congressional district number. If the address is a non-state address (for example Puerto Rico or Washington D.C.) this field is blank.

Obtaining County Names

Validate Address can determine the county where a particular address is located and return the county name.

Note: County names are available for U.S. addresses only.

To obtain county names, select the **Include postal information** check box on the **Output Data Option** tab. This will return a variety of data about the address, including county names. For information on the specific data that this option will return, see **Postal Data Output** on page 180.

Table 61: County Name Output

Field Name	Description
USCountyName	County name

Obtaining FIPS County Numbers

Federal Information Processing Standards (FIPS) county numbers are numbers that identify each county in a state. Note that these numbers are only unique at the state level, not the national level. For more information, see **http://www.census.gov**.

Note: FIPS county numbers are available for U.S. addresses only.

To obtain FIPS county numbers, select the **Include postal information** check box on the **Output Data Options** tab. This will return a variety of data about the address, including FIPS county numbers. For information on the specific data that this option will return, see **Postal Data Output** on page 180.

Table 62: FIPS County Number Output

Field Name	Description
USFIPSCountyNumber	FIPS (Federal Information Processing Standards) county number

Obtaining Carrier Route Codes

Carrier route codes are unique identifiers assigned to each mail carrier who delivers mail, allowing unique identification of each U.S. delivery route. Validate Address can return the code that represents an addressee's carrier route.

Note: Carrier route codes are available for U.S. addresses only.

To obtain carrier route codes, select the **Include postal information** check box on the **Output Data Options** tab. This will return a variety of data about the address, including carrier route codes. For information on the specific data that this option will return, see **Postal Data Output** on page 180.

Table 63: Carrier Route Code Output

Field Name	Description
USCarrierRouteCode	Carrier route code

Creating Delivery Point Barcodes

A Delivery Point Barcode (DPBC) is a POSTNET™ barcode representation of the address. It consists of 62 bars with beginning and ending frame bars and five bars each for the ZIP + 4® Code, a value calculated based on the street address number, and a correction digit. The DPBC allows automated sortation of letter mail to the carrier level in walk sequence. Validate Address generates the data you need to assemble a DPBC.

Note: Delivery Point Barcodes are available for U.S. addresses only. For more information on Delivery Point Barcodes, see **http://www.usps.com**.

To generate the data needed to assemble a DPBC, select the **Include postal information** check box on the **Output Data Options** tab. This will return a variety of data about the address, including data needed to construct DPBCs. For information on the specific data that this option will return, see **Postal Data Output** on page 180.

Table 64: Delivery Point Barcode Output

Field Name	Description
PostalBarCode	The delivery point portion of the delivery point barcode.
USBCCheckDigit	Check-digit portion of the 11-digit delivery point barcode.

To assemble a DPBC you concatenate the values found in the Validate Address output fields as follows:

PostalCode.Base + PostalCode.Addon + PostalBarcode + USBCCheckDigit

For example, if you have the following:

- **PostalCode.Base** = 49423
- **PostalCode.Addon** = 4506
- **PostalBarcode** = 29
- **USBCCheckDigit** = 2

The assembled barcode would be:

494234506292

Default Options

The following table lists the options that control the format and processing of addresses. These are called "default options" because by default the apply to all addresses. Some of these options can be overridden for Canadian addresses. For more information, see **Canadian Address Options** on page 162.

Table 65: Default Options

Option	Description
Casing	Specifies the casing of the output address. One of the following: **Mixed** Returns the output in mixed case (default). For example: 123 Main St Mytown FL 12345 **Upper** Returns the output in upper case. For example: 123 MAIN ST MYTOWN FL 12345
Insert postal code separation character	Specifies whether to use separators (spaces or hyphens) in ZIP™ Codes or Canadian postal codes. For example, a ZIP + 4® Code with the separator would be 20706-1844 and without the separator it would be 207061844. A Canadian postal code with the separator would be P5E"1S7 and without the separator it would be P5E1S7. **Note:** Spaces are used in Canadian postal codes and hyphens in U.S. ZIP + 4® Codes.

Option	Description
Output multinational characters	Specifies whether or not to return multinational characters, including diacritical marks such as umlauts or accents. (Not supported for U.S. addresses).
Return multiple addresses	Indicates whether or not to return multiple address for those input addresses that have more than one possible match. For more information, see **Returning Multiple Matches** on page 150.
Secondary address placement	Specifies where to place secondary address information for U.S. addresses. Secondary address information refers to apartment numbers, suite numbers, and similar designators. For example, in this address the secondary address information is "Apt 10E" and the primary address information is "424 Washington Blvd". Apt 10E 424 Washington Blvd Springfield MI 49423 **Same line as address** — Place both primary and secondary address information in AddressLine1 (default). **Separate address line** — Place the primary address information in AddressLine1 and the secondary address information in AddressLine2. **Dual address separation** — Place both primary and secondary address information in AddressLine1 and place dropped information from dual addresses in AddressLine2. A dual address is an address that contains both street information and PO Box/Rural Route/Highway Contract information. For more information, see **About Dual Address Logic** on page 149.

Option	Description
City format	Specifies how to format city names that have short city name or non-mailing city name alternatives. Applies to U.S. and Canadian addresses. **Short** — Returns the USPS®-approved abbreviation for the city, if there is one. The USPS® provides abbreviations for city names that are 14 characters long or longer. City abbreviations are 13 characters or less and can be used when there is limited space on the mailing label. If there is no short city name for the city, then the full city name is returned. **Long** — Returns the long city name (default). **Standard** — Returns the abbreviated city name only if an abbreviated city name is used in the input address. If the input address does not use a short city name, either the long or short city name could be returned, depending on USPS® regulations for the particular city. Select this option if you are performing a CASS™ test. **Non-Mailing (Vanity)** — Output the non-mailing city name (the vanity name) if the input city name is a non-mailing city name. For example, "Hollywood" is a non-mailing city name for "Los Angeles". If you do not select this option and the input city name is a non-mailing city name the long version of the mailing city is returned.
Country format	Specifies the format to use for the country name returned in the **Country** output field. For example, if you select English, the country name "Deutschland" would be returned as "Germany". **English Names** — Use English country names (default). **Spanish Names** — Use Spanish country names. **French Names** — Use French country names. **German Names** — Use German country names. **ISO Codes** — Use two-letter ISO abbreviation for the countries instead of country names. **UPU Codes** — Use Universal Postal Union abbreviation for the countries instead of country names.

Option	Description
Default country	Specifies the default country. You should specify the country where most of your addresses reside. For example, if most of the addresses you process are in Canada, specify Canada. Validate Address uses the country you specify to attempt validation when it cannot determine the country from the StateProvince, PostalCode, and Country address fields.
Dual address logic	Indicates how to return a match if multiple non-blank address lines are present or multiple address types are on the same address line. (U.S. addresses only.) **Normal Match** (Default) USPS® CASS™ regulations determine the address returned based on the following order of priority: 1. PO Box 2. Firm 3. Highrise 4. Street 5. Rural Route 6. General Delivery **Street Match** Return a street match, regardless of the address line. **PO Box Match** Return a PO Box match, regardless of the address line. For more information, see **About Dual Address Logic** on page 149.

About Dual Address Logic

For U.S. addresses only, the **Dual address logic** option controls whether Validate Address should return a street match or a PO Box/Rural Route/Highway Contract match when the address contains both street and PO Box/Rural Route/Highway Contract information in the same address line.

> **Note:** The **Dual address logic** option has no effect if the street information is in a different address line input field than the PO Box/Rural Route/Highway Contract information.

For example, given the following input address:

AddressLine1: 401 N Main St Apt 1 POB 1
City: Kemp
StateProvince: TX
PostalCode: 75143

Validate Address would return one of the following:

- If **Dual address logic** is set to either `Normal Match` or `PO Box Match`:

AddressLine1: PO Box 1
City: Kemp
StateProvince: TX
PostalCode: 75143-0001

- If **Dual address logic** is set to `Street Match`:

  AddressLine1: 401 N Main St Apt 1
  City: Kemp
  StateProvince: TX
  PostalCode: 75143-4806

The address data that is not used to standardize the address can be returned in one of two places:

- **AddressLine2**—The address information not used to standardize the address is returned in the **AddressLine2** field if you select `Dual address separation` in the **Secondary address placement** field. For more information, see **Default Options** on page 146. For example, if you choose to return a street match for dual addresses,

  AddressLine1: 401 N Main St Apt 1
  AddressLine2: PO Box 1
  City: Kemp
  StateProvince: TX
  PostalCode: 75143-0001

- **AdditionalInputData**—If you do not select `Dual address separation` in the **Secondary address placement** field then the address information not used to standardize the address is returned in the **AdditionalInputData** field. For more information on this option, see **Default Options** on page 146. For example, if you choose to return a street match for dual addresses,

  AddressLine1: 401 N Main St Apt 1
  City: Kemp
  StateProvince: TX
  PostalCode: 75143-0001
  AdditionalInputData: PO Box 1

Address information that is dropped can be retrieved by setting**Secondary address placement** to `Dual address separation`. For more information, see **Default Options** on page 146 .

Returning Multiple Matches

If Validate Address finds multiple address in the postal database that are possible matches for the input address, you can have Validate Address return the possible matches. For example, the following address matches multiple addresses in the U.S. postal database:

PO BOX 1
New York, NY

Options

To return multiple matches, use the options described in the following table.

Table 66: Multiple Match Option

Option Name	Description
Return multiple addresses	Indicates whether or not to return multiple address for those input addresses that have more than one possible match.
Maximum results	Next to the **Return multiple addresses** check box, enter a number between 1 and 10 that indicates the maximum number of addresses to return. The default value is 1. **Note:** The difference between unchecking **Return multiple addresses** and checking **Return multiple addresses** and specifying a maximum number of results of 1 is that a multiple match will return a failure if **Return multiple addresses** is unchecked, whereas a multiple match will return one record if **Return multiple addresses** is checked and the maximum number of results is 1.
Include result codes for individual fields	To identify which output addresses are candidate addresses, you must check **Include result codes for individual fields** on the **Output Data** tab. When you do this, records that are candidate addresses will have one or more "M" values in the field-level result indicators.

Output

When you choose to return multiple matches, the addresses are returned in the address format you specify. For information on specifying address format, see **Output Data Options** on page 139. To identify which records are the candidate addresses, look for multiple "M" values in the field-level result indicators. For more information, see **Field-Level Result Indicators** on page 187.

U.S. Address Options

Option Name	Description
Enable U.S. address processing	Specifies whether to process U.S. addresses. If you enable U.S. address processing Validate Address will attempt to validate U.S. addresses. If you disable U.S. address processing, U.S. addresses will fail, meaning they are returned with an "F" in the Status output field. The output field Status.Code will say "DisabledCoder." If you are not licensed for U.S. address processing you must disable U.S. address processing in order for your jobs to complete successfully, regardless of whether or not they contain U.S. addresses. **Note:** You must have a valid license for U.S. address processing to successfully process U.S. addresses. If you enable U.S. address processing but are not licensed for this feature, or your license has expired, your entire job will fail.
Database	Specifies which database to use for validating U.S. addresses. Only databases that have been defined in the US Database Resources panel in the Management Console are available.
Line of travel	Enhanced Line of Travel (eLOT) processing assigns a Line of Travel sequence code to your addresses. Note that addresses are not sorted into eLOT sequence but they are assigned a Line of Travel sequence code that allows you to sort addresses into eLOT sequence. To perform eLOT processing you must have the eLOT database installed. For a listing of the output fields returned by this option, see **Enhanced Line of Travel Output** on page 201.
Residential Delivery Indicator processing	Residential Delivery Indicator (RDI™) processing checks if an address is a residential address (not a business address). To perform RDI™ processing, you must have the RDI™ database installed. If you enable both DPV® and RDI™ processing, RDI™ information is only returned if the address is a valid delivery point. If DPV® does not validate the address no RDI™ data is returned.
Enhanced street matching	Enhanced Street Matching (ESM) applies additional matching logic to correct misspelled or complex street names and obtain a match. ESM enables more addresses to be validated but it reduces performance. You cannot perform ESM when ASM is enabled.

Option Name	Description
All street matching	All Street Matching (ASM) applies ESM processing as well as additional matching logic to correct errors in street names and obtain a match. It is effective at matching streets when the first letter of the street is incorrect. ASM provides the best address validation but reduces performance.
Delivery Point Validation & CMRA	Delivery Point Validation (DPV®) validates that a specific address exists, as opposed to validating that a specific address is within a range of valid addresses. CMRA processing checks if an address is for a mailbox rented from a private company, referred to as a Commercial Mail Receiving Agent (CMRA). To perform DPV and CMRA processing, you must have the DPV database installed. The DPV database contains both DPV and CMRA data. For a listing of the output fields returned by this option, see **DPV and CMRA Output** on page 204.
LACS/Link conversion	The USPS® Locatable Address Conversion System (LACS) allows you to correct addresses that have changed as a result of a rural route address converting to street-style address, a PO Box renumbering, or a street-style address changing. When enabled, LACS^{Link} processing is attempted for addresses that could not be validated, or addresses were validated and flagged for LACS^{Link} conversion. To perform LACS^{Link} processing, you must have the LACS^{Link} database installed. For a listing of the output fields returned by this option, see **LACSLink Output** on page 202
Early Warning System	The Early Warning System (EWS) uses the USPS® EWS File to validate addresses that are not in the ZIP + 4® database. To perform EWS processing, you must have the EWS database installed. If an input address matches an address in the EWS file, the following record-level result indicators are returned: • Status="F" • Status.Code="EWSFailure" • Status.Description="Address found in EWS table"

Option Name	Description
Firm name extraction	

Option Name	Description
	Specifies whether to extract the firm name from AddressLine1 through AddressLine4 and place it in the FirmName output field. This option works in cases where the input record's FirmName field is blank and there is more than one address line. To identify firm names in address lines, the address lines are scanned for keywords and patterns that identify which fields are address lines and which are FirmName lines. Since this is done based on patterns, fields may be misidentified. The following tips can help ensure optimal firm extraction: • If possible, place the primary address elements in AddressLine1, the secondary elements in AddressLine2, Urbanization in AddressLine3, and firm in AddressLine4. If the address has no urbanization code, then place the firm name in AddressLine3 and leave AddressLine4 blank. For example, **AddressLine1:** 4200 Parliament Place **AddressLine2:** Suite 600 **AddressLine3:** Pitney Bowes **AddressLine4:** <blank> • When you define just two address lines, AddressLine2 is assigned to the secondary address most of the time. If you want to increase the chance that AddressLine2 will be treated as a firm name, put the firm name in AddressLine3 and leave AddressLine2 blank. • Numbers in a firm name (such as the "1" in "1 Stop Software") will increase the likelihood that the field will be treated as an address line. Here are some examples of firm name extraction: • In this example, AddressLine2 would get extracted into the FirmName output field **FirmName:** <blank> **AddressLine1:** 4200 Parliament Place Suite 600 **AddressLine2:** International Goose Feathers inc. • In this example, AddressLine3 would get extracted into the FirmName output field. **FirmName:** <blank> **AddressLine1:** 4200 Parliament Place **AddressLine2:** Suite 600 **AddressLine3:** Pitney Bowes • In this example, AddressLine3 would be placed in the AdditionalInputData output field. The firm name would not be extracted because the FirmName input field is not blank. **FirmName:** International Goose Feathers Inc. **AddressLine1:** 4200 Parliament Place **AddressLine2:** Suite 600 **AddressLine3:** Pitney Bowes • In this example, no firm name would be extracted because there is only one non-blank address line, which is always treated as the primary address element. **FirmName:** <blank> **AddressLine1:** 4200 Parliament Place Suite 600

Option Name	Description
	• In this example, AddressLine2 would be treated as a secondary address element because the numeral "1" causes that field to be treated as a secondary address element. **FirmName:** <blank> **AddressLine1:** 4200 Parliament Place Suite 600 **AddressLine2:** 1 Stop Software
U.S. urbanization name extraction	Specifies whether to extract the urbanization name from AddressLine1 through AddressLine4 and place it in the USUrbanName output field. This option works in cases where the input record's USUrbanName field is blank and there is more than one address line. To identify urbanization names, the address lines are scanned for keywords and patterns that identify which fields are address lines and which are urbanization name lines. Since this is done based on patterns, it is possible for fields to be incorrectly identified. To help ensure optimal urbanization extraction, place the primary address elements in AddressLine1, the secondary elements in AddressLine2, Urbanization in AddressLine3, and firm in AddressLine4, if possible. For example, **AddressLine1:** A1 Calle A **AddressLine2:** **AddressLine3:** URB Alamar **AddressLine4:** Pitney Bowes
Suite/Link support	Specifies whether to perform Suite$^{Link™}$ processing. Suite^{Link} corrects secondary address information for U.S. business addresses whose secondary address information could not be validated. If Suite^{Link} processing is enabled, the firm name is matched to a database of known firm names and their secondary address information. For example, Firm Name: Pitney Bowes Address Line 1: 4200 Parliament Place Address Line 2: STE 1 Postal Code: 20706 In this case, Suite^{Link} processing would change the suite number to the correct suite number: Firm Name: Pitney Bowes Address Line 1: 4200 Parliament Place Address Line 2: **STE 600** Postal Code: 20706-1844 To perform Suite$^{Link™}$ processing, you must have the Suite$^{Link™}$ database installed. For a listing of fields returned by this option, see **SuiteLink Output** on page 206.

Option Name	Description
Preferred alias street name processing	Specifies whether to use a street's preferred alias in the output. Street name aliases in the United States are alternative names given to sections of a street. There are four types of street name aliases: • **Preferred**—A preferred alias is the street name preferred locally. It typically applies only to a specific range of addresses on the street. • **Abbreviated**—An abbreviated alias is a variation of the street name that can be used in cases where the length of AddressLine1 is longer than 31 characters. For example, the street name 1234 BERKSHIRE VALLEY RD APT 312A could be abbreviated to 1234 BERKSHIRE VLLY RD APT 312A. • **Changed**—There has been an official street name change and the alias reflects the new name. For example if SHINGLE BROOK RD is changed to CANNING DR, then CANNING DR would be a changed alias type. • **Other**—The street alias is made up of other names for the street or common abbreviations of the street. The non-alias version of the street name is called the base street name. If the preferred alias is used in the input then the preferred alias will be the street name in the output regardless of whether you enable this option. This is one of three options that control how Validate Address handles street name aliases. The other two are **Return street name alias** and **Abbreviated street name alias processing**. In most cases, if you select both **Preferred street name alias processing** and **Abbreviated street name alias processing**, and Validate Address finds both a preferred and an abbreviated alias in the postal database, the abbreviated alias will be used in the output. The exception to this rule is if the input street name is a preferred alias. In this case, the preferred alias will be used in the output. **Note:** If the input address contains a street name alias of type "changed" the output address will always contain the base street name regardless of the options you specify.
Abbreviated alias street name processing	Specifies whether to use a street's abbreviated alias in the output if the output address line is longer than 31 characters. This is one of three options that control how Validate Address handles street name aliases. The other two are **Return street name alias** and **Preferred street name alias processing**. **Note:** If a preferred alias is specified in the input, the output street name will always be the preferred alias, even if you enable abbreviated street name alias processing. **Note:** If the input address contains a street name alias of type "changed" the output address will always contain the base street name regardless of the options you specify.

Option Name	Description
Determine if delivery point is active	Determines the "no stat" status of an address. An address is considered "no stat" if it exists but cannot receive mail, and therefore is not counted as a delivery statistic on a carrier's route (hence the term "no stat"). Examples include buildings under construction or those that the letter carrier has identified as not likely to receive mail. **Note:** You must enable DPV processing to use this option. The result is returned in the DPVNoStat field. For more information see **LACSLink Output** on page 202
Determine if address is vacant	Determines if the location has been unoccupied for at least 90 days. **Note:** You must enable DPV processing to use this option. The result is returned in the DPVVacant field. For more information see **LACSLink Output** on page 202
Return VeriMove detail data	Returns VeriMove detail data in output.
Suppress zip+4 carrier route R777	Specifies whether to supress addresses with Carrier Route R777. These addresses are phantom routes and are not eligible for street delivery. Since these addresses are assigned a ZIP + 4® code by the USPS®, Validate Address marks these addresses as deliverable. Select this option if you do not want addresses with Carrier Route R777 marked as deliverable. This will cause the following actions: • No ZIP + 4 code is assigned • Address is not counted on the USPS Form 3553 (CASS Summary Report) • DPV Footnote of R7 is returned
Street matching	Specifies the algorithm to use when determining if an input address matches an address in the postal database. One of the following: **Exact** — The input street name must match the database exactly. **Tight** — The matching algorithm is "tight." **Medium** — The matching algorithm is "medium" (default). **Loose** — The matching algorithm is "loose."

Option Name	Description
Firm matching	Specifies the algorithm to use when determining if an input address matches an address in the postal database. One of the following: **Exact** The input firm name must match the database exactly. **Tight** The matching algorithm is "tight." **Medium** The matching algorithm is "medium" (default). **Loose** The matching algorithm is "loose."
Directional matching	Specifies the algorithm to use when determining if an input address matches an address in the postal database. One of the following: **Exact** The input directionals, such as the "N" in 123 N Main St., must match the database exactly. **Tight** The matching algorithm is "tight." **Medium** The matching algorithm is "medium". Default. **Loose** The matching algorithm is "loose."
DPV Success Condition	Select the match condition where a DPV result does NOT cause a record to fail. **Note:** You must enable DPV processing to use this option.
Fail on CMRA match	Treat Commercial Mail Receiving Agency (CMRA) matches as failures? **Note:** You must enable DPV processing to use this option.
Place PMB elements in	Specifies where Private Mailbox (PMB) information is placed. **No AddressLine** Do not include the PMB information in Standard Address output (default). **AddressLine1** Place the PMB information in AddressLine1.If you choose AddressLine1, you must set the **Address Format** field to either `Combined Unit` or `Separate Dual Address`. **AddressLine2** Place the PMB information in AddressLine2. You may not select this option if **Generate 3553 Form** is checked.

Option Name	Description
Preferred City	Specifies whether the preferred last line city name should be stored. **ZIP+4 Last Line** — Store the Preferred Last Line City Name from the USPS ZIP+4 File (Override City Name). **Note:** If you select this option, Validate Address generates a CASS-certified configuration and the USPS 3553 Report. **USPS City/State** — Store the USPS-preferred City Name from USPS City/State File. **Note:** If you select this option, Validate Address does not generate a CASS-certified configuration and does not generate the USPS 3553 Report. **Primary** — Store the Primary City Name from the USPS City/State File. **Note:** If you select this option, Validate Address does not generate a CASS-certified configuration and does not generate the USPS 3553 Report.

CASS Certified Processing

Validate Address can operate in a CASS Certified™ mode when a specific combination of options are enabled. CASS Certified™ processing enables you to qualify for USPS® postal discounts.

When you use CASS Certified™ processing, Validate Address generates USPS CASS Form 3553. This form must be given to the USPS along with the mailing to qualify for certain discounts. The form contains information about the software you used for CASS processing, information about your name-and-address list, information about your output file, information about the mailer, and other statistics about your mailing. For detailed information about USPS Form 3553, see **www.usps.com**.

CASS Certified™ processing also generates the USPS CASS Detailed Report, which contains some of the same information as the 3553 report but provides much greater detail about DPV, LACS, and SuiteLink statistics. The USPS CASS Detailed Report is not required for postal discounts and does not need to be submitted with your mailing.

> **Note:** USPS CASS Form 3553 and the USPS CASS Detailed Report are available for batch processing only.

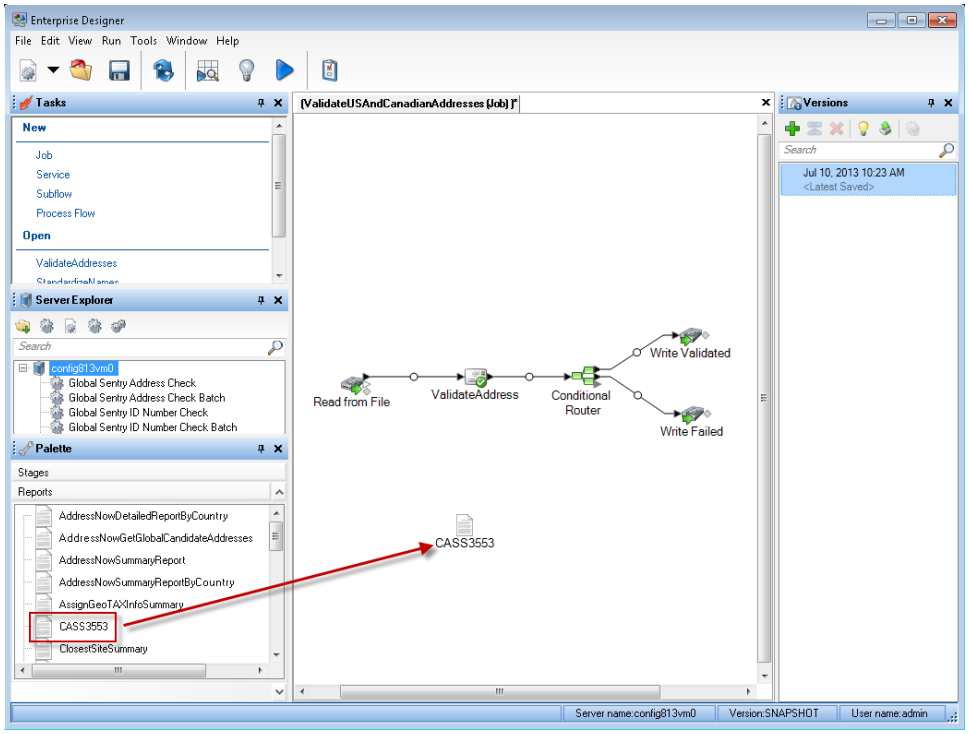
To run Validate Address in CASS Certified™ mode, follow these steps:

1. Validate Address must be in CASS Certified™ mode. If **(Not CASS Certified)** appears at the top of the window, click the **Enable CASS** button. The **Enforce CASS rules** check box will appear.
2. Click **Configure CASS 3553**. The **CASS Report Fields** dialog box appears.

3. Type the **List Processor** company name, **List Name or ID#**, and the **Number of Lists** being processed for this job.
4. Type the **Mailer Name, Address**, and **City, State, ZIP**.
5. Click **OK**.

   The List information will appear in Section B and the Mailer information in Section D of the generated USPS® CASS Form 3553.

6. In Enterprise Designer, drag the **CASS3553** report from the Reports pallet to the canvas.



7. Double-click the **CASS3553** icon on the canvas.
8. On the **Stages** tab, check the **Validate Address** checkbox. Note that if you have renamed the Validate Address stage to something else, you should check the box with the name you have given the address validation stage.
9. On the **Parameters** tab, select the format for the report. You can create the report in PDF, HTML, or plain text format.
10. Click **OK**.
11. Repeat steps 6-10 for **CASSDetail** if you want to produce the CASS Detail Report.

    Note: You do not need to draw a connector between the Validate Address stage and the reports.

Canadian Address Options

Option Name	Description
Enable Canadian address processing	Specifies whether to process Canadian addresses. If you enable Canadian address processing Validate Address will attempt to validate Canadian addresses. If you disable Canadian address processing, Canadian addresses will fail, meaning they is returned with an "F" in the Status output field. The output field Status.Code will say "DisabledCoder." If you are not licensed for Canadian address processing you must disable Canadian address processing in order for your jobs to complete successfully, regardless of whether or not they contain Canadian addresses. **Note:** You must have a valid license for Canadian address processing to successfully process Canadian addresses. If you enable Canadian address processing but are not licensed for this feature, or your license has expired, your entire job will fail.
Database	Specifies which database you want to use for validating Canadian addresses. To specify a database for Canadian address validation, select a database in the **Database** drop-down list. Only databases that have been defined in the **CAN Database Resources** panel in the Management Console are available.

Option Name	Description
Determine language using	Specifies how to determine the language (English or French) to use to format the address and directional. The following example shows an address formatted in English and French: English: 123 Main St W French: 123 Rue Main O The parameter controls the formatting of the address. It also affects the spelling of the directional but not spelling of the suffix. **Street suffix** Use the street suffix returned by the matching process to determine the language. The street suffix returned by the matching process, which is used internally by Validate Address during processing, may be different from that in the input address. Ambiguous records are formatted like the input. Default. All addresses in Quebec are formatted using French. **CPC database** Use the Canadian database to determine the language. The Canadian database contains data from the Canada Post Corporation (CPC). All addresses in Quebec are formatted using French. **CanLanguage field** Use the CanLanguage input field to determine the language. If there is a non-blank value in this field the address are formatted using French.
Default English apt label	For English addresses, specifies the default apartment label to use in the output if there is no apartment label in the input address. This setting is ignored if you select **Number in front** in the **Secondary address format** field. **Apt** Use "Apt" as the label. Default. **Apartment** Use "Apartment" as the label. **Suite** Use "Suite" as the label. **Unit** Use "Unit" as the label.

Option Name	Description
Default French apt label	For French addresses, specifies the default apartment label to use in the output if there is no apartment label in the input address. This setting is ignored if you select **Number in front** in the **Secondary address format** field. **App** Use "App" as the label. Default. **Appartement** Use "Appartement" as the label. **Bureau** Use "Bureau" as the label. **Suite** Use "Suite" as the label. **Unite** Use "Unite" as the label.
Force Correction for LVR/Single-Single CPC data record	Changes the civic and/or suite information to match the Large Volume Receiver (LVR) or single-single record (used when there is only one record for that postal code/street name/street type). **N** Do not change the civic and/or suite information to match the LVR or single-single record. The LVR record will be marked as a valid but non-correctable record (VN). The single-single record will be corrected, if possible, or processed as a non-correctable record.. **Y** Change the civic and/or suite information to match the LVR or single-single record. **Note:** If you check this box, the Statement of Address Accuracy will not be printed because this is **not** a SERP-recognized setting.
Prefer house number on postal code conflict	In cases where the house number and postal code are both valid but in conflict, you can force the postal code to be corrected based on the house number by selecting **Prefer house number on postal code conflict**. If you do not select this option the house number is changed to match the postal code.
Return city alias	Specifies whether or not to return the city alias when the alias is in the input address. This option is disabled when you select **Use default option** in the **City format** field.

Option Name	Description
Abbreviate non-civic keywords	Specifies whether or not non-civic keywords are abbreviated in the output. For example, Post Office Box vs. PO Box.
Enable SERP settings	Specifies whether or not to use SERP options.
Secondary address format	Specifies where to place secondary address information in the output address. Secondary address information refers to apartment numbers, suite numbers, and similar designators. **Use default option** — Place apartment information in the location specified in the**Secondary address format** field in the **Default Options** tab. Default. **End of address line** — Place apartment information at the at the end of the AddressLine1 field. **Front, number only** — Place the apartment number only (no label) at the beginning of the AddressLine1 field. For example, 400-123 Rue Main **Front, number and label** — Place the apartment number and label at the beginning of the AddressLine1 field. For example, Apt 400 123 Rue Main **Separate address line** — Place apartment information on a separate line. **Same as input** — Place apartment information in the same location as the input address.

Option Name	Description
City format	Specifies whether to use the long, medium, or short version of the city if the city has a long name. For example, Long: BUFFALO HEAD PRAIRIE Medium: BUFFALO-HEAD-PR Short: BUFFALO-HD-PR **Use default option** — Use the default option specified on the **Default Options** tab, **City format** field. Default. If you select `Non-mailing (vanity)` in the **City format** field, the city is formatted as if you select `Long` for this option (see below) and check the **Return city alias** box. **Short** — Output short city name. **Long** — Output the long city name. **Medium** — Output the medium city name. **Same as input** — Use the same city format as used in the input address. Output is L, M, or S.
Place rural route into in	Specifies where to place rural route delivery information. An example of an address with rural route delivery information is: 36 GRANT RD RR 3 ANTIGONISH NS In this address, "RR 3" is the rural route delivery information. **AddressLine1** — Place rural route delivery information on the same line as the address, after the address information. Default. For example, 36 GRANT RD RR 3 **AddressLine2** — Place rural route delivery information on a separate address line. For example, 36 GRANT RD RR 3

Option Name	Description
Place delivery office info in	Specifies where to place station information. An example of an address with station information is: PO BOX 8625 STN A ST. JOHN'S NL **Same as input** Place station information in the same location as it is in the input address. Default. **AddressLine1** Place station information on the same line as the address, after the address information. For example, PO BOX 8625 STN A **AddressLine2** Place station information on a separate address line. For example, PO BOX 8625 STN A

Option Name	Description
Dual address logic	Specifies whether Validate Address should return a street match or a PO Box/non-civic match when the address contains both civic and non-civic information. One of the following: **Use default option** — Use DualAddressLogic Global Option. Default. **PO Box Match** — Match to PO Box or other non-street data. **Street Match** — Match to street. For example, given the following input address: AddressLine1: 36 GRANT RD AddressLine2: RR 4 City: ANTIGONISH StateProvince: NS Validate Address would return one of the following: • If **Dual address logic** is set to `Street Match`, Validate Address returns the following: AddressLine1: 36 GRANT RD AddressLine2: RR 3 City: ANTIGONISH StateProvince: NS PostalCode: B2G 2L1 • If **Dual address logic** is set to `PO Box Match`, Validate Address returns the following: AddressLine1: RR 4 City: ANTIGONISH StateProvince: NS PostalCode: B2G 2L2 The address data that is not used to standardize the address is returned in the **AdditionalInputData** field. For more information, see **Output Data Options** on page 139.

SERP Processing

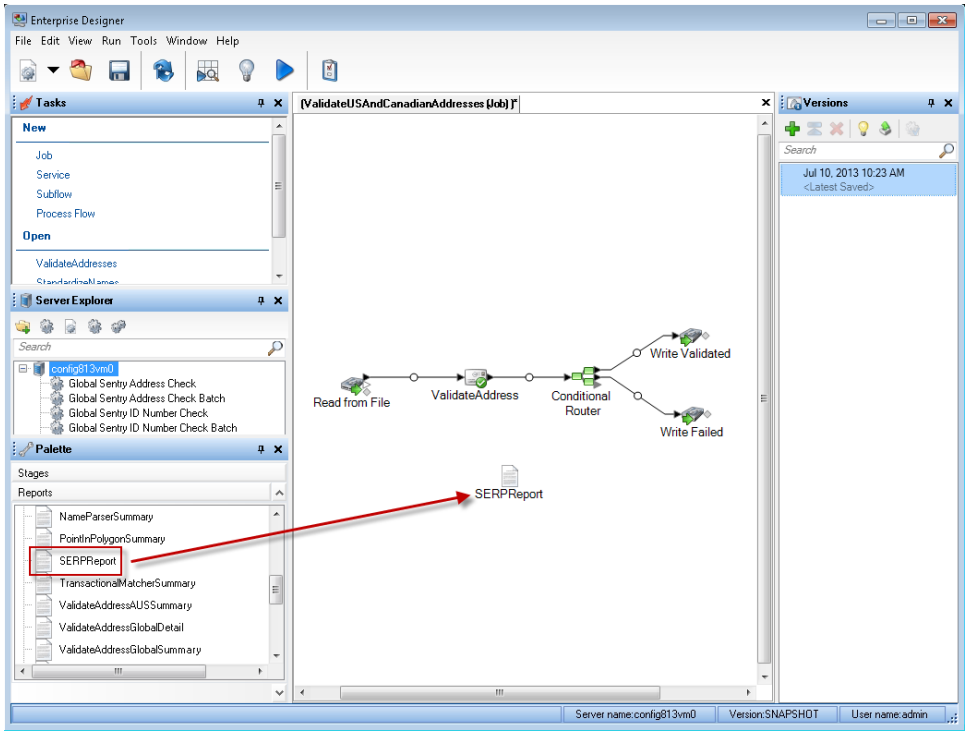
Validate Address allows for Software and Evaluation Recognition Processing (SERP). SERP processing enables you to qualify for Canada Post® postal discounts. Validate Address returns PoCAD data, which improves accuracy for house number and apartment data.

> **Note:** You can return PoCAD data in batch mode only. If you try to return PoCAD data in real time, Validate Address will return with an error.

When you use SERP Certified™ processing, Validate Address generates a Canada Post SERP Statement of Accuracy. This form must be given to Canada Post along with the mailing to qualify for certain discounts. The form contains information about the software you used for SERP processing, information about your name-and-address list, information about your output file, information about the mailer, and other statistics about your mailing. For detailed information about Canada Post Address Accuracy Statement, see **http://www.canadapost.ca/cpo/mc/business/productsservices/atoz/addressaccuracy.jsf**.

To run Validate Address in SERP Certified™ mode, follow these steps:

1. Validate Address must be in SERP Certified™ mode. If **(Not SERP Certified)** appears at the top of the window, click the **Enable SERP settings** button. The **Configure SERP** box will appear.
2. Click **Configure SERP**. The **SERP Report Fields** dialog box appears.
3. Type your merchant **CPC number**.
4. Type the mailer **Name, Address**, and **City, State, ZIP**.
5. Click **OK**.
6. In Enterprise Designer, drag the SERPReport from the Reports pallet to the canvas.



Note: You do not need to draw a connector between the Validate Address stage and the CASS3553 report.

7. Double-click the **SERPReport** icon on the canvas.

8. On the **Stages** tab, ensure that the **Validate Address** checkbox is checked. Note that if you have renamed the Validate Address stage to something else, you should check the box with the name you have given the address validation stage.
9. On the **Parameters** tab, select the format for the report. You can create the report in PDF, HTML, or plain text format. PDF format is the default.
10. Click **OK**.

Obtaining SERP Return Codes

SERP return codes indicate the quality of the input address as determined by the Canada Post's Software Evaluation and Recognition Program regulations.

To obtain SERP return codes, on the **Output Data** tab, select the **Include postal information** check box. This will return a variety of data about the address, including the SERP return codes. For information on the specific data that this option will return, see **Postal Data Output** on page 180.

SERP return codes are provided in the following output field.

Table 67: SERP Return Code Output

Field Name	Description
CanadianSERPCode	Validation/correction return code (Canadian addresses only): **V** The input was valid. Canada Post defines a "valid" address as an address that meets all the following requirements: **Note:** There are exceptions. For further information, contact the CPC. • The address must contain all required components as found in CPC's Postal Code Data Files. • The address must provide an exact match on all components for only one address in CPC's Postal Code Data Files, allowing for acceptable alternate words and names listed in the CPC Postal Code Data Files. • Address components must be in a form that allows recognition without ambiguity. Certain components may require "qualifiers" to identify them. For instance, a Route Service address requires the key words "Rural Route" or "RR" for differentiation from a "Suburban Service" or "SS" address with the same number. **I** The input was invalid. An "invalid" address is one that does not meet CPC requirements for a valid address (see above). Examples of this include address components that are missing, invalid, or inconsistent. **C** The input was correctable. A "correctable" address is one that can be corrected to match one, and only one, address. **N** The input was non-correctable. A "non-correctable" address is one that could be corrected a number of different ways such that Validate Address cannot identify a single correct version. **F** The input address was foreign (outside of Canada).

International Address Options

Addresses outside of the U.S. and Canada are referred to as "international" addresses. The following options control international address processing:

Option Name	Description
Enable international address processing	Specifies whether to process international addresses (addresses outside the U.S. and Canada). If you enable international address processing Validate Address will attempt to validate international addresses. If you disable international address processing, international addresses will fail, meaning they is returned with an "F" in the Status output field. The output field Status.Code will say "DisabledCoder." If you are not licensed for international address processing you must disable international address processing in order for your jobs to complete successfully, regardless of whether or not they contain international addresses. **Note:** You must have a valid license for international address processing to successfully process international addresses. If you enable international address processing but are not licensed for this feature, or your license has expired, your entire job will fail.
Database	Specifies which database you want to use for validating international addresses. To specify a database for international address validation, select a database in the **Database** drop-down list. Only databases that have been defined in the **INTL Database Resources** panel in the Management Console are available.

Option Name	Description
International city and street searching	By default, Validate Address provides a balance of good address matching accuracy with good performance. If you are willing to trade matching accuracy for faster performance, use the **International city and street searching** field to increase processing speed. When you do this, some accuracy is lost. This option only controls performance for addresses outside the U.S. and Canada. This setting affects a small percentage of records, mostly addresses in the U.K. There is no performance control for U.S. and Canadian address processing. If you use Get Candidate Addresses, the candidate addresses returned by Get Candidate Addresses may differ from the multiple matches returned by Validate Address if you set the performance tuning option for international addresses to any value other than 100. To control performance for addresses outside the U.S. and Canada, use the **International city and street searching** slider. To increase matching accuracy, move the slider to the right. A value of 100 results in the greatest accuracy. To increase processing speed, move the slider to the left. A value of 0 results in the greatest processing speed.
Search address lines on fail	This option enables Validate Address to search the AddressLine input fields for the city, state/province, postal code, and country when the address cannot be matched using the values in the City, StateProvince, and PostalCode input fields. Consider enabling this option if your input addresses have the city, state/province, and postal code information in the AddressLine fields. Consider disabling this option if your input addresses use the City, State/Province and PostalCode fields. If you enable this option and these fields are used, there is an increased possibility that Validate Address will fail to correct values in these fields (for example a misspelled city name).

Output

The output from Validate Address contains different information depending on the output categories you select.

Standard Address Output

Standard address output consists of four lines of the address which correspond to how the address would appear on an address label. City, state/province, postal code, and other data is also included in standard address output. Standard address output is returned for validated addresses if you select the **Include a standard address** check box. Standard address fields are always returned for addresses that could not be validated. For non-validated addresses, the standard address output fields contain the address as it appeared in the input ("pass through" data). If you want addresses to be standardized according to postal authority standards when validation fails, select the **Include normalized data when no match is found** check box.

Table 68: Standard Address Output

Field Name	Description
AdditionalInputData	Input data not used by the address validation process. For more information, see **Additional Input Data** on page 207.
AddressLine1	If the address was validated, the first line of the validated and standardized address. If the address could not be validated, the first line of the input address without any changes.
AddressLine2	If the address was validated, the second line of the validated and standardized address. If the address could not be validated, the second line of the input address without any changes.
AddressLine3	If the address was validated, the third line of the validated and standardized address. If the address could not be validated, the third line of the input address without any changes.
AddressLine4	If the address was validated, the fourth line of the validated and standardized address. If the address could not be validated, the fourth line of the input address without any changes.
AddressLine5	For U.K. addresses only. If the address was validated, the fifth line of the validated and standardized address. If the address could not be validated, the fifth line of the input address without any changes.
City	The validated city name.

Field Name	Description
Country	The country in the format determined by what you selected in Country format: • ISO Code • UPU Code • English • French • German • Spanish
DepartmentName	For U.K. addresses only, a subdivision of a firm. For example, Engineering Department.
FirmName	The validated firm or company name.
PostalCode	The validated ZIP Code™ or postal code.
PostalCode.AddOn	The 4-digit add-on part of the ZIP Code™. For example, in the ZIP Code™ 60655-1844, 1844 is the 4-digit add-on. (U.S. addresses only.)
PostalCode.Base	The 5-digit ZIP Code™; for example 20706 (U.S. addresses only).
StateProvince	The validated state or province abbreviation.
USUrbanName	The validated urbanization name. (U.S. addresses only.) This is used primarily for Puerto Rico addresses.

Parsed Address Elements Output

Output addresses are formatted in the parsed address format if you select the **Include matched address elements** check box. If you want Validate Address to return formatted data in the Parsed Address format when validation fails (that is, a normalized address), select the **Return normalized data when no match is found** check box.

> **Note:** If you always want return parsed input data returned regardless of whether or not validation is successful, select **Include standardized input address elements**. For more information, see **Parsed Input** on page 178.

Table 69: Parsed Address Output

Field Name	Description
AdditionalInputData	Input data not used by Validate Address. For more information, see **Additional Input Data** on page 207.
AdditionalInputData.Base	Input data that was not output to the standardized address by Validate Address. For more information, see **Additional Input Data** on page 207.
AdditionalInputData.Unmatched	Input data passed to the matcher but not used by Validate Address for validation. For more information, see **Additional Input Data** on page 207.
ApartmentLabel	Apartment designator (such as STE or APT), for example: 123 E Main St **APT** 3
ApartmentLabel2	Secondary apartment designator, for example: 123 E Main St APT 3, 4th **Floor** **Note:** In this release, this field will always be blank.
ApartmentNumber	Apartment number. For example: 123 E Main St APT **3**
ApartmentNumber2	Secondary apartment number. For example: 123 E Main St APT 3, **4th** Floor **Note:** In this release, this field will always be blank.
CanadianDeliveryInstallationAreaName	Delivery installation name (Canadian addresses only)
CanadianDeliveryInstallationQualifierName	Delivery installation qualifier (Canadian addresses only)
CanadianDeliveryInstallationType	Delivery installation type (Canadian addresses only)

Field Name	Description
City	Validated city name
Country	Country. Format is determined by what you selected in **Country format**: • ISO Code • UPU Code • English
DepartmentName	For U.K. addresses only, a subdivision of a firm. For example, Engineering Department.
FirmName	The validated firm or company name
HouseNumber	House number, for example: **123** E Main St Apt 3
LeadingDirectional	Leading directional, for example: 123 **E** Main St Apt 3
POBox	Post office box number. If the address is a rural route address, the rural route box number will appear here.
PostalCode	Validated postal code. For U.S. addresses, this is the ZIP Code.
PrivateMailbox	Private mailbox indicator.
PrivateMailbox.Type	The type of private mailbox. Possible values include: • Standard • Non-Standard **Note:** This replaces PrivateMailboxType (no period in field name). Please modify your API calls accordingly.

Field Name	Description
RRHC	Rural Route/Highway Contract indicator
StateProvince	Validated state or province name
StreetName	Street name, for example: 123 E **Main** St Apt 3
StreetSuffix	Street suffix, for example: 123 E Main **St** Apt 3
TrailingDirectional	Trailing directional, for example: 123 Pennsylvania Ave **NW**
USUrbanName	USPS® urbanization name. Puerto Rican addresses only.

Parsed Input

The output can include the input address in parsed form. This type of output is referred to as "parsed input." Parsed input fields contain the address data that was used as input regardless of whether or not Validate Address validated the address. Parsed input is different from the "parsed address elements" output in that parsed address elements contain the validated address if the address could be validated, and, optionally, the input address if the address could not be validated. Parsed input always contains the input address regardless of whether or not Validate Address validated the address.

To include parsed input fields in the output, select the **Return parsed input data** check box.

Table 70: Parsed Input

Field Name	Description
ApartmentLabel.Input	Apartment designator (such as STE or APT), for example: 123 E Main St **APT** 3
ApartmentNumber.Input	Apartment number, for example: 123 E Main St APT **3**

Field Name	Description
CanadianDeliveryInstallationAreaName.Input	Delivery installation name (Canadian addresses only)
CanadianDeliveryInstallationQualifierName.Input	Delivery installation qualifier (Canadian addresses only)
CanadianDeliveryInstallationType.Input	Delivery installation type (Canadian addresses only)
City.Input	Validated city name
Country.Input	Country. Format is determined by what you selected in Country format: • ISO Code • UPU Code • English • French • German • Spanish
FirmName.Input	The validated firm or company name
HouseNumber.Input	House number, for example: **123** E Main St Apt 3
LeadingDirectional.Input	Leading directional, for example: 123 **E** Main St Apt 3
POBox.Input	Post office box number. If the address is a rural route address, the rural route box number will appear here.
PostalCode.Input	Validated postal code. For U.S. addresses, this is the ZIP Code.
PrivateMailbox.Input	Private mailbox indicator

Field Name	Description
PrivateMailbox.Type.Input	The type of private mailbox. Possible values include: • Standard • Non-Standard
RRHC.Input	Rural Route/Highway Contract indicator
StateProvince.Input	Validated state or province name
StreetName.Input	Street name, for example: 123 E **Main St** Apt 3
StreetSuffix.Input	Street suffix, for example: 123 E Main St Apt 3
TrailingDirectional.Input	Trailing directional, for example: 123 Pennsylvania Ave **NW**
USUrbanName.Input	USPS® urbanization name

Postal Data Output

If you select **Include postal information** then the following fields are returned in the output.

Table 71: Postal Data Output

Field Name	Description
CanadianSERPCode	Validation/correction return code (Canadian addresses only). For more information, see **Obtaining SERP Return Codes** on page 170.
IntHexaviaCode	For addresses in France only, a numeric code that represents the street. For information about Hexavia codes, see **www.laposte.fr**.

Field Name	Description
IntINSEECode	For addresses in France only, a numeric code that represents the city. For a listing of INSEE codes, see **www.insee.fr**.
PostalBarCode	The two-digit delivery point portion of the delivery point barcode (U.S. addresses only). For more information, see **Creating Delivery Point Barcodes** on page 145.
USAltAddr	Indicates whether or not alternate address matching logic was used, and if so which logic was used (U.S. addresses only). One of the following: **null** No alternate address scheme used. **D** Delivery point alternate logic was used. **E** Enhanced highrise alternate match logic was used. **S** Small town default logic was used. **U** Unique ZIP Code logic was used.
USBCCheckDigit	Check-digit portion of the 11-digit delivery point barcode (U.S. addresses only). For more information, see **Creating Delivery Point Barcodes** on page 145.
USCarrierRouteCode	Carrier route code (U.S. addresses only). For more information, see **Obtaining Carrier Route Codes** on page 144.
USCongressionalDistrict	Congressional district (U.S. addresses only). For more information, see **Obtaining Congressional Districts** on page 143.
USCountyName	County name (U.S. addresses only). For more information, see **Obtaining County Names** on page 144.
USFinanceNumber	The finance number in which the address resides (U.S. addresses only). The finance number is a number assigned by the USPS to an area that covers multiple ZIP Codes. An address is validated only if its finance number matches the finance number of the candidate address in the U.S. Database.
USFIPSCountyNumber	FIPS (Federal Information Processing Standards) county number (U.S. addresses only). For more information, see **Obtaining FIPS County Numbers** on page 144.

Field Name	Description
USLACS	Indicates whether or not the address is a candidate for LACS^{Link} conversion (U.S. addresses only). One of the following: **Y** Yes, the address is a candidate for LACS^{Link} processing. If LACS^{Link} is enabled, an attempt is made to convert the address using the LACS^{Link} database. If the conversion attempt is successful, the output address is the new address obtained from the LACS^{Link} database. If the attempt is not successful, the address will not be converted. **N** No, the address is not a candidate for LACS^{Link} processing. LACS^{Link} processing may still be attempted if LACS^{Link} processing is requested, the LACS^{Link} database is installed, and one of the following is true: • The address matches to a Rural Route address and the RecordType.Default field returns a Y. • The input address could not be matched to any address in the U.S. Postal Database (Failures due to multiple matches are not LACS^{Link} candidates.)
USLastLineNumber	A six-character alphanumeric value that groups together ZIP Codes that share the same primary city. For example, addresses with the following two last lines would have the same last line number: Chantilly VA 20151 Chantilly VA 20152

Result Indicators

Result indicators provide information about the kinds of processing performed on an address. There are two types of result indicators:

Record-Level Result Indicators

Record-level result indicators provide data about the results of Validate Address processing for each record, such as the success or failure of the match attempt, which coder processed the address, and other details. The following table lists the record-level result indicators returned by Validate Address.

Table 72: Record Level Indicators

Field Name	Description
AddressFormat	The type of address data being returned: **F** French format (for example: 123 Rue Main) **E** English format (for example: 123 Main St)
Confidence	The level of confidence assigned to the address being returned. Range is from zero (0) to 100; zero indicates failure, 100 indicates a very high level of confidence that the match results are correct. For multiple matches, the confidence level is 0. For details about how this number is calculated, see **Introduction to the Validate Address Confidence Algorithm** on page 276.
CouldNotValidate	If no match was found, which address component could not be validated: • ApartmentNumber • HouseNumber • StreetName • PostalCode • City • Directional • StreetSuffix • Firm • POBoxNumber • RuralRoute **Note:** More than one component may be returned, in a comma-separated list.

Field Name	Description
CountryLevel	The category of address matching available. This is always "A" for U.S. and Canadian addresses. One of the following: **A** The address is in a country for which there is highly detailed postal data available. Addresses in this match level can have the following address elements validated and corrected, and added if missing from the input: • Postal code • City name • State/county name • Street address elements • Country name **B** The address is in a country for which there is a medium level of postal data available. Addresses in this match level can have the following address elements validated and corrected, and added if missing from the input: • Postal code • City name • State/county name • Country name **C** The address is in a country for which the postal data is least detailed. Addresses in this match level can have the following actions performed on them: • Validate and correct country name (cannot supply missing country name) • Validate the format of the postal code (cannot supply missing postal code or validate the code)

Field Name	Description
MatchScore	MatchScore provides an indication of the degree to which the output address is correct. It is significantly different from Confidence in that Confidence is indicates how much the input address changed to obtain a match, whereas the meaning of Match Score varies between U.S. and non-U.S. addresses. For U.S. addresses, MatchScore is a one-digit score on a scale of 0 to 9 that reflects the closeness of the street-name match (after transformations by Validate Address, if any). Zero indicates an exact match and 9 indicates the least likely match. If no match was found, this field is blank. For non-U.S. and non-Canadian addresses, MatchScore is a five-digit score, with a maximum value of 00999. Higher numbers indicates a closer match. This field does not apply to Canadian addresses. Note that you cannot equate match scores from U.S. addresses with those of non-U.S. addresses. For example, a match score of 4 for a U.S address does not indicate the same level of match as a 00004 for a non-U.S. address. **Note:** The Validate Address and Advanced Matching Module components both use the MatchScore field. The MatchScore field value in the output of a dataflow is determined by the last stage to modify the value before it is sent to an output stage. If you have a dataflow that contains Validate Address and Advanced Matching Module components and you want to see the MatchScore field output for each stage, use a Transformer stage to copy the MatchScore value to another field. For example, Validate Address produces an output field called MatchScore and then a Transformer stage copies the MatchScore field from Validate Address to a field called AddressMatchScore. When the matcher stage runs it populates the MatchScore field with the value from the matcher and passes through the AddressMatchScore value from Validate Address.
MultimatchCount	If multiple matches were found, indicates the number of records that are possible matches.
MultipleMatches	Indicates which address component had multiple matches, if multiple matches were found: • Firm • LeadingDirectional • PostalCode • StreetName • StreetSuffix • TrailingDirectional • Urbanization **Note:** More than one component may be returned, in a comma-separated list.

Field Name	Description
ProbableCorrectness	Relative probable correctness of the overall match that was found: **Blank** No match was found. **0** Match is most likely correct. **1-8** Intermediate match levels on a sliding scale. **9** Match is least likely to be correct. **Note:** These values reflect the program's estimate of “relative probable correctness” only. It is possible that some matches given a score of 0 are not correct, and probable that matches given a score of 9 are nevertheless correct.
ProcessedBy	Which address coder processed the address: **USA** U.S. address coder **CAN** Canadian address coder **INT** International address coder
RecordType	Type of address record, as defined by U.S. and Canadian postal authorities (supported for U.S. and Canadian addresses only): • FirmRecord • GeneralDelivery • HighRise • PostOfficeBox • RRHighwayContract • Normal
RecordType.Default	Code indicating the "default" match: **Y** The address matches a default record. **null** The address does not match a default record.
Status	Reports the success or failure of the match attempt. For multiple matches, this field is "F" for all the possible matches. **null** Success **F** Failure

Field Name	Description
Status.Code	Reason for failure, if there is one. For multiple matches, all possible matches is "MultipleMatchesFound." • DisabledCoder • InsufficientInputData • MultipleMatchesFound • UnableToValidate
Status.Description	Description of the problem, if there is one. **Possible Multiple Addresses Found** — This value will appear if Status.Code=MultipleMatchesFound. **Address Not Found** — This value will appear if Status.Code=UnableToValidate. **PerformUSProcessing disabled** — This value will appear if Status.Code=DisabledCoder. **PerformCanadianProcessing disabled** — This value will appear if Status.Code=DisabledCoder. **PerformInternationalProcessing disabled** — This value will appear if Status.Code=DisabledCoder.

Field-Level Result Indicators

Field-level result indicators describe how Validate Address handled each address element. Field-level result indicators are returned in the qualifier "Result". For example, the field-level result indicator for HouseNumber is contained in **HouseNumber.Result**.

To enable field-level result indicators, check the **Include result codes for individual fields** check box. For more information, see **Output Data Options** on page 139.

The following table lists the field-level result indicators. If a particular field does not apply to an address, the result indicator may be blank.

Table 73: Field-Level Result Indicators

Field Name	Description
AddressRecord.Result	These result codes apply to international addresses only. **M** Multiple. The input address matched multiple records in the postal database, and each matching record has a different value in this field. **S** Standardized. This option includes any standard abbreviations. **U** Unmatched. **V** Validated. The data was confirmed correct and remained unchanged from input.
ApartmentLabel.Result	**A** Appended. The field was added to a blank input field. U.S. and Canadian addresses only. **C** Corrected. U.S. and Canadian addresses only. **D** Dropped. The field provided on input was removed. U.S. and Canadian addresses only. For more information, see **Additional Input Data** on page 207. **F** Formatted. The spacing and/or punctuation was changed to conform to postal standards. Does not apply to U.S. or Canadian addresses. **P** Pass-through. The data was not used in the validation process, but it was preserved in the output. U.S. and Canadian addresses only. **R** The apartment label is required but is missing from the input address. U.S. addresses only. **S** Standardized. This option includes any standard abbreviations. **U** Unmatched. Does not apply to Canadian addresses. **V** Validated. The data was confirmed correct and remained unchanged from input.

Field Name	Description
ApartmentNumber.Result	**A** Appended. The field was added to a blank input field. U.S. and Canadian addresses only. **C** Corrected. Canadian addresses only. **D** Dropped. The field provided on input was removed. U.S. addresses only. For more information, see **Additional Input Data** on page 207. **F** Formatted. The spacing and/or punctuation was changed to conform to postal standards. Does not apply to U.S. or Canadian addresses. **P** Pass-through. The data was not used in the validation process, but it was preserved in the output. U.S. addresses that are an EWS match will have a value of P. U.S. and Canadian addresses only. **R** The apartment number is required but is missing from the input address. U.S. addresses only. **S** Standardized. This option includes any standard abbreviations. Does not apply to U.S. addresses. **U** Unmatched. **V** Validated. The data was confirmed correct and remained unchanged from input.

Field Name	Description
City.Result	**A** Appended. The field was added to a blank input field. U.S. and Canadian addresses only. **C** Corrected. U.S. and Canadian addresses only. **F** Hyphens missing or punctuation errors. Canadian addresses only. **M** Multiple. The input address matched multiple records in the postal database, and each matching record has a different value in this field. Does not apply to U.S. or Canadian addresses. **P** Pass-through. The data was not used in the validation process, but it was preserved in the output. **R** The city is required but is missing from the input address. U.S. addresses only. **S** Standardized. This option includes any standard abbreviations. Does not apply to U.S. addresses. **U** Unmatched. Does not apply to Canadian addresses. **V** Validated. The data was confirmed correct and remained unchanged from input.
Country.Result	These result codes do not apply to U.S. or Canadian addresses. **M** Multiple. The input address matched multiple records in the postal database, and each matching record has a different value in this field. **S** Standardized. This option includes any standard abbreviations. **U** Unmatched. **V** Validated. The data was confirmed correct and remained unchanged from input.

Field Name	Description
FirmName.Result	**C** Corrected. U.S. addresses only. **P** Pass-through. The data was not used in the validation process, but it was preserved in the output. U.S. and Canadian addresses only. **U** Unmatched. U.S. and Canadian addresses only. **V** Validated. The data was confirmed correct and remained unchanged from input. U.S. addresses only.
HouseNumber.Result	**A** Appended. The field was added to a blank input field. Canadian addresses only. **C** Corrected. Canadian addresses only. **D** Dropped. The field provided on input was removed. U.S. addresses only. For more information, see **Additional Input Data** on page 207. **F** Formatted. The spacing and/or punctuation was changed to conform to postal standards. Does not apply to U.S. or Canadian addresses. **O** Out of range. Does not apply to U.S. or Canadian addresses. **P** Pass-through. The data was not used in the validation process, but it was preserved in the output. Canadian addresses only. **R** The house number is required but is missing from the input address. Canadian addresses only. **S** Standardized. This option includes any standard abbreviations. Does not apply to U.S. or Canadian addresses. **U** Unmatched. **V** Validated. The data was confirmed correct and remained unchanged from input.

Field Name	Description
LeadingDirectional.Result	**A** Appended. The field was added to a blank input field. U.S. and Canadian addresses only. **C** Corrected. Non-blank input was corrected to a non-blank value. U.S. addresses only. **D** Dropped. The field provided on input was removed. U.S. addresses only. For more information, see **Additional Input Data** on page 207. **F** Formatted. The spacing and/or punctuation was changed to conform to postal standards. Does not apply to U.S. or Canadian addresses. **M** Multiple. The input address matched multiple records in the postal database, and each matching record has a different value in this field. U.S. addresses only. **P** Pass-through. The data was not used in the validation process, but it was preserved in the output. Canadian addresses only. **S** Standardized. This option includes any standard abbreviations. **U** Unmatched. **V** Validated. The data was confirmed correct and remained unchanged from input. Does not apply to Canadian addresses.

Field Name	Description
POBox.Result	**A** Appended. The field was added to a blank input field. Canadian addresses only. **C** Corrected. Canadian addresses only. **D** Dropped. The field provided on input was removed. U.S. addresses only. For more information, see **Additional Input Data** on page 207. **F** Formatted. The spacing and/or punctuation was changed to conform to postal standards. Does not apply to U.S. or Canadian addresses. **M** Multiple matches. The input address matched multiple records in the postal database, and each matching record has a different value in this field. U.S. addresses only. **P** Pass-through. The data was not used in the validation process, but it was preserved in the output. Canadian addresses only. **R** The P.O. Box number is required but is missing from the input address. U.S. addresses only. **S** Standardized. This option includes any standard abbreviations. **U** Unmatched. **V** Validated. The data was confirmed correct and remained unchanged from input.

Field Name	Description
PostalCode.Result	**A** Appended. The field was added to a blank input field. U.S. and Canadian addresses only. **C** Corrected. U.S. and Canadian addresses only. **F** Formatted. The spacing and/or punctuation was changed to conform to postal standards. Does not apply to U.S. or Canadian addresses. **M** Multiple. The input address matched multiple records in the postal database, and each matching record has a different value in this field. Does not apply to Canadian addresses. **P** Pass-through. The data was not used in the validation process, but it was preserved in the output. Does not apply to U.S. addresses. **R** The postal code is required but is missing from the input address. U.S. addresses only. **S** Standardized. This option includes any standard abbreviations. Does not apply to U.S. or Canadian addresses. **U** Unmatched. For example, if the street name does not match the postal code, both StreetName.Result and PostalCode.Result will contain U. **V** Validated. The data was confirmed correct and remained unchanged from input.
PostalCodeCity.Result	These result codes apply to international addresses only. **M** Multiple. The input address matched multiple records in the postal database, and each matching record has a different value in this field. **P** Pass-through. The data was not used in the validation process, but it was preserved in the output. **S** Standardized. This option includes any standard abbreviations. **U** Unmatched. **V** Validated. The data was confirmed correct and remained unchanged from input.

Field Name	Description
PostalCode.Source	These result codes apply to U.S. addresses only. **FinanceNumber** The ZIP Code™ in the input was verified by using USPS® Finance Number groupings. **ZIPMOVE** The ZIP Code™ in the input address was corrected because the USPS® redrew ZIP Code™ boundaries and the address is now in a different ZIP Code™.
PostalCode.Type	**P** The ZIP Code™ contains only PO Box addresses. U.S. addresses only. **U** The ZIP Code™ is a unique ZIP Code™ assigned to a specific company or location. U.S. addresses only. **M** The ZIP Code™ is for military addresses. U.S. addresses only. **null** The ZIP Code™ is a standard ZIP Code™.
RRHC.Result	**C** Corrected. Canadian addresses only. **D** Dropped. The field provided on input was removed. U.S. addresses only. For more information, see **Additional Input Data** on page 207. **M** Multiple matches. The input address matched multiple records in the postal database, and each matching record has a different value in this field. U.S. addresses only. **P** Pass-through. The data was not used in the validation process, but it was preserved in the output. Canadian addresses only. **R** The rural route/highway contract is required but is missing from the input address. U.S. addresses only. **S** Standardized. This option includes any standard abbreviations. U.S. and Canadian addresses only. **U** Unmatched. U.S. and Canadian addresses only. **V** Validated. The data was confirmed correct and remained unchanged from input. U.S. and Canadian addresses only.

Field Name	Description
RRHC.Type	These result codes apply to U.S. addresses only. **HC** The address is a Highway Contract address. **RR** The address is a Rural Route address.
StateProvince.Result	**A** Appended. The field was added to a blank input field. U.S. and Canadian addresses only. **C** Corrected. U.S. addresses only. **M** Multiple. The input address matched multiple records in the postal database, and each matching record has a different value in this field. Does not apply to U.S. or Canadian addresses. **P** Pass-through. The data was not used in the validation process, but it was preserved in the output. **R** The state is required but is missing from the input address. U.S. addresses only. **S** Standardized. This option includes any standard abbreviations. Does not apply to U.S. addresses. **U** Unmatched. Does not apply to Canadian addresses. **V** Validated. The data was confirmed correct and remained unchanged from input.
Street.Result	These result codes apply to international addresses only. **M** Multiple. The input address matched multiple records in the postal database, and each matching record has a different value in this field. **P** Pass-through. The data was not used in the validation process, but it was preserved in the output. **R** Street corrected. House number is out of range. Applies to French, UK, and Japanese records only. **S** Standardized. This option includes any standard abbreviations. **U** Unmatched. **V** Validated. The data was confirmed correct and remained unchanged from input.

Field Name	Description
StreetName.AbbreviatedAlias.Result	Indicates the result of abbreviated alias processing. One of the following: **null** No abbreviated alias processing attempted. **B** The StreetName field contains the base street name. **L** The standardized address length is less than 31 characters so the StreetName field contains the base name. **N** No abbreviated alias found. **Y** An abbreviated alias was found for input address. The StreetName field contains the abbreviated alias.
StreetName.Alias.Type	This result code applies to U.S. addresses only. **Note:** In previous releases this field was named StreetName.AliasType with no "." between "Alias" and "Type." This old name is obsolete. Please update your processes to use the new name StreetName.Alias.Type. **Abbreviated** The alias is an abbreviation of the street name. For example, HARTS-NM RD is an abbreviated alias for HARTSVILLE NEW MARLBORO RD. **Changed** There has been an official street name change and the alias reflects the new name. For example if SHINGLE BROOK RD is changed to CANNING DR, then CANNING DR would be a changed alias type. **Other** The street alias is made up of other names for the street or common abbreviations of the street. **Preferred** The street alias is the locally preferred alias. For example, a street is named "South Shore Dr." because it runs along the southern shore of a lake, not because it is south of a municipal demarcation line. So, "South" is not a predirectional in this case and should not be shorted to "S". So, "South Shore Dr." would be the preferred alias.

Field Name	Description
StreetName.PreferredAlias.Result	Indicates the result of preferred alias processing. One of the following: **null** No preferred alias processing attempted. **A** Preferred alias processing was not attempted because the input address matched to an alias. Preferred alias processing is only attempted for base addresses. **N** No preferred alias found. **Y** A preferred alias was found for the input address. The StreetName field contains the preferred alias.
StreetName.Result	**A** Appended. The field was added to a blank input field. Canadian addresses only. **C** Corrected. U.S. and Canadian addresses only. **D** Dropped. The field provided on input was removed. U.S. addresses only. For more information, see **Additional Input Data** on page 207. **F** Formatted. The spacing and/or punctuation was changed to conform to postal standards. Does not apply to U.S. or Canadian addresses. **M** Multiple. The input address matched multiple records in the postal database, and each matching record has a different value in this field. U.S. addresses only. **P** Pass-through. The data was not used in the validation process, but it was preserved in the output. Does not apply to U.S. addresses. **S** Standardized. This option includes any standard abbreviations. U.S. and Canadian addresses only. **U** Unmatched. **V** Validated. The data was confirmed correct and remained unchanged from input.

Field Name	Description
StreetSuffix.Result	**A** Appended. The field was added to a blank input field. U.S. and Canadian addresses only. **C** Corrected. U.S. and Canadian addresses only. **D** Dropped. The field provided on input was removed. U.S. and Canadian addresses only. For more information, see **Additional Input Data** on page 207. **F** Formatted. The spacing and/or punctuation was changed to conform to postal standards. Does not apply to U.S. or Canadian addresses. **M** Multiple. The input address matched multiple records in the postal database, and each matching record has a different value in this field. U.S. addresses only. **P** Pass-through. The data was not used in the validation process, but it was preserved in the output. Canadian addresses only. **S** Standardized. This option includes any standard abbreviations. **U** Unmatched. Does not apply to U.S. addresses. **V** Validated. The data was confirmed correct and remained unchanged from input.

Field Name	Description
TrailingDirectional.Result	**A** Appended. The field was added to a blank input field. U.S. and Canadian addresses only. **C** Corrected. U.S. and Canadian addresses only. **D** Dropped. The field provided on input was removed. U.S. and Canadian addresses only. For more information, see **Additional Input Data** on page 207. **F** Formatted. The spacing and/or punctuation was changed to conform to postal standards. Does not apply to U.S. or Canadian addresses. **M** Multiple. The input address matched multiple records in the postal database, and each matching record has a different value in this field. U.S. addresses only. **P** Pass-through. The data was not used in the validation process, but it was preserved in the output. Canadian addresses only. **S** Standardized. This option includes any standard abbreviations. **U** Unmatched. Does not apply to Canadian addresses. **V** Validated. The data was confirmed correct and remained unchanged from input.
USUrbanName.Result	These result codes apply to U.S. addresses only. **A** Appended. The field was added to a blank input field. **C** Corrected. **M** Multiple. The input address matched multiple records in the postal database, and each matching record has a different value in this field. **U** Unmatched. **V** Validated. The data was confirmed correct and remained unchanged from input.

Output from Options

Validate Address returns additional data depending on the options you select. For information on the output generated by each option, see the options listed in the following sections:

Enhanced Line of Travel Output

Enhanced Line of Travel processing produces the following output.

Field Name	Description
USLOTCode	Line of Travel sequence code and an indicator denoting USPS® LOT sequence. This field is in the format nnnnY where: **nnnn** The four-digit LOT code. **Y** One of the following: • **A**—Ascending LOT sequence • **D**—Descending LOT sequence
USLOTHex	A hexadecimal value that allows you to sort your file in ascending order only. The hexadecimal values range from 0 to FF ascending, then FF through 0 descending.
USLOTSequence	A two-byte value used for final sortation in place of the DPC add-on. It consists of an uppercase letter followed by a digit 0 through 9. Values range from A0 (99 descending) through J9 (00 descending), and K0 (00 ascending) through T9 (99 ascending).

LACS^{Link} Output

Field Name	Description
USLACS	Indicates whether or not the address is a candidate for LACS^{Link} conversion (U.S. addresses only). One of the following: **Y** Yes, the address is a candidate for LACS^{Link} processing. If LACS^{Link} is enabled, Validate Address will attempt to convert the address using the LACS^{Link} database. If the conversion attempt is successful, the output address is the new address obtained from the LACS^{Link} database. If the attempt is not successful, the address will not be converted. **N** No, the address is not a candidate for LACS^{Link} processing. LACS^{Link} processing may still be attempted if LACS^{Link} processing is requested, the LACS^{Link} database is installed, and one of the following is true: • The address matches to a Rural Route address and the RecordType.Default field returns a Y. • The input address could not be matched to any address in the U.S. Postal Database (Failures due to multiple matches are not LACS^{Link} candidates.)
USLACS.ReturnCode	Indicates the success or failure of LACS^{Link} processing. (U.S. addresses only.) **A** LACS^{Link} processing successful. Record matched through LACS^{Link} processing. **00** LACS^{Link} processing failed. No matching record found during LACS^{Link} processing. **09** LACS^{Link} processing matched the input address to an older highrise default address. The address has been converted. Rather than provide an imprecise address, LACS^{Link} processing does not provide a new address. **14** LACS^{Link} processing failed. Match found during LACS^{Link} processing but conversion did not occur due to other USPS® regulations. **92** LACS^{Link} processing successful. Record matched through LACS^{Link} processing. Unit number dropped on input. **null** LACS^{Link} did not process the record, or LACS^{Link} processing was not attempted.

RDI Output

Field Name	Description
RDI	Return values indicating address type. **B** The address is a business address. **R** The address is a residential address. **M** The address is both a residential and a business address. **null** Not checked because the address did not code at a ZIP + 4® level, or RDI™ was not performed.

DPV and CMRA Output

Field Name	Description
DPV	Indicates the results of Delivery Point Validation (DPV) processing. **Y** DPV confirmed. Mail can be delivered to the address. **N** Mail cannot be delivered to the address. **S** The building number was validated but the unit number could not be confirmed. A building number is the primary address number for a building. A unit number is a number of a distinct mailing address within a building such as an apartment, suite, floor, and so on. For example, in this address 424 is the building number and 12 is the unit number: 424 Washington Blvd. Apt. 12 Oak Park IL 60302 USA **D** The building number was validated but the unit number was missing from input. A building number is the primary address number for a building. A unit number is a number of a distinct mailing address within a building such as an apartment, suite, floor, and so on. For example, in this address 424 is the building number and 12 is the unit number: 424 Washington Blvd. Apt. 12 Oak Park IL 60302 USA **M** The address matches multiple valid delivery points. **U** The address could not be confirmed because the address did not code at the ZIP + 4® level. **V** The address caused a false-positive violation.
CMRA	Indicates if the address is a Commercial Mail Receiving Agency (CMRA) **Y** Yes, the address is a CMRA. **N** No, the address is not a CMRA. **U** Unconfirmed.

Field Name	Description
DPVFootnote	DPV footnote codes. **AA** Input address matched to the ZIP + 4® file. **A1** Input address not matched to the ZIP + 4® file. **BB** Input address matched to DPV (all components). **CC** Input address primary number matched to DPV but secondary number not match (present but not valid). **F1** Input address is military; DPV bypassed. **G1** Input address is general delivery; DPV bypassed. **M1** Input address primary number missing. **M3** Input address primary number invalid. **N1** Input address primary number matched to DPV but high rise address missing secondary number. **P1** Input address missing RR or HC Box number. **P3** Input address missing PO, RR, or HC Box number **RR** Input address matched to CMRA. **R1** Input address matched to CMRA but secondary number not present. **U1** Input address is unique ZIP; DPV bypassed.
DPVVacant	Indicates whether the building is vacant (unoccupied for 90 days). One of the following: **Y** Yes, the building is vacant. **N** No, the building is not vacant. **null** The **Determine if address is vacant** option was not turned on.
DPVNoStat	Indicates whether the building is a "no stat" building and therefore unable to receive mail. One of the following: **Y** Yes, the building is a "no stat" building, which means the building is not receiving mail. **N** No, the building is not a "no stat" building, which means the building does receive mail. **null** The **Determine if delivery point is active** option was not turned on.

Suite[Link] *Output*

Field Name	Description
SuiteLinkReturnCode	Indicates whether or not Validate Address corrected the secondary address information (U.S. addresses only). One of the following: **A** Validate Address corrected the secondary address information. **00** Validate Address did not correct the secondary address information. **null** Suite[Link] was not performed. **XX** Suite[Link] processing encountered an error. For example, an error would occur if the Suite[Link] database is expired.
SuiteLinkMatchCode	Provides additional information on the Suite[Link] match attempt. (U.S. addresses only) **A** Validate Address corrected the secondary address information. **B** Validate Address did not correct the secondary address information. No additional detail about the match attempt is available. **C** The words in the FirmName field are all "noise" words. Noise words are defined by the USPS® and are ignored when attempting to mach the firm name. Examples of noise words are "company" and "corporation". Validate Address is not able to correct secondary address information for firm names that consist entirely of noise words. For example "Company and Corporation" is all noise words. **D** The address is not a high-rise default address. Suite[Link] matching is only done for high-rise default addresses. A high-rise default is a default to use when the address does not contain valid secondary information (the apartment number or apartment type is missing). **E** Suite[Link] processing failed because the Suite[Link] database is expired. **null** Suite[Link] was not performed or there was an error.

Field Name	Description
SuiteLinkFidelity	Indicates how well Validate Address matched the firm name to the firm names in the Suite[Link] database. **1** The firm name matches the Suite[Link] database exactly. **2** Good match. All words in the firm name except one matched the firm name in the Suite[Link] database. **3** Poor match. More than one word in the firm name did not match the firm name in the Suite[Link] database. **null** Suite[Link] could not match the firm name, or was not performed, or there was an error.

VeriMove Output

Field Name	Description
VeriMoveDataBlock	Indicates whether or not Validate Address should return a 250-byte field containing input data to pass to VeriMove Express. This field contains the Detail Results Indicator data required by VeriMove. For more information about the contents of this field, see the VeriMove User's Guide. One of the following: **Y** Yes, return the field VeriMoveDataBlock.. **N** No, do not return the field VeriMoveDataBlock.

Additional Input Data

Some input data is ignored during the address standardization process. This extraneous data (sometimes referred to as "dropped data") is returned in the AdditionalInputData field. Some examples of dropped data include:

- Delivery instructions (for example, "Leave at back door")
- Phone numbers (for example, "555-135-8792")
- Attention lines (for example, "Attn: John Smith")

Data such as this is generally not embedded in an address. If it is embedded, the extraneous data can usuall be identified and returned in the AdditionalInputData field.

> **Note:** Dropped data from split indicia addresses is not returned. A split indicia address is one where a primary address is split between multiple address lines. For example, if the

primary address is "1 Green River Valley Rd" then the following would be a split indicia version of this address:

1 Green River
Valley Rd
01230

If there is more than one piece of dropped data in an address, each piece of data is separated by a semicolon and a space ("; ") for U.S. addresses and a space for addresses outside the U.S. The order of dropped data in AdditionalInputData is:

1. Care of, mail stop (U.S. addresses only)
2. Other extraneous data found on address lines
3. Entire unused data lines

For example, if this is the input address:

123 Main St C/O John Smith
Apt 5 Drop at back dock
jsmith@example.com
555-123-4567
05674

Then AdditionalInputData would contain:

C/O John Smith; Apt 5 Drop At Back Dock; 555-123-4567; Jsmith@example.com; 555-123-4567

Care of Data

For U.S. addresses only, "care of" data is returned in AdditionalInputData. The following addresses contain examples of "care of" data:

123 Main St C/O John Smith
Apt 5
05674

123 Main St
Apt 5 ATTN John Smith
05674

123 Main St Apt 5
MailStop 2
05674

Extraneous Data on Its Own Address Line

Validate Address returns extraneous data on its own address line for U.S. and Canadian addresses.

For U.S. addresses, Validate Address uses the first two non-blank address lines to perform address standardization, unless either the firm name extraction or urbanization code extraction options are enabled (see **Address Line Processing for U.S. Addresses** on page 139 for more information). Data on other address lines is returned in AdditionalInputData. In the following address, "John Smith"

would be returned in AdditionalInputData because it is in the third non-blank address line and Validate Address only uses the first two non-blank address lines for U.S. addresses.

123 Main St
Apt 5
John Smith
05674

If one of either of the first two non-blank address lines contains extraneous data, that data is returned in AdditionalInputData. For example, in the following addresses "John Smith" would be returned in AdditionalAddressData.

123 Main St
John Smith
05674

John Smith
123 Main St
05674

In the following address both "John Smith" and "Apt 5" would both be returned in AdditionalInputData. "John Smith" would be returned because it is extraneous data in one of the first two address lines and "Apt 5" would be returned because U.S. address data must be in the first two non-blank address lines.

John Smith
123 Main St
Apt 5
05674

Extraneous Data Within an Address Line

Extraneous data that is within an address line is returned in AdditionalInputData. For example, in the following addresses "John Smith" would be returned in AdditionalInputData.

123 Main St John Smith
05674

123 Main St Apt 5 John Smith
05674

123 Main St John Smith
Apt 5
05674

123 Main St
Apt 5 John Smith
05674

For U.S. addresses, only extraneous data at the end of the address line is returned in AdditionalInputData. Extraneous data that is not at the end of an address line is not returned for U.S. addresses. For example, in the following addresses "John Smith" is not returned.

John Smith 123 Main St
05674

123 Main John Smith St
05674

The AdditionalInputData field will sometimes contain the original street name or suffix if the street name was changed to obtain a match and the street name or suffix was at the end of a line. For example this address:

Pitney Bowes
4200 Parlament
Lanham MD

Validate Address would correct the spelling of the street name and add the suffix, returning "4200 Parliament Pl" as the corrected street address and "Parlament" in AdditionalInputData.

Dual Addresses

A dual address is an address that contains both street and PO Box/Rural Route/Highway Contract information. Depending on the processing options you select, the portion of the dual address that is not used for address standardization may be returned in AdditionalInputData. For more information, see **About Dual Address Logic** on page 149.

Reports

USPS CASS 3553 Report

The USPS CASS 3553 report must be given to the USPS along with the mailing to qualify for certain discounts. The report contains information about the software you used for CASS processing, your name-and-address list, your output file, the mailer, and other statistics about your mailing. For details about USPS Form 3553, see **www.usps.com**.

For information about CASS settings see **CASS Certified Processing** on page 160. For instructions on how to use reports, see the *Spectrum™ Technology Platform Dataflow Designer Guide*.

USPS CASS Detail Report

The USPS CASS Detailed Report does not need to be given to the USPS to qualify for certain discounts. This report contains some of the same information as the 3553 report but provides much greater detail about DPV, LACS, and SuiteLink statistics.

For more information about CASS settings see **CASS Certified Processing** on page 160. For instructions on how to use reports, see the *Spectrum™ Technology Platform Dataflow Designer Guide*.

Validate Address Summary Report

The Validate Address Summary Report lists statistics about the job, such as the total number of records processed, the number of addresses validated, and more.

For instructions on how to use reports, see the *Spectrum™ Technology Platform Dataflow Designer Guide*.

Validate Address AUS

Validate Address AUS standardizes and validates Australian addresses using Australia Post address data. It also adds missing postal information, such as postal codes, city names, state/territory names, and more.

Validate Address AUS also returns result indicators about validation attempts, such as whether or not Validate Address AUS validated the address, and the reason for failure if the address could not be validated.

During address matching and standardization, Validate Address AUS separates address lines into components and compares them to the contents of a Universal Addressing Module database. If a match is found, the input address is *standardized* to the database information.

Validate Address AUS is part of the Universal Addressing Module.

Input

Validate Address AUS takes a standard address as input. All addresses use this format.

Table 74: Input Format

Field Name	Format	Description
AddressLine1	String [288]	The first address line.
AddressLine2	String [288]	The second address line.
AddressLine3	String [288]	The third address line.
AddressLine4	String [288]	The fourth address line.

Field Name	Format	Description
City	String [48]	The city/locality/suburb name. This can optionally be entered into one of the AddressLine fields along with the State and Postal Code.
StateProvince	String [4]	The state. This can optionally be entered into one of the AddressLine fields along with the City and Postal Code.
PostalCode	String [8]	The postal code. This can optionally be entered into one of the AddressLine fields along with the State and City.

Options

Validate Address AUS provides several options that enable you to control how addresses are processed and the type of information returned.

Table 75: Options

Option	Description
Database	Specifies the database to be used for Australian address validation. Only databases that have been defined in the **Australia Database Resources** panel in the Management Console are available.
Include result codes for individual fields	Outputs result fields associated with certain output elements. See **Result Codes** on page 214.
Include original input data	Returns the original input data. See **Original Input Data** on page 217.
Include parsed address elements	Returns parsed address elements. See **Parsed Address Elements** on page 215.

Option	Description
Format data using AMAS conventions	Specifies that output address data is to be formatted using Address Matching Approval System (AMAS) conventions. This option causes Validate Address AUS to use AMAS rules when standardizing an address. AMAS is an Australia Post program for enforcing addressing standards. For more information on the AMAS formatting conventions, refer to the Address Matching Approval System (AMAS) Handbook. This option modifies the output data as follows. • Numeric fields are padded with zeros. This affects the following output fields: HouseNumber, HouseNumber2, PostalDeliveryNumber, and DPID. For example, if the input address is 298 New South Head Rd Double Bay NSW 2028, then the format of the HouseNumber field is changed from 298 to 00298. • If a match is not made, then all digits in the DPID field will be zero. For example, 00000000. • If a match is not made, then all return fields (parsed address elements) will be blank, except numeric fields which will contain all zeros. • The CCD field is not output.

Output

At a minimum, the output of Validate Address AUS consists of the standard output fields listed in **Standard Output Fields** on page 213. In addition to these standard fields, the output may also include other information, depending on the output options you select. For more information on the optional output fields, see **Result Codes** on page 214, **Parsed Address Elements** on page 215, and **Original Input Data** on page 217.

Standard Output Fields

The following table lists the standard fields that are output by Validate Address AUS.

Table 76: Output Fields

Field Name	Description
AddressLine1	A formatted address line.
BuildingName	The building name.
City	The city/locality/suburb name 1.

Field Name	Description
City2	The city/locality/suburb name 2 - split names e.g. VIA.
StateProvince	The state.
PostalCode	The postal code.
CCD	The Census Collection District. The basic geographic unit for collection, processing and output of census data. In general, there are about 200 to 250 households per CCD, and about 37,000 CCDs throughout Australia.
DPID	The Delivery Point Identifier. An eight-digit number from the Australia Post Postal Address File that uniquely identifies a mail delivery point, such as a street address.
Status	The success or failure of the match attempt. **F** Failure (no DPID or CCD found) **null** Success
Status.Code	Reason for failure, if there is one. • UnableToValidate • InsufficientInputData
Status.Description	A description of the problem, if there is one.
AMAS.ResultCode	The result code returned by the underlying engine.
AMAS.ResultMessage	Any result messages returned by the underlying engine.

Result Codes

This option outputs result fields that are associated with certain output elements, as well as a result code for each result field, if available. If a result field does not have an accompanying result code, it may indicate one of the following:

- No change was made to the parsed element
- The parsed element was standardized (e.g., 'Street' changed to 'ST')
- No data was parsed into a corresponding parsed address element

Table 77: Result Codes

Field Name	Result Code	
City.Result	**C**	Corrected
HouseNumber.Result	**U**	Unmatched, missing, or ambiguous
PostalCode.Result	**C**	Corrected
PostalDelivery.Result	**C**	Corrected
	D	Dropped
	U	Unmatched
StateProvince.Result	**C**	Corrected
StreetName.Result	**C**	Corrected
	U	Unmatched, missing, or ambiguous
StreetSuffix.Result	**C**	Corrected

Parsed Address Elements

This option outputs parsed address elements.

Table 78: Parsed Address Elements

Field Name	Description
ApartmentLabel	The flat or unit type (such as STE or APT), for example: 123 E Main St **Apt** 3
ApartmentNumber	The flat or unit number, for example: 123 E Main St Apt **3**
FloorLabel	The floor/level type, for example: 123 E Main St Apt 3, 4th **Floor**
FloorNumber	The floor/level number, for example: 123 E Main St Apt 3, **4th** Floor
LotNumber	The lot number, for example: Lot 7 Caldwell Hwy
PostalDeliveryLabel	The postal delivery type, for example: PO Box 42
PostalDeliveryNumber	The postal delivery number, for example: PO Box 42
PostalDeliveryPrefix	The postal delivery number prefix, for example: PO Box A42
PostalDeliverySuffix	The postal delivery number suffix, for example: PO Box 42B
HouseNumber	The house number 1, for example: 298A-1B New South Head Rd
HouseSuffix	The house number 1 suffix, for example: 298A-1B New South Head Rd
HouseNumber2	The house number 2, for example: 298A-1B New South Head Rd
HouseSuffix2	The house number 2 suffix, for example: 298A-1B New South Head Rd
StreetName	The name of street where property is located, for example: 123 E **Main** St Apt 3

Field Name	Description
StreetSuffix	The street suffix, for example: 123 E Main **St** Apt 3
TrailingDirectional	The trailing directional, for example: 123 Pennsylvania Ave **NW**

Original Input Data

This option outputs the original input data in <FieldName>.Input fields.

Table 79: Input Data

Field Name	Description
AddressLine1.Input	The first address line passed on input.
AddressLine2.Input	The second address line passed on input.
AddressLine3.Input	The third address line passed on input.
AddressLine4.Input	The fourth address line passed on input.
City.Input	The city/locality/suburb name passed on input.
StateProvince.Input	The state passed on input.
PostalCode.Input	The postal code passed on input.

Validate Address Global

Validate Address Global provides enhanced address standardization and validation for addresses outside the U.S. and Canada. Validate Address Global can also validate addresses in the U.S. and Canada but its strength is validation of addresses in other countries. If you process a significant number of addresses outside the U.S. and Canada, you should consider using Validate Address Global.

Validate Address Global is part of the Universal Addressing Module.

Validate Address Global performs several steps to achieve a quality address, including transliteration, parsing, validation, and formatting.

Character Set Mapping and Transliteration

Validate Address Global handles international strings and their complexities. It uses fully Unicode enabled string processing which enables the transliteration of non-roman characters into the Latin character set and mapping between different character sets.

Character set mapping and transliteration features include:

- Support for over 30 different character sets including UTF-8, ISO 8859-1, GBK, BIG5, JIS, EBCDIC
- Proper "elimination" of diacritics according to language rules
- Transliteration for various alphabets into Latin Script
- Greek (BGN/PCGN 1962, ISO 843 - 1997)
- Cyrillic (BGN/PCGN 1947, ISO 9 - 1995)
- Hebrew
- Japanese Katakana, Hiragana and Kanji
- Chinese Pinyin (Mandarin, Cantonese)
- Korean Hangul

Address Parsing, Formatting, and Standardization

Restructuring incorrectly fielded address data is a complex and difficult task especially when done for international addresses. People introduce many ambiguities as they enter address data into computer systems. Among the problems are misplaced elements (such as company or personal names in street address fields) or varying abbreviations that are not only language, but also country specific. Validate Address Global identifies address elements in address lines and assigns them to the proper fields. This is an important precursor to the actual validation. Without restructuring, "no match" situations might result.

Properly identified address elements are also important when addresses have to be truncated or shortened to fit specific field length requirements. With the proper information in the right fields, specific truncation rules can be applied.

- Parses and analyzes address lines and identifies individual address elements
- Processes over 30 different character sets

- Formats addresses according to the postal rules of the country of destination
- Standardizes address elements (such as changing AVENUE to AVE)

Global Address Validation

Address validation is the correction process where properly parsed address data is compared against reference databases supplied by postal organizations or other data providers. Validate Address Global validates individual address elements to check for correctness using sophisticated fuzzy matching technology and produces standardized and formatted output based on postal standards and user preferences. FastCompletion validation type can be used in quick address entry applications. It allows input of truncated data in several address fields and generates suggestions based on this input.

In some cases, it is not possible to fully validate an address. Here Validate Address Global has a unique deliverability assessment feature that classifies addresses according to their probable deliverability.

Input

Validate Address Global takes a standard address as input. All addresses use this format no matter what country the address is from.

Table 80: Validate Address Global Input

Field Name	Format	Description
AddressLine1 through AddressLine6	String [79]	These fields contain address line data. AddressLine1 contains the first address line, AddressLine2 contains the second address line, and so forth. Note that the city, state/province, and postal code information should be placed in their respective fields, not address line fields. For example: **AddressLine1:** 17413 Blodgett Road **AddressLine2:** PO Box 123 **City:** Mount Vernon **StateProvice:** WA **PostalCode:** 97273 **Country:** USA If the input address is not already parsed into the appropriate address line and City, StateProvice, and PostalCode fields, use the UnformattedLine fields instead of the address line fields.
City	String [79]	City name

Field Name	Format	Description
StateProvince	String [79]	State or province.
PostalCode	String [79]: 99999 ~~99999-9999~~ A9A9A9 A9A 9A9 9999 999	The postal code for the address. In the U.S. this is the ZIP Code®.
Contact	String [79]	The name of the addressee. For example, "Mr. Jones".
Country	String [79]	The name of the country. If no value is specified in the **Force country (ISO3)** or **Default country (ISO3)** option, you must specify a country.
FirmName	String [79]	The company or firm name.
Street	String [79]	Street
Number	Building [79]	Number
Building	String [79]	Building
SubBuilding	String [79]	SubBuilding
DeliveryService	String [79]	DeliveryService

Field Name	Format	Description
UnformattedLine1 through UnformattedLine10	String [79]	Use these fields if the input address is completely unparsed and you want Validate Address Global to attempt to parse the address into the appropriate fields. For example: **UnformattedLine1:** 17413 Blodgett Road **UnformattedLine2:** PO Box 123 **UnformattedLine3:** Mount Vernon WA 97273 **UnformattedLine4:** USA This address would be parsed into these output fields: **AddressLine1:** 17413 Blodgett Road **AddressLine2:** PO Box 123 **City:** Mount Vernon **StateProvice:** WA **PostalCode:** 97273 **Country:** USA **Note:** If you specify input in the unformatted line fields you must specify the entire address using only unformatted line fields. Do not use other fields such as City or StateProvince in combination with unformatted line fields.

Options

Input Options

Table 81: Validate Address Global Input Options

Option	Description/Valid Values
Database	Specifies the database resource containing the postal data to use for address validation. Only databases that have been defined in the **Global Database Resources** panel in the Management Console are available. For more information, see the *Spectrum™ Technology Platform Administration Guide*.
Default country (ISO3 format)	Specifies a default country to use when the input record does not contain explicit country information. Specify the country using the ISO3 country code. If you do not specify a default country each input record must have the country specified in the Country input field. For a list of ISO codes see **ISO Country Codes and Module Support**.

Option	Description/Valid Values
Force country (ISO3 format)	Causes address records to be always treated as originating from the country specified here, overriding the country in the address record and the default country. Specify the country using the ISO3 country code. For a list of ISO codes, see **ISO Country Codes and Module Support**.
Format Delimiter	Enables you to use non-standard formatting for multi-line addresses in input files. Acceptable values for this field include the following: • CRLF (default) • LF • CR • SEMICOLON (2101 MASSACHUSETTS AVE NW **;** WASHINGTON DC 20008) • COMMA (2101 MASSACHUSETTS AVE NW **,** WASHINGTON DC 20008) • TAB (2101 MASSACHUSETTS AVE NW WASHINGTON DC 20008) • PIPE (2101 MASSACHUSETTS AVE NW **|** WASHINGTON DC 20008) • SPACE (2101 MASSACHUSETTS AVE NW WASHINGTON DC 20008) **Note:** The same value must be selected for both the input option and output option.

Output Options

Table 82: Validate Address Global Output Options

Option	Description
Maximum number of results returned	This option specifies the maximum number of candidate addresses to return. This field is disabled for batch processing; for all other processing modes the default is 1 and the maximum is 99. If you are using FastCompletion mode, you may want to enter a number greater than 1 to ensure you are provided with multiple options for completing a field.
Return input data with results	Specifies whether to include the input data in the output. If enabled, the output will contain fields that end with .Input containing the corresponding input field. For example, the output field AddressLine1.Input would contain the data specified in the input field AddressLine1.

Option	Description
State/Province	Specifies the format for the StateProvince field. One of the following. **Abbreviation** Return the abbreviation for the state or province. For example, North Carolina would be returned as "NC". **Country standard** Return either the abbreviation or the full name depending on the format used by the country's postal authority. (Default) **Extended** Return the full name of the state or province, not the abbreviation. For example "North Carolina".
Country format	Specifies the language or code to use for the country name returned by Validate Address Global. • Chinese • Danish • Dutch • English (default) • Finnish • French • German • Greek • Hungarian • ISO number (returns the ISO number for the country) • ISO2 (returns the two-character ISO country code) • ISO3 (returns the three-character ISO country code) • Italian • Japanese • Korean • Polish • Portuguese • Russian • Sanskrit • Spanish • Swedish

Option	Description
Script/Alphabet	Specifies the alphabet in which the output should be returned. The alphabet in which the data is returned differs from country to country. For most countries the output will be Latin I regardless of the selected preferred language. **ASCII extended** — ASCII characters with expansion of special characters (e.g. Ã– = OE) **ASCII simplified** — ASCII characters **Database** — (default) Latin I or ASCII characters (as per reference database standard) **Latin** — Latin I characters **Latin alternate** — Latin I characters (alternative transliteration) **Postal admin alternate** — Latin I or ASCII characters (local postal administration alternative) **Postal admin preferred** — Latin I or ASCII characters (as preferred by local postal administration) For countries that use an alphabet other than Latin I, the returned alphabet differs from country to country. For more information, see **Alphabets for Non-Latin 1 Countries** on page 225.
Language	Specifies the language in which the output should be returned. The alphabet in which the data is returned differs from country to country, but for most countries the output will be Latin, regardless of the selected preferred language. **Database** — Language derived from reference data for each address. Default. **English** — English locality and state/province names output, if available.
Casing	Specifies the casing of the output. **Native** — Output will be based on the reference database standard. **Upper** — Output will be in upper case for all countries. **Lower** — Output will be in lower case for all countries. **Mixed** — Casing determined by country-specific rules. **No change** — For parse mode, returns the data the way it was entered. For validation mode, uses the casing found in the reference data and according to postal rules. Values that could not be checked against the reference data will retain their input casing.

Option	Description
Format Delimiter	Enables you to use non-standard formatting for multi-line addresses in the output. Acceptable values for this field include the following: • CRLF (default) • LF • CR • SEMICOLON (2101 MASSACHUSETTS AVE NW **;** WASHINGTON DC 20008) • COMMA (2101 MASSACHUSETTS AVE NW **,** WASHINGTON DC 20008) • TAB (2101 MASSACHUSETTS AVE NW WASHINGTON DC 20008) • PIPE (2101 MASSACHUSETTS AVE NW **|** WASHINGTON DC 20008) • SPACE (2101 MASSACHUSETTS AVE NW WASHINGTON DC 20008) **Note:** The same value must be selected for both the input option and output option.

Alphabets for Non-Latin 1 Countries

For countries that use an alphabet other than Latin I, the returned alphabet differs from country to country. The following table shows how the output is returned for specific countries. All countries that are not listed use the value specified in the **Script/Alphabet** field option.

Country	Database	Postal admin preferred	Postal admin alternate	Latin	Latin alternate	ASCII simplified	ASCII extended
RUS	Cyrillic	Cyrillic	Cyrillic	CYRILLIC_ISO	CYRILLIC_BGN	CYRILLIC_ISO + LATIN_SIMPLE	CYRILLIC_ISO + LATIN
JPN	Kanji	Kanji	Kana	JAPANESE	JAPANESE	JAPANESE + LATIN_SIMPLE	JAPANESE + LATIN
CHN	Hanzi	Hanzi	Hanzi	CHINESE_ MANDARIN	CHINESE_ CANTONESE	CHINESE_ MANDARIN + LATIN_SIMPLE	CHINESE_ MANDARIN + LATIN
HKG	Hanzi	Hanzi	Hanzi	CHINESE_ CANTONESE	CHINESE_ MANDARIN	CHINESE_ CANTONESE + LATIN_SIMPLE	CHINESE_ CANTONESE + LATIN

Country	Database	Postal admin preferred	Postal admin alternate	Latin	Latin alternate	ASCII simplified	ASCII extended
TWN	Hanzi	Hanzi	Hanzi	CHINESE_ CANTONESE	CHINESE_ MANDARIN	CHINESE_ CANTONESE + LATIN_SIMPLE	CHINESE_ CANTONESE + LATIN
GRC	Greek	Greek	Greek	GREEK_ISO	GREEK_BGN	GREEK_ISO + LATIN_SIMPLE	GREEK_ISO + LATIN
KOR	Latin	Hangul	Hanja	KOREAN	KOREAN	KOREAN + LATIN_SIMPLE	KOREAN + LATIN
ISR	Latin	Hebrew	Hebrew	HEBREW	HEBREW	HEBREW + LATIN_SIMPLE	HEBREW + LATIN
ROM	Latin-3	Latin-3	Latin-3	Latin-3	Latin-3	LATIN_SIMPLE	LATIN
POL	Latin-2	Latin-2	Latin-2	Latin-2	Latin-2	LATIN_SIMPLE	LATIN
CZE	Latin-2	Latin-2	Latin-2	Latin-2	Latin-2	LATIN_SIMPLE	LATIN
CRI	Latin-2	Latin-2	Latin-2	Latin-2	Latin-2	LATIN_SIMPLE	LATIN
HUN	Latin-2	Latin-2	Latin-2	Latin-2	Latin-2	LATIN_SIMPLE	LATIN
MDA	Latin-2	Latin-2	Latin-2	Latin-2	Latin-2	LATIN_SIMPLE	LATIN
SVK	Latin-2	Latin-2	Latin-2	Latin-2	Latin-2	LATIN_SIMPLE	LATIN
LAT	Latin-7	Latin-7	Latin-7	Latin-7	Latin-7	LATIN_SIMPLE	LATIN

Process Options

Table 83: Validate Address Global Process Options

Option	Description
Optimization level	Use this option to set the appropriate balance between processing speed and quality. One of the following: **Narrow** The parser will honor input assignment strictly, with the exception of separation of House Number from Street information. **Standard** The parser will separate address element more actively as follows: • Province will be separated from Locality information • PostalCode will be separated from Locality information • House Number will be separated from Street information • SubBuilding will be separated from Street information • DeliveryService will be separated from Street information • SubBuilding will be separated from Building information • Locality will be separated from PostalCode information **Wide** Parser separation will happen similarly to Standard, but additionally up to 10 parsing candidates will be passed to validation for processing. Validation will widen its search tree and take additional reference data entries into account for matching. Please note that adjusting the optimization level might have no effect for countries that lack the postal reference data information required for the kind of separation described above. Increasing separation granularity from Narrow to Standard consumes some processing power, but the major impact on processing speed is from validation processing a larger search tree, thus increasing the number of data accesses and comparisons for the optimization level Wide, in an attempt to make the most out of the input data given.

Option	Description
Processing mode	Specifies the type of processing to perform on the addresses. One of the following: **Batch** Use this mode in batch processing environments when no human input or selection is possible. It is optimized for speed and will terminate its attempts to correct an address when ambiguous data is encountered that cannot be corrected automatically. The Batch processing mode will fall back to Parse mode when the database is missing for a specific country. **Note:** When the Process Status returns a value of I3, the attempt is considered a failure and the Status will return a value of F. **Certified** Use this mode in batch processing environments for Australian mail. Validate Address Global is certified by Australia Post's Address Matching Approval System (AMAS). It will standardize and validate your mail against the Postal Address File, providing postal discounts and allowing for the least amount of undeliverable pieces. **FastCompletion** Use this mode if you want to use FastCompletion mode to enter truncated data in address fields and have Validate Address Global generate suggestions. For example, if you work in a call center or point-of-sale environment, you can enter just part of an address element and the FastCompletion feature will provide valid options for the complete element. **Interactive** Use this mode when working in interactive environments to generate suggestions when an address input is ambiguous. This validation type is especially useful in data entry environments when capturing data from customers or prospects. It requires the input of an almost-complete address and will attempt to validate or correct the data provided. If ambiguities are detected, this validation type will generate up to 20 suggestions that can be used for pick lists. The Interactive processing mode will fall back to Parse mode when the respective database is missing for a specific country. **Parse** Use this mode for separating address input into tokens for subsequent processing in other systems, bypassing validation. For example, you could use this mode when address data of already high quality simply needs to be tokenized quickly for export to an external system or for use by a downstream stage.

Option	Description
Matching scope	Specifies how closely an address must match the reference data in order for the address to be validated. One of the following: **Note:** These settings may not have an effect for countries lacking the necessary level of detail in the postal reference data. **All levels** — All address elements must match. **Delivery point level** — Validate Global Address must achieve a match on StateProvince, PostalCode, City/Locality/Suburb, street, house number, and sub building. **Street level** — Validate Global Address must achieve a match on StateProvince, PostalCode, City/Locality/Suburb, and street. **Locality level** — Validate Global Address must achieve a match on StateProvince, PostalCode, and City/Locality/Suburb.

Output

Address Data

Table 84: Parsed Address Elements

Field Name	Description
AddressBlock1-9	The AddressBlock output fields contain a formatted version of the standardized or normalized address as it would be printed on a physical mailpiece. Validate Address Global formats the address into address blocks using postal authority standards. Each line of the address is returned in a separate address block field. There can be up to nine address block output fields: AddressBlock1 through AddressBlock9. For example, this input address: AddressLine1: 4200 Parliament Place AddressLine2: Suite 600 City: Lanham StateProvince: MD PostalCode: 20706 Results in this address block output: AddressBlock1: 4200 PARLIAMENT PL STE 600 AddressBlock2: LANHAM MD 20706-1882

Field Name	Description
AddressLine1-6	If the address was validated, the address line fields contain the validated and standardized address lines. If the address could not be validated, the address line fields contain the input address without any changes. Note that the last line of the address is contained in the LastLine field. For example: AddressLine1: 4200 PARLIAMENT PL STE 600 LastLine: LANHAM MD 20706-1882
AdministrativeDistrict	An area smaller than a state/province but larger than a city.
ApartmentLabel	The flat or unit type (such as STE or APT), for example: 123 E Main St **Apt** 3
ApartmentNumber	The flat or unit number, for example: 123 E Main St Apt **3**
BlockName	An estate or block name.
BuildingName	The name of a building, for example Sears Tower.
City	The name of the town or city. For example, **Vancouver**, BC.
City.AddInfo	Additional information about the city.
City.SortingCode	A code used by the postal authority to speed up delivery in certain countries for large localities, for example Prague or Dublin.
Contact	The name of the addressee. For example, **Mr. Jones**.
Country	The country in the language or code specified in the **Country format** option.
County	Dependent state or province information that further subdivides a state or province. An example would be a U.S. county.
FirmName	The name of a company.
Floor	Information that further subdivides a building, e.g. the suite or apartment number. For example: 123 E Main St Apt 3, **4th Floor**

Field Name	Description
HouseNumber	The house number 1, for example: 298A-1B New South Head Rd
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	Dependent place name that further subdivides a Locality. Examples are colonias in Mexico, Urbanisaciones in Spain.
POBox	Post Box descriptor (POBox, Postfach, Case Postale etc.) and number.
PostalCode	The postal code for the address. The format of the postcode varies by country.
PostalCode.AddOn	The second part of a postcode. For example, for Canadian addresses this will be the LDU. For U.S. addresses this is the ZIP + 4 add on. This field is not used by most countries.
PostalCode.Base	The base portion of the postcode.
Room	A room number in a building.
SecondaryStreet	The name of a secondary street or rural route.
StateProvince	The name of the state or province.
StreetName	The name of street where property is located, for example: 123 E **Main** St Apt 3
StreetSuffix	The street suffix, for example: 123 E Main **St** Apt 3
SubBuilding	A portion of a building, such as a suite. For example, Suite 102.
Suburb	Dependent place name that further subdivides a Locality. An example would be Mahalle in Turkey.
Territory	The name of a territory. Territories are larger than a state/province.

Field Name	Description
TrailingDirectional	The trailing directional, for example: 123 Pennsylvania Ave **NW**

Original Input Data

This option outputs the original input data in <FieldName>.Input fields.

Table 85: Original Input Data

Field Name	Format	Description
AddressLine1.Input	String [79]	First address line
AddressLine2.Input	String [79]	Second address line
AddressLine3.Input	String [79]	Third address line
AddressLine4.Input	String [79]	Fourth address line
AddressLine5.Input	String [79]	Fifth address line
AddressLine6.Input	String [79]	Sixth address line
City.Input	String [79]	City name
StateProvince.Input	String [79]	State or province

Field Name	Format	Description
PostalCode.Input	String [79]:	The postal code for the address. In the U.S. this is the ZIP Code. One of these formats: 99999 99999-9999 A9A9A9 A9A 9A9 9999 999
Contact.Input	String [79]	The name of the addressee. For example, "Mr. Jones".
Country.Input	String [79]	Specify the country using the format you chose for input country format (English name, ISO code, or UPU code). For a list of valid values, see **ISO Country Codes and Module Support**.
FirmName.Input	String [79]	The company or firm name.
Street.Input	String [79]	Street
Number.Input	Building [79]	Number
Building.Input	String [79]	Building
SubBuilding.Input	String [79]	SubBuilding
DeliveryService.Input	String [79]	DeliveryService

Result Codes

These output fields contain information about the result of the validation processing.

Table 86: Result Codes

Field Name	Result Code
AddressType	For United States and Canada addresses only, the AddressType field indicates the type of address. One of the following: **F** The address was validated/corrected to the firm name. **B** The address was validated/corrected to the building name. **G** The address is a general delivery address. **H** The address was validated/corrected to the high-rise default. **L** The address is a large volume receiver. **M** The address is a military address. **P** The address was validated/corrected to PO box. **R** The address was validated/corrected to a rural route. **S** The address was validated/corrected to a street address. **U** The address could not be validated/corrected so the type is unknown.
Confidence	The level of confidence assigned to the address being returned. Range is from zero (0) to 100; zero indicates failure, 100 indicates a very high level of confidence that the match results are correct.
CountOverflow	Indicates whether the number of candidate addresses exceeds the number returned. One of the following: **Yes** Yes, there are additional candidate addresses. To obtain the additional candidates, increase the **Maximum number of results returned** value. **No** No, there are no additional candidates.
ElementInputStatus	ElementInputStatus provides per element information on the matching of input elements to reference data. The values in this field vary depending on whether you are using batch mode or parse mode. For information about the value in this field, see **Interpreting ElementInputStatus, ElementResultStatus, and ElementRelevance** on page 239.
ElementRelevance	Indicates which address elements are actually relevant from the local postal authority's point of view. For information about the value in this field, see **Interpreting ElementInputStatus, ElementResultStatus, and ElementRelevance** on page 239.

Field Name	Result Code
ElementResultStatus	ElementResultStatus categorizes the result in more detail than the ProcessStatus field by indicating if and how the output fields have been changed from the input fields. For information about the value in this field, see **Interpreting ElementInputStatus, ElementResultStatus, and ElementRelevance** on page 239.
MailabilityScore	An estimate of how likely it is that mail sent to the address would be successful delivered. One of the following: **5** Completely confident of deliverability **4** Almost certainly deliverable **3** Should be deliverable **2** Fair chance **1** Risky **0** No chance
ModeUsed	Indicates the processing mode used. The processing mode is specified in the **Processing Mode** option. For a description of the modes, see **Process Options** on page 227.
MultimatchCount	If the address was matched to multiple candidate addresses in the reference data, this field contains the number of candidate matches found.

Field Name	Result Code
ProcessStatus	

Field Name	Result Code

Provides a general description of the output quality. For a more detailed description of the output quality, see the ElementResultStatus field.

One of the following:

V4	Verified. The input data is correct. All elements were checked and input matched perfectly.
V3	Verified. The input data is correct on input but some or all elements were standardized or the input contains outdated names or exonyms.
V2	Verified. The input data is correct but some elements could not be verified because of incomplete reference data.
V1	Verified. The input data is correct but the user standardization has deteriorated deliverability (wrong element user standardization - for example, postcode length chosen is too short). Not set by validation.
C4	Corrected. All elements have been checked.
C3	Corrected, but some elements could not be checked.
C2	Corrected, but delivery status unclear (lack of reference data).
C1	Corrected, but delivery status unclear because user standardization was wrong. Not set by validation.
I4	Data could not be corrected completely, but is very likely to be deliverable. Single match (e.g. HNO is wrong but only 1 HNO is found in reference data).
I3	Data could not be corrected completely, but is very likely to be deliverable. Multiple matches (e.g. HNO is wrong but more than 1 HNO is found in reference data).
I2	Data could not be corrected, but there is a slim chance that the address is deliverable.
I1	Data could not be corrected and is unlikely to be delivered.
RA	Country recognized from the Force country Setting
R9	Country recognized from DefaultCountryISO3 Setting
R8	Country recognized from name without errors
R7	Country recognized from name with errors
R6	Country recognized from territory
R5	Country recognized from province
R4	Country recognized from major town
R3	Country recognized from format
R2	Country recognized from script
R1	Country not recognized - multiple matches

Field Name	Result Code	
	R0	Country not recognized
	S4	Parsed perfectly
	S3	Parsed with multiple results
	S2	Parsed with errors. Elements change position.
	S1	Parse Error. Input Format Mismatch.
	N1	Validation Error: No validation performed because country was not recognized.
	N2	Validation Error: No validation performed because required reference database is not available.
	N3	Validation Error: No validation performed because country could not be unlocked.
	N4	Validation Error: No validation performed because reference database is corrupt or in wrong format.
	N5	Validation Error: No validation performed because reference database is too old.
	N6	Validation Error: No validation performed because input data was insufficient.
	Q3	FastCompletion Status: Suggestions are available - complete address.
	Q2	FastCompletion Status: Suggested address is complete but combined with elements from the input (added or deleted).
	Q1	FastCompletion Status: Suggested address is not complete (enter more information).
	Q0	FastCompletion Status: Insufficient information provided to generate suggestions.
Status	Reports the success or failure of the processing attempt.	
	null	Success
	F	Failure
Status.Code	The reason for the failure, if there was one.	
Status.Description	A description of the reason for the failure, if there was one.	

Interpreting ElementInputStatus, ElementResultStatus, and ElementRelevance

The ElementInputStatus, ElementResultStatus, and ElementRelevance output fields contain a series of digits that describe the outcome of the validation operation in detail. ElementInputStatus contains some information for parsing operations.

This is what an ElementInputStatus value looks like:

44606040600000000060

This is what an ElementResultStatus value looks like:

88F0F870F00000000040

This is what an ElementRelevance value looks like:

11101010100000000000

To understand the values in these fields you need to know which element each position represents, and the meaning of the values in each position. For example, the first digit indicates the result from the PostalCode.Base output field. The position meanings are listed below.

- Position 1—PostalCode.Base
- Position 2—PostalCode.AddOn
- Position 3—City
- Position 4—Locality and Suburb
- Position 5—StateProvice
- Position 6—County
- Position 7—StreetName
- Position 8—SecondaryStreet
- Position 9—HouseNumber
- Position 10—Number level 1
- Position 11—POBox
- Position 12—Delivery service level 1
- Position 13—Building level 0
- Position 14—BuildingName
- Position 15—Sub building level 0
- Position 16—Floor and Room
- Position 17—FirmName
- Position 18—Organization level 1
- Position 19—Country
- Position 20—Territory

For ElementInputStatus, the possible values for validation are:

- 0—Empty
- 1—Not found
- 2—Not checked (no reference data)

- 3—Wrong - Set by validation only: The reference database suggests that either Number or DeliveryService is out of valid number range. Input is copied, not corrected for batch mode, for interactive mode and FastCompletion suggestions are provided.
- 4—Matched with errors in this element
- 5—Matched with changes (inserts and deletes) For example:
  - Parsing: Splitting of house number for "MainSt 1"
  - Validation: Replacing input that is an exonym or dropping superfluous fielded input that is invalid according to the country reference database
- 6—Matched without errors

For ElementInputStatus, the possible values for parsing are:

- 0—Empty
- 1—Element had to be relocated
- 2—Matched but needed to be normalized
- 3—Matched

For ElementRelevance, the possible values for parsing are:

- 0—Empty
- 1—Element had to be relocated
- 2—Matched but needed to be normalized
- 3—Matched

For ElementResultStatus, the possible values are (for all address elements apart from country):

- 0—Empty
- 1—Not validated and not changed. Original is copied.
- 2—Not validated but standardized.
- 3—Validated but not changed due to invalid input, database suggests that number is out of valid ranges. Input is copied, not corrected - this status value is only set in batch mode.
- 4—Validated but not changed due to lack of reference data.
- 5—Validated but not changed due to multiple matches. Only set in batch mode, otherwise multiple suggestions that replace the input are marked as corrected (status value 7).
- 6—Validated and changed by eliminating the input value
- 7—Validated and changed due to correction based on reference data
- 8—Validated and changed by adding value based on reference data
- 9—Validated, not changed, but delivery status not clear (e.g. DPV value wrong; given number ranges that only partially match reference data).
- C—Validated, verified but changed due to outdated name
- D—Validated, verified but changed from exonym to official name
- E—Validated, verified but changed due to standardization based on casing or language. Validation only sets this status if input fully matches a language alternative.
- F—Validated, verified and not changed due to perfect match

For Country (position 19 & 20), the following values are possible:

- 0—Empty
- 1—Country not recognized
- 4—Country recognized from DefaultCountryISO3 setting
- 5—Country not recognized - multiple matches
- 6—Country recognized from script
- 7—Country recognized from format
- 8—Country recognized from major town
- 9—Country recognized from province
- C—Country recognized from territory
- D—Country recognized from name with errors
- E—Country recognized from name without errors
- F—Country recognized from ForceCountryISO3 setting

Reports

Validate Address Global Summary Report

The Validate Address Global Summary Report lists summary statistics about the job, such as the total number of records processed, the number of addresses validated, and more. For instructions on how to use reports, see the *Spectrum™ Technology Platform Dataflow Designer's Guide*.

Job Summary

This section contains summary information about the job.

- **Started**—The date and time that the job started.
- **Finished**—The date and time that the job ended.
- **Processing time**—The duration of the job.
- **Total Records**—The total number of records presented to Validate Address Global for processing. This may be different from the number of input records for the job depending on how the job is designed.
- **Processed Records**—The number of addresses that were successfully processed by Validate Address Global. This is the total number of records less records not processed.
- **Default country**—The default country specified in the **Default country (ISO3 format)** option.
- **Casing**—The casing selected in the **Casing** option.
- **Script/Alphabet**—The script specified in the **Script/Alphabet** option.
- **Countries**—The number of countries represented in the input addresses.

Status Summary

This section lists the validation and correction results.

- **Validated**—Addresses that were correct on input.
- **Corrected**—Addresses that were corrected by Validate Address Global.

- **Good deliverability**—Addresses that could not be corrected but that are very likely to be deliverable.
- **Fair deliverability**—Addresses that could not be corrected but have a fair chance that the address is deliverable.
- **Poor deliverability**—Addresses that could not be corrected and are unlikely to be deliverable.
- **Parsed**—Addresses that were successfully parsed.
- **Failed**—Addresses that could not be verified, corrected, or parsed.

Validate Address Global Detail Report

The Validate Address Detail Report shows the results of validation/correction/parsing for each country. For instructions on how to use reports, see the *Spectrum™ Technology Platform Dataflow Designer's Guide*.

Status Details

This section lists the validation and correction results for each country.

- **V (Validated)**—Addresses that were correct on input.
- **C (Corrected)**—Addresses that were corrected by Validate Address Global.
- **I4 (Good deliverability)**—Addresses that could not be corrected but that are very likely to be deliverable.
- **I3 (Fair deliverability)**—Addresses that could not be corrected but have a fair chance that the address is deliverable.
- **I2 (Poor deliverability)**—Addresses that could not be corrected and are unlikely to be deliverable.
- **S (Parsed)**—Addresses that were successfully parsed.
- **F (Failed)**—Addresses that could not be verified, corrected, or parsed.

Validate Address Loqate

Validate Address Loqate standardizes and validates addresses using postal authority address data. Validate Address Loqate can correct information and format the address using the format preferred by the applicable postal authority. It also adds missing postal information, such as postal codes, city names, state/province names, and so on.

Validate Address Loqate also returns result indicators about validation attempts, such as whether or not Validate Address Loqate validated the address, the level of confidence in the returned address, the reason for failure if the address could not be validated, and more.

During address matching and standardization, Validate Address Loqate separates address lines into components and compares them to the contents of the Universal Addressing Module databases. If a match is found, the input address is *standardized* to the database information. If no database match is found, Validate Address Loqate optionally *formats* the input addresses. The formatting process attempts to structure the address lines according to the conventions of the appropriate postal authority.

Validate Address Loqate is part of the Universal Addressing Module.

Input

Validate Address Loqate takes an address as input. All addresses use this format regardless of the address's country.

Table 87: Input Format

Field Name	Format	Description
AddressLine1	String	The first address line.
AddressLine2	String	The second address line.
AddressLine3	String	The third address line.
AddressLine4	String	The fourth address line.
City	String	The city name.
Country	String	The country code or name, in any of the following formats: • Two-character ISO 3116-1 Alpha-2 country code • Three-character ISO 3116-1 Alpha-3 country code • English country name See **ISO Country Codes and Module Support** for a list of ISO codes.
FirmName	String	The company or firm name.
PostalCode	String	The postal code for the address in one of these formats: 99999 99999-9999 A9A9A9 A9A 9A9 9999 999

Field Name	Format	Description
StateProvince	String	The state or province.

Options

The following table lists the options that control the type of information returned by Validate Address Loqate.

Table 88: Output Data Options

Option	Description
Database	Specifies which database you want to use for validating international addresses. To specify a database for international address validation, select a database in the **Database** drop-down list.
Include a standard address	Returns 1 to 4 lines of address data plus city, state, postal code, and firm name. Each address line represents an actual line of the address as it would appear on an envelope. For more information, see **Output** on page 251. If Validate Address Loqate could validate the address, the address lines contain the standardized address. When addresses are standardized, punctuation is removed, directionals are abbreviated, street suffixes are abbreviated, and address elements are corrected. If Validate Address Loqate could not validate the address, the address lines contain the address as it appeared in the input ("pass through" data). Non-validated addresses are always included as pass through data in the address line fields even if you uncheck this option.
Include matched address elements	Each part of the address, such as house number, street name, street suffix, directionals, and so on is returned in a separate field. For more information, see **Parsed Address Elements Output** on page 252. Note that if you select this option and also select **Return normalized data when no match is found**, the address elements will contain the input address for addresses that could not be validated.

Option	Description
Include standardized input address elements	This option returns the input address in parsed form regardless of whether or not Validate Address Loqate is able to validate the address. Each part of the input address, such as house number, street name, street suffix, directionals, and so on is returned in a separate field. Selecting this option differs from selecting the combination of **Include matched address elements**/**Return normalized data when no match is found** in that **Return standardized input address elements** returns all input address in parsed form, not just input that could not be validated. For more information, see **Parsed Input** on page 255.
Return geocoded address fields	Specifies whether to perform geocoding during processing. Geocoding output provides the latitude and longitude for each input address, as well as the level of accuracy of the match and the likely maximum distance between the geocode and the actual physical location of the address.
Include result codes for individual fields	Specifies whether to include field-level result indicators. Field-level result indicators describe how Validate Address Loqate handled each address element. Field-level result indicators are returned in the qualifier "Result". For example, the field-level result indicator for HouseNumber is contained in **HouseNumber.Result**. For a complete listing of result indicator output fields, see **Result Indicators** on page 259.
Return normalized data when no match is found	Specifies whether to return a formatted address when an address cannot be validated. The address is formatted using the preferred address format for the address's country. If this option is not selected, the output address fields are blank when Validate Address Loqate cannot validate the address. Formatted addresses are returned using the format specified by the **Include a standard address**, **Include address line elements**, and **Include postal information** check boxes. Note that if you select **Include address line elements**, the parsed address elements will contain the parsed, validated address for addresses that could be validated. If the address could not be validated the parsed address elements will contain the input address in parsed form. If you always want the output to contain the input address in parsed form, regardless of whether or not Validate Address Loqate could validate the address, select **Include standardized input address elements**. If you check this option, you must select **Include a standard address** and/or **Include address line elements**.

Option	Description
Return address data blocks	Specifies whether to return a formatted version of the address as it would be printed on a physical mailpiece. Each line of the address is returned in a separate address block field. There can be up to nine address block output fields: **AddressBlock1** through **AddressBlock9**. For example, this input address: AddressLine1: 4200 Parliament Place AddressLine2: Suite 600 City: Lanham StateProvince: MD PostalCode: 20706 Results in this address block output: AddressBlock1: 4200 PARLIAMENT PL STE 600 AddressBlock2: LANHAM MD 20706-1882 AddressBlock3: UNITED STATES OF AMERICA Validate Address Loqate formats the address into address blocks using postal authority standards. The country name is returned using the Universal Postal Union country name. Note that the option Country format does not affect the country name in the address block, it only affects the name returned in the **Country** output field.
Format data using AMAS conventions	Specifies that output address data is to be formatted using Address Matching Approval System (AMAS) conventions. This option causes Validate Address Loqate to use AMAS rules when standardizing an address. AMAS is an Australia Post program for enforcing addressing standards. For more information on the AMAS formatting conventions, refer to the Address Matching Approval System (AMAS) Handbook. This option modifies the output data as follows. • Numeric fields are padded with zeros. This affects the following output fields: HouseNumber, HouseNumber2, PostalDeliveryNumber, and DPID. For example, if the input address is 298 New South Head Rd Double Bay NSW 2028, then the format of the HouseNumber field is changed from 298 to 00298. • If a match is not made, then all digits in the DPID field will be zero. For example, 00000000. • If a match is not made, then all return fields (parsed address elements) will be blank, except numeric fields which will contain all zeros. • The CCD field is not output. **Note:** When this option is selected, results will be returned with AMAS formatting regardless of selections made in the **Acceptance level** and **Minimum match score** fields.

Option	Description
Casing	Specifies the casing of the output data. One of the following: **Mixed** Returns the output in mixed case (default). For example: 123 Main St Mytown FL 12345 **Upper** Returns the output in upper case. For example: 123 MAIN ST MYTOWN FL 12345
Default country	Specifies the default country. You should specify the country where most of your addresses reside. For example, if most of the addresses you process are in Germany, specify Germany. Validate Address Loqate uses the country you specify to attempt validation when it cannot determine the country from the StateProvince, PostalCode, and Country address fields.
Country format	Specifies the format to use for the country name returned in the **Country** output field. For example, if you select English, the country name "Deutschland" would be returned as "Germany". **English Names** Use English country names (default). **ISO Codes** Use two-letter ISO abbreviation for the countries instead of country names. **UPU Codes** Use Universal Postal Union abbreviation for the countries instead of country names.
Script/Alphabet	Specifies the alphabet or script in which the output should be returned. This option is bi-directional and generally takes place from Native to Latin and Latin to Native. **Input Script** Do not perform transliteration and provide output in the same script as the input (default). **Native** Output in the native script for the selected country wherever possible. **Latin (English)** Use English values.

Option	Description
Acceptance level	Specifies the minimum verification level a record must reach to be considered successfully processed. The value in this field corresponds to the second character of the Address Verification Code, which is called "Post-Processed Verification Match Level": • **5**—Delivery point (building or post box). The record will be passed or will have high confidence if ApartmentNumber, HouseNumber, Street, City, and StateProvince supplied in the input record match to the Loqate reference dataset. Will have moderate confidence if ApartmentNumber is correct but other remaining fields are incorrect, but in this case the Loqate engine should able to identify the ApartmentNumber as ApartmentNumber is at a more granular level. It will have zero confidence if ApartmentNumber and other fields are unable to parsed by the Loqate engine. • **4**—Premise or building. The record will be passed or will have high confidence if House Number, Street, City, and StateProvince supplied in the input record match the Loqate reference dataset. Will have moderate confidence if HouseNumber is correct but the other fields are not; however, in this case the Loqate engine should able to identify the HouseNumber because HouseNumber is at a more granular level. It will have zero confidence if the HouseNumber and other fields are unable to parsed by the Loqate engine. • **3**—Thoroughfare, road, or street. The record will be passed or will have high confidence if Street, City, and StateProvince supplied in the input record match the Loqate reference dataset. Will have moderate confidence if City is correct but StateProvince is not; however, in this case the Loqate engine should able to identify the StateProvince as City itself is the part of StateProvince. It will have zero confidence if City or both fields (City and State Province) are unable to parsed by the Loqate engine. • **2**—Locality (city or town). The record will be passed or will have high confidence if both City and StateProvince supplied in the input record match the Loqate reference dataset. Will have moderate confidence if City is correct but StateProvince is not; however, in this case the Loqate Engine should able to identify the StateProvince as City itself is the part of StateProvince. It will have zero confidence if City or both fields (City and StateProvince) are unable to be parsed by the Loqate engine. • **1**—Administrative area (state or region). The record will be passed or will have high confidence if the StateProvince supplied in the input record matches the Loqate reference dataset. • **0**—None. This is equivalent to loosest match option.

Option	Description
Duplicate handling	Enables the duplicate handling mask and specifies how duplicate records are processed and removed. Select one or more of the following options: **Single** Selected by default. Pre-process the input and remove duplicates that occur in a single field. **Multi** Selected by default. Pre-process the input and remove duplicates across all fields. **Non-standard** Pre-process the input and remove duplicates in fields that are not standard address fields. **Output** Selected by default. Post-process the output from verification and remove duplicates from non-verified fields.
Minimum match score	Specifies a numeric value between 0 and 100 that indicates the degree to which Validate Address Loqate will change an address in order to obtain a match in the Loqate reference database. The lower the number, the greater amount of change is allowed. A value of 100 means that after parsing the input address is nearly identical to the validated address. A value of 0 means that the parsed input address may be completely changed in order to obtain a validated address.
Return multiple addresses	Specifies whether or not to return multiple address for those input addresses that have more than one possible match. For more information, see **Returning Multiple Matches** on page 249.
Fail Multiple Matches	Fails multiple addresses for those input addresses that have more than one possible match.

Returning Multiple Matches

If Validate Address Loqate finds multiple address in the postal database that are possible matches for the input address, you can have Validate Address Loqate return the possible matches. For example, the following address matches multiple addresses in the U.S. postal database:

PO BOX 1 New York, NY

Options

To return multiple matches, use the options described in the following table.

Table 89: Multiple Match Option

Option Name	Description/Valid Values
Return multiple addresses	Indicates whether or not to return multiple address for those input addresses that have more than one possible match.
Maximum results	Next to the **Return multiple addresses** check box, enter a number between 1 and 10 that indicates the maximum number of addresses to return. The default value is 1. **Note:** The difference between unchecking **Return multiple addresses** and checking **Return multiple addresses** and specifying a maximum number of results of 1 is that a multiple match will return a failure if**Return multiple addresses** is unchecked, whereas a multiple match will return one record if**Return multiple addresses** is checked and the maximum number of results is 1.
Include result codes for individual fields	To identify which output addresses are candidate addresses, you must check **Include result codes for individual fields** on the **Output Data** tab. When you do this, records that are candidate addresses will have one or more "M" values in the field-level result indicators.

Output

When you choose to return multiple matches, the addresses are returned in the address format you specify. For information on specifying address format, see **Options** on page 244. To identify which records are the candidate addresses, look for multiple "M" values in the field-level result indicators. For more information**Result Indicators** on page 259, see .

Match Score Threshold Options

There are two options for setting match score thresholds.

> **Note:** These options are not available in the Validate Address Loqate user interface; they are located in the following file:
>
> *SpectrumDirectory*/server/modules/loqate/env.properties

The **MatchScoreAbsoluteThreshold** option is used to specify the minimum match score a record must reach to be considered a candidate for matching. The default value is 60, and the maximum value is 100.

The **MatchScoreThresholdFactor** is a value that represents a factor of the highest matching result. This value is used as a cutoff for considering result candidates. The higher the value of the factor,

the higher the chance of getting a good verification result. The default value is 95 and the maximum value is 100.

Output

The output from Validate Address Loqate contains various information depending on the output categories you select.

Standard Address Output

Standard address output consists of four lines of the address which correspond to how the address would appear on an address label. City, state/province, postal code, and other data is also included in standard address output. Validate Address Loqate returns standard address output for validated addresses if you select the **Include a standard address** check box. Standard address fields are always returned for addresses that could not be validated regardless of whether or not you select the **Include a standard address** check box. For non-validated addresses, the standard address output fields contain the address as it appeared in the input ("pass through" data). If you want Validate Address Loqate to standardize address according to postal authority standards when validation fails, select the **Include normalized data when no match is found** check box.

Table 90: Standard Address Output

Field Name	Description
AdditionalInputData	Input data that could not be matched to a particular address component. For more information, see **About Additional Input Data**.
AddressLine1-4	If the address was validated, the first line of the validated and standardized address. If the address could not be validated, the first line of the input address without any changes. There can be up to four address block output fields: AddressLine1 through AddressLine4.
City	The validated city name.
Country	The country in the format determined by what you selected in Country format: • ISO Code • UPU Code • English
FirmName	The validated firm or company name.

Field Name	Description
PostalCode	The validated ZIP Code™ or postal code.
PostalCode.AddOn	The 4-digit add-on part of the ZIP Code™. For example, in the ZIP Code™ 60655-1844, 1844 is the 4-digit add-on.
PostalCode.Base	The 5-digit ZIP Code™; for example 20706.
StateProvince	The validated state or province abbreviation.

Parsed Address Elements Output

Output addresses are formatted in the parsed address format if you select the **Include matched address elements** check box. If you want Validate Address Loqate to return formatted data in the Parsed Address format when validation fails (that is, a normalized address), select the **Return normalized data when no match is found** check box.

> **Note:** If you want Validate Address Loqate to always return parsed input data regardless of whether or not validation is successful, select **Include standardized input address elements**. For more information, see **Parsed Input** on page 255.

Table 91: Parsed Address Output

Field Name	Description
AddressBlock1-9	The AddressBlock output fields contain a formatted version of the standardized or normalized address as it would be printed on a physical mailpiece. Validate Address Global formats the address into address blocks using postal authority standards. Each line of the address is returned in a separate address block field. There can be up to nine address block output fields: AddressBlock1 through AddressBlock9. For example, this input address: AddressLine1: 4200 Parliament Place AddressLine2: Suite 600 City: Lanham StateProvince: MD PostalCode: 20706 Results in this address block output: AddressBlock1: 4200 PARLIAMENT PL STE 600 AddressBlock2: LANHAM MD 20706-1882
ApartmentLabel	Apartment designator (such as STE or APT), for example: 123 E Main St **APT** 3
ApartmentNumber	Apartment number, for example: 123 E Main St APT **3**
ApartmentNumber2	Secondary apartment number, for example: 123 E Main St APT 3, **4th** Floor **Note:** In this release, this field will always be blank.
Building	Descriptive name identifying an individual location.
City	Validated city name

Field Name	Description
Country	Country. Format is determined by what you selected in **Country format**: • ISO Code • UPU Code • English
County*	The smallest geographic data element within a country, for instance, **USA County**
FirmName	The validated firm or company name
HouseNumber	House number, for example: **123** E Main St Apt 3
LeadingDirectional	Leading directional, for example: 123 **E** Main St Apt 3
POBox	Post office box number. If the address is a rural route address, the rural route box number will appear here.
PostalCode	Validated postal code. For U.S. addresses, this is the ZIP Code.
Principality *	The largest geographic data element within a country
StateProvince	Validated state or province name
StreetAlias	Alternate street name; typically applies only to a specific range of addresses on the street. If you do not allow street aliases in the output then the street's "base" name will appear in the output regardless of whether or not there is an alias for the street. for example: 123 E **Main** St Apt 3
StreetName	Street name, for example: 123 E **Main St** Apt 3

Field Name	Description
StreetSuffix	Street suffix, for example: 123 E Main **St** Apt 3
Subcity*	A smaller population center data element, dependent on the contents of the Locality field. For instance, **Turkish Neighbourhood**.
Substreet*	The dependent street or block data element within a country. For instance, **UK Dependent Street**.
TrailingDirectional	Trailing directional, for example: 123 Pennsylvania Ave **NW**

*This is a subfield and may not contain data.

Parsed Input

The output can include the input address in parsed form. This type of output is referred to as "parsed input." Parsed input fields contain the address data that was used as input regardless of whether or not Validate Address validated the address. Parsed input is different from the "parsed address elements" output in that parsed address elements contain the validated address if the address could be validated, and, optionally, the input address if the address could not be validated. Parsed input always contains the input address regardless of whether or not Validate Address validated the address.

To include parsed input fields in the output, select the **Return parsed input data** check box.

Table 92: Parsed Input

Field Name	Description
ApartmentLabel.Input	Apartment designator (such as STE or APT), for example: 123 E Main St **APT** 3
ApartmentNumber.Input	Apartment number, for example: 123 E Main St APT **3**
City.Input	Validated city name

Field Name	Description
Country.Input	Country. Format is determined by what you selected in Country format: • ISO Code • UPU Code • English
County.Input*	The smallest geographic data element within a country, for instance, **USA County**
FirmName.Input	The validated firm or company name
HouseNumber.Input	House number, for example: **123** E Main St Apt 3
LeadingDirectional.Input	Leading directional, for example: 123 **E** Main St Apt 3
POBox.Input	Post office box number. If the address is a rural route address, the rural route box number will appear here.
PostalCode.Input	Validated postal code. For U.S. addresses, this is the ZIP Code.
Principality.Input *	The largest geographic data element within a country
StateProvince.Input	Validated state or province name
StreetAlias.Input	Alternate street name; typically applies only to a specific range of addresses on the street. If you do not allow street aliases in the output then the street's "base" name will appear in the output regardless of whether or not there is an alias for the street. The base name is the name that applies to the entire street. For example: If StreetName is “N MAIN ST” the StreetAlias field would contain “MAIN” and the thoroughfare type,"ST", would be returned in the StreetSuffix field.

Field Name	Description
StreetName.Input	Street name, for example: 123 E **Main St** Apt 3
StreetSuffix.Input	Street suffix, for example: 123 E Main St Apt 3
Subcity.Input*	A smaller population center data element, dependent on the contents of the Locality field. For instance, **Turkish Neighbourhood**.
Substreet.Input*	The dependent street or block data element within a country. For instance, **UK Dependent Street**.
TrailingDirectional.Input	Trailing directional, for example: 123 Pennsylvania Ave **NW**

*This is a subfield and may not contain data.

Geocode Output

Validate Address Loqate returns the latitude/longitude, geocoding match code, dependent and double dependent localities, dependent thoroughfare, subadministrative and superadministrative areas, and the search distance as output. Match codes describe how well the geocoder matched the input address to a known address; they also describe the overall status of a match attempt. Search distance codes represent how close the geocode is to the actual physical location of an address.

Table 93: Geocode Address Output

Field Name	Description
Geocode.MatchCode	This two-byte code reflects the status and level of geocode matching for an address. The first byte represents the geocoding status and is one of the following: **A** Multiple candidate geocodes were found to match the input address, and an average of these was returned **I** A geocode was able to be interpolated from the input addresses location in a range **P** A single geocode was found matching the input address **U** A geocode was not able to be generated for the input address The second byte represents the level of geocoding matching and is one of the following: **5** Delivery point (post box or subbuilding) **4** Premise or building **3** Thoroughfare **2** Locality **1** Administrative area **0** None
Latitude	Eight-digit number in degrees and calculated to five decimal places (in the format specified).
Longitude	Eight-digit number in degrees and calculated to five decimal places (in the format specified).
SearchDistance	The radius of accuracy in meters, providing an indication of the probable maximum distance between the given geocode and the actual physical location. This field is derived from and dependent upon the accuracy and coverage of the underlying reference data.

Table 94: City/Street/Postal Code Centroid Match Codes

Element	Match Code
Address Point	P4

Element	Match Code
Address Point Interpolated	I4
Street Centroid	A4/P3
Postal Code/City Centroid	A3/P2/A2

Note: Geocode.Match.Code does not return two coordinates for a street segment (such as the beginning and ending of a portion of a street). Instead, with input resulting in return codes of I3 (interpolated to thoroughfare or street level, where no input premise number was provided), the complete street is used in the computation.

Result Indicators

Result indicators provide information about the kinds of processing performed on an address. There are two types of result indicators:

Record-Level Result Indicators

Record-level result indicators provide data about the results of Validate Address Loqate processing for each record, such as the success or failure of the match attempt, which coder processed the address, and other details. The following table lists the record-level result indicators returned by Validate Address Loqate.

Table 95: Record Level Indicators

Field Name	Description
Confidence	The level of confidence assigned to the address being returned. Range is from zero (0) to 100; zero indicates failure, 100 indicates a very high level of confidence that the match results are correct. For multiple matches, the confidence level is 0. For details about how this number is calculated, see **Introduction to the Validate Address Loqate Confidence Algorithm**.

Field Name	Description
CouldNotValidate	If no match was found, which address component could not be validated: • ApartmentNumber • HouseNumber • StreetName • PostalCode • City • Directional • StreetSuffix • Firm • POBoxNumber **Note:** More than one component may be returned, in a comma-separated list.
MatchScore	MatchScore provides an indication of the similarity between the input data and the closest reference data match. It is significantly different from Confidence in that Confidence indicates how much the input address changed to obtain a match, whereas the meaning of Match Score varies between U.S. and non-U.S. addresses. The int getFieldMatchscore (unit record, const char*) field is a decimal value between 0 and 100 that reflects the similarity between the identified input data and the closest reference data match. A result of 100 indicates that no changes other than alias, casing, or diacritic changes have been made to the input data. A result of 0 indicates that there is no similarity between the input data and closest reference data match. **Note:** The Validate Address Loqate and Advanced Matching Module components both use the MatchScore field. The MatchScore field value in the output of a dataflow is determined by the last stage to modify the value before it is sent to an output stage. If you have a dataflow that contains Validate Address Loqate and Advanced Matching Module components and you want to see the MatchScore field output for each stage, use a Transformer stage to copy the MatchScore value to another field. For example, Validate Address Loqate produces an output field called MatchScore and then a Transformer stage copies the MatchScore field from Validate Address Loqate to a field called AddressMatchScore. When the matcher stage runs it populates the MatchScore field with the value from the matcher and passes through the AddressMatchScore value from Validate Address Loqate.
ProcessedBy	Which address coder processed the address: **LOQATE** The Loqate coder processed the address.

Field Name	Description
Status	Reports the success or failure of the match attempt. For multiple matches, this field is "F" for all the possible matches. **null** Success **F** Failure
Status.Code	Reason for failure, if there is one. • UnableToValidate
Status.Description	Description of the problem, if there is one. **Address Not Found** This value will appear if Status.Code=UnableToValidate.

Field-Level Result Indicators

Field-level result indicators describe how Validate Address Loqate handled each address element. Field-level result indicators are returned in the qualifier "Result". For example, the field-level result indicator for HouseNumber is contained in **HouseNumber.Result**.

To enable field-level result indicators, check the **Include result codes for individual fields** box.

The following table lists the field-level result indicators. If a particular field does not apply to an address, the result indicator may be blank.

Table 96: Field-Level Result Indicators

Field Name		Description
ApartmentLabel.Result	**A**	Appended. The field was added to a blank input field. U.S. and Canadian addresses only.
	C	Corrected. U.S. and Canadian addresses only.
	F	Formatted. The spacing and/or punctuation was changed to conform to postal standards.
	P	Pass-through. The data was not used in the validation process, but it was preserved in the output. U.S. and Canadian addresses only.
	R	The apartment label is required but is missing from the input address. U.S. addresses only.
	S	Standardized. This option includes any standard abbreviations.
	U	Unmatched. Does not apply to Canadian addresses.
	V	Validated. The data was confirmed correct and remained unchanged from input.
ApartmentNumber.Result	**A**	Appended. The field was added to a blank input field. U.S. and Canadian addresses only.
	C	Corrected. Canadian addresses only.
	F	Formatted. The spacing and/or punctuation was changed to conform to postal standards. Does not apply to U.S. or Canadian addresses.
	P	Pass-through. The data was not used in the validation process, but it was preserved in the output. U.S. addresses that are an EWS match will have a value of P. U.S. and Canadian addresses only.
	R	The apartment number is required but is missing from the input address. U.S. addresses only.
	S	Standardized. This option includes any standard abbreviations. Does not apply to U.S. addresses.
	U	Unmatched.
	V	Validated. The data was confirmed correct and remained unchanged from input.

Field Name	Description
City.Result	**A** Appended. The field was added to a blank input field. U.S. and Canadian addresses only. **C** Corrected. U.S. and Canadian addresses only. **F** Hyphens missing or punctuation errors. Canadian addresses only. **M** Multiple. The input address matched multiple records in the postal database, and each matching record has a different value in this field. Does not apply to U.S. or Canadian addresses. **P** Pass-through. The data was not used in the validation process, but it was preserved in the output. **R** The city is required but is missing from the input address. U.S. addresses only. **S** Standardized. This option includes any standard abbreviations. Does not apply to U.S. addresses. **U** Unmatched. Does not apply to Canadian addresses. **V** Validated. The data was confirmed correct and remained unchanged from input.
Country.Result	These result codes do not apply to U.S. or Canadian addresses. **M** Multiple. The input address matched multiple records in the postal database, and each matching record has a different value in this field. **S** Standardized. This option includes any standard abbreviations. **U** Unmatched. **V** Validated. The data was confirmed correct and remained unchanged from input.
County.Result*	The smallest geographic data element within a country, for instance, **USA County**
FirmName.Result	**C** Corrected. U.S. addresses only. **P** Pass-through. The data was not used in the validation process, but it was preserved in the output. U.S. and Canadian addresses only. **U** Unmatched. U.S. and Canadian addresses only. **V** Validated. The data was confirmed correct and remained unchanged from input. U.S. addresses only.

Field Name		Description
HouseNumber.Result	**A**	Appended. The field was added to a blank input field. Canadian addresses only.
	C	Corrected. Canadian addresses only.
	F	Formatted. The spacing and/or punctuation was changed to conform to postal standards. Does not apply to U.S. or Canadian addresses.
	O	Out of range. Does not apply to U.S. or Canadian addresses.
	P	Pass-through. The data was not used in the validation process, but it was preserved in the output. Canadian addresses only.
	R	The house number is required but is missing from the input address. Canadian addresses only.
	S	Standardized. This option includes any standard abbreviations. Does not apply to U.S. or Canadian addresses.
	U	Unmatched.
	V	Validated. The data was confirmed correct and remained unchanged from input.
LeadingDirectional.Result	**A**	Appended. The field was added to a blank input field. U.S. and Canadian addresses only.
	C	Corrected. Non-blank input was corrected to a non-blank value. U.S. addresses only.
	F	Formatted. The spacing and/or punctuation was changed to conform to postal standards. Does not apply to U.S. or Canadian addresses.
	M	Multiple. The input address matched multiple records in the postal database, and each matching record has a different value in this field. U.S. addresses only.
	P	Pass-through. The data was not used in the validation process, but it was preserved in the output. Canadian addresses only.
	S	Standardized. This option includes any standard abbreviations.
	U	Unmatched.
	V	Validated. The data was confirmed correct and remained unchanged from input. Does not apply to Canadian addresses.

Field Name		Description
POBox.Result	**A**	Appended. The field was added to a blank input field. Canadian addresses only.
	C	Corrected. Canadian addresses only.
	F	Formatted. The spacing and/or punctuation was changed to conform to postal standards. Does not apply to U.S. or Canadian addresses.
	M	Multiple matches. The input address matched multiple records in the postal database, and each matching record has a different value in this field. U.S. addresses only.
	P	Pass-through. The data was not used in the validation process, but it was preserved in the output. Canadian addresses only.
	R	The P.O. Box number is required but is missing from the input address. U.S. addresses only.
	S	Standardized. This option includes any standard abbreviations.
	U	Unmatched.
	V	Validated. The data was confirmed correct and remained unchanged from input.
PostalCode.Result	**A**	Appended. The field was added to a blank input field. U.S. and Canadian addresses only.
	C	Corrected. U.S. and Canadian addresses only.
	F	Formatted. The spacing and/or punctuation was changed to conform to postal standards. Does not apply to U.S. or Canadian addresses.
	M	Multiple. The input address matched multiple records in the postal database, and each matching record has a different value in this field. Does not apply to Canadian addresses.
	P	Pass-through. The data was not used in the validation process, but it was preserved in the output. Does not apply to U.S. addresses.
	R	The postal code is required but is missing from the input address. U.S. addresses only.
	S	Standardized. This option includes any standard abbreviations. Does not apply to U.S. or Canadian addresses.
	U	Unmatched. For example, if the street name does not match the postal code, both StreetName.Result and PostalCode.Result will contain U.
	V	Validated. The data was confirmed correct and remained unchanged from input.

Field Name		Description
PostalCode.Type	**P**	The ZIP Code™ contains only PO Box addresses. U.S. addresses only.
	U	The ZIP Code™ is a unique ZIP Code™ assigned to a specific company or location. U.S. addresses only.
	M	The ZIP Code™ is for military addresses. U.S. addresses only.
	null	The ZIP Code™ is a standard ZIP Code™.
Principality.Result *		The largest geographic data element within a country
StateProvince.Result	**A**	Appended. The field was added to a blank input field. U.S. and Canadian addresses only.
	C	Corrected. U.S. addresses only.
	M	Multiple. The input address matched multiple records in the postal database, and each matching record has a different value in this field. Does not apply to U.S. or Canadian addresses.
	P	Pass-through. The data was not used in the validation process, but it was preserved in the output. U.S. and Canadian addresses only.
	R	The state is required but is missing from the input address. U.S. addresses only.
	S	Standardized. This option includes any standard abbreviations. Does not apply to U.S. addresses.
	U	Unmatched. Does not apply to Canadian addresses.
	V	Validated. The data was confirmed correct and remained unchanged from input.
StreetAlias.Result		An alternate name for a street; typically applies only to a specific range of addresses on the street. If you do not allow street aliases in the output then the street's "base" name will appear in the output regardless of whether or not there is an alias for the street. The base name is the name that applies to the entire street. For example: If StreetName is “N MAIN ST” the StreetAlias field would contain “MAIN” and the thoroughfare type,"ST", would be returned in the StreetSuffix field.

Field Name	Description	
StreetName.Result	**A**	Appended. The field was added to a blank input field. Canadian addresses only.
	C	Corrected. U.S. and Canadian addresses only.
	F	Formatted. The spacing and/or punctuation was changed to conform to postal standards. Does not apply to U.S. or Canadian addresses.
	M	Multiple. The input address matched multiple records in the postal database, and each matching record has a different value in this field. U.S. addresses only.
	P	Pass-through. The data was not used in the validation process, but it was preserved in the output. Does not apply to U.S. addresses.
	S	Standardized. This option includes any standard abbreviations. U.S. and Canadian addresses only.
	U	Unmatched.
	V	Validated. The data was confirmed correct and remained unchanged from input.
StreetSuffix.Result	**A**	Appended. The field was added to a blank input field. U.S. and Canadian addresses only.
	C	Corrected. U.S. and Canadian addresses only.
	F	Formatted. The spacing and/or punctuation was changed to conform to postal standards. Does not apply to U.S. or Canadian addresses.
	M	Multiple. The input address matched multiple records in the postal database, and each matching record has a different value in this field. U.S. addresses only.
	P	Pass-through. The data was not used in the validation process, but it was preserved in the output. Canadian addresses only.
	S	Standardized. This option includes any standard abbreviations.
	U	Unmatched. Does not apply to U.S. addresses.
	V	Validated. The data was confirmed correct and remained unchanged from input.
Subcity.Result*	A smaller population center data element, dependent on the contents of the Locality field. For instance, **Turkish Neighbourhood**.	
Substreet.Result*	The dependent street or block data element within a country. For instance, **UK Dependent Street**.	

Field Name		Description
TrailingDirectional.Result	**A**	Appended. The field was added to a blank input field. U.S. and Canadian addresses only.
	C	Corrected. U.S. and Canadian addresses only.
	F	Formatted. The spacing and/or punctuation was changed to conform to postal standards. Does not apply to U.S. or Canadian addresses.
	M	Multiple. The input address matched multiple records in the postal database, and each matching record has a different value in this field. U.S. addresses only.
	P	Pass-through. The data was not used in the validation process, but it was preserved in the output. Canadian addresses only.
	S	Standardized. This option includes any standard abbreviations.
	U	Unmatched. Does not apply to Canadian addresses.
	V	Validated. The data was confirmed correct and remained unchanged from input.

*This is a subfield and may not contain data.

The AVC Code

The Address Verification Code (AVC) is an 11-byte code that is made up of accuracy indicators for addresses; the codes tell you the quality of the processing results and provide guidelines on how to correct the input data if necessary. Each individual address receives its own code. This code is automatically returned within your dataflow's output. An example of an AVC is:

V44-I44-P6-100

AVCs consist of eight parts:

- Verification Status
- Post-Process Verification Match Level
- Pre-Process Verification Match Level
- Parsing Status
- Lexicon Identification Match Level
- Context Identification Match Level
- Postcode Status
- Matchscore

Verification Status

The level to which an address was verified.

- **V**—Verified. A complete match was made between the input data and a single record from the available reference data. For simple address validation, this is considered the best code to return.
- **P**—Partially verified. A partial match was made between the input data and a single record from the available reference data. This could mean that there is granular data for the address information that was provided, but additional information is required to return a full validation.
- **A**—Ambiguous. There are multiple addresses that could match the input.
- **U**—Unable to verify. This gets returned when there is not enough information to verify an address or when the input query is unreadable. The output fields will contain the input data.
- **R**—Reverted. The record could not be verified to the specified minimum acceptable level. This occurs when advanced options such as minimum reversion levels are set on a process. The output fields will contain the input data.
- **C**—Conflict. There is more than one close reference data match with conflicting values.

Post-Process Verification Match Level

The level to which the input data matches the available reference data after processing.

- **5**—Delivery point (building or post box). The record will be passed or will have high confidence if ApartmentNumber, HouseNumber, Street, City, and StateProvince supplied in the input record match to the Loqate reference dataset. Will have moderate confidence if ApartmentNumber is correct but other remaining fields are incorrect, but in this case the Loqate engine should able to identify the ApartmentNumber as ApartmentNumber is at a more granular level. It will have zero confidence if ApartmentNumber and other fields are unable to parsed by the Loqate engine.
- **4**—Premise or building. The record will be passed or will have high confidence if House Number, Street, City, and StateProvince supplied in the input record match the Loqate reference dataset. Will have moderate confidence if HouseNumber is correct but the other fields are not; however, in this case the Loqate engine should able to identify the HouseNumber because HouseNumber is at a more granular level. It will have zero confidence if the HouseNumber and other fields are unable to parsed by the Loqate engine.
- **3**—Thoroughfare, road, or street. The record will be passed or will have high confidence if Street, City, and StateProvince supplied in the input record match the Loqate reference dataset. Will have moderate confidence if City is correct but StateProvince is not; however, in this case the Loqate engine should able to identify the StateProvince as City itself is the part of StateProvince. It will have zero confidence if City or both fields (City and State Province) are unable to parsed by the Loqate engine.
- **2**—Locality (city or town). The record will be passed or will have high confidence if both City and StateProvince supplied in the input record match the Loqate reference dataset. Will have moderate confidence if City is correct but StateProvince is not; however, in this case the Loqate Engine should able to identify the StateProvince as City itself is the part of StateProvince. It will have zero confidence if City or both fields (City and StateProvince) are unable to be parsed by the Loqate engine.
- **1**—Administrative area (state or region). The record will be passed or will have high confidence if the StateProvince supplied in the input record matches the Loqate reference dataset.
- **0**—None. This is equivalent to loosest match option.

Pre-Process Verification Match Level

The level to which the input data matches the available reference data before processing.

- **5**—Delivery point (building or post box)
- **4**—Premise or building.
- **3**—Thoroughfare, road, or street.
- **2**—Locality (city or town).
- **1**—Administrative area (state or region).
- **0**—None.

Parsing Status

The level to which an address was parsed.

- **I**—Identified and parsed. The input data has been identified and placed into components. For example, with "123 Kingston Av" Validate Address Loqate would be able to determine that "123" was a Premise Number, "Kingston" was the Thoroughfare Name, and "Av" or "Avenue" would be the Thoroughfare Type.
- **U**—Unable to parse. Validate Address Loqate was unable to identify and parse the input data. As with the "Unverified" verification status, the input data was incomplete or vague.

Lexicon Identification Match Level

The level to which the input data has some recognized form through the use of pattern matching (for instance, a numeric value could be a premise number) and lexicon matching (for example, "rd" could be Thoroughfare Type "road"; "London" could be a locality, and so on).

- **5**—Delivery point (building or post box)
- **4**—Premise or building.
- **3**—Thoroughfare, road, or street.
- **2**—Locality (city or town).
- **1**—Administrative area (state or region).
- **0**—None.

Context Identification Match Level

The level to which the input data can be recognized based on the context in which it appears. This is the least accurate form of matching and is based on identifying a word as a particular address element. For example, input could be determined to be a thoroughfare because it was preceded by something that could be a premise and followed by something that could be a locality, the latter items being identified through a match against the reference data or the lexicon.

- **5**—Delivery point (building or post box)
- **4**—Premise or building.
- **3**—Thoroughfare, road, or street.
- **2**—Locality (city or town).
- **1**—Administrative area (state or region).

- **0**—None.

Postcode Status

The level to which a postal code was verified.

- **P8**—PostalCodePrimary and PostalCodeSecondary verified.
- **P7**—PostalCodePrimary verified, PostalCodeSecondary added or changed.
- **P6**—PostalCodePrimary verified.
- **P5**—PostalCodePrimary verified with small change.
- **P4**—PostalCodePrimary verified with large change.
- **P3**—PostalCodePrimary added.
- **P2**—PostalCodePrimary identified by lexicon.
- **P1**—PostalCodePrimary identified by context.
- **P0**—PostalCodePrimary empty.

Match Score

A numeric value between 0 and 100 representing the similarity between the identified input data and the output data for the record. A result of 100 means that no changes other than additions,alias, casing, or diacritic changes have been made to the input data. A result of 0 means there is no similarity between the input data item and the output data provided.

AMAS Output

The following table lists the standard fields that are output by Validate Address AUS.

Table 97: Output Fields

Field Name	Description
Barcode	Standard barcode based on the DPID. **F** — Failure (no barcode found) **20-digit number** — Success
DPID	The Delivery Point Identifier. An eight-digit number from the Australia Post Postal Address File that uniquely identifies a mail delivery point, such as a street address. **Note:** This field will contain "00000000" for Australian addresses that are not AMAS-verified and will be empty for non-Australian addresses.
FloorNumber	The floor/level number, for example: 123 E Main St Apt 3, **4th** Floor

Field Name	Description
FloorType	The floor/level type, for example: 123 E Main St Apt 3, 4th **Floor**
PostalBoxNum	The postal delivery number, for example: PO Box 42

Encountering False Positives

What is a False-Positive?

To prevent the generation of address lists, the DPV and LACS^{Link} databases include false-positive records. False-positive records are artificially manufactured addresses that reside in a false-positive table. For each negative response that occurs in a DPV or LACS^{Link} query, a query is made to the false-positive table. A match to this table (called a false-positive match) disables your DPV or LACS^{Link} key. In batch processing the job that contains the violation will complete successfully but you will not be able to run any subsequent jobs that use DPV or LACS^{Link} until you report the violation and obtain a key to reactivate DPV or LACS^{Link}.

> **Note:** The term "seed record violation" is also used to refer to encountering false positive records. The two terms mean the same thing.

Reporting DPV False-Positive Violations

Spectrum™ Technology Platform indicates a false-positive match via messages in the server log.

During batch processing, if you encounter a false positive record the job will continue. After the job completes you will not be able to run any other jobs using DPV because your DPV key is disabled. When a DPV false positive record violation occurs, the following text is displayed in the Execution History:

```
DPV Seed Record Violation. Seed Code S<ZIP, ZIP+4, Address, Unit>
```

You can report the violation and obtain a restart key by following these steps.

1. In your browser, go to http://<yourserver>:<port>/<product code>/dpv.jsp. For example, http://localhost:8080/unc/dpv.jsp for the Universal Addressing Module and http://localhost:8080/geostan/dpv.jsp for the Enterprise Geocoding Module.
2. Enter the mailer's information into each field. The number in parentheses after each field name indicates the maximum length of the field.
3. Click **Submit** when you're done. A **File Download** dialog will appear.

4. Click **Save** to save the file to your computer. A **Save As** dialog will appear.
5. Specify a file name and location on your local hard drive (for example `c:\DPVSeedFile.txt`) and click **Save**.
6. Go to **www.g1.com/support** and log in.
7. Click **DPV & LACS**[Link] **False Positive**.
8. Follow the on-screen instructions to attach your seed file and obtain a restart key.

DPV False Positive Header File Layout

The USPS® has determined the required layout of the DPV false-positive header file, which is currently defined as a fixed-length file containing two or more 180-byte records. The first record must always be the header record, whose layout is shown below.

Table 98: DPV False-Positive Header Record Layout

Position	Length	Description	Format
1-40	40	Mailer's company name	Alphanumeric
41-98	58	Mailer's address line	Alphanumeric
99-126	28	Mailer's city name	Alphanumeric
127-128	2	Mailer's state abbreviation	Alphabetic
129-137	9	Mailer's 9-digit ZIP Code	Numeric
138-146	9	Total Records Processed	Numeric
147-155	9	Total Records DPV Matched	Numeric
156-164	9	Percent Match Rate to DSF	Numeric
165-173	9	Percent Match Rate to ZIP + 4®	Numeric

Position	Length	Description	Format
174-178	5	Number of ZIP Codes on file	Numeric
179-180	2	Number of False-Positives	Numeric

The trailer record contains information regarding the DPV false-positive match. There must be one trailer record added to the false-positive file for every DPV false-positive match. The layout is shown below.

Table 99: DPV False-Positive Trailer Record Layout

Position	Length	Description	Format
1-2	2	Street predirectional	Alphanumeric
3-30	28	Street name	Alphanumeric
31-34	4	Street suffix abbreviation	Alphanumeric
35-36	2	Street postdirectional	Alphanumeric
37-46	10	Address primary number	Alphanumeric
47-50	4	Address secondary abbreviation	Alphanumeric
51-58	8	Address secondary number	Numeric
59-63	5	Matched ZIP Code	Numeric
64-67	4	Matched ZIP + 4®	Numeric

Position	Length	Description	Format
68-180	113	Filler	Spaces

Reporting LACS/Link False-Positive Violations

Spectrum™ Technology Platform indicates a false-positive match via messages in the server log. Batch jobs will fail if a false-positive match occurs and client/server calls will throw an exception.

> **Note:** The term "seed record violation" is also used to refer to encountering false positive records. The two terms mean the same thing.

When a false positive record is encountered, the server log will say:

```
2005-05-19 09:40:10,758 WARN [com.g1.dcg.component.Log] Seed record
violation for RR 1             R74039  2924
2005-05-19 09:40:10,774 ERROR [com.g1.dcg.component.Log] Feature
Disabled: LLB: LACS Seed Record Violation. Seed Code: R74039  2924
2005-05-19 09:40:10,867 ERROR
[com.g1.dcg.job.server.stages.JobRunnerStages] Error executing job
com.g1.dcg.stage.StageException: com.g1.dcg.component.ComponentException:
 Feature Disabled: LLB
```

1. In your browser, go to http://<ServerName>:<port>/<product code>/lacslink.jsp. For example, http://localhost:8080/unc/lacslink.jsp for the Universal Addressing Module and http://localhost:8080/geostan/lacslink.jsp for the Enterprise Geocoding Module.
2. Enter the mailer's information into each field. The number in parentheses after the field name indicates the maximum length of the field. Click **Submit** when you're done. A **File Download** dialog will appear.
3. Click **Save** to save the file to your computer. A **Save As** dialog will appear.
4. Specify a file name and location on your local hard drive (for example `c:\lacslink.txt`) and click **Save**.
5. Go to **www.g1.com/support** and log in.
6. Click **DPV & LACS^{Link} False Positive**.
7. Follow the on-screen instructions to attach your seed file and obtain a restart key.

Validate Address Confidence Algorithm

Introduction to the Validate Address Confidence Algorithm

ValidateAddress computes a confidence score for each validated address. This score describes how likely it is that the validated address is correct. Confidence code values range from 0 to 100, with a zero confidence level indicating no confidence and 100 indicating a very high level of confidence that the match results are correct. Confidence codes are calculated based on an algorithm that takes into account the match results for individual output fields. The output fields involved in this calculation include:

- Country
- City
- State
- PostalCode
- StreetName
- HouseNumber
- LeadingDirectional
- TrailingDirectional
- StreetSuffix
- ApartmentNumber

Each field has its own Weight in the algorithm. Additionally, for each field the match result could be labeled as Success, Failure, or Changed. ("Changed" refers to cases where the contents of the field have been corrected in order to get a match.) The match result—Success, Failure, or Changed—determines what the Factor is for that field. Thus, the calculation for the confidence code is a product of Weight by Factor as follows:

```
Confidence = (Weight * Factor) for City
  + (Weight * Factor) for Country
  + (Weight * Factor) for State
  + (Weight * Factor) for PostalCode
  + (Weight * Factor) for StreetName
  + (Weight * Factor) for HouseNumber
  + (Weight * Factor) for Directionals
  + (Weight * Factor) for Street Suffix
  + (Weight * Factor) for ApartmentNumber
```

Confidence Algorithm for U.S. and Canadian Addresses

The following table details the scoring and logic behind the ValidateAddress confidence algorithm for U.S. and Canadian addresses.

Table 100: Confidence Algorithm for U.S. and Canadian Addresses

Field	Weight/Match Score	Factor if Changed[1]	Factor If Filled[2]
Country	10	100%	0%
City	10	50%	75%
State	15	50%	75%
PostalCode	15	25%	25%
StreetName	15	50%	75%
HouseNumber	15	50%	75%
Directionals	10	50%	75%
StreetSuffix	5	50%	75%
ApartmentNumber	5	50%	75%

Confidence Algorithm for International Addresses

There are two confidence algorithms for addresses outside the U.S. and Canada, one for addresses in countries that use postal codes and one for addresses in countries that do not use postal codes.

The following table details the confidence algorithm for non-U.S. and non-Canadian addresses from countries that use postal codes.

[2] Refers to instances when the input data in this field is not present but is filled in order to achieve a match.

[1] Refers to instances when the input data in this field is changed in order to achieve a match.

Table 101: Confidence Algorithm for Countries With Postal Codes

Field	Weight/Match Score	Factor if Changed[3]	Factor If Filled[4]	Factor if Postal Data Unavailable
Country	11.1111111111111	100%	0%	0%
City	11.1111111111111	50%	75%[5]	0%
State	16.6666666666667	100%	100	80%
PostalCode	16.6666666666667	100%	100%	80%
StreetName	16.6666666666667	50%	75%	50%
HouseNumber	16.6666666666667	50%	75%	50%
Directionals	0	50%	75%	0%
StreetSuffix	5.55555555555556	50%	75%	50%
ApartmentNumber	5.55555555555556	50%	75%	50%

[4] Refers to instances when the input data in this field is not present but is filled in order to achieve a match.

[3] Refers to instances when the input data in this field is changed in order to achieve a match.

[5] If the country is a Category C country, this value is 50%. Countries fall into one of these categories:

- **Category A**—Enables the validation and correction of an address's postal code, city name, state/county name, street address elements, and country name.
- **Category B**—Enables the validation and correction of an address's postal code, city name, state/county name, and country name. It does not support the validation or correction of street address elements.
- **Category C**—Enables the validation and correction of the country name, and the validation of the format of the postal code.

The following table details confidence algorithm for countries that do not use postal codes.

Table 102: Confidence Algorithm for Countries Without Postal Codes

Field	Weight/Match Score	Factor if Changed[6]	Factor If Filled[7]	Factor if Postal Data Unavailable
Country	13.3333333333333	100%	0%	0%
City	13.3333333333333	50%	75%[8]	0%
State	20	100%	100	80%
StreetName	20	50%	75%	50%
HouseNumber	20	50%	75%	50%
Directionals	0	50%	75%	0%
StreetSuffix	6.66666666666667	50%	75%	50%
ApartmentNumber	6.66666666666667	50%	75%	50%

[7] Refers to instances when the input data in this field is not present but is filled in order to achieve a match.

[6] Refers to instances when the input data in this field is changed in order to achieve a match.

[8] If the country is a Category C country, this value is 50%. Countries fall into one of these categories:

- **Category A**—Enables the validation and correction of an address's postal code, city name, state/county name, street address elements, and country name.
- **Category B**—Enables the validation and correction of an address's postal code, city name, state/county name, and country name. It does not support the validation or correction of street address elements.
- **Category C**—Enables the validation and correction of the country name, and the validation of the format of the postal code.

The following table lists countries without postal codes.

Table 103: Countries Without Postal Codes

Afghanistan	Albania	Angola
Anguilla	Bahamas	Barbados
Belize	Benin	Bhutan
Botswana	Burkina Faso	Burundi
Cameroon	Cayman Islands	Central African Rep.
Chad	Cocos Islands	Colombia
Comoros	Congo (Dem. Rep.)	Congo (Rep.)
Cote d'Ivoire	Korea (North)	Djibouti
Dominica	Equatorial Guinea	Eritrea
Fiji	Gabon	Gambia
Ghana	Grenada	Guyana
Ireland	Jamaica	Kiribati
Libya	Malawi	Mali
Mauritania	Namibia	Nauru

Palau	Panama	Peru
Qatar	Rwanda	Saint Lucia
Saint Vincent and the Grenadines	Samoa	Sao Tome and Principe
Seychelles	Sierra Leone	Suriname
Tanzania	Timor	Togo
Tonga	Trinidad & Tobago	Tuvalu
Uganda	United Arab Emirates	Vanuatu
Yemen	Zimbabwe	

Appendix

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ISO Country Codes and Module Support 283

A - ISO Country Codes and Module Support

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ISO Country Codes and Module Support 284

ISO Country Codes and Module Support

The table lists the two-digit and three-digit ISO codes for each country.

ISO Country Name	ISO 3116-1 Alpha-2	ISO 3116-1 Alpha-3
Afghanistan	AF	AFG
Aland Islands	AX	ALA
Albania	AL	ALB
Algeria	DZ	DZA
American Samoa	AS	ASM
Andorra	AD	AND
Angola	AO	AGO
Anguilla	AI	AIA
Antarctica	AQ	ATA
Antigua And Barbuda	AG	ATG
Argentina	AR	ARG
Armenia	AM	ARM

ISO Country Name	ISO 3116-1 Alpha-2	ISO 3116-1 Alpha-3
Aruba	AW	ABW
Australia	AU	AUS
Austria	AT	AUT
Azerbaijan	AZ	AZE
Bahamas	BS	BHS
Bahrain	BH	BHR
Bangladesh	BD	BGD
Barbados	BB	BRB
Belarus	BY	BLR
Belgium	BE	BEL
Belize	BZ	BLZ
Benin	BJ	BEN
Bermuda	BM	BMU
Bhutan	BT	BTN

ISO Country Name	ISO 3116-1 Alpha-2	ISO 3116-1 Alpha-3
Bolivia, Plurinational State Of	BO	BOL
Bonaire, Saint Eustatius And Saba	BQ	BES
Bosnia And Herzegovina	BA	BIH
Botswana	BW	BWA
Bouvet Island	BV	BVT
Brazil	BR	BRA
British Indian Ocean Territory	IO	IOT
Brunei Darussalam	BN	BRN
Bulgaria	BG	BGR
Burkina Faso	BF	BFA
Burundi	BI	BDI
Cambodia	KH	KHM
Cameroon	CM	CMR
Canada	CA	CAN

ISO Country Name	ISO 3116-1 Alpha-2	ISO 3116-1 Alpha-3
Cape Verde	CV	CPV
Cayman Islands	KY	CYM
Central African Republic	CF	CAF
Chad	TD	TCD
Chile	CL	CHL
China	CN	CHN
Christmas Island	CX	CXR
Cocos (Keeling) Islands	CC	CCK
Colombia	CO	COL
Comoros	KM	COM
Congo	CG	COG
Congo, The Democratic Republic Of The	CD	COD
Cook Islands	CK	COK
Costa Rica	CR	CRI

ISO Country Name	ISO 3116-1 Alpha-2	ISO 3116-1 Alpha-3
Côte d'Ivoire	CI	CIV
Croatia	HR	HRV
Cuba	CU	CUB
Curacao	CW	CUW
Cyprus	CY	CYP
Czech Republic	CZ	CZE
Denmark	DK	DNK
Djibouti	DJ	DJI
Dominica	DM	DMA
Dominican Republic	DO	DOM
Ecuador	EC	ECU
Egypt	EG	EGY
El Salvador	SV	SLV
Equatorial Guinea	GQ	GNQ

ISO Country Name	ISO 3116-1 Alpha-2	ISO 3116-1 Alpha-3
Eritrea	ER	ERI
Estonia	EE	EST
Ethiopia	ET	ETH
Falkland Islands (Malvinas)	FK	FLK
Faroe Islands	FO	FRO
Fiji	FJ	FJI
Finland	FI	FIN
France	FR	FRA
French Guiana	GF	GUF
French Polynesia	PF	PYF
French Southern Territories	TF	ATF
Gabon	GA	GAB
Gambia	GM	GMB
Georgia	GE	GEO

ISO Country Name	ISO 3116-1 Alpha-2	ISO 3116-1 Alpha-3
Germany	DE	DEU
Ghana	GH	GHA
Gibraltar	GI	GIB
Greece	GR	GRC
Greenland	GL	GRL
Grenada	GD	GRD
Guadeloupe	GP	GLP
Guam	GU	GUM
Guatemala	GT	GTM
Guernsey	GG	GGY
Guinea	GN	GIN
Guinea-Bissau	GW	GNB
Guyana	GY	GUY
Haiti	HT	HTI

ISO Country Name	ISO 3116-1 Alpha-2	ISO 3116-1 Alpha-3
Heard Island and McDonald Islands	HM	HMD
Holy See (Vatican City State)	VA	VAT
Honduras	HN	HND
Hong Kong	HK	HKG
Hungary	HU	HUN
Iceland	IS	ISL
India	IN	IND
Indonesia	ID	IDN
Iran, Islamic Republic Of	IR	IRN
Iraq	IQ	IRQ
Ireland	IE	IRL
Isle Of Man	IM	IMN
Israel	IL	ISR
Italy	IT	ITA

ISO Country Name	ISO 3116-1 Alpha-2	ISO 3116-1 Alpha-3
Jamaica	JM	JAM
Japan	JP	JPN
Jersey	JE	JEY
Jordan	JO	JOR
Kazakhstan	KZ	KAZ
Kenya	KE	KEN
Kiribati	KI	KIR
Korea, Democratic People's Republic Of	KP	PRK
Korea, Republic Of	KR	KOR
Kosovo	KS	KOS
Kuwait	KW	KWT
Kyrgyzstan	KG	KGZ
Lao People's Democratic Republic	LA	LAO
Latvia	LV	LVA

ISO Country Name	ISO 3116-1 Alpha-2	ISO 3116-1 Alpha-3
Lebanon	LB	LBN
Lesotho	LS	LSO
Liberia	LR	LBR
Libyan Arab Jamahiriya	LY	LBY
Liechtenstein	LI	LIE
Lithuania	LT	LTU
Luxembourg	LU	LUX
Macao	MO	MAC
Macedonia, Former Yugoslav Republic Of	MK	MKD
Madagascar	MG	MDG
Malawi	MW	MWI
Malaysia	MY	MYS
Maldives	MV	MDV
Mali	ML	MLI

ISO Country Name	ISO 3116-1 Alpha-2	ISO 3116-1 Alpha-3
Malta	MT	MLT
Marshall Islands	MH	MHL
Martinique	MQ	MTQ
Mauritania	MR	MRT
Mauritius	MU	MUS
Mayotte	YT	MYT
Mexico	MX	MEX
Micronesia, Federated States Of	FM	FSM
Moldova, Republic Of	MD	MDA
Monaco	MC	MCO
Mongolia	MN	MNG
Montenegro	ME	MNE
Montserrat	MS	MSR
Morocco	MA	MAR

ISO Country Name	ISO 3116-1 Alpha-2	ISO 3116-1 Alpha-3
Mozambique	MZ	MOZ
Myanmar	MM	MMR
Namibia	NA	NAM
Nauru	NR	NRU
Nepal	NP	NPL
Netherlands	NL	NLD
New Caledonia	NC	NCL
New Zealand	NZ	NZL
Nicaragua	NI	NIC
Niger	NE	NER
Nigeria	NG	NGA
Niue	NU	NIU
Norfolk Island	NF	NFK
Northern Mariana Islands	MP	MNP

ISO Country Name	ISO 3116-1 Alpha-2	ISO 3116-1 Alpha-3
Norway	NO	NOR
Oman	OM	OMN
Pakistan	PK	PAK
Palau	PW	PLW
Palestinian Territory, Occupied	PS	PSE
Panama	PA	PAN
Papua New Guinea	PG	PNG
Paraguay	PY	PRY
Peru	PE	PER
Philippines	PH	PHL
Pitcairn	PN	PCN
Poland	PL	POL
Portugal	PT	PRT
Puerto Rico	PR	PRI

ISO Country Name	ISO 3116-1 Alpha-2	ISO 3116-1 Alpha-3
Qatar	QA	QAT
Reunion	RE	REU
Romania	RO	ROU
Russian Federation	RU	RUS
Rwanda	RW	RWA
Saint Barthelemy	BL	BLM
Saint Helena, Ascension & Tristan Da Cunha	SH	SHE
Saint Kitts and Nevis	KN	KNA
Saint Lucia	LC	LCA
Saint Martin (French Part)	MF	MAF
Saint Pierre and Miquelon	PM	SPM
Saint Vincent and the Grenadines	VC	VCT
Samoa	WS	WSM
San Marino	SM	SMR

ISO Country Name	ISO 3116-1 Alpha-2	ISO 3116-1 Alpha-3
Sao Tome and Principe	ST	STP
Saudi Arabia	SA	SAU
Senegal	SN	SEN
Serbia	RS	SRB
Seychelles	SC	SYC
Sierra Leone	SL	SLE
Singapore	SG	SGP
Sint Maarten (Dutch Part)	SX	SXM
Slovakia	SK	SVK
Slovenia	SI	SVN
Solomon Islands	SB	SLB
Somalia	SO	SOM
South Africa	ZA	ZAF
South Georgia And The South Sandwich Islands	GS	SGS

ISO Country Name	ISO 3116-1 Alpha-2	ISO 3116-1 Alpha-3
South Sudan	SS	SSD
Spain	ES	ESP
Sri Lanka	LK	LKA
Sudan	SD	SDN
Suriname	SR	SUR
Svalbard And Jan Mayen	SJ	SJM
Swaziland	SZ	SWZ
Sweden	SE	SWE
Switzerland	CH	CHE
Syrian Arab Republic	SY	SYR
Taiwan, Province of China	TW	TWN
Tajikistan	TJ	TJK
Tanzania, United Republic Of	TZ	TZA
Thailand	TH	THA

ISO Country Name	ISO 3116-1 Alpha-2	ISO 3116-1 Alpha-3
Timor-Leste	TL	TLS
Togo	TG	TGO
Tokelau	TK	TKL
Tonga	TO	TON
Trinidad and Tobago	TT	TTO
Tunisia	TN	TUN
Turkey	TR	TUR
Turkmenistan	TM	TKM
Turks And Caicos Islands	TC	TCA
Tuvalu	TV	TUV
Uganda	UG	UGA
Ukraine	UA	UKR
United Arab Emirates	AE	ARE
United Kingdom	GB	GBR

ISO Country Name	ISO 3116-1 Alpha-2	ISO 3116-1 Alpha-3
United States	US	USA
United States Minor Outlying Islands	UM	UMI
Uruguay	UY	URY
Uzbekistan	UZ	UZB
Vanuatu	VU	VUT
Venezuela, Bolivarian Republic Of	VE	VEN
Viet Nam	VN	VNM
Virgin Islands, British	VG	VGB
Virgin Islands, U.S.	VI	VIR
Wallis and Futuna	WF	WLF
Western Sahara	EH	ESH
Yemen	YE	YEM
Zambia	ZM	ZMB
Zimbabwe	ZW	ZWE

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