# Address Validation - City, State, Zip

## XML Developer Guide

July 08, 2019

# Important Information

## UPS Developer Kit APIs

Your development of an application using UPS Developer Kit APIs is governed by the UPS Technology Agreement you entered into with UPS. The following are key legal requirements from these agreements for the UPS Developer Kit APIs. For more information on all requirements for the UPS Developer Kit APIs, please refer to the UPS Technology Agreement.

Defined terms used but not defined in this document have the meaning set forth in the UPS Technology Agreement.

## Key Legal Requirements for UPS Developer APIs

### *Permitted Territories*

This document can only be used in the countries of the Permitted Territory as defined in the UPS Technology Agreement, as applicable.

### Use

The application must not be designed to allow distribution of information received through the UPS Developer Kit APIs to third parties, other than to persons having a bona fide interest in such information (e.g., the shipper, receiver, or the third party payer, or to your service providers authorized by UPS).

### Consent to Use of UPS Mark

- All screens or forms generated by your application including information received through the UPS Developer Kit APIs must include (1) the UPS Mark positioned in reasonable proximity to the Information and of an appropriate size to readily identify the source of the Information as UPS and (2) the following language at the bottom of every screen that displays the UPS Mark: "UPS, the UPS brand mark, and the Color Brown are trademarks of United Parcel Service of America, Inc. All Rights Reserved." Except as set forth in the preceding sentence, you have no right to use the UPS Mark without the prior written approval of UPS.
- You shall not use the UPS Mark in association with any third party trademarks in a manner that might suggest co-branding or otherwise create potential confusion as to source or sponsorship of the application, or ownership of the UPS Mark.
- The UPS Mark shall be used only as provided by UPS electronically or in hard copy form. The UPS Mark may not be altered in any manner, including proportions, colors, elements, etc., or animated, morphed or otherwise distorted in perspective or dimensional appearance.
- The UPS Mark may not be combined with any other symbols, including words, logos, icons, graphics, photos, slogans, numbers, or other design elements. A minimum amount of empty space must surround the UPS Mark separating it from any other object, such as type, photography, borders, edges, etc. The required area of empty space around the UPS Mark must be 1/3x, where x equals the height of the UPS Mark.

### Copyright and Proprietary Notice

In your application and any POD Letters you prepare, you must include a prominent reproduction of UPS's copyright and proprietary notices in a form and format specified by UPS (See the Copyright section of this document).

### Display of Information

The application must not display information concerning any other provider of shipping services or such other shipping services on any page, whether comprising one or more frames, displaying information your application receives from the UPS Developer Kit APIs. Your application must present all data within each field received through the UPS Developer Kit APIs without amendment, deletion, or modification of any type.

 

## Notice

In all communications with UPS concerning this document, please refer to the document date located on the cover.

## Copyright



## Trademarks

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# Table of Contents

# Chapter 1: Introduction

In this document, you will find guidance and instructions for integrating the Address Validation (AV) XML API into your application, service, or system.

This API is used for City, State, and Zip Code validation, for Street level validation, refer to the Address Validation Street Level Web Service or XML Developer Guide.

### In this guide, you will find:

- New release features
- Address Validation XML API functionality and business rules
- XML API request and response schema
- FAQs for the Address Validation API
- Adddress Validation error response code descriptions

### This guide applies to the following API:

- Address Validation XML API

### This guide does not apply to the following APIs:

- Address Validation Street Level API

## Intended Audience

This guide is intended for developers who will be integrating the Address Validation API into their application, service, or system.

## Required Knowledge & Skills

This guide assumes you have a basic understanding of the following:

- Concepts and instructions in the *Introduction to the UPS Developer Kit* guide.
- XML syntax and structure
- Software development

## How to Use this Guide

- If this is your first time working with the UPS Developer Kit, begin with the *Introduction to the UPS Developer Kit* guide. This guide serves as the foundation for all API-specific developer guides.
- If you are experienced with the UPS Developer Kit but have not yet worked with the Address Validation API, continue with Chapter 2: Understanding the Address Validation API. There you will find an overview of the Address Validation functionality and business rules.
- Chapter 3: Customer Integration Environment (CIE) contains information on UPS integration environments.
- Chapter 4: Address Validation API Elements and Details contains an overview of the top-level containers and elements that comprise the Address Validation request and response.
- Request and response examples are located in Chapter 5: Address Validation City, State, Zip Examples.
- Reference tables, services codes, and error codes are located in the Appendices.

# Release Features

## July 2019

No change.

## January 2019

No change.

## July 2017

No change.

## January 2017

No change.

## July 2016

No change.

## January 2016

No change.

# Chapter 2: Understanding the Address Validation API

## Business Processes and Rules

- UPS expects schema elements/tags as defined in the XPath and presented in the schema structure without spelling or structural deviations. Elements/tags that are not defined in the schema or do not conform to the schema structure will be ignored by UPS.
- Only users that plan to ship packages manifested, tendered, and delivered by UPS can use the API.
- Any customers/developers abusing or data mining the API will have their access revoked.
- To access API documentation the user must have or create a My UPS profile.
- To access testing and production sites the user must have an Access Key. To get an Access Key you must have a My UPS profile and an associated shipping account. For additional information, refer to the *UPS Developer Kit User Guide*.

### Address Validation City, State, Zip

- The UPS Address Validation API's database is updated every month with new address information from USPS.
- Address Validation for City, State, Zip is only available for the United States.

### UPS Address Validation Notice

You must display the following notice, or such other language provided by UPS from time to time, in reasonable proximity to the Address Validation input and output information screens:

**NOTICE**: UPS assumes no liability for the information provided by the address validation functionality. The address validation functionality does not support the identification or verification of occupants at an address.

# Chapter 3: Customer Integration Environment (CIE)

The Customer Integration Environment allows customers to test their application prior to launch. This environment is intended for integration testing of customer applications with the UPS servers.

Once your application has been thoroughly tested, you should redirect the application to the UPS Production Environment.

 No stress testing should ever be performed by customers against any UPS systems.

To access testing and production sites the user must have an Access Key. You can request an Access Key after establishing a UPS profile and associating your shipping account.

### System Availability

The Customer Integration Environment is available 24 hours a day, 7 days a week. Note, the system is occasionally down for server maintenance.

## Integration Testing

Test your Address Validation application with valid and invalid address elements. It is recommended that you use addresses that are familiar to you, for example, your home or business address. This will ensure that your application has the ability to process success and error responses correctly.

 All API URLs are case sensitive.

For integration testing, direct your test Address Validation XML to:

https://wwwcie.ups.com/ups.app/xml/AV

## Production

 All API URLs are case sensitive.

Once testing is complete, direct your Address Validation XML to the production URL:

https://onlinetools.ups.com/ups.app/xml/AV

## Server Availability Check

All of the UPS services work using HTTPS POST. If the server is available, it will reply with the service name, remote user, server port, server name, and servlet path.

To see this in action, type the following URL in your web browser:

https://wwwcie.ups.com/ups.app/xml/AV

| | |
|---|---|
| **Service Name:** | AV |
| **Remote User:** | null |
| **Server Port:** | 443 |
| **Server Name:** | wwwcie.ups.com |
| **Servlet Path:** | /AV |

# Chapter 4: Address Validation API Elements and Details

## Element Constraints

The Request and Response XPath tables contain the full hierarchy of the API elements.

UPS expects schema elements/tags as defined in the XPath and presented in the schema structure i.e., no spelling or structural deviations. Elements/tags that are not defined in the schema or do not conform to the schema structure will be ignored by UPS.

Element constraints are defined as follows:

### Required

- Yes - indicates the element must be present in the request or response.
- Yes* - indicates the element must be present in the request if the parent container is present in the request.
- No - indicates the element is optional and may be used if it applies to the request.
- Cond – indicates the element is required under certain conditions.

### Type

- Container - holds a group of related elements.
- String - consists of alphanumeric characters, spaces, and decimals.

### Length

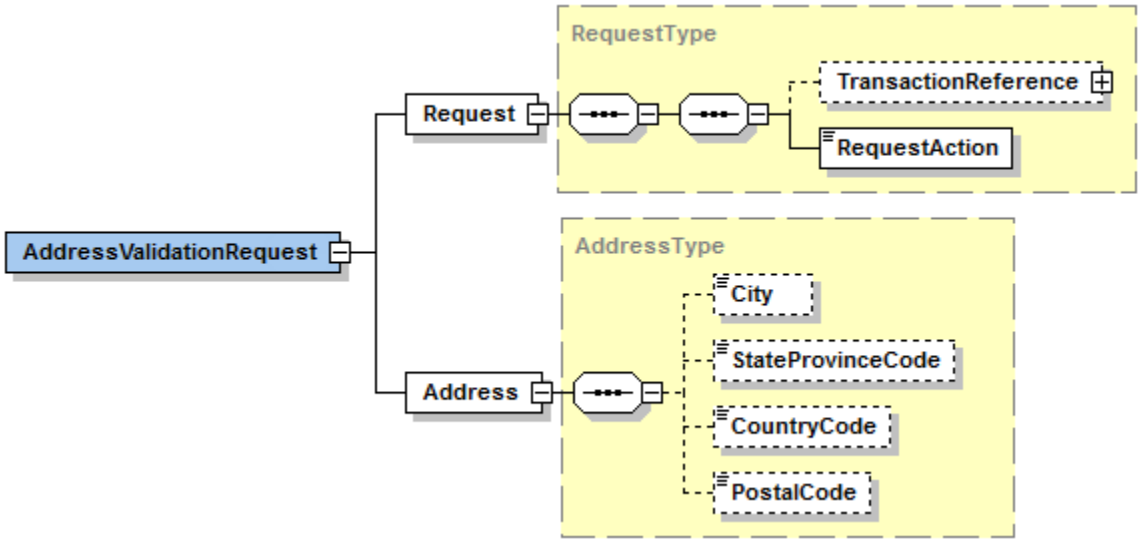
- The maximum number of characters that can be present in a String. Length is not applicable (N/A) to Containers.

### Max Allowed

- The maximum number of elements or containers that can be present in the parent container.

## AddressValidationRequest Top Level Containers




## AddressValidationRequest XPath

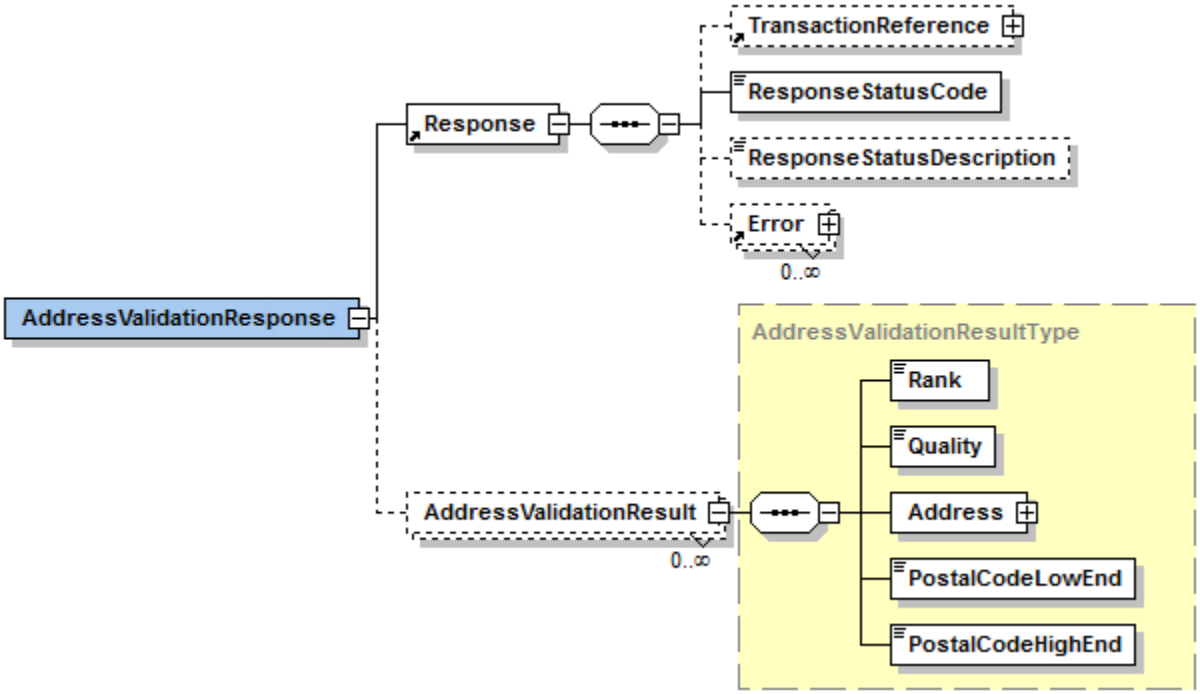
| Name | Constraint | Description |
|---|---|---|
| /AddressValidationRequest | | |
| AddressValidationRequest | Required: Yes<br>Type: Container<br>Max Allowed: 1<br>Length: N/A | Container for AddressValidationRequest |
| /AddressValidationRequest/Request | | |
| Request | Required: Yes<br>Type: Container<br>Max Allowed: 1<br>Length: N/A | Container for Request |
| /AddressValidationRequest/Request/TransactionReference | | |
| TransactionReference | Required: No<br>Type: Container<br>Max Allowed: 1<br>Length: N/A | Transaction Reference container tag. |
| /AddressValidationRequest/Request/TransactionReference/CustomerContext | | |
| CustomerContext | Required: No<br>Type: String<br>Max Allowed: 1<br>Length: 1...512 | Customer context can be any freeform, valid XML characters. The client uses CustomerContext to synchronize request/response pairs. The client establishes CustomerContext, which may contain customer-defined valid XML tags that are echoed in the response. |
| /AddressValidationRequest/Request/RequestAction | | |
| RequestAction | Required: Yes<br>Type: String<br>Max Allowed: 1<br>Length: 2 | The action to be taken by the Address Validation tool. Must contain 'AV' to execute address validation. |

| Name | Constraint | Description |
|---|---|---|
| /AddressValidationRequest/Address | | |
| Address | Required: Yes<br>Type: Container<br>Max Allowed: 1<br>Length: N/A | Address container tag. |
| /AddressValidationRequest/Address/City | | |
| City | Required: Cond<br>Type: String<br>Max Allowed: 1<br>Length: 1...40 | U.S. city to be validated. (A valid city/state/postal code combination must be included as input) |
| /AddressValidationRequest/Address/StateProvinceCode | | |
| StateProvinceCode | Required: Cond<br>Type: String<br>Max Allowed: 1<br>Length: 2 | State to be validated. (A valid city/state/postal code combination must be included as input) |
| /AddressValidationRequest/Address/CountryCode | | |
| CountryCode | Required: Yes<br>Type: String<br>Max Allowed: 1<br>Length: 2 | Two character Country or Territory Code. See Country/Territory Code table for values. |
| /AddressValidationRequest/Address/PostalCode | | |
| PostalCode | Required: Cond<br>Type: String<br>Max Allowed: 1<br>Length: 1...9 | Postal code to be validated. (A valid city/state/postal code combination must be included as input) |

## AddressValidationResponse Top Level Containers




## AddressValidationResponse XPath

| Name | Constraint | Description |
|---|---|---|
| /AddressValidationResponse | | |
| AddressValidationResponse | Required: Yes<br>Type: Container<br>Max Allowed: 1<br>Length: N/A | Container for AddressValidationResponse |
| /AddressValidationResponse/Response | | |
| Response | Required: Yes<br>Type: Container<br>Max Allowed: 1<br>Length: N/A | Container for Response |
| /AddressValidationResponse/Response/TransactionReference | | |
| TransactionReference | Required: Yes<br>Type: Container<br>Max Allowed: 1<br>Length: N/A | Container for customer provided data. |
| /AddressValidationResponse/Response/TransactionReference/CustomerContext | | |
| CustomerContext | Required: No<br>Type: String<br>Max Allowed: 1<br>Length: 1...512 | Customer context can be any free form, valid XML characters. The client uses CustomerContext to synchronize request/response pairs. The client establishes CustomerContext, which may contain customer-defined valid XML tags that are echoed in the response. |

| Name | Constraint | Description |
|---|---|---|
| /AddressValidationResponse/Response/ResponseStatusCode | | |
| ResponseStatusCode | Required: Yes<br>Type: String<br>Max Allowed: 1<br>Length: 1 | Identifies the success or failure of the transaction.<br>1 = Successful<br>0 = Failed |
| /AddressValidationResponse/Response/ResponseStatusDescription | | |
| ResponseStatusDescription | Required: No<br>Type: String<br>Max Allowed: 1<br>Length: 1...10 | Describes Response Status Code. Returns text of 'Success' or 'Failure'. |
| /AddressValidationResponse/Response/Error | | |
| Error | Required: Yes<br>Type: Container<br>Max Allowed: 1<br>Length: N/A | If an error is encountered during the interchange, the Response contains an error. If the error is present, then the ErrorSeverity and ErrorCode are required. |
| /AddressValidationResponse/Response/Error/ErrorSeverity | | |
| ErrorSeverity | Required: Yes<br>Type: String<br>Max Allowed: 1<br>Length: 1...10 | Describes the severity of the error. TransientError - Customer's data has not been processed due to system unavailability. The customer has to wait and try again.<br>HardError - The error was encountered processing the customer's data and that the data needs correction.<br>Warning - The customer's data was successfully processed; however, there were warnings encountered during processing. |
| /AddressValidationResponse/Response/Error/ErrorCode | | |
| ErrorCode | Required: Yes<br>Type: String<br>Max Allowed: 1<br>Length: 2 | A numeric value that describes the error. Each tool defines a range of error codes. |
| /AddressValidationResponse/Response/Error/ErrorDescription | | |
| ErrorDescription | Required: No<br>Type: String<br>Max Allowed: 1<br>Length: 1...150 | Describes the error code. |
| /AddressValidationResponse/Response/Error/MinimumRetrySeconds | | |
| MinimumRetrySeconds | Required: No<br>Type: String<br>Max Allowed: 1<br>Length: 1...10 | Number of seconds to wait until retry. This field is populated on special conditions of the Transient Error only, as defined by the service. A number between 1 and 86400 (24 hours) |
| /AddressValidationResponse/Response/Error/ErrorLocation | | |
| ErrorLocation | Required: Yes<br>Type: Container<br>Max Allowed: 1<br>Length: N/A | Identifies the element in error. |
| /AddressValidationResponse/Response/Error/ErrorLocation/ErrorLocationElementName | | |
| ErrorLocationElementName | Required: No<br>Type: String<br>Max Allowed: 1<br>Length: 1...30 | The XPATH name of the element in error. This is a valid XPATH pointing to an element in the request document. |

| Name | Constraint | Description |
|---|---|---|
| /AddressValidationResponse/Response/Error/ErrorLocation/ErrorLocationAttributeName | | |
| ErrorLocationAttributeName | Required: No<br>Type: String<br>Max Allowed: 1<br>Length: 1...30 | The name of the attribute in error. This is the name of the attribute contained by the ErrorLocation Element. |
| /AddressValidationResponse/Response/Error/ErrorDigest | | |
| ErrorDigest | Required: No<br>Type: String<br>Max Allowed: Many<br>Length: unbounded | The contents of the element in error. |
| /AddressValidationResponse/AddressValidationResult | | |
| AddressValidationResult | Required: Yes<br>Type: Container<br>Max Allowed: Many<br>Length: N/A | Address Validation Result container tag. |
| /AddressValidationResponse/AddressValidationResult/Rank | | |
| Rank | Required: Yes<br>Type: String<br>Max Allowed: 1<br>Length: 1...10 | The rank of each range result. |
| /AddressValidationResponse/AddressValidationResult/Quality | | |
| Quality | Required: Yes<br>Type: String<br>Max Allowed: 1<br>Length: 2 | The quality factor, which describes the accuracy of the result compared to the request.<br>1.0 = Exact match.<br>95-.99 = Very close match.<br>90-.94 = Close match.<br>70-.89 = Possible match.<br>00-.69 = Poor match |
| /AddressValidationResponse/AddressValidationResult/Address | | |
| Address | Required: Yes<br>Type: Container<br>Max Allowed: 1<br>Length: N/A | Container for address |
| /AddressValidationResponse/AddressValidationResult/Address/City | | |
| City | Required: Yes<br>Type: String<br>Max Allowed: 1<br>Length: 1...30 | The city for this address match. |
| /AddressValidationResponse/AddressValidationResult/Address/StateProvinceCode | | |
| StateProvinceCode | Required: Yes<br>Type: String<br>Max Allowed: 1<br>Length: 2 | The state for this address match. |
| /AddressValidationResponse/AddressValidationResult/PostalCodeLowEnd | | |
| PostalCodeLowEnd | Required: Yes<br>Type: String<br>Max Allowed: 1<br>Length: 1...10 | When the Address Validation tool finds matches for a given input combination, a postal code range may be associated with each match. This is the low end of the range. |

| Name | Constraint | Description |
|---|---|---|
| /AddressValidationResponse/AddressValidationResult/PostalCodeHighEnd | | |
| PostalCodeHighEnd | Required: Yes<br>Type: String<br>Max Allowed: 1<br>Length: 1...10 | When the Address Validation tool finds matches for a given input combination, a postal code range may be associated with each match. This is the high end of the range. |

| Name | Constraint | Description |
|---|---|---|
| /AddressValidationResponse | | |
| AddressValidationResponse | Required: Yes<br>Type: Container<br>Max Allowed: 1<br>Length: N/A | Container for Validation Response |

# Chapter 5: Address Validation City, State, Zip Examples

## AddressValidationRequest XML

```
<?xml version="1.0" ?>
    <AccessRequest xml:lang='en-US'>
        <AccessLicenseNumber>YOURACCESSLICENSENUMBER</AccessLicenseNumber>
        <UserId>YOURUSERID</UserId>
        <Password>YOURPASSWORD</Password>
    </AccessRequest>
<?xml version="1.0" ?>
<AddressValidationRequest xml:lang='en-US'>
    <Request>
        <TransactionReference>
            <CustomerContext>Your Customer Context</CustomerContext>
        </TransactionReference>
        <RequestAction>AV</RequestAction>
    </Request>
    <Address>
        <City>Alpharetta</City>
        <StateProvinceCode>GA</StateProvinceCode>
        <PostalCode>30005</PostalCode>
        <CountryCode>US</CountryCode>
</Address>
</AddressValidationRequest>
```

## AddressValidationResponse XML

### Single match

```
<?xml version="1.0" ?>
<AddressValidationResponse>
    <Response>
        <TransactionReference>
            <CustomerContext>Your Customer Context</CustomerContext>
        </TransactionReference>
        <ResponseStatusCode>1</ResponseStatusCode>
        <ResponseStatusDescription>Success</ResponseStatusDescription>
    </Response>
    <AddressValidationResult>
        <Rank>1</Rank>
        <Quality>1.0</Quality>
        <Address>
            <City>ALPHARETTA</City>
            <StateProvinceCode>GA</StateProvinceCode>
</Address>
        <PostalCodeLowEnd>30005</PostalCodeLowEnd>
        <PostalCodeHightEnd>30005</PostalCodeHightEnd>
</AddressValidationResult>
</AddressValidationResponse>
```

### Multiple candidate matches

```
<?xml version="1.0" ?>
<AddressValidationResponse>
    <Response>
        <TransactionReference>
            <CustomerContext>Your Customer Context</CustomerContext>
        </TransactionReference>
        <ResponseStatusCode>1</ResponseStatusCode>
        <ResponseStatusDescription>Success</ResponseStatusDescription>
    </Response>
    <AddressValidationResult>
        <Rank>1</Rank>
        <Quality>0.9975000023841858</Quality>
        <Address>
            <City>TIMONIUM</City>
            <StateProvinceCode>MD</StatePrvinceCode>
</Address>
        <PostalCodeLowEnd>21093</PostalCodeLowEnd>
        <PostalCodeHightEnd>21094</PostalCodeHightEnd
</AddressValidationResult>
    <AddressValidationResult>
        <Rank>2</Rank>
        <Quality>0.829999833106995</Quality>
        <Address>
            <City>LUTHERVILLE TIMONIUM</City>
            <StateProvinceCode>MD</StatePrvinceCode>
</Address>
        <PostalCodeLowEnd>21093</PostalCodeLowEnd>
        <PostalCodeHightEnd>21094</PostalCodeHightEnd
</AddressValidationResult>
</AddressValidationResponse>
```

# Chapter 6: Address Validation City, State, Zip FAQs

| Category | Question | Answer |
|---|---|---|
| Address Validation | How often is AV data updated? | The UPS Address Validation API's database is updated every month with new address information from USPS. |
| General | What countries' addresses can be validated by the Address Validation API? | The Address Validation API can only be utilized to validate addresses in the regional level (city, state, and zip code) within the US and Puerto Rico.<br>Note: Puerto Rico uses the US country code. |
| General | How much time will it take to program/implement the Address Validation API or the Address Validation - Street Level API? | The programming/implementation time will vary depending on the skill level of the developer.<br>An implementation of Address Validation Street Level may take as little as a week for a very skilled developer to as long as months for a less skilled developer. |
| Batch Upload | Does either the Address Validation or Address Validation Street Level APIs offer the ability to batch upload? | No. |

# Appendices

# Error Codes (XML)

When the UPS system is unable to respond to a request, be it from a malformed request, an illegal or invalid value, or other issues, the API generates an error response. For examples and additional information on error responses, refer to *Chapter 3: Error Responses*, in the *Introduction to the UPS Developer Kit* guide.

To discover errors, check the ResponseStatusCode element. A “1” normally indicates a successful response, whereas a “0” indicates a Transient or Hard error. The PrimaryErrorCode element contains the error code and description.

- Successful responses may or may not include warnings.
  - Without warnings - Indicates the request has been processed as anticipated.
  - With warnings - Indicates the request has been processed with potentially unanticipated results. The warning contains information in the response that should be passed to the end user.
- The severity of an error may be transient or hard.
  - Transient error - Indicates an error that is temporary in nature. Such errors may be caused by response timeouts due to high server loads or scheduled maintenance in progress. The request may be issued successfully at a later time.
  - Hard error - Indicates the request has a problem that the system is not able to resolve. These errors are critical and prevent requests from processing.

Do not resubmit requests with Hard Errors until the problems causing the error have been resolved.

## Common Error Codes

The following error codes can apply to all Webservice and other APIs.

| Code | Severity | Description |
|---|---|---|
| 10001 | Hard | The XML document is not well formed. |
| 10002 | Hard | The XML document is well formed but the document is not valid. |
| 10003 | Hard | The XML document is either empty or null. |
| 10006 | Hard | Although the document is well formed and valid, the element content contains values which do not conform to the rules and constraints contained in this specification. |
| 10013 | Hard | The message is too large to be processed by the Application. |
| 20001 | Transient | General process failure. |
| 20002 | Hard | The specified service name, {0}, and version number, {1}, combination is invalid. |
| 20003 | Hard | Please check the server environment for the proper J2EE ws apis. |
| 20006 | Hard | Invalid request action. |
| 20007 | Hard | Missing Required field, {0}. |
| 20008 | Hard | The field, {0}, contains invalid data, {1}. |
| 20012 | Hard | The Client Information exceeds its Maximum Limit of {0}. |
| 250000 | Hard | No XML declaration in the XML document. |
| 250001 | Hard | Invalid Access License for the tool. Please re-license. |
| 250002 | Hard | Invalid UserId/Password. |
| 250003 | Hard | Invalid Access License number. |
| 250004 | Hard | Incorrect UserId or Password. |

| Code | Severity | Description |
|---|---|---|
| 250005 | Hard | No Access and Authentication Credentials provided. |
| 250006 | Hard | The maximum number of user access attempts was exceeded. |
| 250007 | Hard | The UserId is currently locked out, please try again in 30 minutes. |
| 250009 | Hard | License Number not found in the UPS database. |
| 250019 | Hard | Invalid Field value. |
| 250050 | Transient | License system not available. |

# Supported Countries/Territories

Address Validation City, State, Zip API Supported Countries/Territories:

| Country/Territory Name | Country/Territory Code |
|---|---|
| United States and Puerto Rico | US |