



UPS Address Validation

Restful API Developer Guide

July 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.
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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

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Chapter 1: Introduction

This document contains implementation instructions for integrating the Address Validation API into your application, service, or system.

In this guide, you will find:

- Address Validation functionality and business rules
- Header, URL, request and response elements
- Error response code descriptions

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.
- Web APIs
- 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.
- 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.
- Reference tables and error codes are located in the [Appendices](#).

Technical Specifications

The application creating the return is a Restful API providing Interface to client applications in Support of Chapter 3: Customer Integration Environment (CIE)

Chapter 2: Understanding the Address Validation API

The Address Validation API can be used to request either a general validation of a city, state, and zip code, or a validation of a specific street address. The `RegionalRequestIndicator` in the URL determines which type of validation will be performed.

Address Validation API can:

- classify an address as residential or commercial.
- validate shipping addresses for US and Puerto Rico.
- provide a list of potential valid addresses for US and Puerto Rico.

Address Validation cannot:

- perform Apt/Suite validation for an address.
- validate shipping addresses for countries outside of the US or Puerto Rico

Business Processes and Rules

- UPS expects JSON schema as defined in the request structure i.e., no spelling or structural deviations. Elements that are not defined in the JSON data request will result in request being rejected.
- 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](#).

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.

Residential / Commercial Address Classification

The Address Validation API can determine whether a given address is a residential or commercial address. Address classification uses the same request/response exchange as address validation. In fact, classification and validation can be combined in a single request.

 To view supported countries or territories, refer to [Address Validation API Supported Countries/Territories](#) in the Appendix.

For address classification, UPS determines whether an address is a residence or a commercial location. For address classification requests, it is important that the user include as much information as possible or available about the address, for example, a contact name or "attention to" value. Such information is important for accurate results, as many locations include both commercial and residential entities (such as a deli on the ground floor of an apartment building).

 NOTE: Consignee name is heavily weighted when determining resi / comm classification. Contrary to popular assumptions, an "address" in and of itself is not residential or commercial, but rather the aggregate of all address elements, including and especially consignee name, are used to determine the classification.

Address Validation Examples

The Address Validation API does not perform Apt/Suite validation. In cases where there is a valid match (ValidAddressIndicator in Response) the API will return a blank as noted in the example:

Request		Response	
Company or Name:	LAKESIDE PAIN CENTER	Company or Name:	LAKESIDE PAIN CENTER
AddressLine:	6010 LAKESIDE COMMONS DR.	AddressLine:	6010 LAKESIDE COMMONS DR.
AddressLine 2:	STE B	AddressLine 2:	
City:	Macon	City:	Macon
State:	GA	State:	GA
Zip:	31210	Zip:	31210
Country:	US	Country:	US

If the following address is sent in a request, the system will check if it exists. In this case, this address does not exist. However the API will be able to return an address that may be similar to the one that was provided as a candidate.

Request		Response	
Company or Name:	LAKESIDE PAIN CENTER	Company or Name:	LAKESIDE PAIN CENTER
AddressLine:	6010 LAKESIDE	AddressLine:	6010 LAKESIDE
AddressLine:		AddressLine:	
City:	Macon	City:	Macon
State:		State:	GA
Zip:	312	Zip:	31210
Country:	US	Country:	US

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 and Production URLs

Testing:	https://wwwcie.ups.com/addressvalidation/v1/{requestoption}
Production:	https://onlinetools.ups.com/addressvalidation/v1/{requestoption}

Chapter 4: Address Validation API Elements and Details

Element Constraints

The Header, URL, URL Parameters, Request and Response tables contain the full hierarchy of the API elements.

Element constraints are defined as follows:

State

- Required - indicates the element must be present in the request or response.
- Optional - indicates the element is optional and may be used if it applies to the request.
- Conditional – indicates the element is required under certain conditions.

Type

- Container - holds a group of related elements.
- String - consists of alphanumeric characters, spaces, and decimals.
- Array - collection of values that allows to provide a list of values. A JSON array begins with [(left bracket) and ends with] (right bracket). Its values are separated by , (comma).

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

Header

Name	Type	State	Max Length	Description
AccessLicenseNumber	Header	Required	16	Authorization: Access Key obtained through on-boarding process. Contact your UPS representative for additional information.
Username	Header	Required	16	The customers MyUPS username
Password	Header	Required	26	The customers MyUPS password
Authentication Token	Header	Optional		Used to authorize the access to API. Can be used in place of Username and Password
Authorization	Header	Optional		Used to authorize the access to API. Can be used in place of Username and Password

URL

<https://onlinetools.ups.com/addressvalidation/v1/{requestoption}?regionalrequestIndicator=true&maximumcandidateListsSize=1>

URL Parameters

Name	Type	State	Max Length	Description
requestoption	Path	Required	1	Identifies the type of request. Valid values: 1 - Address Validation 2 - Address Classification 3 - Address Validation and Address Classification.
regionalrequestindicator	Query	Optional	5	Valid values: True or False. If True, either the region element or any combination of Political Division 1, Political Division 2, PostcodePrimaryLow and the PostcodeExtendedLow fields will be recognized for validation in addition to the urbanization element. If False or no indicator, street level address validation is provided
maximumcandidateListsSize	Query	Optional	2	Valid values: 0 – 50 The maximum number of Candidates to return for this request. If not provided, the default size of 15 is returned.

Request

Name	Type	State	Max Length	Description
XAVRequest		Required		Address Validation Request container
AddressKeyFormat	AddressKeyFormat	Required		AddressKeyFormat container. The Key format is based on addressing standards jointly developed by the Postal Service and mailing industry. The information provided in the Address Key container will be returned in the same format.
ConsigneeName	String	Optional	40	Name of the business, company or person. Ignored if user selects the RegionalRequestIndicator.
BuildingName	String	Optional	40	Name of the building. Ignored if user selects the RegionalRequestIndicator.
AddressLine	String	Optional	100	Address line (street number, street name and street type) used for street level information. Additional secondary information (apartment, suite, floor, etc.) Applicable to US and PR only. Ignored if user selects the RegionalRequestIndicator.
Region	String	Conditional	100	If this node is present the following tags will be ignored: - Political Division 2 - Political Division 1 - PostcodePrimaryLow - PostcodeExtendedLow Valid only for US or PR origins only. Using this tag for non US/PR origins may cause address format errors.
PoliticalDivision2	String	Conditional	30	City or Town name.
PoliticalDivision1	String	Conditional	30	State or Province/Territory name
PostcodePrimaryLow	String	Conditional	10	Postal Code.
PostcodeExtendedLow	String	Conditional	10	4 digit Postal Code extension. For US use only.
Urbanization	String	Optional	30	Puerto Rico Political Division 3. Only valid for Puerto Rico.
CountryCode	String	Required	2	Country/Territory Code

Response

Name	Type	Max Length	Description
XAVResponse	Container		
Response	Container		
ResponseStatus	Container		
Code	String	10	Required. Warning code returned by the system.
Description	String	150	Required. Message returned from the system
ValidAddressIndicator	String	1	Conditional. Query found a valid match
AmbiguousAddressIndicator	String	1	Conditional. Indicates query could not find a match based on the information provided. A candidate list follows
NoCandidatesIndicator	String	1	Conditional. No Candidate found.
AddressClassification	Container		Optional. AddressClassification Container
Code	String	1	Contains the classification code of the input address. Valid values: 0 - UnClassified 1 - Commercial 2 - Residential
Description	String	15	Contains the text description of the address classification code: - UnClassified - Commercial
Candidate	Container	1	Optional. Candidate Container
AddressKeyFormat	Container		
AddressLine	String	100	Address line (street number, street name and street type) used for street level information. Additional secondary information (apartment, suite, floor, etc.). Applicable to US and PR only. Ignored if user selects the RegionalRequestIndicator.
Region	String	100	If this node is present the following tags will be ignored: - Political Division 2 - Political Division 1 - PostcodePrimaryLow - PostcodeExtendedLow Valid only for US or PR origins only. Using this tag for non US/PR origins may cause address format errors.

Name	Type	Max Length	Description
PoliticalDivision2	String	30	City or Town name.
PoliticalDivision1	String	30	State or Province/Territory name.
PostcodePrimaryLow	String	10	Postal Code.
PostcodeExtendedLow	String	10	4 digit Postal Code extension. For US use only.
Urbanization	String	30	Puerto Rico Political Division 3. Only valid for Puerto Rico.
CountryCode	String	2	Country/TerritoryCode.

API Sample Scenario

Scenario:

Client application is requesting regional validation for a US address and wants a maximum candidate list size of 10 returned in the response.

Method	POST
Content-Type	application/json
Accept	application/json
Example URL	https://onlinetools.ups.com/addressvalidation/v1/1?regionalrequestindicator=true&maximumcandidatelistszie=10
Example Request	<pre>{ "XAVRequest": { "AddressKeyFormat": { "ConsigneeName": "RITZ CAMERA CENTERS-1749", "BuildingName": "Innoplex", "AddressLine": ["26601 ALISO CREEK ROAD", "STE D", "ALISO VIEJO TOWN CENTER"], "Region": "ROSWELL,GA,30076-1521", "PoliticalDivision2": "ALISO VIEJO", "PoliticalDivision1": "CA", "PostcodePrimaryLow": "92656", "PostcodeExtendedLow": "1521", "Urbanization": "porto arundal", "CountryCode": "US" } } }</pre>

Example Response	<pre>{ "XAVResponse": { "Response": { "ResponseStatus": { "Code": "1", "Description": "Success" }, "TransactionReference": { "CustomerContext": "Verify that an XAV request with an Address Line 1 element returns a successful response." } }, "AmbiguousAddressIndicator": "", "Candidate": [{ "AddressKeyFormat": { "PoliticalDivision2": "ROSWELL", "PoliticalDivision1": "GA", "PostcodePrimaryLow": "30076", "Region": "ROSWELL GA 30076", "CountryCode": "US" } }, { "AddressKeyFormat": { "PoliticalDivision2": "ROSWELL", "PoliticalDivision1": "GA", "PostcodePrimaryLow": "30075", "Region": "ROSWELL GA 30075", "CountryCode": "US" } }, { "AddressKeyFormat": { "PoliticalDivision2": "ROSWELL", "PoliticalDivision1": "GA", "PostcodePrimaryLow": "30077", "Region": "ROSWELL GA 30077", "CountryCode": "US" } }] } }</pre>
-------------------------	---

Example Error Response

```
"response"
{
  "errors": [
    {
      "code": "9264028",
      "message": "Invalid or missing request option."
    }
  ]
}
```

Appendices

Error Codes

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.

HTTP Status Codes

Code	Message	Description
200	OK	Success: Everything is working
400	Bad Request	The request was invalid or cannot be served. The exact error should be explained in the error payload. E.g. The JSON is not valid“
401	Unauthorized	The request requires authentication
404	Not found	URL does not exist or resource not found
405	Method not allowed	Method not allowed
500	An internal server error occurred	An internal server error occurred; API developers should avoid this error. If an error occurs in the global catch blog, the stracktrace should be logged and not returned as response.
503	Internal Server Error	The service/resource is not available. There are external component DOWN issues that the client will not be able to resolve

Common Error Codes

The following error codes can apply:

Code	HTTP Status	Description
10013	400	The message is too large to be processed by the Application.
20001	500	General process failure.
20002	400	The specified service name, {0}, and version number, {1}, combination is invalid.
20003	400	Please check the server environment for the proper J2EE ws apis.
20006	400	Invalid request action.
20007	400	Missing Required field, {0}.
20008	400	The field, {0}, contains invalid data, {1}.
20012	400	The Client Information exceeds its Maximum Limit of {0}.
250001	401	Invalid Access License for the tool. Please re-license.
250003	401	Invalid Access License number.
250005	401	No Access and Authentication Credentials provided.
250006	401	The maximum number of user access attempts was exceeded.
250009	401	License Number not found in the UPS database.
250019	401	Invalid Field value.
250050	500	License system not available.

Address Validation Error Codes

Code	HTTP Status	Message
250065	400	Invalid or missing request element
260000	500	Service currently unavailable
264002	400	Country code is invalid or missing
264003	400	The maximum allowable Candidate List size has been exceeded with the User Request
264004	400	The maximum validation query time has been exceeded due to poor address data
264005	400	Address classification is not valid for a regional request
264006	400	Invalid candidate list size.
264007	400	Address classification is not allowed for the country requested
264008	400	Country code and address format combination is not allowed
264027	400	Additional address fields are needed to perform the requested operation
9264028	400	Invalid or missing request option
9264029	400	Missing address key format
9264030	400	The state is not supported in the Customer Integration Environment

Address Validation API Supported Countries/Territories

UPS Country/Territory code abbreviations generally follow the ISO Standard 3166.

 **NOTE:** Not all UPS services are available in every country or territory. Refer to the UPS Rate and Service Guide at UPS.com for more information on UPS services.

Country/Territory Name	Country/Territory Code	Residential/Commercial Classification	Street Level Validation
Aland Islands	AX	X	
Austria	AT	X	
Azores	A2	X	
Belgium	BE	X	
Belarus	BY	X	
Canada	CA	X	
Canary Islands	IC	X	
Ceuta	XC	X	
Czech Republic	CZ	X	
Denmark	DK	X	
England	EN	X	
Finland	FI	X	
France	FR	X	
Germany	DE	X	
Greece	GR	X	
Holland	HO	X	
Hungary	HU	X	
Ireland, Republic of	IE	X	
Italy	IT	X	
Jersey	JE	X	
Luxembourg	LU	X	
Madeira	M3	X	
Mexico	MX	X	
Netherlands	NL	X	
Northern Ireland	NB	X	
Norway	NO	X	
Poland	PL	X	
Portugal	PT	X	
Puerto Rico	PR	X	X

Country/Territory Name	Country/Territory Code	Residential/Commercial Classification	Street Level Validation
Romania	RO	X	
Russia	RU	X	
Scotland	SF	X	
Slovenia	SI	X	
Spain	ES	X	
Sweden	SE	X	
Switzerland	CH	X	
Turkey	TR	X	
Ukraine	UA	X	
United Kingdom	GB	X	
United States	US	X	X
Wales	WL	X	