Worldview Web Services Developer's Guide

Revised August 2013

Release 17.8.01-r60001-r

PRODUCT LICENSING

Thank you for licensing our web service product, we appreciate your business. In this document you will find technical specifications on GDC's Worldview SOAP based web service application programming interface (API) and how to successfully access and utilize the API from a programming language.

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RELEASE NOTES - INTRODUCTION

The Global Data Consortium's Worldview platform is a scalable solution that enables customers and partners to verify and validate: Identity, Delivery, and Payment data for domestic and cross border commerce transactions. The platform provides a portal interface for batch processing of data records and an SOAP based web service for interactive and integrated services within other technologies and toolsets.

The key technical services provided by the current release (Release 17.8.01-r60001-r) on the platform are listed below:

Portal
1. No net new updates with this point release

Web Service
1. Brazilian identity verification and enrichment
2. Identity verification scoring for: Mexico, Great Britain, Australia, Germany, and China.
3. Web Service hierarchy has been adjusted to allow for maximum flexibility
4. Implementation of CENSUS TRACT, RDI, and extended US address processing

BEFORE YOU BEGIN

Before you begin any integration or development efforts with the Worldview (WV) Web Service please be sure you have contacted the Worldview team and have the following:

1. Provided contact information for your organization including: phone and email.
2. Registered at the website (www.globaldataconsortium.com/worldview) or been in contact to receive:
   a. Company tenant name
   b. Your specific user name
   c. Your specific password

Worldview is a multi-tenant system and user and company credentials for the platform allow access to both the WV portal and web service URL. Please inform the WV team of the intended plaform use to be sure your user(s) have the correct roles and permissions.
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FUNCTIONALITY DEFINED

There are two web service interfaces provided by WV and each interface has specific functions defined.

Validate: This is the request that takes input of identity, delivery, and payment data and returns results from the platform. Currently address data is passed as input to this function and address verification results are returned.

retrieveMessage: This request returned the underlying detail of a request made through the **Validate** request. The message returned contains address verification details, geo-coordinate details and delivery point and census data as available per country and/or territory.

The SOAP envelope for both of these calls is listed below:

validate SOAP Envelope

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ws="http://ws.wvservice.globaldata.com/">
  <soapenv:Header/>
  <soapenv:Body>
    <ws:validate>
      <!--Optional:-->
      <input>
        <!--Optional:-->
        <ws:address>
          <!--Optional:-->
          <addressLine1>?</addressLine1>
          <!--Optional:-->
          <addressLine10>?</addressLine10>
          <!--Optional:-->
          <addressLine2>?</addressLine2>
          <!--Optional:-->
          <addressLine3>?</addressLine3>
          <!--Optional:-->
          <addressLine4>?</addressLine4>
          <!--Optional:-->
          <addressLine5>?</addressLine5>
          <!--Optional:-->
```

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```
<addressLine6>?</addressLine6>
<!--Optional:-->
<addressLine7>?</addressLine7>
<!--Optional:-->
<addressLine8>?</addressLine8>
<!--Optional:-->
<addressLine9>?</addressLine9>
<!--Optional:-->
<building>?</building>
<!--Optional:-->
<cebucoCode>?</cebucoCode>
<!--Optional:-->
<census>?</census>
<!--Optional:-->
<codes>
  <!--Optional:-->
  <adaptation>?</adaptation>
  <!--Optional:-->
  <detailCode>?</detailCode>
  <!--Optional:-->
  <detail_list>?</detail_list>
  <!--Zero or more repetitions:-->
  <messages>
    <!--Optional:-->
    <code>?</code>
    <!--Optional:-->
    <value>?</value>
  </messages>
  <!--Optional:-->
  <options>?</options>
  <!--Optional:-->
  <reliability>?</reliability>
</codes>
<!--Optional:-->
<congressionalDistrict>?</congressionalDistrict>
<!--Optional:-->
<countryCode>?</countryCode>
<!--Optional:-->
<countryISO3>?</countryISO3>
```

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```xml
<!--Optional:-->
<countryName>?</countryName>
<!--Optional:-->
<countryNumber>?</countryNumber>
<!--Optional:-->
<county>?</county>
<!--Optional:-->
<countyCode>?</countyCode>
<!--Optional:-->
<department>?</department>
<!--Optional:-->
<district>?</district>
<!--Optional:-->
<dpvCoded>?</dpvCoded>
<!--Optional:-->
<dpvFootnotes>?</dpvFootnotes>
<!--Optional:-->
<dpvIndicator>?</dpvIndicator>
<!--Optional:-->
<dpvIsCMRA>?</dpvIsCMRA>
<!--Optional:-->
<dpvIsNoStat>?</dpvIsNoStat>
<!--Optional:-->
<dpvIsPBSA>?</dpvIsPBSA>
<!--Optional:-->
<dpvIsVacant>?</dpvIsVacant>
<!--Optional:-->
<eggCode>?</eggCode>
<!--Optional:-->
<formalCountryName>?</formalCountryName>
<!--Optional:-->
<hausCode>?</hausCode>
<!--Optional:-->
<houseNumber>?</houseNumber>
<!--Optional:-->
<houseNumberAddition>?</houseNumberAddition>
<!--Optional:-->
<lacsIndicator>?</lacsIndicator>
<!--Optional:-->
```

_____

```xml
<latitude>?</latitude>
<!--Optional:-->
<locality>?</locality>
<!--Optional:-->
<longitude>?</longitude>
<!--Optional:-->
<lotNumber>?</lotNumber>
<!--Optional:-->
<municipalityCode>?</municipalityCode>
<!--Optional:-->
<name>?</name>
<!--Optional:-->
<organization>?</organization>
<!--Optional:-->
<postBox>?</postBox>
<!--Optional:-->
<postIndicator>?</postIndicator>
<!--Optional:-->
<postTown>?</postTown>
<!--Optional:-->
<postalCode>?</postalCode>
<!--Optional:-->
<preIndicator>?</preIndicator>
<!--Optional:-->
<premise>?</premise>
<!--Optional:-->
<province>?</province>
<!--Optional:-->
<provinceCode>?</provinceCode>
<!--Optional:-->
<subDistrict>?</subDistrict>
<!--Optional:-->
<thoroughfare>?</thoroughfare>
<!--Optional:-->
<timezone>?</timezone>
<!--Optional:-->
<urbanArea>?</urbanArea>
<!--Optional:-->
<urbanization>?</urbanization>
```

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```xml
      </ws:address>
      <!--Optional:-->
      <credentials>
        <!--Optional:-->
        <username>?</username>
        <!--Optional:-->
        <password>?</password>
        <!--Optional:-->
        <tenant>?</tenant>
      </credentials>
      <!--Optional:-->
      <email>
        <!--Optional:-->
        <addressee>?</addressee>
        <!--Optional:-->
        <codes>
          <!--Optional:-->
          <adaptation>?</adaptation>
          <!--Optional:-->
          <detailCode>?</detailCode>
          <!--Optional:-->
          <detail_list>?</detail_list>
          <!--Zero or more repetitions:-->
          <messages>
            <!--Optional:-->
            <code>?</code>
            <!--Optional:-->
            <value>?</value>
          </messages>
          <!--Optional:-->
          <options>?</options>
          <!--Optional:-->
          <reliability>?</reliability>
        </codes>
        <!--Optional:-->
        <countryCode>?</countryCode>
        <!--Optional:-->
        <display_name>?</display_name>
        <!--Optional:-->
```

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```
      <domain>?</domain>
      <!--Optional:-->
      <full_email_address>?</full_email_address>
      <!--Optional:-->
      <top_level>?</top_level>
    </email>
    <!--Optional:-->
    <identity>
      <!--Optional:-->
      <businessid>?</businessid>
      <!--Optional:-->
      <codes>
        <!--Optional:-->
        <adaptation>?</adaptation>
        <!--Optional:-->
        <detailCode>?</detailCode>
        <!--Optional:-->
        <detail_list>?</detail_list>
        <!--Zero or more repetitions:-->
        <messages>
          <!--Optional:-->
          <code>?</code>
          <!--Optional:-->
          <value>?</value>
        </messages>
        <!--Optional:-->
        <options>?</options>
        <!--Optional:-->
        <reliability>?</reliability>
      </codes>
      <!--Optional:-->
      <completename>?</completename>
      <!--Optional:-->
      <contact_type>?</contact_type>
      <!--Optional:-->
      <countryCode>?</countryCode>
      <!--Optional:-->
      <dob>?</dob>
      <!--Optional:-->
```

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```
            <formofaddress>?</formofaddress>
            <!--Optional:-->
            <function>?</function>
            <!--Optional:-->
            <gender>?</gender>
            <!--Optional:-->
            <givenfullname>?</givenfullname>
            <!--Optional:-->
            <givennameinitials>?</givennameinitials>
            <!--Optional:-->
            <indicator>?</indicator>
            <!--Optional:-->
            <name_qualified>?</name_qualified>
            <!--Optional:-->
            <nationalid>?</nationalid>
            <!--Optional:-->
            <nationality>?</nationality>
            <!--Optional:-->
            <organization_name>?</organization_name>
            <!--Optional:-->
            <passport>?</passport>
            <!--Optional:-->
            <qualification_int_first>?</qualification_int_first>
            <!--Optional:-->
            <qualification_int_second>?</qualification_int_second>
            <!--Optional:-->
            <qualification_suceeding>?</qualification_suceeding>
            <!--Optional:-->
            <qualificationpreceding>?</qualificationpreceding>
            <!--Optional:-->
            <surname_first>?</surname_first>
            <!--Optional:-->
            <surname_prefix_first>?</surname_prefix_first>
            <!--Optional:-->
            <surname_prefix_second>?</surname_prefix_second>
         </identity>
         <!--Optional:-->
         <options>?</options>
         <!--Optional:-->
```

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```xml
<ws:phone>
  <!--Optional:-->
  <area_code>?</area_code>
  <!--Optional:-->
  <calling_code>?</calling_code>
  <!--Optional:-->
  <calling_from>?</calling_from>
  <!--Optional:-->
  <codes>
    <!--Optional:-->
    <adaptation>?</adaptation>
    <!--Optional:-->
    <detailCode>?</detailCode>
    <!--Optional:-->
    <detail_list>?</detail_list>
    <!--Zero or more repetitions:-->
    <messages>
      <!--Optional:-->
      <code>?</code>
      <!--Optional:-->
      <value>?</value>
    </messages>
    <!--Optional:-->
    <options>?</options>
    <!--Optional:-->
    <reliability>?</reliability>
  </codes>
  <!--Optional:-->
  <countryCode>?</countryCode>
  <!--Optional:-->
  <formatted_international>?</formatted_international>
  <!--Optional:-->
  <international_prefix>?</international_prefix>
  <!--Optional:-->
  <line_type>?</line_type>
  <!--Optional:-->
  <name>?</name>
  <!--Optional:-->
  <number>?</number>
```

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```
          <!--Optional:-->
          <phone_number>?</phone_number>
          <!--Optional:-->
          <timezone>?</timezone>
          <!--Optional:-->
          <trunk>?</trunk>
        </ws:phone>
      </input>
    </ws:validate>
  </soapenv:Body>
</soapenv:Envelope>
```

retrieveMessage SOAP Envelope

```
<SOAPENV:ENVELOPE XMLNS:SOAPENV="HTTP://SCHEMAS.XMLSOAP.ORG/SOAP/ENVELOPE/"
XMLNS:WS="HTTP://WS.GDCSERVICE.JSOPUS.COM/">
  <SOAPENV:HEADER/>
  <SOAPENV:BODY>
    <WS:RETRIEVEMESSAGE>
      <!--OPTIONAL:-->
      <ARG0>
        <CREDENTIALS>
          <!--OPTIONAL:-->
          <USERNAME>?</USERNAME>
          <!--OPTIONAL:-->
          <PASSWORD>?</PASSWORD>
          <!--OPTIONAL:-->
          <TENANT>?</TENANT>
        </CREDENTIALS>
        <!--OPTIONAL:-->
        <KEY>?</KEY>
      </ARG0>
    </WS:RETRIEVEMESSAGE>
  </SOAPENV:BODY>
</SOAPENV:ENVELOPE>
```

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THE USE OF CREDENTIALS

Both SOAP requests have the same section for credentials. These credentials are the tenant/company, username and password provided by WV support.

```
<credentials>
        <!--Optional:-->
        <username>?</username>
        <!--Optional:-->
        <password>?</password>
        <!--Optional:-->
        <tenant>?</tenant>
 </credentials>
```

Not usage is linked to the tenant and user so the WV support team recommends having a separate *interactive* user account and *batch* user account for the different processing options.

In the event your login fails or have invalid credentials, you will receive return XML from your SOAP call:

```
<S:Envelope xmlns:S="http://schemas.xmlsoap.org/soap/envelope/">
  <S:Body>
    <S:Fault xmlns:ns4="http://www.w3.org/2003/05/soap-envelope">
      <faultcode>S:Server</faultcode>
      <faultstring>Invalid Login Credentials</faultstring>
    </S:Fault>
  </S:Body>
</S:Envelope>
```

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HIERARCHY AND REQUIRED FIELDING

Hierarchy of the service

The current release of the web service consists of the following implemented hierarchy/structure for a request:

```
<validate>>
      <input>
            <address>
            <credentials>
            <email>
            <identity>
            <phone>
```

In order to assemble a request for the service you must provide credentials and populate one of the input elements requesting a specific service. As of this release **global address validation** is the only feature which is always on. This feature can be disabled for individual web service calls with the option **DisableDQ** which is discussed later in this document.

Address Verification and Geocoding

The current release has limited country detection enabled so it is advised that whenever possible each call contain the either the ISO2, ISO3 or country name to be assured of accurate country classification and utilization of the best reference data and results service.

Identity Elements Verification & Enrichment

The current release has implemented enhanced identity coverage in a core set of countries. All identity checks (whether verify or enrich) require **identity** elements in conjunction with **phone**, **address**, or **email** elements depending on the country. These are all found under **Input.**

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INTEGRATION AND CODING

Overview:

In this section we will discuss and show examples of coding against these services. The example code is in Visual Basic.NET but SOAP services can be accessed from almost any programming examples. Please contact the WV Support team at support@globaldataconsortium.com if you are in need of language specific examples.

Configuring the service with credentials

First in your development IDE, Visual Studio for VB.NET (Eclipse perhaps for JAVA), create a reference to the web service.
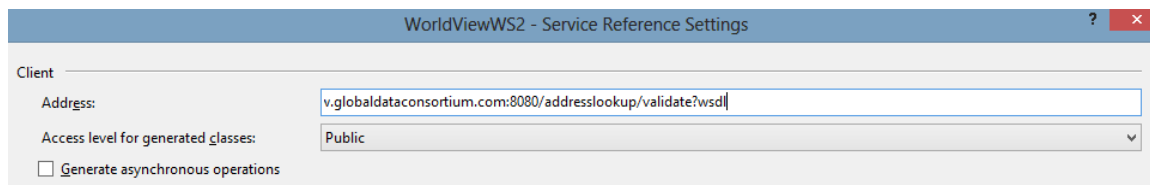
Figure 1 Visual Studio 2010 Service Reference Settings

Once a reference is created it can be coded again and from here code can be written to set the credentials, populate input, and return results.

```vb
Dim lgin As New WorldViewWS2.credentials
Dim gdcinp As New WorldViewWS2.gdcInput

Dim phone2 As New WorldViewWS2.phone
Dim email2 As New WorldViewWS2.email
Dim contact2 As New WorldViewWS2.identity

Dim avsEngine As New WorldViewWS2.WorldViewLookupImplClient
Dim avsResult As WorldViewWS2.gdcResult
```

Set Credentials for authentication

The objects create above represent connection access for passing credentials to the service, assigning input values to identity/contacts and assigning address values as input.

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First populate the *lgn variable* with the credentials for connecting to the service

```
lgin.password = "password123"
lgin.tenant = "Global Data Consortium"
lgin.username = "webuser"
```

Address Validation Example

Making and Address Verification Call

Then set the credentials into the address input object (gdcinp) and create a new instance of the *address* variable for populating the address data or validation.

```
' now make call
gdcinp.credentials = lgin
gdcinp.address = New WorldViewWS2.address' or declare with New
```

Populating an Address Request

Then set the address data for correction/validation.

```
gdcinp.address.addressLine1 = "123 W Cornwall Rd"
gdcinp.address.addressLine2 = ""
gdcinp.address.province = "NC"
gdcinp.address.postTown = "Cary"
gdcinp.address.PostalCode = "27607"
gdcinp.address.countryCode = "USA"
gdcinp.address.countryName = "United States"
gdcinp.options = "Geocoding"
```

This code takes the input address and sets an option that says after address validation/correction perform a *geocoding* request on the resulting address and return the latitude and longitude with the corrected address data. There will be more about **utilizing options** in subsequent sections of this guide.

Requesting a Result

Making a validation call is as easy as passing the assembled address data variable to the *validate* function. See the code snippet below:

```
'= Now make validation call
avsResult = avsEngine.validate(gdcinp)
```

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First you assign the *address* object to the *gdcinput* property for address input. Notice the results are coming back in *avsResult* defined as a *gdcResult*. Also, the *avsResult* object typed as *gdcResult* contains the *address, email, phone* responses, though we only requested an address validation based on input. Here is example code for *getting* the response values for certain address pieces.

```
Print avsResult.address.thoroughfare
Print avsResult.address.county
Print avsResult.address.locality
Print avsResult.address.province
Print avsResult.address.postalCode
Print avsResult.address.countryName
```

This section of the call holds the return results. Below is the XML result from a call for this address as an example, note the red item is incorrect on input.

123 W Cornwall Rd
Cary NC 27607
USA

Note the areas in blue and red in the response below:

XML Return

```
<S:Envelope xmlns:S="http://schemas.xmlsoap.org/soap/envelope/">
  <S:Body>
    <ns2:validateResponse xmlns:ns2="http://ws.wvservice.globaldata.com/">
      <return>
        <address>
          <addressLine1>123 W CORNWALL RD</addressLine1>
          <addressLine10/>
          <addressLine2>CARY NC 27511-3859</addressLine2>
          <addressLine3>UNITED STATES</addressLine3>
          <addressLine4>US</addressLine4>
          <addressLine5/>
          <addressLine6/>
          <addressLine7/>
          <addressLine8/>
          <addressLine9/>
```

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```xml
<building/>
<cebucoCode/>
<census/>
<codes>
  <adaptation>30</adaptation>
  <detailCode>WS-92888.2013.5.21.9.28.43.31</detailCode>
  <detail_list/>
  <messages>
    <code>25</code>
    <value>ZIP changed</value>
  </messages>
  <options>None</options>
  <reliability>10</reliability>
</codes>
<congressionalDistrict/>
<countryCode>US</countryCode>
<countryISO3/>
<countryName>UNITED STATES</countryName>
<countryNumber/>
<county>WAKE</county>
<countyCode/>
<department></department>
<district/>
<dpvCoded/>
<dpvFootnotes/>
<dpvIndicator>false</dpvIndicator>
<dpvIsCMRA/>
<dpvIsNoStat/>
<dpvIsPBSA/>
<dpvIsVacant/>
<eggCode/>
<formalCountryName/>
<hausCode/>
<houseNumber>123</houseNumber>
<houseNumberAddition/>
<lacsIndicator>false</lacsIndicator>
<latitude/>
<locality>CARY</locality>
<longitude/>
```

_____

```xml
      <lotNumber/>
      <municipalityCode/>
      <name/>
      <organization/>
      <postBox/>
      <postIndicator/>
      <postTown/>
      <postalCode>27511-3859</postalCode>
      <preIndicator/>
      <premise/>
      <province>NC</province>
      <provinceCode/>
      <subDistrict/>
      <thoroughfare>CORNWALL</thoroughfare>
      <timezone/>
      <urbanArea/>
      <urbanization/>
    </address>
    <codes>
      <adaptation>30</adaptation>
      <detailCode>WS-92888.2013.5.21.9.28.43.31</detailCode>
      <detail_list/>
      <options>None</options>
      <reliability>30</reliability>
    </codes>
    <email>
      <addressee/>
      <codes>
        <adaptation>30</adaptation>
        <detailCode>WS-92888.2013.5.21.9.28.43.31</detailCode>
        <detail_list/>
        <options>None</options>
        <reliability>30</reliability>
      </codes>
      <countryCode/>
      <display_name/>
      <domain/>
      <full_email_address/>
      <top_level/>
```

```
      </email>
      <identity>
        <businessid/>
        <codes>
          <adaptation>30</adaptation>
          <detailCode/>
          <detail_list/>
          <options>None</options>
          <reliability>30</reliability>
        </codes>
        <completename/>
        <contact_type/>
        <countryCode/>
        <dob/>
        <formofaddress/>
        <function/>
        <gender/>
        <givenfullname/>
        <givennameinitials/>
        <indicator/>
        <name_qualified/>
        <nationalid/>
        <nationality/>
        <organization_name/>
        <qualification_int_first/>
        <qualification_int_second/>
        <qualification_suceeding/>
        <qualificationpreceding/>
        <surname_first/>
        <surname_prefix_first/>
        <surname_prefix_second/>
      </identity>
      <phone>
        <area_code/>
        <calling_code/>
        <calling_from/>
        <codes>
          <adaptation>30</adaptation>
          <detailCode>WS-92888.2013.5.21.9.28.43.31</detailCode>
```

_____

```
                <detail_list/>
                <options>None</options>
                <reliability>30</reliability>
            </codes>
            <countryCode/>
            <formatted_international/>
            <international_prefix/>
            <line_type/>
            <name/>
            <number/>
            <phone_number/>
            <timezone/>
            <trunk/>
        </phone>
      </return>
    </ns2:validateResponse>
  </S:Body>
</S:Envelope>
```

ANALYSIS

When looking at the results in the XML you will notice several things immediately:

- The structure of the response and the coding around the results is in the same object structure for: *phone, email, address, and identity.*
- One detail code is provided no matter what type of check is being performed.
- The *codes object* contains all relevant data for understanding the results: *reliability, adaptation, messages, details, etc.*

Identity Validation Example

Making and Identity Verification/Enrichment Call

Identity validation/enrichment is accomplished based on the type of identity option to be leveraged: *IdentityVerify, IdentityVerifyPhone, IdentityVerifyEmail, IdentityEnrichEmail, and IdentityEnrichPhone* to list a few. The details on all identity options currently available are listed in the subsequent section on options.

For this code example we will use the *IdentityVerifyPhone* option. Credentials are the same, but the input data is passed via *Phone* object.

```
'now make call
gdcinp.credentials = lgin
gdcinp.phone = New WorldViewWS2.phone ' or declare with New
```

Populating an Identity Request

Then set the address data for correction/validation.

```
gdcinp.phone.countryCode = "BRA"
gdcinp.phone.phone_number = "33793570"
gdcinp.phone.calling_code = "51"
gdcinp.options = "IdentityVerifyPhone"
```

This code takes the input address and sets an option that says after address validation/correction perform a *geocoding* request on the resulting address and return the latitude and longitude with the corrected address data. There will be more about **utilizing options** in subsequent sections of this guide.

Requesting a Result

Making a validation call is as easy as passing the assembled address data variable to the *validate* function. See the code snippet below:

```
'= Now make validation call for checking identity based on phone number
avsResult = avsEngine.validate(gdcinp)
```

Notice the results are coming back in *avsResult* defined as a *gdcResult* just as with the address validation call. Also, the *avsResult* object typed as *gdcResult* contains the *address, email, phone and identity* responses, though we only request for identity phone based validation based on input. Here is example code for *getting* the

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response values for certain address pieces. Note: if this had been an enrichment call and the country supported it the *address object* would have contained appended address data.

```
Print avsResult.identity.codes.reliability '= Output the reliability score on the phone number
Print avsResult.address.locality
Print avsResult.address.province
Print avsResult.address.postalCode
Print avsResult.address.countryName
```

This section of the call holds the return results. Below is the XML result from a call for identity phone verification. Identity data is stripped.

```
<S:Envelope xmlns:S="http://schemas.xmlsoap.org/soap/envelope/">
  <S:Body>
    <ns2:validateResponse xmlns:ns2="http://ws.wvservice.globaldata.com/">
     <return>
      <address>
        <addressLine1> </addressLine1>
        <addressLine10/>
        <addressLine2> </addressLine2>
        <addressLine3/>
        <addressLine4/>
        <addressLine5/>
        <addressLine6/>
        <addressLine7/>
        <addressLine8/>
        <addressLine9/>
        <cebucoCode/>
        <census/>
        <codes>
          <adaptation>30</adaptation>
          <detailCode>WS-1215220.2013.5.21.10.15.51.265</detailCode>
          <detail_list></detail_list>
          <messages>
            <code> </code>
            <value></value>
          </messages>
          <messages>
            <code> </code>
            <value> </value>
```

```
        </messages>
      <options>None</options>
      <reliability>30</reliability>
    </codes>
    <congressionalDistrict/>
    <countryCode> </countryCode>
    <countryISO3/>
    <countryName> </countryName>
    <countryNumber/>
    <countyCode/>
    <department> </department>
    <dpvCoded/>
    <dpvFootnotes/>
    <dpvIndicator/>
    <dpvIsCMRA/>
    <dpvIsNoStat/>
    <dpvIsPBSA/>
    <dpvIsVacant/>
    <eggCode/>
    <formalCountryName/>
    <hausCode/>
    <houseNumber/>
    <houseNumberAddition/>
    <lacsIndicator/>
    <latitude/>
    <longitude/>
    <lotNumber/>
    <municipalityCode/>
    <organization/>
    <postIndicator/>
    <postTown/>
    <preIndicator/>
    <provinceCode/>
    <subDistrict/>
    <timezone/>
    <urbanArea/>
    <urbanization/>
  </address>
  <codes>
```

_____

```xml
      <adaptation>30</adaptation>
      <detailCode>WS-1215220.2013.5.21.10.15.51.265</detailCode>
      <detail_list/>
      <options>None</options>
      <reliability>30</reliability>
    </codes>
    <email>
      <addressee/>
      <codes>
        <adaptation>30</adaptation>
        <detailCode>WS-1215220.2013.5.21.10.15.51.265</detailCode>
        <detail_list/>
        <options>None</options>
        <reliability>30</reliability>
      </codes>
      <countryCode/>
      <display_name/>
      <domain/>
      <full_email_address/>
      <top_level/>
    </email>
    <identity>
      <businessid/>
      <codes>
        <adaptation>30</adaptation>
        <detailCode/>
        <detail_list/>
        <options>None</options>
        <reliability>10</reliability>
      </codes>
      <completename/>
      <contact_type/>
      <countryCode/>
      <dob/>
      <formofaddress/>
      <function/>
      <gender/>
      <givenfullname/>
      <givennameinitials/>
```

```
        <indicator/>
        <name_qualified/>
        <nationalid/>
        <nationality/>
        <organization_name/>
        <qualification_int_first/>
        <qualification_int_second/>
        <qualification_suceeding/>
        <qualificationpreceding/>
        <surname_first/>
        <surname_prefix_first/>
        <surname_prefix_second/>
      </identity>
      <phone>
        <area_code/>
        <calling_code/>
        <calling_from/>
        <codes>
          <adaptation>30</adaptation>
          <detailCode>WS-1215220.2013.5.21.10.15.51.265</detailCode>
          <detail_list/>
          <options>IdentityVerifyPhone/options>
          <reliability>10</reliability>
        </codes>
        <countryCode/>
        <formatted_international/>
        <international_prefix/>
        <line_type/>
        <name/>
        <number/>
        <phone_number/>
        <timezone/>
        <trunk/>
      </phone>
    </return>
  </ns2:validateResponse>
 </S:Body>
</S:Envelope>
```

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ANALYSIS

When looking at the results for identity options within the XML you will notice several things immediately:

- The structure of the response and the coding around the results is in the same object structure for: *phone, email, address, and identity.*
- One detail code is provided no matter what type of check is being performed.
- The *codes object* contains all relevant data for understanding the results: *reliability, adaptation, messages, details, etc.*
- *Enrichment* values are returned within the underlying objects: phone, email, address and identity. So if you get an appended phone number from an *IdentityEnrichEmail* option it will be returned in the phone object. This allows input data to have data quality applied before identity check or disabled all without impacting how integration has mapped the return values.

UTILIZING OPTIONS

Both within the WV Portal and the Web Service there is the ability to provide *per record* directives or *options* which explicitly dictate a feature or service to be applied to the results of the initial validation/verification. These options are powerful because they give the calling application (in the case of SOAP) or the user in the case of batch file processing exact control over the record(s) on which a particular extended service may be applied. For current release (2.3.12-r59309) below is a list of parameters which can be applied for *option(s)* parameters. These parameters are passed as a semicolon delimited string of values – example "*NativeOutputScript;UpperCase.*" Please note that though the options are listed here in explicit case the options values **are not actually case sensitive.**

Address Options	
Option Parameter	Definition
NativeOutputScript	Return the validated or verified result in the native alphabet. For example Greek for Greece, Cyrillic for Russia, and Arabic for the UAE.
UpperCase	Return all data in upper case where possible.
LowerCase	Return all data in lower case where possible.
PreProcessing	This option will do a preliminary check of

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	the input address data before attempting correction.
DPV	For the United States attempt to perform *delivery point verification* on the address data results
LASC	For the United States attempt to match results against a list of rural routes, highways and box addresses.
GeoCoding	Attempt to geocode the address results AFTER verification and append a latitude and longitude to the return.
GeoCodingOnly	Attempts geocoding without address check
ShowSuggestions	In the WV Portal instead of taking the best result candidate show all suggestions.
AllowDuplicateValues	This option will allow the input address lines to contain duplicate values: *street street or the same postal code in two address line* for example.
FormatStreetAddress	This option will attempt to analyze the address line(s) and format the address line appropriately as it relates to items such as the location of the house number.
DetectByLocality	Utilize the locality provided to determine the ISO country code.
DetectByCountryName	Utilized the country name provided as input to determine the ISO country code.

Identity Options	
Option Parameter	*Definition*
DisableDQCheck	This general option disables all default DQ checks allowing identity checks to be performed with and address, phone, or name verifications.
IdentityVerify	For those countries that support this feature the service will attempt to verify the identity with the best match using all provided input data.
IdentityEnrichEmail	For those countries that support this feature

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	the service will attempt to verify the email in combination with other input data combinations and provide a score on the likelihood of this being an individual and append additional data.
IdentityVerifyEmail	For those countries that support this feature the service will attempt to verify the email in combination with other input data combinations and provide a score on the likelihood of this being an individual.
IdentityEnrichPhone	For those countries that support this feature the service will attempt to verify and enrich the name and phone combination and provide the best identified match.
IdentityVerifyPhone	For those countries that support this feature the service will attempt to verify the name and address combination and provide the best identified match.
NameCheck	Perform name validation and check, including parsing, gender detection, and contact type categorization.
MultiMatch	If this option is provided any identity or data verification which produces multiple matches will record all matches in the detail code. **NOTE: this can impact performance.**
NOTE: in the portal and upcoming in next major release of web service	

Email Options	
Option Parameter	*Definition*
EmailVerify **NOTE: in the portal and upcoming in next major release of web service**	Provide email verification to check syntax and domain accuracy for email address on records.

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Phone Options	
Option Parameter	**Definition**
PhoneVerify **NOTE: in the portal and upcoming in next major release of web service**	Independent of other elements, verification, standardization, and correction the phone number provided on an input record.

UNDERSTANDING REQUIRED INPUTS FOR IDENTITY

The WV service requires a minimum number of inputs when making an identity call and expecting return values. Typical Identity elements include Name (First, Last, Middle Initial or Full Name), Date of Birth (DOB; formatted MM/DD/YYYY), National ID (example Social Security Number (SSN)), Email, Phone or Address. The service runs identity checks based on this information and returns the input fields and possibly additional fields based on the call. The required input fields vary by country. A table below is shown below denoting the required fields for the countries the WV platform supports for Identity.

	Input Elements					
	Full Name	**DOB**	**National ID**	**Address**	**Phone**	**Email**
Country						
Australia	R	R	O	R	O	O
Austria	R	R	O	R	O	O
Belgium	R	R	O	R	O	O
Brazil	R	O	R	O	O	O
Canada	R	R	O	R	O	O
China	R	R	R	R	O	O
Denmark	R	R	O	R	O	O
Finland	R	R	O	R	O	O
France	R	R	O	R	O	O
Germany	R	R	O	R	O	O
Great Britain	R	R	O	R	O	O
Hong Kong	R	R	R	R	O	O

Ireland	R	R	O	R	O	O
Italy	R	R	O	R	O	O
Japan	R	R	O	R	O	O
Luxembourg	R	R	O	R	O	O
Malaysia	R	R	R	R	O	O
Mexico	R	R	R	R	O	O
Netherlands	R	R	O	R	O	O
New Zealand	R	R	O	R	O	O
Norway	R	R	O	R	O	O
Portugal	R	R	O	R	O	O
Singapore	R	R	R	R	O	O
South Africa	R	R	R	R	O	O
Spain	R	R	O	R	O	O
Sweden	R	R	O	R	O	O
Switzerland	R	R	O	R	O	O
Turkey	R	R	O	R	O	O
United States	R	R	O	R	O	O

R = Required Field, O = Optional Field

Note - In most cases, providing the required minimum required inputs, along with a strong unique identifier will provide the best results

UNDERSTANDING RESULTS

From the example above: 123 W Cornwall Rd Cary NC **27607** USA the result codes in the XML below were provided.

```
<codes>
  <reliability>10</reliability>
  <adaptation>20</adaptation>
  <optionCodes>?</optionCodes>
  <errorCodes>84-1</errorCodes>
  <messages>Directional ZIP changed</messages>
</codes>
```

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Reliability Codes

Reliability Codes represent a scoring system designed to be easy to understand and implement/decision.

<reliability>**10**</reliability>

The options are 10 (Good/Correct/Corrected)
            20 (Possible/Doubtful)
            30 (Not Correct/Results not complete enough).

The WV team recommends the customer analyze the messages and <errCodes> for all return values for extra information. The error codes and messages can be found in the interactive help with-in the portal.

Adaptability Codes

Adaptability codes represent the measure of **change** regarding the reliability code.

The options are:
            10 (No change or very minor adjustment such as capitalization or casing for standardization)
            20 (Substantial change which appears to have had a minor impact on the reliability – such as correction of spelling or address formatting, and minor address data changes. Example append of +4 top US Postal code)
            30 (Substantial change which appears to have had a minor impact on the reliability – appending of missing address data or change of address elements).

Information regarding the specific changes is also available in the <errCodes> and messages return values.

Like address, a reliability score is returned for an **identity result**. The score is based on the complete, partial or non-match of identity elements passed upon input. Similarly, the return scores can be thought of like that of an address, 10 = Good, 20 – Questionable, 30 – Doubtful. The status messages returned identify the specific matches returned from the input provided.

USING THE DETAIL SERVICE

Every inquiry on the WV web service returns a unique detail code. Customer may utilize the detail code to get underlying return values from the WV service that can assist in troubleshooting results and additional licensed

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data such as DPV in the United States. The example detail code below could be submitted to the detail service and specific return values provided

        <detailCode> WS-302671.2013.7.15.16.37.29.91</detailCode>

This detail code would result in the return detail below with specific highlighted values included should they have been specified as **options.**

Below is a sample return from the primary web service and utilizing the WS code returned the potential detail.

```
<S:Envelope xmlns:S="http://schemas.xmlsoap.org/soap/envelope/">
  <S:Body>
    <ns2:validateResponse xmlns:ns2="http://ws.wvservice.globaldata.com/">
      <return>
        <address>
          <addressLine1>28 Ashfield Road</addressLine1>
          <addressLine10/>
          <addressLine2>Shipley</addressLine2>
          <addressLine3>West Yorkshire</addressLine3>
          <addressLine4>BD18 4LE</addressLine4>
          <addressLine5>UNITED KINGDOM</addressLine5>
          <addressLine6>GB</addressLine6>
          <addressLine7/>
          <addressLine8/>
          <addressLine9/>
          <cebucoCode/>
          <census/>
          <codes>
            <adaptation>30</adaptation>
            <detailCode>WS-302671.2013.7.15.16.37.29.91</detailCode>
            <detail_list/>
            <messages>
              <code>V</code>
              <value>Verified. A complete match was made between the input data and a single record from the
available reference data</value>
            </messages>
            <messages>
              <code>P4</code>
              <value>Post-Processed Verification Match Level. Premise (Premise or Building)</value>
```

```
      </messages>
      <options/>
      <reliability>10</reliability>
   </codes>
   <congressionalDistrict/>
   <countryCode>GB</countryCode>
   <countryISO3/>
   <countryName>United Kingdom</countryName>
   <countryNumber/>
   <countyCode/>
   <department/>
   <dpvCoded/>
   <dpvFootnotes/>
   <dpvIndicator/>
   <dpvIsCMRA/>
   <dpvIsNoStat/>
   <dpvIsPBSA/>
   <dpvIsVacant/>
   <eggCode/>
   <formalCountryName/>
   <hausCode/>
   <houseNumber/>
   <houseNumberAddition/>
   <lacsIndicator/>
   <latitude/>
   <locality>Shipley</locality>
   <longitude/>
   <lotNumber/>
   <municipalityCode/>
   <organization/>
   <postIndicator/>
   <postTown/>
   <postalCode>BD18 4LE</postalCode>
   <preIndicator/>
   <premise>28</premise>
   <province>West Yorkshire</province>
   <provinceCode/>
   <subDistrict/>
   <thoroughfare>Ashfield Road</thoroughfare>
```

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```xml
      <timezone/>
      <urbanArea/>
      <urbanization/>
    </address>
    <codes>
      <adaptation>30</adaptation>
      <detailCode>WS-302671.2013.7.15.16.37.29.91</detailCode>
      <detail_list/>
      <options/>
      <reliability>30</reliability>
    </codes>
    <email>
      <addressee/>
      <codes>
        <adaptation>30</adaptation>
        <detailCode>WS-302671.2013.7.15.16.37.29.91</detailCode>
        <detail_list/>
        <options/>
        <reliability>30</reliability>
      </codes>
      <countryCode/>
      <display_name/>
      <domain/>
      <full_email_address/>
      <top_level/>
    </email>
    <identity>
      <businessid/>
      <codes>
        <adaptation>30</adaptation>
        <detailCode/>
        <detail_list/>
        <options>None</options>
        <reliability>30</reliability>
      </codes>
      <completename/>
      <contact_type/>
      <countryCode/>
      <dob/>
```

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```xml
      <formofaddress/>
      <function/>
      <gender/>
      <givenfullname/>
      <givennameinitials/>
      <indicator/>
      <name_qualified/>
      <nationalid/>
      <nationality/>
      <organization_name/>
      <passport/>
      <qualification_int_first/>
      <qualification_int_second/>
      <qualification_suceeding/>
      <qualificationpreceding/>
      <surname_first/>
      <surname_prefix_first/>
      <surname_prefix_second/>
    </identity>
    <phone>
      <area_code/>
      <calling_code/>
      <calling_from/>
      <codes>
        <adaptation>30</adaptation>
        <detailCode>WS-302671.2013.7.15.16.37.29.91</detailCode>
        <detail_list/>
        <options/>
        <reliability>30</reliability>
      </codes>
      <countryCode/>
      <formatted_international/>
      <international_prefix/>
      <line_type/>
      <name/>
      <number/>
      <phone_number/>
      <timezone/>
      <trunk/>
```

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```
        </phone>
      </return>
    </ns2:validateResponse>
  </S:Body>
</S:Envelope>
```

DETAIL SERVICE RETURN

Here is the detail service return, note the items in red which are of interest in using the service.

```
<S:Envelope xmlns:S="http://schemas.xmlsoap.org/soap/envelope/">
  <S:Body>
    <ns2:retrieveMessageResponse xmlns:ns2="http://ws.messageservice.globaldata.com/">
      <return>
        <logMessage>
          <randomKey>UNIQUE KEY VALUE</randomKey>
          <request/>
          <response>
            <address>
              <addressLine1>28 Ashfield Road</addressLine1>
              <addressLine10/>
              <addressLine2>Shipley</addressLine2>
              <addressLine3>West Yorkshire</addressLine3>
              <addressLine4>BD18 4LE</addressLine4>
              <addressLine5>UNITED KINGDOM</addressLine5>
              <addressLine6>GB</addressLine6>
              <addressLine7/>
              <addressLine8/>
              <addressLine9/>
              <building/>
              <cebucoCode/>
              <census/>
              <codes>
                <adaptation>30</adaptation>
                <detailCode>PROVIDER SPECIFIC RESULTS AND RETURN CODES</AVC>
</item>
</Results>]]></detailCode>
```

```
              <detail_list/>
              <messages>
                <code>V</code>
                <value>Verified. A complete match was made between the input data and a single record from
the available reference data</value>
              </messages>
              <messages>
                <code>P4</code>
                <value>Post-Processed Verification Match Level. Premise (Premise or Building)</value>
              </messages>
              <options>None</options>
              <reliability>10</reliability>
           </codes>
           <congressionalDistrict/>
           <countryCode>GB</countryCode>
           <countryISO3/>
           <countryName>United Kingdom</countryName>
           <countryNumber/>
           <county/>
           <countyCode/>
           <department/>
           <district/>
           <dpvCoded/>
           <dpvFootnotes/>
           <dpvIndicator/>
           <dpvIsCMRA/>
           <dpvIsNoStat/>
           <dpvIsPBSA/>
           <dpvIsVacant/>
           <eggCode/>
           <formalCountryName/>
           <hausCode/>
           <houseNumber/>
           <houseNumberAddition/>
           <lacsIndicator/>
           <latitude/>
           <locality>Shipley</locality>
           <longitude/>
           <lotNumber/>
```

```
        <municipalityCode/>
        <name/>
        <organization/>
        <postBox/>
        <postIndicator/>
        <postTown/>
        <postalCode>BD18 4LE</postalCode>
        <preIndicator/>
        <premise>28</premise>
        <province>West Yorkshire</province>
        <provinceCode/>
        <subDistrict/>
        <thoroughfare>Ashfield Road</thoroughfare>
        <timezone/>
        <urbanArea/>
        <urbanization/>
      </address>
      <codes>
        <adaptation>30</adaptation>
        <detailCode/>
        <detail_list/>
        <options>None</options>
        <reliability>30</reliability>
      </codes>
      <email>
        <addressee/>
        <codes>
          <adaptation>30</adaptation>
          <detailCode/>
          <detail_list/>
          <options>None</options>
          <reliability>30</reliability>
        </codes>
        <countryCode/>
        <display_name/>
        <domain/>
        <full_email_address/>
        <top_level/>
      </email>
```

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```
<identity>
  <businessid/>
  <codes>
    <adaptation>30</adaptation>
    <detailCode/>
    <detail_list/>
    <options>None</options>
    <reliability>30</reliability>
  </codes>
  <completename/>
  <contact_type/>
  <countryCode/>
  <dob/>
  <formofaddress/>
  <function/>
  <gender/>
  <givenfullname/>
  <givennameinitials/>
  <indicator/>
  <name_qualified/>
  <nationalid/>
  <nationality/>
  <organization_name/>
  <passport/>
  <qualification_int_first/>
  <qualification_int_second/>
  <qualification_suceeding/>
  <qualificationpreceding/>
  <surname_first/>
  <surname_prefix_first/>
  <surname_prefix_second/>
</identity>
<phone>
  <area_code/>
  <calling_code/>
  <calling_from/>
  <codes>
    <adaptation>30</adaptation>
    <detailCode/>
```

```
            <detail_list/>
            <options>None</options>
            <reliability>30</reliability>
        </codes>
        <countryCode/>
        <formatted_international/>
        <international_prefix/>
        <line_type/>
        <name/>
        <number/>
        <phone_number/>
        <timezone/>
        <trunk/>
      </phone>
    </response>
    <service>UNDERLYING PROVIDER/SERVICE</service>
    <timeStamp>DATE/TIME STAMP</timeStamp>
   </logMessage>
  </return>
 </ns2:retrieveMessageResponse>
 </S:Body>
</S:Envelope>
```

APPENDIX 1 – DATA STORAGE

Introduction

At GDC we often have customers request recommendations on how best to store address and location specific international data and results. This section has some field definitions for data storage at the address and locality/region levels. These are guidelines and recommendations with no absolute guarantee it will meet all needs..

Locality Data Fields

Below is a basic structure for storing regional data, however and depending on the country and territories in question, some fields may be empty.

Field name Data type Description
Country Char(2) ISO 3166-1 country code

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Language Char(2) ISO 639-1 language code
ID Long Record counter
ISO2 Char(6) ISO 3166-2 region code
Region1 Char(60) Administrative region level 1
Region2 Char(60) Administrative region level 2
Region3 Char(60) Administrative region level 3
Region4 Char(60) Administrative region level 4
ZIP Char(10) ZIP/Postal code
City Char(60) Locality name
Area1 Char(80) Additional information (street, block, district, ..)
Area2 Char(80) Additional information (street, block, district, ..)
Lat Double WGS 84 Geographic latitude in decimal format
Lng Double WGS 84 Geographic longitude in decimal format
TZ Char(30) Time zone (Olson code)
UTC Char(10) Local time
DST Char(1) Daylight saving time

Sample Table structures for the storage of postal code data

MySQL database (.sql)

Here is sample SQL to load the file into a MySQL database with load scripts.

```
DROP TABLE IF EXISTS GDC_PC ;
CREATE TABLE GDC_PC  (
Country varchar(2) NOT NULL,
Language varchar(2) NOT NULL,
ID bigint(20) NOT NULL,
RegISO2 varchar(6) NOT NULL,
Region1 varchar(60) NOT NULL,
Region2 varchar(60) NOT NULL,
Region3 varchar(60) NOT NULL,
Region4 varchar(60) NOT NULL,
ZIP varchar(10) NOT NULL,
City varchar(60) NOT NULL,
Area1 varchar(80) NOT NULL,
Area2 varchar(80) NOT NULL,
Lat double NOT NULL,
Lng double NOT NULL,
TZ varchar(30) NOT NULL,
UTC varchar(10) NOT NULL,
DST varchar(1) NOT NULL
) ENGINE=MyISAM DEFAULT CHARSET=utf8;
LOAD DATA INFILE '/path/GDC_PC _xx.csv' INTO TABLE yourdb.GDC_PC  FIELDS
```

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```
TERMINATED BY ';' ENCLOSED BY '"' ESCAPED BY '\\' LINES TERMINATED BY
'\r\n';
```

Microsoft SQL Server

The table structure below can house data at a postal code or locality level once imported or inputted.

```
CREATE TABLE [GDC_PC ] (
[Country] [nvarchar](2) NULL,
[Language] [nvarchar](2) NULL,
[ID] [bigint] NULL,
[RegISO2] [nvarchar](6) NULL,
[Region1] [nvarchar](60) NULL,
[Region2] [nvarchar](60) NULL,
[Region3] [nvarchar](60) NULL,
[Region4] [nvarchar](60) NULL,
[ZIP] [nvarchar](10) NULL,
[City] [nvarchar](60) NULL,
[Area1] [nvarchar](80) NULL,
[Area2] [nvarchar](80) NULL,
[Lat] [float] NULL,
[Lng] [float] NULL,
[TZ] [nvarchar](30) NULL,
[UTC] [nvarchar](10) NULL,
[DST] [nvarchar](1) NULL
)
```

Lastly the table below has field definitions and usage, which can be commonly applied to support the storage of all address elements worldwide.

Name	Length	Use
Organization	50	Company or Organization name including company type such as Inc. or GmbH
Organization2	50	Secondary company line
Department	50	Dept. or Mail Stop type information
Role	60	Role for the given contact
Gender	1	Gender - M = Male, F=Female, U=Unknown
First_Name	40	First name on contact record
Middle_Name	40	Middle name on contact record
Last_Name	40	Last name on contact record
Building	50	Building Name

Field	Length	Description
Subbuilding	50	Information that subdivides a building set. Could be suite number or floor
HouseNumber	10	Number of the premises (house or building) on a street. Placement in street line varies per Country
Streetline1	50	Name of thoroughfare or street
Streetline2	50	additional street/thoroughfare line
PO_Box	20	Stores the PO Box number (term P.O. is not included)
DependentLocality	50	Place names that further divide a locality, like a District
Locality	50	City or regional area below a province
PostalCD	10	Postal Code
Province	50	The state, province, prefecture etc. as a subdivision of Country
ProvinceAbbr	3	Where applicable the abbreviation (ISO or accepted) of the province in Country
CountryName	50	Full Country Name
CountryISO3	3	ISO alpha3 standardized abbreviation for a Country according to ISO3166- United States of America = USA

APPENDIX 2 – COUNTRY COVERAGE

The table below lists the Country coverage and function provide for each Country within the WV service and portal. This table is subject to change with the addition and removal of "best available" providers within each Country and Territory around the world. Note: it is specified which Countries are provided with a **"best available" in-Country solution** vs. our **World Coverage Solution** for address validation and correction.

Country	ISO3	ISO2	FIPS	Territory	Included	in-Country Provider AVS	WV World AVS Service
Afghanistan	AFG	AF	AF	WA		no	yes
Aland Islands	ALA	AX	FI	WE	FIN	yes	yes
Albania	ALB	AL	AL	EE		yes	yes
American Samoa	ASM	AS	AQ	OZ	USA	no	yes
Andorra	AND	AD	AN	WE		yes	yes
Angola	AGO	AO	AO	AF		no	yes
Anguilla	AIA	AI	AV	CA	GBR	no	yes
Antarctica	ATA	AQ	AY	AR		no	yes
Antigua and Barbuda	ATG	AG	AC	CA		no	yes
Argentina	ARG	AR	AR	SA		yes	yes
Armenia	ARM	AM	AM	WA		no	yes
Aruba	ABW	AW	AA	CA		no	yes
Australia	AUS	AU	AS	OZ	AUS	yes	yes
Austria	AUT	AT	AU	WE		yes	yes
Azerbaijan	AZE	AZ	AJ	WA		no	yes
Bahamas	BHS	BS	BF	CA		no	yes
Bahrain	BHR	BH	BA	ME		yes	yes
Bangladesh	BGD	BD	BG	EA		no	yes
Barbados	BRB	BB	BB	CA		no	yes
Belarus	BLR	BY	BO	EE		yes	yes
Belgium	BEL	BE	BE	WE		yes	yes
Belize	BLZ	BZ	BH	CA		no	yes
Benin	BEN	BJ	BN	AF		no	yes
Bermuda	BMU	BM	BD	CA		no	yes
Bhutan	BTN	BT	BT	WA		no	yes
Bolivia	BOL	BO	BL	SA		no	yes
Bosnia and Herzegovina	BIH	BA	BK	EE		yes	yes
Botswana	BWA	BW	BC	AF		yes	yes
Bouvet Island	BVT	BV	BV	AR	NOR	no	yes
Brazil	BRA	BR	BR	SA		yes	yes

British Indian Ocean Territory	IOT	IO	IO	WA	GBR	no	yes
Brunei Darussalam	BRN	BN	BX	EA		no	yes
Bulgaria	BGR	BG	BU	EE		yes	yes
Burkina Faso	BFA	BF	UV	AF		no	yes
Burundi	BDI	BI	BY	AF		no	yes
Cambodia	KHM	KH	CB	EA		no	yes
Cameroon	CMR	CM	CM	AF		no	yes
Canada	CAN	CA	CA	NA		yes	yes
Cape Verde	CPV	CV	CV	AF		no	yes
Cayman Islands	CYM	KY	CJ	CA		yes	yes
Central African Republic	CAF	CF	CT	AF		no	yes
Chad	TCD	TD	CD	AF		no	yes
Chile	CHL	CL	CI	SA		yes	yes
China	CHN	CN	CH	EA	CHN	yes	yes
Christmas Island	CXR	CX	KT	OZ	AUS	no	yes
Cocos Island	CCK	CC	CK	OZ	AUS	no	yes
Colombia	COL	CO	CO	SA		yes	yes
Comoros	COM	KM	CN	AF		no	yes
Congo	COG	CG	CF	AF		no	yes
Congo, the Democratic Republic of the	COD	CD	CG	AF		no	yes
Cook Islands	COK	CK	CW	OZ	NZL	no	yes
Costa Rica	CRI	CR	CS	CA		no	yes
cote d'Ivoire	CIV	CI	IV	AF		no	yes
Croatia	HRV	HR	HR	EE		yes	yes
Cuba	CUB	CU	CU	CA		no	yes
Cyprus	CYP	CY	CY	EE		no	yes
Czech Republic	CZE	CZ	EZ	EE		yes	yes
Denmark	DNK	DK	DA	WE	DNK	yes	yes
Djibouti	DJI	DJ	DJ	AF		no	yes
Dominica	DMA	DM	DO	CA		no	yes
Dominican Republic	DOM	DO	DR	CA		no	yes
Ecuador	ECU	EC	EC	SA		no	yes
Egypt	EGY	EG	EG	AF		no	yes
El Salvador	SLV	SV	ES	CA		no	yes
Equatorial Guinea	GNQ	GQ	EK	AF		no	yes
Eritrea	ERI	ER	ER	AF		no	yes
Estonia	EST	EE	EN	EE		yes	yes
Ethiopia	ETH	ET	ET	AF		no	yes
Falkland Islands	FLK	FK	FK	SA	GBR	no	yes
Faroe Islands	FRO	FO	FO	WE	DNK	no	yes
Fiji	FJI	FJ	FJ	OZ		no	yes

Finland	FIN	FI	FI	WE	FIN	yes	yes
France	FRA	FR	FR	WE	FRA	yes	yes
French Guiana	GUF	GF	FG	SA	FRA	yes	yes
French Polynesia	PYF	PF	FP	OZ	FRA	no	yes
French Southern Territories	ATF	TF	FS	AR	FRA	no	yes
Gabon	GAB	GA	GB	AF		no	yes
Gambia	GMB	GM	GA	AF		no	yes
Georgia	GEO	GE	GG	WE		no	yes
Germany	DEU	DE	GM	WE		yes	yes
Ghana	GHA	GH	GH	AF		no	yes
Gibralter	GIB	GI	GI	WE	GBR	no	yes
Greece	GRC	GR	GR	EE		yes	yes
Greenland	GRL	GL	GL	NA	DNK	no	yes
Grenada	GRD	GD	GJ	CA		no	yes
Guadeloupe	GLP	GP	GP	CA	FRA	yes	yes
Guam	GUM	GU	GQ	OZ	USA	no	yes
Guatemala	GTM	GT	GT	CA		no	yes
Guernsey	GGY	GG	GK	WE	GBR	no	yes
Guinea	GIN	GN	GV	AF		no	yes
Guinea-Bissau	GNB	GW	PU	AF		no	yes
Guyana	GUY	GY	GY	SA		no	yes
Haiti	HTI	HT	HA	CA		no	yes
Heard Island and McDonald Islands	HMD	HM	HM	AR	AUS	no	yes
Holy See	VAT	VA	VT	WE		no	yes
Honduras	HND	HN	HO	CA		no	yes
Hong Kong	HKG	HK	HK	EA	CHN	yes	yes
Hungary	HUN	HU	HU	EE		yes	yes
Iceland	ISL	IS	IC	WE		yes	yes
India	IND	IN	IN	WA		yes	yes
Indonesia	IDN	ID	ID	EA		yes	yes
Iran, Islamic Republic of	IRN	IR	IR	ME		no	yes
Iraq	IRQ	IQ	IZ	ME		no	yes
Ireland, Republic of	IRL	IE	EI	WE		yes	yes
Isle of Man	IMN	IM	IM	WE	GBR	no	yes
Israel	ISR	IL	IS	ME		no	yes
Italy	ITA	IT	IT	WE		yes	yes
Jamaica	JAM	JM	JM	CA		no	yes
Japan	JPN	JP	JA	EA		yes	yes
Jersey	JEY	JE	JE	WE	GBR	no	yes
Jordan	JOR	JO	JO	ME		yes	yes
kazakhstan	KAZ	KZ	KZ	WA		no	yes

Kenya	KEN	KE	KE	AF		no	yes
Kiribati	KIR	KI	KR	OZ		no	yes
Korea, Democratic People's Republic of	PRK	KP	KN	EA		yes	yes
Korea, Republic of	KOR	KR	KS	EA		yes	yes
Kuwait	KWT	KW	KU	ME		yes	yes
Kyrgyzstan	KGZ	KG	KG	WA		no	yes
Lao, People's Democratic Republic of	LAO	LA	LA	EA		no	yes
Latvia	LVA	LV	LG	EE		yes	yes
Lebanon	LBN	LB	LE	ME		yes	yes
Lesotho	LSO	LS	LT	AF		yes	yes
Liberia	LBR	LR	LI	AF		no	yes
Libyan Arab Jamahriya	LBY	LY	LY	AF		no	yes
Liechtenstein	LIE	LI	LS	WE		no	yes
Lithuania	LTU	LT	LH	EE		yes	yes
Luxembourg	LUX	LU	LU	WE		yes	yes
Macau	MAC	MO	MC	EA	CHN	yes	yes
Macedonia, The Former Yugoslv Republic of	MKD	MK	MK	EE		yes	yes
Madagascar	MDG	MG	MA	AF		no	yes
Malawi	MWI	MW	MI	AF		no	yes
Malaysia	MYS	MY	MY	EA		yes	yes
Maldives	MDV	MV	MV	WA		no	yes
Mali	MLI	ML	ML	AF		no	yes
Malta	MLT	MT	MT	WE		no	yes
Marshall Islands	MHL	MH	RM	OZ	USA	no	yes
Martinique	MTQ	MQ	MB	CA	FRA	yes	yes
Mauritania	MRT	MR	MR	AF		no	yes
Mauritius	MUS	MU	MP	AF		no	yes
Mayotte	MYT	YT	MF	AF	FRA	no	yes
Mexico	MEX	MX	MX	CA		yes	yes
Micronesia, Federated States of	FSM	FM	FM	OZ	USA	no	yes
Moldova	MDA	MD	MD	EE		yes	yes
Monaco	MCO	MC	MN	WE		yes	yes
Mongolia	MNG	MN	MG	EA		no	yes
Montenegro	MNE	ME	MJ	EE	SRB	yes	yes
Montserrat	MSR	MS	MH	CA	GBR	no	yes
Morocco	MAR	MA	MO	AF		yes	yes
Mozambique	MOZ	MZ	MZ	AF		no	yes
Myanmar	MMR	MM	BM	EA		no	yes

Namibia	NAM	NA	WA	AF		yes	yes
Nauru	NRU	NR	NR	OZ		no	yes
Nepal	NPL	NP	NP	WA		no	yes
Netherlands	NLD	NL	NL	WE		yes	yes
Netherlands Antilles	ANT	AN	NT	CA		no	yes
New Caledonia	NCL	NC	NC	OZ	FRA	no	yes
New Zealand	NZL	NZ	NZ	OZ	NZL	yes	yes
Nicaragua	NIC	NI	NU	CA		no	yes
Niger	NER	NE	NG	AF		no	yes
Nigeria	NGA	NG	NI	AF		no	yes
Niue	NIU	NU	NE	OZ	NZL	no	yes
Norfolk Island	NFK	NF	NF	OZ	AUS	no	yes
Northern Mariana Islands	MNP	MP	CQ	OZ	USA	no	yes
Norway	NOR	NO	NO	WE	NOR	yes	yes
Oman	OMN	OM	MU	ME		yes	yes
Pakistan	PAK	PK	PK	WA		yes	yes
Palau	PLW	PW	PS	OZ	USA	no	yes
Palestinian Territory	PSE	PS		ME		no	yes
Panama	PAN	PA	PM	CA		no	yes
Papua New Guinea	PNG	PG	PP	EA		no	yes
Paraguay	PRY	PY	PA	SA		no	yes
Peru	PER	PE	PE	SA		no	yes
Philippines	PHL	PH	RP	EA		no	yes
Pitcairn	PCN	PN	PC	OZ	GBR	no	yes
Poland	POL	PL	PL	EE		yes	yes
Portugal	PRT	PT	PO	WE		yes	yes
Puerto Rico	PRI	PR	RQ	CA	USA	no	yes
Qatar	QAT	QA	QA	ME		yes	yes
Reunion	REU	RE	RE	AF	FRA	no	yes
Romania	ROU	RO	RO	EE		yes	yes
Russian Federation	RUS	RU	RS	EE		yes	yes
Rwanda	RWA	RW	RW	AF		no	yes
Saint Barthelemy	BLM	BL	TB	CA	FRA	yes	yes
Saint Helena	SHN	SH	SH	AF	GBR	no	yes
Saint Kitts and Nevis	KNA	KN	SC	CA		no	yes
Saint Lucia	LCA	LC	ST	CA	GBR	no	yes
Saint Martin	MAF	MF	RN	CA	FRA	no	yes
Saint Pierre and Miquelon	SPM	PM	SB	NA	FRA	no	yes
Saint Vincent and the Grenadines	VCT	VC	VC	CA		no	yes
Samoa	WSM	WS	WS	OZ		no	yes
San Marino	SMR	SM	SM	WE		no	yes

Sao Tome and Principe	STP	ST	TP	AF		no	yes
Saudi Arabia	SAU	SA	SA	ME		yes	yes
Senegal	SEN	SN	SG	AF		no	yes
Serbia	SRB	RS	SR	EE		yes	yes
Seychelles	SYC	SC	SE	AF		no	yes
Sierra Leone	SLE	SL	SL	AF		no	yes
Singapore	SGP	SG	SN	EA		yes	yes
Slovakia	SVK	SK	LO	EE		yes	yes
Slovenia	SVN	SI	SI	EE		yes	yes
Solomon Islands	SLB	SB	BP	OZ		no	yes
Somalia	SOM	SO	SO	AF		no	yes
South Africa	ZAF	ZA	SF	AF		yes	yes
South Georgia and the South Sandwich Islands	SGS	GS	SX	AR	GBR	no	yes
Spain	ESP	ES	SP	WE		yes	yes
Sri Lanka	LKA	LK	CE	WA		no	yes
Sudan	SDN	SD	SU	AF		no	yes
Suriname	SUR	SR	NS	SA		no	yes
Svalbard and Jan Mayen	SJM	SJ	SV	WE	NOR	no	yes
Swaziland	SWZ	SZ	WZ	AF		yes	yes
Sweden	SWE	SE	SW	WE		yes	yes
Switzerland	CHE	CH	SZ	WE		yes	yes
Syrian Arab Republic	SYR	SY	SY	ME		no	yes
Taiwan	TWN	TW	TW	EA	CHN	yes	yes
Tajikistan	TJK	TJ	TI	WA		no	yes
Tanzania, United Republic of	TZA	TZ	TZ	AF		no	yes
Thailand	THA	TH	TH	EA		yes	yes
Timor-Leste	TLS	TL	TT	EA		no	yes
Togo	TGO	TG	TO	AF		no	yes
Tokelau	TKL	TK	TL	OZ	NZL	no	yes
Tonga	TON	TO	TN	OZ		no	yes
Trinidad and Tobago	TTO	TT	TD	CA		no	yes
Tunisia	TUN	TN	TS	AF		yes	yes
Turkey	TUR	TR	TU	WA		yes	yes
Turkmenistan	TKM	TM	TX	WA		no	yes
Turks and Caicos Islands	TCA	TC	TK	CA	GBR	no	yes
Tuvalu	TUV	TV	TV	OZ		no	yes
Uganda	UGA	UG	UG	AF		no	yes
Ukraine	UKR	UA	UP	EE		yes	yes
United Arab Emirates	ARE	AE	AE	ME		yes	yes
United Kingdom	GBR	GB	UK	WE	GBR	yes	yes
United States	USA	US	US	NA	USA	yes	yes

United States Minor Outlying Islands	UMI	UM		AR	USA	no	yes
Uruguay	URY	UY	UY	SA		no	yes
Uzbekistan	UZB	UZ	UZ	WA		no	yes
Vanuatu	VUT	VU	NH	OZ		no	yes
Venezuela	VEN	VE	VE	SA		yes	yes
Vietnam	VNM	VN	VM	EA		no	yes
Virgin Islands, British	VGB	VG	VI	CA	GBR	no	yes
Virgin Islands, U.S.	VIR	VI	VQ	CA	USA	no	yes
Wallisand Futuna	WLF	WF	WF	OZ	FRA	no	yes
Western Sahara	ESH	EH	WI	AF		no	yes
Yemen	YEM	YE	YM	ME		no	yes
Zambia	ZMB	ZM	ZA	AF		no	yes
Zimbabwe	ZWE	ZW	ZI	AF		no	yes

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APPENDIX 3 –Worldview Detailed Status Messages

In the table below there is a complete list as of this release of every status code and its corresponding status message. These values are available for export within the WV portal and exposed as return value(s) within the WV web service.

Germany, Netherlands, Belgium, France

Status Code	Status Message
10-6	Address field cannot be matched and it is returned unchanged in the output.
20-6	Changed upper/lowercase.
30-6	Changed diacritics.
40-6	Changed punctuation.
50-6	Removed leading zeros.
60-6	Merged words.
70-6	Split up words.
80-6	Replaced a word with a phonologically equal word.
90-6	Corrected a typing error.
100-6	Replaced a word with a synonym.
101-6	Authentication to Worldview web service failed: the user name or password in the configuration is invalid, contact Global Data Consortium.
102-6	The number of purchased transactions is used for Worldview web service, no more transactions allowed.
103-6	The usage time of transactions for Worldview web service is expired, no more transactions allowed.
110-6	Replaced a word with an abbreviation.
120-6	Changed the word order.
130-6	Added an unimportant word (Jan Dam is changed to Jan van Dam).
140-6	Removed an unimportant word (Jan van Dam is changed to Jan Dam).
150-6	Added an important word (Dam is changed to Jan Dam).
151-6	Empty value in the input.
153-6	Insufficient space in the output buffer; output has been truncated.
154-6	Conversion by Worldview cannot be done.

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155-6	After transformation the buffer length was changed.
156-6	Too many results, only the first 20 results are returned.
157-6	No license for this country for Worldview.
160-6	Removed an important word (Jan Dam is changed to Dam).
165-6	Replaced an unimportant word (Riverside house is changed to Riverside cottage).
170-6	Replaced an important word (East street is changed to West street).
180-6	Replaced an obsolete word with the current word; this can happen when, for example, a street is renamed.
190-6	Replaced an unofficial variant of an address field.
200-6	Changed language of address field.
202-6	No address in the input.
203-6	Incomplete address in the input
204-6	Country not recognized
205-6	Country database not found
206-6	Country database has wrong format or corrupt data
207-6	Access denied to country database of Worldview (e.g. license is missing)
210-6	Changed the order of address field.
220-6	Added an address field.
230-6	Removed an address field.
240-6	Obsolete field in address; e.g. a street is renamed. See the remark for the field that is obsolete.
250-6	Internal error.
251-6	Internal error.
252-6	Internal error.
253-6	Internal error.
254-6	Internal error.
255-6	Internal error.
299-6	Request size exceeds maximum for Worldview web service.
300-6	Operation timed out.
399-6	Server error.
500-6	Removed or added empty line(s).
510-6	Split up one address line into two adjacent address lines.
520-6	Merged two adjacent address lines.

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530-6	Relocations of address lines (e.g. changes in order).
540-6	Split up address fields into two or more address fields.
550-6	Relocations of address fields (e.g. changes in order).
600-6	Country not recognized.
601-6	Country is not available for this user.
602-6	No more transactions by Worldview web service allowed for this country.
699-6	Reference database for this country not available.
700-6	Requested language is not available; output is in the official language.
810-6	House number in the input is incorrect.
820-6	Overall address in the input is incorrect.
830-6	Postal code in the input is incorrect.
840-6	Administrative area in the input is incorrect.
850-6	Sub-administrative area in the input is incorrect.
860-6	Post town in the input is incorrect.
870-6	Delivery service qualifier in the input is incorrect.
880-6	Locality in the input is incorrect.
890-6	Dependent locality in the input is incorrect.
900-6	Business park in the input is incorrect.
910-6	Post box in the input is incorrect.
920-6	Organization in the input is incorrect.
930-6	Thoroughfare in the input is incorrect.
940-6	Dependent thoroughfare in the input is incorrect.
950-6	House number addition in the input is incorrect.
960-6	Dependent thoroughfare number in the input is incorrect.
970-6	Dependent thoroughfare number addition in the input is incorrect.
980-6	Premise in the input is incorrect.
990-6	Sub-premise in the input is incorrect.
6000-6	This status code is only shown when strict mode is not checked. The address that was found has multiple organizations, but the input has no organization; the organization is excluded from output
7001-6	The service returned a client fault (SOAP 1.2 sender fault).
7002-6	The service returned a server fault (SOAP 1.2 receiver fault).
7003-6	An XML element did not correspond to anything expected.
7004-6	An XML schema type mismatch.

7005-6	An XML syntax error occurred on the input.
7006-6	Begin of an element expected, but not found.
7007-6	Array index out of bounds.
7008-6	An address element needs to be ignored that is necessary for the address.
7009-6	Namespace name mismatch (validation error).
7010-6	Internal error, contact GDC.
7011-6	Internal error, contact GDC.
7012-6	An exception raised by the service.
7013-6	The dispatcher did not find a matching operation for the request.
7014-6	No data in HTTP message.
7015-6	HTTP GET operation not handled.
7016-6	Out of memory.
7017-6	Internal error, contact GDC.
7018-6	Internal error, contact GDC.
7019-6	An element was empty.
7020-6	Multiple occurrences of the same element in the input.
7021-6	Element ID missing for an HREF on the input.
7022-6	Reference to object is incompatible with the object referred to.
7023-6	Message too large to store in UDP packet.
7024-6	A connection error occurred.
7025-6	An HTTP error occurred.
7026-6	An SSL error occurred.
7027-6	A Zlib error occurred.
7028-6	DIME parsing error.
7029-6	DIME attachment has no href from SOAP body.
7030-6	DIME version/transmission error.
7031-6	End of DIME error.
7032-6	MIME parsing error.
7033-6	Internal error, contact GDC.
7034-6	Internal error, contact GDC.
7035-6	SOAP version mismatch or no SOAP message.
7036-6	Internal error, contact GDC.
7037-6	SOAP 1.2 DataEncodingUnknown fault.
7038-6	Attributed required validation error.

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7039-6	Attributed prohibited validation error.
7040-6	Element minOccurs/maxOccurs validation error.
7041-6	Element length validation error.
7042-6	Internal error, contact GDC.
9999-6	Internal error, contact GDC.

United States

Status Code	Status Message
0-1	No changes
1-1	No changes
2-1	No changes
3-1	No changes
4-1	No changes
5-1	No changes
6-1	No changes
7-1	Matched unique post code; delivery address line not verified
8-1	Matched general delivery post code; delivery address line not verified
9-1	Address by LACS
10-1	Secondary added by SuiteLink
11-1	Alias
12-1	post code match
13-1	Alternate
21-1	City
22-1	City state changed
23-1	City post code changed
24-1	City, and post code changed
25-1	post code
26-1	post code State changed
27-1	State changed
28-1	Census tract changed
29-1	Census tract and postal code changed
35-1	Street and city changed
36-1	Street city, and state changed
37-1	Street city, and post code changed
38-1	Street city, state, and post code changed

39-1	Street and post code changed
40-1	Street post code, and state changed
41-1	Street and state changed
42-1	Street suffix, and city changed
43-1	Street suffix, city, and state changed
44-1	Street suffix, city, and post code changed
45-1	Street suffix, city, state, and post code changed
46-1	Street suffix, and post code changed
47-1	Street suffix, post code, and state changed
48-1	Street suffix, and state changed
49-1	Street directional, and city changed
50-1	Street directional, city, and state changed
51-1	Street directional, city, and post code changed
52-1	Street directional, city, state, and post code changed
53-1	Street directional, and post code changed
54-1	Street directional, post code, and state changed
55-1	Street directional, and state changed
56-1	Street suffix, directional, and city changed
57-1	Street suffix, directional, city, and state changed
58-1	Street suffix, directional, city, and post code changed
59-1	Street suffix, directional, city, state, and post code changed
60-1	Street suffix, directional, and post code changed
61-1	Street suffix, directional, post code, and state changed
62-1	Street suffix, directional, and state changed
63-1	Suffix
64-1	Suffix directional changed
65-1	Suffix city changed
66-1	Suffix, and state changed
67-1	Suffix, and post code changed
68-1	Suffix, state, and post code changed
69-1	Suffix post code changed
70-1	Suffix, and state changed
71-1	Suffix state changed
72-1	Suffix, and city changed
73-1	Suffix, city, and state changed

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74-1	Suffix, city, and post code changed
75-1	Suffix, city, state, and post code changed
76-1	Suffix, and post code changed
77-1	Suffix, post code, and state changed
78-1	Suffix, and state changed
79-1	Directional
80-1	Directional city changed
81-1	Directional, and state changed
82-1	Directional, and post code changed
83-1	Directional, state, and post code changed
84-1	Directional post code changed
85-1	Directional, and state changed
86-1	Directional state changed
92-1	Failed because of invalid secondary
93-1	Failed because of missing secondary
111-1	No post code, no input state, and no input city
112-1	No post code and no input city
113-1	Foreign
211-1	No post code, no input state, and input city invalid
212-1	No post code, input state invalid, and input city invalid
213-1	Input invalid, no input state, and input city invalid
214-1	Input invalid, input state invalid, and input city invalid
215-1	Input invalid, no input city
216-1	Unique post code does not match input city/state
311-1	Could parse a primary number from input data
312-1	Could parse a street name from input data
313-1	Address blank
411-1	Primary invalid
412-1	Street invalid
413-1	Similar names were found but with no exact matches
414-1	Multiple matches with different post code+4 codes were found
415-1	Pre-directional to choose from multiple possible matches
416-1	Post-directional to choose from multiple possible matches
417-1	Suffix to choose from multiple possible matches
418-1	Directional suffix required to choose from multiple possible matches

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419-1	Valid Code required to choose from multiple possible matches
420-1	Valid name required to choose from multiple possible matches
421-1	Valid required to choose from multiple possible matches
422-1	Matched undeliverable address; 5-digit coded
423-1	Matched a record in the Early Warning System (EWS) file
491-1	Failed because of invalid primary
492-1	Valid but failed DPV because of invalid secondary
493-1	Valid but failed DPV because of missing secondary
494-1	Failed because of invalid PO, RR, or HC box number

Italy, Spain, Portugal, Mexico

Status Code	Status Message
0-3	No significant changes
1-3	Postal Code changed
2-3	Street changed
3-3	Street and suffix changed
4-3	Street and Directional changed
5-3	Street suffix, and directional changed
6-3	Street and postal code changed
7-3	Significant changes required

Worldwide

Status Code	Status Message
V-4	A complete match was made between the input data and a single record from the available reference data
P-4	A partial match was made between the input data and a single record from the available reference data
U-4	Unable to verify. The output fields will contain the input data
A-4	More than one close reference data match
C-4	More than one close reference data match with conflicting values
R-4	Record could not be verified to the specified minimum acceptable level. The output fields will contain the input data
0-4	Verification Match Level: None
1-4	Verification Match Level: Administrative Area
2-4	Verification Match Level: Locality

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3-4	Verification Match Level: Thoroughfare
4-4	Verification Match Level: Premise (Premise or Building)
5-4	Verification Match Level: Delivery Point (PostBox or SubBuilding)
P0-4	Postal Code Primary empty
P1-4	Postal Code Primary identified by context
P2-4	Postal Code Primary identified by lexicon
P3-4	Postal Code Primary added
P4-4	Postal Code Primary verified with large change
P5-4	Postal Code Primary verified with small change
P6-4	Postal Code Primary verified
P7-4	Postal Code Primary verified, Postal Code Secondary added or changed
P8-4	Postal Code Primary and Postal Code Secondary verified

Argentina

Status Code	Status Message
CO-5	Address Fixed
NE-5	Address Not Found
SD-5	No data
DU-5	Address Doubtful
NP-5	Unable to Parse

Latvia, Lithuania, and Estonia

Status Code	Status Message
0-7	The resulting address data is not deliverable but may have some accurate elements, overall it is deemed suspect
1-7	The resulting address data is not deliverable but may have some accurate elements, overall it is deemed suspect
2-7	The resulting address data is not deliverable but may have some accurate elements, overall it is deemed suspect
3-7	The resulting address data is not deliverable but may have some accurate elements, overall it is deemed suspect
4-7	The resulting address data is not deliverable but may have some accurate elements, overall it is deemed suspect

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5-7	The resulting address data is not verifiable but useful and possibly deliverable depending on the destination country
6-7	The resulting address data is not verifiable but useful and possibly deliverable depending on the destination country
7-7	The resulting address data is not verifiable but useful and possibly deliverable depending on the destination country
8-7	The resulting address is verified / corrected to the highest available reference data level in the country.
9-7	The resulting address is verified / corrected to the highest available reference data level in the country.
10-7	The resulting address is verified / corrected to the highest available reference data level in the country.

Worldview System

Status Code	Status Message
errNoServer	Error in the Communications with the Web Service. Error produced due to the lack of Communications between client and server.
errNoUser	The user does not exist o has been unsubscribed.
errNoAccess	The number of hits available has been run out.
errUnknownProduct	Unknown chosen product in the variable product (Please, contact GDC technical service to check your products).
errMoreThanOneBase	A product base (Addresses or Names) has been duplicated in the field product.
ErrUnknown	Please, contact Global Data Consortium.
countryErrorDefinition	Error in the definition of the country name, if the country entered is correct it might be due to the selection of the parameter countryLiteralType.
ErrorNoCountry	No country has been set for the address. This value is necessary to configure the normalization engine.

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APPENDIX 4 - SAMPLE REQUEST/RESPONSE

Below is another test request response for verification purposes:

```xml
<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/">
 <SOAP-ENV:Header/>
 <SOAP-ENV:Body>
  <ws:validate xmlns:ws="http://ws.wvservice.globaldata.com/">
   <input>
    <address>
    <name/>
    <houseNumber/>
    <thoroughfare/>
    <postalCode>BD184LE</postalCode>
    <postTown/>
    <locality>SHIPLEY</locality>
    <province></province>
    <county/>
    <premise/>
    <countryName/>
    <countryCode>GB</countryCode>
    <addressLine1>28 Ashfield Road</addressLine1>
    <addressLine2></addressLine2>
    <addressLine3/>
    <addressLine4/>
    <addressLine5/>
    <addressLine6/>
    <addressLine7/>
    <addressLine8/>
    <addressLine9/>
    <addressLine10/>
   </address>
   <credentials>
    <username>USERID</username>
    <password>PASSWORD</password>
    <tenant>TENANT/COMPANY NAME</tenant>
   </credentials>
```

_____

```
    <options/>
   </input>
  </ws:validate>
 </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

EXPECTED RESPONSE

```
<S:Envelope xmlns:S="http://schemas.xmlsoap.org/soap/envelope/">
  <S:Body>
    <ns2:validateResponse xmlns:ns2="http://ws.wvservice.globaldata.com/">
     <return>
      <address>
        <addressLine1>28 Ashfield Road</addressLine1>
        <addressLine10/>
        <addressLine2>Shipley</addressLine2>
        <addressLine3>West Yorkshire</addressLine3>
        <addressLine4>BD18 4LE</addressLine4>
        <addressLine5>UNITED KINGDOM</addressLine5>
        <addressLine6>GB</addressLine6>
        <addressLine7/>
        <addressLine8/>
        <addressLine9/>
        <cebucoCode/>
        <census/>
        <codes>
          <adaptation>30</adaptation>
          <detailCode>WS-302671.2013.7.15.16.37.29.91</detailCode>
          <detail_list/>
          <messages>
            <code>V</code>
            <value>Verified. A complete match was made between the input data and a single record from the
available reference data</value>
          </messages>
          <messages>
            <code>P4</code>
            <value>Post-Processed Verification Match Level. Premise (Premise or Building)</value>
```

```
        </messages>
        <options/>
        <reliability>10</reliability>
      </codes>
      <congressionalDistrict/>
      <countryCode>GB</countryCode>
      <countryISO3/>
      <countryName>United Kingdom</countryName>
      <countryNumber/>
      <countyCode/>
      <department/>
      <dpvCoded/>
      <dpvFootnotes/>
      <dpvIndicator/>
      <dpvIsCMRA/>
      <dpvIsNoStat/>
      <dpvIsPBSA/>
      <dpvIsVacant/>
      <eggCode/>
      <formalCountryName/>
      <hausCode/>
      <houseNumber/>
      <houseNumberAddition/>
      <lacsIndicator/>
      <latitude/>
      <locality>Shipley</locality>
      <longitude/>
      <lotNumber/>
      <municipalityCode/>
      <organization/>
      <postIndicator/>
      <postTown/>
      <postalCode>BD18 4LE</postalCode>
      <preIndicator/>
      <premise>28</premise>
      <province>West Yorkshire</province>
      <provinceCode/>
      <subDistrict/>
      <thoroughfare>Ashfield Road</thoroughfare>
```

```
        <timezone/>
        <urbanArea/>
        <urbanization/>
      </address>
      <codes>
        <adaptation>30</adaptation>
        <detailCode>WS-302671.2013.7.15.16.37.29.91</detailCode>
        <detail_list/>
        <options/>
        <reliability>30</reliability>
      </codes>
      <email>
        <addressee/>
        <codes>
          <adaptation>30</adaptation>
          <detailCode>WS-302671.2013.7.15.16.37.29.91</detailCode>
          <detail_list/>
          <options/>
          <reliability>30</reliability>
        </codes>
        <countryCode/>
        <display_name/>
        <domain/>
        <full_email_address/>
        <top_level/>
      </email>
      <identity>
        <businessid/>
        <codes>
          <adaptation>30</adaptation>
          <detailCode/>
          <detail_list/>
          <options>None</options>
          <reliability>30</reliability>
        </codes>
        <completename/>
        <contact_type/>
        <countryCode/>
        <dob/>
```

```
        <formofaddress/>
        <function/>
        <gender/>
        <givenfullname/>
        <givennameinitials/>
        <indicator/>
        <name_qualified/>
        <nationalid/>
        <nationality/>
        <organization_name/>
        <passport/>
        <qualification_int_first/>
        <qualification_int_second/>
        <qualification_suceeding/>
        <qualificationpreceding/>
        <surname_first/>
        <surname_prefix_first/>
        <surname_prefix_second/>
      </identity>
      <phone>
        <area_code/>
        <calling_code/>
        <calling_from/>
        <codes>
          <adaptation>30</adaptation>
          <detailCode>WS-302671.2013.7.15.16.37.29.91</detailCode>
          <detail_list/>
          <options/>
          <reliability>30</reliability>
        </codes>
        <countryCode/>
        <formatted_international/>
        <international_prefix/>
        <line_type/>
        <name/>
        <number/>
        <phone_number/>
        <timezone/>
        <trunk/>
```

_____

```
            </phone>
         </return>
      </ns2:validateResponse>
   </S:Body>
</S:Envelope>
```