Informatica® Address Verification
6.4.0

Developer Guide

Informatica Address Verification Developer Guide
6.4.0
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Preface

Read the Informatica Address Verification Developer Guide to learn about how you can invoke Address Verification with the REST API. The guide includes the REST endpoints for address verification and includes sample POST calls that you can make to the product.

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.

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- View product availability information.
- Create and review your support cases.
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You can contact a Global Support Center by telephone or through the Informatica Network.

To find your local Informatica Global Customer Support telephone number, visit the Informatica website at the following link:
https://www.informatica.com/services-and-training/customer-success-services/contact-us.html.

To find online support resources on the Informatica Network, visit https://network.informatica.com and select the eSupport option.

Part I: Cloud Operations

This part contains the following chapters:

C H A P T E R 1

Informatica Address Verification

This chapter includes the following topics:

Informatica Address Verification Overview

Informatica Address Verification is a cloud-based address validation solution that you can use to verify and validate postal addresses in real time.

You can integrate Address Verification with CRM systems, e-commerce sites, and other cloud-based or web-based solutions to verify and enhance addresses. You can access Address Verification over Secure Sockets Layer (SSL) connections. Use your Informatica Address Verification Data Quality Center user account to access Address Verification.

Connecting to Informatica Address Verification

Use a REST API to invoke Address Verification as a web service. You submit the job requests that Address Verification processes through an endpoint URL.

Informatica locates the web service that the endpoints identify in the United States and the European Union. Typically, you make calls to the endpoint closest to your region. You can decide which endpoint to use. Your subscription entitles you to use both endpoints.

Address Verification provides the following REST endpoints:

European Union

https://eu-av.informaticadaas.com/AV6/v1/process

United States

https://us-av.informaticadaas.com/AV6/v1/process

Make sure that you support TLS 1.2 when you use the endpoints.

Note: CASS certified processing for the United States is available on the United States endpoint only.

Informatica Address Verification Transactions

When you run an address verification job in Informatica Address Verification, you consume a transaction from a pool of transactions in your Data Quality Center account. You must have sufficient transactions in your account to support the job.

You can buy transactions online from the Data Quality Center portal. Choose the type and number of transactions based on your requirements.

For example, you can use batch transactions to validate addresses in batch and certified modes. Similarly, you can use interactive transactions to validate addresses in interactive and quick capture modes.

Note: To authenticate an address validation request with Address Verification, you must include the Data Quality Center account ID and password in the request.

For more information about Data Quality Center accounts, see the *Informatica AddressDoctor® Data Quality Center User Guide*.

About This Document

The *Address Verification 6.2.0 Developer Guide* and the *Address Verification 6.2.0 (On-Premises) Developer Guide* share common information about the parameters and elements that you can select and about files that you can configure on your local system.

If you are an Address Verification 6.2.0 user, you can disregard any information or instructions to save or update files on your local system. For example, disregard any instructions to download or install address reference data. The jobs that you create in Address Verification 6.2.0 run in the Informatica cloud and read reference data that Informatica maintains in the cloud.

CHAPTER 2

REST Call Creation

This chapter includes the following topics:

REST Call Creation Overview

The Informatica Address Verification REST API supports the POST method to send data.

You add the addresses and parameters in the request body.

Web Service Credentials

Informatica Address Verification processes only those requests that contain valid values for the Login and Password properties.

The Login property contains the Informatica Address Verification Data Quality Center account ID. The Password property contains the password.

You can view your Data Quality Center account ID and password on the Data Quality Center portal. To log in to the portal, use your Informatica Passport credentials. For more information about accessing the portal, see the *Informatica AddressDoctor Data Quality Center User Guide*.

If you leave the Login or Password property empty or enter incorrect values for these properties, Address Verification returns an AuthenticationError status.

Submitting an Address Job

A REST call can include one or more of the properties below.

JobToken

The address verification process in interactive and quick capture modes can be an iterative one. In each mode, you may need to submit an address more than once before you find the address that you need. To facilitate the process, Informatica Address Verification can return a job token in each mode that allows you to submit multiple requests on the same transaction charge.

Address Verification returns a job token in response to each new job request quick capture mode. Address Verification returns a job token for each new job request in interactive mode if the response does not include an address with a V, A, or C process status. When you submit a job with the associated job token, you do not incur a transaction charge.

A job token is an alphanumeric string that can contain up to 50 characters.

The following string is an example of a job token:

```
b89be474-318c-4da3-87c2-f15b2e43c2cb
```

You can resubmit a job with a given job token twice in interactive mode without additional cost. You can resubmit a job with a given job token nine times in quick capture mode without additional cost. You can resubmit a job with a given job token a single time in interactive mode without additional cost if the response includes an address with a V, A, or C process status. If you use the job token in further requests, or if the job token is not valid, Address Verification treats the request as a new transaction and applies a transaction charge accordingly.

Similarly, if you do not use the job token within five minutes of the job that generated it, the token expires. Address Verification treats any request outside the five-minute interval as a new transaction and applies a transaction charge accordingly.

UseTransactions

UseTransactions is an optional property. Include the UseTransactions property to specify the transaction pool that Informatica Address Verification must use for a call.

You can specify one of the following values for the UseTransactions property:

- PRODUCTION. Address Verification uses only the production transaction pool.
- TEST. Address Verification uses only the test transaction pool.

Use the UseTransactions property if you have separate production and development environments. It is technologically possible to use both kinds of transactions in either environment. However, using test transactions for production purposes violates the Terms of Use. If you use production transactions for test purposes, you reduce the available transactions in the production environment.

Note: If you use the UseTransactions property during development, change the value to production when you deploy the application to the production environment. We recommend making this externally configurable, for example through a configuration file or Registry setting. Alternatively, you can use compiler switches or similar code to distinguish the production environment from the development environment.

CampaignId

A CampaignId is an optional property for which you can specify an arbitrary string value of up to 20 characters. Informatica Address Verification returns the CampaignId value in the response.

Use a CampaignID to add a unique name or descriptor to the call.

TransactionInfo

The TransactionInfo property details about the transactions that users have used on the account.

The property returns the following information:

- The total number of transactions consumed on the account.
- The types of address verification that the account users performed.
- The number of address verification jobs that ran for each type of address verification.

Transaction Reporting

You can use a REST call to retrieve information on the transaction usage on your account. Use the getTransactionDetails method to retrieve the information.

The getTransactionDetails Method

When you submit a request with the getTransactionDetails method, you provide your account name and password. No other input information is necessary.

The getTransactionDetails method returns the information as an array of properties. The method returns a set of properties for each type of transaction that you purchased for the account.

The getTransactionDetails method returns the following properties:

TransactionType

The type of transaction that a given set of properties describes. The type represents the processing mode in which you run the address jobs that consume the transactions. For example, *BATCH*.

PoolType

The transaction pool that a given set of properties describes. The transaction pool represents the project environment in which you run the address jobs that consume the transactions. For example, *PRODUCTION*.

Note: The array that Address Verification returns for the getTransactionDetails method includes a set of properties for each combination of TransactionType and PoolType that exists in your account.

For example, let's say that you purchase a quantity of batch transactions and interactive transactions and you assign the transactions to a Test pool and a Production pool. The getTransactionDetails method returns a separate set of properties for BATCH: TEST, BATCH: PRODUCTION, INTERACTIVE: TEST, and INTERACTIVE: PRODUCTION.

PaymentModel

The method that your organization uses to pay for the transactions that the properties specify. For example, *Prepaid*.

TotalTransactions

The total number of transactions of the given transaction type and pool type that your organization purchased for your account.

UsedTransactions

The number of transactions of the given transaction type and pool type that your account has used to date.

RemainingTransactions

The number of transactions of the given transaction type and pool type that remain in your account.

ValidFrom

The date and time at which the given transactions became usable in your account.

ValidTo

The date and time at which the given transactions will expire in your account.

Region

The global region in which the transactions are valid.

Request Format

You can structure a REST request in a POST method.

POST Requests

When you use the POST method to submit your data, you include all of the data as a part of the request body. Submit the data in a JSON object.

Note: You cannot test the data directly in your browser.

The required HTTP header for the operation is **Content-Type**. You must set the header to **application/json**. You can use tools like Postman or SoapUI to submit REST requests using the POST method.

Address Job Example

The following code shows a valid address job request in REST:

```
POST /AV6/v1/process HTTP/1.1
Host: eu-av.informaticadaas.com
Content-Type: application/json
{
    "Login": "*****",
    "Password": "*****",
    "UseTransactions": "TEST",
    "Request": {
        "Parameters": {
            "Mode": "Interactive",
            "CountrySets": [
                {
                    "Process": {
                        "VerificationLevel": {
                            "PreferredVerificationLevel": "All",
                            "MinimumVerificationLevel": "All"
                        },
                        "AlternativeHandling": {
                            "OutdatedAddresses": {
                                "Match": "WithFaultTolerance",
                                "GetNewAddress": false
                            }
                        },
                        "Geocode": {
                            "SearchRadius": "50"
```

```json
                },
                "Enrichments": {
                    "Geocoding": {
                        "Rooftop": false,
                        "ArrivalPoint": false,
                        "StreetCenter": false,
                        "PostalCodeCenter": false,
                        "LocalityCenter": false
                    },
                    "Global": false,
                    "CountrySpecific": false,
                    "CAMEO": false
                }
            },
            "Result": {
                "MaxResultCount": 10,
                "NumericRangeExpansion": {
                    "RangesToExpand": "None",
                    "RangeExpansionType": "Flexible"
                }
            },
            "Standardizations": [
                {
                    "Default": {
                        "PreferredLanguage": [],
                        "PreferredScript": {
                            "Script": "NativePrimary",
                            "TransliterationType": "Default",
                            "LimitLatinCharacters": "NoLimit"
                        },
                        "FormatWithCountry": false,
                        "CountryNameType": "ENG",
                        "CountryCodeType": "ISO3",
                        "MaxItemLength": 255,
                        "Casing": "PostalAdmin",
                        "DescriptorLength": "Short",
                        "AliasHandling": "PostalAdmin"
                    }
                }
            ],
            "OutputDetail": {
                "PreformattedData": {
                    "SingleAddressLineDelimiter": "Semicolon",
                    "StreetWithNumber": false,
                    "NumberAndSubBuilding": false,
                    "PostalFormattedAddressLines": true,
                    "PostalDeliveryAddressLines": true,
                    "PostalRecipientAddressLines": true,
                    "PostalLocalityLines": true,
                    "SingleAddressLine": true
                },
                "SubItems": true,
                "ElementStatus": true,
                "OutputStatusForEmptyElements": false
            }
        }
    ],
    "CountryDetermination": {
        "DefaultCountries": [],
        "SearchInFields": [
            "Country"
        ]
    }
},
"IO": {
    "Inputs": [
        {
            "AddressElements": {
                "Street": [
                    {
                        "Value": "Röntgen strasse"
```

```
                    }
                ],
                "HouseNumber": [
                    {
                        "Value": "9"
                    }
                ],
                "Locality": [
                    {
                        "Value": "Maxdorf"
                    }
                ],
                "PostalCode": [
                    {
                        "Value": "67113"
                    }
                ],
                "Country":"DEU"
                "AdministrativeDivision": [],
                "Building": [],
                "SubBuilding": []
            },
            "PreformattedData": {
                "PostalDeliveryAddressLines": [
                    "Potsdamer Platz 3"
                ]
            },
            "OrganizationElements": {
                "Companies": [],
                "Department": []
            },
            "ContactElements": [
                {
                    "Name": {}
                }
            ]
        }
    ]
}
}
}
```

You can request the geocoordinates and supplementary enrichments for an address. You can also specify options such as casing style, language, and character set for the output addresses. You can only set the parameters once per request. Address Verification applies the parameters to the processing of all the addresses that you submit in a single request.

You receive the results of a REST call in the JSON format with the POST method.

Note: For a complete example of an address job request and response in QuickCapture mode, see Appendix A, "REST Call Example" on page 101.

Transaction Reporting Example

The code below shows a valid address job request in REST. The getTransactionDetails method takes the account name and password as input values only.

```
POST /AV6/v1/getTransactionDetails HTTP/1.1
Host: eu-av.informaticadaas.com
Content-Type: application/json
{
  "Login": "*****",
  "Password": "*****"
}
```

Response Format

The code below shows the response to a REST request for information about the transactions in an account. The request used the getTransactionDetails method.

```
{
    "Login": "*****",
    "Password": "*****",
    "UseTransactions": "TEST",
    "Request": {
        "Parameters": {
            "Mode": "Interactive",
            "CountrySets": [
                {
                    "Process": {
                        "VerificationLevel": {
                            "PreferredVerificationLevel": "All",
                            "MinimumVerificationLevel": "All"
                        },
                        "AlternativeHandling": {
                            "OutdatedAddresses": {
                                "Match": "WithFaultTolerance",
                                "GetNewAddress": false
                            }
                        },
                        "Geocode": {
                            "SearchRadius": "50"
                        },
                        "Enrichments": {
                            "Geocoding": {
                                "Rooftop": false,
                                "ArrivalPoint": false,
                                "StreetCenter": false,
                                "PostalCodeCenter": false,
                                "LocalityCenter": false
                            },
                            "Global": false,
                            "CountrySpecific": false,
                            "CAMEO": false
                        }
                    },
                    "Input": {
                        "SingleAddressLineDataType": "UndelimitedSingleLine",
                        "SingleAddressLineDelimiter": "Comma"
                    }
                    "Result": {
                        "DeliverAdditionalSuggestions": "No",
                        "NumericRangeExpansion": {
                            "RangesToExpand": "All",
                            "RangeExpansionType": "Flexible"
                        }
                    },
                    "Standardizations": [
                        {
                            "Default": {
                                "PreferredLanguage": [],
                                "PreferredScript": {
                                    "Script": "NativePrimary",
                                    "TransliterationType": "Default",
                                    "LimitLatinCharacters": "NoLimit"
                                },
                                "FormatWithCountry": false,
                                "CountryNameLanguage": "ENG",
                                "CountryCodeType": "ISO3",
                                "MaxItemLength": 255,
                                "Casing": "PostalAdmin",
                                "DescriptorLength": "Short",
                                "AliasHandling": "PostalAdmin"
                                "StandardizeInvalidAddresses": false
```

```
                                }
                            "ElementStandardizations": {
                                "HouseNumber": {
                                    "Casing": "UseDefault"
                                    "DescriptorLength": "Short"
                                    "MaxItemCount": 6
                                    "MaxItemLength": 255
                                    "AliasHandling": "UseDefault"
                                }
                            }
                        ],
                        "OutputDetail": {
                            "PreformattedData": {
                                "SingleAddressLineDelimiter": "Semicolon",
                                "StreetWithNumber": false,
                                "NumberAndSubBuilding": false,
                                "PostalFormattedAddressLines": true,
                                "PostalDeliveryAddressLines": true,
                                "PostalRecipientAddressLines": true,
                                "PostalLocalityLines": true,
                                "SingleAddressLine": false
                            },
                            "SubItems": false,
                            "ElementStatus": false,
                            "OutputStatusForEmptyElements": false
                        }
                    }
                ],
                "CountryDetermination": {
                    "DefaultCountries": [],
                    "SearchInFields": [
                        "Country"
                    ]
                }
            }
        },
        "IO": {
            "Inputs": [
                {
                    "AddressElements": {
                        "Street":    [
                            {
                                "Value": "Röntgen strasse"
                            }
                        ],
                        "HouseNumber": [
                            {
                                "Value": "9"
                            }
                        ],
                        "Country": "DEU",
                        "Locality": [
                            {
                                "Value": "Maxdorf"
                            }
                        ],
                        "PostalCode": [
                            {
                                "Value": "67113"
                            }
                        ],
                        "AdministrativeDivision": [],
                        "Building": [],
                        "SubBuilding": []
                    },
                    "PreformattedData": {
                        "PostalDeliveryAddressLines": [
                            "Potsdamer Platz 3"
                        ]
                    },
                    "OrganizationElements": {
                        "Companies": [],
```

```
                        "Department": []
                    },
                    "ContactElements": [
                        {
                            "Name": {}
                        }
                    ]
                }
            ]
        }
    }
}
```

Swagger Documentation for POST Requests

You can view the full JSON Schema for Address Verification as a swagger document on the following web page:

https://app.swaggerhub.com/apis/avinfa/AV6Cloud/6.2.0

The web page includes a sample POST call that you can test or customize for your projects.

Note: All parameters, elements, and values in Address Verification JSON schemas are case-sensitive. Take care to follow the character case that the schema specifies.

REST Call Status

Informatica Address Verification returns status codes that describe the success or otherwise of the job that you run.

The codes provide a high-level summary of the address verification process.

Address Verification returns the following status codes:

Ok

No error. The Results array contains the processed result output.

AuthenticationError

Either the login and password combination is not correct, or you do not have valid transaction for the process mode you specified.

InsufficientTransactions

You do not have sufficient transactions for the process mode that you specified.

ProcessModeNotAllowed

The process mode that you requested is invalid or not allowed.

DataAccessError

General failure in data access and authentication component.

Timeout

The request that you sent to verify an address took longer than the expected time limit.

EngineError

The internal IDVE engine failed to process the request.

EngineUninitialized

The internal IDVE engine is not ready. Initialization is not over yet, or initialization failed.

EngineResponseError

The internal IDVE engine returned an invalid or unexpected result.

BadParameter

The input data is invalid. Some parameters in the input JSON are undefined or contains unexpected value.

InvalidUrl

The service URL is not valid.

Error

General failure. The logs contain more details.

CHAPTER 3

Address Structure and Elements

This chapter includes the following topics:

Address Structure and Elements Overview

Informatica Address Verification makes use of a range of input and output address elements. Select the appropriate input fields based on the input address structure. Select the output fields based on the result that you want to achieve.

You choose the verification modes that you need to verify an address. You can assign the default country for an input address and identify the country information if the information is absent in an address.

Process Modes

The process mode defines the type of address processing that Informatica Address Verification performs.

Choose one of the following process modes:

- AddressCodeLookup
- Batch
- Certified
- GeocodeToAddress
- Interactive
- QuickCapture

Note: The engine handles the process mode values in a case-sensitive manner. When you configure an address job, enter the process mode values as they appear in the list above. For example, do not enter BATCH as a process mode.

AddressCodeLookup Mode

The Address Verification reference data includes unique values that represent part of an address or the complete address. To return the value for an address, or to retrieve the address information that a value represents, configure Informatica Address Verification in address code lookup mode. You must also install the corresponding address code lookup (`ACL`) database with valid license keys.

In address code lookup mode, you can retrieve address information for the following countries:

- Austria
- Germany
- Japan
- Serbia
- South Africa
- United Kingdom

To configure Informatica Address Verification in address code lookup mode, specify the address code for the information that you require in the input.

The AddresssCode element includes the following properties:

- Value. The address code value.
- Type. The type of address code.

When you submit the address code lookup values for processing, Address Verification returns the partial or complete addresses that correspond to the values.

Address Codes

The following table lists the address codes that you can add:

Country	Address Code	Description

Austria	AUT_PACID	An Austria address has a PAC ID value when the address receives mail at another address at the same location.
		The PAC ID value is the Postal Address Code (PAC) value of the corresponding address that receives the mail.
		For example, a PAC ID value of 100004254 returns the following address:
		`Neue-Welt-Gasse 2`
		`8010 Graz`
		`AUT`
		Note: The address that gives access to the mailbox is the Ident address.

Germany	DEU_AGS	The Amtliche Gemeindeschlüssel (AGS) is a variable-length value that uniquely identifies a municipality in Germany. An AGS value might return more than one level of municipality information. See also `DEU_StreetID`.

Country	Address Code	Description
Germany	`DEU_LocalityID`	The Locality ID is a variable-length value that uniquely identifies a German locality. See also `DEU_StreetID`.

Germany	`DEU_StreetID`	The Street ID is a variable-length value that uniquely identifies a German street address.
		
		For example, when you validate the following address:
		
		`Röntgenstr. 9`
		`67133 Maxdorf`
		`Germany`
		
		Address Verification returns the following additional information in the address output:
		
		`AGS: 07338018`
		`LocalityID: 68015519`
		`StreetID: 100560690`

Japan	`JPN_ChoumeiAzaCode`	The Choumei Aza code is an 11-digit value that corresponds to a delivery point address in Japan.
		
		For example, a JPN_ChoumeiAzaCode of 28201160001 fetches the following result:
		
		〒670-0081 兵庫県姫路市田寺東１丁目
		
		or
		
		`01 Chome`
		`Taderahiga-shi`
		`Himeji-shi Hyogo-ken 670-0081`
		`Japan`
		
		You can use the Choumei Aza code in address code lookup mode to find the current version or an historical version of an address.

Japan	`JPN_ChoumeiAzaGaikuCode`	The Choumei Aza code is an 11-digit value that defines a unique delivery point for Japan addresses. The Gaiku code is a four-digit value that identifies a city block (ban) in Japan. The combined Choumei Aza code and Gaiku code helps you to retrieve more accurate addresses from Address Verification.

Serbia	`SRB_PAK`	The Postal Address Code (PAK) is a six-digit value that defines a unique Serbian address to the street level.
		
		For example, a SRB_PAK value of 111411 fetches the following result:
		
		`Braće Krsmanovića 13`
		`11000 Beograd`
		`SRB`

Country	Address Code	Description

South Africa	ZAF_NADID	The National Address Database (NAD) ID is a unique numeric ID assigned to a South Africa street address.
		
		For example, a ZAF_NADID value of 2170232 fetches the following result:
		
		`4 Balmoral Road`
		`Vincent`
		`East London`
		`5247`
		`South Africa`

United Kingdom	GBR_UDPRN	The Unique Delivery Point Reference Number (UDPRN) is an eight-character value that uniquely identifies a postal address in the Royal Mail PAF database.
		
		For example, a GBR_UDPRN value of 15511432 fetches the following result:
		
		`Flat 16`
		`Haden Court`
		`Lennox Road`
		`London`
		`N4 3HS`
		`United Kingdom`

United Kingdom	GBR_UPRN	The Unique Property Reference Number (UPRN) is a numeric value that uniquely identifies a land or property unit in the United Kingdom.
		
		For example, a GBR_UPRN value of 151117706 fetches the following result:
		
		`2 Drumforber Cottage`
		`Laurencekirk`
		`AB30 1RS`
		`United Kingdom`

Note: Address Verification returns a value of 0 for the ResultQuality and PostalRelevance status codes in address code lookup mode, because the lookup returns a partial address.

Address Verification returns a value of U as the Address Type in address code lookup mode.

Transaction Key and Record ID Values in Address Code Lookup Mode

If the address records in your organization contain transaction keys or record ID values, you can use the values in address code lookup mode. When you include the values in the input addresses, Address Verification passes the values through to the output addresses. You can then enter a transaction key or record ID value in address code lookup mode to query the output addresses and to return the address that matches the value.

Use the SourceID to enter the values.

Batch Mode

Use batch mode to verify one or more addresses without any user intervention. In batch mode, Informatica Address Verification processes and verifies the addresses that you enter and returns the results when the processing is complete.

Choose batch mode when you want to enter multiple addresses for verification and receive one result for each input address. If you have multiple addresses to verify, you can create a text file that contains the addresses and provide the file as the input. You can submit 1000 addresses in a single call in batch mode.

In batch mode, Address Verification does not correct addresses that are ambiguous or difficult to correct without user intervention. If the reference address database for the country to which the input address belongs is not available, Address Verification does not verify the address.

Certified Mode

Use certified mode to verify addresses to the standards that the postal authority in a country specifies. You can use certified mode to verify addresses in Australia, Canada, France, New Zealand, and the United States.

The verification process in certified mode works in broadly the same way as verification in batch mode. However, certified mode applies additional rules and regulations to the verification process.

You can use certified mode to verify addresses in accordance with the following postal certifications:

- Address Matching Approval System (AMAS) certification for Australia Post. Certified to AMAS Cycle 2020.
- Coding Accuracy Support System (CASS) certification for the United States Postal Service. Certified to CASS Cycle N.
  Address Verification also supports several requirements that the United States Postal Service proposes for CASS Cycle O.
- SendRight certification for New Zealand Post. Certified to SendRight Cycle 2020.
- Service National de L'Adresse (SNA) certification for La Poste of France. Certified to SNA Cycle 2020. Address Verification certifies addresses in France to the following levels:
  - CEDEX A. Organization level.
  - Hexacle. House-number level.
  - Hexaligne 3. Building level.
  - Hexaposte. Post code level.
  - Hexavia. Street level.
- Software Evaluation and Recognition Program (SERP) certification for Canada Post. Certified to SERP Cycle 2020.

An address that you verify in certified mode must meet the formatting requirements that the postal authority of the country specifies. For example, to verify a Canada address in certified mode, the input address can include a maximum of two postal delivery address lines. To verify a France address in certified mode, the input address can include a maximum of six postal formatted address lines. Of the six lines in France addresses, three lines must contain delivery elements other than the post box and locality information.

For certified mode, you must install the certified database files with valid license keys. You can submit 1000 addresses in a single call in certified mode.

Certified mode falls back to batch mode if the address belongs to a country that Informatica Address Verification does not support in certified mode.

If you enable certified mode and do not have the corresponding certified reference address database, Address Verification returns an N error status.

Certified Mode Verification for Australia Addresses

To verify Australia addresses in certified mode, install the `AUS_ADV_VRF_C01_000_6_1_0.MD6` database with valid license keys.

The `AUS_ADV_VRF_C01_000_6_1_0.MD6` database contains Postal Address File (PAF) data, which includes Delivery Point Identifiers (DPIDs) from Australia Post.

Certified Mode Verification for Canada Addresses

To verify Canada addresses in certified mode, install the `CAN_ADV_VRF_C01_000_6_1_0.MD6` database with valid license keys. The `CAN_ADV_VRF_C01_000_6_1_0.MD6` database contains the PoCAD (Point of Call Address Data).

Address Verification is SERP 2020 compliant. SERP 2020 compliance ensures that Address Verification adheres to the following changes to the postal rules and regulations set by Canada Post:

- If the input suite number is outside the only range available for the address in PoCAD, Address Verification marks that address as not valid. When the input postal code maps to a Large Volume Receiver (LVR), Address Verification copies the suite number from the input address to the output address even if the suite number does not match any database entry that contains the correct single suite-civic number combination.

- If the range-based PoCAD has only one address associated with a civic street and if the input address does not match the address in the database, Address Verification marks that address as not valid or noncorrectable.

- If the range-based PoCAD contains a Type 2 record that does not have a route identifier or a delivery mode identifier for a rural address, Address Verification handles that address in the same way that it handles Type 1 addresses. However, the following conditions apply to the handling of rural civic addresses:

  - If the input address does not have a match in the range-based PoCAD and the postal code of the input address has a corresponding Type 4 address in the range-based PoCAD, Address Verification marks the address as VQ (Valid but questionable) in the SERP category enrichment.

  - If the input address is a rural address with a street that has no civic street number, Address Verification adds the civic street number when a unique correction is possible. If no unique civic street can be added to the input address, Address Verification rejects the address.

Note that Post Office Box numbers from 99900 through 99905 in Canada denote Deliver to Post Office (DTPO) addresses for retail outlet locations. Addresses with Post Office Box numbers from 99900 through 99905 are specifically meant for parcel delivery and should not be used for other mail items.

Certified Mode Verification for New Zealand Addresses

To verify New Zealand addresses in certified mode, install the `NZL_ADV_VRF_C01_000_6_1_0.MD6` database with valid license keys.

Certified Mode Verification for France Addresses

To verify France addresses in certified mode, install the `FRA_ADV_VRF_BIA_000_6_1_0.MD6` database with valid license keys.

For SNA certified processing, enter addresses in the six-line PostalFormattedAddressLines format, including empty lines wherever a part of the address is missing.

The following table lists the values for the six-line PostalFormattedAddressLines format:

Postal Formatted Address Lines	Value
Line 1	ORGANIZATION IDENTIFICATION or IDENTITY OF THE ADDRESSEE
Line 2	INDIVIDUAL IDENTIFICATION (Company Contact) or DELIVERY POINT ACCESS INFORMATION (SubBuilding)
Line 3	DELIVERY POINT LOCATION (Building)
Line 4	STREET NUMBER or PLOT and THOROUGHFARE
Line 5	DELIVERY SERVICE or THOROUGHFARE COMPLEMENTARY IDENTIFICATION
Line 6	POSTCODE and LOCALITY or CEDEX POSTCODE and DISTRIBUTION AREA INDICATOR

SNA certification supports 7-bit ASCII data, and certified output does not include diacritics or mixed-case values.

Note: Informatica also provides the `FRA_ADV_VRF_BIA_001_6_1_0.MD6` file, which you can use to deliver addresses with diacritics and in mixed case in batch and interactive modes. If the 001 data file is not available, batch and interactive processing can succeed if the 000 data file is present.

The `FRA_ADV_VRF_BIA_000_6_1_0.MD6` file is the default file for France in the batch and interactive file data set.

Certified Mode Verification for United States Addresses

To verify United States addresses in certified mode, install the United States `Cxx` databases. The `Cxx` databases are numbered `USA_ADV_VRF_C01_000_6_1_0.MD6` through `USA_ADV_VRF_C07_000_6_1_0.MD6`. The databases enable the address verification process to analyze and update different aspects of the address according to the different USPS postal criteria. Add the licenses for the files.

Consider the following rules and guidelines for certified verification in the United States:

- Certified mode verification of United States addresses is available only to customers in the United States.

- The CASS certification files comply with the SHA-256 standard.

- The DPV database has information that helps you check whether a ZIP+4 coded address is in the USPS delivery file as a known address record. You can use the DPV product to confirm known USPS addresses and to identify potential addressing issues that might affect delivery.

  Note: Address Verification can also add ZIP+4 Codes to addresses in batch and interactive mode. Address Verification reads the codes from the `USA_ADV_VRF_BIA_000_6_1_0.MD6` database in batch and interactive modes.

- Informatica Address Verification sends records with input suite data that does not match the ZIP+4 Code reference data thorough the SuiteLink process. If Address Verification finds a match for such addresses with SuiteLink, Address Verification retains the input suite data in the residue component and writes the correct suite data on the second postal delivery address line. The USPS requires that the address verification operation retains the non-matching input data.

GeocodeToAddress Mode

Use GeocodeToAddress mode to retrieve one or more addresses that match a set of geocoordinates that you submit.

Address Verification applies a search radius to the input geocoordinates to define the area in which to search for addresses. The default radius is 50 meters.

Address Verification returns the address closest to the geocoordinates within the search radius. If one or more addresses lie within ten meters of the closest address, Address Verification returns the closest address and also the addresses within the ten-meter range. Address Verification also returns the distance from the geocoordinates of each output address and the direction in which the address lies.

GeocodeToAddress mode requires arrival point reference data and returns addresses with arrival point precision.

For more information see "Reverse Geocoding" on page 59.

Interactive Mode

Use interactive mode to manually resolve ambiguities and select the best possible corrections. In interactive mode, Informatica Address Verification returns multiple address suggestions from which you can choose the most appropriate result.

For each address that you enter for verification in interactive mode, you can receive a maximum of 100 suggestions from Address Verification.

For information about how to specify the number of address suggestions for an address, see "Maximum Number of Results in the Output" on page 62.

QuickCapture Mode

Use QuickCapture mode to receive address suggestions as you type. QuickCapture mode supports single-line data input. Use the SingleAddressLine element and the Country element to retrieve address suggestions. You can receive up to 100 suggestions for an input address in QuickCapture mode.

You can specify the maximum number of suggestions that Informatica Address Verification returns for each partial or complete address that you enter in QuickCapture mode. For information about how to specify the number of address suggestions, see "Maximum Number of Results in the Output" on page 62.

Use a character space as the delimiter in the input address. Use the SingleAddressLineDelimiter element to set the output delimiter. The default output delimiter for elements in QuickCapture mode is the semicolon.

You can set the output delimiter to one of the following values:

- Comma
- Semicolon
- Space
- Tab

Sorting Criteria in QuickCapture Mode

At the highest level, Address Verification sorts address suggestions by the type of address element in each suggestion that most closely matches the input address values.

Within each group, QuickCapture mode considers the following factors when it sorts and returns address suggestions:

- The similarity between the input address and the reference address, as indicated by the MatchPercentage value.
- The distance between the input address and the reference address, if the distance can be calculated.

If you provide an IP address or a set of geocoordinates in the input address, the locality that the IP address or the geocoordinates identify becomes the primary sorting criterion within each result group.

Address Verification returns a complete address in suggestions when the address type is S. For other address types, Address Verification may return a partial address that includes the information that links it to a result group.

For more information about the ResultGroup property, see "Result Group" on page 95.

Locality Order in QuickCapture Output

Address Verification can sort the address suggestion list according to the town or city to which the addresses belong, beginning with the addresses in the nearest town or city. Address Verification sorts the addresses by town or city when you include an IP address or a set of geocoordinates in the input address.

You can submit an IP address in IPv4 format or IPv6 format. When you submit IP address data with a partial address, Address Verification converts the IP address to a geocode and uses the geocode to select the town or district in which the address is located.

You can enter geocoordinates as a single input value, or you can enter the latitude and longitude coordinates as discrete input values.

If you enter both IP address and geocoordinate values for an address that you verify in QuickCapture mode, Address Verification gives precedence to the geocoordinates over the IP address.

Rules and Guidelines for QuickCapture Mode

Consider the following rules and guidelines when you submit an address for verification in QuickCapture mode:

- QuickCapture mode reads the SingleAddressLine element, the Country element, and optionally the SourceID element. Enter country information in the Country element and not in the SingleAddressLine element.
- Ensure that you fully preload the quick capture reference data files before you submit an address in QuickCapture mode.
- QuickCapture mode can process an incomplete address. For best results, submit a complete address.

  QuickCapture mode can tolerate a mis-spelling in an address element in a manner that batch and interactive modes cannot. For example, QuickCapture mode can recognize 1 FIFTH AVE NEW YO as 1 FIFTH AVE NEW YORK.
- When you submit an address to QuickCapture mode in a Chinese or Japanese character set, use a character space as a delimiter between the elements.
- Do not separate associated address values. For example, do not add a locality name between a street name and its associated descriptor.
- Do not enter a child address element without the corresponding parent element. For example, do not enter a house number without the corresponding street name.
- QuickCapture mode may return partial addresses when all elements are not provided on input or when there are ranges in the output that do not uniquely identify an address.
- QuickCapture mode supports five-digit ZIP Codes in the United States but does not support +4 digit ZIP Code extensions.

- Address Verification expands any house number, building number, and postal code number ranges in the addresses that it returns in a suggestion list in QuickCapture mode. Address Verification performs range expansion from the first eligible address in the suggestion list and can continue to the limit that the MaxResultCount property defines.

  Address Verification applies preset values to the NumericRangeExpansion parameter properties in QuickCapture mode. For more information about range expansion, see "Expand Numerical Ranges" on page 62.

Country Determination

The CountryDetermination element specifies how Informatica Address Verification handles the country information in the input address.

Address Verification can identify the country to which an address belongs from the information in your address.

You can specify the input fields that you want Address Verification to consider when it searches for country information. You add the input field names in the SearchInFields property.

You can specify one or more of the following fields on the SearchInFields property:

- Country
- PostalFormattedAddressLines

Note: The order in which you specify the fields on the SearchInFields property determines the order in which Address Verification searches for the country information.

You can also set a default country that Address Verification can apply to input addresses that do not contain country information. To set a default country, configure the DefaultCountries property in the CountryDetermination element.

If you leave the SearchInFields property empty, Address Verification does not identify the country information from the input address and returns the country that you specified in the DefaultCountries property.

Note: The country information in the country input field takes precedence when Address Verification can infer multiple countries from the input address.

Address Values in the AddressElements Object

Informatica Address Verification provides you with address elements that you can use to map an input address that contains each item of address information in a separate field. You can also use the address elements to configure the output structure of an address.

Address Line Elements and Formatted Data

Informatica Address Verification provides you with address line elements that you can use to map an input address that contains multiple address information in a single field. You can also use the address line elements to configure the output structure of an address.

Informatica Address Verification supports the following address line elements:

PostalRecipientLines

Contains recipient information, such as contact or organization name. Address Verification supports up to six lines of recipient information.

PostalDeliveryAddressLines

Contains delivery information, such as street, house number, building, and delivery service information. Address Verification supports up to six lines of postal delivery address line information.

PostalFormattedAddressLines

Contains unfielded data such as recipient information, delivery address information, and locality information. Address Verification supports up to 19 lines of postal formatted address line information.

PostalLocalityLine

Contains information such as locality, postal code, province, and country details. Address Verification supports up to six lines of postal locality line information.

SingleAddressLine

Contains an address in a single line. You can submit fielded or fielded data in the SingleAddressLine element. Use the element in batch, interactive, and certified modes.

StreetWithNumber

Contains street and house number information in a single element. For example, 1 MAIN ST.

NumberAndSubBuilding

Contains number and sub-building information in a single element. For example, 1 #1.

Input Options for Single Address Line Data

By default, Informatica Address Verification does not recognize a delimiter in single-line input. To specify a delimiter, update the single-line input properties for the address.

Note: When you submit address data on a single line, Address Verification applies a character space as a separator between the values.

The Input element has the following properties:

SingleAddressLineDataType

Determines whether Address Verification expects a delimiter in single-line data.

The property takes one of the following values:

- DelimitedMultiLine. Indicates that the single-line input uses delimiters to identify address fields. When you set the property to DelimitedMultiLine, Address Verification uses the SingleAddressLineDelimiter property value to identify the field delimiter.

- UndelimitedSingleLine. Indicates that the single-line input does not use delimiters. When you set the property to UndelimitedSingleLine, Address Verification ignores the SingleAddressLineDelimiter property value.

  The default value is UndelimitedSingleLine.

SingleAddressLineDelimiter

Identifies the delimiter that Address Verification expects when you set the SingleAddressLineDataType property to DelimitedMultiLine.

The property takes one of the following values:

- Comma

- Semicolon

- Tab

The default value is Comma.

Example: Multiline Address in a Single-Line Field

The following United States address includes a semicolon as a delimiter between the street information and the city, state, and ZIP Code information:

1960 W CHELSEA AVE STE 2006R; ALLENTOWN PA 18104

If you submit the address with the delimiter, configure the SingleAddressLineDataType and SingleAddressLineDelimiter properties to expect the semicolon. If you omit a delimiter, you do not need to update the properties.

Reference Data Specification

When you run an address job, Informatica Address Verification uses the country information in the input addresses and the process mode that the job specifies to select the appropriate reference data file for each address. Address Verification selects the file from the files that are loaded into memory for the current job.

You can additionally use the DataSet array on the DataSetDetermination parameter to specify the reference data files that Address Verification can use for an address job.

Use a DataSet array when more than one reference data file meets the country and process mode requirements that the input address defines. If you configure a DataSet array, Address Verification uses only the files that the array identifies in the current address job.

Configuring the DataSet Array

Use a DataSet array to specify a single reference data file that Address Verification can use for a given country and process mode.

Populate the DataSet array with the following values:

- The three-character ISO code for the country to which each address belongs. Enter the ISO code on the *Country* property.

- The three-digit identifier of the reference data file. Enter the identifier on the *ID* property.

- The type of reference data that the file supports, for example BatchInteractive. Enter the type on the *SubType* property.

You can enter the following SubType values:

- AddressCodeLookup

- BatchInteractive

- CAMEO

- Certified

- GeocodeToAddress

- GeocodingArrivalPoint

- GeocodingRooftop

- GeocodingStandard

- QuickCapture

- Supplementary

Rules and Guidelines for Dataset Arrays

Consider the following rules and guidelines when you configure the Dataset array:

- The DataSet array values are optional in the following cases:
  - Address Verification loaded a single data file into memory for the current job.

    If you do not populate any DataSet array and a single data file is loaded into memory, Address Verification uses the available file regardless of the file name.
  - Address Verification loaded multiple data file into memory, and a single file includes the default data set ID in the file name.

    If you do not populate any DataSet array, and if the loaded files include a single file with the default ID, Address Verification uses the file with the default ID.

- When you use a DataSet array, populate all of the values on the array.

- If a DataSet array specifies a reference data file for an address but the file is not loaded into memory, Address Verification does not process the address.

- You can add multiple arrays to DatasetDetermination element.

- A DataSet array may specify a data set that the address job does not use. In such cases, the job ignores the data set.

Defining an Address Job with a Single Data Set

The following code fragment shows a single data set in the DataSet array:

```
"DataSetDetermination": {
    "DataSet": [
        {
            "Country": "AUS",
            "ID": "002",
            "SubType": "BatchInteractive"
        }
    ]
}
```

In this example, Address Verification will search the files in memory for an Australia reference data file with the sub type BatchInteractive and a data set ID of 002.

Defining an Address Job with Multiple Data Sets

The following code fragment shows a sample of multiple data sets in the DataSet array:

```
{
    "DataSet": [
```

```
        {
            "Country": "IRL",
            "ID": "001",
            "SubType": "BatchInteractive"
        },
        {
            "Country": "AUS",
            "ID": "001",
            "SubType": "BatchInteractive"
        }
    ]
  }
```

In this example, Address Verification can search the files in memory for the following data files:

- A batch and interactive data file for Ireland with a data set ID of 001.

- A batch and interactive data file for Australia with a data set ID of 001.

JSON Output

You can configure the OutputDetail element to enable or disable certain output values in the output.

Preformatted Data

You can set the following properties of the PreformattedData element to true or false:

- PostalFormattedAddressLines. The default value is true.

- PostalDeliveryAddressLines. The default value is true.

- PostalRecipientLines. The default value is true.

- PostalLocalityLine. The default value is true.

- StreetWithNumber. The default value is false.

- NumberAndSubBuilding. The default value is false.

- SingleAddressLine. The default value is false.
  For information about the SingleAddressLineDelimiter property of the PreformattedData element, see .

SubItems and Status

You can set the SubItems, ElementStatus, and OutputStatusForEmptyElements properties of the OutputDetail element to true or false. The default value is false.

Part II: Parameter and Element Reference

This part contains the following chapters:

CHAPTER 4

Address Enrichments

This chapter includes the following topics:

Enrichments Overview

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, Informatica Address Verification can return geocoordinates that identify the physical location of an address. You can determine the type of geocoordinates that Address Verification returns. For more information, see "Geocodes" on page 41.

Some enrichments are specific to addresses in individual countries, and some enrichments apply equally to every country. For more information, see "Country-Specific and Global Enrichments" on page 44.

CAMEO Consumer Segmentation

CAMEO profiles from the TransUnion Information Group provide consumer classification systems that indicate the socio-economic and geo-demographic profiles of neighborhoods across the world. You can retrieve CAMEO profiles as an address enrichment for many countries.

To receive CAMEO information in the validated addresses, you must install the CAMEO reference address databases.

Note: Informatica Address Verification adds CAMEO information only to validated addresses. To enable CAMEO enrichment, you must install the Batch and Interactive reference address databases along with the CAMEO databases.

The CAMEO profiles contain socio-demographic and lifestyle data at the microcell level based on parameters such as age, education, income, and general interests.

The following list shows some of the use cases for CAMEO profiles:

- Enhance and segment consumer databases
- Improve your understanding about customers and responders
- Find more prospects by finding look-alikes
- Perform area and location analysis
- Understand market potential
- Perform advanced statistical analysis and modeling

Database Filename Format

The CAMEO database filenames have the following format:

[ISO]_ADV_ENR_CAM_000_6_1_0.MD6

Note: [ISO] represents the three-letter ISO-3166 code for the country name.

Supported Countries

You can configure Address Verification to include CAMEO information in valid output for the following countries:

Australia	Austria
Belgium	Brazil
Canada	Czech Republic
Denmark	Estonia
Finland	France
Germany	Hong Kong
Hungary	India
Indonesia	Ireland
Italy	Japan
Korea	Mexico
Netherlands	New Zealand
Norway	Poland
Portugal	Romania
Singapore	Slovakia
South Africa	Spain
Sweden	Switzerland
United Kingdom	United States

Status Codes for CAMEO

Address Verification returns status codes that describe the status of the CAMEO data in the output address. For information about CAMEO status codes, see .

Enabling CAMEO Demographic Profiles

You can configure Informatica Address Verification to include CAMEO demographic profile information as an enrichment to addresses.

▶ Include the CAMEO element in your input address request and set the element to *true*. Find the CAMEO element under **Parameters** > **CountrySet** > **Enrichments** .

The default value of the element is *false*.

CAMEO Output Fields

When you validate an address with CAMEO enrichment enabled, you receive the following information in the validated output:

CATEGORY

A code for the age and affluence of the address residents at the country level.

CATEGORY_DESCRIPTION

A description for the age and affluence of the address residents at the country level.

GROUP

A code for the neighborhood of the address at the country level.

GROUP_DESCRIPTION

A description for the neighborhood of the address at the country level.

INTERNATIONAL

A code for the age and affluence of the address residents at an international level.

INTERNATIONAL_DESCRIPTION

A description for the age and affluence of the address residents at an international level.

MVID

A match key that you can use to link your CAMEO-encoded addresses to CAMEO Analysis, a TransUnion Information Group product. CAMEO Analysis is a separate product that you can license directly from TransUnion Information Group.

Find the CAMEO output properties under **IO** > **Outputs** > **Results** > **Enrichments**.

Geocodes

You can use the Geocoding element to add geocoordinates as an enrichment to a verified address. Geocoordinates indicate the latitude and the longitude of an address. Informatica Address Verification follows the World Geodetic System standards (WGS 84) for geocoding.

Address Verification can return geocoordinates at different levels of precision.

The Geocoding element includes the following properties:

- Rooftop
- ArrivalPoint
- StreetCenter
- LocalityCenter
- PostalCodeCenter
- Preferred

You can set one or more of the Rooftop, ArrivalPoint, StreetCenter, LocalityCenter, and PostalCodeCenter properties to true or false to specify the type of geocoordinates that you require. Address Verification will return geocoordinates for each type that you set to true.

Alternatively, you can use the Preferred property to list multiple types of geocoordinates in an array. When you use the Preferred property, Address Verification returns the geocoordinates for the first type on your list that it finds in the reference data.

If Address Verification cannot find any type of geocoordinates that you specify in the reference data, Address Verification does not return any geocoordinates. The default value on the properties is false.

You can set the Preferred property to the following values:

- Rooftop
- ArrivalPoint
- StreetCenter
- LocalityCenter
- PostalCodeCenter

Note: A true value on a Rooftop, ArrivalPoint, StreetCenter, LocalityCenter, or PostalCodeCenter property takes precedence over any value that you set on the Preferred property.

Types of Geocoordinates

Address Verification can return the following types of geocoordinates in the verified output:

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.

By default, Address Verification returns the geocoordinates to the PrimaryLocalityCenter level of precision. Address Verification returns the geocoordinates to a SubLocalityCenter level of precision if the sub-locality data is present in the reference data.

PostalCodeCenter

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

Each geocoding property can return information on the following properties:

- Value. Contains the latitude and longitude coordinates of an address.
- Latitude. The latitude value that address verification can return for the input address.
- Longitude. The longitude value that address verification can return for the input address.
- Accuracy. The level of accuracy to which address verification returns geocodes.

GeoCoding Status Values

Informatica Address Verification returns the following geocoding status values to help you understand the status of a geocoding request.

ER_DATA_NOT_AVAILABLE

Address 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

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

POCO_BASE_CENTER

Geocoordinates are only partially accurate to the postal code level. For example, 795xx.

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

High-precision arrival point geocoordinates. (Measured entryway to the parcel of land.)

POINT_ROOFTOP

High-precision rooftop geocoordinates.

Country-Specific and Global Enrichments

Informatica Address Verification can provide additional information as enrichments to addresses from several countries. Some enrichments are specific to addresses in individual countries, and some enrichments apply equally to every country.

Informatica Address Verification returns the requested enrichments based on the supplementary reference data files that you install and the valid license keys available for the data files.

Enrichments by Country

Use the CountrySpecific property to specify whether Address Verification returns the enrichments that it offers for individual countries. When you set the CountrySpecific property to true, Address Verification returns any country-specific enrichment that it finds in the reference data for the input addresses that identify the country. The default CountrySpecific property value is false.

You can additionally configure Address Verification to return enrichments for a subset of the countries for which enrichments are available. To do so, set the CountrySpecific property to true, and add a list of one or more countries as an array to the Countries element. Add the ISO three-character codes for each country in a comma-separated list, for example AUT, DEU. When you add a list of countries to the Countries element, Address Verification returns the available enrichments for the countries that you specify only. Find the Countries element under **Parameters** > **CountrySets**.

The following table lists the countries that support supplementary information, the databases to install, and the enrichment codes for each country:

Country	Database	Enrichment Codes
Australia	AUS_ADV_ENR_EN1_000_6_1_0.MD6	GNAFID | PrimaryGNAFID | PrimarySecondaryIndicator | SA1MainNo | SA1Digit7No | SA2MainNo | SA2Digit5No | SA2Name | SA3Name | SA3Code | SA4Name | SA4Code | GCCName | GCCCode | STEName | STECode | CCD06 | MeshBlock11 | MeshBlock16
Austria	AUT_ADV_ENR_EN1_000_6_1_0.MD6	PostalAddressCode | PostalAddressCodeID
Belgium	BEL_ADV_ENR_EN1_000_6_1_0.MD6	NISCode
Brazil	BRA_ADV_ENR_EN1_000_6_1_0.MD6	IBGECode
Czech Republic	CZE_ADV_ENR_EN1_000_6_1_0.MD6	RUIANSOID | RUIANAMID | RUIANTEAID
France	FRA_ADV_ENR_EN1_000_6_1_0.MD6	INSEECode | INSEE9Code
Germany	DEU_ADV_ENR_EN1_000_6_1_0.MD6	LocalityID | StreetID | AGS | StreetCode
Italy	ITA_ADV_ENR_EN1_000_6_1_0.MD6	ISTATCode
Japan	JPN_ADV_ENR_EN1_000_6_1_0.MD6	ChoumeiAzaCode | NewChoumeiAzaCode | CurrentChoumeiAzaCode | GaikuCode
Poland	POL_ADV_ENR_EN1_000_6_1_0.MD6	GMINACode | LocalityTerytID | StreetTerytID
Russia	RUS_ADV_ENR_EN1_000_6_1_0.MD6	FIASID
Serbia	SRB_ADV_ENR_EN1_000_6_1_0.MD6	PostalAddressCode

Country	Database	Enrichment Codes
South Africa	ZAF_ADV_ENR_EN1_000_6_1_0.MD6	NADID
Spain	ESP_ADV_ENR_EN1_000_6_1_0.MD6	INEProvinceCode | INEMunicipalityCode | INEStreetCode
Switzerland	CHE_ADV_ENR_EN1_000_6_1_0.MD6	PostalCodeExtension
United Kingdom	GBR_ADV_ENR_EN1_000_6_1_0.MD6	DeliveryPointSuffix | DeliveryPointType | UDPRN | AddressKey | OrganizationKey | UPRN
United States	USA_ADV_ENR_EN1_000_6_1_0.MD6	CountyFipsCode | StateFipsCode | MSAID | CBSAID | CensusTractNo | CensusBlockNo | CensusBlockGroup | CensusCountyFips | CensusCountyName | MCDID | PlaceFipsCode | FinanceNumber

Global Enrichments

Use the Global property to activate enrichments that can apply in the same way to addresses in every country. To return the enrichments, set the property to true. The default value is false.

Note: The presence of an enrichment as a global property does not mean that Address Verification will return the enrichment for every country. Address Verification returns a global enrichment in the same manner for addresses in every country that supports the enrichment.

Address Verification supports the following global enrichments:

TimeZoneCode

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.

TimeZoneName

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

The global enrichments TimeZoneCode and TimeZoneName are available only for United States addresses.

Status Codes for Enrichments

Address Verification returns status codes that describe the status of the enrichment data in the output address. For information about enrichment status codes, see .

Enrichments for Australia Addresses

You can configure Informatica Address Verification to include address enrichments in the validated Australia addresses. Address Verification bases the enrichments on geographical areas that the Australian Bureau of Statistics defines.

To receive address enrichments for Australia, install the latest supplementary reference data files for Australia and ensure that the valid license keys are available for the data files.

Address Verification provides enrichment data for the following statistical elements:

CCD06

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.

GCCCode

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.

GCCName

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.

GNAFID

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.

The GNAFID value is the most precise identifier in the address file for a given address. If the GNAFID value represents a sub-building address, Address Verification returns the GNAF value for the house or building that contains the sub-building in the PrimaryGNAFID field.

MeshBlock11

An 11-digit code that identifies the mesh block to which an address belongs. MeshBlock11 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.

MeshBlock16

An 11-digit code that identifies the mesh block to which an address belongs. MeshBlock16 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 *MeshBlock11*.

PrimaryGNAFID

A 14-digit code that represents the house or building in the GNAF that the address identifies. Australian government departments and organizations recognize the code as a persistent, unique identifier for the

primary address. If the address identifies a sub-building in the house or building, the GNAFID field returns the code for the address at sub-building level.

PrimarySecondaryIndicator

Indicates whether an input address is a primary address or a secondary address. A primary address in the GNAF is a house or building. A secondary address is a sub-building within the house or building. The PrimarySecondaryIndicator value can be P for primary, or S for secondary, or the field can be empty when the input address is not a multi-resident dwelling.

SA1Digit7No

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 SA1MainNo 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.

SA1MainNo

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 SA1MainNo code include the values of the larger areas in the statistical area hierarchy. That is, the SA1MainNo 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 SA1MainNo uniquely identifies the area to which the address belongs.

SA2Digit5No

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 SA2MainNo 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.

SA2MainNo

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 SA2MainNo code include the values of the larger areas in the statistical area hierarchy. That is, the SA2MainNo 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.

SA2Name

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.

SA3Code

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 SA3Code 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.

SA3Name

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.

SA4Code

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 SA4Code 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.

SA4Name

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.

STECode

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

STEName

Represents the name of a state or territory.

Enrichments for Austria Addresses

You can configure Informatica Address Verification to include unique identification codes in the output for valid Austria addresses.

To receive address enrichments for Austria, install the latest supplementary reference data files for Austria and ensure that the valid license keys are available for the data files.

Address Verification can return the following code values:

PostalAddressCode

The Postal Address Code, or PAC, is a unique identifier for a current Austria address.

PostalAddressCodeID

ThePostalAddressCodeID is the PAC of the address at which a building receives mail if the building has more than one address.

Address Verification reads the address from the `AUT_ADV_VRF_ACL_000_6_1_0.MD6` database.

PostalAddressCode Enrichment

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

```
Plättenstraße 7
2380 Perchtoldsdorf
Niederösterreich
AUT
```

PostalAddressCodeID Enrichment

An Austria address has a PostalAddressCodeID 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 PostalAddressCode value and a PostalAddressCodeID value. The PostalAddressCodeID value is the postal address code of the Ident address that receives the mail. The postal carrier delivers mail to the address that the PostalAddressCodeID identifies.

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

Address	PostalAddressCode	PostalAddressCodeID
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 PostalAddressCodeID is the PAC of the address that receives the mail. The PostalAddressCode value for the Ident address is 100004254.

Enrichment for Belgium Addresses

You can configure Informatica Address Verification to add the National Institute of Statistics (StatBel) or NISCode as an enrichment to validated Belgium addresses.

To receive address enrichments for Belgium, install the latest supplementary reference data files for Belgium and ensure that the valid license keys are available for the data files.

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

For example, Address Verification returns `21004A001` as an enrichment to the following address:

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

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

Enrichments for Brazil Addresses

You can configure Informatica Address Verification to include the Brazilian Institute of Geography and Statistics (IBGE) code as enrichment to validated Brazil addresses.

To receive address enrichments for Brazil, install the latest supplementary reference data files for Brazil and ensure that the valid license keys are available for the data files.

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

Example: IBGECode in Address Output

When you validate the following address with the address enrichment enabled, Address Verification returns an IBGECode of `IBGECode: 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 Informatica Address Verification 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.

To receive address enrichments for Czech Republic, install the latest supplementary reference data files for Czech Republic and ensure that the valid license keys are available for the data files.

The RUIAN ID enrichment comprises the following codes:

- RUIANAMID. Uniquely identifies the address delivery point.
- RUIANSOID. Identifies the address to building level.
- RUIANTEAID. Identifies the building entrance.

The supplementary database for the Czech Republic includes RUIANAMID and RUIANSOID values for ninety-nine percent of Czech Republic addresses. The database includes RUIANTEAID values for a small percentage of addresses.

Enrichments for France Addresses

You can configure Informatica Address Verification to include the INSEECode and the INSEE9Code in the validated output for France addresses.

To receive address enrichments for France, install the latest supplementary reference data files for France and ensure that the valid license keys are available for the data files.

The INSEECode 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 INSEE9Code 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.

Enrichments for Germany Addresses

You can configure Informatica Address Verification to include multiple address enrichments in validated Germany addresses.

To receive address enrichments for Germany, install the latest supplementary reference data files for Germany and ensure that the valid license keys are available for the data files.

You can configure Address Verification to include the following enrichments in validated Germany addresses:

AGS

The Amtliche Gemeindeschlüssel (AGS) is a variable-length code that uniquely identifies a locality in Germany.

LocalityID

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

StreetID

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

StreetCode

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.

Note: You must install the `DEU_ADV_ENR_EN1_001_6_1_0.MD6` database to receive the StreetCode enrichment for Germany addresses.

For example, when you validate the following address:

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

Address Verification returns the following additional information in the validated output:

```
AGS: 07338018
LocalityID: 68015519
StreetID: 100560690
StreetCode: 057
```

Enrichments for Italy Addresses

You can configure Informatica Address Verification to add ISTATCode data as an enrichment to a valid Italy address.

To receive address enrichments for Italy, install the latest supplementary reference data files for Italy and ensure that the valid license keys are available for the data files.

The ISTAT code contains a series of values that provide geographic and demographic information about the address locale, including the province, municipality, and region to which the address belongs. The Italian National Institute of Statistics (ISTAT) maintains the ISTAT codes.

Enrichments for Japan Addresses

You can configure Informatica Address Verification to add enrichments to valid Japan addresses.

To receive address enrichments for Japan, install the latest supplementary reference data files for Japan and ensure that the valid license keys are available for the data files.

Address Verification offers the following enrichments for Japan:

- **ChoumeiAzaCode**
- **NewChoumeiAzaCode**
- **CurrentChoumeiAzaCode**
- **GaikuCode**

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. You can submit a Choumei Aza code in address code lookup mode to obtain the version of the address that the code identifies.

Address Verification returns the following types of Choumei Aza code:

ChoumeiAzaCode

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

NewChoumeiAzaCode

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 NewChoumeiAzaCode value that Address Verification returns represents the second version of the address.

CurrentChoumeiAzaCode

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. Address Verification verifies the address and returns the Choumei Aza code enrichments. You submit the CurrentChoumeiAzaCode value in address code lookup mode. Address Verification returns the current version of the address.

Note: The NewChoumeiAzaCode returns the Choumei Aza code for the update that directly followed the address that you submitted. You can rerun the steps with the NewChoumeiAzaCode value to find each version of the address in the reference data. Or, you can use the ArchiveHandling property to retrieve the current version of any older address in a single step. For more information on ArchiveHandling, see GUID-EDCA4648-4A25-43F6-9684-740AC9BFECA3.

GaikuCode

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 Informatica Address Verification to include the GMINACode, LocalityTerytID, and StreetTerytID as enrichments for validated Poland addresses.

To receive address enrichments for Poland, install the latest supplementary reference data files for Poland and ensure that the valid license keys are available for the data files.

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.

Enrichments for Russia Addesses

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

To receive address enrichments for Russia, install the latest supplementary reference data files for Russia and ensure that the valid license keys are available for the data files.

The FIASID is an alphanumeric string.

Enrichments for Serbia Addresses

You can configure Informatica Address Verification to include the PostalAddressCode as an enrichment to the validated output for Serbia addresses.

To receive address enrichments for Serbia, install the latest supplementary reference data files for Serbia and ensure that the valid license keys are available for the data files.

The PostalAddressCode is a six-digit code that maps to the street level. Including the PostalAddressCode in an address ensures correct and prompt delivery to recipients in Serbia. You do not need the PostalAddressCode 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 Informatica Address Verification to include the National Address Database (NAD) ID in the validated output for South Africa addresses.

To receive address enrichments for South Africa, install the latest supplementary reference data files for South Africa and ensure that the valid license keys are available for the data files.

The NADID is a unique numeric ID that is assigned to street addresses in South Africa.

For example, Address Verification returns the NADID 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 Informatica Address Verification to add INE code data as an enrichment to a valid Spain address.

To receive address enrichments for Spain, install the latest supplementary reference data files for Spain and ensure that the valid license keys are available for the data files.

The INE code contains a series of values that identify the INEProvinceCode, INEMunicipalityCode, and INEStreetCode to which the address belongs. The National Statistics Institute of Spain (INE) maintains the INE codes.

Enrichments for Switzerland Addresses

You can configure Informatica Address Verification to include the additional postal code characters in the validated output for Switzerland addresses.

To receive address enrichments for Switzerland, install the latest supplementary reference data files for Switzerland and ensure that the valid license keys are available for the data files.

Address Verification returns the additional postal code characters in an enrichment field called PostalCodeExtension.

For example, when you validate the following Switzerland address with the address enrichment enabled, Address Verification returns a PostalCodeExtension value of 02:

```
Müllerboden
Buochserbergstrasse 5
6383 Niederrickenbach
Switzerland
```

Enrichments for the United Kingdom Addresses

You can configure Informatica Address Verification to include address enrichments in validated United Kingdom addresses.

To receive address enrichments for United Kingdom, install the latest supplementary reference data files for United Kingdom and ensure that the valid license keys are available for the data files.

Address Verification includes the following enrichments in validated United Kingdom addresses:

AddressKey

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.

DeliveryPointSuffix

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.

DeliveryPointType

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

OrganizationKey

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

UDPRN

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.

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	AddressKey: 18161676 DeliveryPointSuffix: 1H DeliveryPointType: R OrganizationKey: 00000000 UDPRN: 15498195 UPRN: 200123099
Large Organization	PO BOX 43078 LONDON NW1 1SF UNITED KINGDOM	AddressKey: 02356470 DeliveryPointSuffix: 1A DeliveryPointType: L OrganizationKey: 00000000 UDPRN: 17635833 UPRN: 10015054387
Small Organization	17A THE GROVE LONDON N3 1QN UNITED KINGDOM	AddressKey: 28470295 DeliveryPointSuffix: 1H DeliveryPointType: O OrganizationKey: 01464593 UDPRN: 15491057 UPRN: 200210632

Enrichments for United States Addresses

You can configure Informatica Address Verification to add multiple address enrichments when you verify United States addresses.

To receive address enrichments for the United States, install the latest supplementary reference data files for United States and ensure that valid license keys are available for the data files.

Address Verification includes the following enrichments for validated United States addresses:

CBSAID

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.

CensusBlockGroup

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.

CensusBlockNo

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

CensusCountyFips

A three-digit number that identifies a county in the United States. The United States Census Bureau provides the county information.

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.

CensusCountyName

The name of the county that the Census Bureau provides.

CensusTractNo

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

CountyFipsCode

A three-digit number that identifies a county in the United States. The United States Postal Service (USPS) provides the county information.

Note: The United States Census Bureau and the USPS both maintain county FIPS codes. The county codes from each organization differ in approximately 5% of cases.

FinanceNumber

A finance number is a six-digit number that the 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.

MCDID

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

MSAID

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.

PlaceFipsCode

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

StateFipsCode

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

Certification

Postal certification improves the quality of addresses and ensures that Address Verification services meet postal authority requirements. Certifications indicate if an address contains the data required by the certification standards of national mail carriers.

Address Verification returns the requested certifications based on the certification reference data files that you install and the valid license keys available for the data files.

The following table describes the certification codes that Informatica Address Verification can return:

Certification	Codes
AMAS	ErrorCode | DeliveryPointID | DeliveryID | LotNumber | PostalDeliveryNumber | PostalDeliveryNumberPrefix | PostalDeliveryNumberSuffix | HouseNumber1 | HouseNumber1Suffix | HouseNumber2 | HouseNumber2Suffix
SendRight	AddressType | SOARecordIgnored | DeliveryPointID | DeliveryServiceType | DeliveryServiceNumber | DeliveryServiceLocality | HouseNumber | HouseNumberAlpha | RdNumber | Hygiene | ValidityCode
CASS	ErrorCode | BarCode | DeliveryPoint | PoBoxOnly | RecordType | CarrierRoute | CongressionalDistrict | DeliveryPointCheckDigit | HighriseDefault | HighriseExact | RuralRouteDefault | RuralRouteExact | LACSIndicator | DPVConfirmation | DPVConfirmation3553 | DPVCMRA | DPVPBSA | DPVDNA | DPVNSL | DPVFalsePositive | DPVFootnote1 | DPVFootnote2 | DPVFootnote3 | DPVFootnoteValue | DPVFootnoteComplete | DPVThrowBack | LACSLinkReturnCode | SuiteLinkReturnCode | EWSReturnCode | ZIPMoveReturnCode | DPVNoStatIndicator | DPVNoStatReason | DPVVacantIndicator | DefaultFlag | LACSLinkIndicator | RDI | DPVNDD | ELOTFlag | ELOTSequence
SERP	Category | ExcludedFlag
SNA	Category

Status Codes for Certifications

Address Verification returns status codes that describe the status of the certification data in the output address. For information about certification status codes, see .

CHAPTER 5

Process Parameter

This chapter includes the following topics:

Process Parameter Overview

You can configure the properties present in the Process element to specify how you want Informatica Address Verification to process an address.

Alternative Handling for Addresses

The AlternativeHandling element specifies whether you want Informatica Address Verification to consider outdated or alias address data while verifying an address.

Configure the following elements in the AlternativeHandling element:

- OutdatedAddresses
- AliasAddresses

Note: You can use the GetNewAddress property only when you set the Match property to a value other than Off.

OutdatedAddresses

The OutdatedAddresses element includes the properties Match and GetNewAddress.

You can set the Match property to Off, PerfectOnly, or WithFaultTolerance:

- If you set the Match property to Off, Address Verification does not match an address to the outdated addresses and ignores the outdated addresses available in the reference data. If you submit an outdated address with Match property set to Off, Address Verification rejects or corrects the input address.
- If you set the Match property to PerfectOnly, Address Verification matches only a perfectly entered input address to outdated addresses in the reference data.

- If you set the Match property to WithFaultTolerance, Address Verification matches an input address to outdated addresses in the reference data and also corrects an address to match the outdated addresses.

You can set the GetNewAddress property to true or false. If you set the GetNewAddress property to true, Address Verification returns the current version of the address. If you set the GetNewAddress property to false, Address Verification returns the outdated address.

AliasAddresses

The AliasAddresses element includes the Match property. You can set the Match property to Off or PerfectOnly.

If you set the Match property to Off, Address Verification does not match an address to the alias addresses and ignores the alias addresses available in the reference data. If you submit an alias address with Match property set to Off, Address Verification rejects or corrects the input address.

If you set the Match property to PerfectOnly, Address Verification matches only a perfectly entered input address to alias addresses in the reference data.

For information about how to handle alias addresses, see "AliasHandling" on page 78.

Configuring the AlternativeHandling

To specify whether Informatica Address Verification should match the input addresses with outdated and alias addresses in the reference data, configure the OutdatedAddresses and AliasAddresses properties.

- In the OutdatedAddresses element, set the Match property to one of the following values:
  - Off. Address Verification does not match the input address to the outdated addresses in the reference data.
  - PerfectOnly. Address Verification matches only a perfectly entered input address to the outdated addresses in the reference data.
  - WithFaultTolerance. Address Verification matches the input address to the outdated addresses in the reference data and also corrects an address to match the outdated addresses.
- In the AliasAddresses element, set the Match property to one of the following values:
  - Off. Address Verification does not match an input address to the alias addresses in the reference data.
  - PerfectOnly. Address Verification matches only a perfectly entered input address to alias addresses in the reference data.

Reverse Geocoding

You can submit geocoordinates as input values to Informatica Address Verification and retrieve the closest address or addresses to the coordinates. To perform reverse geocoding, submit the address job in GeocodeToAddress mode.

Address Verification applies a search radius to the geocoordinates to define an area in which to search for addresses. The geocoordinates are the center of the search area. The default search radius is 50 meters. You can set the radius to a value between 10 metres and 200 meters.

You can enter a pair of geocoordinates as a single input value, or you can enter the latitude and longitude coordinates as discrete input values. Address Verification will return one address or multiple addresses, depending on the parameters that you set and the distance between the addresses.

Address Verification returns the address closest to the geocoordinates that you enter. If any address lies within ten meters of the closest address, Address Verification returns the closest address and also each address within the ten-meter range. Address Verification also returns the distance from the geocoordinates of each output address and the direction in which the address lies.

If Address Verification cannot find any address within the search radius, Address Verification does not return an address.

To retrieve addresses in GeocodeToAddress mode, configure the following properties :

- SearchRadius. Defines the radius from the geocoordinates in which Address Verification searches for addresses. Find the property under **Parameters** > **CountrySets** > **Process** > **Geocode**.
- Value. Contains the latitude and longitude vales that constitute the geocoordinates. Find the property under **Parameters** > **IO** > **Inputs** > **Geocode**. Use the property if you do not use the Latitude and Longitude properties.
- Latitude and Longitude. Contain the latitude and longitude coordinates as discrete values. Find the properties under **Parameters** > **IO** > **Inputs** > **Geocode**. Use the properties if you do not use the Value property.

Address Verification returns the following values in addition to each address:

- Distance. Indicates the distance in metres from the address to the center of the search radius.
- Direction. Indicates the direction which the address lies from the center of the search radius.

Consider the following rules and guidelines when you configure an address job for reverse geocoding:

- Address Verification follows the World Geodetic System standards (WGS 84) for geocoding.
- Reverse geocoding requires arrival point reference data and returns addresses with arrival point precision.
- The geocoordinates that you provide may identify a location on a given plot of land but may be closer to the arrival point on an adjacent plot of land. In this case, Address Verification selects the address of the adjacent plot as it represents the nearest arrival point.
- The MaxResultCount property governs the total number of addresses that reverse geocoding can return for the geocoordinates that you enter.

To read the list of countries that support reverse geocoding, see GUID-89BE87A9-B42C-463D-BCFB-039BB8B733E8.

Address Verification Level

You can set the minimum level of information that an address must contain before Informatica Address Verification accepts it as valid. Use the VerificationLevel element to set the level. The VerificationLevel element specifies a threshold of valid information at which Address Verification will not reject an address.

You can set the following properties on VerificationLevel:

- PreferredVerificationLevel. The desired level.
- MinimumVerificationLevel. The minimum level that you accept for an address to be valid.

You can set the PreferredVerificationLevel and MinimumVerificationLevel properties to one of the following values:

- All. Address Verification verifies all address elements and also checks for the presence of all postally relevant elements. Default is All.
- Address. Address Verification verifies all address elements except company information.

- Premise. Address Verification verifies an address to house number level or building level and ignores sub-building information.

- Street. Address Verification verifies an address to street level or delivery service with number level and ignores information such as house number, building, and sub-building.

- Locality. Address Verification verifies an address to locality level and ignores street and delivery service information. Address Verification also verifies the postal codes.

- PrimaryLocality. Address Verification verifies an address up to locality level 1 and ignores the more granular locality level information. Address Verification also verifies the postal codes.

Ensure that the value that you set in the PreferredVerificationLevel property is not lower than the MinimumVerificationLevel value.

If Address Verification cannot verify the address information at the preferred verification level, it attempts to verify the address at the next level between the preferred and the minimum levels. Address Verification can return the verification level met by the address in the UsedVerificationLevel property.

Address Verification copies any input information outside the minimum verification level to the output address. If Address Verification cannot verify the address information to the minimum level, it rejects the address.

Note: When you set both VerificationLevel element properties to All and Address Verification cannot verify an input data value, Address Verification rejects the address.

CHAPTER 6

Result Parameter

This chapter includes the following topics:

Result Parameter Overview

You can configure the properties in the Result element to specify the formatting of the validated output. .

Maximum Number of Results in the Output

The MaxResultCount property specifies the maximum number of address suggestions that Address Verification can return in interactive, quick capture, and GeocodeToAddress modes. You can set the MaxResultCount property to a value from 1 through 100. The default value is 20.

Expand Numerical Ranges

The NumericRangeExpansion element specifies how Informatica Address Verification returns address suggestions when the input address data matches a range of addresses in the same building or street. For example, Address Verification might determine that an input address matches a range of house numbers on a given street. In such a case, Address Verification can return the upper and lower numbers in the available range in a single suggestion.

Address Verification can apply numeric range expansion to house number data, building data, and sub-building data. Address Verification can perform range expansion in quick capture and interactive modes.

NumericRangeExpansion Properties

To define how Address Verification handles number ranges, configure the following properties on the NumericRangeExpansion element:

RangesToExpand

Specifies whether to expand number ranges in address suggestions from countries for which individual house number, building, or sub-building values are available in the reference data.

RangeExpansionType

Specifies the scope of range expansion in suggestion lists.

RangesToExpand

The RangesToExpand property has the following options:

All

Expands the house number, building, or sub-building values to match the individual house numbers available in the reference data.

OnlyValid

Expands the ranges only when the reference data contains the complete list of valid numbers in a range.

None

Does not expand any range. The default value is None.

When the complete list of house numbers is not available in the reference address database, OnlyValid setting works the same way as None.

RangeExpansionType

The RangeExpansionType property has the following options:

Full

Expand all the items in the suggestion list, depending on the current RangesToExpand options.

Flexible

Expands the initial items in the suggestion list, depending on the current RangesToExpand options.

If you set the RangeExpansionType property to Flexible, the internal engine logic decides on the number of results to expand and how many to keep as ranges without exceeding the maximum result count value. Therefore, the suggestion list might contain both expanded and unexpanded ranges if you set the RangeExpansionType property to Flexible.

Configuring the NumericRangeExpansion Properties

To determine how Informatica Address Verification handles number ranges in addresses, configure the RangesToExpand and RangeExpansionType properties.

- To specify whether or not to expand the ranges, set the RangesToExpand property to one of the following values:
  - All. Address Verification always expands the ranges.
  - OnlyValid. Address Verification expands the ranges only when the reference address database contains full list of numbers for the specified range.
  - None. Address Verification does not expand a range.
- To specify whether or not to expand all the items in the suggestion list, set the RangeExpansionType property to one of the following values:
  - Full. Address Verification might expand all the items in the suggestion list.
  - Flexible. Address Verification might expand only the initial items in the suggestion list.

Numerical Range Formats

Address Verification uses two periods (..) to indicate a numerical range in quick capture mode. Address Verification uses a dash symbol (-) to indicate a numerical range in interactive mode.

For example, 15500..15508 can indicate that houses from 15500 through 15508 on a given street are candidate matches for an input address in quick capture mode.

When the Address Verification engine returns multiple ranges for an input address in a single suggestion, each range is separated by a semicolon. For example:

23..27;30..36

The engine can return up to three ranges separated by a semicolon in a single suggestion.

If the engine reaches the maximum address count limit for a given address and additional addresses remain in the reference data, the engine adds three periods (...) after the values in the final suggestion. This indicates that additional address suggestions are available in the reference data.

Note: Address Verification might return even-numbered and odd-numbered ranges in separate records for a single input address. For example, 1..9 MAIN STREET and 2..10 MAIN STREET may indicate odd-numbered and even-numbered houses respectively.

Rules and Guidelines for Numerical Ranges

Consider the following rules and guidelines for expanding numerical ranges:

- Address Verification ignores the RangeExpansionType property when the RangesToExpand property value is None.

- In jobs that run in QuickCapture mode, Address Verification sets the RangesToExpand property to All and the RangeExpansionType property to Flexible. Address Verification ignores the physical properties of the NumericRangeExpansion element in QuickCapture mode.

- Each address suggestion that the engine returns can identify a single address, a range of addresses, or multiple ranges. The combination of single addresses and ranges in the suggestion list depends on the values on the RangesToExpand and RangeExpansionType properties and on the MaxResultCount property value.
  The engine may return single addresses in the initial address suggestions and return addresses in ranges in subsequent suggestions.

DeliverAdditionalSuggestions

Address Verification can return additional data for addresses with a V or C score when the data is present in address in the reference data and not used in the output. You can use the DeliverAdditionalSuggestions property to retrieve the data.

Find the property under **Parameters** > **CountrySets** > **Result** in the `AVJob.schema.json` file.

You can configure the property to one of the following values:

No

Address Verification does not return any additional data for V or C addresses. Default is No.

ForAllElements

Address Verification returns additional data for all of the address elements in the database that match the elements in the input address.

ForPostalRelevantElements

Address Verification returns additional data for elements that are postally relevant.

CHAPTER 7

Standardization Parameters

This chapter includes the following topics:

Standardization Overview

You can configure Informatica Address Verification to apply a standard policy to the presentation of different aspects of an output address.

For example, you can specify the character case for the output elements, and you can set a policy for returning element descriptors in their abbreviated or complete forms. You can specify a preferred language for the address data, and you can specify the character set in which to return the address.

Address-Level Properties and Element-Level Properties

You can set standardization policies at the level of the complete address and at the level of discrete address elements. You can set both property types. Element-level properties take precedence over address-level properties.

The following table describes the standardization properties:

PropertyName	Description	Set at Address Level	Set at Element Level
AliasHandling	Specifies how to handle alias names.	Yes	Yes
Casing	Specifies the character case.	Yes	Yes
CountryCodeType	Spcifies the ISO country code to use for country data.	Yes	No
CountryNameLanguage	Spcifies the language in which to return the country name.	Yes	No
DescriptorLength	Specifies whether to abbreviate street and directional descriptors.	Yes	Yes
FormatWithCountry	Specifies whether to include the country name in the output.	Yes	No
MaxItemCount	Specifies the maximum number of address lines that an address element can contain.	No	Yes
MaxItemLength	Specifies the maximum number of characters that an output field can contain.	Yes	Yes
PreferredLanguage	Specifies a list of one or more languages in which Address Verification will return the output address data.	Yes	No
PreferredScript	Specifies the character set in which Address Verification will return the output address data.	Yes	No
StandardizeInvalidAddresses	Specifies that Address Verification standardizes elements in an address that returns I as a Process Status score.	Yes	No

Standardization at the Address Level

Use the Standardizations property to define a general standardization policy for the elements in an address.

You can standardize the following address elements:

- Organization

- Contact

- Building

- SubBuilding

- Street

- HouseNumber

- DeliveryService

- PostOffice

- Locality

- PostalCode

- AdministrativeDivision

- Country

- PostalFormattedAddressLines

- PostalDeliveryAddressLines

- PostalRecipientLines

- PostalLocalityLine

- StreetWithNumber

- NumberAndSubBuilding

- SingleAddressLine

Standardization at the Address Element Level

Use the ElementStandardizations property to define a standardization policy for discrete address elements.

You can standardize the following address elements:

- Organization

- Contact

- Building

- SubBuilding

- Street

- HouseNumber

- DeliveryService

- PostOffice

- Locality

- PostalCode

- AdministrativeDivision

- Country

- PostalFormattedAddressLines

- PostalDeliveryAddressLines

- PostalRecipientLines

- PostalLocalityLine
- StreetWithNumber
- NumberAndSubBuilding
- SingleAddressLine

PreferredLanguage

Informatica Address Verification can return address data in more than one language in multiple countries. You can specify the preferred output language for the addresses that you submit. Use the PreferredLanguage property to specify a preferred language.

Consider the following rules and guidelines when you configure the PreferredLanguage property:

- You can specify one or more languages on the PreferredLanguage property. Use the three-letter ISO 639 code associated with each language that you specify. Add a list of one or more languages as an array to the PreferredLanguage property. Address Verification tries to return an address in the most-preferred language based on the order that you specify in the array. If the first language that you specify is not present in the reference data, Address Verification tries to return the address in the next language in the array.

    For example, when you submit NLD, FRA, and DEU as the list of preferred languages, Address Verification returns the address in Flemish. If the reference data does not contain the address in Flemish, Address Verification returns the address in French if available.

    The following code fragment shows a sample of one or more languages in the PreferredLanguage property:

    ```
    "PreferredLanguage":
                {
                  "NLD",
                  "FRA",
                  "DEU"
                }
    ```

    Note: Use a comma to separate the languages on each line of the array, as shown in the code fragment.

- By default, the input list of preferred languages is empty. When the input list is empty, Address Verification returns the default language.

- You can configure the property to return an address in the language that the input address uses. The PRESERVE option is useful in cases where the input address set contains address records that are not recorded in the default language. Address Verification can preserve the input language if the reference data contains the address information in the input language. To preserve the input language, add PRESERVE as the first entry in the PreferredLanguage property. You can also add language codes after the PRESERVE option.

    If Address Verification cannot return an address in the input language, Address Verification tries to return the address in the next language that you specified in the list of preferred languages. If the input list is empty, Address Verification returns the address in the default language.

- You can receive an address in more than one language in a single verification job. To return more than one language at once, add an instance of the Standardizations object for each language and set the PreferredLanguage property for each instance.

    For example, to receive Flemish and French languages in the output, add two instances of the Standardizations object and specify NLD and FRA as the preferred language in each instance.

Multilanguage Country Support

Informatica Address Verification can return address elements in multiple languages for addresses in several countries.

The following table lists the countries and languages that Address Verification can return:

Country	Supported Languages
Algeria	English, French
Austria	English, German
Belgium	English, Flemish, French, German
Bulgaria	English, Bulgarian
Canada	English, French
China	Chinese, English
Croatia	Croatian, Italian
Cyprus	English, Greek, Turkish
Egypt	English, Egyptian
Finland	English, Finnish, Swedish
Germany	English, German
Greece	English, Greek
Hong Kong	English, Chinese
Ireland	English, Irish
Israel	English, Hebrew
Kazakhstan	English, Russian
Lithuania	English, Lithuanian
Macau	English, Portuguese, Traditional Chinese
Portugal	English, Portuguese
Qatar	Arabic, English
Russian Federation	English, Russian
Saudi Arabia	Arabic, English
Slovakia	English, Slovak
Spain	English, Spanish

Country	Supported Languages
Switzerland	English, French, German, Italian
Taiwan	English, Chinese
Thailand	English, Thai
Timor-Leste	English, Portuguese
Ukraine	English, Ukrainian

PreferredScript

Informatica Address Verification can return addresses from many countries in more than one script. When necessary, Address Verification can transliterate the address into the Latin scripts that you specify and can add the appropriate Latin characters for the address output. Use the PreferredScript property to specify a preferred script.

The PreferredScript property supports the following options:

- Script. Specifies the policy that Address Verification uses to select the script for an output address.
- TransliterationType. Specifies the transliteration standard that Address Verification uses to transliterate the results into Latin when multiple Latin standards are available.
- LimitLatinCharacters. Specifies the depth of the Latin character set that Address Verification can use in an output address.

By default, Address Verification returns the addresses in the primary native script that the country uses for the addresses.

PreferredScript Process Flow

The process includes the following steps:

1. In the Script option, review or update the script policy for the output data.
2. If you select a Latin script, specify a transliteration type to apply to the output.
3. To further define the output, for example to omit special characters that a character set does not support, set the LimitLatinCharacters option.

Script

You can set one of the following values:

NativePrimary

Returns the address in the primary native script that the country uses for the addresses. NativePrimary is the default value.

NativeAlternative1

Returns the address in the alternative script that the country uses.

Latin

Transliterates the address into a Latin script.

Note: You can use the options TransliterationType and LimitLatinCharacters only when you request an output in a Latin script.

Preserve

Returns the address in the same script as the input address.

TransliterationType

You can set one of the following values:

Default

Transliterates the address into a default transliteration type. Default is the default value.

Alternative1

Transliterates the address into an alternative transliteration type if the alternative is available for the address.

LimitLatinCharacters

You can set one of the following values:

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
ẚ	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 database supports the characters that the transliteration can return. For example, a database that supports ASCII characters only will not store all Latin characters.

PreferredScript Options

You determine the scripts that Address Verification returns when you set the preferred script options. The Script table displays the different scripts that Address Verification returns for each country. The

TransliterationType table displays the transliteration methods used for each country when you request a Latin script in the output.

Script

The following table lists the preferred scripts that Address Verification can specify for different countries:

Country	NativePrimary	NativeAlternative1
BLR	Belarusian Cyrillic	Belarusian Cyrillic
BGR	Bulgarian Cyrillic	Bulgarian Cyrillic
CHN	Hanzi	Hanzi
CZE	Latin-2	Latin-2
FIN	Latin-1	Latin-1
GRC	Greek	Greek
HKG	Hanzi	Hanzi
HUN	Latin-2	Latin-2
ISR	Hebrew	Latin
JPN	Kanji	Kana
KAZ	Cyrillic	Cyrillic
KOR	Hangul	Hangul
LVA	Latin-7	Latin-7
MAC	Hanzi	Hanzi
MDA	Latin-2	Latin-2
MKD	Cyrillic	Cyrillic
POL	Latin-2	Latin-2
ROU	Latin-3	Latin-3
RUS	Cyrillic	Cyrillic
SVK	Latin-2	Latin-2
TWN	Hanzi	Hanzi
UKR	Cyrillic	Cyrillic
VNM	Vietnamese	Vietnamese

TransliterationType

The following table lists the transliteration methods that Address Verification can use for different countries:

Country	Default	Alternative1
BLR	ASCII, transliterated to the Belarusian database standard	ASCII, transliterated to the Belarusian BGN standard
BGR	ASCII, transliterated to the Bulgarian BGN standard	ASCII, transliterated to the Bulgarian BGN standard
CHN	Latin, Mandarin transliteration	Latin, Cantonese transliteration
CZE	ASCII	Latin-2
FIN	ASCII	Latin-1
GRC	Latin-1, transliterated to the ISO standard	ASCII, transliterated to the BGN standard
HKG	Latin, Cantonese transliteration	Latin, Mandarin transliteration
HUN	ASCII	Latin-2
ISR	Latin	Latin
JPN	Latin	Latin
KAZ	Latin-2, transliterated to the ISO standard	ASCII, transliterated to the BGN standard
KOR	ASCII, transliterated using Revised Romanization	ASCII, transliterated using ISO/TR 11941 Romanization
LVA	ASCII	Latin-7
MAC	Latin, Cantonese transliteration	Latin, Mandarin transliteration
MDA	ASCII	Latin-2
MKD	ASCII	ASCII, transliterated to the Macedonian BGN standard
POL	ASCII	Latin-2
ROU	ASCII	Latin-3
RUS	Latin-2, transliterated to the ISO standard	ASCII, transliterated to the BGN standard
SVK	ASCII	Latin-2
TWN	Latin, Cantonese transliteration	Latin, Mandarin transliteration

Country	Default	Alternative1
UKR	ASCII	ASCII, transliterated to the Ukrainian BGN standard
VNM	ASCII	Vietnamese

Note: Address Verification can also return addresses in ASCII-simplified and ASCII-extended characters for each country.

Casing

The Casing property specifies the character casing policy to apply to the address output.

You can set the property at the element level and at the address level. The element-level Casing property takes precedence over the address-level property.

You can set the following casing policies at the address level and individually on each element:

Upper

Returns the output in uppercase letters.

Lower

Returns the output in lowercase letters.

Mixed

Returns the output in mixed case with an appropriate use of uppercase letters. For example, a mixed case policy will start proper nouns and street names with an uppercase letter.

Preserve

Preserves the style from the input.

If Address Verification corrects the input data, Address Verification endeavors to return the corrected data output in the same case.

PostalAdmin

Returns the output in the casing style that the local postal authority prefers. The default value is PostalAdmin.

You can set the following casing policies at the element level only:

UseDefault

Returns the element in the casing style that the address-level casing policy specifies. The default value is UseDefault.

You can set the following casing policies at the element level for elements that combine two or more other elements:

ElementSpecific

Returns each element in the string in the casing style that the element configuration specifies.

The following elements under ElementStandardizations support the ElementSpecific option:

- NumberAndSubBuilding
- PostalDeliveryAddressLines
- PostalFormattedAddressLines
- PostalLocalityLine
- PostalRecipientLines
- SingleAddressLine
- StreetWithNumber

DescriptorLength

The DescriptorLength property specifies whether to abbreviate street and directional descriptors when abbreviations are available in the reference data.

You can set the property at the element level and at the address level. The element-level DescriptorLength property takes precedence over the address-level property.

You can set the property to one of the following values at the address level and individually on each element:

Database

Returns the descriptor preferred by the postal authority or indicated by the common country rules. Database is the default value at the address level.

Long

Returns the expanded form of the element descriptor.

For example, Address Verification returns STREET for the input element ST.

Short

Returns the abbreviated form of the element descriptor.

For example, Address Verification returns AVE for the input element AVENUE.

Preserve

Returns the descriptor in the same form as the input.

If you select Preserve and Address Verification corrects or adds the descriptor, Address Verification returns the descriptor in the default format that reference data specifies.

You can set the following values at the element level only:

UseDefault

Returns the element descriptor in the form that the address-level property value specifies. UseDefault is the default value at the element level.

MaxItemLength

The MaxItemLength property specifies the maximum number of characters that an output field can contain. The default value for the property is 255.

You can set the property at the element level and at the address level. The element-level MaxItemLength property takes precedence over the address-level property.

You can set the MaxItemLength property for every address element under ElementStandardizations.

For more information about the maximum item length value for address elements, see "Table of Values for MaxItemLength and MaxItemCount" on page 77.

MaxItemCount

The MaxItemCount property indicates the maximum number of information levels that an address element can contain. For example, the locality element supports up to six levels of information. A United States state name can occupy the Locality 1 position in an address, and a county name within the state can occupy the Locality 2 position.

You can set the property at the element level. .

For more information about the maximum item count value for address elements, see "Table of Values for MaxItemLength and MaxItemCount" on page 77.

Table of Values for MaxItemLength and MaxItemCount

The following table describes the MaxItemLength and MaxItemCount properties and supported values for different address elements:

Address Element	Value Range Supported for MaxItemLength	Value Range Supported for MaxItemCount	Default Value for MaxItemCount
Organization	20 through 1024	1 through 3	3
Contact	20 through 1024	1 through 3	3
Building	20 through 1024	1 through 6	6
SubBuilding	20 through 1024	1 through 6	6
Street	20 through 1024	1 through 6	6
HouseNumber	5 through 1024	1 through 6	6
DeliveryService	20 through 1024	1 through 3	3

Address Element	Value Range Supported for MaxItemLength	Value Range Supported for MaxItemCount	Default Value for MaxItemCount
PostOffice	25 through 1024	1 through 3	3
Locality	20 through 1024	1 through 6	6
PostalCode	5 through 1024	1 through 3	3
AdministrativeDivision	2 through 1024	1 through 3	3
Country	2 through 1024	1 through 3	3
PostalFormattedAddressLines	25 through 1024	1 through 19	19
PostalDeliveryAddressLines	25 through 1024	1 through 6	6
PostalRecipientLines	25 through 1024	1 through 6	6
PostalLocalityLine	25 through 1024	1 through 6	6
StreetWithNumber	25 through 1024	1 through 6	6
NumberAndSubBuilding	25 through 1024	1 through 6	6
SingleAddressLine	25 through 1024	Not Applicable	Not Applicable

The default MaxItemLength for an address element is 255.

AliasHandling

An alias is a recognized alternative name for an item of information in an address. For example, a street or a locality might have an official name and also an alias by which it is commonly recognized.

You can set the property at the element level and at the address level. The element-level AliasHandling property takes precedence over the address-level property.

To set the alias handling policy at the address level, find the property under **Parameters** > **CountrySets** > **Standardizations** . To set the policy at the element level, find the property under the associated element name under **Parameters** > **CountrySets** > **Standardizations** > **ElementStandardizations** .

You can configure the AliasHandling property to one of the following values at the address level and individually on each element:

PreserveAll

Retains the alias for the address element.

PreserveOfficial

Returns the version of the address element that the postal authority prefers. The version may be the official name or the alias, depending on the local usage.

PostalAdmin

Returns the official version of the address element. At the address level, the default value is PostalAdmin.

UseAbbreviation

Returns the address element in its abbreviated form if the reference data contains the abbreviation. The reference data can contain abbreviations for street information, such as street names, descriptors, and directional values, and for locality information.

When you validate addresses in certified mode, set the AliasHandling property to PreserveOfficial.

You can set the following values at the element level only:

UseDefault

Returns the version of the address element that the address-level property value specifies. At the element level, the default value is UseDefault.

FormatWithCountry

The property specifies whether or not to include the country name in any postally formatted lines in the output. You can set the FormatWithCountry property to true or false. The default value is false.

The property applies at the address level. .

StandardizeInvalidAddresses

The StandardizeInvalidAddresses property can standardize the address elements in an address that returns I as a Process Status score. Standardizing the address elements in an invalid address can improve the performance of any downstream data quality process, such as deduplication, that you apply to the address.

You set the property at the address level.

Set the StandardizeInvalidAddresses property to true or false. The default value is false.

When the StandardizeInvalidAddresses property is set to true, Informatica Address Verification standardizes the following address elements in addresses that have an I process status:

- Street types
- Pre- and post-directionals
- Delivery service items
- Subbuilding descriptors
- State/province/regions

For example, Address Verification can standardize California to CA.

CountryNameLanguage

The CountryNameLanguage property specifies the language in which to return the country name in the output address. You set the property at the address level. .

The CountryName value includes the ISO-639 three-letter code for the language. The default value is ENG, which denotes the name of the country in English.

You can set the property to one of the following values:

- CHI. Chinese.
- DAN. Danish.
- DEU. German.
- ENG. English.
- SPA. Spanish.
- FIN. Finnish.

- FRE. French.
- GRE. Greek.
- HUN. Hungarian.
- ITA. Italian.
- JPN. Japanese.
- COR. Korean.

- DUT. Dutch.
- POL. Polish.
- POR. Portuguese.
- RUA. Russian.
- ARA. Arabic.
- SWE. Swedish.

CountryCodeType

The CountryCodeType property specifies how Address Verification returns the country code in the output address. You set the property at the address level. .

Address Verification can return the ISO-3166-1 two-character code, ISO-3166-1 three-character code, or ISO-3166-1 three-digit number for the country. The default value is ISO3, which denotes the three-character code.

You can set the property to one of the following values:

- ISO2. ISO 3166-1 two-character code.
- ISO3. ISO 3166-1 three-character code.
- ISONumber. ISO 3166-1 three-digit code.

CHAPTER 8

Output Fields

This chapter includes the following topics:

Output Fields Overview

When you process an address, you receive a result output that contains a number of fields, such as address elements, address line elements, and enrichment values. The result output also contains process-related information and status codes.

The JSON output file defines the output formats and fields. The result output you receive depends on the process parameters and result properties that you configure.

Output Result Information

The output result that you receive depends on the process and result settings that you configure for an address.

The ResultInfo object contains the following properties:

SourceID

Indicates the user address identity.

ProcessStatus

Indicates status of the process call. For more information, see "Process Status" on page 87.

ProcessModeUsed

Indicates the process mode that you specified.

DeliverAdditionalSuggestions

Indicates the property value that you specified.

ResultCount

Indicates the number of results. The value range is between 0 through 100. The default value is 0.

ResultCountOverflow

Indicates whether there are more results available when you verify addresses in the interactive or quick capture mode. The possible values are true and false. The default value is false.

ResultCountries

Indicates the country information in the result.

The Result Element

The Results object contains multiple properties. The elements of result properties contain various status codes that helps you analyze the results.

Address Elements

The AddressElements property of the Results object contains the following elements:

Building

Contains building information. A Building field contains building-level data, such as the building descriptor, building name, and building number.

The Building element includes the following properties:

- Value. The building information.
- SubItems. The sub items of the element. The possible values are PreDescriptor, Name, Number, and PostDescriptor.
- Status. The address element status codes.

SubBuilding

Contains sub-building information, such as an apartment or suite number. A SubBuilding field contains sub-building level data, such as the sub-building descriptor, sub-building name, and sub-building number.

The SubBuilding element includes the following properties:

- Value. The sub-building information.
- SubItems. The sub items of the element. The possible values are PreDescriptor, Name, Number, and PostDescriptor
- Status. The address element status codes.

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.

The Street element includes the following properties:

- Value. The street information.

- SubItems. The sub items of the element. The possible values are , PreDescriptor, PreDirectional, Name, Number, PostDirectional, PostDescriptor, and AdditionalInfo.
- Status. The address element status codes.

SupplementaryDeliveryInformation

Contains supplementary delivery information. A SupplementaryDeliveryInformation field adds supplementary data to an address to assist the mail carrier in mail delivery.

The SupplementaryDeliveryInformation element includes the following properties:

- Value. The supplementary delivery information.
- Status. The address element status codes.

HouseNumber

Contains house number information. The house number identifies a building at street level.

The HouseNumber element includes the following properties:

- Value. The house number information.
- SubItems. The sub items of the element. The possible values are PreDescriptor, Number, Suffix, and PostDescriptor.
- Status. The address element status codes.

DeliveryService

Contains delivery service information. A delivery service is a mail pickup location managed by the post office, such as a P.O. Box.

The DeliveryService element includes the following properties:

- Value. The delivery service information.
- SubItems. The sub items of the element. The possible values are PreDescriptor, Number, NumberSuffix, PostDescriptor, and AdditionalInfo.
- Status. The address element status codes.

PostOffice

Contains post office information.

The PostOffice element includes the following properties:

- Value. The post office information.
- SubItems. The sub items of the element. The possible values are PreDescriptor, Name, Number, PostDescriptor, and AdditionalInfo.
- Status. The address element status codes.

Locality

Contains locality information.

The Locality element includes the following properties:

- Value. The locality information.
- SubItems. The sub items of the element. The possible values are Prefix, Name, Suffix, SortingCode, and AdditionalInfo.
- Status. The address element status codes.

PostalCode

Contains postal code information.

The PostalCode element includes the following properties:

- Value. The postal code information.
- SubItems. The sub items of the element. The possible values are Base and AddOn.
- Status. The address element status codes.

AdministrativeDivision

Contains province information.

The AdministrativeDivision element includes the following properties:

- Value. The province information.
- Variants. The variants of the element. The possible values are Extended, ISO, and Abbreviation.
- SubItems. The sub items of the element. The possible values are Prefix, Name, and Suffix.
- Status. The address element status codes.

Residue

Contains residue information. A Residue field contains data duplicate or redundant data.

The Residue element includes the following properties:

- Value. The residue information.
- Type. The type of residue information. The possible values are Necessary, Superfluous, and Unrecognized.

Country

Contains country information.

The Country element includes the following properties:

- Code. The ISO2, ISO3, or the ISONumber of the country.
- Name. The name of the country, such as ENG.

The CountryNameLanguage and CountryCodeType properties present in the Standardizations element controls the country name and the country code.

Contact Elements

The ContactElements property of the Results object contains the following elements:

Name

Contains full name of any contact. The Name element includes the data, such as a first name, middle name, and surname of any contact.

The Name element includes the following properties:

- Value. The contact name information.
- SubItems. The sub items of the element. The possible values are Salutation, Title, FirstName, MiddleName, Surname.

Function

Contains job title of any contact.

DeliveryIdentifier

Contains delivery identifiers data.

Gender

Contains gender of any contact

EMail

Contains email address of any contact.

The EMail element includes the following properties:

- Value. The email address information.
- SubItems. The sub items of the element. The possible values are LocalPart and Domain.

PhoneNumber

Contains phone number of any contact.

The PhoneNumber element includes the following properties:

- Value. The phone number information.
- SubItems. The sub items of the element. The possible values are CountryCode, LocalPrefix, and Number.

Organization Elements

The OrganizationElements property of the Results object contains the following elements:

Companies

Contains company information.

The Companies element includes the following properties:

- Value. The company information.
- SubItems. The sub items of the element. The possible values are Name, PreDescriptor, and PostDescriptor.
- Status. The address element status codes.

Departments

Contains department information.

The Departments element includes the following properties:

- Value. The department information.
- SubItems. The sub items of the element. The possible values are Name, PreDescriptor, and PostDescriptor.
- Status. The address element status codes.

Preformatted Data

The PreformattedData property of the Results object contains the following elements:

SingleAddressLine

Contains address elements in a single line. The value property of SingleAddressLine includes the output address information.

PostalRecipientLines

Contains recipient information, such as contact or organization name. Address Verification supports up to six lines of recipient information. The value property of PostalRecipientLines includes the output address information.

PostalDeliveryAddressLines

Contains delivery information, such as street, house number, building, and delivery service information. Address Verification supports up to six lines of postal delivery address line information. The value property of PostalDeliveryAddressLines includes the output address information.

PostalFormattedAddressLines

Contains unfielded data that includes, recipient information, delivery address information, and locality information. Address Verification supports up to 19 lines of postal formatted address line information. The value property of PostalFormattedAddressLines includes the output address information.

PostalLocalityLine

Contains information, such as locality, postal code, province, and country details. Address Verification supports up to six lines of postal locality line information. The value property of PostalLocalityLine includes the output address information.

StreetWithNumber

Contains street and house number information in a single element. For example, 1 MAIN ST. The value property of StreetWithNumber includes the output address information.

NumberAndSubBuilding

Contains number and sub-building information in a single element. For example, 1 #1. The value property of NumberAndSubBuilding includes the output address information.

Enrichments

The Enrichments property of the Results object contains the following elements:

Geocodes

Contains the closest latitude and longitude coordinates that the reference data can return for each address.

For information about the Geocodes element properties, see "Geocodes" on page 41.

Global

For information about the Global element properties, see "Country-Specific and Global Enrichments" on page 44.

CountrySpecific

For information about the CountrySpecific element properties, see "Country-Specific and Global Enrichments" on page 44.

Certifications

For information about the Certifications element properties, see "Certification" on page 56.

Process Status

A ProcessStatus property provides a summary of the address verification process for a single address. The process status code indicates the overall quality of the output address.

The following table describes the process status values:

Status Code	Description
V	Address Verification verified all postally relevant elements. The input data matches the reference data for the address.
A	Address Verification added one or more relevant address elements to the address.
C	Address Verification corrected one or more input address elements to match the address elements in the reference data.
I	Address Verification cannot correct the address. The address is not valid.
N	Address Verification cannot verify the address because the address is not available in the reference data or the country is not supported.
F	QuickCapture mode. Address Verification returned complete addresses in the suggestion list.
P	QuickCapture mode. Address Verification returned aggregated address suggestions. **Note:** A status of P indicates that the verification process is incomplete and that the available suggestions are not fully extended in the result.
W	Web Service. Indicates insufficient transactions in the transaction pool for the customer or pool type/region.

Address Element Status Codes

The MatchStatus, ResultStatus, PostalRelevance, and ExtendedResultStatus properties provide granular, element-level details.

You can use the status information to assess the following values:

- Quality of the input address and result.
- Probability of successful delivery to the address.
- Postal relevance of address elements.
- Reasons for rejection in case of address that are not valid.
- Level of similarities between the input address and the result.

Match Status

The MatchStatus property describes the level of similarity between each data element in the input address and the corresponding element that the reference data files store for the address. Address Verification returns a discrete match status code for every address data element.

The following table describes the match status values:

Value	Description
0	The input element does not contain any data from the user.
1	The reference data does not contain the input address element for the country as a whole or for specific address, locality, and street.
2	The reference data does not contain a match for the input element value, and the input address does not contain enough verifiable elements to permit an estimate of a correct value for the element.
3	The reference data does not contain a match for the input element value, and Address Verification cannot correct the value. Address Verification rejects the address.
4	The input element value partially matches the reference data.
5	The input element value matches the reference data, but Address Verification corrects the data.
6	The input element value matches the reference data within the available range.
7	The input element value matches the reference data, but Address Verification standardizes the data
8	The input element value perfectly matches the reference data without any errors.

Result Status

The ResultStatus property describes any change made to the input data during processing. Address Verification returns a discrete result status code for every address data element.

The following table describes the result status values:

Value	Description
1	The element value is not changed.
2	The element value is standardized.
3	The element value is replaced by a preferred version because the input contains outdated synonyms, archived names, or a combination of languages.
4	Address Verification changed the secondary part of the elements. For example, Address Verification corrected street descriptors, street directionals, or the +4 data in ZIP Codes.
5	Address Verification changed the primary part of the elements. For example, Address Verification corrected street names or five-digit ZIP Codes.
6	Address Verification added the element to the result output.

Postal Relevance

You can use the PostalRelevance property value to identify the address elements that are relevant to an address according to the local postal guidelines. Address Verification returns a discrete postal relevance value for every address data element.

The following table describes the postal relevance values:

Value	Description
2	Element mandatory. The address element is relevant.
1	Element optional. The address might be valid without the element.
0	Element not used in the postal format. Address element is not relevant.

All address elements with an element relevance value of 2 must be present for the local postal authority to consider an address valid. Element relevance value might vary from address to address for countries with different address types, such as rural address and metropolitan addressing. Furthermore, address elements that have actually been validated against reference data might override the default element relevance value defined for that address element.

Note: Element relevance values are available only for addresses with a process status value of C or V in batch and interactive modes or I values in the interactive mode. Other element-level codes such as match status, result status, and extended result status always return a value regardless of the process status.

Extended Result Status

You can use the ExtendedResultStatus property value to understand a result and to see whether more information is available in the reference data. Address Verification returns a discrete extended result status code for every address data element.

Address Verification returns the following extended result status values:

- FromDBNotUsed
- WrongFormatMoved
- AlternativeExists
- UncheckedParts
- CertificationRule
- DominantMatch
- RangeInterpolation
- LanguageNotAvailable
- Deprecated
- RangeGuess
- RangeCovert

Certification and Enrichment Data Status Codes

Informatica Address Verification returns status codes that describe the successful delivery of enrichment and certification data in the output address.

The status codes describe the completeness of the data that Address Verification returns for global enrichments, country-specific enrichments, CAMEO data, and the supplementary data returned in certification mode.

Address Verification returns the following status codes for supplementary and certification data along with the address output:

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

The status code fields are empty when you did not request the enrichment or certification item concerned. The status code fields are also emtpy when Address Verification did not find a match for the input address.

Note: Address Verification does not return the empty fields in the JSON output.

CHAPTER 9

Address Status Values and Return Codes

This chapter includes the following topics:

Address Status Values and Return Codes Overview

Informatica Address Verification returns several values that help you to understand and analyze the result output. The status values include a high-level summary of the address verification process.

You also receive return codes that indicate the status of API functions. The API function calls provide information about the status of an API call.

Address Types

You can use the AddressType property information in the result output to identify the type of mail box an address points to.

For United States addresses, Informatica Address Verification returns the address type values that the United States Postal Service specifies. The United States Postal Service includes a RecordType value in the reference data for domestic addresses.

New Zealand Posts provides a rural address identifier. Canada Post provides a large volume receiver identifier.

If the reference data does not contain a formal address type designator, Address Verification uses different data elements to assign address types to addresses. Address Verification assigns address type values to addresses from countries that do not define address types based on criteria that Address Verification defined.

Address Verification employs a range of criteria to decide the address type for the following countries:

- Australia
- Canada
- France
- New Zealand

Address Verification has a separate set of criteria for identifying the address type when verifying the United States addresses in the QuickCapture mode.

Address Type Indicators for United States Addresses

Informatica Address Verification returns the United States Postal Service address type for a United States address when you perform verification in Batch, Certified, or Interactive mode.

The United States Postal Service provides the following address types for United States addresses:

- 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.
- 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.
- U. Unidentified. The address is not valid, and Address Verification does not assign an address type.

Address Type Indicators for the United States Addresses in QuickCapture Mode

When verifiying addresses in the quick capture mode, Informatica Address Verification returns the following address type values:

- B. The address identifies a building.
- F. The address identifies an organization.
- L. The address post code identifies the organization as a large volume receiver. The reference data adds or verifies 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.

- S. The address identifies a street. S is the default address type. If Address Verification cannot determine the address type from the address data, it returns the default value.

- U. Unidentified. The address is not valid, and Address Verification does not assign an address type.

If an address meets the criteria for more than one address type, Address Verification assigns the first applicable address type from the following list:

L, F, P, B, S

Address Type Indicators for Australia Addresses

Informatica Address Verification returns the following address type values for Australia addresses:

- B. The address identifies a building.

- F. The address identifies an organization.

- 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.

- S. The address identifies a street. S is the default address type. If Address Verification cannot determine the address type from the address data, it returns the default value.

- U. Unidentified. The address is not valid, and Address Verification does not assign an address type.

If an address meets the criteria for more than one address type, Address Verification assigns the first applicable address type from the following list:

L, F, P, B, S

Address Type Indicators for Canada Addresses

Informatica Address Verification returns the following address types for Canada addresses:

- B. The address identifies a building.

- F. The address identifies an organization. In Canada addresses, the type F addresses are a subset of the type L addresses. Therefore, the address type F also indicates a large volume receiver.

- G. The address is a general delivery address. In a general delivery address, the postal code and the recipient data identify the address. Address Verification uses the delivery record in the reference data to identify the address type.

- L. The address post code identifies the organization as a large volume receiver. The address might or might not contain an organization name.

- P. The address identifies a Post Office Box or a delivery service.

- R. The address identifies a rural route. Address Verification uses the delivery record in the reference data to identify the address type.

- S. The address identifies a street. S is the default address type. If Address Verification cannot determine the address type from the address data, it returns the default value.

- U. Unidentified. The address is not valid, and Address Verification does not assign an address type.

If an address meets the criteria for more than one address type, Address Verification assigns the first applicable address type from the following list:

F, L, P, B, R, S, G.

Addresss Type Indicators for France Addresses

Informatica Address Verification returns the following address type values for France addresses:

- B. The address identifies a building.
- F. The address identifies an organization. The address does not include a CEDEX post code.
- G. The address is a general delivery address. The reference data does not contain a match for the street information. However, the reference data contains a match for the CEDEX postal code in the address.
- L. The postal code identifies the organization as a large volume receiver. The address might or might not contain an organization name. The reference data uses the CEDEX postal code to add or validate the organization name.
- P. The address identifies a Post Office Box or a delivery service.
- S. The address identifies a street address. S is the default address type. If Address Verification cannot determine the address type from the address data, it returns the default value.
- U. Unidentified. The address is not valid, and Address Verification does not assign an address type.

If an address meets the criteria for more than one address type, Address Verification assigns the first applicable address type from the following list:

L, F, P, B, S, G.

Address Type Indicators for New Zealand Addresses

Informatica Address Verification returns the following address type values for New Zealand addresses:

- B. The address identifies a building.
- F. The address identifies an organization.
- 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 identifies a rural route. Address Verification uses the delivery record in the reference data to identify the address type.
- S. The address identifies a street. S is the default address type. If Address Verification cannot determine the address type from the address data, it returns the default value.
- U. Unidentified. The address is not valid, and Address Verification does not assign an address type.

If an address meets the criteria for more than one address type, Address Verification assigns the first applicable address type from the following list:

L, F, P, B, R, S

Address Type Indicators for Addresses from the Rest of the World

Informatica Address Verification returns the following address type values for addresses from countries other than Australia, Canada, France, New Zealand, and the United States:

- B. The address identifies a building.
- F. The address identifies an organization.
- 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.
- S. The address identifies a street. S is the default address type. If Address Verification cannot determine the address type from the address data, it returns the default value.
- U. Unidentified. The address is not valid, and Address Verification does not assign an address type.

If an address meets the criteria for more than one address type, Address Verification assigns the first applicable address type from the following list:

L, F, P, B, S

Note: Address Verification can return information relevant to the address type on other output elements. Consult the Process Status, Match Status, and Result Status values.

Result Group

When you verify an address in quick capture mode, Informatica Address Verification returns the address suggestions in the following result groups:

- Organization
- Building
- Street
- DeliveryService
- PostalCode
- Locality
- AdministrativeDivision

Address Verification returns the best address suggestions for each result group. The ResultGroup property identifies the group with the best results.

Address Verification adds each address suggestion to the group in which the address information most closely matches the reference data.

Note: Depending on the suggestions returned and on the MaxResultCount limit, Address Verification may not populate all result groups.

For information about the number of addresses in the database that match an input address suggestion, see .

LanguageISO3 Code

When a result output contains data from the reference address database, Informatica Address Verification specifies the language in the ISO 639 3-letter code in the output. For example, `DEU` for German.

For transliterated output, Address Verification specifies the original language in the output. For example, `JPN` in case of romanized Japanese output.

If the reference address database does not contain language information, Address Verification returns a value of `???` in the LanguageISO3 property.

Note: If you request an address in more than one language or script, Address Verification returns the address results in the ISO 639 3-letter code for every language or script that you requested.

Level of Verification

The UsedVerificationLevel property reports the depth or level to which the input address was verified.

Match Percentage Value

The MatchPercentage property describes the degree of similarity between the input data and the reference data as a percentage value. Higher values indicate higher degrees of similarity.

Use the match percentage values to filter out results with extensive corrections. Similarly, use the match percentage values to identify interactive mode suggestions that have the least deviation from the input.

Note: Match percentage values refer explicitly to the similarity between the input and the reference data and not to the similarity between the input and the output address. In most cases, the degrees of similarity will be the same. However, this will not be the case if the output address contains an alternative form of a value, such as MUNICH for MÜNCHEN or PKWY for PARKWAY.

Script

Indicates the type of script used in the output address.

Address Count

When you verify an address in quick capture mode, the AddressCount property returns the number of complete addresses in the reference data that match the input address suggestion. For example, if the reference data contains 12 sub-buildings for a given house number, Address Verification returns a value of 12 in the AddressCount property.

The AddressCount property can also return the possible number of houses, buildings, or sub-buildings for output addresses that contain range-based house numbers, sub-buildings, or buildings.

For addresses in a Street, Locality, or PostalCode group, Address Verification returns an approximate value followed by a + symbol on the AddressCount property.

Address Verification returns an AddressCount value of 1 when the output address suggestion is a single complete address. Address Verification returns a value of ? in the AddressCount property if Address Verification cannot find a house number match in the database and fails to return address suggestions.

For information about the output groups in which Address Verification returns the address suggestions, see .

Result Quality

The ResultQuality property is 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 process status value, to evaluate the address quality and deliverability.

The following table describes the result quality values:

Value	Summary	Description
6	Completely confident	Indicates that Address Verification verified all postally relevant elements.
5	Very confident	Indicates that Address Verification cannot completely verify the address. For example, Address Verification 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 Address Verification can check the primary delivery identifier but cannot verify the secondary delivery information in the address record.
3	Primary delivery identifier not verified	Indicates that Address Verification 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 Address Verification 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 Address Verification 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: Address Verification is likely to return a lower score for a poor-quality address in batch mode than in interactive mode. Interactive 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.

API Return Codes

Informatica Address Verification returns numeric codes to indicate the status of API function calls. All API function calls to Address Verification receive an IDVE_I32 (32 bit signed integer) return code value.

- A value of 0 (zero) indicates success.
- A negative value of -20000 or below indicates a very critical error, and further processing is usually impossible. Immediately shut down the whole process as it might be in an unstable state.
- A negative value between -10000 and -12099 indicates a critical error, and further processing might be impossible.
- A positive value of 20000 or above indicates a non-critical error, and further processing is possible.
- A positive value between 10000 and 12099 indicates a warning, including a possible issue with configuration settings, address input, or output.

The return value must always be checked for by the calling logic. While the return values inform about fundamental errors, the actual verification results are returned through separate API functions.

Success

On successful completion of an API call, Informatica Address Verification returns a return code of 0 (zero).

Warnings

Informatica Address Verification returns one of the following return codes when an API call receives an unexpected result:

Code	Description
10000	The Core/System/MaxMemoryMegabytes setting in the IDVE config file was too small to fulfill all preloading settings.
11000	A database file was found but skipped, possibly because a newer file was preferred.
11001	A database file was not found.
11002	A database with an unsupported version was found.
11003	A corrupted database file was found.
12000	A license file is expired or not yet valid.
12001	The environment settings (for example, Operating System) in a license are incompatible with the current machine.
12002	A license with an unsupported version was found.
12003	The maximum amount of license files was reached. The additional license files will not be loaded.
12004	A license file was not found.

Code	Description
12005	No active license was found.
12006	A license file is corrupted.

Errors

Informatica Address Verification returns the following return codes if an API call failed to run because of an error condition:

Code	Description
20000	IDVE has already been initialized or is currently being initialized.
20001	The attempted operation was not valid.
21000	The output buffer is too small, no output was written.
21001	Buffer misalignment, for example an IDVE_WChar* points to an odd address.
21002	No configuration was given as a parameter for IDVE_Initialize().
21003	A pointer parameter is NULL.
21004	A numeric parameter is 0.
21005	A parameter is out of range or illegal.
21006	Multiple parameters are present that are mutually exclusive.
22000	The syntax of a parameter or value is not valid.
22001	The given URI is not valid either for this operation or in general.
22002	JSON string is not valid.
22003	Missing access rights for this JSON operation.
22004	A JSON value is not available.
22005	A JSON value is of a different type (for example, called IDVE_GetString() on an integer value).
22006	A JSON integer value is outside the bounds of the provided integer type. Choose a larger integer type.
22007	The character sequence of a JSON string is not valid (for example, it contains escape sequences that are not valid).
22008	The JSON file is in an unsupported encoding.
23000	Subfolder FileSetA or FileSetB (or both) were not found on disk.
23001	The FileSetsInfo file has content that is not valid or could not be found.

Code	Description
24000	No free job is available.
24001	The job ID is not valid.
25000	Payload exceeded IPC capacity.
25001	Lost connection to FunctionServer instance, a restart has been initiated.

Critical Errors

If a critical error occurs, Informatica Address Verification returns one of the following return codes:

Code	Description
-10000	IDVE has not been initialized (call IDVE_Initialize() to initialize) or is still being initialized.
-10001	A version mismatch between IDVE components has been detected.
-10002	IDVE is trapped in an unrecoverable error state. Call IDVE_Deinitialize().
-11000	A FunctionServer process could not be started.
-12000	A memory allocation request failed.
-12001	Access to a system resource failed (for example, files and mutexes).

Address Verification does not allow any function call other than `IDVE_Initialize()` and `IDVE_Deinitialize()` after it returns a critical error code.
.

Very Critical Errors

When a very critical error occurs, Informatica Address Verification does not allow any API call other than `IDVE_Deinitialize()`.

The following return calls indicate very critical errors:

Code	Description
-20000	An unknown exception has been thrown. This event should never occur.
-20001	An internal error has occurred. This event should never occur.
-20002	An internal assertion has failed. This event should never occur.

APPENDIX A

REST Call Example

This appendix includes the following topic:

Example: Verifying an Address in QuickCapture Mode

The following example shows an address verification request for a Canada address in quick capture mode.

In the Request example, the text in bold describes the operations that you define in the JSON elements that follow.

In the Response example, the text in bold describes the information returned in the JSON elements that follow.

Request

You submit the following request:

Indicate a REST call to Address Verification in a POST method.

```
POST /AV6/v1/process HTTP/1.1
Host: eu-av.informaticadaas.com
Content-Type: application/json
```

Enter your credentials. Optionally, specify the service information details that you require when you make the call.

```
{
"Login": "*****",
"Password": "*****",
"UseTransactions": "TEST",
```

Set the process mode for verification.

```
"Request":
{
      "Parameters": { "Mode": "QuickCapture",
```

Set the output detail, result, and standardization parameters that you want to apply to the address.

```
"CountrySets": [
      {
        "OutputDetail": {
          "PreformattedData": {
            "PostalFormattedAddressLines": true,
            "SingleAddressLine": true,
            "SingleAddressLineDelimiter": "Space"
          },
```

```
              "SubItems": true
            },
            "Result": {
              "MaxResultCount": 20,
              "NumericRangeExpansion": {
                "RangesToExpand": "None",
                "RangeExpansionType": "Flexible"
              }
            },
            "Standardizations": [
              {
                "Default": {
                  "PreferredScript": {
                    "Script": "Latin",
                    "TransliterationType": "Default",
                    "LimitLatinCharacters": "Latin1"
                  },
                  "FormatWithCountry": false,
                  "CountryNameType": "NameEN",
                  "CountryCodeType": "ISO3",
                  "MaxItemLength": 255,
                  "Casing": "PostalAdmin",
                  "DescriptorLength": "Database",
                  "AliasHandling": "PostalAdmin"
                }
              }
            ]
          }
        ]
      },
```

Specify the address that you want to verify.

```
    "IO": {
        "Inputs": [
            {
                "AddressElements": {
                    "Country"     : "CAN"
                },
                "PreformattedData":{
                    "SingleAddressLine":"181 Wellington    Toronto   M5V 3G7"
                }
            }
        ]
      }
    }
}
```

Response

Informatica Address Verification returns the following response:

The status of the request.

```
{
    "Status": "Ok",
```

The service information details of the call.

```
    "JobToken": "bb4c5a04-85a8-40cf-a229-ea201574d14c",
        "TransactionInfo": {
            "TotalTransactionsCharged": 1,
            "TransactionPools": [
                {
                    "Type": "INTERACTIVE",
                    "TransactionsCharged": 1
                }
            ]
        },
```

The summary of the response.

```
"Response": [
    {
        "ResultInfo": {
            "ProcessStatus": "F",
            "ProcessModeUsed": "QuickCapture",
            "ResultCount": 7,
            "ResultCountOverflow": false,
            "ResultCountries": [
                "CAN"
            ]
        },
```

The address suggestions that Address Verification returned for the input address.

The first address suggestion in the Street result group for the address.

```
"Results": [
    {
        "Variants": [
            {
                "StatusValues": {
                    "AddressType": "S",
                    "ResultGroup": "Street",
                    "LanguageISO3": "ENG",
                    "UsedVerificationLevel": "None",
                    "MatchPercentage": "96.15",
                    "Script": "Latin1",
                    "AddressCount": "1",
                    "ResultQuality": 5
                },
                "AddressElements": {
                    "Street": [
                        {
                            "Value": "WELLINGTON ST W",
                            "SubItems": {
                                "Name": "WELLINGTON",
                                "PostDirectional": "W",
                                "PostDescriptor": "ST"
                            }
                        }
                    ],
                    "HouseNumber": [
                        {
                            "Value": "181",
                            "SubItems": {
                                "Number": "181"
                            }
                        }
                    ],
                    "Locality": [
                        {
                            "Value": "TORONTO",
                            "SubItems": {
                                "Name": "TORONTO"
                            }
                        }
                    ],
                    "PostalCode": [
                        {
                            "Value": "M5V 3G7",
                            "SubItems": {
                                "Base": "M5V3G7"
                            }
                        }
                    ],
                    "AdministrativeDivision": [
                        {
                            "Value": "ON",
                            "Variants": {
                                "Extended": "ONTARIO",
```

```
                                        "ISO": "ON",
                                        "Abbreviation": "ON"
                                    }
                                }
                            ],
                            "Country": [
                                {
                                    "Code": "CAN",
                                    "Name": "CANADA"
                                }
                            ]
                        },
                        "PreformattedData": {
                            "SingleAddressLine": {
                                "Value": "181 WELLINGTON ST W TORONTO ON M5V 3G7"
                            },
                            "PostalDeliveryAddressLines": [
                                {
                                    "Value": "181 WELLINGTON ST W"
                                }
                            ],
                            "PostalFormattedAddressLines": [
                                {
                                    "Value": "181 WELLINGTON ST W"
                                },
                                {
                                    "Value": "TORONTO ON M5V 3G7"
                                }
                            ],
                            "PostalLocalityLine": {
                                "Value": "TORONTO ON M5V 3G7"
                            }
                        }
                    }
                ]
            },
```

The second address suggestion in the Street result group for the address.

```
            {
                    "Variants": [
                        {
                            "StatusValues": {
                                "AddressType": "S",
                                "ResultGroup": "Street",
                                "LanguageISO3": "ENG",
                                "UsedVerificationLevel": "None",
                                "MatchPercentage": "85.10",
                                "Script": "Latin1",
                                "AddressCount": "1",
                                "ResultQuality": 5
                            },
                            "AddressElements": {
                                "SubBuilding": [
                                    {
                                        "Value": "SUITE 181",
                                        "SubItems": {
                                            "Number": "181",
                                            "PostDescriptor": "SUITE"
                                        }
                                    }
                                ],
                                "Street": [
                                    {
                                        "Value": "WELLINGTON ST W",
                                        "SubItems": {
                                            "Name": "WELLINGTON",
                                            "PostDirectional": "W",
                                            "PostDescriptor": "ST"
                                        }
                                    }
```

```
                                ],
                                "HouseNumber": [
                                    {
                                        "Value": "436",
                                        "SubItems": {
                                            "Number": "436"
                                        }
                                    }
                                ],
                                "Locality": [
                                    {
                                        "Value": "TORONTO",
                                        "SubItems": {
                                            "Name": "TORONTO"
                                        }
                                    }
                                ],
                                "PostalCode": [
                                    {
                                        "Value": "M5V 1E3",
                                        "SubItems": {
                                            "Base": "M5V1E3"
                                        }
                                    }
                                ],
                                "AdministrativeDivision": [
                                    {
                                        "Value": "ON",
                                        "Variants": {
                                            "Extended": "ONTARIO",
                                            "ISO": "ON",
                                            "Abbreviation": "ON"
                                        }
                                    }
                                ],
                                "Residue": [
                                    {
                                        "Value": "3G7",
                                        "Type": "Superfluous"
                                    }
                                ],
                                "Country": [
                                    {
                                        "Code": "CAN",
                                        "Name": "CANADA"
                                    }
                                ]
                            },
                            "PreformattedData": {
                                "SingleAddressLine": {
                                    "Value": "436 WELLINGTON ST W SUITE 181 TORONTO ON
M5V 1E3"
                                },
                                "PostalDeliveryAddressLines": [
                                    {
                                        "Value": "436 WELLINGTON ST W SUITE 181"
                                    }
                                ],
                                "PostalFormattedAddressLines": [
                                    {
                                        "Value": "436 WELLINGTON ST W SUITE 181"
                                    },
                                    {
                                        "Value": "TORONTO ON M5V 1E3"
                                    }
                                ],
                                "PostalLocalityLine": {
                                    "Value": "TORONTO ON M5V 1E3"
                                }
                            }
                        }
                    }
```

The third address suggestion in the Street result group for the address.

```
                    ]
                },
        {
                "Variants": [
                    {
                        "StatusValues": {
                            "AddressType": "S",
                            "ResultGroup": "Street",
                            "LanguageISO3": "ENG",
                            "UsedVerificationLevel": "None",
                            "MatchPercentage": "85.10",
                            "Script": "Latin1",
                            "AddressCount": "1",
                            "ResultQuality": 5
                        },
                        "AddressElements": {
                            "SubBuilding": [
                                {
                                    "Value": "SUITE 181",
                                    "SubItems": {
                                        "Number": "181",
                                        "PostDescriptor": "SUITE"
                                    }
                                }
                            ],
                            "Street": [
                                {
                                    "Value": "WELLINGTON ST W",
                                    "SubItems": {
                                        "Name": "WELLINGTON",
                                        "PostDirectional": "W",
                                        "PostDescriptor": "ST"
                                    }
                                }
                            ],
                            "HouseNumber": [
                                {
                                    "Value": "462",
                                    "SubItems": {
                                        "Number": "462"
                                    }
                                }
                            ],
                            "Locality": [
                                {
                                    "Value": "TORONTO",
                                    "SubItems": {
                                        "Name": "TORONTO"
                                    }
                                }
                            ],
                            "PostalCode": [
                                {
                                    "Value": "M5V 1E3",
                                    "SubItems": {
                                        "Base": "M5V1E3"
                                    }
                                }
                            ],
                            "AdministrativeDivision": [
                                {
                                    "Value": "ON",
                                    "Variants": {
                                        "Extended": "ONTARIO",
                                        "ISO": "ON",
                                        "Abbreviation": "ON"
                                    }
                                }
```

```
                                    ],
                                    "Residue": [
                                        {
                                            "Value": "3G7",
                                            "Type": "Superfluous"
                                        }
                                    ],
                                    "Country": [
                                        {
                                            "Code": "CAN",
                                            "Name": "CANADA"
                                        }
                                    ]
                                },
                                "PreformattedData": {
                                    "SingleAddressLine": {
                                        "Value": "462 WELLINGTON ST W SUITE 181 TORONTO ON
M5V 1E3"
                                    },
                                    "PostalDeliveryAddressLines": [
                                        {
                                            "Value": "462 WELLINGTON ST W SUITE 181"
                                        }
                                    ],
                                    "PostalFormattedAddressLines": [
                                        {
                                            "Value": "462 WELLINGTON ST W SUITE 181"
                                        },
                                        {
                                            "Value": "TORONTO ON M5V 1E3"
                                        }
                                    ],
                                    "PostalLocalityLine": {
                                        "Value": "TORONTO ON M5V 1E3"
                                    }
                                }
                            }
                        ]
                    },
```

The fourth address suggestion in the Street result group for the address.

```
        {
                            "Variants": [
                                {
                                    "StatusValues": {
                                        "AddressType": "S",
                                        "ResultGroup": "Street",
                                        "LanguageISO3": "ENG",
                                        "UsedVerificationLevel": "None",
                                        "MatchPercentage": "85.10",
                                        "Script": "Latin1",
                                        "AddressCount": "1",
                                        "ResultQuality": 5
                                    },
                                    "AddressElements": {
                                        "SubBuilding": [
                                            {
                                                "Value": "SUITE 181",
                                                "SubItems": {
                                                    "Number": "181",
                                                    "PostDescriptor": "SUITE"
                                                }
                                            }
                                        ],
                                        "Street": [
                                            {
                                                "Value": "WELLINGTON ST W",
                                                "SubItems": {
                                                    "Name": "WELLINGTON",
                                                    "PostDirectional": "W",
```

```json
                        "PostDescriptor": "ST"
                    }
                }
            ],
            "HouseNumber": [
                {
                    "Value": "200",
                    "SubItems": {
                        "Number": "200"
                    }
                }
            ],
            "Locality": [
                {
                    "Value": "TORONTO",
                    "SubItems": {
                        "Name": "TORONTO"
                    }
                }
            ],
            "PostalCode": [
                {
                    "Value": "M5V 3C7",
                    "SubItems": {
                        "Base": "M5V3C7"
                    }
                }
            ],
            "AdministrativeDivision": [
                {
                    "Value": "ON",
                    "Variants": {
                        "Extended": "ONTARIO",
                        "ISO": "ON",
                        "Abbreviation": "ON"
                    }
                }
            ],
            "Residue": [
                {
                    "Value": "3G7",
                    "Type": "Superfluous"
                }
            ],
            "Country": [
                {
                    "Code": "CAN",
                    "Name": "CANADA"
                }
            ]
        },
        "PreformattedData": {
            "SingleAddressLine": {
                "Value": "200 WELLINGTON ST W SUITE 181 TORONTO ON
M5V 3C7"
            },
            "PostalDeliveryAddressLines": [
                {
                    "Value": "200 WELLINGTON ST W SUITE 181"
                }
            ],
            "PostalFormattedAddressLines": [
                {
                    "Value": "200 WELLINGTON ST W SUITE 181"
                },
                {
                    "Value": "TORONTO ON M5V 3C7"
                }
            ],
            "PostalLocalityLine": {
                "Value": "TORONTO ON M5V 3C7"
```

```
                                        }
                                    }
                                }
                            ]
                        },
```

The fifth address suggestion in the Street result group for the address.

```
            {
                "Variants": [
                    {
                        "StatusValues": {
                            "AddressType": "B",
                            "ResultGroup": "Street",
                            "LanguageISO3": "ENG",
                            "UsedVerificationLevel": "None",
                            "MatchPercentage": "85.10",
                            "Script": "Latin1",
                            "AddressCount": "1",
                            "ResultQuality": 5
                        },
                        "AddressElements": {
                            "Building": [
                                {
                                    "Value": "BUSINESS BUILDING",
                                    "SubItems": {
                                        "Name": "BUSINESS BUILDING"
                                    }
                                }
                            ],
                            "SubBuilding": [
                                {
                                    "Value": "SUITE 181",
                                    "SubItems": {
                                        "Number": "181",
                                        "PostDescriptor": "SUITE"
                                    }
                                }
                            ],
                            "Street": [
                                {
                                    "Value": "WELLINGTON ST W",
                                    "SubItems": {
                                        "Name": "WELLINGTON",
                                        "PostDirectional": "W",
                                        "PostDescriptor": "ST"
                                    }
                                }
                            ],
                            "HouseNumber": [
                                {
                                    "Value": "200",
                                    "SubItems": {
                                        "Number": "200"
                                    }
                                }
                            ],
                            "Locality": [
                                {
                                    "Value": "TORONTO",
                                    "SubItems": {
                                        "Name": "TORONTO"
                                    }
                                }
                            ],
                            "PostalCode": [
                                {
                                    "Value": "M5V 3C7",
                                    "SubItems": {
                                        "Base": "M5V3C7"
                                    }
```

```
                                                      }
                                                 ],
                                                 "AdministrativeDivision": [
                                                      {
                                                           "Value": "ON",
                                                           "Variants": {
                                                               "Extended": "ONTARIO",
                                                               "ISO": "ON",
                                                               "Abbreviation": "ON"
                                                           }
                                                      }
                                                 ],
                                                 "Residue": [
                                                      {
                                                           "Value": "3G7",
                                                           "Type": "Superfluous"
                                                      }
                                                 ],
                                                 "Country": [
                                                      {
                                                           "Code": "CAN",
                                                           "Name": "CANADA"
                                                      }
                                                 ]
                                            },
                                            "PreformattedData": {
                                                 "SingleAddressLine": {
                                                      "Value": "BUSINESS BUILDING 200 WELLINGTON ST W
SUITE 181 TORONTO ON M5V 3C7"
                                                 },
                                                 "PostalDeliveryAddressLines": [
                                                      {
                                                           "Value": "BUSINESS BUILDING"
                                                      },
                                                      {
                                                           "Value": "200 WELLINGTON ST W SUITE 181"
                                                      }
                                                 ],
                                                 "PostalFormattedAddressLines": [
                                                      {
                                                           "Value": "BUSINESS BUILDING"
                                                      },
                                                      {
                                                           "Value": "200 WELLINGTON ST W SUITE 181"
                                                      },
                                                      {
                                                           "Value": "TORONTO ON M5V 3C7"
                                                      }
                                                 ],
                                                 "PostalLocalityLine": {
                                                      "Value": "TORONTO ON M5V 3C7"
                                                 }
                                            }
                                       }
                                  ]
                             },
```

The sixth address suggestion in the Street result group for the address.

```
                   {
                                  "Variants": [
                                       {
                                            "StatusValues": {
                                                 "AddressType": "S",
                                                 "ResultGroup": "Street",
                                                 "LanguageISO3": "ENG",
                                                 "UsedVerificationLevel": "None",
                                                 "MatchPercentage": "78.01",
                                                 "Script": "Latin1",
                                                 "AddressCount": "1",
                                                 "ResultQuality": 5
```

```
        },
        "AddressElements": {
            "SubBuilding": [
                {
                    "Value": "SUITE 181",
                    "SubItems": {
                        "Number": "181",
                        "PostDescriptor": "SUITE"
                    }
                }
            ],
            "Street": [
                {
                    "Value": "WELLINGTON ST W",
                    "SubItems": {
                        "Name": "WELLINGTON",
                        "PostDirectional": "W",
                        "PostDescriptor": "ST"
                    }
                }
            ],
            "HouseNumber": [
                {
                    "Value": "145",
                    "SubItems": {
                        "Number": "145"
                    }
                }
            ],
            "Locality": [
                {
                    "Value": "TORONTO",
                    "SubItems": {
                        "Name": "TORONTO"
                    }
                }
            ],
            "PostalCode": [
                {
                    "Value": "M5J 1H8",
                    "SubItems": {
                        "Base": "M5J1H8"
                    }
                }
            ],
            "AdministrativeDivision": [
                {
                    "Value": "ON",
                    "Variants": {
                        "Extended": "ONTARIO",
                        "ISO": "ON",
                        "Abbreviation": "ON"
                    }
                }
            ],
            "Residue": [
                {
                    "Value": "3G7",
                    "Type": "Superfluous"
                }
            ],
            "Country": [
                {
                    "Code": "CAN",
                    "Name": "CANADA"
                }
            ]
        },
        "PreformattedData": {
            "SingleAddressLine": {
                "Value": "145 WELLINGTON ST W SUITE 181 TORONTO ON
```

```
                                          M5J 1H8"
                                        },
                                        "PostalDeliveryAddressLines": [
                                            {
                                                "Value": "145 WELLINGTON ST W SUITE 181"
                                            }
                                        ],
                                        "PostalFormattedAddressLines": [
                                            {
                                                "Value": "145 WELLINGTON ST W SUITE 181"
                                            },
                                            {
                                                "Value": "TORONTO ON M5J 1H8"
                                            }
                                        ],
                                        "PostalLocalityLine": {
                                            "Value": "TORONTO ON M5J 1H8"
                                        }
                                    }
                                }
                            ]
                        },
```

The seventh address suggestion in the Street result group for the address.

```
                        {
                            "Variants": [
                                {
                                    "StatusValues": {
                                        "AddressType": "B",
                                        "ResultGroup": "Street",
                                        "LanguageISO3": "ENG",
                                        "UsedVerificationLevel": "None",
                                        "MatchPercentage": "78.01",
                                        "Script": "Latin1",
                                        "AddressCount": "1",
                                        "ResultQuality": 5
                                    },
                                    "AddressElements": {
                                        "Building": [
                                            {
                                                "Value": "BUSINESS BUILDING",
                                                "SubItems": {
                                                    "Name": "BUSINESS BUILDING"
                                                }
                                            }
                                        ],
                                        "SubBuilding": [
                                            {
                                                "Value": "SUITE 181",
                                                "SubItems": {
                                                    "Number": "181",
                                                    "PostDescriptor": "SUITE"
                                                }
                                            }
                                        ],
                                        "Street": [
                                            {
                                                "Value": "WELLINGTON ST W",
                                                "SubItems": {
                                                    "Name": "WELLINGTON",
                                                    "PostDirectional": "W",
                                                    "PostDescriptor": "ST"
                                                }
                                            }
                                        ],
                                        "HouseNumber": [
                                            {
                                                "Value": "145",
                                                "SubItems": {
```

```
                    "Number": "145"
                }
            }
        ],
        "Locality": [
            {
                "Value": "TORONTO",
                "SubItems": {
                    "Name": "TORONTO"
                }
            }
        ],
        "PostalCode": [
            {
                "Value": "M5J 1H8",
                "SubItems": {
                    "Base": "M5J1H8"
                }
            }
        ],
        "AdministrativeDivision": [
            {
                "Value": "ON",
                "Variants": {
                    "Extended": "ONTARIO",
                    "ISO": "ON",
                    "Abbreviation": "ON"
                }
            }
        ],
        "Residue": [
            {
                "Value": "3G7",
                "Type": "Superfluous"
            }
        ],
        "Country": [
            {
                "Code": "CAN",
                "Name": "CANADA"
            }
        ]
    },
    "PreformattedData": {
        "SingleAddressLine": {
            "Value": "BUSINESS BUILDING 145 WELLINGTON ST W
SUITE 181 TORONTO ON M5J 1H8"
        },
        "PostalDeliveryAddressLines": [
            {
                "Value": "BUSINESS BUILDING"
            },
            {
                "Value": "145 WELLINGTON ST W SUITE 181"
            }
        ],
        "PostalFormattedAddressLines": [
            {
                "Value": "BUSINESS BUILDING"
            },
            {
                "Value": "145 WELLINGTON ST W SUITE 181"
            },
            {
                "Value": "TORONTO ON M5J 1H8"
            }
        ],
        "PostalLocalityLine": {
            "Value": "TORONTO ON M5J 1H8"
        }
    }
}
```

```
                            }
                        ]
                    }
                ]
            }
        ]
    }
```

APPENDIX B

Geocode Countries

This appendix includes the following topic:

-

GeoCoding Types

This appendix identifies the countries for which you can retrieve geocodes and the level of geocoding that Address Verification performs for each country.

The following table describes the geocode capabilities that Address Verification currently supports:

Country	Geocoding Precision
Afghanistan	LocalityCenter
Albania	LocalityCenter
Algeria	LocalityCenter
Andorra	StreetCenter
Andorra	ArrivalPoint
Angola	LocalityCenter
Anguilla	LocalityCenter
Antarctica	LocalityCenter
Antigua and Barbuda	LocalityCenter
Argentina	StreetCenter
Argentina	ArrivalPoint
Armenia	LocalityCenter
Aruba	LocalityCenter
Australia	StreetCenter

Country	Geocoding Precision
Australia	ArrivalPoint
Austria	StreetCenter
Austria	ArrivalPoint
Azerbaijan	LocalityCenter
Bahamas	StreetCenter
Bahrain	StreetCenter
Bahrain	ArrivalPoint
Bangladesh	LocalityCenter
Barbados	LocalityCenter
Belarus	LocalityCenter
Belgium	StreetCenter
Belgium	ArrivalPoint
Belize	LocalityCenter
Benin	LocalityCenter
Bermuda	LocalityCenter
Bhutan	LocalityCenter
Bolivia	ArrivalPoint
Bolivia	StreetCenter
Bosnia and Herzegovina	LocalityCenter
Botswana	LocalityCenter
Brazil	StreetCenter
British Indian Ocean Territory	LocalityCenter
Brunei Darussalam	LocalityCenter
Burkina Faso	LocalityCenter
Bulgaria	StreetCenter
Bulgaria	ArrivalPoint
Burundi	LocalityCenter

Country	Geocoding Precision
Cambodia	LocalityCenter
Cameroon	LocalityCenter
Canada	StreetCenter
Canada	ArrivalPoint
Canada	Rooftop
Central African Republic	LocalityCenter
Chad	LocalityCenter
Chile	LocalityCenter
Chile	ArrivalPoint
China	LocalityCenter
Colombia	StreetCenter
Comoros	LocalityCenter
Congo	LocalityCenter
Congo, The Democratic Republic of the	LocalityCenter
Cook Islands	LocalityCenter
Costa Rica	StreetCenter
Côte d'Ivoire	LocalityCenter
Cuba	LocalityCenter
Curacao	StreetCenter
Croatia	ArrivalPoint
Croatia	StreetCenter
Cyprus	LocalityCenter
Czech Republic	StreetCenter
Czech Republic	ArrivalPoint
Denmark	StreetCenter
Denmark	ArrivalPoint
Djibouti	LocalityCenter

Country	Geocoding Precision
Dominica	LocalityCenter
Ecuador	PostalCodeCenter
Egypt	LocalityCenter
Equatorial Guinea	LocalityCenter
Eritrea	LocalityCenter
Estland	ArrivalPoint
Estland	StreetCenter
Eswatini	LocalityCenter
Ethiopia	LocalityCenter
Falkland Islands	LocalityCenter
Faroe Islands	StreetCenter
Faroe Islands	ArrivalPoint
Fiji	LocalityCenter
Finland	StreetCenter
Finland	ArrivalPoint
France	StreetCenter
France	ArrivalPoint
Gabon	LocalityCenter
Gambia	LocalityCenter
Georgia	LocalityCenter
Germany	StreetCenter
Germany	ArrivalPoint
Ghana	LocalityCenter
Gibraltar	StreetCenter
Gibraltar	ArrivalPoint
Greece	ArrivalPoint
Greece	StreetCenter

Country	Geocoding Precision
Greenland	PostalCodeCenter
Grenada	LocalityCenter
Guatemala	LocalityCenter
Guinea	LocalityCenter
Guinea-Bissau	LocalityCenter
Guyana	LocalityCenter
Haiti	LocalityCenter
Hong Kong	StreetCenter
Hong Kong	ArrivalPoint
Hungary	StreetCenter
Hungary	ArrivalPoint
Iceland	StreetCenter
Iceland	ArrivalPoint
Indonesia	LocalityCenter
Iran, Islamic Republic of	LocalityCenter
Iraq	LocalityCenter
Ireland	StreetCenter
Ireland	ArrivalPoint
Israel	LocalityCenter
Italy	StreetCenter
Italy	ArrivalPoint
Ivory Coast	LocalityCenter
Japan	StreetCenter
Jordan	LocalityCenter
Kazakhstan	LocalityCenter
Kenya	LocalityCenter
Kiribati	LocalityCenter

Country	Geocoding Precision
Korea, Democratic People's Republic of	LocalityCenter
Korea, Republic of	ArrivalPoint
Korea, Republic of	StreetCenter
Kuwait	LocalityCenter
Kyrgyzstan	LocalityCenter
Lao, People's Democratic Republic	LocalityCenter
Latvia	StreetCenter
Latvia	ArrivalPoint
Lebanon	LocalityCenter
Lesotho	LocalityCenter
Liberia	LocalityCenter
Libyan Arab Jamahiriya	LocalityCenter
Liechtenstein	StreetCenter
Liechtenstein	ArrivalPoint
Lithuania	ArrivalPoint
Lithuania	StreetCenter
Luxembourg	StreetCenter
Luxembourg	ArrivalPoint
Macau	StreetCenter
Macau	ArrivalPoint
Macedonia, The Former Yugoslav Republic of	LocalityCenter
Madagascar	LocalityCenter
Malawi	LocalityCenter
Malaysia	StreetCenter
Malaysia	ArrivalPoint
Maldives	LocalityCenter
Mali	LocalityCenter

Country	Geocoding Precision
Mauritania	LocalityCenter
Mauritius	LocalityCenter
Mexico	StreetCenter
Mexico	ArrivalPoint
Moldova	ArrivalPoint
Moldova	StreetCenter
Mongolia	LocalityCenter
Montenegro	LocalityCenter
Montserrat	LocalityCenter
Morocco	LocalityCenter
Mozambique	LocalityCenter
Myanmar	LocalityCenter
Namibia	LocalityCenter
Nauru	LocalityCenter
Nepal	LocalityCenter
Netherlands	StreetCenter
Netherlands	ArrivalPoint
New Zealand	StreetCenter
New Zealand	ArrivalPoint
Nicaragua	LocalityCenter
Niger	LocalityCenter
Nigeria	LocalityCenter
Niue	LocalityCenter
Norfolk Island	LocalityCenter
Norway	StreetCenter
Norway	ArrivalPoint
Oman	LocalityCenter

Country	Geocoding Precision
Pakistan	LocalityCenter
Panama	StreetCenter
Papua New Guinea	LocalityCenter
Paraguay	LocalityCenter
Peru	StreetCenter
Peru	ArrivalPoint
Philippines	LocalityCenter
Pitcairn	LocalityCenter
Poland	StreetCenter
Poland	ArrivalPoint
Portugal	StreetCenter
Portugal	ArrivalPoint
Qatar	LocalityCenter
Romania	LocalityCenter
Russia	ArrivalPoint
Russia	StreetCenter
Rwanda	LocalityCenter
Saint Helena	LocalityCenter
Saint Kitts and Nevis	LocalityCenter
Saint Lucia	LocalityCenter
Saint Vincent and the Grenadines	LocalityCenter
Samoa	LocalityCenter
Sao Tome and Principe	LocalityCenter
Saudi Arabia	LocalityCenter
Senegal	LocalityCenter
Serbia	LocalityCenter
Seychelles	LocalityCenter

Country	Geocoding Precision
Sierra Leone	LocalityCenter
Singapore	StreetCenter
Singapore	ArrivalPoint
Slovakia	StreetCenter
Slovakia	ArrivalPoint
Slovenia	StreetCenter
Slovenia	ArrivalPoint
Solomon Islands	LocalityCenter
Somalia	LocalityCenter
South Africa	ArrivalPoint
South Africa	StreetCenter
South Georgia and the South Sandwich Islands	LocalityCenter
Spain	StreetCenter
Spain	ArrivalPoint
Sri Lanka	LocalityCenter
St Martin	StreetCenter
Sudan	LocalityCenter
Suriname	LocalityCenter
Sweden	StreetCenter
Sweden	ArrivalPoint
Switzerland	StreetCenter
Switzerland	ArrivalPoint
Syrian Arab Republic	LocalityCenter
Taiwan	StreetCenter
Taiwan	ArrivalPoint
Tajikistan	LocalityCenter
Tanzania, United Rep.	LocalityCenter

Country	Geocoding Precision
Timor-Leste	StreetCenter
Togo	LocalityCenter
Tokelau	LocalityCenter
Tonga	LocalityCenter
Trinidad and Tobago	LocalityCenter
Tunisia	LocalityCenter
Turkey	ArrivalPoint
Turkey	StreetCenter
Turkmenistan	LocalityCenter
Turks and Caicos Islands	LocalityCenter
Tuvalu	LocalityCenter
Uganda	LocalityCenter
Ukraine	StreetCenter
Ukraine	ArrivalPoint
United Arab Emirates	LocalityCenter
United Kingdom	StreetCenter
United Kingdom	ArrivalPoint
United States	StreetCenter
United States	ArrivalPoint
United States	Rooftop
Uruguay	StreetCenter
Uruguay	ArrivalPoint
Uzbekistan	LocalityCenter
Vanuatu	LocalityCenter
Venezuela	StreetCenter
Venezuela	ArrivalPoint
Virgin Islands, British	LocalityCenter

Country	Geocoding Precision
Western Sahara	LocalityCenter
Yemen	LocalityCenter
Zambia	LocalityCenter
Zimbabwe	LocalityCenter

APPENDIX C

Certified Mode Values

This appendix includes the following topics:

CASS Certification Values

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

Field	Property	Description
Barcode	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 Answer	CarrierRoute	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
Concatenation of DPV Footnotes*	DPVFootnoteComplete	All data values from the populated DPV Footnote fields in a single string.
Congressional District	CongressionalDistrict	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).

Field	Property	Description
Default Flag	DefaultFlag	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	DeliveryPoint	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 Answer	DeliveryPointCheckDigit	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 3553 Confirmation*	DPVConfirmation3553	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 CMRA Indicator*	DPVCMRA	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 Indicator*	DPVConfirmation	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 Door Not Available*	DPVDNA	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 DPV DNA indicator can contain the values of Y or N: - 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 False Positive Indicator*	DPVFalsePositive	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	Property	Description
DPV Footnote 1* DPV Footnote 2* DPV Footnote 3*	DPVFootnote1 DPVFootnote2 DPVFootnote3	The footnote(s) returned for an address from DPV processing: - AA - Input address matched to the ZIP + 4 file. - A1 - Input address did not match to the ZIP + 4 file. - BB - Input address matched to DPV (all components). - CC - Input address primary number matched to DPV, but secondary number did not match (present but not valid). - F1 - Input address matched to a military address. - G1 - Input address matched to a general delivery address. - N1 - Input address primary number matched to DPV, but the address is missing a secondary number. - M1 - Input address primary number is missing. - M3 - Input address primary number is not valid. - P1 - Input address Post Office, Rural Route, or Highway Contract Box number is missing - P3 - Input address Post Office, Rural Route, or Highway Contract Box number is not valid. - PB - Input address matched to a PO Box Street Address (PBSA). - RR - Input address matched to CMRA and Private Mailbox (PMB) designator is present. - R1 - Input address matched to CMRA, but PMB designator is not present. - R7 - Input address matched to a physical address that does not receive delivery from the USPS (R777). - TA - Input house number includes a trailing alphabetical character and cannot DPV confirm. However, the address DPV confirms without the trailing alphabetical character. - U1 - Input address matched to a unique ZIP code.
DPV No Secure Location*	DPVNSL	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*	DPVPBSA	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. Address Verification also returns the footnote PB for a PBSA address.
DPV Throwback Indicator*	DPVThrowBack	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*	DPVNoStatIndicator	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	Property	Description
DSF2 No Stats Reason*	DPVNoStatReason	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. Address Verification 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*	DPVVacantIndicator	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.
Early Warning System (EWS) Return Code*	EWSReturnCode	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.
eLOT Ascending/ Descending	ELOTFlag	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	ELOTSequence	A number that indicates the order in which add-on codes are arranged within a given carrier route.
High-rise Default	HighriseDefault	A flag that indicates that the record is assigned to a default high-rise record.
High-rise Exact	HighriseExact	Identifies high-rise addresses that contain unit identifiers.

Field	Property	Description
LACS Indicator*	LACSIndicator	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.
LACSLink Indicator*	LACSLinkIndicator	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 Return Code*	LACSLinkReturnCode	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.

Non-Delivery Days*	DPVNDD	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. Address Verification returns the first letter of a weekday in the corresponding position in the code if the address does not receive mail on that day. Address Verification returns a dash symbol in the corresponding position otherwise.
P. O. Box Only	PoBoxOnly	Indicates if the address is located in a ZIP code that contains post office box addresses only. Y = Address is in a PO Box only Delivery Zone.
Record Type Code	RecordType	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
Residential Delivery Indicator *	RDI	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	Property	Description
Rural Route Default	RuralRouteDefault	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	RuralRouteExact	Indicates if the address matches a rural route address in the USPS address reference data set.

SuiteLink Return Code*	SuiteLinkReturnCode	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*	ZIPMoveReturnCode	A return value of ZIPMove processing: - Y = ZIPMove match was made. - N = ZIPMove match was not made.

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

AMAS Certification Values

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

Field	Property	Description
Error Code	ErrorCode	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 Identifier	DeliveryPointID	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.
Delivery Identifier	DeliveryID	An eight-digit identifier that Australia Post assigns to an entire street or locality. The identifier represents all the addresses in the street or locality. Australia Post creates the street DIDs in a range from 26,000,000 through 27,999,999 and the locality DIDs in a range from 28,000,000 through 28,999,999.
Lot Number	LotNumber	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.

Field	Property	Description
Postal Delivery Number	PostalDeliveryNumber	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, Address Verification does not populate the field.
Postal Delivery Number Prefix	PostalDeliveryNumberPrefix	The prefix character in a postal delivery number. For example, A in A500.
Postal Delivery Number Suffix	PostalDeliveryNumberSuffix	The suffix character in a postal delivery number. For example, A in 500A.
House Number 1	HouseNumber1	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.
House Number 1 Suffix	HouseNumber1Suffix	An alphabetical suffix to a House Number 1 value. For example, A in 123A.
House Number 2	HouseNumber2	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, Address Verification returns 00000 as the field value.
House Number 2 Suffix	HouseNumber2Suffix	An alphabetical suffix to a House Number 2 value. For example, B in 456B.

SendRight Certification Values

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

Field	Property	Description
Address Type	AddressType	The address type. Contains one of the following values: - Bag - Box - CMB Rural - CMB Urban - Counter - Rural - Urban
Delivery Service Type	DeliveryServiceType	Specifies the type of the delivery service. It may be PO Box, Private Bag, CMB, Response Bag, Counter Delivery, or Poste Restante.
Delivery Service Identifier	DeliveryServiceNumber	The box or bag number. It contains no leading zeros or spaces, separators, or other punctuation.
Delivery Service Locality	DeliveryServiceLocality	Part of the Suburb line for New Zealand addresses. Contains Box Lobby as the value.
House Number	HouseNumber	Number of the structure erected on the property associated with the delivery point.
House Number Alpha	HouseNumberAlpha	The alphabetical part of the house number of the property associated with the delivery point.
Validity Code	ValidityCode	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
Rural Delivery Number	RdNumber	A six-character field that identifies the rural delivery route number of an address.
Delivery Point Identifier	DeliveryPointID	An eight-digit number that uniquely identifies each delivery point in New Zealand.
Hygiene	Hygiene	A flag that indicates whether address cleansing is possible.
SOA Record Ignored	SOARecordIgnored	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.

SERP Certification Values

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

Field	Property	Description
SERP category	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	ExcludedFlag	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.

SNA Certification Values

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

Field	Property	Description
SNA category	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.