Informatica® Cloud Data Quality
July 2024

Verifier assets

Informatica Cloud Data Quality Verifier assets
July 2024
July 2024

© Copyright Informatica LLC 1998, 2024

This software and documentation are provided only under a separate license agreement containing restrictions on use and disclosure. No part of this document may be reproduced or transmitted in any form, by any means (electronic, photocopying, recording or otherwise) without prior consent of Informatica LLC.

U.S. GOVERNMENT RIGHTS Programs, software, databases, and related documentation and technical data delivered to U.S. Government customers are "commercial computer software" or "commercial technical data" pursuant to the applicable Federal Acquisition Regulation and agency-specific supplemental regulations. As such, the use, duplication, disclosure, modification, and adaptation is subject to the restrictions and license terms set forth in the applicable Government contract, and, to the extent applicable by the terms of the Government contract, the additional rights set forth in FAR 52.227-19, Commercial Computer Software License.

Informatica, Informatica Cloud, Informatica Intelligent Cloud Services, and the Informatica logo are trademarks or registered trademarks of Informatica LLC in the United States and many jurisdictions throughout the world. A current list of Informatica trademarks is available on the web at https://www.informatica.com/trademarks.html. Other company and product names may be trade names or trademarks of their respective owners.

Portions of this software and/or documentation are subject to copyright held by third parties.

The information in this documentation is subject to change without notice. If you find any problems in this documentation, report them to us at infa_documentation@informatica.com.

Informatica products are warranted according to the terms and conditions of the agreements under which they are provided. INFORMATICA PROVIDES THE INFORMATION IN THIS DOCUMENT "AS IS" WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING WITHOUT ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND ANY WARRANTY OR CONDITION OF NON-INFRINGEMENT.

Publication Date: 2024-07-11

Table of Contents

Preface 6

Informatica Resources 6

- Informatica Documentation 6
- Informatica Intelligent Cloud Services web site 6
- Informatica Intelligent Cloud Services Communities 6
- Informatica Intelligent Cloud Services Marketplace 7
- Informatica Knowledge Base 7
- Informatica Intelligent Cloud Services Trust Center 7
- Informatica Global Customer Support 7

Chapter 1: Introduction to verifier assets 8

Verifier operations 8

Verifier structure 9

Input model 10

Inputs 10

Outputs 11

Understanding the address structure 12

Address verification process flow 13

Certified verification 13

Address enrichments 14

Verifier assets and mappings 14

Verifier assets and dimensions 15

Reference data 15

Chapter 2: Verifier configuration 16

Selecting an input model 16

Selecting the input fields 17

Selecting the output fields 17

- Selecting output fields to verify and correct addresses 17
- Selecting output fields to update the address structure 18
- Selecting output fields to generate address suggestions 19
- Selecting output fields to measure address quality 20
- Selecting output fields to generate geocodes 21
- Selecting output fields to retrieve certification data 22

Chapter 3: Verifier asset properties 24

Input properties 24

Process properties 26

Result properties 28

Standardization properties 30

Certification report details. 32

Chapter 4: Frequently asked questions. 38

Why does the verifier asset show multiple instances of a single field?. 38
How do I set the input and output address properties for an address?. 38
How do I standardize street and directional descriptors? 39
How do I activate suggestions for addresses that I cannot verify? 39
How do I set the level of verification for an address? 39
How do I standardize common terms in addresses that fail verification?. 40
How do I set the output address data to upper case?. 40
How do I set the destination country for the input addresses?. 40
How do I specify the character set for the output address data?. 40
Can I expand the numerical ranges in address suggestions?. 41
How do I change the language of the output address data?. 41
Can the Secure Agent download CASS data files? 41

Chapter 5: Address verification properties. 42

Verification properties in the CDQAV property set. 42
Configuring the address verification properties. 44

Chapter 6: Validation and testing. 46

Validate a verifier 46

Chapter 7: Input address fields. 47

Chapter 8: Output address fields. 50

Single address elements and preformatted data fields. 50
Status code fields. 50
- Verification Status Codes. 51
- Result Quality. 51
- Address Type. 52

Enrichments: Geocoding fields. 53
- Geocoding Accuracy Codes. 53

Enrichments: Certified fields. 54
- Australia-AMAS. 55
- Canada-SERP 56
- France-SNA. 56
- New Zealand-Send Right 57
- United States-CASS. 58

Enrichments: Global fields. 63
Enrichments: Country Specific fields. 64
- Enrichments for Australia addresses. 64
- Enrichments for Austria addresses. 66

Enrichment for Belgium addresses. 67
Enrichments for Brazil addresses. 67
Enrichment for Czech Republic addresses. 68
Enrichments for France addresses. 68
Enrichments for Germany addresses. 69
Enrichments for Italy addresses 69
Enrichments for Japan addresses. 69
Enrichments for Poland addresses. 70
Enrichments for Russia addresses. 70
Enrichments for Serbia addresses. 71
Enrichments for South Africa addresses. 71
Enrichments for Spain addresses. 71
Enrichments for Switzerland addresses. 71
Enrichments for United Kingdom addresses. 72
Enrichments for United States addresses. 73
Enrichment and certification status fields. 74

Index. 75

Preface

Refer to *Verifier* to learn how to use a verifier asset to measure and enhance the quality of your postal address data. You configure a verifier asset in Data Quality, and you add the asset to a Verifier transformation in a mapping in Data Integration. You can also use a verifier to update the structure of your addresses, retrieve alternative suggestions for incomplete addresses, and add information to your addresses.

Informatica Resources

Informatica provides you with a range of product resources through the Informatica Network and other online portals. Use the resources to get the most from your Informatica products and solutions and to learn from other Informatica users and subject matter experts.

Informatica Documentation

Use the Informatica Documentation Portal to explore an extensive library of documentation for current and recent product releases. To explore the Documentation Portal, visit https://docs.informatica.com.

If you have questions, comments, or ideas about the product documentation, contact the Informatica Documentation team at infa_documentation@informatica.com.

Informatica Intelligent Cloud Services web site

You can access the Informatica Intelligent Cloud Services web site at http://www.informatica.com/cloud.

Informatica Intelligent Cloud Services Communities

Use the Informatica Intelligent Cloud Services Community to discuss and resolve technical issues. You can also find technical tips, documentation updates, and answers to frequently asked questions.

Access the Informatica Intelligent Cloud Services Community at:

https://network.informatica.com/community/informatica-network/products/cloud-integration

Developers can learn more and share tips at the Cloud Developer community:

https://network.informatica.com/community/informatica-network/products/cloud-integration/cloud-developers

Informatica Intelligent Cloud Services Marketplace

Visit the Informatica Marketplace to try and buy Data Integration Connectors, templates, and mapplets:

https://marketplace.informatica.com/

Informatica Knowledge Base

Use the Informatica Knowledge Base to find product resources such as how-to articles, best practices, video tutorials, and answers to frequently asked questions.

To search the Knowledge Base, visit https://search.informatica.com. If you have questions, comments, or ideas about the Knowledge Base, contact the Informatica Knowledge Base team at KB_Feedback@informatica.com.

Informatica Intelligent Cloud Services Trust Center

The Informatica Intelligent Cloud Services Trust Center provides information about Informatica security policies and real-time system availability.

You can access the trust center at https://www.informatica.com/trust-center.html.

Subscribe to the Informatica Intelligent Cloud Services Trust Center to receive upgrade, maintenance, and incident notifications. The Informatica Intelligent Cloud Services Status page displays the production status of all the Informatica cloud products. All maintenance updates are posted to this page, and during an outage, it will have the most current information. To ensure you are notified of updates and outages, you can subscribe to receive updates for a single component or all Informatica Intelligent Cloud Services components. Subscribing to all components is the best way to be certain you never miss an update.

To subscribe, on the Informatica Intelligent Cloud Services Status page, click **SUBSCRIBE TO UPDATES**. You can choose to receive notifications sent as emails, SMS text messages, webhooks, RSS feeds, or any combination of the four.

Informatica Global Customer Support

You can contact a Global Support Center through the Informatica Network or by telephone.

To find online support resources on the Informatica Network, click **Contact Support** in the Informatica Intelligent Cloud Services Help menu to go to the **Cloud Support** page. The **Cloud Support** page includes system status information and community discussions. Log in to Informatica Network and click **Need Help** to find additional resources and to contact Informatica Global Customer Support through email.

The telephone numbers for Informatica Global Customer Support are available from the Informatica web site at https://www.informatica.com/services-and-training/support-services/contact-us.html.

CHAPTER 1

Introduction to verifier assets

A verifier is an asset that evaluates the accuracy and deliverability of address records. Use a verifier to determine the accuracy of the input addresses, fix errors in the addresses, and enhance the addresses where possible with additional information.

You can also use a verifier to measure and report on the quality of each address, to retrieve global and country-specific enrichments for addresses, and to verify addresses to the certification standards that a country defines.

To evaluate and update input addresses, the verifier compares the input address data with address reference data. The Secure Agent downloads the reference data to the local system when the mapping runs.

Verifier operations

When you configure a verifier asset, you create a template for the input and output addresses that a Verifier transformation will read and write in a mapping. To create the template, you select a set of input fields that correspond to the address data columns that you will connect to the transformation. Likewise you select a set of output fields that represent the data structure that you want to write to downstream objects in the mapping.

When you run a mapping with a transformation that specifies a verifier, the transformation compares the input address fields to the reference data and performs the actions that the asset defines.

The verifier can perform the following operations:

Verify

A verifier verifies the address data to fix errors and to complete partial address records. To fix an address, the transformation looks for a positive match with an address in the reference data. The transformation replaces any incorrect or absent data elements in the input address with the correct elements in the address reference data.

Format

You can configure a verifier to format the output address data to meet the requirements that the local postal authorities specify. You can also configure a verifier to create an output address in a structure that suits your project or data structure requirements.

Suggest

A verifier can provide you with a list of address suggestions from which you can select the most relevant address. The address list includes the best matches between the input address and the reference data.

Measure

A verifier can measure the quality of an address and help you to understand and analyze the results of the verification process. You select the fields that contain the address status information when you configure the output address structure.

Enrich

A verifier can provide additional information as enrichments to help you better understand and use your address data. You can configure a verifier to provide enrichments that are specific to addresses in individual countries or enrichments that apply to every country. You can also configure a verifier to add geocoordinates as an enrichment to verified addresses.

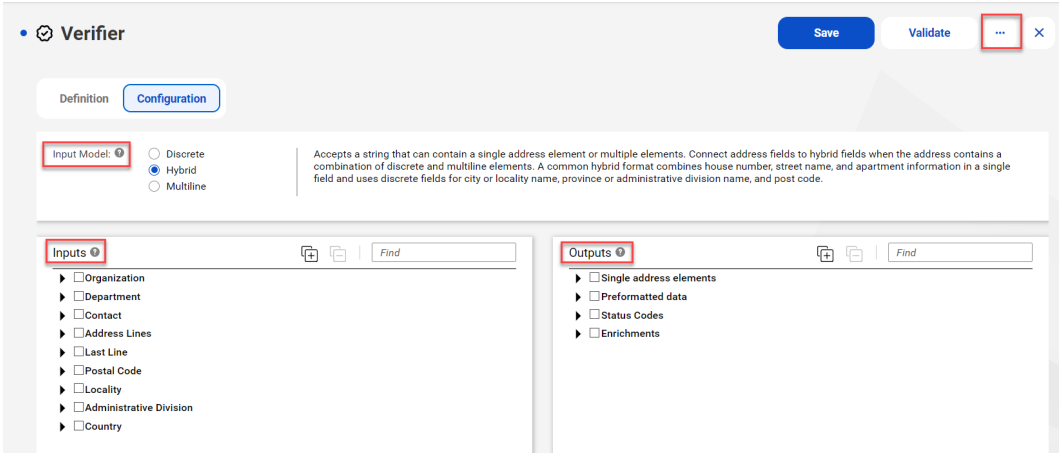
Certify

Postal certification is an additional level of address verification and standardization in Australia, Canada, France, New Zealand, and the United States. Certification requires that a software application validates address accuracy and prepares address records in accordance with the format and quality levels that the national postal carriers expect. The verification engine in Data Quality performs address verification in accordance with the latest certification standards.

Verifier structure

The verifier has configurable options on two tabs. Use the **Definition** tab options to provide a name, description, and location for the asset. Use the **Configuration** tab options to define a template for the addresses that the mapping will read and write at run time.

The following image shows the **Configuration** tab:



The **Configuration** tab has the following options:

1. Input Model. Indicates the type of address template that you will use to define the input address structure. Each input model has a corresponding set of address elements that represent the common ways in which a data source might store address data values.

   Note: The input model selection does not affect the output fields that you can choose from.
2. Inputs. Indicates the available input fields on the model that you select.
3. Outputs. Indicates the output fields that you can use to define the structure of the output address records.
4. Actions. Provides options that you can use to update the address verification properties.

Input model

An input model is a set of address elements that you can use to define the input address fields that the Verifier transformation can read at run time. Select the model that best represents the data structure of the address records that the Verifier transformation will read.

Select one of the following input models for the verifier:

Discrete

Accepts input fields that contain a single address element. Connect address fields to discrete fields when each field represents a unique address element, such as a house number, apartment number, street name, city or locality name, or post code.

Hybrid

Accepts input fields that can contain a single address element or multiple elements. Connect address fields to hybrid fields when the address contains a combination of discrete and multiline elements. A common hybrid format combines house number, street name, and apartment information in a single field and uses discrete fields for city or locality name, province or administrative division name, and post code.

Multiline

Accepts input fields that contain multiple address elements. Connect address fields to multiline fields when each field represents multiple address elements. For example, Address Line 1 in a multiline address might contain "100 Main Street, Suite 1" and Address Line 2 might contain "New York, NY 10001."

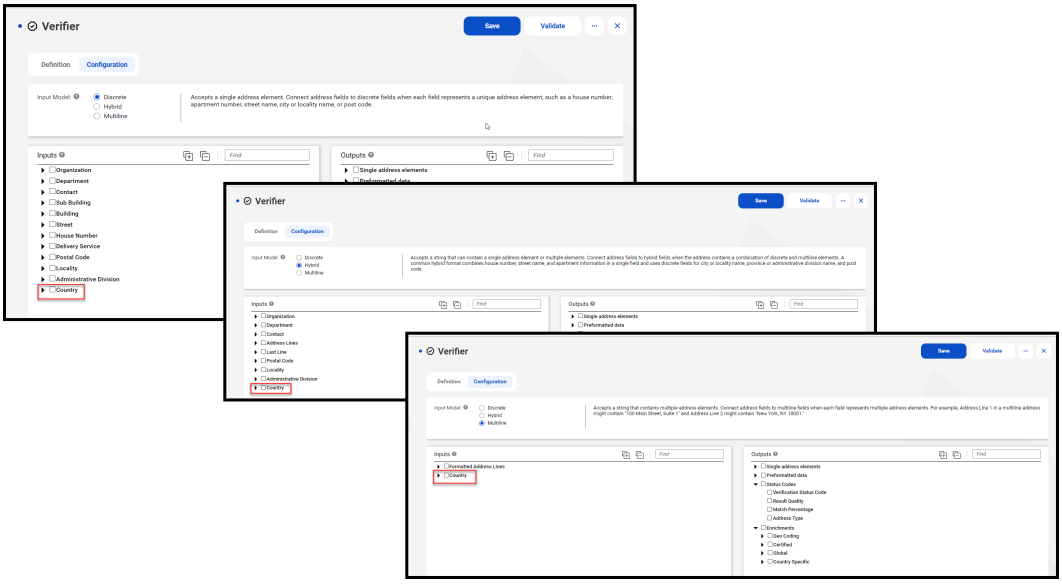
For more information, see “Selecting an input model” on page 16.

Inputs

The Inputs section shows the address fields that you can use to define the structure of your input address data. Select the appropriate fields for the address data that the verification process will analyze at run time.

The address fields that display are based on the input model that you select. You can expand an address field to drill-down to lower levels of the address structure.

The following image shows the input address fields:



The Inputs section includes the following fields:

- Discrete fields.
  Displays input fields that contain data for a single address element. Use when your input address structure assigns individual address elements to discrete fields.
- Hybrid fields.
  Displays input fields that combine discrete fields with fields that can contain multiple address elements. Use when your input address contains a mix of field types.
- Multiline fields.
  Displays input fields that contain multiple address elements. Use when your input address assigns multiple address elements to a single field.

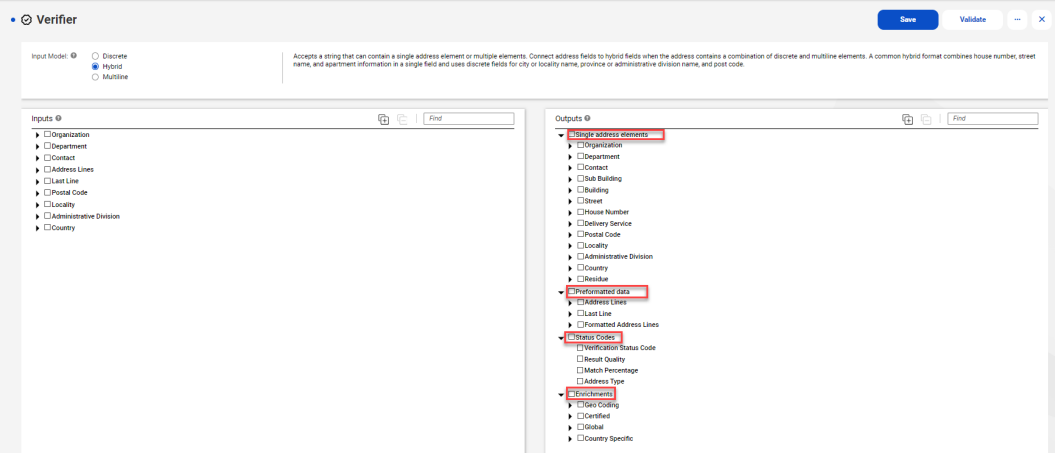
Outputs

The Outputs section shows the address fields that you can use to create an address record. Select the fields that represent the address information that you want the output records to contain.

The output fields in the Single address elements and Preformatted data field groups carry the same types of information as the input fields of the same name. The Single address output fields additionally contain the Residue field group. The Status Codes fields provide information about the output address quality. The Enrichments field add postally-relevant demographic and geographic information to the address records.

You can expand an address field to drill down to lower levels of the address structure.

The following image shows the output groups:



The Outputs section includes the following output groups:

- Single address elements group.
  Contains output fields that correspond to individual address elements. Use to create an address record that assigns the primary elements in the address to individual fields.
- Preformatted data group.
  Contains output fields that correspond to the lines of an address as they appear on an envelope or address label. Use to create an address record that you can print in a manner that is ready for postage.
- Status Codes group.
  Contains status reporting fields that report on the quality of the address. Use to examine the deliverability and accuracy of an address.
- Enrichments group.
  Contains multiple enrichment fields that provide additional information about an addresses and that can increase the usefulness of the address record.

Understanding the address structure

Before you can select the input model and configure the input and output address fields, you must understand the structure of the address data that the Verifier transformation will read and the structure of the addresses that the transformation will write.

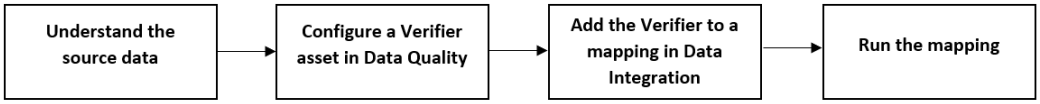
You might work with a data steward to learn more about the source data structure and to understand the required structure of the transformation output. You might also run a profile on the source data to discover the input data structure.

Note: The input and output address structures do not need to be the same.

Address verification process flow

To verify an address, you perform steps in Data Quality and in Data Integration.

The following image shows the steps involved in the verification process:



The verification process includes the following steps:

1. Analyze the structure of the source data, so that you can identify the fields that contain the address elements. You might run a profile to understand the data structure. You might also consult with a data steward who is responsible for the data. You will connect each address field to the appropriate input field in the Verifier asset that you create.
2. In Data Quality, configure a Verifier asset that can process the address data.

   To configure the asset, perform the following steps:

   a. In the Verifier, select the input fields that match the address fields in the source data.

   b. Select the output fields that represent the structure of the address data that you want to write to the mapping target.

      Optionally, add status reporting fields to the output fields. Status reporting fields are optional but important elements that report on the success or otherwise of the verification operation.

      Optionally, add enrichment fields to the output fields.

   c. Review the verification properties, and update the property values if necessary.
3. In Data Integration, define a mapping that can run the verification operation.

   As part of the mapping definition, do the following:

   a. Add the verifier asset to a Verifier transformation.

   b. Connect the verifier asset input and output fields to the upstream and downstream objects in the mapping.
4. Run the mapping and review the outcome of the verification operation. You can modify the Verifier and re-run the mapping to obtain better results.

Certified verification

Postal certification is an additional standard of address verification in Australia, Canada, France, New Zealand, and the United States. You can configure a verifier asset to create output addresses that meet the certification standards.

The following postal services define the certification standards in each country:

Australia Post

Australia Post defines the Address Matching Approval System (AMAS) standard for software applications that validate Australian addresses.

Canada Post

Canada Post defines the Software Evaluation and Recognition Program (SERP) standard for software applications that validate Canadian addresses.

La Poste

La Poste defines the National Address Management Service (SNA) standard for software applications that validate French addresses.

New Zealand Post

New Zealand Post defines the SendRight standard for software applications that validate New Zealand addresses.

United States Postal Service (USPS)

The USPS defines the Coding Accuracy Support System (CASS) standard for software applications that validate United States addresses.

To generate addresses that meet the certification standards, select *Certified verification* on the Process tab of the **Properties** dialog box.

Note: The verification engine can verify addresses to the certification standards that the postal authorities in each country define. The engine can generate certification reports for addresses that you verify in certified mode in Australia, Canada, New Zealand, and the United States. The engine is formally certified by the postal authorities in Australia, New Zealand, and the United States.

Address enrichments

Address enrichments provide additional information that helps you better understand and use the address data. The enrichments include data that increases the precision of the address, provides additional information about the administrative or statistical regions to which the address belongs, and helps the postal service to find the destination mailbox more easily.

For example, a verifier can return the latitude and longitude geocoordinates of an address. For more information, see " Enrichments: Geocoding fields" on page 53.

Many enrichments are specific to addresses in individual countries, such as the census-based information that a verifier can return for United States addresses. The output fields that accompany certified verification are also a form of address enrichment. Some enrichments apply equally to every country. For more information, see " Enrichments: Country Specific fields" on page 64 and " Enrichments: Global fields" on page 63.

Verifier assets and mappings

The verifier that you create is available to the users who create mappings in Data Integration. You or other users can add a Verifier transformation to a mapping and then add a verifier asset to the transformation. The Verifier transformation applies the logic in the verifier asset to the data source that the mapping identifies.

A Verifier transformation works in a similar way to a Mapplet transformation. A Data Integration user connects the transformation inputs and outputs to other objects in the mapping in the same manner as a mapplet connects to other mapping objects. When the Data Integration user runs the mapping, the Verifier transformation applies the verifier logic to the input data and generates output data for downstream objects.

Verifier assets and dimensions

The data quality issues that you may find in your data can fall into a range of common categories. Data Quality assets can identify the categories as dimensions. When you configure an asset in Data Quality, you can use the **Dimension** property to indicate the type of data quality issue that you want the asset to examine.

Find the Dimension property on the **Definition** tab of the asset.

For more information about data quality dimensions, see the *Introduction* in Data Quality documentation.

Reference data

Address reference data contains authoritative data for the postal addresses in a country. For many countries, the address reference data contains complete data for every postal address. When you run a mapping with a Verifier transformation, the transformation compares the input address data to the reference data files.

The mapping compares the elements in each input address separately and collectively against the reference data to verify that the address identifies a single deliverable address. The mapping results include the verified or corrected versions of the address and any additional information that you requested.

Consider the following rules and guidelines for address reference data:

- The Secure Agent downloads the current versions of the files that you need. If the current version of a file is already present on the Secure Agent host machine, the file is not downloaded again.

  The download operation checks the files that the mapping requires and does not necessarily check the status of every reference data file on the system.
- The download operation downloads a hash file with each reference data file. When you run a mapping, the Secure Agent uses the hash file data to verify that the reference data location contains the current version of the file.

  The address reference data files and hash data files are read-only files. Do not move or delete any file that the Secure Agent downloads for address verification.
- The default location of the reference data files is *[Informatica_root_directory]/avdata*. You can review or update the reference data location in the Administrator service.
- If you change the reference data location, the Secure Agent downloads the reference data to the new location on the next occasion that you run a mapping.
- Ensure that you have enough disk space available in the system for the download files. The disk space that you require depends on the countries for which you download data and the number and type of files that you download. The full set of global reference data files takes up approximately 18 GB of disk space.

  If the current mapping requires a large volume of reference data, the download process may take some time.
- The reference data files require a valid license. The verifier reads the license information from one or more license files that the Secure Agent can access. You enter the path to the license files as a data property on the Secure Agent.
- The address reference data that enables certified address verification for United States addresses is not licensed for use outside the United States.

For more information on the reference data properties, see Chapter 5, “Address verification properties” on page 42.

CHAPTER 2

Verifier configuration

When you configure a verifier asset, you select the appropriate address model for the input address structure and you specify the input and output fields. Select the input fields based on the structure of the source data that the mapping will read. Select the output fields based on the task that you want the mapping to perform.

You can also review and update the properties that determine how the Verifier transformation reads, writes, and processes data at run time.

You can configure a verifier to perform the following tasks on address data:

- Verify and correct address data
- Update the address structure
- Generate address suggestions
- Measure address quality
- Generate geocodes
- Retrieve country-specific address enrichments
- Retrieve global address enrichments
- Retrieve certification data

Note: Every task that you perform with a verifier will attempt to verify and correct the address data.

Selecting an input model

Review the source data structure and select the input model for the address data.

1. Examine the input address structure. You can run a profile to understand the source data. If a data steward is assigned to the data, you might also consult with the data steward.
2. Select one of the following address models:
   - **Discrete**. The discrete input fields contain address information on a single data element, such as a house number, street, or post code.
   - **Hybrid**. The hybrid input fields can contain a single address element or multiple address elements.
   - **Multiline**. The multiline input model contains multiple address elements. Each input column corresponds to a line of an address.

For more information, see "Input model" on page 10.

Selecting the input fields

Select the input fields that correspond to the address fields in the data that the Verifier transformation will read.

For example, if the input data contains the house number, street, and apartment in a single field, you might select an Address Lines field in the Hybrid input model. You can enter the remaining address information, such as the locality, province, and postal code in their respective fields.

If the input data contains street and locality in a single field, select a Formatted Address Lines field in the Multiline input model.

If the input data contains the address information in individual address fields, select the corresponding address fields in the Discrete input model.

Note: An address might use more than one level within a given field. For example, an address in India can contain four locality levels. The element of the largest size is level 1. Levels 2, 3 and other levels are sub-divisions of the preceding element. Disregard any level that the address does not use.

For more information about the uses of the input address fields, see Chapter 7, “Input address fields” on page 47.

Selecting the output fields

The verifier provides you with a range of output address fields. The output fields that you select depend on your objectives for the address verification process. In some cases, the selection of the output fields might overlap. For example, when you select output fields to verify an address or generate address suggestions, you might select the same output fields.

You can use the output fields to update the structure of the address data. Additionally, you can select Status Codes and Enrichments fields to perform tasks such as reporting on the quality of each address and retrieving enrichment data for valid addresses.

For more information about the uses of the output address fields, see Chapter 7, “Input address fields” on page 47.

Selecting output fields to verify and correct addresses

Verify your address records to determine the accuracy and deliverability of the addresses.

Address verification is the basic objective of all tasks that a verifier can perform. All tasks that you perform with a verify asset will try to verify and correct the input address data.

If your objective is to verify your addresses and to preserve the input address structure, you can choose the same fields for input and output.

1. Select the input model for the address data.
2. Select the input fields. The source data structure defines the input fields for the address.
3. Select the output fields. You define the output fields based on the result that you want to achieve.

   For example, the source data might include the following address:

   ```
   1960 W CHELSEA AVE STE 2006R
   ALLENTOWN PA 18104
   USA
   ```

The following table shows the input fields that correspond to the address data:

Address Information	Input Fields	Input Model
1960 W CHELSEA AVE STE 2006R	Formatted Address Lines 1	Multiline
ALLENTOWN PA 18104	Formatted Address Lines 2	Multiline
USA	Country	Multiline

The following table shows the output fields that you can select to verify the address data:

Output Fields	Address Information
Formatted Address Lines 1	1960 W CHELSEA AVE STE 2006R
Formatted Address Lines 2	ALLENTOWN PA 18104
Country ISO3 1	USA

Selecting output fields to update the address structure

Use the output fields to organize the address data into a set of columns that suits your project or data storage requirements. For example, your current address records might contain multiple address elements in a single field. You can specify individual fields for each address element in the output address.

1. Select the input model for the address data.
2. Select the input fields. The source data structure defines the input fields for the address.
3. Select the output fields. You define the output fields based on the result that you want to achieve.

   For example, the source data might include the following address:

   ```
   1960 W CHELSEA AVE STE 2006R
   ALLENTOWN PA 18104
   USA
   ```

   The following table shows the input fields that correspond to the address data:

Address Information	Input Fields	Input Model
1960 W CHELSEA AVE STE 2006R	Formatted Address Lines 1	Multiline
ALLENTOWN PA 18104	Formatted Address Lines 2	Multiline
USA	Country	Multiline

The following table shows the output fields that you can select to update the address structure of the address data:

Output Fields	Address Information
Sub Building 1	STE 2006R
Street 1	W CHELSEA AVE
House Number 1	1960
Postal Code 1	18104
Locality 1	ALLENTOWN
Administrative Division Name 1	PA
Country Name 1	UNITED STATES

Selecting output fields to generate address suggestions

If your source data contains an incomplete address, or an address of uncertain quality, the address verification mapping can return valid suggestions for the addresses from the reference data. To receive the list of address suggestions, set the verification mode in the verifier properties to *Verification with suggestions*.

1. Select the input model for the address data.
2. Select the input fields. The source data structure defines the input fields for the address.
3. Select the output fields. You define the output fields based on the result that you want to achieve.

   For example, the source data might include the following address:

   ```
   1960 W CHELSEA AVE STE 2006R
   18104
   USA
   ```

   The following table shows the input fields that correspond to the address data:

Address Information	Input Fields	Input Model
1960 W CHELSEA AVE STE 2006R	Formatted Address Lines 1	Multiline
18104	Formatted Address Lines 2	Multiline
USA	Country	Multiline

The following table shows the output fields that you can select for the address data:

Output Fields	Address Information
Sub Building 1	STE 2006R
Street 1	W CHELSEA AVE

Output Fields	Address Information
House Number 1	1960
Postal Code 1	18104
Locality 1	ALLENTOWN
Administrative Division Name 1	PA
Country Name 1	UNITED STATES

Note: The mapping will return the complete address, including the city and state information.

4. Choose the *Verification with suggestions* option from the **Verification mode** field of the **Process** tab property to generate the list of address suggestions for the address.

Selecting output fields to measure address quality

You measure the quality of the address data to check the deliverability of the addresses and to identify any address that the address verification mapping cannot correct. Select output fields that write each address data element to a separate field. Also, select the address validation status field that provide detailed information on the accuracy and completeness of the output data.

1. Select the input model for the address data.
2. Select the input fields. The source data structure defines the input fields for the address.
3. Select the output fields. You define the output fields based on the result that you want to achieve. Include the Status Codes fields in the output.

   For example, the source data might include the following address:

   ```
   1960 W CHELSEA AVE STE 2006R
   ALLENTOWN PA 18104
   USA
   ```

   The following table shows the input fields that correspond to the address data:

Address Information	Input Fields	Input Model
1960 W CHELSEA AVE STE 2006R	Formatted Address Lines 1	Multiline
ALLENTOWN PA 18104	Formatted Address Lines 2	Multiline
USA	Country	Multiline

   The following table shows the output fields that you can select for the address data:

Output Fields	Address Information
Sub Building 1	STE 2006R
Street 1	W CHELSEA AVE

Output Fields	Address Information
House Number 1	1960
Postal Code 1	18104
Locality 1	ALLENTOWN
Administrative Division Name 1	PA
Country Name 1	UNITED STATES
Verification Status Code	V
Match Percentage	100

Selecting output fields to generate geocodes

You can add geocoordinate data to address records to improve the likelihood of delivery, for example in rural areas. The geocodes indicate the closest latitude and longitude coordinates for each address that verification can provide, based on the level of precision in the reference data and the precision level that you select. Select the Geo Coding fields to add geocodes to the address records.

1. Select the input model for the address data.
2. Select the input fields. The source data structure defines the input fields for the address.
3. Select the output fields. You define the output fields based on the result that you want to achieve.

   Include the geocoding fields that you require in the output. Find the fields under **Enrichments** > **Geo Coding** in the Outputs section.

   For example, the source data might include the following address:

   ```
   1960 W CHELSEA AVE STE 2006R
   ALLENTOWN PA 18104
   USA
   ```

   The following table shows the input fields that correspond to the address data:

Address Information	Input Fields	Input Model
1960 W CHELSEA AVE STE 2006R	Formatted Address Lines 1	Multiline
ALLENTOWN PA 18104	Formatted Address Lines 2	Multiline
USA	Country	Multiline

   The following table shows the output fields that you can select for the address data:

Output Fields	Address Information
Sub Building 1	STE 2006R
Street 1	W CHELSEA AVE

Output Fields	Address Information
House Number 1	1960
Postal Code 1	18104
Locality 1	ALLENTOWN
Administrative Division Name 1	PA
Country Name 1	UNITED STATES
Arrival Point Coordinates	[Latitude and longitude coordinates]
Arrival Point Accuracy Code	[Geocoding accuracy code value]

Selecting output fields to retrieve certification data

You can retrieve certification data to verify that your addresses meet the data standards that a local postal service may define.

The certification standards require that each address in an address set includes values that can affirm the deliverability and accuracy of the address. To receive the certification values, set the verification mode in the verifier properties to *Certified verification*.

1. Select the input model for the address data.
2. Select the input fields. The source data structure defines the input fields for the address.
3. Select the output fields. You define the output fields based on the result that you want to achieve.

   Include the CASS Status, Barcode, and Carrier Route fields in the output. Find the fields under **Enrichments** > **Certified** > **UnitedStates-CASS** in the Outputs section.

   For example, the source data might include the following address:

   ```
   1960 W CHELSEA AVE STE 2006R
   ALLENTOWN PA 18104
   USA
   ```

   The following table shows the input fields that correspond to the address data:

Address Information	Input Fields	Input Model
1960 W CHELSEA AVE STE 2006R	Formatted Address Lines 1	Multiline
ALLENTOWN PA 18104	Formatted Address Lines 2	Multiline
USA	Country	Multiline

The following table shows the output fields that you can select for the address data:

Output Fields	Address Information
Sub Building 1	STE 2006R
Street 1	W CHELSEA AVE
House Number 1	1960
Postal Code 1	18104
Locality 1	ALLENTOWN
Administrative Division Name 1	PA
Country Name 1	UNITED STATES
Certification Status	[Certification status code value]
Barcode	[An 11-digit number that represents the delivery point for the record.]
Carrier Route	[A four-character code assigned to a mail delivery or collection route within a 5-digit ZIP Code.]

CHAPTER 3

Verifier asset properties

You can configure properties on a verifier asset that determine how a mapping that includes the asset will read, write, and process addresses. To view the properties, open the **Properties** dialog box from the Actions menu on the Data Quality toolbar.

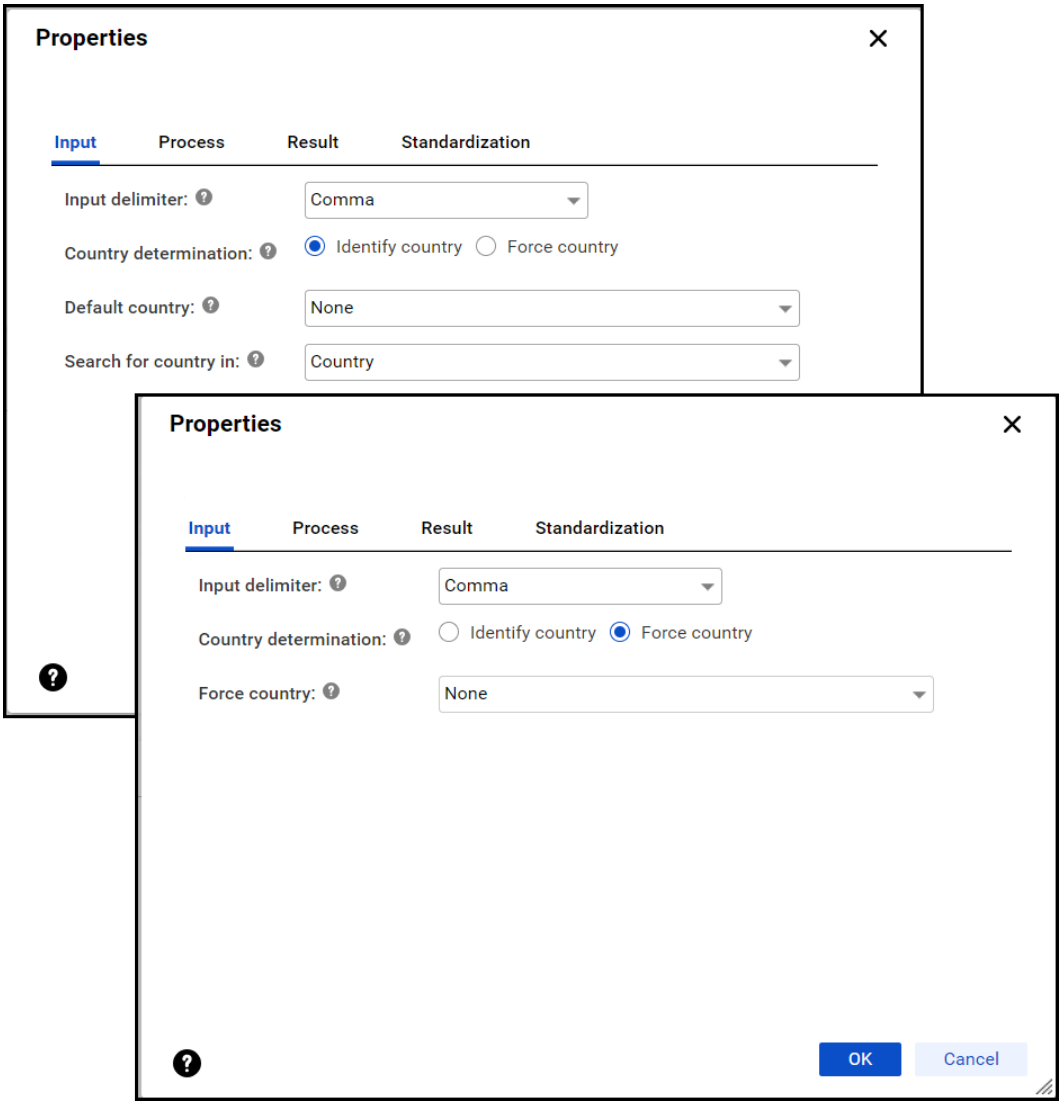
The **Properties** dialog box displays the options on **Input**, **Process**, **Result** and **Standardization** tabs. On the **Input** tab, you can specify the delimiter that the mapping uses to identify the input fields and set options that identify the destination country for the addresses. On the **Process** tab, you can specify the type of verification that you want the mapping to perform and the depth at which level you want to verify the addresses. On the **Result** tab, you can specify how the mapping returns address suggestions and how the mapping can update addresses that return an I value for the verification status code. On the **Standardization** tab, you can specify the language and formatting options that the mapping applies to the output data.

Edit the properties to suit your source data and your project requirements.

Input properties

The **Input** tab properties determine how the mapping parses the input fields and can also assign a destination country to the addresses.

The following image shows the **Input** tab properties:



You can review and update the following properties:

Input delimiter

Specifies the field separator that the input addresses use. For example, if you set the Input delimiter to comma, the verifier treats strings on either side of a comma as separate fields. The mapping treats each line of data as a separate field.

You can select one of the following options:

- Comma. Identifies a comma as the field separator. Comma is the default value.
- Semicolon. Identifies a semicolon as the field separator.
- Tab. Identifies a tab character as the field separator.

Country determination

Determines how verification identifies the destination country for an address.

Select one of the following options:

- Identify country. Searches for country information in the field or fields that you specify.

- Force country. Instructs the mapping to assign all addresses to the country that you specify, regardless of any country information in the address.

Default country

Applies when you select *Identify country* as the Country determination option. Assigns a country to any address that does not contain country information in the field that you specify. Select the country from the drop-down list.

Force country

Applies when you select *Force country* as the Country determination option. Assigns the country that you select to all input addresses. Select the country from the drop-down list.

If you select *None*, the asset ignores the property.

Search for country in

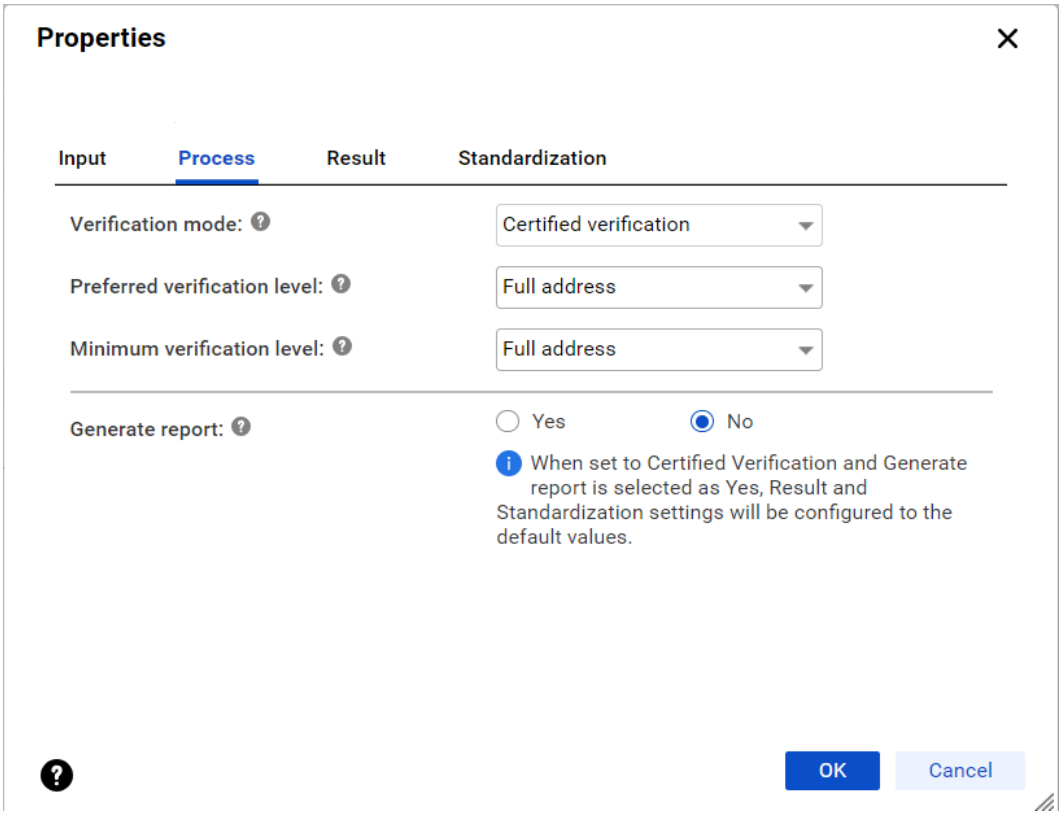
Applies when you select *Identify country* as the Country determination option. Identifies the address field or fields in which the mapping looks for country information.

You can specify that the mapping searches the Country field, any formatted address lines in the address, or a combination of the Country and formatted address line fields. Country is the default value.

Process properties

The **Process** tab properties specify the verification process that the address verification mapping applies to the data and also specify the depth to which the mapping verifies the address data.

The following image shows the **Process** tab properties:



You can set the following properties:

Verification mode

Identifies the address verification process that the mapping runs on the input data.

You can select one of the following options:

- Verification only. Default value. The mapping verifies and corrects the input address data.
- Verification with suggestions. The mapping verifies and corrects the input address data and returns address suggestions for any input address that is ambiguous or incomplete.
- Certified verification. The mapping verifies and corrects the input address data to the certification standards that the postal authority in a country specifies. You can perform certified verification on addresses in Australia, Canada, France, New Zealand, and the United States.

  The verifier complies with the following postal certifications:

  - Address Matching Approval System (AMAS) certification for Australia Post.
  - Coding Accuracy Support System (CASS) certification for the United States Postal Service.
  - SendRight certification for New Zealand Post.
  - Service National de L'Adresse (SNA) certification for La Poste of France.
  - Software Evaluation and Recognition Program (SERP) certification for Canada Post.

The mapping can also generate a certification report for addresses that you verify in Australia, Canada, New Zealand, and the United States.

Preferred verification level

Specifies the depth of address information that the mapping seeks to verify in the input data. The property works in tandem with the **Minimum verification level** property.

Minimum verification level

Specifies the minimum depth of information that the mapping can accept in an address that it considers valid. The property works in tandem with the **Preferred verification level** property.

You can select one of the following options on the Preferred verification level and Minimum verification level properties:

- Full address. Default value on both properties. The mapping attempts to verify all available information.
- Premise level. The mapping attempts to verify all information to building or house number level.
- Street level. The mapping attempts to verify all information to street or delivery service level.
- Locality level. The mapping attempts to verify all information to locality level. The mapping ignores delivery service information. The mapping can also verify postal codes.
- Primary locality level. The mapping attempts to verify all information to locality level 1 and ignores more granular or lower-level locality information. The mapping can also verify postal codes.

If you set both levels to Full and the mapping cannot verify an input data value, address verification invalidates the address.

Generate report

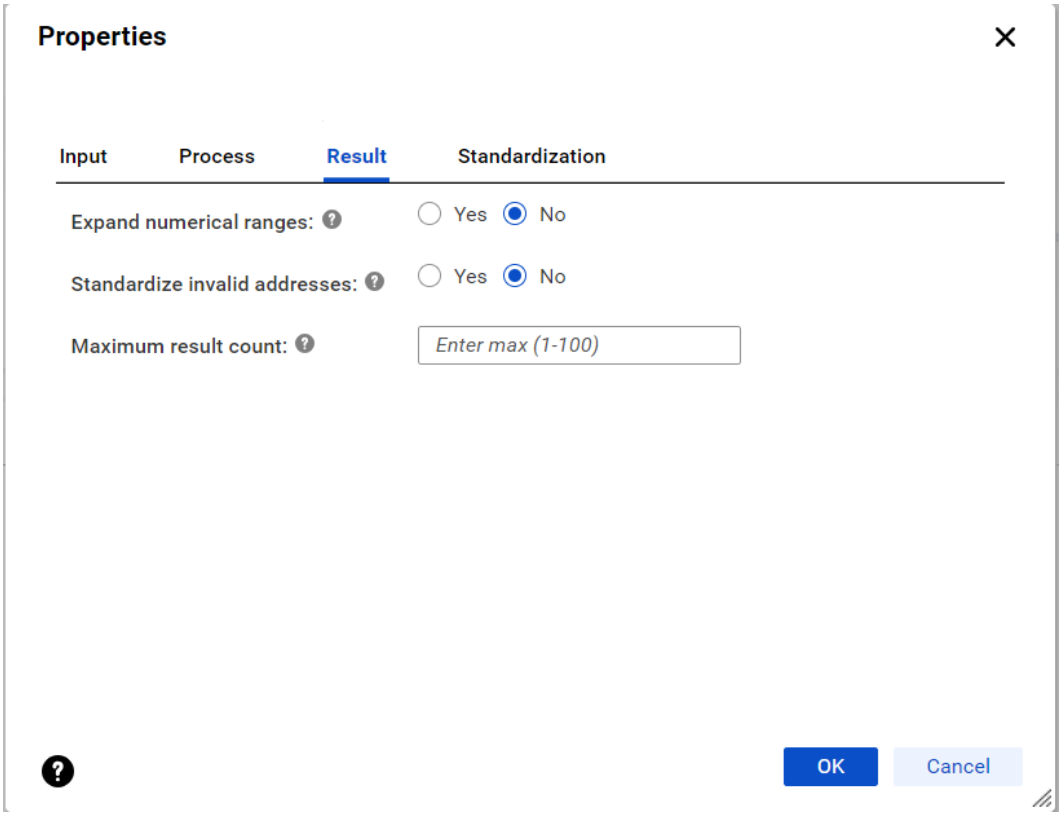
Specifies whether to generate a report that describes the address set that you verify in certified mode. Choose Yes to generate the report.

The **Generate report** property appears when you set the **Verification mode** property to Certified verification. For more information about certification reports, see "Certification report details" on page 32.

Result properties

The **Result** tab properties specify how the mapping returns address suggestions and whether the mapping updates addresses that return an I value for the verification status code.

The following image shows the **Result** tab properties:



You can set the following properties:

Expand numerical ranges

Specifies whether to expand house, building, or sub-building number ranges into individual numbers in address suggestions when the individual numbers are available in the reference data. The default value is No.

Standardize invalid addresses

Determines whether to standardize common address elements in addresses that do not otherwise pass validation, such as addresses that return an I score in the Verification Status Code field. Use the property when you do not expect to find valid versions of the address data and you want to standardize terms that occur throughout the data. The default value is No.

Address verification can standardize the following address elements:

- Street types, for example Road to Rd.
- Pre-directional and post-directional indicators, for example West to W.
- Delivery service terms, for example Post Office Box to P. O. Box.
- Sub-building descriptors, for example Apartment to Apt.
- State, province, or regions, for example California to CA.

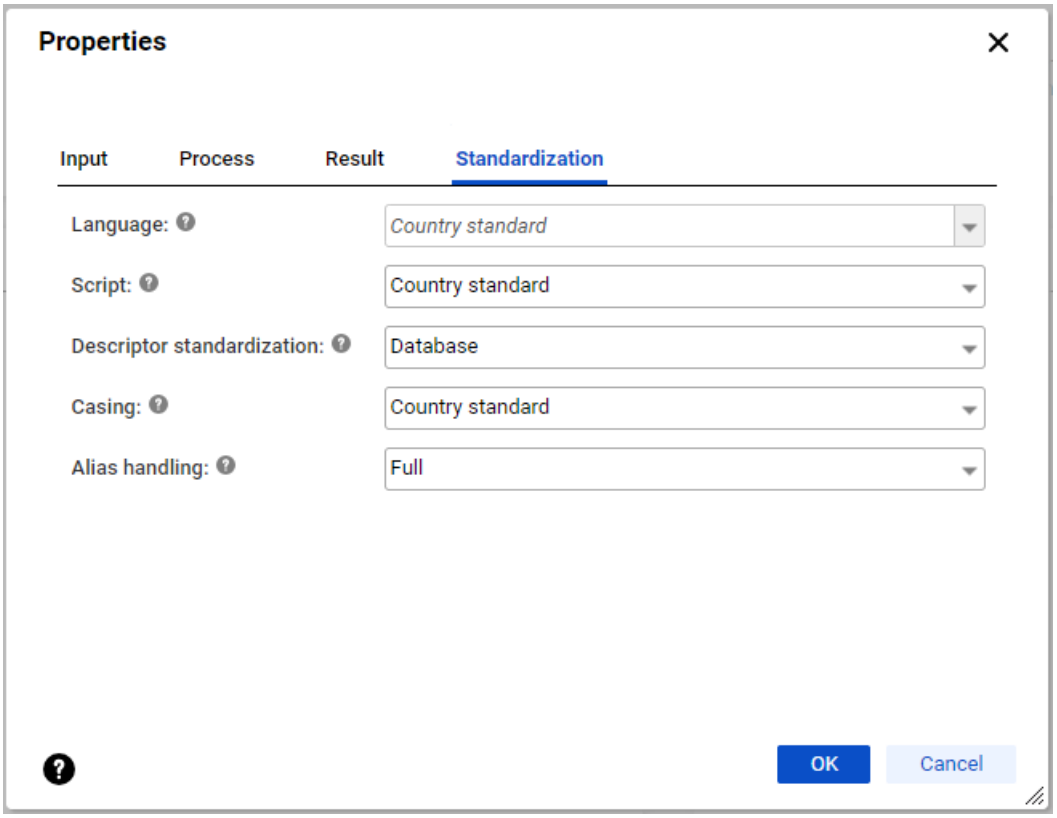
Maximum result count

Specifies the maximum number of address suggestions that address verification can return for an input address when the **Verification mode** property is set to *Verification with suggestions*. You can set the property to a value from 1 through 100. The default value is 20.

Standardization properties

The **Standardization** tab properties specify the language and formatting options that the mapping applies to the output data.

The following image shows the **Standardization** tab properties:



You can set the following properties:

Language

Indicates how the verifier selects the language in which to return an output address. You can set the property to return address data in the default language for the address country, or you can opt to preserve the input language in the output address data where it is possible to do so. Additionally, the **Language** property options include a list of ISO 639-3 codes that identify a range of languages around the world. You can select one or more language codes from the list.

Before you select a non-default option on the property, ensure that the Secure Agent that runs address verification mappings has access to reference data files for the country that you specify.

You can select one of the following options:

Country standard

Default value. Returns all available address data in the default language that the reference data files specify for the country.

Preserve input

Returns the address data in the language that the input data uses. Preserves the language if the reference data contains the address in the input language.

Select a country from a list of ISO language codes

Returns all available address data in the language that you select.

You can select multiple languages. Select the languages in order of preference. If the verifier cannot return the address data in a language that you specify, it tries the next language.

Script

Indicates the character set to use for the output data when the country supports more than one character set.

Country standard

Default value. Returns the address in the principal character set in which the reference data stores the address.

Country alternate

Returns the address in an alternative character set that the reference data stores for the address, if the character set is present. Otherwise uses the principal script.

Latin

Returns the address in a Latin script.

Preserve input

Returns the address in the character set that the input data uses.

Transliteration type

Indicates whether the transliteration process uses the default transliteration type for the address or an alternative transliteration type. Applies when you select *Latin* or *Preserved input* in *Script* property.

Limit Latin characters

Determines the extent to which the verifier restricts the use of characters from Latin character sets in an output address. Applies when you select *Latin* or *Preserved input* in *Script* property.

You can select one of the following options:

NoLimit

Returns the transliterated output in full. NoLimit is the default value.

Latin1

Limits the Latin characters to the Latin-1 (ISO-8859-1) character set. For example, replaces the following characters with Latin-1 characters:

Input	Output (Latin-1)
ä	ä
á	á
à	à
ả	a
ā	a

ASCIISimplified

Changes non-ASCII Latin characters to characters in the ASCII character set. Uses basic conversion, for example ö to o.

ASCIIExpanding

Changes non-ASCII Latin characters to characters in the ASCII character set. Uses extended conversion, for example ö to oe.

Note: Verify that your reference data files support the characters that the **Script** options specify. For example, a database that supports ASCII characters only will not store all Latin characters.

Descriptor Standardization

Specifies whether to abbreviate street and directional descriptors when abbreviations are available in the reference data.

You can select one of the following options:

- Database. Default value. Returns the standard element descriptors from the reference data.
- Long version. Returns the expanded form of the element descriptors. For example, a mapping returns STREET for the input element ST.
- Preserve input. Copies the element descriptors from the input to the output.
- Short version. Returns the abbreviated form of the element descriptors. For example, a mapping returns AVE for the input element AVENUE.

Casing

Specifies the character case for the output address data.

You can configure one of the following options:

- Country standard. Default value. Returns the output in the standard casing style that the reference data uses for the country rules.
- Lower. Returns the output in lowercase letters.
- Mixed. Returns the output in mixed case according to country-specific casing guidelines.
- Upper. Returns the output in uppercase letters.

Alias handling

Identifies the policy that address verification applies to recognized alternative names for address elements in an input address.

You can select one of the following options:

- Full. Retains the alias for the address element. The default value is Full.
- PreserveOfficial. Returns the address element name that the postal authority prefers. The name may be the official name or the alias, depending on the local usage.
- PostalAdmin. Returns the official name of the address element.

Certification report details

When you submit a certified address set to a postal authority, you include a certification report with the address set. The Secure Agent can generate a certification report for an address data set in Australia,

Canada, New Zealand, and the United States. The report contains information that you enter as properties on the verifier asset.

The Secure Agent generates the report when you run a mapping that contains the verifier asset. The Secure Agent also downloads the report to a directory on the Secure Agent machine.

The default download location for certification reports is [Informatica_root_directory]/avreports. You can review and update the download location on the CertifiedReportLocation property in the CDQAV property set. For information about CDQAV properties, see "Verification properties in the CDQAV property set" on page 42.

Use the **Choose report to generate** property on the verifier asset to identify the certification standard for which you'll generate a report. Find the property on the **Process** tab in the verifier asset properties.

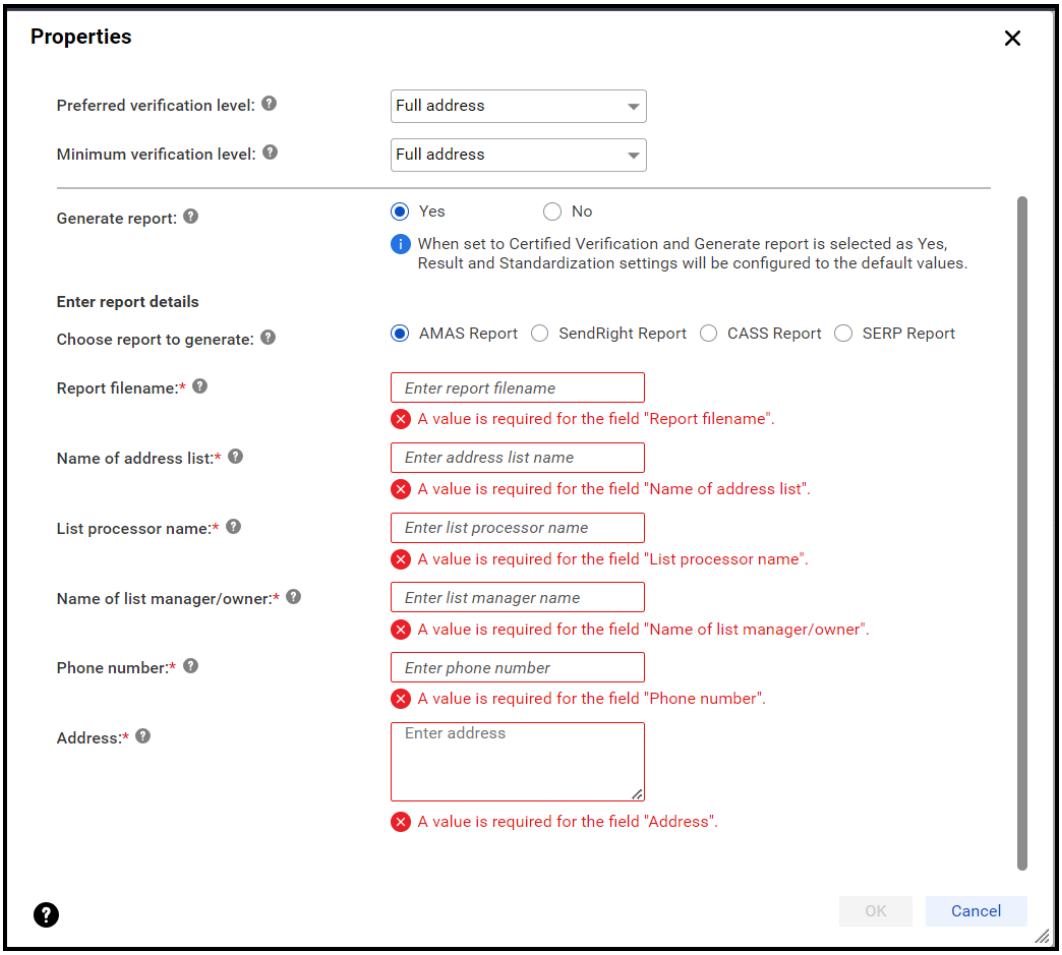
You can select one of the following options:

- AMAS Report. Select for certified addresses in Australia.
- CASS Report. Select for certified addresses in the United States.
- SendRight Report. Select for certified addresses in New Zealand.
- SERP Report. Select for certified addresses in Canada.

When you select an option, the property sheet displays a series of fields that you can complete. Enter the data that each field requires.

AMAS report fields

The following image shows the AMAS report fields:

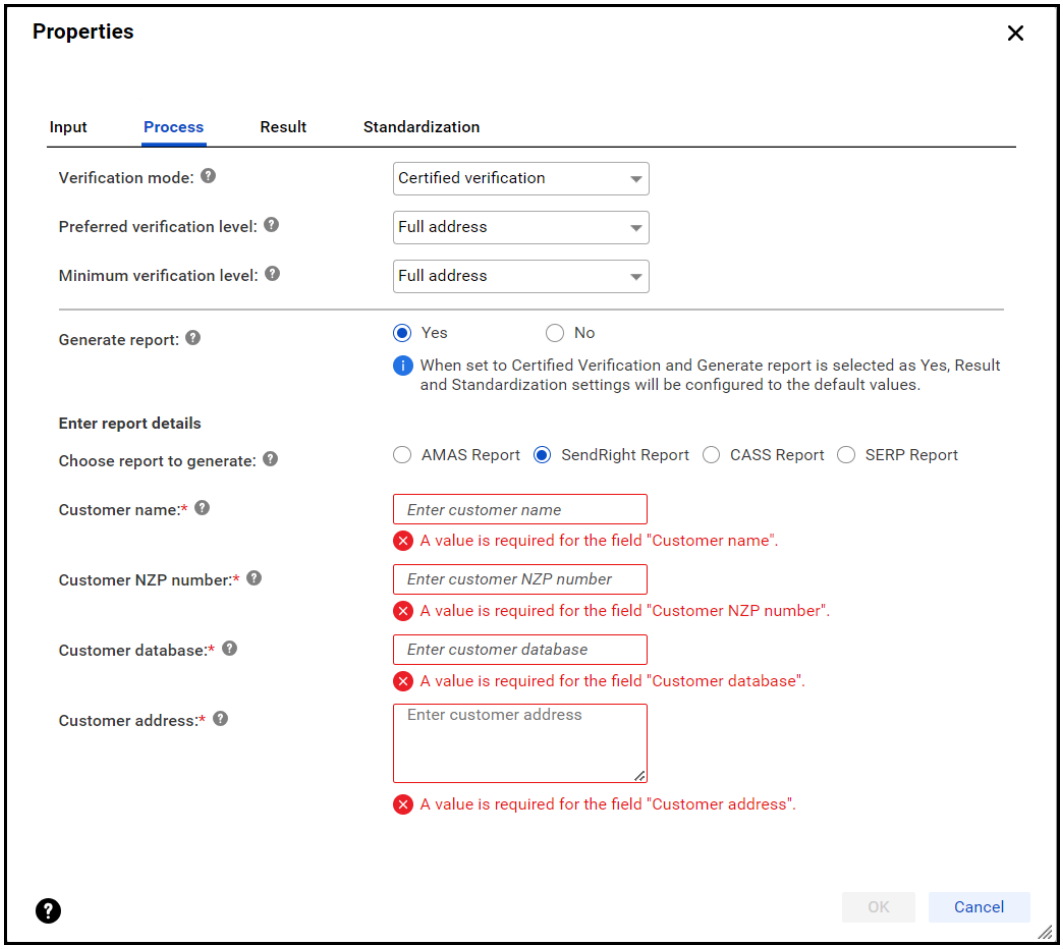


The following table describes the AMAS report fields:

Field	Description
Report filename	Name of the report that the address verification operation creates.
Name of address list	Name of the address record set that you submit to Australia Post.
List processor name	Name of the organization that submits the address record set.
Name of list manager/owner	Name of the manager or owner of the address data in the organization.
Phone number	Contact telephone number of the organization that submits the address record set.
Address	Address of the organization that submits the address record set.

SendRight report fields

The following image shows the SendRight report fields:

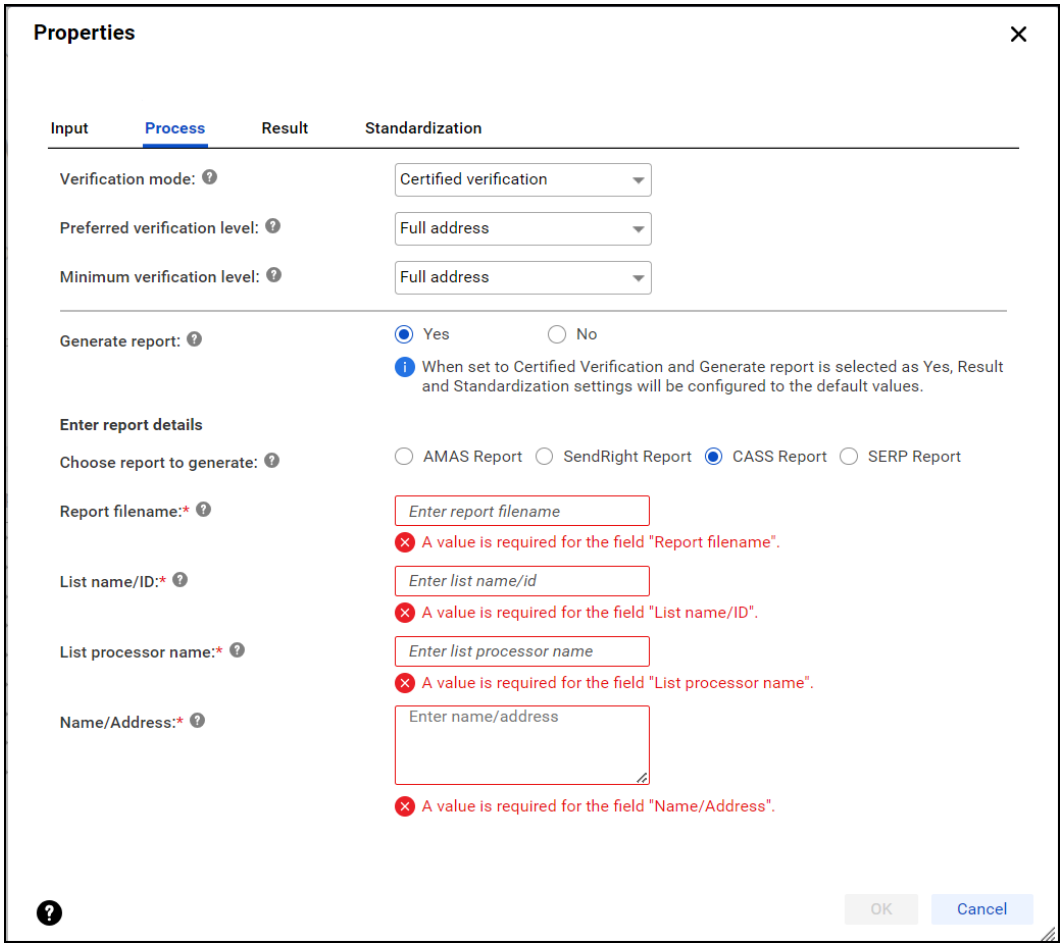


The following table describes the SendRight report fields:

Field	Description
Customer name	The name of the organization that submits the address record set.
Customer NZP number	The New Zealand Post account number of the organization that submits the address record set. If a mailhouse submits the records on behalf of the organization, enter the mailhouse transport identification (TPID) number.
Customer database	The name of the file that contains the address record set.
Customer address	The address of the organization that submits the address record set.

CASS report fields

The following image shows the CASS report fields:

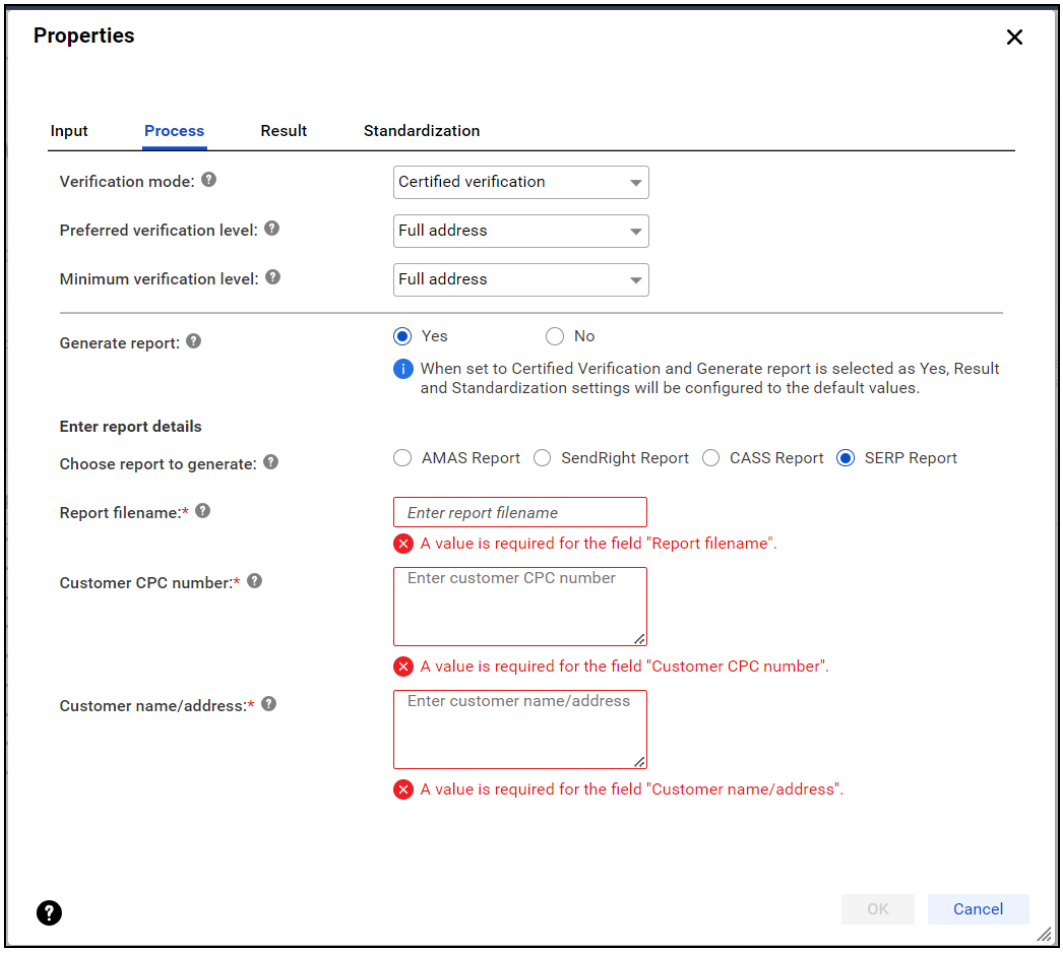


The following table describes the CASS report fields:

Field	Description
Report filename	Name of the report that the address verification operation creates.
List name/ID	Name or identification number of the address list that your organization submits to the mail carrier.
List processor name	Name of the organization that performs the address verification.
Name/Address	Postal name and address of the organization that performs the address verification.

SERP report fields

The following image shows the SERP report fields:



The following table describes the SERP report fields:

Field	Description
Report filename	Name of the report that the address verification operation creates.
Customer CPC number	Customer number that the Canada Post Corporation issues to the organization that performs the address verification.
Customer name/address	Name and address of the organization that performs the address verification.

CHAPTER 4

Frequently asked questions

The frequently asked questions provide quick solutions on how to set up various operations in a verifier. Each question corresponds to a value on a property or option in the verifier.

Why does the verifier asset show multiple instances of a single field?

The verifier asset displays multiple input and output fields for many field types. Use the fields to define an input and output address structure that best suits your address records and your data needs.

In many cases, the fields allow the asset to verify addresses that contain multiple levels of information for a single element. For example, a United Kingdom address might include the district of BETHNAL GREEN and the town of LONDON. To verify the address, you select the Locality 1 and Locality 2 input and output fields on the asset. At run time, the Data Integration user who adds the asset to a Verifier transformation can assign the fields that contain BETHNAL GREEN and LONDON to the Locality 2 and Locality 1 fields respectively.

Additionally, a single Address Lines or Formatted Address Lines field can contain data for multiple address elements. Your address records might use the fields to create address data that matches the standard layout of a printed address. For example, you might select the Formatted Address Lines 1 and Formatted Address Lines 2 fields for the following address data:

```
Field 1: 350 5TH AVE
Field 2: NEW YORK NY 10118
```

Note: You can select the Address Lines 1 field and the Last Line 1 field for the same address.

How do I set the input and output address properties for an address?

The toolbar on the **Configuration** tab includes an **Actions** menu option. Use the menu option to open the **Properties** dialog box. The dialog box contains properties on four tabbed pages that you can configure based on the type of information that you want the address verification mapping to read and write.

For more information about configuring the properties, see Chapter 3, “Verifier asset properties” on page 24.

How do I standardize street and directional descriptors?

In the **Properties** dialog box, select the **Standardization** tab. The **Standardization** tab includes the **Descriptor standardization** property, which you can use to standardize the descriptor data.

You can choose one the following options to standardize the address elements:

- Database, or the reference data standard
- Long version
- Preserve input
- Short version

For more information about setting the **Standardization** tab properties, see "Standardization properties" on page 30.

How do I activate suggestions for addresses that I cannot verify?

In the **Properties** dialog box, select the **Process** tab. The **Process** tab includes the **Verification mode** property, which you can use to activate suggestions for an address. Choose the *Verification with suggestions* option to receive address suggestions.

For more information about setting the **Process** tab properties, see "Process properties" on page 26.

How do I set the level of verification for an address?

In the **Properties** dialog box, select the **Process** tab. The **Process** tab includes the **Preferred verification level** and **Minimum verification level** properties, which you can use to set the level of verification for an address.

The following list identifies the levels that you can set on each property, from the lowest or most precise level to the highest or least precise level:

- Full address
- Premise level
- Street level
- Locality level
- Primary locality level

Select a preferred verification level at the same level of granularity as the minimum verification level or at a lower level. *Full address* is the default value on both properties.

For more information about setting the **Process** tab properties, see "Process properties" on page 26.

How do I standardize common terms in addresses that fail verification?

Use the **Standardize invalid addresses** property on the **Result** tab to standardize common address terms. For example, you might decide to change all instances of Apartment to Apt. You might select the property as a fallback option for addresses of low quality that do not pass verification. Choose *Yes* to standardize the terms.

For more information about setting the **Result** tab properties, see "Result properties " on page 28.

How do I set the output address data to upper case?

In the **Properties** dialog box, select the **Standardization** tab. The **Standardization** tab includes the **Casing** property, which you can use to set the casing to upper case.

For more information about setting the **Standardization** tab properties, see "Standardization properties" on page 30.

How do I set the destination country for the input addresses?

In the **Properties** dialog box, select the **Input** tab. The **Input** tab includes the **Country determination** property. Use the *Identify country* or *Force country* option on the property to determine how verification identifies the destination country.

Use the **Default Country** property to identify a country for any input address that does not contain country identification data. You can select the types of fields in which address verification searches for country information. The **Default Country** property does not apply to any address that identifies a destination country.

Use the **Force Country** property to specify a common destination country for all input addresses. The **Force Country** property overrides any country information in an input address.

To apply either property, choose a country name from the respective country list.

For more information about setting the **Input** tab properties, see "Input properties" on page 24.

How do I specify the character set for the output address data?

In the **Properties** dialog box, select the **Standardization** tab. The **Standardization** tab includes the **Script** property, which you can use to set the character set for the output addresses. Select a character set that accommodates the verified addresses in the data set.

For more information about setting the **Standardization** tab properties, see "Standardization properties" on page 30.

Can I expand the numerical ranges in address suggestions?

The **Expand numerical ranges** property of the **Result** tab helps you expand the house or building number ranges into individual numbers in address suggestions when the individual numbers are available in the reference data. Choose *Yes* to expand the numerical ranges.

For more information about setting the **Result** tab properties, see "Result properties " on page 28.

How do I change the language of the output address data?

In the **Properties** dialog box, select the **Standardization** tab. The **Standardization** tab includes the **Language** property, which you can use to determine how the verifier selects the language in which to return an output address. The property applies in countries where the reference data contains elements in more than one language.

You can select one of the following options:

Country standard

Default value. Returns all available address data in the default language that the reference data files specify for the country.

Preserve input

Returns the address data in the language that the input data uses. Preserves the language if the reference data contains the address in the input language.

Select a country from a list of ISO language codes

Returns all available address data in the language that you select.

You can select multiple languages. Select the languages in order of preference. If the verifier cannot return the address data in a language that you specify, it tries the next language.

For more information about setting the **Standardization** tab properties, see "Standardization properties" on page 30.

Can the Secure Agent download CASS data files?

If your Secure Agent is located in the United States, it can download CASS data files for certified address verification. You can confirm the download status for CASS data on the **DownloadCASSdata** property on the Secure Agent.

For information about the property, see "Verification properties in the CDQAV property set" on page 42.

CHAPTER 5

Address verification properties

Informatica Intelligent Cloud Services applies a range of properties to the address verification process. The properties provide configuration information to the runtime environment, including the amount of memory to assign to a verification process and the identities of any reference data files to preload into memory.

Configure the properties on the Secure Agent that will run a mapping with a Verifier transformation. The Secure Agent stores the properties in the CDQAV property set on the Data Integration Server.

For more information about the CDQAV properties, see "Verification properties in the CDQAV property set" on page 42.

Configuration properties in earlier releases

In earlier releases of Informatica Intelligent Cloud Services, the Data Integration Server stored address verification properties in the IDQAD property set. The IDQAD property set remain visible on the Data Integration Server for user reference. The IDQAD properties do not impact the verifier asset or address verification operations.

Verification properties in the CDQAV property set

The properties in the CDQAV property set determine how the Secure Agent reads address reference data files and allocates memory for address verification. Configure the properties in the Data Integration Server service on the Secure Agent on which you'll run address verification mappings.

The following table describes the properties:

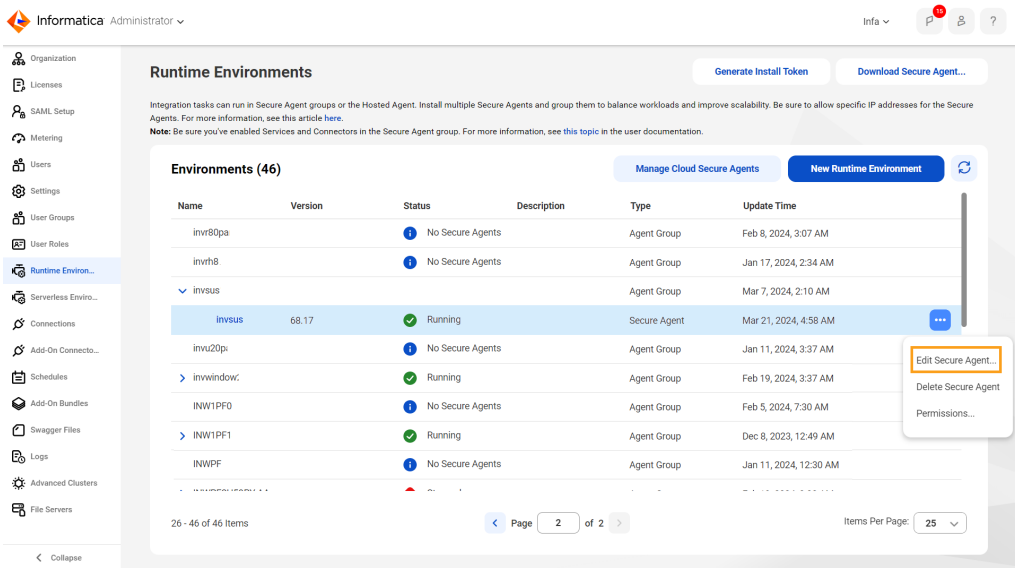
Property	Description
LicenseFileDirectoryPath	Location of the license files that activate the address reference data. You might have more than one file, for example, if you use batch reference data and geocoding reference data. You might have license files for a single country, for multiple countries, or for the entire world. Add the license files to a directory that the Secure Agent can read. For example, add the files to the following location: `[Informatica_root_directory]/avLicenseFile`
RefereceDataDirectoryPath	Location of the parent directory for the address reference data files. Default location: `[Informatica_root_directory]/avdata` **Note:** If you change the reference data location, the Secure Agent downloads the reference data to the new location the next time that you run an address verification mapping. The reference data download process creates a `FileSetA` directory in the parent directory for the data files. Do not configure a common reference data location for more than one Secure Agent if the Secure Agents run mappings on a combination of Microsoft Azure and non-Microsoft Azure pods.
FullPreLoadCountries	List of countries for which all reference data, including geocoding data, is loaded into memory before address verification begins. Enter the three-character ISO country codes in a comma-separated list. For example, enter DEU, FRA, USA. Enter ALL to load all data sets. The property is empty by default. Load the full reference database to increase performance. Some countries, such as the United States, have large databases that require significant amounts of memory. The Secure Agent downloads reference data for every country that the property identifies.
PartialPreLoadCountries	List of countries for which reference metadata and indexing structures are loaded into memory before address verification begins. The property also applies to geocoding data files. Enter the three-character ISO country codes in a comma-separated list. For example, enter DEU, FRA, USA. Enter ALL to partially load all data sets. The property is empty by default. Partial preloading increases performance when not enough memory is available to load the complete databases into memory. The Secure Agent downloads reference data for every country that the property identifies.
NoPreLoadCountries	List of countries for which no reference data is loaded into memory before address verification begins. Enter the three-character ISO country codes in a comma-separated list. For example, enter DEU, FRA, USA. Default is ALL. The Secure Agent downloads reference data for every country that the property identifies. The default value indicates that the Secure Agent will download all address reference data.
MaximumMemoryinMegabytes	The total amount of memory, expressed in megabytes, that the address verification engine may allocate for data preloading and processing. Default is 1048.
MaximumNumberofResults	The maximum number of addresses that a node in the runtime environment can return in a single thread. The default value is 100.

Property	Description
DownloadCASSData	Indicates whether the Secure Agent downloads CASS reference data files for certified United States address processing. You can download the CASS data if your Secure Agent is located in the United States. Enter *Yes* if the Secure Agent is located in the United States and you want to download the CASS data. Otherwise, enter *No*. Default is *No*.
CertifiedReportLocation	Indicates the location to which the Secure Agent downloads a certified report when you select the Generate report option in a verifier asset. The default location is [Informatica_root_directory]/avreports' on the Secure Agent machine.
ParrallelExecutionInstances	The number of threads that the Secure Agent creates for Verifier transformations at run time. Set the number to the maximum number of Verifier transformations that you expect to run in a single mapping. Default is 5.

Configuring the address verification properties

Before you test a verifier asset or run a mapping with a Verifier transformation, configure the properties in the Administrator service.

1. From the **My Services** page, select the **Administrator** service.
2. Choose the **Runtime Environments** option.
3. Select the **Secure Agent** that you will use to run address verification mappings.
4. Hover over the action icon for the Secure Agent, and select the **Edit Secure Agent** option.



The **Secure Agent** page appears.

5. Under **System Configuration Details**, select the following options:
   - Select **Data Integration Server** in the **Service** field.
   - Select **CDQAV** in the **Type** field.

The **System Configuration Details** pane returns a list of properties based on the type that you specified.

6. Review the properties.

   You must provide a license file for each type of reference data that you will download and use in a mapping. You can accept the default values for all other properties. Add the license files to a directory that the Secure Agent can read.

   For example, add the files to the following location:

   ```
   [Informatica_root_directory]/avLicenseFile]
   ```

   Optionally, update the property values to suit your system and the mappings that you will run.

   Note: If you deploy the Secure Agent in a container environment on Linux, review the amount of memory available in the /dev/shm memory space. A Secure Agent that you deploy in a container environment requires access to at least 1 GB memory space for address verification operations.

CHAPTER 6

Validation and testing

Validate a verifier asset in Data Quality before you add it to a Verifier transformation in a mapping.

Validate a verifier

Validate a verifier to verify that the asset is ready for use in a Verifier transformation.

1. Open the verifier asset.
2. Click **Validate** on the asset toolbar.

If the validation process reports any error in the asset, fix the error before using the asset.

CHAPTER 7

Input address fields

A verifier displays a range of fields in the Inputs and Outputs sections of the **Configuration** tab. Each input field appears in one or more input models. Every field appears as an output field.

The following address fields appear in the both Inputs and Outputs sections:

Address Lines

Contains multiple elements of delivery information such as street, house number, and sub-building information, in a single field. Use in conjunction with a Last Line field. The input fields appear in the Hybrid input model.

The number of Address Line fields you need can differ from country to country. Select the number of Address Line fields that you need.

Administrative Division

Contains name of the largest administrative area below the national level, such as a province in Canada, state in India, or county in the United Kingdom. The input fields appear in the Discrete and Hybrid input models.

A verifier includes three levels of Administrative Division fields in the input. Use Administrative Division 1 to identify the primary or largest region. Use Administrative Division 2 to identify the primary subdivision in the province. For example, use Administrative Division 2 for county data in the United States. If the province data is highly complex, use the Administrative Division 3 field.

A verifier includes the following types of Administrative Division output fields:

- Administrative Division Standard
- Administrative Division Name
- Administrative Division Abbreviation
- Administrative Division ISO

Each sub-field contains three levels.

Building

Contains building information. A Building field contains building-level data such as the building descriptor, building name, and building number. If an address record contains more than one building, select additional Building fields. The input fields appear in the Discrete input model.

Contact

Contains contact information such as name, function, and salutation. The input fields appear in the Discrete and Hybrid input models.

A verifier includes the following types of Contact fields:

- Contact 1

- First Name 1
- Middle Name 1
- Surname 1
- Title 1
- Function 1
- Salutation 1

Note: If your address verification mapping will read contact data, select the Contact 1 input field or select one or more of the First Name 1, Middle Name 1, and Surname 1 input fields.

Country

Contains country information. The input fields appear in the Discrete, Hybrid, and Multiline input models.

The input field group contains a single Country field.

The output field group contains the following types of Country field:

- Country Name
- Country ISO 3
- Country ISO 2
- Country ISO Number

Each output field type has two levels. For example, the output fields include Country ISO Number 1 and Country ISO Number 2.

Delivery Service

Contains delivery service information. A delivery service is a mail pickup location managed by the post office, such as a P.O. Box. If the address record contains delivery service elements at more than one level, select additional Delivery Service fields. The input fields appear in the Discrete input model.

Department

Contains information about a department within an organization. The input fields appear in the Discrete and Hybrid input models.

Formatted Address Lines

Contains multiple elements in a single field. You can enter every line of an address on a formatted address line. You can use the Formatted Address Line output to print envelopes or to generate address labels. The input fields appear in the Multiline input model.

Select Formatted Address Lines input fields when the input data consists wholly of address lines instead of fields for different information types. Select Formatted Address Lines output fields to write addresses that you want to format for envelope printing and mail delivery.

House Number

Contains house number information. The house number identifies a building at street level. If the address record contains house numbers at more than one level, select additional House Number fields. The input fields appear in the Discrete input model.

Last Line

Contains last-line address information such as locality, postal code, and province information. Use in conjunction with Address Line fields. The input fields appear in the Hybrid input model.

Select a Last Line input field when you format the input address for postal delivery. Select a Last Line output field to create a formatted address that writes the last line of data to a single field.

Locality

Contains town or city name. Most countries use Locality 1 and optionally Locality 2. You might select additional locality fields if the locality data is highly complex. The input fields appear in the Discrete and Hybrid input models.

Organization

Contains organization information. An Organization field contains organization-level data, such as the organization name and organization descriptor. The input fields appear in the Discrete and Hybrid input models.

Postal Code

Contains postal code information. If the address record contains postal codes at more than one level, select additional Postal Code fields. The input fields appear in the Discrete and Hybrid input models.

Street

Contains street information. A Street field contains street-level data such as the street name, street post-descriptor, street post-directional, street pre-descriptor, and street pre-directional. If an address record contains more than one street, select additional Street fields. The input fields appear in the Discrete input model.

Sub Building

Contains sub-building information, such as an apartment or suite number. A Sub Building field contains sub-building level data such as the sub-building descriptor, sub-building name, and sub-building number. If an address record contains more than one sub-building level, select additional Sub Building fields. The input fields appear in the Discrete input model.

CHAPTER 8

Output address fields

When you process an address, you receive a result that can contains a large number of fields, including address elements, address line elements, and enrichment values. The result can also contain process-related information and status codes that describe the outcome of the verification process for the address.

Select the output fields that suit your address data and your business needs.

Single address elements and preformatted data fields

The output fields that you can select in the *Single address elements* and *Preformatted data* groups carry broadly the same types of information as the input fields of the same name.

For more information about the fields, see Chapter 7, “Input address fields” on page 47.

The output fields that you can select under *Single address elements* include an additional field group:

Residue

Contains residue information. *Residue* fields contain any input values that the verification operations identify as duplicate or redundant. Address verification moves the values from their input fields to the residue fields.

The *Residue* fields carry the following types of information:

- Residue Value. An input value moved to the residue field.
- Residue Type. The reason that address verification assigned the corresponding value to residue. The Residue Type field can return the following values: Necessary, Superfluous, and Unrecognized.

Status code fields

Status code information indicates whether an address is accurate enough for delivery and describes the result of the verification process.

You can select the following status code fields:

Verification Status Code

Provides a summary of the address verification process and indicates the general quality of the address.

Result Quality

Provides a general estimate of the likelihood that a mail carrier can deliver mail to the address

Match Percentage

Indicates the degree of similarity between the input data and reference data. The value ranges from 0 through 100. Values close to 100% indicate high similarity.

Address Type

Indicates the type of mail box that an address identifies.

Verification Status Codes

The Verification Status Code value summarizes the results of the comparison of the input address to the reference data. The code also summarizes any correction that the mapping makes to the address. Find the field in the Status Codes output group.

The following table describes the Verification Status Code output values:

Status Code	Description
V	The mapping verified all postally relevant elements. The input data matches the reference data for the address.
A	The mapping added one or more relevant address elements to the address.
C	The mapping corrected one or more input address elements to match the address elements in the reference data.
I	The mapping cannot correct the address. The address is not valid.
N	The mapping cannot verify the address because the address is not available in the reference data or the country is not supported.

Result Quality

The Result Quality field provides a general estimate of the likelihood that a mail carrier can deliver mail to an address. Use the result quality value with other status values, such as the verification status code, to evaluate the address quality and deliverability.

The following table describes the result quality values:

Value	Summary	Description
6	Completely confident	Indicates that the verification mapping verified all postally relevant elements.
5	Very confident	Indicates that the verification mapping cannot completely verify the address. For example, the verification mapping may be unable to verify secondary delivery information such as sub-building data. Or, the address might be a high-rise default address.
4	Secondary delivery point not verified	Indicates that the verification mapping can check the primary delivery identifier but cannot verify the secondary delivery information in the address record. If an input address contains a unique ZIP Code, corrects other input values and returns the address with a result quality value of 4.

Value	Summary	Description
3	Primary delivery identifier not verified	Indicates that the verification mapping cannot check the primary delivery identifiers such as house number and P.O. Box number. In countries where the house number information is not available, the primary delivery identifier might be a building name.
2	Delivery information not verified	Indicates that the verification mapping cannot find a match for the input street or delivery service information within the reference data. The address is verified to locality level.
1	Incomplete or contradictory address	Indicates that the verification mapping cannot find a match for the address in the reference data. This can occur when locality information is not available in the reference data or the address includes contradictory postal code data.
0	Not an address	Indicates that the input is not a deliverable address.

Note: The verification mapping is likely to return a lower score for a poor-quality address in **Verification only** mode than in **Verification with suggestions** mode. **Verification with suggestions** mode can apply a relatively higher tolerance when calculating the result quality score, as it returns multiple addresses from which you can select the correct address.

Address Type

The Address Type field identifies the physical type of mail box that will receive mail at the address.

Postal authorities around the world use a common set of alphabetic codes to represent address types. However, differences in address type assignment exist between countries. Also, the logic within the processing modes in address verification can result in differences in assignment of address type values across the modes.

The following table describes a set of address type values that apply in many countries:

- B. The address identifies a building.
- F. The address identifies an organization.
- G. The address is a general delivery address. In a general delivery address, the postal code and the recipient data identify the address.
- H. The address identifies a high-rise building. The address contains subbuilding elements such as apartment or suite.
- L. The address post code identifies the organization as a large volume receiver. The reference data adds or validates the organization name.

  Address verification can determine that the address is a large volume receiver in one of the following ways:

  - The address post code identifies the organization as a large volume receiver.
  - The reference data does not contain street or building information.
- P. The address identifies a Post Office Box or a delivery service.
- R. The address is a rural route/highway contract address.
- S. The address identifies a street. S is the default address type. If verification cannot determine the address type from the address data, it returns the default value.
- U. Unidentified. The address is not valid, and verification does not assign an address type.

Enrichments: Geocoding fields

To increase the chance of successful delivery, for example in rural areas, you can enrich the verified addresses with geocodes. Geocodes identify the latitude and longitude of an address.

A verifier asset supports the following levels of geocoding:

Rooftop

Rooftop geocoordinates map to the center of the roof of the primary building on a parcel of land.

ArrivalPoint

ArrivalPoint geocoordinates map to a point in the center of the street segment in front of a house or a building.

StreetCenter

StreetCenter geocoordinates map to an approximate mid-point of the street, based on known geocodes for locations nearby.

LocalityCenter

LocalityCenter geocoordinates map to an approximate mid-point of the locality, based on known geocodes for locations nearby.

PostalCodeCenter

PostalCodeCenter geocoordinates map to a post office that handles mail for the address.

The maximum available precision of the geocodes depends on the depth of the geocoding data that the reference data stores for the country. If verification cannot return geocodes to the level of precision that you select, it returns the geocodes to the closest possible level of precision.

You can select the following fields for each level of geocoding precision:

[Geocoding Level] Accuracy Code

Returns the level of accuracy to which a verifier can return geocodes for an address in a given country.

[Geocoding Level] Coordinates

Returns the closest latitude and longitude coordinates that a verifier can return for the input address.

[Geocoding Level] Latitude

Returns the closest latitude coordinates that a verifier can return for the input address.

[Geocoding Level] Longitude

Returns the closest longitude coordinates that a verifier can return for the input address.

Geocoding Accuracy Codes

The geocoding accuracy code fields describe the result of the geocoding process for an output address. The fields can indicate the level of precision to which address verification returns the geocodes. Find the fields in the Geo Coding output group.

The verifier asset includes geocoding accuracy code data fields for every level of geocoding precision. For example, the asset provides an Arrival Point Accuracy Code field that contains status values for addresses that return Arrival Point geocode data.

The geocoding accuracy code fields can return the following geocoding status values:

ER_DATA_NOT_AVAILABLE

Verification cannot find the geocoding database.

ER_NOT_UNLOCKED

The geocoding database is not unlocked.

ER_DATA_CORRUPT

The geocoding database is corrupted.

NOTHING_FOUND

Verification cannot append geocoordinates to the input address because no geocoordinates are available for the address.

POCO_CENTER

Geocoordinates are accurate to the postal code level.

LOCALITY_CENTER

Geocoordinates are accurate to the locality level.

STREET_CENTER

Geocoordinates are accurate to the street level.

INTERPOLATED

Geocoordinates are accurate to the house number level. (Estimated location of the parcel of land with street-side offset.)

POINT_ARRIVAL_POINT

Geocoordinates are accurate to arrival point level. (Measured entryway to the parcel of land.)

POINT_ROOFTOP

Geocoordinates are accurate to rooftop level.

Enrichments: Certified fields

You can use *Certified verification* mode to verify addresses to the certification standards that postal services define in Australia, Canada, France, New Zealand, and the United States. The verifier asset includes output fields that can add enrichment and status information to addresses from each country.

The asset also includes a *Certification Status* field that reports on the overall outcome of the certified verification process. For more information about the Certification Status field, see "Enrichment and certification status fields" on page 74.

Australia-AMAS

The following table describes the values and data indicators that a verifier can return when you verify an Australia address in certified mode:

Field	Description
AMAS Error Code	A two-character code that represents the validity of the address with respect to the AMAS standard. The code can indicate that the address is fully valid, or the code can describe the reason why the address does not meet the AMAS standard.
Delivery Point ID	An eight-digit identifier that Australia Post assigns to a delivery point. Each DPID is unique and randomly generated. Australia Post creates DPIDs in a range from 30,000,000 to 99,999,999.
Lot Number	The lot reference number that a government department assigned to a property during the sub-division of a parcel of land and prior to road numbering.
Postal Delivery Number	The number information in the delivery service. For example, the post office box number in a P.O. Box address. Australia Post stores a postal delivery number as a five-digit number in the Postal Address File (PAF). Therefore, the PAF stores the postal delivery number 500 as 00500. If the address does not contain a postal delivery number, a verifier does not populate the field.
Postal Delivery Number Prefix	The prefix character in a postal delivery number. For example, A in A500.
Postal Delivery Number Suffix	The suffix character in a postal delivery number. For example, A in 500A.
AUS House Number 1	The primary house number in a street address. Australia Post stores a house number as a five-digit number in the PAF. Therefore, the PAF stores the house number 123 as 00123.
AUS House Number 1 Suffix	An alphabetical suffix to a House Number 1 value. For example, A in 123A.
AUS House Number 2	The secondary house number in a street address. Australia Post stores a house number as a five-digit number in the PAF. Therefore, the PAF stores the house number 456 as 00456. If the address does not contain a secondary house number, a verifier returns 00000 as the field value.
AUS House Number 2 Suffix	An alphabetical suffix to a House Number 2 value. For example, B in 456B.

Canada-SERP

The following table describes the values and data indicators that a verifier can return when you verify a Canada address in certified mode:

Field	Description
SERP Category	The verification category for the address. The category summarizes the result of the verification operation for the address. Contains one of the following values: - V. Address valid. - C. Address corrected. - N. Not valid. - VQ. Considered valid, but questionable because of insufficient data or input. For example, some "general delivery" addresses. - V1A. Valid apartment type record. - V2A. Valid commercial type record. - C1A. Corrected apartment type record. - C2A. Corrected commercial type record. The 1A and 2A types usually refer to database records containing building information.
Excluded	Indicates that the value is excluded from SERP calculations because the sub-building input data is incorrect. Occurs in conjunction with SERP category N. The field contains the value EXCLUDED for an ignored record. Otherwise, the field is empty.

France-SNA

The following table describes the values and data indicators that a verifier can return when you verify a France address in certified mode:

Field	Description
SNA Category	The verification category for the address. The category summarizes the result of the verification operation for the address. Contains one of the following values: - ORI. Address valid, output identical to input. - RES. Address valid or corrected, output not identical to input. - AVE. Address rejected, user input required. - NOK. Address rejected.

New Zealand-Send Right

The following table describes the values and data indicators that a verifier can return when you verify a New Zealand address in certified mode:

Field	Description
NZL Address Type	The address type. Contains one of the following values: - Bag - Box - CMB Rural - CMB Urban - Counter - Rural - Urban
SOA Record Ignored	Indicates whether the Statement of Accuracy ignores the record. The following address records maybe ignored for SOA calculation: - Poste Restante - Private Bags with no number The field contains the value Excluded for an ignored record. Otherwise, the field is empty.
Delivery Point Identifier	An eight-digit number that uniquely identifies each delivery point in New Zealand.
Delivery Service Type	Specifies the type of the delivery service. It may be PO Box, Private Bag, CMB, Response Bag, Counter Delivery, or Poste Restante.
Delivery Service Number	The box or bag number. It contains no leading zeros or spaces, separators, or other punctuation.
Delivery Service Locality	Part of the Suburb line for New Zealand addresses. Contains Box Lobby as the value.
House Number	Number of the structure erected on the property associated with the delivery point.
House Number Alpha	The alphabetical part of the house number of the property associated with the delivery point.
Rural Delivery Number	A six-character field that identifies the rural delivery route number of an address.
Hygiene	A flag that indicates whether address cleansing is possible.
Validity Code	Helps to determine the validity of the input address. Contains one of the following values: - Unique match - VALID-U - Base Address match - VALID-B - Not valid - INVALID

United States-CASS

The following table describes the values and data indicators that a verifier can return when you verify a United States address in certified mode:

Field	Description
CASS Error Code	Indicates whether the fields in the US Specific field group contain data for the address. Verifier does not currently generate output on the CASS Error Code field.
Barcode	An 11-digit number that represents the delivery point for the record. It consists of the nine-digit ZIP+4 code and the two-digit Delivery Point Answer.
Carrier Route	A four-character code assigned to a mail delivery or collection route within a 5-digit ZIP Code. The first character of the code is alphabetical and the last three are numeric: - Bnnn = PO box - Hnnn = Highway contract - Rnnn = Rural route - Cnnn = City delivery - Gnnn = General delivery
Congressional District	A standard value that identifies a geographic area served by a member of the United States House of Representatives or Senate. If the address is an Army/Air Force (APO) address or a fleet post office (FPO) address, the field is blank. If there is only one member of congress within the state, the value is AL (At Large).
Default Flag	Indicates that the record matched to a high-rise, rural route, or street default record in the ZIP + 4 data. The flag has the value Y for a matching record.
Delivery Point Answer	The final two digits of the house/box number, or if a High-rise record is matched, the secondary unit number that represents the delivery point information. The Delivery Point Answer contributes to the 11-digit delivery point barcode (DPBC).
Delivery Point Check Digit	A number that you can add to the sum of the other digits in the delivery point barcode (DPBC) to yield a number that is a multiple of ten. For example: ZIP+4 code = 123456789 Delivery Point Answer = 01 Sum of digits (1+2+3+4+5+6+7+8+9+0+1) = 46 Check digit = 4 (46+4 = 50)
DPV CMRA Indicator*	Indicates the result of the call to the DPV CMRA (Commercial Mail Receiving Agent) hash table: - Y =Address was found in the CMRA table. - N =Address was not found in the CMRA table. - Blank = Address was not presented to the hash table.
DPV Confirmation Enhanced*	Provides additional information on the reasons for the DPV Status assignment: - Y= Address was DPV confirmed for both primary and secondary numbers to determine a valid delivery point. - D= Address was DPV confirmed for the primary number only, and secondary number information was missing. - S= Address was DPV confirmed for the primary number only, and the secondary number information was present but not confirmed. Or, a single trailing alpha character on a primary number was dropped to make a DPV match, and secondary information is required. - N= The primary number information failed to DPV confirm. - R= Address was DPV confirmed but assigned to phantom route R777 or R779. The USPS does not provide delivery. - Blank= Address was not presented to the hash table.

Field	Description
DPV Confirmation Indicator*	Indicates the result of the call to the Delivery Point Validation (DPV) Confirmation hash table: - Y =Address was DPV confirmed for both primary and (if present) secondary numbers. - D =Address was DPV confirmed for the primary number only, and secondary number information was missing. - S = Address was DPV confirmed for the primary number only, and secondary number information was present but unconfirmed. - N =Both primary and (if present) secondary number information failed to DPV confirm. - Blank = Address was not presented to the hash table.
DPV 3553 Confirmation*	Indicates whether to add the address to the total number of addresses recorded in the ZIP + 4/DPV Confirmed column on form 3553: - Increment the total number of addresses. - Do not increment the total number of addresses.
DPV Door Not Accessible*	Identifies addresses that do not provide a door or entry point that the postal carrier can access. A Door Not Available (DNA) address might not provide a door for mail delivery, or the mailbox might reside behind a locked gate. The field can contain the following values: - Y = Address does not have a door available for postal delivery. - N = Address has a door available for postal delivery. - Blank = Address was not presented to the hash table.
DPV Drop Indicator*	Indicates the status of the address in the Delivery Sequence File Second Generation (DSF2) Drop Indicator table. The Drop Indicator table identifies mailbox addresses that serve multiple households or businesses. The field can contain the following values: - Y= Address was found in the table. - N= Address was not found in the table. - Blank = Address was not presented to the hash table.
DPV False Positive Indicator*	Indicates the results of the call to the DPV False Positive hash table: - Y = Address was found in the False Positive table. - N = Address was not found in the False Positive table. - Blank = Address was not presented to the hash table.

Field	Description
DPV Footnote 1* DPV Footnote 2* DPV Footnote 3* DPV Footnote 4* DPV Footnote 5*	The footnote(s) returned for an address from DPV processing: - AA - Input address matched to the ZIP + 4 product. - A1 - Input address not matched to the ZIP + 4 product. - BB - Input address matched to DPV for both primary and secondary numbers necessary to determine a valid delivery point. - CC - Input address primary number matched, secondary number not matched, secondary number not required. - C1 - Input address primary number matched, secondary number not matched, secondary number required. - F1 - Input address matched to a military address. - G1 - Input address matched to a general delivery address. - IA - Informed address identified. - M1 - Input address primary number missing. - M3 - Input address primary number not valid. - N1 - Input address primary number matched to DPV, but required secondary number is missing. - PB - Identified Post Office Box Street Address. - P1 - Input address Post Office Box, Rural Route, or Highway Contract box number missing. - P3 - Input address Post Office Box, Rural Route, or Highway Contract box number not valid. - RR - Input address matched to a Commercial Mail Receiving Agency (CMRA), but a Private Mailbox (PMB) designator is present (PMB 123 or # 123). - R1 - Input address matched to CMRA, but PMB designator is not present (PMB 123 or # 123). - R7 - Addresses that are assigned to a phantom route R777 or R779. - TA - Input address primary number matched to DPV by dropping trailing alphabetic character. - U1 - Input address matched to a unique ZIP Code.
DPV Footnote Complete*	All data values from the populated DPV Footnote fields in a single string.
DPV No Secure Location*	Identifies an address that does not provide a reliable mailbox or reception point for mail: - Y = Location is not secure. - N = Location is secure. - Blank = Address was not presented to the hash table.
DPV PBSA*	Indicates that the address is a Post Office Box Street address (PBSA): - Y =Address was found in the PBSA table. - N =Address was not found in the PBSA table. - Blank = Address was not presented to the hash table. A verifier also returns the footnote PB for a PBSA address.
DPV Throwback Indicator*	Indicates a valid street address for which the USPS forwards mail to a Post Office Box: - Y = The address is a Throwback address. - N = The address is not a Throwback address. - Blank = Address was not presented to the hash table.
DSF2 No Stats Indicator*	Indicates the results of the call to the DPV No-Stat table: - Y = Address was found in the No-Stat table. - N = Address was not found in the No-Stat table. - Blank = Address was not presented to the hash table.

Field	Description
DSF2 No Stats Reason*	A single-digit code that identifies the reason why an address returned a Y in the *DSF2 No Stats Indicator* field. The code can have the following values: - *1 - IDA* Internal Drop Address. The verified address does not physically receive mail. Instead, the USPS delivers mail to a 'drop' address associated with the verified address. - *2 - CDS* The address identifies a new construction that cannot yet accept delivery. Or, the address lies on a Rural Route, Highway Contract Route, or Contract Delivery Service route and the delivery point is unoccupied for more than 90 days. - *3 - Collision* The address does not DPV confirm. A verifier users will not see the collision value, because address validation will change the NoStats indicator to N in this case and clear the NoStats Reason code. - *4 - CMZ* The address is in a college, military, or other zone. A CMZ address is a ZIP+4 address that the USPS has added to the reference data. - *5 - Regular No-Stat* The address is no longer deliverable or lies on an R777 route, Or, the address includes a Post Office Box that has never been rented or is not available to rent.
DSF2 Vacant Indicator*	Indicates the results of the call to the DPV Vacant table: - Y = Address was found in the Vacant table. - N = Address was not found in the Vacant table. - Blank = Address was not presented to the hash table.
eLOT Flag	The Enhanced Line of Travel (eLOT) order in which delivery points are delivered within a given add-on code. For example, if the code is A (Ascending) and the house numbers are 1, 3, and 5, the carrier delivers 1, 3, and 5, in that order (low to high). If the code is D (Descending), the carrier delivers first to 5, then 3, and then 1 (high to low).
eLOT Sequence Number	A number that indicates the order in which add-on codes are arranged within a given carrier route.
Early Warning System (EWS) Return Code*	Indicates whether the address was found in the EWS data: Y = Address was found in the EWS data, thus resulting in a ZIP + 4 No Match. Blank = Address was not found in the EWS data.
High-rise Default	A flag that indicates that the record is assigned to a default high-rise record.
High-rise Exact	Identifies high-rise addresses that contain unit identifiers.
LACS Indicator*	Identifies an address that matched to a LACS address in the ZIP + 4 file. A LACS address is an address that was converted to the city-style address format so that emergency vehicles can more easily find the address location. Return values: - L = Address matched to a LACS address in the ZIP + 4 file. - Blank = Address is not a LACS address in the ZIP + 4 file.

Field	Description
LACSLink Indicator*	An indicator returned when the LACSLink hash tables are queried: - Y = The input record matched a record in the master file. - N = The input record did not match a record in the master file. - Blank = Address was not presented to the hash table.
LACSLink False Positive*	Indicates the results of the call to the LACSLink False Positive hash table: - Y = Address was found in the table. - N = Address was not found in the table. - Blank = Address was not presented to the table.
LACSLink Return Code*	A return value from LACSLink processing: - *A = LACS record match* A new address can be furnished. The input record matched to a record in the master file. - *00 = No match* A new address cannot be furnished. The input record cannot be matched to a record in the master file. - *14 = Found LACS record, but new address did not convert at run time.* The new address cannot be converted to a deliverable address. The input record matched to a record in the master file. - *92 = LACS record, secondary number dropped from input address.* The record is a ZIP + 4 street-level or high-rise match. The input record matched to a master file record, but the input address had a secondary number and the master file record did not.
NonDelivery Days*	A seven-character code that identifies the day or days of the week on which an address cannot receive mail. The code contains a seven-character string that represents the days of the week from Sunday through Saturday. A verifier returns the first letter of a weekday in the corresponding position in the code if the address does not receive mail on that day. A verifier returns a dash symbol in the corresponding position otherwise.
NonDelivery Days Flag*	A single-character field that indicates if the address is not deliverable on one or more days of the week. Address verification populates the NonDelivery Days field for every address that returns Y in the NonDelivery Days Flag field. The NonDelivery Days Flag field can contain the following values: - Y= Address was found in the table. - N= Address was not found in the table. - Blank = Address was not presented to the hash table.
PO Box Only	Indicates if the address is located in a ZIP code that contains post office box addresses only. Y = Address is in a post office box-only delivery zone.
Residential Delivery Indicator *	Indicates if the delivery point is residential: - Y = Indicates residential delivery. - N = Not residential delivery. - Blank = Did not query the Residential Delivery Indicator (RDI) data.

Field	Description
Record Type Code	An alphabetic value that identifies the type of data in the record. Record type codes include the following: - F = Firm - G = General delivery - H = High-rise - P = PO box - R = Rural route/highway contract - S = Street - U = Unidentified. Verification does not assign a record type.
Rural Route Default	A flag that indicates that the record is assigned to a default rural route record. This occurs when the input house number does not match to the primary numbers in the reference data and there is a corresponding rural route record with no primary numbers.
Rural Route Exact	Indicates if the address matches a rural route address in the USPS address reference data set.
SuiteLink Return Code*	A return value of SuiteLink Processing: - *A = SuiteLink Record Match* The input record matched to a record in the master file. An improved business address can be furnished. - *00 = No Match* Business address not improved. The input record cannot be matched to a record in the master file. An improved business address can not be furnished.
ZIPMove Return Code*	A return value from ZIPMove processing: - Y = ZIPMove match was made. - N = ZIPMove match was not made.
ZIP5 Valid Flag	Indicates whether the address record can be added to Form 3553. Five-digit validation requires that the last line values of city, state, and ZIP Code correspond to each other. When CASS certification makes a ZIP+4 match, the five-digit ZIP Code is valid. **Note:** Five-digit validation applies to No Match ZIP+4 records.

Note: Fields marked with * will only be populated for United States customers, in accordance with USPS licensing restrictions.

Enrichments: Global fields

Use the Global field to activate enrichments that can apply in the same way to addresses in every country.

You can select the following global enrichment fields:

TimeZone Code

A one- to three-character numeric value that indicates the offset between the address time zone and Greenwich Mean Time. For example, the time zone code for Eastern Standard Time is -5.

TimeZone Name

A three-character code that identifies the time zone to which the address belongs. For example, EST identifies Eastern Standard Time.

The global enrichments TimeZone Code and TimeZone Name are available only for United States addresses.

Enrichments: Country Specific fields

The verifier asset includes output fields that can add enrichments to addresses across a range of countries. Find the fields in the *Country Specific* field group.

The *Country Specific* group includes a *Country Specific Status* field that reports on the overall outcome of the process to add the enrichments. For more information about the Country Specific Status field, see "Enrichment and certification status fields" on page 74.

Enrichments for Australia addresses

You can configure a verifier to include address enrichments in the validated Australia addresses. The verifier bases the enrichments on geographical areas that the Australian Bureau of Statistics defines.

A verifier provides enrichment data for the following statistical elements:

Geocoded National Address File Identifier

A 14-digit code that identifies an address in the Geocoded National Address File (GNAF). Australian government departments and organizations recognize the code as a persistent, unique identifier for the address.

Level One Statistical Area 11-Digit

An 11-digit code that identifies the level-1 statistical area to which an address belongs. A level-1 statistical area is typically the smallest area for which the Australian Bureau of Statistics releases statistical data.

The 11 digits of the Level One Statistical Area 11-Digit code include the values of the larger areas in the statistical area hierarchy. That is, the Level One Statistical Area 11-Digit includes a state and territory identifier, SA4 identifier, SA3 identifier, and SA2 identifier in addition to the SA1 identifier. The final two digits in the code identify the level-1 statistical area. In this way, the Level One Statistical Area 11-Digit uniquely identifies the area to which the address belongs.

Level One Statistical Area 7-Digit

A seven-digit code that identifies the level-1 statistical area that an address belongs to but that does not provide the full hierarchy of geographical information that Level One Statistical Area 11-Digit provides. The seven-digit code comprises the state and territory identifier, SA2 identifier, and SA1 identifier.

A level-1 statistical area is typically the smallest area for which the Australian Bureau of Statistics releases statistical data.

Level Two Statistical Area 9-Digit

A nine-digit code that identifies the level-2 statistical area to which an address belongs. A level-2 statistical area is a physical area that broadly defines a single social or economic community. A level-2 statistical area comprises multiple level-1 statistical areas.

The nine digits of the Level Two Statistical Area 9-Digit code include the values of the larger areas in the statistical area hierarchy. That is, the Level Two Statistical Area 9-Digit includes a state and territory identifier, SA4 identifier, and SA3 identifier in addition to the SA2 identifier. The final four digits in the code identify the level-2 statistical area.

Level Two Statistical Area 5-Digit

A five-digit code that identifies the level-2 statistical area that an address belongs to but that does not provide the full hierarchy of geographical information that SA2_MAIN_NO provides. The five-digit code comprises the state and territory identifier and the four-digit SA2 identifier.

A level-2 statistical area is a physical area that broadly defines a single social or economic community. A level-2 statistical area comprises multiple level-1 statistical areas.

Level Two Statistical Area Name

The name of the level-2 statistical area to which the address belongs. Each level-2 name is unique, and each name contains no more than forty characters. In an urban area, the name is based on the suburb or suburbs that the area covers. In rural areas, the name is based on the locality that the area covers.

Level Three Statistical Area 5-Digit

A five-digit code that identifies the level-3 statistical area to which an address belongs. A level-3 statistical area comprises multiple level-2 statistical areas.

The five digits of the level-3 statistical areas include the values of larger geographical regions. That is, the Level Three Statistical Area 5-Digit includes a state and territory identifier and SA4 code in addition to the SA3 identifier. The final two digits in the code identify the level-3 statistical area.

A level-3 statistical area generally covers a population of between 30,000 and 130,000 people.

Level Three Statistical Area Name

The name of the level-3 statistical area to which the address belongs. Each level-3 name is unique, and each name contains no more than forty characters. SA3 names reflect the names of the cities, towns, or rural areas that they cover.

Level Four Statistical Area 3 Digit

A three-digit code that identifies the level-4 statistical area to which an address belongs. A level-4 statistical area comprises multiple level-3 statistical areas.

The three digits of the level-4 statistical areas include the values of the largest sub-state regions in the main structure of the Australian Statistical Geography Standard (ASGS). That is, the Level Four Statistical Area 3 Digit includes a state and territory identifier and SA4 identifier. The final two digits in the code identify the level-4 statistical area.

A level-4 statistical area contain at least 100,000 people. In regional areas, a level-4 statistical area might include between 100,000 and 300,000 people. In urban areas, a level-4 statistical area might include between 300,000 and 500,000 people.

Level Four Statistical Area Name

The name of the level-4 statistical area to which the address belongs. Each level-4 name is unique, and each name contains no more than forty characters. SA4 names reflect the names of the cities, towns, or rural areas that they cover.

Greater Capital City Statistical Area 5-Char

A five-character alphanumeric code that identifies the greater capital city (GCCSA) statistical area to which an address belongs. A greater capital city statistical area comprises multiple level-4 statistical areas.

There are 16 spatial GCCSA regions, including eight regions that represent the Australian state and territory capital cities and eight regions that cover the rest of each state and the Northern Territory. In addition, there are 18 non-spatial greater capital city statistical areas.

The five character code includes a single-digit state and territory identifier and a four-character GCCSA identifier.

Greater Capital City Statistical Area Name

The name of the greater capital city statistical area to which an address belongs.

Greater capital city statistical areas are named for the cities they represent or, if they do not identify a city, for the rest of the state or territory that they represent.

State or Territory Name

Represents the name of a state or territory.

State or Territory Code

An unique one-digit code that represents a state or territory.

Census Collection District Code 2006

A seven-digit code that represents a census collection district that the Australia Bureau of Statistics defined for the 2006 census. A census collection district is an area that a census data collector might cover in a ten-day period. In urban areas, the district might comprise 220 homes. In rural areas, the district might comprise fewer homes and the geographical area might increase.

Mesh Block 11-Digit 2011

An 11-digit code that identifies the mesh block to which an address belongs. Mesh Block 11-Digit 2011 represents the areas that the Australian Bureau of Statistics defined for the 2011 census. A mesh block represents the smallest geographical area that the Australian Bureau of Statistics uses to generate statistical information.

Mesh blocks are building blocks for statistical information rather than areas for which the Australian Bureau of Statistics releases information. The Australian Bureau of Statistics builds statistical areas and regions from mesh blocks. Mesh blocks broadly align with land use, such as residential use, commercial use, or parkland. A mesh block might contain thirty to sixty dwellings, although some mesh blocks are designed to contain no dwellings.

Mesh Block 11-Digit 2016

An 11-digit code that identifies the mesh block to which an address belongs. Mesh Block 11-Digit 2016 represents the areas that the Australian Bureau of Statistics defined for the 2016 census.

Note: The Australian Bureau of Statistics might maintain statistical information for some mesh blocks that it defined for the 2016 census.

See also *Mesh Block 11-Digit 2011*.

Enrichments for Austria addresses

You can configure a verifier to include unique identification codes in the output for valid Austria addresses.

A verifier can return the following code values:

Postal Address Code AT

The Postal Address Code AT is a unique identifier for a current Austria address.

Postal Address Code Indentifier AT

The Postal Address Code Indentifier AT is the Postal Address Code AT of the address at which a building receives mail if the building has more than one address.

Postal Address Code AT enrichment

The Postal Address Code is a unique identifier for the current version of an address in Austria. For example, the following address returns a Postal Address Code value of 105176447:

```
Plättenstraße 7
2380 Perchtoldsdorf
```

```
Niederösterreich
AUT
```

Postal Address Code Indentifier AT enrichment

An Austria address has a Postal Address Code Indentifier AT value when the address identifies a mailbox that receives mail at another address. For example, a building at an intersection of two streets might have an address on both streets and might specify one of the addresses as the mailbox address.

Note: The address that gives access to the mailbox is called the Ident address.

A street address that does not receive mail has a Postal Address Code value and a Postal Address Code Indentifier AT value. The Postal Address Code Indentifier AT value is the Postal Address Code of the Ident address that receives the mail. The postal carrier delivers mail to the address that the Postal Address Code Indentifier AT identifies.

The following table lists street addresses that identify a single mail destination:

Address	Postal Address Code AT	Postal Address Code Indentifier AT
Hauptplatz 4 8010 Graz AUT	100001915	100004254
Neue-Welt-Gasse 2 8010 Graz AUT	100004254	Not applicable

The address "Hauptplatz 4" does not receive mail because the mailbox is at another address at the same location. The building receives mail at “Neue-Welt-Gasse 2” and therefore “Neue-Welt-Gasse 2” is the Ident address. The Postal Address Code Indentifier AT is the Postal Address Code AT of the address that receives the mail. The Postal Address Code value for the Ident address is 100004254.

Enrichment for Belgium addresses

You can configure a verifier to add the National Institute of Statistics (StatBel) or NIS Code as an enrichment to validated Belgium addresses.

NIS codes are five-digit codes that uniquely identify geographic areas in Belgium. If you enable enrichment for Belgium, a verifier returns a nine-digit code that contains the five-digit NIS code and a four-digit Neighborhood ID.

For example, a verifier returns `21004A001` as an enrichment to the following address:

```
Rue au Beurre 1
1000 Bruxelles
BEL
```

In this example, `21004` is the NIS code and `A001` is the Neighborhood ID.

Enrichments for Brazil addresses

You can configure a verifier to include the Institute of Geography and Statistics (IBGE) Code as enrichment to validated Brazil addresses.

The IBGE code is a seven-digit numeric code that identifies cities and states in Brazil. The IBGE code is useful for e-commerce operations as you can use this code for taxation and audit purposes.

Example: Institute of Geography and Statistics Code

When you validate the following address with the address enrichment enabled, a verifier returns an IBGE code of `Institute of Geography and Statistics Code: 2606101` as an enrichment to the validated output.

```
Rua da Matriz 9
Centro
Glória do Goitá-pe
55620-000
Brazil
```

Enrichment for Czech Republic addresses

You can configure a verifier to add RUIAN ID codes as an enrichment to a valid Czech Republic address. The Czech Office for Surveying, Mapping and Cadastre (ČÚZK) maintains the RUIAN code data.

The RUIAN ID enrichment comprises the following codes:

- RUIAN Delivery Point Identifier. Uniquely identifies the address delivery point.
- RUIAN Building Identifier. Identifies the address to building level.
- RUIAN Building Entrance Identifier. Identifies the building entrance.

The database for the Czech Republic includes RUIAN Delivery Point Identifier and RUIAN Building Identifier values for ninety-nine percent of Czech Republic addresses. The database includes RUIAN Building Entrance Identifier values for a small percentage of addresses.

Example: RUIAN ID Codes

The supplementary database stores all types of RUIAN ID data for the following address:

```
Musorgského 320/2
Kohoutovice
623 00 Brno 23
CZE
```

A verifier returns the following RUIAN ID codes for the address from the database:

```
RUIAN Delivery Point Identifier: 19382481
RUIAN Building Identifier: 19204035
RUIAN Building Entrance Identifier: 76838
```

Enrichments for France addresses

You can configure a verifier to include the INSEE-5 Code and the INSEE-9 Code in the validated output for France addresses.

The INSEE code is a numeric indexing code that the French National Institute for Statistics and Economic Studies (INSEE) use to identify entities such as French communes and departments. INSEE codes are particularly helpful in uniquely identifying French communes that share the same name, spelling, and pronunciation. Of a five-digit INSEE code for a commune, the first two digits represent the department and the last three denote the commune. INSEE codes are also used as National Identification Numbers for French citizens.

The INSEE-9 code is also known as the IRIS code. IRIS stands for aggregated units for statistical information in French, and represents a demographic group that contains a maximum of 2000 people. France is composed of around 16,100 IRIS units including 650 units in overseas departments.

For example, you receive INSEE-5 Code `47001` and INSEE-9 Code `470010115` when you validate the following France address:

```
6 RUE DU PUITS DU SAUMON
47000 AGEN
FRA
```

Enrichments for Germany addresses

You can configure a verifier to include multiple address enrichments in validated Germany addresses.

You can configure a verifier to include the following enrichments in validated Germany addresses.

Official Municipality Key DE

The Official Municipality Key DE is an eight-digit identification number for a German municipality. A municipality is administrative area in the German federal system.

Locality Identifier DE

The Locality Identifier DE is a variable length code that uniquely identifies a locality in Germany.

Street Identifier DE

The Street Identifier DE is a variable length code that uniquely identifies a street address in Germany.

Street Code

The Street Code is a three-digit code that identifies a street in Germany. Positions 6, 7, and 8 of the Frachtleitcode or Freight code form the street code. A street code value of 994 indicates that the address points to a packstation.

For example, when you validate

```
Röntgenstr. 9
67133 Maxdorf
Germany
```

A verifier returns the following additional information in the validated output:

```
DEU_AGS: 07338018
Locality Identifier DE: 68015519
Street Identifier DE: 100560690
Street Code: 057
```

Enrichments for Italy addresses

You can configure a verifier to add ISTAT code data as an enrichment to a valid Italy address. The ISTAT code contains a series of values that identify the province and municipality to which the address belongs. The Italian National Institute of Statistics (ISTAT) maintains the ISTAT codes.

For example, the ISTAT code for the city of Venice is 027042.

Enrichments for Japan addresses

You can configure a verifier to add enrichments to valid Japan addresses.

A verifier offers the following enrichments for Japan:

- Choumei Aza Code JP
- New Choumei Aza Code JP
- Current Choumei Aza Code JP
- Gaiku Code

Choumei Aza Codes

A Choumei Aza code is an 11-digit string that represents an address to delivery-point level in Japan. When Japan Post updates the address information for a delivery point, Japan Post also issues a new Choumei Aza code for the delivery point. Therefore, a delivery point might have a current address and one or more legacy addresses and a corresponding set of current and legacy Choumei Aza codes.

You can submit a Japan address in batch or interactive mode and return one or more Choumei Aza codes that represent different versions of the address.

A verifier returns the following types of Choumei Aza code:

Choumei Aza Code JP

The code that corresponds directly to the validated version of the address that you submit.

New Choumei Aza Code JP

The code that corresponds to the next iteration of the input address that you submit. For example, if you enter the first or oldest version of the address, the New Choumei Aza Code JP value that the verifier returns represents the second version of the address.

Current Choumei Aza Code JP

The code that corresponds to the current version of the address that you submit.

Example

The Japan reference data contains the current version of an address and two older versions. You have the first or oldest version of the address. You select the Japan enrichments, and you submit the address in batch mode. A verifier verifies the address and returns the Choumei Aza code enrichments.

Note: The New Choumei Aza Code JP returns the Choumei Aza code for the update that directly followed the address that you submitted. You can rerun the steps with the New Choumei Aza Code JP value to find each version of the address in the reference data.

Gaiku Code

A Gaiku code is a four-digit code that identifies a city block in Japan.

Append the Gaiku code to a current Choumei Aza code to create a 15-digit string that you can submit in address code lookup mode to find an address.

Enrichments for Poland addresses

You can configure a verifier to include the Gmina Code PL, TERYT Locality Identifier PL, and TERYT Street Identifier PL as enrichments for validated Poland addresses.

Official Register of the Territorial Division of the Country (TERYT) is the agency responsible for identifiers and names of territories, localities, roads, and buildings in Poland. Gmina is the Polish equivalent of communes or municipalities. TERYT assigns and manages Gmina code and TerytIDs.

For example, when you validate

```
ul. Laskowa 1
50-510 Wrocław
POL
```

A verifier returns the following enrichment values:

```
Gmina Code PL: 2183
TERYT Locality Identifier PL: 0986544
TERYT Street Identifier PL: 10666
```

Enrichments for Russia addresses

You can configure a verifier to include the Federal Information Addressing System (FIAS) ID in the validated output for Russia addresses.

The FIAS ID is an alphanumeric string.

Enrichments for Serbia addresses

You can configure a verifier to include the Postal Address Code RS as an enrichment to the validated output for Serbia addresses.

The Postal Address Code RS is a six-digit code that maps to the street level. Including the Postal Address Code RS in an address ensures correct and prompt delivery to recipients in Serbia. You do not need the Postal Address Code RS for items that you address to a P.O. Box, *poste restante*, or to a military address.

Enrichments for South Africa addresses

You can configure a verifier to include the National Address Database Identifier ZA in the validated output for South Africa addresses. The National Address Database Identifier ZA is a unique numeric ID that is assigned to street addresses in South Africa.

For example, a verifier returns the National Address Database Identifier ZA value of `2170232` in the output when you validate the following address:

```
4 Balmoral Road
Vincent
East London
5247
South Africa
```

Enrichments for Spain addresses

You can configure a verifier to add INE code data as an enrichment to a valid Spain address. The INE code contains a series of values that identify the province, municipality, and street to which the address belongs. The National Statistics Institute of Spain (INE) maintains the INE codes.

A verifier returns the following INE codes:

- INE Province Code
- INE Municipality Code
- INE Street Code

Enrichments for Switzerland addresses

You can configure a verifier to include the additional postal code characters in the validated output for Switzerland addresses.

A verifier returns the additional postal code characters in an enrichment field called Postal Code Extension.

For example, when you validate the following Switzerland address with the address enrichment enabled, a verifier returns a Postal Code Extension value of 05.

```
Hohlen 1
3800 Sundlauenen
Switzerland
```

Enrichments for United Kingdom addresses

You can configure a verifier to include address enrichments in validated United Kingdom addresses.

Delivery Point Suffix

A two-character suffix that the Royal Mail assigns to a mailbox in a United Kingdom post code area. The first character in a delivery point suffix is a number and the second character is a letter. A combination of a post code and the delivery point suffix identifies a mailbox.

Delivery Point Type

A single-character code that indicates whether the address points to a residence (R), a small organization (O), or a large organization (L).

Unique Delivery Point Reference Number GB

An eight-character code that uniquely identifies each postal address in the Royal Mail PAF database. The Unique Delivery Point Reference Number (UDPRN) remains uniquely tied to the physical delivery point regardless of changes in the address.

Address Key

An eight-digit numeric code that maps to an address in the Postcode Address File (PAF) from the Royal Mail. An Address Key in conjunction with Organization Key and the Post Code Type uniquely identifies an address.

Organization Key

A unique 8-digit numeric code that Royal Mail assigns to small organizations.

UPRN

A numeric code that uniquely identifies a land or property unit in the United Kingdom. The Unique Property Reference Number (UPRN) is a code that the United Kingdom government assigns and can contain a maximum of 12 digits.

Examples

The following examples show enrichment values for different delivery point type addresses.

Delivery Point Type	Input Address	Enrichment Values
Residence	FLAT 17 GROVE HOUSE WAVERLEY GROVE LONDON N3 3PU UNITED KINGDOM	Address Key: 18161676 Delivery Point Suffix: 1H Delivery Point Type: R Organization Key: 00000000 Unique Delivery Point Reference Number GB: 15498195 UPRN: 200123099
Large Organization	PO BOX 43078 LONDON NW1 1SF UNITED KINGDOM	Address Key: 02356470 Delivery Point Suffix: 1A Delivery Point Type: L Organization Key: 00000000 Unique Delivery Point Reference Number GB: 17635833 UPRN: 10015054387
Small Organization	17A THE GROVE LONDON N3 1QN UNITED KINGDOM	Address Key: 28470295 Delivery Point Suffix: 1H Delivery Point Type: O Organization Key: 01464593 Unique Delivery Point Reference Number GB: 15491057 UPRN: 200210632

Enrichments for United States addresses

You can configure a verifier to add multiple address enrichments when you verify United States addresses.

Country Federal Information Processing Standard Code

A three-digit number that identifies a county in the United States.

Note: The Federal Information Processing Standards (FIPS) include a set of numbers that identify states, counties, and other territorial possessions in the United States. A two-digit state code identifies each state. A three-digit county code identifies a county within a state. Together, the five digits of the state and county codes uniquely identify a county.

State Federal Information Processing Standard Code

A two-digit number that identifies a state in the United States.

Metropolitan Statistical Area Identification

The Metropolitan Statistical Area (MSA) identification number is a five-digit number that identifies an urban area that has a population of 50,000 or more.

Core Based Statistical Area Identification

A Core-Based Statistical Area (CBSA) identification number is a five-digit number that identifies an urban area with a population greater than 10,000. A CBSA can be a Metropolitan Statistical Area or Micropolitan Statistical Area. A Metropolitan Statistical Area has over 50,000 inhabitants. A Micropolitan Statistical Area has between 10,000 and 50,000 inhabitants.

Census Tract Number

A six-digit number that identifies a Census Tract. A Census Tract is a statistical subdivision of a county.

Census Block Number

A four-digit number that identifies a Census Block. A Census Block is the smallest entity for which the Census Bureau collects census information.

Census Block Group

A 12-digit number that identifies a Census Block Group. A Census Block Group is a group of Census Blocks that share the same first digit. The first digit in the Census Block number is the last digit in the 12-digit Census Block Group number.

Finance Number

A finance number is a six-digit number that the United States Postal Service (USPS) assigns to post offices and other postal facilities to support the collection of cost and statistical data. The first two digits of the finance number identify the state. The final four digits identify the post office or postal facility.

Minor Civil Division Identification

A Minor Civil Division (MCD) identification number is a five-digit number. An MCD is a primary legal subdivision of a county.

Place Federal Information Processing Standard Code

A five-digit number that identifies a locality in the United States.

Enrichment and certification status fields

The verifier asset output fields include a *Country Specific Status* field and a *Certification Status* field that describe the delivery of data in any country-specific enrichment or country-specific certification field that you select. Find the Country Specific Status field in the *Country Specific* output field group. Find the Certification Status field in the *Certified* output field group.

You can find the fields in the following locations:

- Find the Country Specific Status field in the *Country Specific* output field group.
- Find the Certification Status field in the *Certified* output field group.

Address verification can return the following status codes in each field:

- AllValuesAvailable. Verification returns all requested data in the output address.
- SomeValuesAvailable. Verification returns some but not all of the requested data in the output address.
- NoValuesAvailable. Verification did not return any of the requested data.

Each status code field is empty when you do not request the enrichment or certification item concerned. The status code fields are also empty when address verification does not find a match for the input address.

INDEX

C

Cloud Application Integration community
  URL 6
Cloud Developer community
  URL 6

D

Data Integration community
  URL 6

I

Informatica Global Customer Support
  contact information 7
Informatica Intelligent Cloud Services
  web site 6

M

maintenance outages 7

S

status
  Informatica Intelligent Cloud Services 7
system status 7

T

trust site
  description 7

U

upgrade notifications 7

V

verifier assets
  and dimensions 15

W

web site 6