Locator Package XML Developers Guide

January 1, 2012

Notice

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

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1.1 Important Information

UPS Developer APIs

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

Key Legal Requirements for UPS Developer APIs

Permitted Territories

This document can only be used in the countries listed in Exhibit C of the UPS Technology Agreement or UPS Customer Technology Agreement.

Use

The application must not be designed to allow distribution of information received through the UPS Web Service 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).

Consent to Use of UPS Mark

- All screens or forms generated by your application including information received through the UPS Web Service 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 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 Web Service APIs. Your application must present all data within each field received through the UPS Web Service APIs without amendment, deletion or modification of any type.

1.2 Welcome to the UPS API Developer's Guides

Welcome to the UPS API Developer's Guides. This guide provides the information you need to begin using UPS Developer APIs.

UPS Developer APIs offer a fast and convenient way to access UPS service information using the Internet. With these Developer APIs, UPS lets you easily incorporate UPS technology in your own applications or your own web site. Your users—running your applications or visiting your web site—can have up-to-the-minute access to UPS services.

1.2.1 What's New for Locator in July 2011

- No functional changes for July 2011.

1.2.2 How to Use this Guide

If you are an experienced developer, you can begin developing applications quickly after reviewing "Required Steps for Integrating."

If you would like a more step-by-step guide to developing and deploying the Developer APIs, "Planning Your Applications" provides advice and describes options for developing and deploying applications and web sites that use UPS Developer APIs.

The "UPS Developer API Technologies" section explains key technologies on which the Developer APIs rely. That section also includes hints for using those technologies in various software development environments.

If you would like to learn more about what the UPS API covered in this guide can do for your applications, refer to the section on understanding the UPS API Services in this guide.

A complete technical reference to the Developer API covered in this guide is found in the API Reference section with details for the programming interfaces.

Additional material, including reference tables and lists, may be found in the appendices.

1.3 Required Steps for Integrating

The required steps for integrating the UPS APIs are listed here for UPS XML Services.

UPS XML Services

1. Review the UPS Technology Agreement available at www.ups.com. This agreement requires that you follow certain procedures and practices in using UPS Developer APIs.
2. Develop applications that make use of standard HTTP communications protocols, SSL security, and XML-based document representations.
3. Test your application and/or web site using the designated UPS staging environment.
4. If you are a UPS Ready developer, review your application with UPS.
5. Obtain UPS Label Certification for your application. (If you are a new customer or if you haven't previously certified. Please see the "UPS Label Certification" section for further details.).
6. Deploy your application for your customers.
7. Ensure the UPS Shipper Account number is added to the user's profile. This can be done at myups.com.

1.4 Planning Your Applications for XML

Planning is a key part of any successful development activity, and UPS Developer API applications are no exception. This section helps that planning by describing the important activities of any UPS Developer API application project. It provides an overview of the steps required to develop applications, and it describes key factors and choices necessary to deploy those applications.

1.4.1 UPS Developer API Applications

Many different types of applications can take advantage of UPS Developer APIs. Those application types include dedicated desktop applications, databases, web applications, and documents. The following figures illustrate some of the possibilities for applications using UPS Developer APIs. The only essential requirement for all of these applications is that they must have access to the Internet.

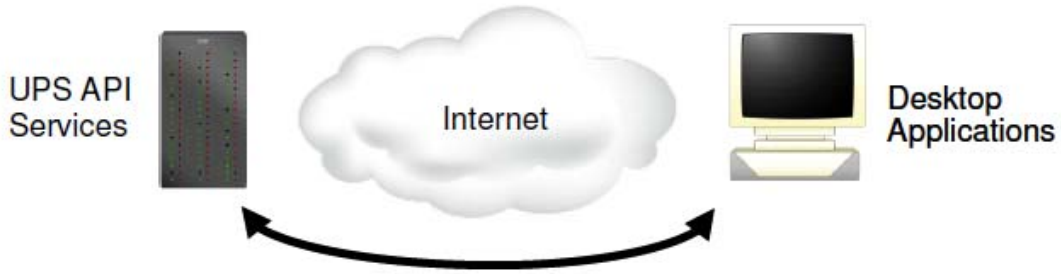


Figure 1: Dedicated applications that users run on their desktops can access UPS Developer APIs.

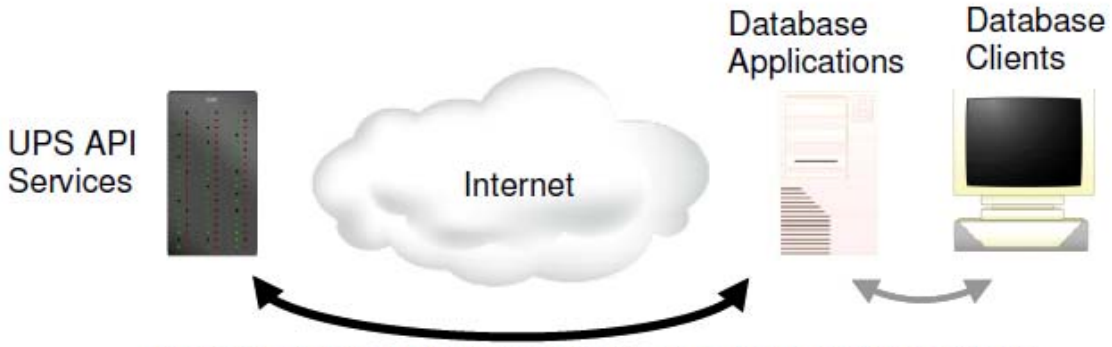


Figure 2: Database applications can access UPS Developer APIs and return information to their clients

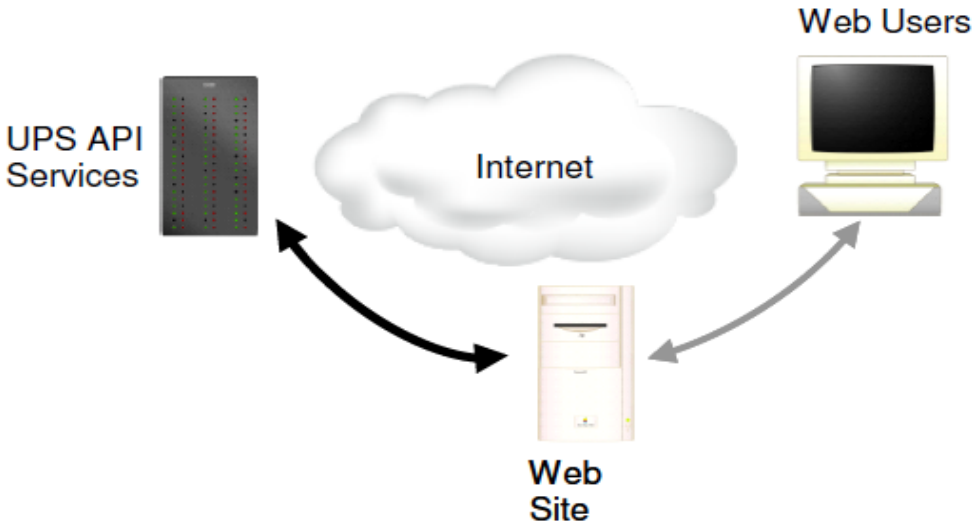


Figure 3: Web sites can access UPS Developer APIs and return information to users' web browsers.

Figure 4: Non-traditional applications such as Microsoft Office or Adobe Acrobat documents can use UPS Developer APIs to automatically update their content.

The UPS Developer APIs can be implemented withal of these types of applications and many others. Virtually any software that needs instant, up-to date access to UPS services can take advantage of UPS Developer APIs.

1.4.2 Licensing the UPS Developer APIs

As part of the UPS Technology Agreement, users of the APIs have certain obligations that are spelled out within the service agreement and its exhibits.
Regardless of the manner in which the UPS Developer APIs are integrated into your specific e-commerce web site or enterprise application, you must adhere to appropriate usage requirements.

1.4.2.1 Branding Requirements

UPS should receive attribution and branding in all applications (including websites and software applications) that use the Developer APIs. No End User, Third Party Developer or Access User should be permitted to use the Developer APIs without providing branded recognition to UPS. Your use of the UPS logo can in no way imply endorsement, sponsorship or certification of your ecommerce web site or enterprise application by UPS. You are not allowed to use or alter the information returned by the UPS Developer APIs in a way that misrepresents the information or the functionality of the service.

1.4.3 Developing Client Applications for Developer APIs

When you develop software that uses the UPS Developer APIs, you are building a client application. Because the UPS Developer APIs rely on standard Internet based technology, you can develop those applications using a wide variety of software development platforms, including Microsoft's Visual Studio, the Java Standard Edition and Enterprise Edition distributions, and many open source projects. This section introduces important technologies available in each of these development environments. Later sections of this document include more details on using each platform. Look for the icons in the left margin, which identify information relevant to a particular development environment.

1.4.3.1 Microsoft Visual Studio

Developers using the Microsoft Visual Studio environment can rely on the Microsoft XML Core Services (MSXML) for interacting with UPS Developer APIs. Those services include functions to help applications create requests for and interpret responses, and they include functions to manage the communications between applications and UPS.

1.4.3.2 Java Standard Edition and Enterprise Edition

Java developers can find all the classes they need for UPS Developer APIs in the Java Standard Edition and Enterprise Edition distributions. The URL class in the java.net package provides the functions required for communication with UPS servers, and the Java API for XML Processing (JAXP) services let programs create requests and interpret responses from UPS.

1.4.3.3 Open Source

There are a number of open source efforts that include technology useful for creating Developer API client applications; open source developers may find two particular projects to be especially helpful. The libcurl project is a library of functions that can manage the communications with UPS servers. For creating requests and interpreting responses, the xerces project provides essential functions in a variety of software languages.

1.4.4 Getting Technical Support

UPS provides technical support for developers who are using the UPS Developer APIs. To get in touch with a UPS technical support engineer, fill out the technical support request form on the UPS web site.

1.4.4.1 Within the United States

UPS provides seven days-a-week support either via email or phone. The primary and most effective method for support is to use email (https://www.ups.com/upsemail/input?requestId=gec&category=techsupport&topic=onlinetools&loc=en_US&WT.svl=SubNav) since you will need to include your code for review by the UPS support team. UPS now provides phone support for all phases of development in extremely urgent situations. To access phone support please call toll free 1-877-289-6420.

7:30 AM - 9:00 PM Monday - Friday (EST)
9:00 AM - 6:00 PM Saturday and Sunday (EST)

For developers in the United States, the request form may be found by selecting "Contact UPS" from the www.myups.com web site, or from www.ups.com from the steps below.

1. Navigate to the UPS website **http://www.ups.com**.
2. Select a language, (ex. United States – English).
3. Log into **www.ups.com** with your User ID and Password.
4. Click the "Support" tab
5. Select "Technology Support" from "Support" tab
6. Click on "Developer Resource Center", and then click "UPS Developer Kit" on the left-hand navigation window.
7. Click the link for "Customer Support for UPS Developer Kit" under Access and Administration.
8. Complete the e-mail form. Please explain details about errors that are being returned, and under what circumstances.

1.4.4.2 Outside of the United States

Developers outside the United States can find the technical support request in the UPS Developer APIs page within the Support section of their country's UPS web site.

1. Navigate to the UPS website **http://www.ups.com**.
2. Select a language,
3. Log into **www.ups.com** with your User ID and Password.
4. Click the "Support" tab
5. Select "Technology Support" from "Support" tab
6. Click on "Developer Resource Center", and then click "UPS Developer Kit" on the left-hand navigation window.

7. Click the link for "Customer Support for UPS Developer Kit" under Access and Administration.
8. Complete the e-mail form. Please explain details about errors that are being returned, and under what circumstances.

For more information or assistance with UPS technical support, please contact your UPS Developer APIs representative

1.4.5 Testing and Deploying Applications

UPS maintains a special environment to support testing and staging of applications that rely on UPS Developer APIs. This environment is called the Customer Integration Environment (CIE) and allows developers test and debug their applications by simulating transactions with UPS. The CIE site responds to requests just like the UPS production environment; however, it does not initiate actual UPS business services.

For example, if you send a shipping request to the UPS production site, a UPS driver may show up at your location expecting to pick up a package (and expecting payment for the service.) Sending the shipping request to CIE will avoid this problem.

1.4.6 Keeping Up-to-Date

As UPS adds new services and features, Developer APIs will evolve, offering more features and service benefits. Once you register to use UPS Developer APIs, UPS will notify you by e-mail of updates and changes to the Developer APIs. It is essential that an accurate e-mail address for your company be maintained. In addition, UPS recommends that you complete the secondary contact information to ensure that your organization receives the latest updates. You should update your profile when changes or responsibilities for the UPS Developer APIs change within your company. You can also return to the UPS Support area of ups.com for the latest updated information about UPS Developer APIs.

1.5 UPS Developer API Technologies for XML

The foundation technologies for UPS Developer APIs are the same underlying technologies in use on the Internet today. They include the Hypertext Transfer Protocol (HTTP) with Secure Sockets Layer 3 (SSL3) security and the Extensible Markup Language (XML). Because these technologies are critical to the Internet, most software development tools provide many powerful features that make it easy for application programs to use them. This section provides a quick introduction to the technologies and to the tools that can support them.

1.5.1 Hypertext Transfer Protocol and Secure Sockets Layer 3

Today's Internet supports a wide variety of applications including email, instant messaging, web browsing, and voice communications. All of these applications have a well-defined set of rules that determines how they communicate. Those rules are known as *protocols*. As an

Internet application themselves, the UPS Developer APIs also rely on protocols to set the rules for their communications. The primary protocol for UPS Developer APIs is the hypertext transfer protocol, or HTTP.

HTTP is a relatively simple protocol. An application that wants to use a Developer API acts as an HTTP client. It sends its request to UPS as part of an HTTP POST message. UPS servers reply to each request using an HTTP response message.

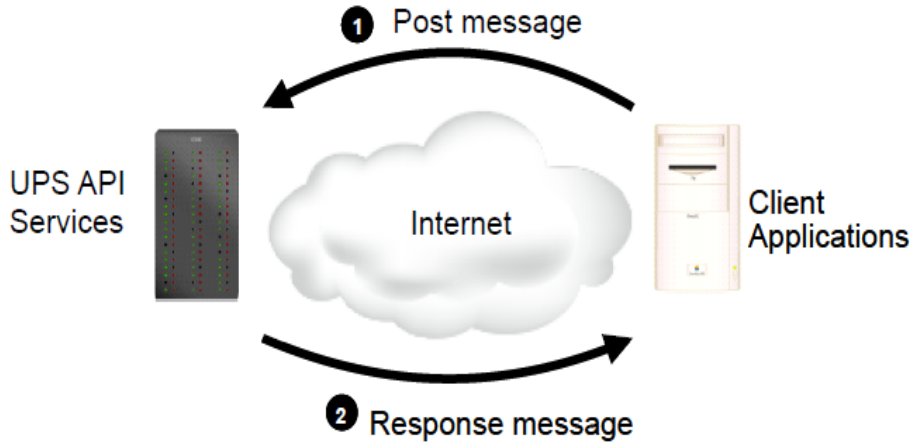


Figure 1. UPS Developer APIs accept requests from client applications in HTTP POST messages and reply to the requests with HTTP responses.

As part of the POST message, client applications indicate the type of content the message contains using an HTTP Content-Type header. For UPS Developer APIs, that content type should be application/x-www-form-urlencoded. (Presently, Version 1.1 is supported)

In many cases the UPS Developer APIs exchange information that should be kept private. To protect confidential information, the Developer APIs rely on the Secure Sockets Layer 3 (SSL3) protocol in addition to HTTP. When two systems communicate using SSL, the protocol creates a secure channel between them, and it encrypts all information that they exchange using this channel. The SSL protocol that Developer APIs use is the same protocol used to secure millions of on-line purchases on the web.

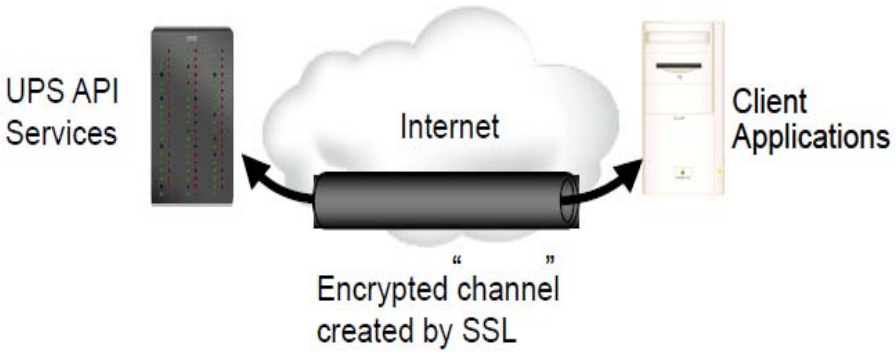


Figure 2: SSL creates a secure channel across a network and protects confidential communications using that channel.

1.5.2 Working with HTTP and SSL in Application Programs

UPS Developer APIs are not the only Internet services that rely on the HTTP and SSL protocols. Both protocols, in fact, were originally developed for web browsing, and they provide the foundation for the majority of Internet applications. Because HTTP and SSL are so common, software development tools make using these protocols very simple.

Because HTTP and SSL are commonly used for web browsing, software development tools often rely on the same notation and abbreviations as standard web browsers. In particular, most tools identify a specific service (such as a UPS Developer API) using a Uniform Resource Locator (URL). URLs begin with an abbreviation of the communication protocol. For UPS Developer APIs that abbreviation will always be "https" to indicate HTTP and SSL. The protocol abbreviation is followed by a colon, two slashes, and the name of a server. Additional information about the specific service can follow the server name; it is written like the path to a file in a directory, with slashes separating individual folders. Figure 3 shows how a URL combines these individual components.

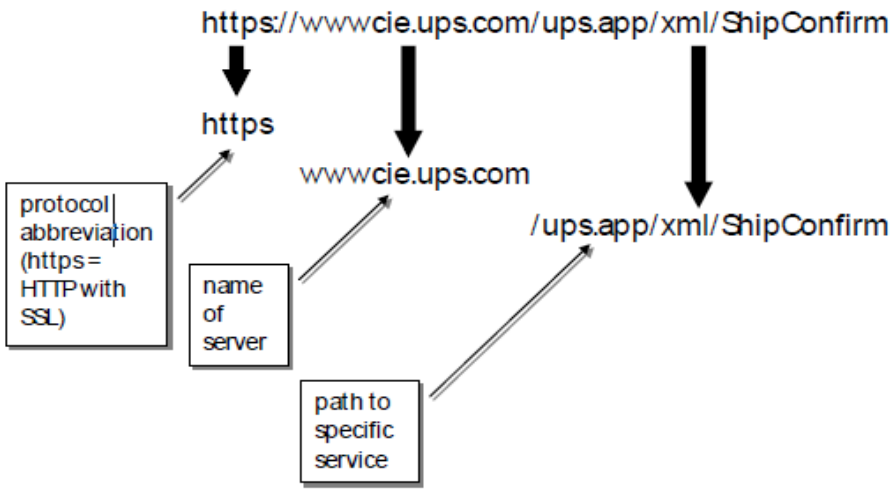


Figure 3. URLs identify communication protocols, servers, and specific services.

The subsections that follow provide brief introductions to using HTTP and SSL with various software development tools, including Microsoft Visual Studio, Java Standard and Enterprise Edition, and popular open source environments.

1.5.2.1 Microsoft Visual Studio

The Microsoft Visual Studio environment includes many tools, classes, and libraries that simplify the use of HTTP and SSL protocols. A very convenient set of tools are included in the Microsoft XML Core Services (MSXML). The following code fragment shows how a Visual Basic program can send a request and retrieve the response. To keep the example as simple as possible, no exception handling is included in the figure. Production software should, of course, appropriately handle all exceptions

```
' create the object that manages the communication
Dim oXMLHttp As XMLHTTP
Set oXMLHttp = New XMLHTTP

' prepare the HTTP POST request
oXMLHttp.open "POST", "https://www.server.com/path", False
oXMLHttp.setRequestHeader "Content-Type", _
                          "application/x-www-form-urlencoded"

' send the request
oXMLHttp.send requestString

' server's response will be available in oXMLHttp.responseXML
```

Figure 4. Visual Basic programs can use features of the MSXML tools to send and receive messages using HTTP and SSL.

1.5.2.2 Java Standard Edition and Enterprise Edition

In a Java SE or EE environment, the URL class in the java.net package provides a convenient way to manage HTTP and SSL communications. Figure 5 contains a small code fragment that demonstrates the use of this class. As above, the fragment doesn't include exception handling that should be inherent in any production software.

```
import java.io.*;
import java.net.*;

URL url = new URL("https://www.server.com/path");
HttpURLConnection conn = (HttpURLConnection) url.openConnection();
conn.setRequestMethod("POST");
conn.setRequestProperty("Content-Type",
                        "application/x-www-form-urlencoded");
conn.setDoOutput(true);
PrintWriter out = new PrintWriter(conn.getOutputStream());
out.println(requestString);
out.close();
BufferedReader in = new BufferedReader(
    new InputStreamReader(conn.getInputStream()));
/* server response is available by reading the in object */
```

Figure 5. The URL class from the java.net package is a convenient way for Java programs to use HTTP and SSL

1.5.2.3 Open Source

The libcurl project is an open source project that includes support for using HTTP and SSL protocols. The fragment in Figure 6 shows how to set up libcurl to send a request using HTTP and SSL. It relies on a callback function to accept the server's response.

```
CURL *curl;
CURLcode res;

/* prepare to send the request */
curl = curl_easy_init();
curl_easy_setopt(curl, CURLOPT_URL, https://www.server.com/path");
curl_easy_setopt(curl, CURLOPT_POSTFIELDS, requestString);
curl_easy_setopt(curl, CURLOPT_WRITEFUNCTION, fnCallback);

res = curl_easy_perform(curl);
```

Figure 6. The open source libcurl library simplifies the use of HTTP and SSL

1.5.2.4 SSL Certificate Changes and Renewals

UPS has migrated from Unchained to Chained Digital Certificates to improve security for UPS servers. Chained Digital Certificates requires the use of SSL 3.0.

Our migration from SSL 2.0 to 3.0 was completed between 6/15/2008 and 3/3/2009.

Renewals of UPS.com SSL Certificates are coordinated by UPS Security Services every two years. There is a concern that some UPS Developer Kit users who store UPS Certificates internally may have issues when SSL Certificates are renewed. It is recommended that UPS Developer Kit users not store UPS Certificates internally; however if a customer finds this necessary due to specific needs within their company, they may need to add renewed certificates to the their trust store.

There are a number of ways one can add a certificate to the application. One way to obtain the proper certificate is by placing a UPS Developer Kit URL, https://onlinetools.ups.com/ups.app/xml/Locator, for example, in a browser, connect to the URL, and double-click on the "lock" on the bottom right of the window (using Internet Explorer 7). After that the steps can be followed to install the certificate.

Also, in the event that the aforementioned solution does not work successfully for you we have been provided with the following certificate which should allow you to connect once it has been successfully added. You should be able to paste the following string into Notepad and save the file locally. Then, it will be necessary to have the client application reference the file so that it will know that this is the trusted certificate for making a connection to UPS.

This is the Verisign Class 3 Secure Server CA - G2 certificate that the client must trust:
-----BEGIN CERTIFICATE-----

MIIGLDCCBZWgAwIBAgIQbk/6s8XmacTRZ8mSq+hYxDANBgkqhkiG9w0BAQUFADCB
wTELMAkGA1UEBhMCVVMxFzAVBgNVBAoTDlZlcmlTaWduLCBJbmMuMTwwOgYDVQQL
EzNDbGFzcyAzIFB1YmxpYyBQcmltYXJ5IENlcnRpZmljYXRpb24gQXV0aG9yaXR5
IC0gRzIxOjA4BgNVBAsTMShjKSAxOTk4IFZlcmlTaWduLCBJbmMuIC0gRm9yIGF1
dGhvcml6ZWQgdXNlIG9ubHkxHzAdBgNVBAsTFlZlcmlTaWduIFRydXN0IE5ldHdv
cmswHhcNMDkwMzI1MDAwMDAwWhcNMTkwMzI0MjM1OTU5WjCBtTELMAkGA1UEBhMC
VVMxFzAVBgNVBAoTDlZlcmlTaWduLCBJbmMuMR8wHQYDVQQLExZWZXJpU2lnbiBU
cnVzdCBOZXR3b3JrMTswOQYDVQQLEzJUZXJtcyBvZiB1c2UgYXQgaHR0cHM6Ly93
d3cudmVyaXNpZ24uY29tL3JwYSAoYykwOTEvMC0GA1UEAxMmVmVyaVNpZ24gQ2xh

c3MgMyBTZWN1cmUgU2VydmVyIENBIC0gRzIwggEiMA0GCSqGSIb3DQEB
AQUAA4IB
DwAwggEKAoIBAQDUVo9XOzcopkBj0pXVBXTatRlqltZxVy/iwDSMoJWzjOE
3JPMu
7UNFBY6J1/raSrX4Po1Ox/lJUEU3QJ90qqBRVWHxYISJpZ6AjS+wIapFgsTPtB
R/
RxUgKIKwaBLArlwH1/ZZzMtiVlxNSf8miKtUUTovStoOmOKJcrn892g8xB85es
sX
gfMMrQ/cYWIbEAsEHikYcV5iy0PevjG6cQIZTiapUdqMZGkD3pz9ff17Ybz8hH
yI
XLTDe+1fK0YS8f0AAZqLW+mjBS6PLlve8xt4+GaRCMBeztWwNsrUqHugffkw
er/4
3RlRKyC6/qfPoU6wZ/WAqiuDLtKOVImOHikLAgMBAAGjggKpMIICpTA0Bg
grBgEF
BQcBAQQoMCYwJAYIKwYBBQUHMAGGGGh0dHA6Ly9vY3NwLnZlcmlza
WduLmNvbTAS
BgNVHRMBAf8ECDAGAQH/AgEAMHAGA1UdIARpMGcwZQYLYIZIAYb4
RQEHFwMwVjAo
BggrBgEFBQcCARYcaHR0cHM6Ly93d3cudmVyaXNpZ24uY29tL2NwczAqBgg
rBgEF
BQcCAjAeGhxodHRwczovL3d3dy52ZXJpc2lnbi5jb20vcnBhMDQGA1UdHwQt
MCsw
KaAnoCWGI2h0dHA6Ly9jcmwudmVyaXNpZ24uY29tL3BjYTMtZzIuY3JsMA4
GA1Ud
DwEB/wQEAwIBBjBtBggrBgEFBQcBDARhMF+hXaBbMFkwVzBVFglpbWFn
ZS9naWYw
ITAfMAcGBSsOAwIaBBSP5dMahqyNjmvDz4Bq1EgYLHsZLjAlFiNodHRwOi8
vbG9n
by52ZXJpc2lnbi5jb20vdnNsb2dvLmdpZjApBgNVHREEIjAgpB4wHDEaMBgGA
1UE
AxMRQ2xhc3MzQ0EyMDQ4LTEtNTIwHQYDVR0OBBYEFKXvCxHOwEEDo
0plkEiyHOBX
LX1HMIHnBgNVHSMEgd8wgdyhgcekgcQwgcExCzAJBgNVBAYTAlVTMRcw
FQYDVQQK
Ew5WZXJpU2lnbiwgSW5jLjE8MDoGA1UECxMzQ2xhc3MgMyBQdWJsaWMg
UHJpbWFy
eSBDZXJ0aWZpY2F0aW9uIEF1dGhvcml0eSAtIEcyMTowOAYDVQQLEzEoYy
kgMTk5
OCBWZXJpU2lnbiwgSW5jLiAtIEZvciBhdXRob3JpemVkIHVzZSBvbmx5MR8w
HQYD
VQQLExZWZXJpU2lnbiBUcnVzdCBOZXR3b3JrghB92f4Hz6getxB5Z/uniTTG
MA0G
CSqGSIb3DQEBBQUAA4GBAGN0Lz1Tqi+X7CYRZhr+8d5BJxnSf9jBHPniOF
Y6H5Cu
OcUgdav4bC1nHynCIdcUiGNLsJsnY5H48KMBJLb7j+M9AgtvVP7UzNvWhb98
lR5e
YhHB2QmcQrmy1KotmDojYMyimvFu6M+O0Ro8XhnF15s1sAIjJOUFuNWI4+
D6ufRf

-----END CERTIFICATE-----

Finally, for more information on installing the latest VeriSign CA Root Certificate, please click on the links below:

- https://knowledge.verisign.com/support/ssl-certificates-support/index?page=content&id=SO7154&actp=search&viewlocale=en_US&searchid=1308235124970
- https://knowledge.verisign.com/support/ssl-certificates-support/index?page=content&actp=CROSSLINK&id=AR1553

- https://knowledge.verisign.com/support/ssl-certificates-support/index?page=content&id=SO4785&actp=LIST

1.5.3 Extensible Markup Language (XML)

The Extensible Markup Language (XML) is an international standard developed by the World Wide Web Consortium, the governing body for web standards and guidelines. XML provides a way to identify the structure of content within a document or, in the case of UPS Developer APIs, a message. Figure 7 shows how a simple XML message could describe a book.

```
<?xml version="1.0" encoding="UTF-8" ?>
<book>
    <title>
        HTTP Essentials: Protocols for Secure, Scaleable Web Sites
    </title>
    <author>
        <firstname>
            Stephen
        </firstname>
        <lastname>
            Thomas
        </lastname>
    </author>
    <publisher>
        John Wiley and Sons
    </publisher>
    <year>
        2001
    </year>
    <isbn>
        0-471-398233
```

Figure 7. XML identifies the structure of documents, as in this document describing a book.

As the figure illustrates, XML is a text-based format. XML messages contain regular text, though that text follows specific rules that XML defines. XML distinguishes different parts of a message with a label known as a *tag*. Tags in the example include <book>, <title>, <author>, <firstname>, etc. A tag can indicate the start of information if it begins with an angle bracket (<), and a tag can indicate the end of information if it begins with an angle bracket and a slash (</). A beginning tag, ending tag, and the information between the two make up an *element*. In this example the publisher element tells us that the publisher for the book is "John Wiley and Sons." The figure also shows how an XML message follows a defined structure. Elements can be contained within other elements, as <firstname> and <lastname> are included within the <author> element. This structure indicates that firstname and lastname are "children" of the author "parent."

Although XML elements can contain almost any text, there are two special characters that cannot appear within an element. Those characters are the less-than sign (<) and the ampersand (&). Elements that include these contents must replace the special characters with "<" or "&" respectively. The name of a large telecommunications company, for example, would appear as "AT&T" within an XML message.

Because XML is a text-based format, software has to take extra steps to use XML with binary data. For example, some UPS services return binary image data such as the image of a shipping label. To include this data in an XML message, UPS converts it from binary to text format using an algorithm known as *Base64 encoding*. The "The Base16, Base32, and Base64 Data Encodings" standard, also known as RFC 3548, defines that algorithm.

Although XML messages consist of a series of text characters, most software development tools represent XML messages in a tree-like data structure. That representation clarifies the structure of the message. Figure 8 shows the same XML message as Figure 7, but it uses a more visual representation to highlight the message's structure.

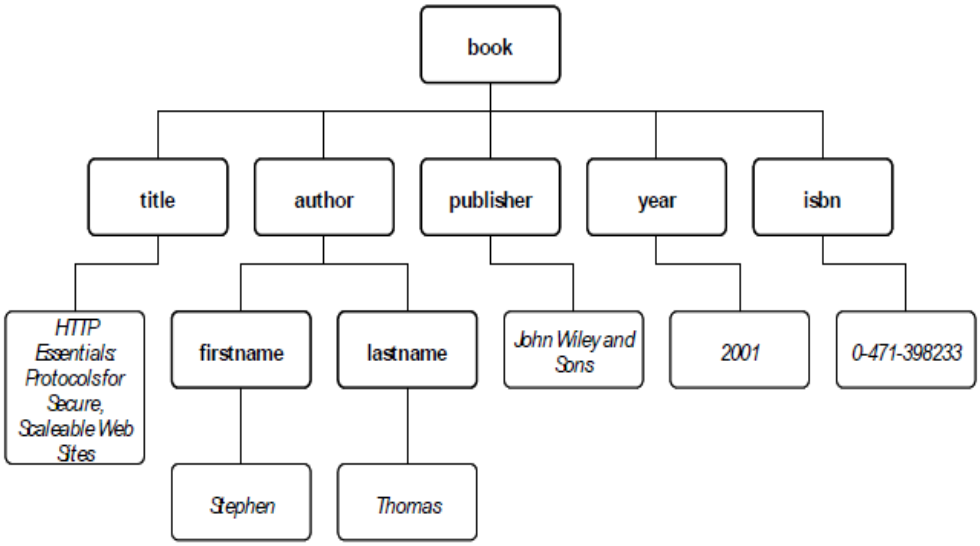


Figure 8. It is often convenient to show XML messages in a tree-like graph to highlight their structure.

The example of Figure 7 and Figure 8 is a relatively simple XML message with just a few elements. UPS Developer APIs rely on XML messages that are larger than this simple example, and it is difficult to show them in a pure graph like Figure 8 without losing legibility. Figure 9 shows an alternate way of depicting the tree-like structure of XML messages; it uses the same example as before.

```
book
  title
    "HTTP Essentials: Protocols for Secure, Scaleable Web Sites"
  author
    firstname
      "Stephen"
    lastname
      "Thomas"
  publisher
    "John Wiley and Sons"
  year
    "2001"
  isbn
    "0-471-398233"
```

Figure 9. It is possible to show the tree-like structure of XML messages using text.

A great deal of information on XML is available on the Internet. A good starting point for further research is the World Wide Web Consortium's main page on XML at http://www.w3.org/XML/.

1.5.4 Working with XML in Application Programs

The popularity of Extensible Markup Language means that nearly all development environments include sophisticated support for creating and interpreting XML messages. This subsection provides a brief introduction to working with XML in Microsoft, Java, and Open Source environments. The examples it contains are only representative approaches; many other approaches are possible.

1.5.4.1 Microsoft Visual Studio

The Microsoft XML Core Services (MSXML) offers one way to work with XML documents in Visual Studio applications. Figure 10 shows one approach for creating an XML message in Visual Basic, and Figure 11 demonstrates how Visual Basic programs can interpret XML responses. To remain as simple as possible, the examples do not include any exception handling. Production software should, of course, provide full exception handling.

```
' Define a variable and initialize it to a new XML message
Dim dom
Set dom = New DOMDocument30

' Set properties of the variable
dom.async = False
dom.validateOnParse = False
dom.resolveExternals = False
dom.preserveWhiteSpace = True

' Identify the message as XML version 1.0
Set node = dom.createProcessingInstruction("xml", "version='1.0'")
dom.appendChild node
Set node = Nothing

' Create the root (book) element and add it to the message
Dim root
Set root = dom.createElement("book")
dom.appendChild root

' Create child elements and add them to the root
Dim node
Set node = dom.createElement("title")
node.text = "HTTP Essentials: ..."
root.appendChild node
Set node = Nothing

Set node = dom.createElement("author")
Dim child
Set child = dom.createElement("firstname")
child.text = "Stephen"
node.appendChild child
Set child = Nothing
Set child = dom.createElement("lastname")
child.text = "Thomas"
node.appendChild child
root.appendChild node

' And so on
```

Figure 10. Visual Basic can create XML messages through the DOMDocument object.

```
' Define a variable to hold the parsed message
Dim dom As New DOMDocument30
dom.async = False
dom.validateOnParse = False
dom.resolveExternals = False
dom.preserveWhiteSpace = True

' Try to parse the message
If dom.loadXML(messageText) = False Then
    ' The text did not contain valid XML
End If

' Get the title information from the message
Dim node As IXMLDOMNode
Set node = dom.selectSingleNode("/title")
If node Is Nothing Then
    ' The message did not contain title information
Else
    ' Do something with node.text
End If
```

Figure 11. Visual Basic can read the contents of XML messages after parsing them with the DOMDocument object.

Visual Basic also has built-in classes to interpret Base64-encoded values. The Convert.FromBase64String() function converts from a Base64-encoded string to an array of 8-bit unsigned integers

1.5.4.2 Java Standard Edition and Enterprise Edition

The Java API for XML Processing (JAXP) is the preferred approach for working with XML messages in Java. Figure 12 shows how a BookClass object can be converted into an XML message, a process that JAXP calls *marshalling*. Similarly, Figure 13 shows the reverse process, where an XML message is converted into a BookClass object. This reverse process is *unmarshalling*. As above, exception handling code is omitted from these examples to make them as clear as possible.

```
import javax.xml.bind.JAXBContext;
import javax.xml.bind.Marshaller;
import java.io.StringWriter;

/* create the book object */
BookClass book = new BookClass("HTTP Essentials...",
    new AuthorClass("Stephen", "Thomas"),
    "John Wiley and Sons",
    "2001",
    "0-471-398233");

/* convert it to an XML string */
StringWriter writer = new StringWriter();
JAXBContext context = JAXBContext.newInstance(book.class);
Marshaller m = context.createMarshaller();
m.marshal(book, writer);
```

Figure 12. JAXP provides a convenient way for Java applications to create XML messages from Java objects.

```
import javax.xml.bind.JAXBContext;
import javax.xml.bind.Marshaller;
import java.io.StringReader;

/* xmlMessage contains the XML message */
StringReader reader = new StringReader(xmlMessage);
JAXBContext context = JAXBContext.newInstance(Book.class);
Unmarshaller u = context.createUnmarshaller();
BookClass book = (BookClass) u.unmarshal(reader);

/* access properties of the book */
System.out.println(book.getAuthor().getFirstname())
```

Figure 13. JAXP also gives Java applications a convenient way to retrieve elements from an XML message

1.5.4.3 Open Source

As of this writing, the most popular open source tool for working with XML is the xerces project. That project includes C++, Java, and Perl implementations of an XML library. The xerces distribution includes extensive sample applications. The code fragment in Figure 14 demonstrates creating an XML message in C++ with the xerces library. Figure 15 shows sample code for accessing an element within an XML message. In both cases exception handling is not shown in order to keep the examples as simple as possible. Production software should always contain full exception handling.

```
DOMImplementation* impl =
    DOMImplementationRegistry::getDOMImplementation(X("Core"));

DOMDocument* doc = impl->createDocument(0, X("book"), 0);
DOMElement* rootElem = doc->getDocumentElement();

DOMElement* titleElem = doc->createElement(X("title"));
rootElem->appendChild(titleElem);

DOMText* titleVal = doc->createTextNode(X("HTTP Essentials..."));
titleElem->appendChild(titleVal);
```

Figure 14. The Xerces C++ library includes classes that can create XML messages.

```
XMLCh* TAG_book;
XMLCh* TAG_title;
xercesc::XercesDOMParser *parser;

XMLPlatformUtils::Initialize();
TAG_book  = XMLString::transcode("book");
TAG_title = XMLString::transcode("title");

parser = new XercesDOMParser;
parser->parse(inputText);
DOMDocument* xmlDoc = parser->getDocument();
DOMElement* elementRoot = xmlDoc->getDocumentElement();
DOMNodeList* children = elementRoot->getChildNodes();
const XMLSize_t nodeCount = children->getLength();
for (XMLSize_t cnt = 0; cnt < nodeCount; ++cnt ) {
    DOMNode* currentNode = children->item(cnt);
    if( currentNode->getNodeType() &&
        currentNode->getNodeType() == DOMNode::ELEMENT_NODE ) {
        DOMElement* currentElement =
            dynamic_cast< xercesc::DOMElement* >( currentNode );
        if( XMLString::equals(currentElement->getTagName(),
                              TAG_title)) {
            /* do something with the title */
        }
    }
}
```

Figure 15. The Xerces C++ library also supports parsing XML messages to find individual elements.

1.6 Understanding XML Locator Services

The Locator API is a convenient and flexible way to find UPS shipping locations. With this UPS Developer API, your application can find UPS Centers, UPS Stores, UPS Drop Boxes, and Authorized Shipping Outlets. You can search for locations based on their types and on UPS services they make available. The Locator API can return search results as a list.

1.6.1 Types of Requests

Applications use the RequestOption element in Locator requests to define the type of information they want UPS to provide. Values less than 8 request UPS locations. With values greater than 7, applications request a list of possible services, program types, and/or retail locations. The information from these requests may be used to refine a search in additional requests. For example, an application may request a list of all available additional services. It can then select the services it needs from that list an issue a second request for locations that offer those services. The following table lists the possible values for the Request Option element.

RequestOption	Type of Request
1	A list of locations
8	All available additional services
16	All available program types
24	All available additional services and program types

RequestOption	Type of Request
32	All available retail locations
40	All available retail locations and additional services
48	All available retail locations and program types
56	All available retail locations, program types, and additional services

1.7 Understanding Mileage Bands and Prioritization in the Global Locator

1.7.1 Countries with the UPS Store

The UPS.com locator attempts to balance convenience for the customer while still giving preference to The UPS Store, our premier channel. The locator search functionality is divided into mileage bands. In the US and Canada within each of those bands, The UPS Store locations receive preferential treatment, as they are always sorted to the top, regardless of whether another retail channel's locations may be closer within that band. The sort order for the different Retail locations within each mileage band is:
1 – The UPS Store
2 – UPS Customer Centers and Drop Boxes
3 – Alliance Locations
4 – Authorized Shipping Outlets
5 – Authorized Service Providers

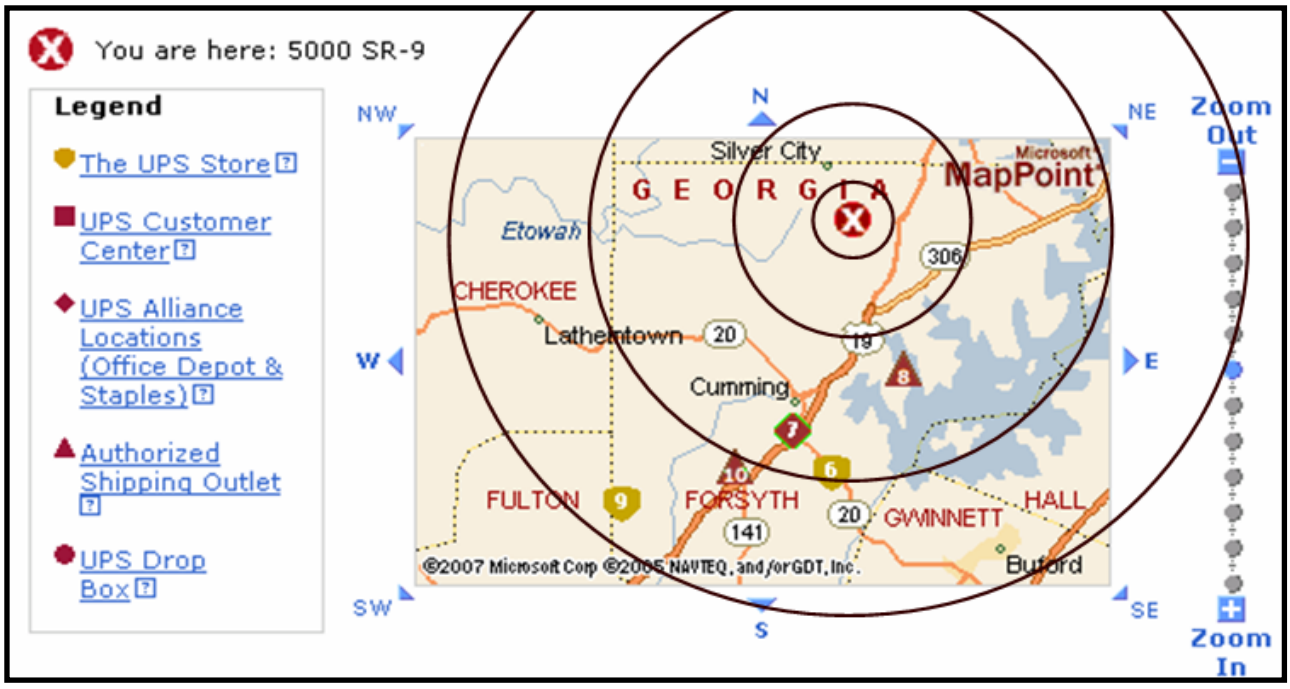
In the non-US and Canada countries, within each of those bands, Mail Boxes Etc. locations receive preferential treatment, as they are always sorted to the top, regardless of whether another retail channel's locations may be closer within that band. The sort order for the different Retail locations within each mileage band is:
1 – Mail Boxes Etc.
2 – UPS Customer Centers
3 – UPS Express
4 – Alliance Locations
5 – Authorized Shipping Outlets
6 – UPS Authorized Service Providers
Or
Closest Distance
On the *Find Locations* screen, we offer the customer the option to select or deselect Retail Channel(s) for which they wish to search.
Sort order:
1 - Mail Boxes Etc.
2 – UPS Customer Center/Drop Boxes
3 – UPS Express
4 – ASO
5 – ASP

The channels are sorted in the above order within each mileage band.

The mileage bands are as follows:

- Less than or equal to 1 mile
- Greater than 1 mile and less than or equal to 5 miles
- Greater than 5 miles and less than or equal to 10 miles
- Greater than 10 miles and less than or equal to 20 miles
- Greater than 20 miles and less than or equal to 50 miles
- Greater than 50 miles and less than or equal to 200 miles

Example of Search Results and Bands



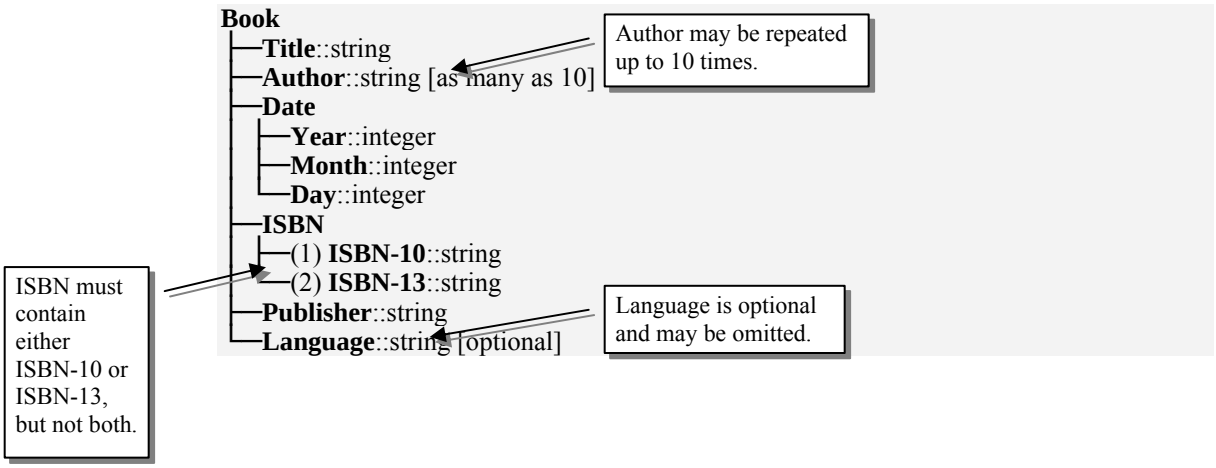
Note: *The UPS Store (#6)* at 9.6 miles is listed before closer Alliance (#7) and ASO (#8).

1.8 The Locator XML Reference

This section documents the details of the XML messages, including the requests that clients send to UPS and the responses that UPS returns. The first subsection explains the notation that this section uses. It is followed by a section that describes how UPS verifies that client applications are authorized to use the API. The next subsections define the messages used by the tool for its services. The final subsection provides a list of error codes.

1.8.1 Describing UPS API Messages

As noted previously, all messages that UPS Developer APIs send and receive consist of XML documents. This reference section defines the specific elements within those XML documents. Because XML documents follow a defined structure, this reference shows those elements using a compact, graphical notation. Here is an example of that notation, with some additional annotations to highlight important conventions:

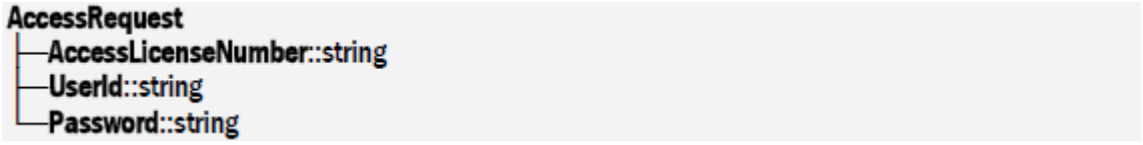


The figure indicates that a "Book" can contain six different child elements: Title, Author, Date, ISBN, Publisher, and Language. The Langauge element is marked "optional" so it is not required. All of the other five elements are required, however. Notice that the Author element can appear as many as ten times within the Book document. (The technical name for this property is *cardinality*.)
Some of the child elements can themselves contain child elements. The Date element, for example, consists of a Year element, a Month element, and a Day element.
Finally, notice that the children of the ISBN element (ISBN-10 and ISBN-13) have a number in parentheses preceding them. This number indicates a choice. In this example, the ISBN element must have either an ISBN-10 child element or an ISBN-13 child element, but it cannot have both.
If an element has no child elements, the notation convention shows the type of content that the element can contain. In the example, Year, Month, and Day must contain integer numbers, while other primitive elements can contain arbitrary text strings.

1.8.2 Authenticating Client Applications

UPS Shipping API Services are only available for authorized UPS customers. To enforce this policy, UPS requires that every message that a client application sends include important authentication information. That information is contained in an AccessRequest XML document that must begin each message.

1.8.2.1 AccessRequest



Each AccessRequest contains three child elements: an AccessLicenseNumber, a UserId, and a Password. The following figure shows an example AccessRequest document.

```
<?xml version="1.0" ?>
<AccessRequest xml:lang='en-US'>
    <AccessLicenseNumber>
        YOURACCESSLICENSENUMBER
    </AccessLicenseNumber>
    <UserId>
        YOURUSERID
    </UserId>
    <Password>
        YOURPASSWORD
    </Password>
</AccessRequest>
```

1.8.3 Locator Service

Tool service relies on a single request and response. Client applications request locations by sending a LocatorRequest message to UPS. UPS replies with a LocatorResponse message.

1.8.3.1 LocatorRequest

The LocatorRequest message consists of two complete XML documents. The first document is an AccessRequest. It is immediately followed by a LocatorRequest. When a client application is undergoing testing and integration, the document combination should be sent to the URL:

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

Once a client application is in production, the document combination should be sent to the URL:

https://www.ups.com/ups.app/xml/Locator

The LocatorRequest document in the request must conform to the following XML structure.

LocatorRequest XML Details

Example LocatorRequest Message

```
<?xml version="1.0" ?>
<AccessRequest xml:lang='en-US'>
    <AccessLicenseNumber>YOURACCESSLICENSENUMBER</AccessLicenseNumber>
    <UserId>YOURUSERID</UserId>
    <Password>YOURPASSWORD</Password>
</AccessRequest>
<?xml version="1.0" ?>
<LocatorRequest>
    <Request>
        <RequestAction>Locator</RequestAction>
        <RequestOption>3</RequestOption>
        <TransactionReference>
            <CustomerContext />
            <XpciVersion>1.0014</XpciVersion>
        </TransactionReference>
    </Request>
    <OriginAddress>
        <AddressKeyFormat><CountryCode>US</CountryCode></AddressKeyFormat>
    </OriginAddress>
    <Translate><LanguageCode>ENG</LanguageCode></Translate>
    <UnitOfMeasurement><Code>MI</Code></UnitOfMeasurement>
    <LocationID />
    <LocationSearchCriteria>
        <SearchOption>
            <OptionType><Code>02</Code></OptionType>
            <OptionCode><Code>01</Code></OptionCode>
            <OptionCode><Code>03</Code></OptionCode>
            <OptionCode><Code>05</Code></OptionCode>
        </SearchOption>
        <SearchOption>
            <OptionType><Code>04</Code></OptionType>
            <OptionCode><Code>01</Code></OptionCode>
        </SearchOption>
        <MaximumListSize />
        <SearchRadius />
        <ServiceSearch><Time /></ServiceSearch>
    </LocationSearchCriteria>
</LocatorRequest>
```

1.8.3.2 LocatorResponse

The LocatorResponse message contains a single XML document that conforms to the following XML structure.

LocatorResponse XML Details

Example LocatorResponse Message

```
<?xml version="1.0" encoding="ISO-8859-1" ?>
<LocatorResponse>
    <Response>
        <TransactionReference><XpciVersion>1.0014</XpciVersion></TransactionReference>
        <ResponseStatusCode>1</ResponseStatusCode>
        <ResponseStatusDescription>Success</ResponseStatusDescription>
    </Response>
    <Geocode>
        <Latitude>33.42634582</Latitude><Longitude>-111.940078</Longitude>
    </Geocode>
    <SearchResults>
        <DropLocation>
            <LocationID>71339</LocationID>
            <AddressKeyFormat>
                <ConsigneeName>SHIP-N-GO - The Sunset Building</ConsigneeName>
                <AddressLine>50 SOUTH ELM STREET</AddressLine>
                <PoliticalDivision2>TEMPE</PoliticalDivision2>
                <PoliticalDivision1>AZ</PoliticalDivision1>
                <PostcodePrimaryLow>85281</PostcodePrimaryLow>
                <CountryCode>US</CountryCode>
            </AddressKeyFormat>
            <PhoneNumber>6029697744</PhoneNumber>
            <FaxNumber>6029697746</FaxNumber>
            <EMailAddress>shipngo@ups.com</EMailAddress>
            <LocationAttribute>
                <OptionType>
                    <Code>01</Code><Description>Location</Description>
                </OptionType>
                <OptionCode>
                    <Code>001</Code><Description>UPS Center</Description>
                </OptionCode>
            </LocationAttribute>
            <LocationAttribute>
                <OptionType>
                    <Code>02</Code>
                    <Description>RetailLocation</Description>
                </OptionType>
                <OptionCode>
                    <Code>01</Code>
                    <Description>UPS Customer Counter</Description>
                </OptionCode>
            </LocationAttribute>
            <LocationAttribute>
                <OptionType>
                    <Code>03</Code><Description>AdditionalServices
```

```
                    </Description>
                </OptionType>
                <OptionCode>
                    <Code>002</Code>
                    <Name>UPS Packaging and Supplies</Name>
                </OptionCode>
            </LocationAttribute>
            <LocationAttribute>
                <OptionType>
                    <Code>04</Code>
                    <Description>ProgramType</Description>
                </OptionType>
                <OptionCode>
                    <Code>01</Code>
                    <Name>UPS Gold Shield</Name>
                </OptionCode>
            </LocationAttribute>
            <Distance>
                <Value>1.9</Value>
                <UnitOfMeasurement>
                    <Code>MI</Code>
                    <Description>MILES</Description>
                </UnitOfMeasurement>
            </Distance>
            <SpecialInstructions />
            <LatestGroundDropOffTime>Mon-Sat: 3:00pm</LatestGroundDropOffTime>
            <AdditionalChargeIndicator />
            <StandardHoursOfOperation>
                Mon-Fri: 9:00am-5:30pm; Sat: 10:00am-2:30pm; Sun: Closed
            </StandardHoursOfOperation>
            <NonStandardHoursOfOperation>Dec 1:
Closed</NonStandardHoursOfOperation>
        </DropLocation>
    </SearchResults>
</LocatorResponse>
```

1.8.4 Locator Request

Locator Request

The LocatorRequest message consists of two complete XML documents. The first document is an AccessRequest. It is immediately followed by a LocatorRequest. When a client application is undergoing testing and integration, the document combination should be sent to the URL:
https://wwwcie.ups.com/ups.app/xml/Locator

Once a client application is in production, the document combination should be sent to the URL:
https://www.ups.com/ups.app/xml/Locator

The LocatorRequest document in the request must conform to the following XML structure.

Name	XPath	Required	Max Allowed	Type	Length	Description
LocatorRequest	/LocatorRequest	Yes	One	Container	N/A	N/A
Request	/LocatorRequest/Request	Yes	One	Container	N/A	N/A
TransactionReference	/LocatorRequest/Request/TransactionReference	No	One	Container	N/A	TransactionReference identifies transactions between client and server.
CustomerContext	/LocatorRequest/Request/TransactionReference/CustomerContext	No	One	String	1..512	The client uses CustomerContext to synchronize request/response pairs. The client establishes CustomerContext, which can contain any information you want, as along as it is valid XML; it is echoed back by the server.
RequestAction	/LocatorRequest/Request/RequestAction	Yes	One	string	13	Indicates the action to be taken by the XML service. Must be 'Locator'
RequestOption	/LocatorRequest/Request/RequestOption	Yes	One	string	1...4	Indicates the type of request. Valid values are: 1 = Locations (Drop Locations and Will call locations), 8 = All available Additional Services, 16 = All available Program Types, 24 = All available Additional Services and Program types, 32 = All available Retail Locations, 40 = All available Retail Locations and Additional Services, 48 = All available Retail Locations and Program Types, 56 = All available Retail Locations, Additional Services and Program Types.
OriginAddress	/LocatorRequest/OriginAddress	Yes	One	Container	N/A	The origin address country code is required for all requests.
Geocode	/LocatorRequest/OriginAddress/Geocode	Cond	One	Container	N/A	required for map and directions

Name	XPath	Required	Max Allowed	Type	Length	Description
Latitude	/LocatorRequest/OriginAddress/Geocode/Latitude	*Yes	One	string	1...11	up to 11 characters
Longitude	/LocatorRequest/OriginAddress/Geocode/Longitude	*Yes	One	string	1...11	up to 11 characters
AddressKeyFormat	/LocatorRequest/OriginAddress/AddressKeyFormat	Yes	One	Container	N/A	Contains all of the basic information about the origin such as Address Lines, City, State/Province, Postal Code and Country Code. The element CountryCode is required. The element Region is not relevant for this tool.
AddressLine	/LocatorRequest/OriginAddress/AddressKeyFormat/AddressLine	No	One	string	1...100	up to 100 characters
PoliticalDivision3	/LocatorRequest/OriginAddress/AddressKeyFormat/PoliticalDivision3	No	One	String	1...50	Barrio or other sub-division of City
PoliticalDivision2	/LocatorRequest/OriginAddress/AddressKeyFormat/PoliticalDivision2	Cond	One	string	1...50	city; up to 50 characters
PoliticalDivision1	/LocatorRequest/OriginAddress/AddressKeyFormat/PoliticalDivision1	Cond	One	string	1...50	state or province; up to 50 characters
PostcodePrimaryLow	/LocatorRequest/OriginAddress/AddressKeyFormat/PostcodePrimaryLow	Cond	One	string	1...10	main postal code; up to 10 characters
PostcodeExtendedLow	/LocatorRequest/OriginAddress/AddressKeyFormat/PostcodeExtendedLow	No	One	string	1...10	extended postal code (zip plus 4); only valid for US
CountryCode	/LocatorRequest/OriginAddress/AddressKeyFormat/CountryCode	Yes	One	string	1...2	two-character country abbreviation
MaximumListSize	/LocatorRequest/OriginAddress/MaximumListSize	No	One	string	1...2	if present, indicates the maximum number of locations the client wishes to receive in response; ranges from 1 to 50 with a default value of 10

Name	XPath	Required	Max Allowed	Type	Length	Description
Translate	/LocatorRequest/Translate	Yes	One	Container	N/A	Contains the locale information for the request.
LanguageCode	/LocatorRequest/Translate/LanguageCode	Yes	One	string	1..3	Language code. Valid values are: US English = eng
UnitOfMeasurement	/LocatorRequest/UnitOfMeasurement	Cond	One	Container	N/A	Distance unit of measurement. This is required for the location, map and driving direction requests. (Request option 1, 2, 3, 4, 6) Options 2-6 only supported for backward compatibility
Code	/LocatorRequest/UnitOfMeasurement/Code	Cond	One	string	2	Required for Location, Map and/or driving directions request (Map and/or driving only supported for backward compatibility). Valid values are: MI = Miles or KM = Kilometers
LocationID	/LocatorRequest/LocationID	Cond	One	string	1...10	Location ID is the identification number of the UPS affiliated UPS location. Required if map ID is not provided in Map only request (request option 2).Required for Driving directions request. Used to indicate which locations the user wants mapped. Can only supply up to 5.Also used to get driving directions. Only one can be supplied to receive driving directions. This number is not to be exposed in the Graphical User Interface.
LocationSearchCriteria	/LocatorRequest/LocationSearchCriteria	Cond	One	Container	N/A	The Location search criteria container allows the user to further define the basis to which they wish to receive the UPS locations. Only relevant when the user requests a Location search. Request option 1, 3
SearchOption	/LocatorRequest/LocationSearchCriteria/SearchOption	No	One	Container	N/A	SearchOption contains the information that forms the basis of the location search. It contains the criteria for search by Locations/RetailLocations/ AdditionalServices/ProgramTypes. There should be one container for each type of search the user may wish to do. The user can specify either search by Locations or RetailLocations, but not both. If this container is missing the default search would be for The UPS Store, UPS Center, UPS Drop Box, and Authorized Shipping Outlet location types.
OptionType	/LocatorRequest/LocationSearchCriteria/SearchOption/OptionType	*Yes	One	Container	N/A	OptionType is a container that indicates the type of search for locations. There are 4 types of search. They are search by: Location, RetailLocation, AdditionalServices, ProgramType. If search criteria by Location or RetailLocation is not provided the default search of The UPS Store, UPS Center, UPS Drop Box, and Authorized Shipping Outlet location types will be performed.

Name	XPath	Required	Max Allowed	Type	Length	Description
Code	/LocatorRequest/LocationSearchCriteria/SearchOption/OptionType/Code	*Yes	One	string	2	Code for Option type. 01 Location; 02 RetailLocation; 03 AdditionalServices; 04 ProgramType; 05 Service Level Option
OptionCode	/LocatorRequest/LocationSearchCriteria/SearchOption/OptionCode	*Yes	One	Container	N/A	Option code contains the information of a particular Location/RetailLocation/ AdditionalService/ ProgramType depending on the option type. The SearchOptions can contain one or more OptionCodes which forms the criteria for the location search.
Code	/LocatorRequest/LocationSearchCriteria/SearchOption/OptionCode/Code	Yes	One	String	3	Code for different Locations: '001' - UPS Customer Center, '002' - The UPS Store, '003' - UPS drop box, '004' - authorized shipping outlet, '005' - Mail Boxes Etc, '007' - UPS Alliance, '009' - UPS Express, '010' - UPS Express, '011 - UPS Express, '012' - UPS Express, '014' - UPS Authorized Service Provider, '015' - UPS Authorized Service Provider, '016' - UPS Authorized Service Provider, '018' - UPS Authorized Service Provider \n\n These codes vary by country. It is strongly recommended that clients contact UPS to retrieve the primary search indicator and the valid Location Types and Service Level Options for each country. The primary search indicator specifies whether to use Location Types or Service Level Options. The Retail Locations codes change dynamically. The valid list of codes for different retail location types can be obtained by a separate type of request (Request Option 32, 40, 48 and 56). The Additional service codes change dynamically. The valid list of codes for different additional services can be obtained by a separate type of request (Request Option 8, 24, 40 and 56). The Program Type codes change dynamically. The valid list of codes for different program types can be obtained by a separate type of request (Request Option 16, 24, 48 and 56). Codes for Service Level Option: '01' = Full Service, '02' = Shipping and Drop Off, '03' = Shipping, '04' = Drop Off, '05' = All, '06' = Self-Service. The Request should include Services Level Options OR Location Types but not both. If both are passed, the Service Level Option will be ignored Only one Service Level Option can be requested at a time.
Relation	/LocatorRequest/LocationSearchCriteria/SearchOption/Relation	No	One	Container	N/A	The relation container will contain the relation parameter (And/Or) that has to be used among multiple option codes in the location search. This is only applicable to option type AdditionalServices and ProgramTypes. If this container is not present for AdditionalServices and ProgramTypes, the default relation of And is used.
Code	/LocatorRequest/LocationSearchCriteria/SearchOption/Relation/Code	*Yes	One	string	2	Applicable for AdditionalServices and ProgramTypes. Code that describes the relation: 01 - 'And' (Default) 02 - 'Or'

Name	XPath	Required	Max Allowed	Type	Length	Description
MaximumListSize	/LocatorRequest/LocationSearchCriteria/MaximumListSize	No	One	string	1...2	Allows the user to specify the maximum number of UPS locations to be returned in the response document. Valid values are 1 through 50.If user does not choose to enter a Maximum List Size Value the search response will be default to 5.
SearchRadius	/LocatorRequest/LocationSearchCriteria/SearchRadius	No	One	string	1..3	Defines the maximum radius the user wishes to search for a UPS location. If the user does not specify the default value is 100 miles or kilometers. Whole numbers only. Valid values are:5 through 100 miles or kilometers
ServiceSearch	/LocatorRequest/LocationSearchCriteria/ServiceSearch	No	One	Container	N/A	Allows for users to further define the search criteria.
Time	/LocatorRequest/LocationSearchCriteria/ServiceSearch/Time	No	One	string	4...6	Scheduled Local Drop-off Time. Format: HHMM
ServiceCode	/LocatorRequest/LocationSearchCriteria/ServiceSearch/ServiceCode	Cond	One	Container	N/A	Container that contains the service information as to Ground/Air Required if the customer provides ServiceSearch Time
Code	/LocatorRequest/LocationSearchCriteria/ServiceSearch/ServiceCode/Code	*Yes	One	string	2	Code indicating the different services
ServiceOptionCode	/LocatorRequest/LocationSearchCriteria/ServiceSearch/ServiceOptionCode	No	One	Container	N/A	Container that contains the optional service information such as Saturday Pick up
Code	/LocatorRequest/LocationSearchCriteria/ServiceSearch/ServiceOptionCode/Code	*Yes	One	string	2	Code that defines the optional service. 01 - Saturday pickup

1.8.5 Locator Response

Locator Response

The LocatorResponse message contains a single XML document that conforms to the following XML structure.

Name	XPath	Required	Max Allowed	Type	Length	Description
LocatorResponse	/LocatorResponse	Yes	One	Container	N/A	Container for LocatorResponse
Response	/LocatorResponse/Response	Yes	One	Container	N/A	Container for Response
TransactionReference	/LocatorResponse/Response/TransactionReference	No	One	Container	N/A	Container for customer provided data and the XPCI Version.
CustomerContext	/LocatorResponse/Response/TransactionReference/CustomerContext	No	One	string	0..512	Customer provided data. May be XML. If this data is present in the request, it is echoed back to the customer.
XpciVersion	/LocatorResponse/Response/TransactionReference/XpciVersion	No	One	string	6	Identifies the version of the message. Current version is 1.0014
ResponseStatusCode	/LocatorResponse/Response/ResponseStatusCode	Yes	One	string	1	Identifies the success or failure of the interchange. 1 = Success 0 = Failure
ResponseStatusDescription	/LocatorResponse/Response/ResponseStatusDescription	No	One	string	1..15	Describes the Response Status Code.
Error	/LocatorResponse/Response/Error	No	One	Container	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.

Name	XPath	Required	Max Allowed	Type	Length	Description
ErrorSeverity	/LocatorResponse/Response/Error/ErrorSeverity	*Yes	One	string	1..15	Describes the severity of the error.
ErrorCode	/LocatorResponse/Response/Error/ErrorCode	*Yes	One	string	1..15	A numeric value that describes the error. Each tool defines a range of error codes.
ErrorDescription	/LocatorResponse/Response/Error/ErrorDescription	No	One	string	1..50	Describes the error code.
MinimumRetrySeconds	/LocatorResponse/Response/Error/MinimumRetrySeconds	No	One	string	1..5	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)
ErrorLocation	/LocatorResponse/Response/Error/ErrorLocation	No	One	Container	N/A	Identifies the element in error.
ErrorLocationElementName	/LocatorResponse/Response/Error/ErrorLocation/ErrorLocationElementName	No	One	string	1..512	The Xpath name of the element in error. This is a valid Xpath pointing to an element in the request document.
ErrorLocationAttributeName	/LocatorResponse/Response/Error/ErrorLocation/ErrorLocationAttributeName	No	One	string	1..50	The name of the attribute in error. This is the name of the attribute contained by the Error Location element.
ErrorDigest	/LocatorResponse/Response/Error/ErrorDigest	No	One	string	Bound by the size of the Request data.	The contents of the element in error.
Geocode	/LocatorResponse/Geocode	Cond	One	Container	N/A	Geocode is the latitude and longitude of the origin address. The Geocode is provided in the first successful response. Required to be returned when the origin address is submitted in the request.

Name	XPath	Required	Max Allowed	Type	Length	Description
Latitude	/LocatorResponse/Geocode/Latitude	*Yes	One	string	1..11	One of the following: The latitude of the origin address. The center point of the exchange. The center point of the postal code or city.
Longitude	/LocatorResponse/Geocode/Longitude	*Yes	One	string	1..11	One of the following: The longitude of the origin address. The center point of the exchange. The center point of the postal code or city.
SearchResults	/LocatorResponse/SearchResults	Yes	One	Container	N/A	Container for SearchResults
GeocodeCandidate	/LocatorResponse/SearchResults/GeocodeCandidate	Cond	One	Container	N/A	If the origin address provided in the location, map or driving direction request document does not have a match, a list of candidate addresses, geocodes and optionally a landmark will be returned.
AddressKeyFormat	/LocatorResponse/SearchResults/GeocodeCandidate/AddressKeyFormat	*Yes	One	Container	N/A	Contains all of the basic information about candidate address.
ConsigneeName	/LocatorResponse/SearchResults/GeocodeCandidate/AddressKeyFormat/ConsigneeName	No	One	string	1...40	Name. Not relevant for candidate list
AddressLine	/LocatorResponse/SearchResults/GeocodeCandidate/AddressKeyFormat/AddressLine	Cond	One	string	1...100	Address Line Information. The address level or Intersection information must be returned if provided in the request. Only one address lines will be returned.
PoliticalDivision3	/LocatorResponse/SearchResults/GeocodeCandidate/AddressKeyFormat/PoliticalDivision3	No	One	String	1...35	Subdivision within a City. e.g., a Barrio
PoliticalDivision2	/LocatorResponse/SearchResults/GeocodeCandidate/AddressKeyFormat/PoliticalDivision2	Cond	One	string	1...50	City
PoliticalDivision1	/LocatorResponse/SearchResults/GeocodeCandidate/AddressKeyFormat/PoliticalDivision1	Cond	One	string	1...50	State/Province

Name	XPath	Required	Max Allowed	Type	Length	Description
PostcodePrimaryLow	/LocatorResponse/SearchResults/GeocodeCandidate/AddressKeyFormat/PostcodePrimaryLow	Cond	One	string	1...10	Postal Code
PostcodeExtendedLow	/LocatorResponse/SearchResults/GeocodeCandidate/AddressKeyFormat/PostcodeExtendedLow	No	One	string	1...10	4 Digit postal code extension. Valid for US only.
CountryCode	/LocatorResponse/SearchResults/GeocodeCandidate/AddressKeyFormat/CountryCode	*Yes	One	string	1...2	A country code.
Geocode	/LocatorResponse/SearchResults/GeocodeCandidate/Geocode	*Yes	One	Container	N/A	Geocode is the latitude and longitude of the origin candidate.
Latitude	/LocatorResponse/SearchResults/GeocodeCandidate/Geocode/Latitude	*Yes	One	string	1...11	The latitude of the origin address or the center point of the area code, same as before.
Longitude	/LocatorResponse/SearchResults/GeocodeCandidate/Geocode/Longitude	*Yes	One	string	1...11	The longitude of the origin address or the center point of the area code, same as before.
LandmarkName	/LocatorResponse/SearchResults/GeocodeCandidate/LandmarkName	Cond	One	string	1...50	If a Landmark code was provided in the request, a candidate list of Landmark Names will be returned along with the corresponding address and Geocode.
Disclaimer	/LocatorResponse/SearchResults/Disclaimer	Cond	One	string	Variable	Disclaimer. In the event the user requested Ground and Air service types and the maximum UPS locations list size has not been met, the list of locations will continue with locations that provide either ground or air within the search radius. The disclaimer will note this deviation from the requested search criteria. The disclaimer is also the location where the user will receive information regarding a one-time pickup option if the first location is greater than 20 miles or kilometers from the origin.
DropLocation	/LocatorResponse/SearchResults/DropLocation	Cond	One	Container	N/A	When a location request is submitted with a valid origin address, UPS locations will be returned.

Name	XPath	Required	Max Allowed	Type	Length	Description
LocationID	/LocatorResponse/SearchResults/DropLocation/LocationID	*Yes	One	string	1...10	The location ID that corresponds to the UPS location. Do not expose the Location ID.
Geocode	/LocatorResponse/SearchResults/DropLocation/Geocode	Yes	One	Container	N/A	Geocode is the latitude and longitude of the location address. The Geocode for the location address will be returned when Location or Locations and Map are requested in the Request Option.
Latitude	/LocatorResponse/SearchResults/DropLocation/Geocode/Latitude	Yes	One	String	15	The latitude of the location address or the center point of the area code.
Longitude	/LocatorResponse/SearchResults/DropLocation/Geocode/Longitude	Yes	One	String	15	The longitude of the location address or the center point of the area code.
AddressKeyFormat	/LocatorResponse/SearchResults/DropLocation/AddressKeyFormat	*Yes	One	Container	N/A	Contains all of the basic information about a location, Consignee Name, Building Name, Address Lines, City, State/Province, Postal Code and Country Code.
ConsigneeName	/LocatorResponse/SearchResults/DropLocation/AddressKeyFormat/ConsigneeName	No	One	string	1...40	Name. (Also includes the building name)Return if available.
AddressLine	/LocatorResponse/SearchResults/DropLocation/AddressKeyFormat/AddressLine	*Yes one or two	One	string	1...100	Address Line Information of the UPS location. The address level or Intersection information. Only two address lines will be returned. The second line may contain such information as the building name, the suite, and room.
PoliticalDivision3	/LocatorResponse/SearchResults/DropLocation/AddressKeyFormat/PoliticalDivision3	No	One	String	1...35	Barrio or other subdivision of City
PoliticalDivision2	/LocatorResponse/SearchResults/DropLocation/AddressKeyFormat/PoliticalDivision2	*Yes	One	string	1...50	City

Name	XPath	Required	Max Allowed	Type	Length	Description
PoliticalDivision1	/LocatorResponse/SearchResults/DropLocation/AddressKeyFormat/PoliticalDivision1	*Yes	One	string	1...50	State/Province
PostcodePrimaryLow	/LocatorResponse/SearchResults/DropLocation/AddressKeyFormat/PostcodePrimaryLow	*Yes	One	string	1...10	Postal Code
PostcodeExtendedLow	/LocatorResponse/SearchResults/DropLocation/AddressKeyFormat/PostcodeExtendedLow	No	One	string	1...10	4 Digit postal code extensions. Valid for US only.
CountryCode	/LocatorResponse/SearchResults/DropLocation/AddressKeyFormat/CountryCode	*Yes	One	string	1...2	A country code.
PhoneNumber	/LocatorResponse/SearchResults/DropLocation/PhoneNumber	*Yes or ore	One	String	1...15	The UPS locations Phone number. A phone number of the location will be returned. 10 digits allowed for US, otherwise 1...15 digits allowed. The phone number will be returned as a string.
FaxNumber	/LocatorResponse/SearchResults/DropLocation/FaxNumber	Cond	One	String	1...15	up to 15 digits
EMailAddress	/LocatorResponse/SearchResults/DropLocation/EMailAddress	Cond	One	string	1...50	Email address of the UPS location. Returned when available.
LocationAttribute	/LocatorResponse/SearchResults/DropLocation/LocationAttribute	*Yes	One	Container	N/A	LocationAttribute is a container that contains the information about the locations LocationType/RetailLocationType/ AdditionalServices/ ProgramType.
OptionType	/LocatorResponse/SearchResults/DropLocation/LocationAttribute/OptionType	*Yes	One	Container	N/A	OptionType is a container that indicates the type of the location attribute. There are 4 types of attributes. They are: Location, RetailLocation, AdditionalServices and ProgramType.

Name	XPath	Required	Max Allowed	Type	Length	Description
Code	/LocatorResponse/SearchResults/DropLocation/LocationAttribute/OptionType/Code	*Yes	One	string	2	Code for Option type. 01 Location 02 RetailLocation 03 AdditionalServices 04 ProgramType
Description	/LocatorResponse/SearchResults/DropLocation/LocationAttribute/OptionType/Description	*Yes	One	string	1...50	Description for Option type such as Location, RetailLocation, AdditionalServices, ProgramType
OptionCode	/LocatorResponse/SearchResults/DropLocation/LocationAttribute/OptionCode	*Yes	One	Container	N/A	Option code is a container that contains the information of a particular type of Location or retail location or additional service or program type that the drop location contains. If the OptionType is Location or Retail Location Type there will be one code since each location has only one location type or retail location type. If the Option type is additional services or program types there can be one or more option code.
Code	/LocatorResponse/SearchResults/DropLocation/LocationAttribute/OptionCode/Code	Yes	One	String	3	Code for different Location types: '001' UPS Customer Center '002' The UPS Store '003' UPS Drop Box '004' Authorized Shipping Outlet '005' Mail Boxes Etc '007 - UPS Alliance '009 - UPS Express '010 - UPS Express '011 - UPS Express '012 - UPS Express '014 - UPS Authorized Service Provider '015 - UPS Authorized Service Provider '016 - UPS Authorized Service Provider '018 - UPS Authorized Service Provider The Retail Location Type codes change dynamically. The valid list of codes for different retail location types can be obtained by a separate type of request (Request Option 32, 40, 48 and 56). The Additional service codes change dynamically. The valid list of codes for different additional services can be obtained by a separate type of request (Request Option 8, 24, 40 and 56). The Program Type codes change dynamically.. The valid list of codes for different program types can be obtained by a separate type of request (Request Option 16, 24, 48 and 56)
Description	/LocatorResponse/SearchResults/DropLocation/LocationAttribute/OptionCode/Description	No	One	String	1...30	Description is only applicable for Location and Retail Location. The description for Program types and additional service is not provided with Location detail. It is only provided when the request is for All available additional services or all available Program types

Name	XPath	Required	Max Allowed	Type	Length	Description
Name	/LocatorResponse/SearchResults/DropLocation/LocationAttribute/OptionCode/Name	*Yes	One	String	1...50	Name will indicate the name Additional Services/ Program Types depending on the option code
Distance	/LocatorResponse/SearchResults/DropLocation/Distance	*Yes	One	Container	N/A	The crow flies distance from the origin to the UPS location.
Value	/LocatorResponse/SearchResults/DropLocation/Distance/Value	*Yes	One	string	1...4	The straight line distance from the origin to the UPS location. Distance value may include one decimal and followed by one decimal place.
UnitOfMeasurement	/LocatorResponse/SearchResults/DropLocation/Distance/UnitOfMeasurement	*Yes	One	Container	N/A	The unit of measurement the user will see the distance is based on the user input provided in the search request.
Code	/LocatorResponse/SearchResults/DropLocation/Distance/UnitOfMeasurement/Code	*Yes	One	string	2	The distance unit of measurement code. The unit of measurement used in the search request is returned. Values returned are: MI = Miles or KM = Kilometers
Description	/LocatorResponse/SearchResults/DropLocation/Distance/UnitOfMeasurement/Description	No	One	string	5,10	May return the description of the unit of measure specified in the request. Valid values are: MI = Miles or KM = Kilometers
SpecialInstructions	/LocatorResponse/SearchResults/DropLocation/SpecialInstructions	No	One	Container	N/A	Walking directions.
Segment	/LocatorResponse/SearchResults/DropLocation/SpecialInstructions/Segment	*Yes	One	string	Variable	Walking directions, last 50 feet.
LatestGroundDropOffTime	/LocatorResponse/SearchResults/DropLocation/LatestGroundDropOffTime	Cond	One	string	Variable	The latest ground time the users can Drop-off the package at the location to be picked up. The time information is based on the time at the UPS location. When a user specifies a Drop-off Time and Ground as the Service Type, the locations that have latest Drop-off times equal to or later than the specified Drop-off time and service type are returned.

Name	XPath	Required	Max Allowed	Type	Length	Description
LatestAirDropOffTime	/LocatorResponse/SearchResults/DropLocation/LatestAirDropOffTime	Cond	One	string	4..6	The latest airtime the users can Drop-off the package at the location to be picked up. The time information is based on the time at the UPS location. When a user specifies a Drop-off Time and Air as the Service Type, the locations that have latest Drop-off times equal to or later than the specified Drop-off time and service type are returned.
AdditionalChargeIndicator	/LocatorResponse/SearchResults/DropLocation/AdditionalChargeIndicator	Cond	One	EMPTY	N/A	Indicates if the UPS location would have an additional charge. ASO locations will require an additional charge.
StandardHoursOfOperation	/LocatorResponse/SearchResults/DropLocation/StandardHoursOfOperation	No	One	string	Variable	The standard hours of operation of the drop location will be returned when available. The locations time may differ because of holidays.
NonStandardHoursOfOperation	/LocatorResponse/SearchResults/DropLocation/NonStandardHoursOfOperation	No	One	string	Variable	The non-standard hours of operation of the drop location. The locations time may differ because of holidays, weekends, or other factors that are beyond the location's control. Seven days preceding a given holiday the Non Standard Hours Of Operation will be returned along with the standard hours of operation if available.
WillCallHoursOfOperation	/LocatorResponse/SearchResults/DropLocation/WillCallHoursOfOperation	No	One	String	Variable	The will call hours of operation of the drop location will be returned when available. The location's time may differ because of holidays.
Number	/LocatorResponse/SearchResults/DropLocation/Number	No	One	string	1....6	The center number of the drop location if it is The UPS store.
HomePageURL	/LocatorResponse/SearchResults/DropLocation/HomePageURL	No	One	string	1..255	The home page URL of the drop location if it is The UPS store.
Comments	/LocatorResponse/SearchResults/DropLocation/Comments	No	One	String	1..255	Comments returned about the location
Disclaimer	/LocatorResponse/SearchResults/DropLocation/Disclaimer	No	one	String	unbounded	Textual disclaimer about the drop location

Name	XPath	Required	Max Allowed	Type	Length	Description
AvailableLocationAttributes	/LocatorResponse/SearchResults/AvailableLocation Attributes	No	unbounded	Container	N/A	This container contains the information about the currently existing Retail Locations or Additional Services or Program types.
OptionType	/LocatorResponse/SearchResults/AvailableLocation Attributes/OptionType	*Yes	One	Container	N/A	OptionType is a container that indicates the type of the location attribute that are available. For example if the Option Type is RetailLocation the list of all available retail locations will be returned in 1 or many corresponding OptionCodes
Code	/LocatorResponse/SearchResults/AvailableLocation Attributes/OptionType/Code	*Yes	One	string	2	Code for Option type. \n 02 RetailLocation \n 03 Additional services \n 04 ProgramType
Description	/LocatorResponse/SearchResults/AvailableLocation Attributes/OptionType/Description	*Yes	One	string	1...50	Description for Option type such as RetailLocation, AdditionalServices, ProgramType
OptionCode	/LocatorResponse/SearchResults/AvailableLocation Attributes/OptionCode	*Yes	One	Container	N/A	Option code is a container that contains the information of a particular retail location type or additional service or program type that is available currently. One or more of this container will be returned to give all the available codes for Retail Type or Additional Services or Program Type.
Code	/LocatorResponse/SearchResults/AvailableLocation Attributes/OptionCode/Code	Yes	One	String	3	Option Code
Description	/LocatorResponse/SearchResults/AvailableLocation Attributes/OptionCode/Description	No	One	String	1...35	Description of the Option Code
Name	/LocatorResponse/SearchResults/AvailableLocation Attributes/OptionCode/Name	No	One	String	1...50	Name will indicate the name of Location/Retail Location or Additional Services or Program Types depending on the option code

1.9 Customer Integration Environment

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

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

Please note that while the Customer Integration Environment maintains system availability 24 hours, 7 days each week, there are occasional system down times to allow for server maintenance.

Locator

Test your Locator application with locations in the following locales.

Note: In the Customer Integration Environment, Locator will only work in the following locales: Country

Country	City
United States	Atlanta
Canada	Toronto
Germany	Neuss
Mexico	Mexico City

For integration testing, you should direct your Locator software to https://wwwcie.ups.com/ups.app/xml/Locator.

1.9.1 System Availability

The Customer Integration Environment is available 24 hours a day, 7 days a week.

1.9.2 Server Availability Check

All of the UPS services work using HTTPS POST. Using the same URL as you point your application to, perform an HTTP GET. 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/Locator.
You should see the following in the browser window:

Service Name: Locator
Remote User: null
Server Port: 80
Server Name: /wwwcie.ups.com
Servlet Path: /ups.app

Appendix A – Locator Error Codes

To discover errors, check the ResponseStatusCode element. A "1" normally indicates a successful response, whereas a "0" indicates an error, either Transient or Hard. When an error occurs there will also be an error code, and an error description.

 Success – Successful responses may or may not include **Warnings**.

- (without warnings) Request is processed as anticipated by the client.
- (with warnings) *Warning* messages indicate that UPS was able to process the request; however (potentially) unanticipated results have also occurred. The warning contains information in the response that should be passed to the end user.

 Errors – will return two different levels of severity.

- *Transient* errors are temporary errors, due to temporary high server loads or scheduled maintenance, for example. The application may re-issue the request at a later time.
- *Hard* errors indicate that an error existed in the request that UPS could not resolve. These errors are critical and prevent requests from processing.

Applications should not re-issue requests with Hard errors without first correcting the error.
The following table lists the errors that UPS may return in response to a request.

Error Code	Severity	Description
350002	Hard	Maximum list size is invalid. It can not be less than 1 or greater than 50.
350003	Hard	Landmark code is invalid. It can not be less than 1 or greater than 16.
350004	Hard	Search Radius is invalid. It can not be less than 5 and greater than 100.
350005	Hard	The unit of measurement is invalid. Valid value is MI and KM.
350006	Hard	Map Height is invalid. Valid value is an integer, greater than 100 or less than 400.
350007	Hard	Map Width is invalid. Valid value is an integer, greater than 100 or less than 400.
350008	Hard	Zoom Factor is invalid. It can not be less than 0 or greater than 15.
350009	Hard	Request option is not supplied or is invalid.
350010	Hard	The Pan Value is invalid. Valid values are -1, 0, or 1.
350019	Hard	The latitude value is invalid. It should be a number.
350020	Hard	The longitude value is invalid. It should be a number.
350021	Hard	The maximum list size is invalid. It should be a number.
350022	Hard	Search radius is invalid. It should be a number.
350023	Hard	Time is invalid. Valid format is HHMM.
350024	Hard	Map Start Number is not valid.
350027	Hard	Zoom Factor is not an integer.
350028	Hard	Pan X is not an integer.
350029	Hard	Pan Y is not an integer.
350031	Hard	Service code that indicates ground or air is required when service time is present.
350032	Hard	More origin information must be provided to complete the request.

Error Code	Severity	Description
350035	Hard	The Latitude is missing. It is required if geocode is present in the request.
350036	Hard	The Longitude is missing. It is required if geocode is present in the request.
350037	Hard	SearchOption node should contain OptionType node.
350038	Hard	SearchOption node should contain OptionCode node.
350039	Hard	Saturday pick up is only applicable for air.
350040	Hard	The request action is invalid.
350041	Hard	Location ID is required for Request Option 2
350042	Hard	The maximum candidate list size supplied is not valid.
350043	Hard	Location ID is required for DrivingDirections request.
350044	Hard	Origin geocode is required for request option 2.
350045	Hard	Both location type and retail location type are present in the request.
350046	Hard	Option type code is invalid . Valid values are, 01, 02, 03, 04 and 05.
350047	Hard	Relation parameter is invalid. Valid values are 01 and 02.
350048	Hard	Service code is invalid. Valid values are 01 and 02.
350049	Hard	Service option code is invalid. Valid values are 01.
350050	Hard	Willcallsearch node should include SLIC.
350051	Hard	Willcallsearch node should include postal code.
350052	Hard	Willcallsearch node should include country code.
350102	Hard	The Country code is missing.
350103	Hard	The language code is missing.
350104	Hard	The country code is invalid. Valid Value is US.
350105	Hard	The language code is invalid. Valid value is ENG.
350201	Hard	Unable to find any locations.
350202	Hard	Geocode was expected for this request.
350203	Hard	Unable to produce results.
350204	Hard	Unable to retrieve driving directions.
350205	Hard	Unable to produce a geospatial coordinate from the request.
350206	Hard	The Program type code provided is invalid.
350208	Hard	Request Option is invalid.
350209	Hard	Additional Services code provided is Invalid.
350210	Hard	Will call Locations not found.
350212	Hard	Invalid Retail Location Type code.
350216	Hard	There are no available additional services.
350217	Hard	There are no available retail location types.
350218	Hard	There are no available program types.
355001	Transient	The locator service is unavailable.
355002	Transient	No map was produced.
355003	Transient	The Locator system is temporarily unavailable.
350106		The city is not supported in the Customer Integration Environment
350107		The country is not supported in the Customer Integration Environment.

Error Code	Severity	Description
350214		A map could not be rendered.
350221		The search criteria did not return any results.

XML Errors

Error 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

Appendix B - Country Codes

UPS country code abbreviations generally follow the recommendations of the International Standards Organization, which publishes a list of currency abbreviations in ISO Standard 3166. The following table lists the ISO country codes that ISO had defined when this document was published. The latest information is available from the ISO web site.
Please note that not all UPS services are available in every country. For more information on UPS services, refer to the latest *UPS*
Rate and Service Guide available at http://www.ups.com.

Country Code	Country Name
AU	Australia
AT	Austria
BE	Belgium
BR	Brazil
CA	Canada
CL	Chile
DK	Denmark
FI	Finland
FR	France
DE	Germany
IN	India
ID	Indonesia
IE	Ireland
IT	Italy
MY	Malaysia
MX	Mexico
NL	Netherlands
NO	Norway
PH	Philippines
PT	Portugal
PR	Puerto Rico
SG	Singapore
ES	Spain
ZA	South Africa
SE	Sweden
CH	Switzerland
TH	Thailand
GB	United Kingdom
US	United States
VI	US Virgin Islands

Appendix C – Service Level Options and Location Types

Service Level Options and Location Types										
01/01/2011	**Full Service**	**Shipping & Drop off**	**Drop off Unstaffed**	**Full Service**	**Full Service**	**Full Service**	**Full Service**	**Shipping & Drop off**	**Shipping**	**Drop-off Staffed**
Country	**The UPS Store**	**UPS Customer Center**	**UPS Drop Boxes**	**UPS Express**	**UPS Alliance**	**Mail Boxes Etc (MBE)**	**Authorized Shipping Outlets**	**UPS Authorized Service Providers**	**Location type Varies**	**Location type Varies**
US	Y	Y	Y	N	Y	N	Y	N	Y	N
Canada	Y	Y	Y	N	N	N	Y	N	Y	N
Germany	N	Y	N	Y	N	Y	N	N	Y	Y
United Kingdom	N	Y	N	N	N	Y	N	N	Y	Y
France	N	Y	N	N	Y	Y	N	N	Y	Y
Italy	N	Y	N	N	N	Y	N	N	Y	Y
Spain	N	Y	N	N	N	Y	N	N	Y	Y
Netherlands	N	Y	N	N	N	N	N	N	Y	Y
Puerto Rico	Y	Y	Y	N	Y	N	N	N	Y	N
Belgium	N	Y	N	N	N	N	N	N	Y	Y
Singapore	N	N	N	Y	Y	Y	Y	Y	Y	Y
Switzerland	N	Y	N	N	N	N	N	N	Y	Y
US Virgin Islands	N	Y	N	N	N	N	N	N	Y	Y
Mexico	N	Y	N	Y	N	Y	Y	Y	Y	Y
Australia	N	N	N	N	N	N	N	Y	Y	Y
Brazil	N	N	N	N	N	Y	Y	N	Y	Y
Thailand	N	N	N	N	N	Y	N	N	Y	Y
Malaysia	N	N	N	N	Y	Y	N	N	Y	Y
Indonesia	N	Y	N	N	Y	N	N	N	Y	Y
South Africa	N	Y	N	N	N	N	N	N	Y	Y
Philippines	N	N	N	N	Y	Y	Y	N	Y	Y
Austria	N	Y	N	N	N	Y	N	N	Y	Y
Ireland	N	Y	N	N	N	Y	N	N	Y	Y
Sweden	N	Y	N	N	N	Y	N	N	Y	Y
Denmark	N	Y	N	N	N	N	N	N	Y	Y
Finland	N	Y	N	N	N	Y	N	N	Y	Y
Norway	N	Y	N	N	N	Y	N	N	Y	Y
Portugal	N	Y	N	N	N	Y	N	N	Y	Y

Note: MBE can be found in countries that do not have The UPS Store. When MBE and The UPS Store are in the same country, MBE is categorized as a Authorized Shipping Outlet.

Appendix F - Frequently Asked Questions: Locator

API	Category	Question	Answer
All	General - security	Does UPS support chained or unchained digital certificates?	Currently, the Ship API uses an unchained cert which will be migrated to chained Sept '09. In the case of the Ship API, INET is responsible for those urls and corresponding Digital Certs. They are being renewed at the end of this month as unchained. They will migrate to chained in Sept '09.
All	API availability	Within what countries are the Developer APIs available?	The Developer APIs are available in the countries listed at ups.com by API and by country under the UPS Developer Kit - Developer APIs. Click on any particular API to go to the API page and scroll to the bottom of the page to get the country listing for that particular API.
All	Mail Innovations	Is Mail Innovations available within any of the Developer APIs?	There is no UPS API available for Mail Innovations services at this time nor did we see one at http://www.upsmailinnovations.com. Additionally we are not aware of any plans to support the services through the UPS Developer APIs. The customer may however contact a Mail Innovations representative by clicking the Support tab of the site for any additional questions or concerns.
All	UPS Logos High Resolution	How do I get access to higher resolution logos than what are available within the downloads for the UPS Developer Kit - Developer APIs?	Customers are not routinely provided these UPS shield graphics without having a design/layout submitted to UPS Brand Management for approval. The customer needs to visit: https://www.upsbrandexchange.com/brandHome.awsp This site will take them through the process for downloading a limited set of sample images for layout, and how to secure an approval for customer use, as well as the high-resolution graphics.
All	Technical Support email form	Is XPCI a required field within the email support form?	No.
All	Technical Support email form	From where is XPCI version number obtained and what does it mean?	XPCI stands for XML Package Carrier Interface (XPCI) and defines a vocabulary and structure for describing packages, shipments, and the activity details for package carriers and their customers. XPCI is a set of DTDs that defines the terminology, transaction enveloping, and XML message definitions. For a client to be XPCI-compliant, the client must generate a well-formed XML message that validates against the XPCI DTDs. Several DTDs, organized into three categories, define XPCI: Vocabulary — This DTD defines the basic business vocabulary of XPCI. All tags used in a message are defined in this DTD. Interchange — This DTD defines the transaction-enveloping scheme. Every message includes transaction information.

API	Category	Question	Answer
			Message — Each message has an associated DTD that defines the vocabulary of the message. The version and date would have been related to versioning however the APIs were not versioned so they currently do not carry significance. They remain as part of the APIs so that in the event they are versioned, we have these elements "just in case".
All	Technical Support	How do I get technical support for the APIs at ups.com?	Go to the Developer Resource Center and select email support under the UPS Developer Kit Support Column.
All	Characters	Can Japanese Kanji character be recognized by UPS Developer APIs?	No.
All	Basic	Do any of the Developer APIs support Basic service?	No. Basic is not supported within the Rating or Shipping APIs but is supported within the Tracking API available within the UPS Developer Kit - Developer APIs.
All	System Down-Times	Are there any designated system down times for the Developer APIs?	Yes. The overall reserved downtime for the CGI servers is Saturday 10:00 PM ET through Sunday 12:00 PM ET. However, often the window is shortened to two 15 minute intervals with one starting at 11 PM and the other occurring sometime between 1 and 3 AM ET Sunday morning for most weekends. The back end goes through numerous updates typically beginning at 11:00PM Saturday through 4:00AM Sunday. Typically traffic is handled in such a way that there is very little impact to customers, and any impact which does occur does so in the small 15 minute intervals mentioned previously. Having said this as this entire time is reserved for maintenance we inform customers of the possibility of experiencing issues throughout this time period so that if there are any issues which occur during maintenance we have a time window to troubleshoot and perform measures to resolve. On Sunday, the maintenance is really relegated to just ABR and freight.
All	ASMX	Are the Web Services versions of the APIs ASMX based?	No. All Web Services are XML based. This is described in the section 'UPS OnLine Tools Technologies' of every developer's guide

API	Category	Question	Answer
All	Web Services - Empty folders within the documentation zip file.	The ship_dev_guide and Ship_Reference_guide folders have some sub folders that look like they should contain some code examples / samples but they are all empty? XML_Samples Visual_Basic Code_samples All empty?	Unfortunately code samples are not provided with the Shipping API - Web Services version. The reason being is that a WSDL is included which provides all of the necessary information needed to successfully implement the API. These folders are typically utilized in the XML version of the APIs as there is no WSDL present. If the customer wishes to view the samples contained in the Shipping API they can download the documentation by logging into UPS.com, navigating to the UPS Developer Kit, and then clicking on the Shipping API link.
All	Pointing to the wrong URL for API	I keep getting, "XML document is well formed but the document is not valid." error message. What am I doing wrong?	The "XML document is well formed but the document is not valid" error message is generally returned when an element in the XML request does not adhere to the formatting defined within the Xpath section of that API's developer guide. When the API returns this error it indicates the field which is not valid in the ErrorLocationElementName element in the XML response. When we test the XML provided by you earlier in this email chain we are able to receive a successful response. This would indicate that you may be posting to an incorrect URL. The error message returned from the API should have contained a line similar to the following: <ErrorLocationElementName>XPATH TO FIRST ELEMENT WHERE XML DOESN'T MATCH EXPECTED FORMAT</ErrorLocationElementName> As previously stated, this element is included in the XML error response to point you to the element of the posted request which is not valid for the Tool. When further clarification is needed you can look up the element in question in the Xpath section of the Developer Guide for the particular API. If this element lists another API's request such as "TrackRequest" it would indicate that you are posting to that API's URL and need to adjust the URL you are sending your XML to.
All	Phone Support	Is phone support provided for the UPS Developer Kit - Developer APIs? If so, what is the number and what are the hours of operation?	Yes. Phone support is provided at 1st Level only and for basic API questions. This includes integration questions and production questions. However, customers questions that cannot be answered verbally will be directed to the email support form at ups.com to escalate to 3rd level via email. Phone Support Hours: M-F 730am- 9pm EST Sa-Su 9am - 6pm EST 877.289.6420

API	Category	Question	Answer
All	Examples of API Implementations	Are there any examples of implementations that we can review to understand how best to utilize the APIs?	We do not share customer implementations of our tools amongst customers. On occasion we do post case studies on ups.com and articles in customer-facing newsletters, but that is only after gaining permission from the customer and working with Legal, Customer Communications, etc.Please understand that the XML tool is only data, which is transparent to the end user. How the developer implements the tool and presents results back to the end user can vary from web site to web site. These web sites may not highlight the full functionality of the tool. We need to be able to describe the value proposition of the tool without depending on another customer's usage.
All	Code languages supported	Do the APIs support PHP or Perl with code sample within the Developer Guides or the developer kit zip files?	Yes. We now support PHP or Perl with sample code.